

**Type Nouveau:
A Typological Approach to Modern Suburbia**

by

Nicole Basich

Submitted in partial fulfilment of the requirements
for the degree of Master of Architecture

at

Dalhousie University
Halifax, Nova Scotia
March 2016

© Copyright by Nicole Basich, 2016

CONTENTS

Abstract	iv
Acknowledgements	v
Chapter 1: Introduction	1
Thesis Question.....	3
Chapter 2: Suburbia	4
Context	4
Suburban Condition.....	6
The Decline of Suburbia.....	7
Movement Towards Modernization.....	8
The Mid-Urb.....	9
Chapter 3: Site.....	10
Victoria.....	10
Oak Bay.....	12
Cost of Housing	14
Demographics.....	15
Suburb Characteristics	16
General	16
Circulation.....	16
Density.....	19
Opportunities for Increased Density	20
Residential Properties.....	20
Other Properties	22
Oak Bay Community Plan	23
Objectives	23
Implementation	24
Analysis	24
Site Selection.....	26
Chapter 4: Typologies.....	29
Why Typologies?	29
Existing Typologies.....	31

Site Conditions	31
Ownership Conditions	32
Condition One	33
Condition Two	34
Condition Three	35
Impact on Population	36
Local Precedents	37
City of Victoria	37
City of Vancouver	38
Chapter 5: Design	40
Design Strategies	40
Type One	42
Type Two	50
Type Three	57
Methods of Implementation	65
Implementation Method One: Minimal Site Impact	65
Implementation Method Two: Average Density	66
Implementation Method Three: Maximum Density	66
Impact of Scheme on Neighbourhood Block	70
The Modern Mid-Urb	71
Chapter 6: Conclusion	76
Appendix: Cost Analysis	79
Notes	85
Bibliography	88

ABSTRACT

Developed in the early part of the 20th century, prevalent in North America in the 1950s - 80s, the suburb as we know it is no longer relevant — particularly within the mid-urban condition. Rising housing costs, lack of vacant land, and low density suburban developments have made this morphology anachronistic, if not simply wrong.

Increasing density, both in number of people and programme composition, and a typological approach to form-making is the answer for the contemporary suburb.

This thesis investigates the condition of the mature, mid-urban development through a study of Oak Bay, Victoria, BC. This community lends itself to investigation due to the clarity and consistency of its existing urban fabric, the current development reshaping it, and its perceived desirable character.

The architectural goals of this thesis are to develop a methodology for densification of the mid-urb, and describe a new set of typologies that challenge the existing model.

ACKNOWLEDGEMENTS

Thank you to mom and dad for all your love, support, and encouragement to follow my dreams no matter the obstacles, or how far away I had to move. You have been a constant throughout this endeavour, and for that I am very grateful. Thank you for being you.

Thank you to Marc for your faith in me and encouragement at every step along the way. Thank you being on the other end of the phone and listening to my never-ending string of stories and complaints throughout these past semesters no matter when I called. Thank you for being a constant support. I would not have made it through this without you.

Thank you to my supervisor, Niall Savage, and my advisor, Diogo Burnay, for all your guidance, encouragement and enthusiasm through this process. Without your help this thesis would not have reached the depth and clarity in ideas that it has.

Thank you to all of the other professors I had the pleasure to work with and wonderful people around the school who have helped along this crazy adventure called architecture school.

Thank you to my classmates and studio mates, too many of you to name, for making the past four years in this school an unforgettable experience with memories to last a lifetime.

Thank you to my loyal friends I have met along the way for the many laughs, good conversations, and sharing in this crazy experience.

CHAPTER 1: INTRODUCTION

The suburban form is one of the most well-known urban morphologies. A model based around low-density single-detached homes on large properties with deep front yard setbacks, that is formed by winding streets, and dead-end cul-de-sacs can be seen widely throughout North America as well as on other continents. With unoccupied land becoming scarce, and the increased cost of housing, a maturation of the suburban form is needed. If there is no change to current practice, the suburban model may face obsolescence and extinction.

Although this issue is affecting a large portion of our society, this thesis focuses on the suburban condition within Victoria, British Columbia. Victoria is a city on the western coast of Canada, situated on the southern tip of Vancouver Island. The Capital Regional District (CRD) of Victoria is divided in to thirteen municipalities, each with a distinct character.

The municipality of focus for this study is the District of Oak Bay. Situated on the south western portion of the city, Oak Bay is known primarily for its character as a single-family residential neighbourhood with quaint villages and character homes. The municipality can be divided in to multiple, smaller, enclaves based on character of development. Such enclaves can also be determined by the time of construction and are divided by major circulation routes. There are few multi-unit residential developments, and where present they are situated in concentration. The site of focus is the residential block surrounding Estevan Village. Constructed primarily in the twenties through to the late fifties, the block is a fair representative of the remainder of the community.

The suburbs, specifically mid-urban communities, have a distinct urban form that divides them from the remainder of the city, and Oak Bay is no different. The repetitive form of low density lots, and at times repeated home designs, reflect the periods of increased development throughout history, and are relatively standard throughout North America. A model of reconstruction is needed that is responsive to both current conditions and dynamic enough to allow alterations to meet the needs of future generations.

With increased levels of development of larger condominium projects within downtown cores, the need for increased density is spreading to suburbs that are at the fringe of the metropolis. This thesis focuses on neighbourhoods that are at this edge, otherwise known as mid-urbs. The investigation seeks to determine a method and framework that can be applied within a variety of contexts to allow for such areas to gain a higher density while maintaining their desirable character.

This thesis proposes that a typological method can be used to create architectural interventions that allow for an increase in density in such neighbourhoods. A study of site context and what modifications are more favourable or less desirable allows for a framework to be devised with the function of introducing new typologies in to the existing urban fabric. This framework also allowing for strategies regarding form making to be developed. This thesis proposes that a method of infill development would be most effective in doing so rather than a redevelopment of existing communities. The site of Oak Bay provides the ideal testing area as little change has occurred in the area since its initial development.

Thesis Question

How can a study of existing conditions within the common mid-urban development model be used to define new typologies with the objective of increasing density to aid in the creation of a modernized suburban model?

CHAPTER 2: SUBURBIA

Context

The idea of living outside of the city's core is not a modern one. The concept can be dated back to the early ages where members of the community would migrate outside of the city walls, sacrificing protection and other services for the idealized lifestyle of owning their own plot of land. In later times, the population shifted towards the outskirts of the city in hopes of escaping the undesirable living conditions within the industrial city. This shift in population continued with the large scale development of housing within areas outside of cities that have become known as suburbs.

The definition of the term suburb varies based on location, but "suburbs are usually defined in physical terms, commonly as residential districts with low densities that are located at, or near, the urban fringe."¹ One of the most common views of suburbia comes from the post-war neighbourhoods constructed under the phenomena of the "American Dream" of financial success and upward mobility. With this promise of an idyllic lifestyle, a new shift in population out of city centres occurred, moving residents further towards the fringe of cities. There was now a new model of living occurring that included urban living within the downtown core, the suburban model at the boundary of this model creating an interface for the exurbs and agricultural lands that lay outside of the metropolitan boundaries. "Public opinion gradually replaced the city with the suburb as the ideal place to raise a family. The suburban lifestyle was absorbed by the mainstream North American social and cultural value system."² This model became the new norm of living.

Although no strict definition of a suburb can be given, Richard Harris, in his work on defining the Canadian suburbs gives the following description of a typical suburb:

Today suburbs are built around cars, but this was not always the case. What are the more enduring features of the suburb? Scholars, and Canadians in general, have usually identified six criteria, although in varying combinations:

- 1 low density of development, typically of detached, or semi-detached, dwellings
- 2 location at, or close to, the urban fringe
- 3 high level of owner-occupation
- 4 politically distinct
- 5 middle, or upper-middle class in character
- 6 exclusively residential, implying that residents must commute beyond the suburb to work ³

Not all suburbs are created equal, and differ in housing typologies, planning methods, as well as demographics in both income, age, family composition and ethnicity. They tend to differ based on the era in which they were developed. Despite such differences, most suburbs loosely conform to Harris' definition.

A secondary catalyst in the shift towards the suburbs was the introduction of the automobile. With the new ability to travel from point A to point B with greater ease, and without being limited to a public transit schedule, a modification to how cities are planned and inhabited occurred. The population could now live further from the downtown core than the previous model of streetcar suburbs allowed. They were no longer restricted in their residence needing to be situated in close proximity to their place of work. Although not seen as ideal today, the concept of a commute in your own automobile from a property that you had ownership up was seen as holding a higher social status.

Suburban Condition

The average city today consists of not only the downtown core, but a greater metropolitan area; surrounding communities consist of rural zones as well as collections of developed housing subdivisions that form the suburbs. The suburban fabric differs greatly from the downtown core in form of planning and level of density. Suburbs are typically made up of low density properties, rather than high density constructions, and roads tend to be free flowing rather than falling within an overarching gridded system. They can also be characterized by a divide of land use into specific zones.

The division of the suburbs by land use instigated the development of zoning practices and the introduction of by-laws. "Most powerfully, they strictly separate places of living, working, shopping, and recreation."⁴ Zoning bylaws also limit the demographic makeup of a community through the housing typologies allowed, and their related cost. There is little mixing of use, as well as class of users, within the suburban realm that would typically occur within a downtown core.

In theory, the division of land uses may be appropriate in creating an efficient society through concentration, but planning in this way involves its own consequences. Daily rituals are not compact and walkable, and travel distance necessitates the use of a car, further limiting affordability of residing in such communities. A further isolation is stimulated by the lack in variety of housing types as a lower density requires further travel distance.

Higher density housing tends to be sparse, and rental units are less available than privately owned single-family de-

tached homes or condominium units. This lack in variety increases the cost of living. "As families struggle to cope with these dilemmas, rigid zoning laws and financing arrangements that make 'granny flats' or 'daughter-in-law apartments' illegal only compound the problem."⁵

The Decline of Suburbia

The affinity towards the suburban lifestyle is facing a crossroads that is leading towards decline. A shift towards a desire for more complete communities is occurring. The "American Dream" home and lifestyle has begun to no longer be a viable option due to cost, and is not acknowledging a shift in demographics and basic housing needs. The new model requires accessibility to amenities, shopping and community centres nearby. This concept includes a network of smaller centres rather than a single large commercial centre within each community. The model also includes an increase in density to meet these requirements. Some of the major influencing factors in this decline are the lack of housing types and rigid zoning regulations. "Existing neighbourhoods are frequently mummified by their current regulations."⁶

Many suburban communities live with a "NIMBY" (not in my backyard) resistance to change."⁷ This attitude consequently leads to "one of the primary dilemmas of American postwar suburbs: places seek to remain the same, yet by doing so they become subject to the soft decline that can be countered only by change."⁸ Many proposals have been made for increasing the density of suburbs, but many dismiss this concept due to imposition and encroachment on private space. The clear divide between public and private zones defined by ownership within suburbs that many see as a required characteristic would be lost. Due to the re-

sistance towards increased density, the availability of housing decreases, and the cost of housing increases greatly in consequence. This results in a migration of the population to a further distance away from the city and towards more affordable properties. With this shift, the current suburban condition is undergoing alterations and may become completely lost.

Movement Towards Modernization

It can be seen that due to the variety in suburban conditions, there is no be-all end-all answer to the issue of population and methods to increase density. A different approach must be taken to the modernization of suburbia that uses the existing conditions as a point of departure. This thesis proposes that a typological method should be used to address the issues within the specific existing context. Different conditions call for different measure, and a focus on site specific solutions that may have a large impact on how the framework for methods of modernization should be approached.

To remain relevant, the suburban form requires a movement towards a new model. This thesis explores how this redefinition can occur while maintaining a distinct difference between the suburban character, specifically the mid-urb, and the downtown urban core. An increase in both density of population and density of programme are key elements in the reform and modernization of the suburban model. There is an increased desire for complete communities that are not only more sustainable, and walkable, but also provide for further changing needs. Without achieving this quality of living, the suburban model may become obsolete. There are multiple modernized views of the new “American Dream” and a housing model is needed to meet these requirements.

The Mid-Urb

This thesis focuses on the suburban condition that is most susceptible to destructive methods of modernization -- those closest to the downtown core, known as mid-urbs. These communities do not conform to the average definition of suburban sprawl, and therefore common techniques proposed to reduce sprawl conditions are not relevant within this context.

The typical mid-urb is gridded in form, and holds a higher density than communities in sprawl conditions. Such suburbs are the interface and transitional zones between the downtown core and sprawling conditions. They hold many of the qualities of the extremes of both conditions. Since many were designed around the existence of a streetcar many lack a front drive or ease of access to parking. This suburban typology was highly planned and rarely developed entirely of a piecemeal fashion. Maintaining the model of commuting via streetcar, walking at either end of the commute, pedestrian culture is still an important part of this suburban model.

As the downtown core expands, increases in density at the bordering interface areas are beginning to occur. Residential communities near this border are the most susceptible to increase in density as they are the most desirable for living. New developments of middle density construction are beginning to occur. In consequence of the increase in density, many of such neighbourhoods tend to begin to lose the characteristics that make them desirable for inhabiting.

CHAPTER 3: SITE

Victoria

Victoria is the capital of British Columbia, and situated on the southern tip of Vancouver Island. Victoria is known as “The Garden City,” a quality which makes it a popular tourist destination along with the picturesque scenery and mild climate. The Capital Regional District (CRD) is composed of thirteen distinct municipalities, with an overall population of approximately 360,000.⁹ Due to its climate, it is also a popular retirement location as outdoor activities such as golf are possible year-round, and there is very little worry of snow.

Victoria’s population is growing, with many young professionals in the technology sector moving to the city. Within the downtown core there are many condominium projects being constructed. As February 2016 there are 319 new condo units in construction on the downtown core, with 952 in planning, as well as 643 rental units under construction, with 390 units in planning.¹⁰ This increase in density is shifting outwards towards the fringe of the downtown core and impact bordering communities. An expansion is also occurring at the borders of the CRD with new residential communities being developed within the outermost municipalities.



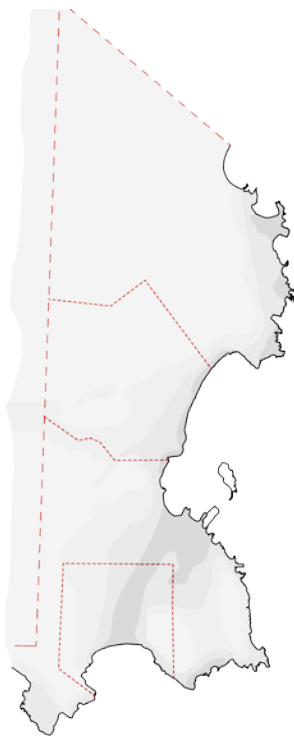
Site location



Map of Victoria, BC; base map from CRD Atlas and OpenStreetMap

Oak Bay

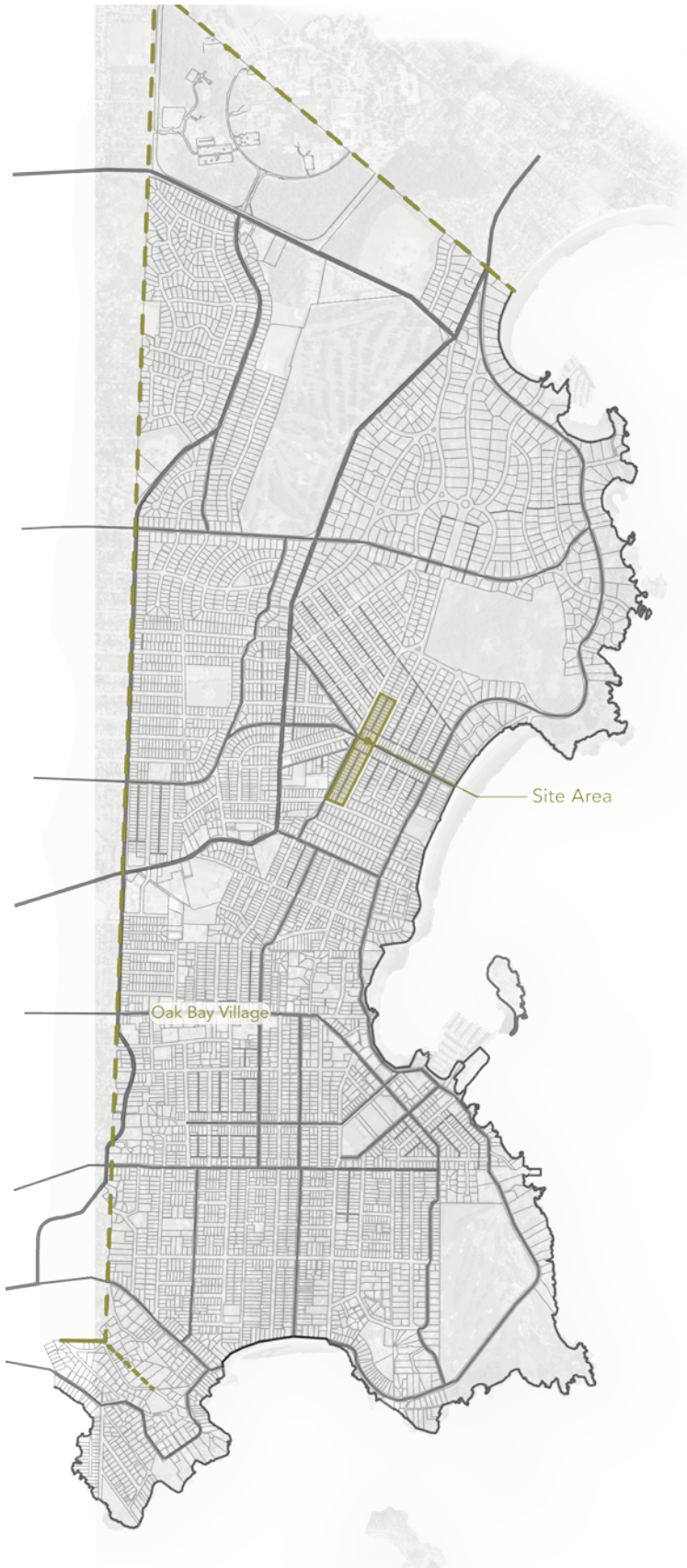
Oak Bay is a seaside municipality within Victoria with a population of approximately 18,000.¹¹ It borders the City of Victoria, and is principally comprised of single-family residential properties. Due to its character, friendly atmosphere, and walkability it has become one of the most popular areas for seniors to live within Victoria.¹² It also draws the aging population due to the proximity of grocery stores, shopping centres and recreation within the community.



Oak Bay original properties

Oak Bay held its origins as farm land, with a portion of the area belonging to the Hudson's Bay Company as a fur trade reserve. Later, exhibition grounds, that included a race track, were set up on the site.¹³ The site area was subdivided as farm lands migrated further away from downtown and existing farms were sold. Some distinct characteristics of each subdivision based on their time of construction are still apparent today. Certain areas of the community contain larger properties on winding roads, while others are composed of smaller properties within a gridded pattern. A portion of the original fur trade land was given to the University of Victoria, where the university remains today on a property located within three different municipalities.

Oak Bay's overall defining qualities would characterize it as a mid-urb typology. Today the area is comprised primarily of residential properties, along with small commercial villages, schools, recreation centres, as well as golf courses, parks, and beaches.



Map of Oak Bay, BC; base image from CRD Atlas and base map from District of Oak Bay

Cost of Housing

Despite its beautiful scenery, and picturesque quality, Oak Bay has underlying issues of its own. As the cost of housing on the west coast is rising rapidly, Oak Bay has become one of the most expensive areas in Canada to live. The average sale price of a single family home in January of 2016 was \$857,300.¹⁴ The Uplands, one of the most prestigious neighbourhoods within the district contributes to this statistic as many of the homes in the area are sold at multi-million dollar price tags, some ranging in to the tens of millions.

In addition to the high purchasing cost of homes, the rental market is consequently much less affordable than other regions of Canada, even within the City of Victoria itself. As of October 2015, the average rent for a one bedroom unit was \$832, while a two bedroom unit cost \$1285, and the overall average rent being \$1,003.¹⁵ These are some of the highest values within the Victoria census metropolitan area, with the average rent within the CRD being \$942, and lowest being \$869.¹⁶

Due to the lack of affordable housing in the area, and the low value of the Canadian Dollar,¹⁷ many properties are being bought by purchasers outside of Canada site-unseen. If this trend continues, an increased number of locals will not be able to afford to live in the area, which could lead to changes in both the culture and characteristics of the area. Many of the existing homes on sites are being torn down and replaced by mansion sized homes that are too large for the sites they occupy, are of low quality construction and do not fit within the community — referred to as “McMansions.” This new construction leads to an increased density of building, but not necessarily of population within the community.

Another limiting factor in the affordability epidemic within Oak Bay are the zoning regulations. Secondary suites, multi-unit homes, and garden flats are not allowed in the area. Owners are therefore unable to supplement their income by renting out portions of their homes to aid with their high mortgage payments.

Demographics

Oak Bay's population is comprised primarily of the upper-middle-class portion of Victoria's inhabitants. The average income of homeowners in the area is \$131,677 per household, before taxes, while the average income of renters living in the area is \$56,549 per household.¹⁸ Although the average is within a higher end of income bracket, a large portion of the population is spending more than 30% of their monthly income on shelter costs — an expenditure level which is considered unaffordable.¹⁹

Oak Bay has a large concentration of seniors, with 27.7% of the population aged 65 years or older.²⁰ A large portion of the senior population is living at home alone in properties that they are unable to maintain or care for.²¹ Due to the lack in variety in housing, they are remaining in their homes as they do not wish to leave their ties to the community. Other than care homes, there are few facilities that are affordable for an aging population to transition to from their current living situation in their family homes. This phenomena has caused the area to have very minimal turnover in population within previous years.²² Unlike within the downtown core, very few new condominium or rental until constructions have begun in Oak Bay within the last decade.

The remaining majority of the population consists of middle-aged parent led families with middle to high school and early post secondary aged children, as well as couples without children.²³ Young families as well as young professionals struggle to afford living in the area, with only 8.9% of the population aged 20 to 29, and 6.9% of the population aged 30 to 39.²⁴

Suburb Characteristics

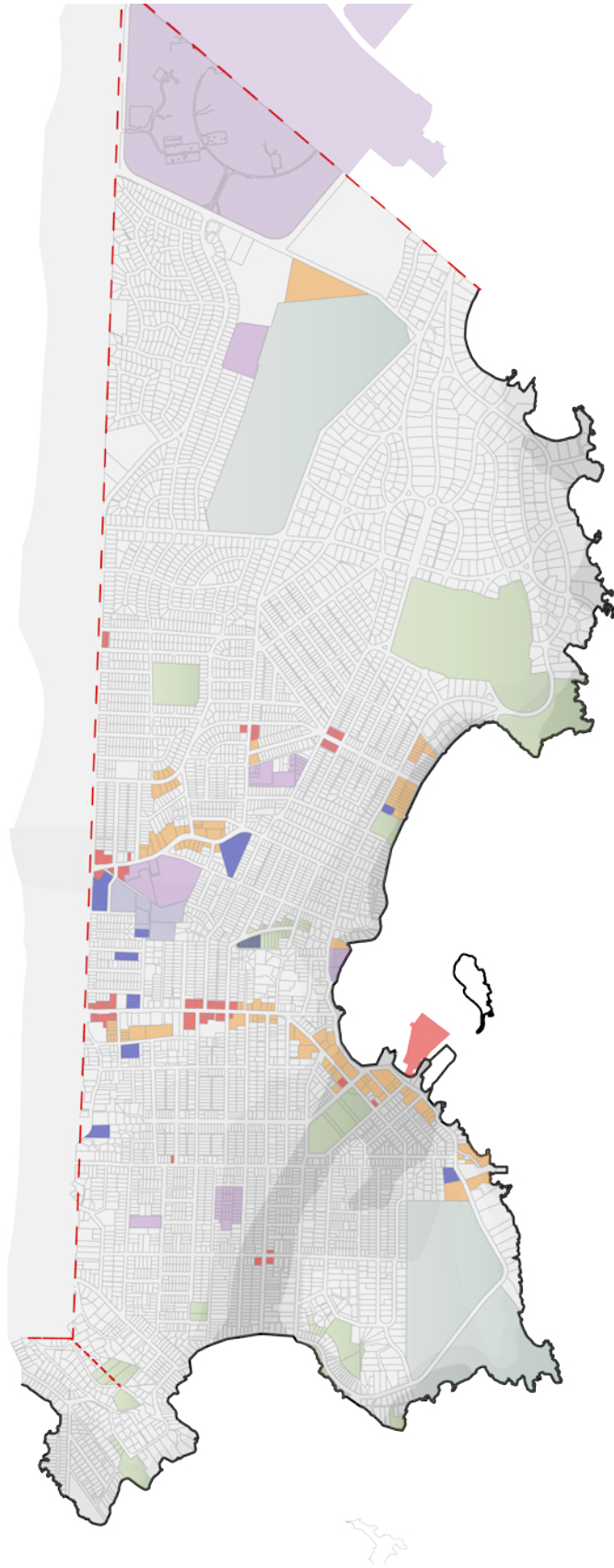
General

Oak Bay does not meet the typical definition of a sprawling suburb, but fits the characteristics of a mid-urb. Many properties are compact; averaging at 55 feet by 115 feet. Where plots are larger the streets are designed to have a landscaped quality with trees lining either side and wide grass covered boulevards between the sidewalk and the road. These plots are typically found in the Uplands district, a prestigious upper-class area within Oak Bay.

As with the average suburb, Oak Bay is divided in to zones based on use. The enclaves can be defined as residential, commercial villages, multi-unit residential concentrations, and recreational areas with some basic variations within these typologies.

Circulation

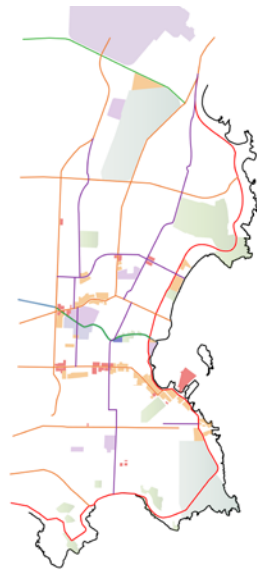
Circulation within the area is primarily by car, as it is approximately a fifteen minute drive from the downtown core. Other modes of transportation are also popular in the area. Many bus routes circulate through the area that reach both the downtown core and the university and colleges nearby. The routes tend to serve the primary and secondary villages



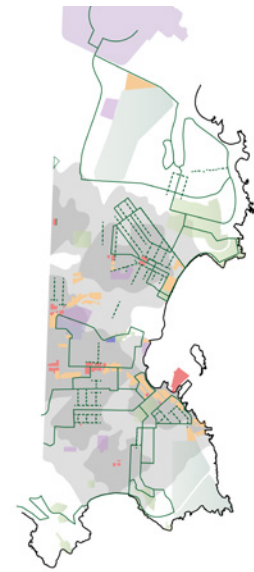
- Legend
- Parks
 - Golf Courses
 - Schools
 - Police and Fire
 - University of Victoria
 - Commercial Buildings
 - Multi-Unit Residential
 - Senior Housing

Oak Bay site types and uses

in the area. Its proximity to the downtown core does allow for residents to commute through more active methods. As the majority of the area is flat, it is easy to reach most destinations by foot or bike. A unique and popular method of circulation within the community consists of many walking paths or trails, as well as a network of laneways that run between the rear yards of residential properties. It is possible to navigate parts of the neighbourhood without walking on a main street. These are mainly within East Central Oak Bay.



Automobile



Pedestrian



Bicycle



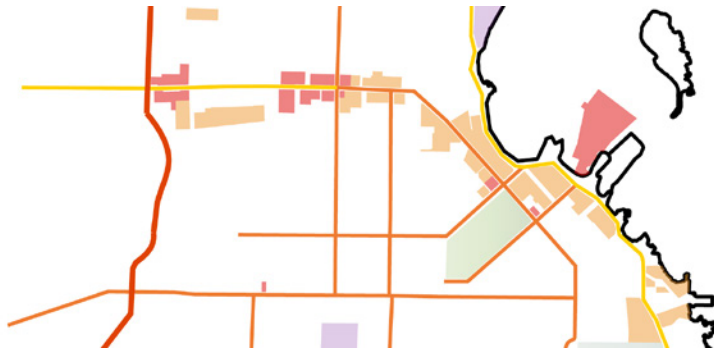
Bus

Density

Within Oak Bay, areas of high density tend to occur near the primary and secondary villages. These villages serve as a hub of activity and commercial services, and therefore multi-unit residential buildings are situated in close proximity. Other concentrations of multi-unit residential buildings occur along the primary circulation routes, as well as along the waterfront. The maximum height of buildings within these zones is approximately eight stories, but four storey constructions are most common. The remainder of the municipality consists of low density single family residential properties. The maximum floor area ratio in higher density areas is 1.5, while it remains 0.4 within the residential zones.²⁵



Concentration of density - Cadboro Bay Road



Concentration of density - Oak Bay Avenue

Opportunities for Increased Density

Oak Bay presents itself with ample opportunities for architectural intervention. With the desire to increase density of both population and programme, low density residential areas provide ideal sites for exploration of typological interventions. The residential infill typology has become an increasingly popular solution in adding density to already occupied residential properties. Oak Bay provides a clean slate for this study as it does not currently allow this type of construction. The resistance to change has led to little change in the urban fabric since its initial development.

The primary categories of sample sites for exploration are: (1) residential properties with frontage to a single road; and (2) residential properties with a frontage to a road and laneway. This variety in residential sites allows for opportunity of multiple explorations of increasing the level of density of the suburban fabric. A multitude of infill methods may be tested. Secondary sites for consideration would be (1) commercial strips; and (2) public spaces.

Residential Properties

The residential properties within the community have the lowest density, and provide the greatest opportunity for increasing the number of housing units without building taller buildings. Such properties also allow for additional programme or uses to be added within the existing framework.

Single Road Frontage

Residential properties that face a single road allow for construction on either front or rear of the property, with each having its specific desirable qualities or challenges. The

sole access point at the front of the property would lead to a negotiation of what can be constructed at the rear of the property.

New construction within the rear of the property could hold multiple uses. A new living unit would allow for owners to supplement their income by constructing a rental unit. There would also be opportunity to create a subdivided or panhandle lot. The introduction of live-work or public programme to the back yard of a site with single access would be possible, but would have a larger impact on existing site conditions.

Programme could also be introduced to the front of homes by renovating to include public spaces such as office, retail, or food service space. This would allow for less of an impact on the site as it is easily accessible from the street. This kind of intervention would have greater impact on the streetscape and the design of the facade of the space and setbacks would be important considerations in maintaining the quality and character of the street.

Single Road Frontage with Laneway

A residential property with a laneway abutting the rear yard provides similar opportunities as a property without, but allows for alternate access to the site. Access by the rear of the site lessens the impact on the existing home, and aids in activating the laneway space which is currently underutilized. Public programme could be introduced to the rear of the site without additional foot traffic through the property.

The access from the rear of the property would also allow for a larger living unit to be introduced. The secondary access

point means that they are able to accommodate a higher density of housing and other use. A live-work unit would be more viable within this site condition and would allow for an increase in both density of population and of programme. Parking could also be available for such units, either for living or customer/client use, off of the laneway. Having a laneway allows for possible subdivision of the property. The owner could sell a portion of their property, whether they plan to remain in the existing home or sell that portion of the lot and transition to the smaller home on the site.

Other Properties

Residential properties are not the only solution to issues of density, but provide the most versatile conditions. Other sites for consideration are public properties and commercial strips.

Public Spaces

Public spaces within the area consist primarily of parks and recreational areas. These properties are difficult to navigate in terms of increasing density. As there is already a great lack in public space within the suburbs, these properties should not be considered for addition of density unless absolutely necessary. Removing these kinds of spaces would lead to a decline in quality of living.

Commercial Strips

Commercial strips vary in programme and provide opportunity for creating new mixed-use typologies or improving on the already existing. The commercial areas in Oak Bay do not take advantage of opportunity to include residential spaces as a part of their vocabulary. These sites would allow

for the introduction of new, mid- to high- density typologies.

As they are already areas of high activity, an increase in use would have less of an impact than introducing higher density construction to low-density properties. This model would also increase housing availability within these areas. This would also have a lesser impact on the character of the suburb.

Oak Bay Community Plan

Oak Bay has recently undertaken the creation of a new Official Community Plan. This plan, completed in 2014, included a public survey, and much of the results of the survey are consistent with a community and inhabitants that desire change. The community survey had a respondent rate of 33%, and of those respondents 56% were in favour of the inclusion of laneway homes or garden suites in existing single-family residential areas, as well as 77% in support of increases in density given developers provide community amenities.²⁶ Despite the results of the survey, many in the area still hold a very strong “not in my backyard” mentality. In the past and in recent years, projects proposed in the area have slowed or halted completely due to vocal neighbouring property owners. A major shift in the mentality of the population or the municipality needs to occur to allow for a change in the urban fabric towards a more sustainable and efficient model of living.

Objectives

One of the objectives within the community plan is to expand housing within the area. A new strategy for housing is desired for the area that would allow for “more diverse hous-

ing options that respond to needs as they change over time, including affordable housing and inclusive housing.”²⁷ A housing typology being considered is infill residential which would include subdivision of larger lots, duplexes, triplexes, laneway houses, as well as garden suites. The municipality justifies this decision as it will “provide housing for people of different ages, income levels and stages of life in these desirable neighbourhoods,”²⁸ and will also support a more sustainable and compact community.

If these changes were to be made, a thorough study would be needed to investigate the impact of interventions within already occupied residential sites. Of importance would be the consideration of size, character, access, and impact on neighbouring properties.

Implementation

To implement infill residential development, it is proposed that criteria and guidelines be created as either a revision of the zoning bylaw, a separate set of guidelines, or the creation of a new residential zone.²⁹ Establishing clear and concise regulations would be key to this method of implementation.

Analysis

Although promising to find that the municipality is welcoming strategies for infill residential, their method of creating new zones, and zoning bylaws and regulations may not be sufficient to implement an increase in density while maintaining the character of the area. Currently there are homes being built that meet zoning requirements for the area, but do not fit with the existing character, or meet the desire for

increased density. It is a worry that although a new zoning regulation would be required, a thorough study of the infill solutions and their impact would be incomplete; such a study is required to implement new construction within the framework of the community in a successful manner.

The guidelines that are set out within the community plan state in numerous places that the development must match characteristics to the existing and neighbouring buildings, but does not stipulate or describe what such characters would be. There is no reference to height, site coverage, or building construction made. For an effective implementation that maintains character of the area, typological descriptions of the existing as well as what is allowed would be required. At the pace at which new regulations are created, this would either take a very long time, and be too little too late, or be completed haphazardly. The development of the community strategy is still in early stages, but at this time the analysis of existing conditions does not seem to be sufficient for the implementation of the infill residential strategy that is being proposed.

The outlined protocol also does not include consideration of the subdivision of property. Maintaining minimum property sizes limits the demographic that can afford to purchase. Although Oak Bay wishes to maintain their prestige, an implementation of subdivision policies should be considered to allow younger or less wealthy homeowners to enter the market. Limitations could still be set on floor area minimums and maximums to aid in maintaining both the desired demographic and character of the area as defined by the municipality.

Site Selection

The Estevan area is situated within the Eastern Central area in North Oak Bay, and is centred around a commercial village. The site area has been chosen as it presents opportunity for study of residential properties that include lane-ways, as well as properties near the village.



Site qualities based on areas within Oak Bay

The chosen site allows for the exploration of multiple site conditions. Sites bordering laneways allow for exploration of typological interventions that could include more than a single residential unit, such as a live-work development. Such sites would also allow for larger housing types to be explored. The proximity to the village allows for the exploration of the addition of public use to the front of existing homes. A study of this typology aids in understanding the impact of increased density on the character of the average residential street.

The area is also a typical representation of majority of the remainder of Oak Bay community. The streets are formed in a gridded pattern, and the existing housing typologies can be found throughout the community. Overall, the Estevan area provides for the most complete exploration of the impact of typological methods of increasing density within the suburban conditions of Oak Bay.



Estevan, Oak Bay - properties of interest; base map from the District of Oak Bay



Existing streetscape



Existing conditions - the street, the property, the laneway



Existing built environment

CHAPTER 4: TYPOLOGIES

Before the codes can be developed, however, the architect or planner must come to grips with the issue of context. There are several schools of thought on the manner in which context can be treated. Many designers would prefer to ignore built context in the hope of moving towards a new architecture that would solve all the problems created by the older environment. And some designers would address a site's context by creating contradictions and tensions between the suburban fabric that is obviously old and suburban fabric that is obviously new. Perhaps the most sensitive (and most marketable) way of treating context, however, is to use the design articulations of the older community, augmented to address the demands of the present and potential markets.³⁰

Architecture is not created devoid of context. It is important to consider the impact of design and new development on the context. It must be asked not only if it is a good design, but also how well it fits in, or if it is destructive to its context. When a shift in morphology or typology is proposed for a site or an entire community, the study must not be completed as if it was in a vacuum, or only citing precedents of other communities.

Why Typologies?

This thesis proposes that a typological method should be used to create an architectural model for infill residential development; this method is created with the goal of increasing density within the existing community. Other proposals for the modernization of typical suburbs include new overall master plans, infill in commercial areas or parking lots, redevelopment of blocks, conversion of multiple single-family residential sites to a larger mid-density construction, and many other invasive models. These proposals do not consider existing context and are intrusive or destructive; these methods do not take in to account the qualities of the area that are desirable. These methods of development are not

appropriate in the area of investigation of this thesis pertaining to communities with the qualities of a mid-urb.

A typological approach allows for a study of what exists in the area, its character, and what qualities should be carried forward. The existing conditions are some of the most useful resources that an architect or planner has, and models that aim to be a catch-all solution can have a negative impact on the existing environment. Such models may propose an entire redevelopment when a more efficient solution, that can be cost effective and time sensitive, is possible.

The communities being studied were not created in the decisively negative conditions of sprawl where there are large thoroughfares and large shopping areas with large parking lots — conditions that are commonly discussed when proposing solutions to sprawl. These communities are also not made up of an array of cul-de-sacs, as discussed in solutions to issues of density in other suburb developments. A common solution proposed in this context is to connect these roads to allow for new properties to be created between them. Again, this is not a method that would work in all communities, and these proposals may not always be a recipe for success.

A typological method allows for the proposed solution to address the issues associated with a catch-all method by coming up with a methodology that will work within the existing condition, while also being dynamic enough to be transferred to other sites. It does not matter if a solution may have been effective elsewhere, it may not be sufficiently adjustable to be right in the given context. For this reason it is important that a solution be flexible to fit within its context.

Existing Typologies

Oak Bay is comprised primarily of residential properties, and consequently, the majority of the community consists of single-detached homes. There are 7,765 occupied private dwellings within the area, and 4,935 (63.6%) are single-detached homes.³¹ There are few high density typologies existing, with the majority of apartment buildings having fewer than five stories, making up a mere 21.7% of the private households.³²

The average home in Oak Bay sits on a property 55 feet wide by 115 feet deep. The average setback is 25 feet from the front and rear property lines, and 5 feet from either interior side lot line. The average home is one story, raised nearly half a story above grade to allow for a basement, and a raised entryway. The typical home will cover approximately 30% of the site, or 23% if there are any accessory buildings.³³ Accessory buildings are currently only allowed for the purpose of storage, workshop space, or as a garage. Larger properties do exist within the area and they tend to hold grander homes with larger setbacks from the street.

Other than single detached homes, the neighbourhood includes semi-detached homes, row houses, two-, three-, four- and eight-storey multi-unit buildings, as well as some mixed-use developments. There is no existing zoning for infill residential development types in Oak Bay.

Site Conditions

For the purpose of investigation, three site conditions have been chosen for the exploration of infill residential development. Each of these site conditions include different positive

and negative qualities, and allow for a variety of typologies and uses to be created to suit the existing context and desired changes to the use of the site. A typological approach is appropriate in this situation as although the site conditions are similar, it can be seen that not all approaches for increasing density within a residential site apply to all site conditions.

The three following residential site conditions have been identified and chosen for this study: (1) properties without laneway access; (2) properties with laneway access; (3) properties along primary circulation route, that may or may not include laneways.

Ownership Conditions

Within the framework of the chosen site conditions, there can be a multitude of typologies explored in an effort to increase density within the boundaries of the property to push the side to its full potential. Other than considering the above site conditions, the consideration of the purpose and inhabitants of the space must also be accounted for in the creation of a new housing model. Within the concept of the suburb, ownership of land has always held a prominent role. The ownership of land holds prestige and status, and high importance to the homeowner. Due to this high value placed on ownership, it must be considered when exploring infill typologies.

Possible scenarios that are considered within this thesis investigation are: (1) the owner of the property retains both ownership and use; (2) the owner maintains ownership of the property but rents the infill construction to another party; and (3) the owner of the property sells a significant portion

of their property -- either the existing home or the portion of the site that holds the new construction. Within each of these definitions of ownership there is possibility for subdivision of typologies in terms of use of the building. This in turn leads to the definition of a framework for the development of purpose and context driven typologies.

The current use of accessory buildings on site is limited to that of a garage, storage shed, workshop or a studio space. The owner is not, under current regulations, able to rent that portion of their property or subdivide to create a second lot.

Condition One

The first condition to consider is that the owner of property constructs and retains use of the secondary building.

The newly constructed building on the site could serve multiple uses. Infill development could introduce any of the following uses: living, working, public space, or a combination thereof to create a live-work unit. Descriptions of each use are presented in the following scenarios.

Living

The new development could be used as a secondary living unit on the property. It could serve the purpose of housing a family member on a permanent basis, or house a guest. The suite could include solely a bedroom, a bathroom and a living space, or could include a kitchen space as well.

For example, the suite could house aging parents moving in with their children or other relatives, but still wishing to maintain some independence by having their own housing unit. Alternatively, it could house a couple moving out of their ex-

isting home in to the smaller suite while allowing relatives to take over the larger building on the property.

Working

The new development could house a working space for the property owner. For example it could be used as an office space, studio space, or a workshop area. This space could be used for personal work purposes, or hold a business where clients could be visiting and accessing the site. For example, an architect could house their studio in the rear yard of their property.

Public

Other than living or working, the new development could serve a public purpose. It could house a food service space such as a café, bistro, or bakery, or serve as a space for the sale of goods such as a book store, boutique shop, or clothing store.

The secondary building could also serve any combination of the above uses. It could house a living unit while also serving as a café in the open space of the unit. Both the purpose, or combination of uses would depend greatly on the site condition on which the building is situated. Certain sites may be more limiting, but a site's capacity may also be tested through including uses considered beyond its limits to aid in determining all possible conditions for a modernized suburban model.

Condition Two

The second condition to consider is that the property owner retains ownership, but rents out the secondary building on

their property to another individual. All of the conditions of use mentioned above are possibilities within this scenario. In this case, though, it is most likely that the unit would be rented for the purpose of living, or for live-work. For the space to be used simply for working, or public purpose are less likely to be appealing to the owner.

Issues that arise with this model of ownership pertain to access through the site, as well as access to parking. How the renter accesses the building with the least impact on the property owner is important. Is there a divide in access? Is there a divide within the property back yard space? These qualities must be considered.

Condition Three

The final condition to consider is that the property owner subdivides the property to create a panhandle lot within their property and sell a portion of the site to another owner. In this case, the building could serve all of the uses described above. Access would remain an issue in this scenario, and would be decided based on site conditions such as the presence of a laneway. Another factor to consider in this scenario would be how the property is divided, and which portion the owner maintains. The property owner may wish to remain in their existing home and sell the divided portion of their property, or they may wish to transition to the smaller dwelling and sell their existing home.

The above framework is simply a basic list of the use of the property, or portion thereof, and is not a complete description of all possible scenarios, simply some of the most probable. There are infinite possibilities of what could occur on the site. This is why a typological method is the most ef-

fective approach to creating infill residential development. The framework of diverse typologies and approaches can accommodate this variety of uses within the same property.

The consideration of what the use of the site should be, and the conditions of ownership provide the framework for the development of new typologies. It also provides basic structure to regulating boards to create new zones, regulations or guides to allow this new kind of construction to occur. There are few cities or municipalities that are allowing this type of development, but many are beginning implementation.

Impact on Population

Currently in Oak Bay there are 7,765 private dwellings, and of those dwelling units, there are 4,935 single-detached homes.³⁴ If this model was implemented on every single-detached dwelling, the number of dwellings in the municipality would be increased to 12,700 or effectively increased by 64%. If there was an average of two inhabitants in each dwelling unit, the population would be able to increase from 18,000 to approximately 28,000. These conditions may not be the desired result, but represent the maximum impact that this model of increasing density could yield. If even half of the existing property holders that own a single-detached dwellings constructed a new unit on their property, this would lead to the number of overall dwelling units increasing by 32% and an increase in population of approximately 5,000 people.

This increase in population would put additional strain on the community infrastructure, but would also be beneficial to the municipality with an increase in patronage to local establishments and recreational services.

Local Precedents

The concept of increasing density within existing residential neighbourhoods is not a new idea. Many cities are beginning to take this approach, but until this point Oak Bay has been resistant to any change in this manner. Two nearby examples that are starting to adapt to this need for increased density are the City of Victoria (the CRD municipal district), as well as the City of Vancouver. The City of Victoria has recently introduced a garden suite policy, allowing the construction of an additional unit in the rear yard of a property. The City of Vancouver has introduced laneway housing, allowing an additional home to be constructed in the rear yard of a property bordering a laneway.

City of Victoria

The City of Victoria has introduced new zoning bylaws that allow for garden suites on properties with existing residential units. These garden suites are allowed within the rear yard of a property, and cover 25% of the rear yard, space. The maximum floor area of new construction is 400 square feet. The access to the suite can come from the public street, and must have a minimum three foot wide pathway to access.³⁵ These suites may also be constructed on sites with laneway access following the same regulations.

The garden suite program was introduced in 2011, but within the first three years only twelve applications were submitted while only two suites constructed.³⁶ The application for a garden suite differs from that of the average secondary suite and can be a deterrent for those who are not familiar with the policy and the process that must be followed.

Considering the example that the City of Victoria has set, Oak Bay has a clear existing reference to aid in introducing new infill residential policy in an efficient way. The primary issues with this model are the property coverage conditions as well as floor area. A larger area allowance should be considered to allow for an increased number of inhabitants within a single living unit. There should also be further considerations made for the subdivision of the property.

City of Vancouver

The City of Vancouver has introduced a laneway housing policy. This policy allows for a second home to be built on properties with laneway access. This initiative has found greater success than the garden suite program within the City of Victoria.

The second home along the laneway can be situated on the rear 26 feet of a site, and must be a minimum of 16 feet from the primary home. The maximum floor area of the house can be 16% of the lot size, with the upper limit of 900 square feet.³⁷ Unlike the garden suite in Victoria, the laneway house is allowed to have a second storey, but is limited to 60% of the building footprint. This allows for the laneway homes to be larger than a single bedroom unit, and may also include a garage space if desired.

Great consideration is also taken in this model to the inclusion of private outdoor space for the laneway house. Whether it is yard, patio, or balcony space, consideration of access to these kinds of spaces is important for the quality of living of the inhabitants. Fresh air and daylight are important design factors and should not be compromised within infill developments.

These two nearby examples provide context, precedent, reason and proof of concept for introducing infill residential development in Oak Bay. Although not all conditions are identical, similarities can be found to utilize principles of this work as a base for typological intervention within a variety of site conditions.

CHAPTER 5: DESIGN

The primary goal of this thesis is to demonstrate how typological methods can be used to increase density within the mid-urb condition. It has been determined that the most effective way to do so is through the introduction of infill development within the rear and front yard areas within already occupied properties. Design proposals are in the form of typologies devised based on site conditions as determined previously and desired use of the new unit. Scenarios have been chosen to push the limits of each lot to its maximal use. In choosing to do so, it demonstrates that models of lesser perceived impact would clearly be viable.

Design strategies for such typologies have been developed based on primary criticisms of the existing conditions, both within the bounds of the site and within the design and form of existing homes. Strategies have been developed to maximize the use of currently underutilized site spaces.

Design Strategies

The typical mid-urb property holds one home, with a large setback from the street creating two yard areas, a formal front yard and an informal rear yard. The typical dwelling situated on this lot is a bungalow home. Neither the interior nor exterior conditions are meeting current housing and user needs. With the current setback from the road, and formal nature of the space, the front yard is rarely used or occupied. This can also be attributed in part to the lack of spaces within the home with a direct interface towards or relationship with this space. There is a lack in exterior to interior connection, or connection to the landscape. Another criticism towards the bungalow home, falling within the concept

of its spatial planning, is the lack of connection between the kitchen and living areas. Open floor plans are much more prevalent today and a need for a formal sitting or dining space has dwindled, and if existing they are rarely used.

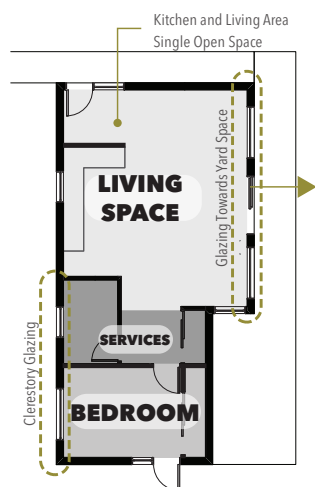
Based on these criticisms, some overall design strategies have been devised for the infill typologies. The overall goal is to ensure that every space on the site is useable, both interior and exterior. To achieve this, two overall strategies for siting and interior layout of the designs have been determined. Firstly, that only a single yard space is created for the new development. In short, it is to create a yard that is easy to access from the interior of the home, and sited in such a way that it will be used — eliminating the underutilized front yard condition. Secondly, that the living spaces, such as the open living and kitchen area, within the unit face towards this yard space. These spaces are to include predominantly glazed facades to enhance this connection to the exterior. Bedrooms need not face towards this yard space and are able to face towards the public realm or the shared portion of the property. Any glazing in these spaces can be clerestory if on the main floor, or increased if the space is on the second floor of the unit to maintain levels of privacy for the inhabitant.

The use of solid walls or walls punctured with openings not only allow for a connection of the interior space to the landscape, but to the existing home as well. In case of a shared yard, the relationship between both units can be stimulated using openings, or discouraged through the use of solid wall conditions. These overall strategies will stimulate the use of the space, as well as the indoor to landscape connection that is lacking within the current model.

The overall goal with the preceding design and siting strategies are to maximize use of the spaces, both interior and exterior on the site. From these strategies, the forms and interior spaces of each of the following typologies have emerged.

Type One

The first typology is situated on a property that does not include a laneway bordering its rear property line. This model consists of a single bedroom dwelling unit, while including an open living space that could also be used as a working space to create a live-work unit. As an example, the unit could house a young professional renting the unit from the property owner. The renter could house their home office within the live-work space included in the unit.

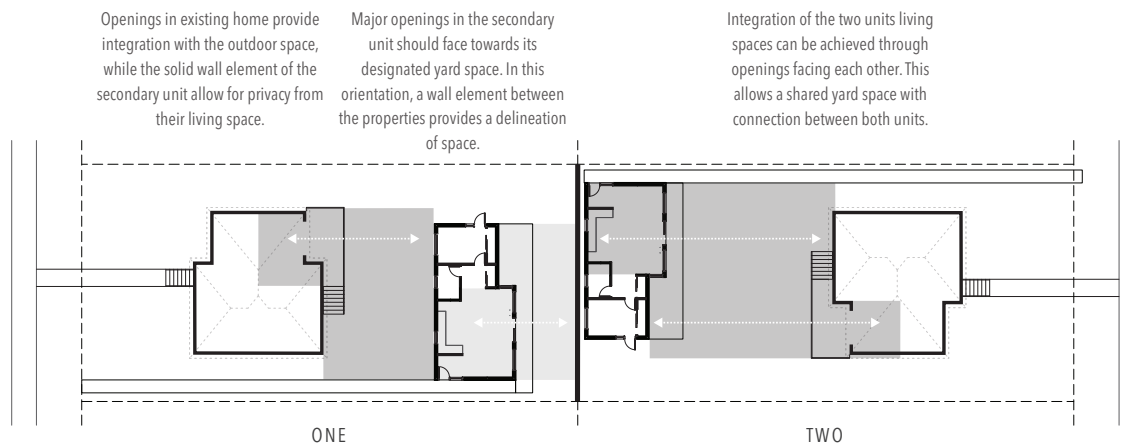


Type one - design strategies

Based on the desire to make all spaces within the home useable, taking cues from the shortfall of the bungalow home, the kitchen and living space have been combined to a single, more flexible and open, space. This space is clearly divided from the bedroom area to allow for a flexibility in the size of the living area as it is able to expand or contract without great impact on the bedroom space. To aid in the connection of interior to exterior of this living area, the wall facing towards the yard space is primarily glazed. This connection aids in encouraging the use of the outdoor space.

With this design model, there are two primary siting strategies. The first, having the living space oriented towards the rear of the site, with a setback from the rear property line. This orientation allows for a private yard space to be created for the unit, separated from that of the existing home. Issues of visibility to and from the bordering property can be miti-

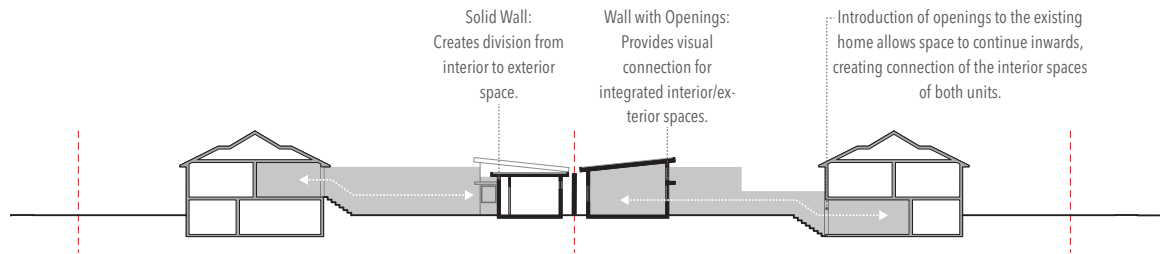
gated through the introduction of a solid wall element, fence or vegetation. The second siting strategy orients the living space towards the existing home on the property. Within this strategy the existing rear yard could either serve as a shared space, or be divided with fencing or vegetation to allow for two yard spaces to be created. Openings within the exterior walls of the existing home and the new construction can be oriented towards each other to allow for a continuous relationship of interior to exterior spaces. In this siting strategy, there would be minimal setback from the rear property line so as a secondary, most likely underutilized, yard space is not created to the rear of the unit — therefore not wasting space on the property.



Type one - siting strategies

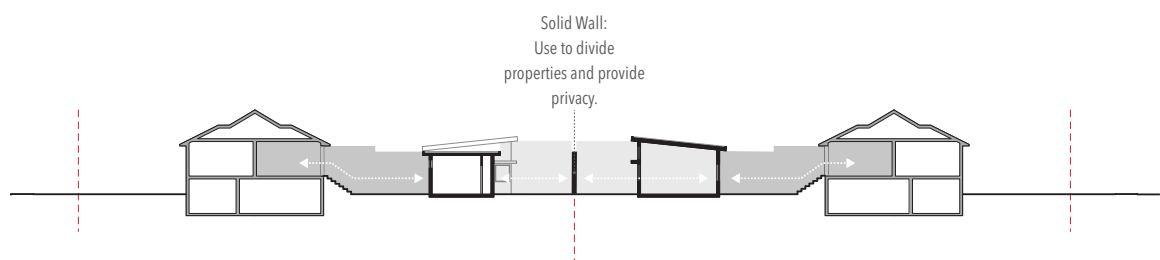
In combining the two siting strategies, three conditions of relationships between the properties can be identified. The first, condition A, both units face their living areas towards the interior of the property. Overlook between the properties is not a major issue in this model, as the spaces bordering the property line are private and do not feature a large amount of glazing. In this model, no new yard is created and the existing rear yard may either be divided or be maintained as a shared space — keeping the common back

yard model intact. The relationship of openings allows for this common space to extend inwards to both units. The public realm then becomes extended.



Type one - siting condition A

The second, condition B, includes both units facing their living area towards the rear property line. In this method, the two yard spaces will border the property line. A solid wall element is used to divide the spaces and prevent the interior living spaces from being open to each other. Within this model, both properties gain a single yard space for each unit situated on the site. This condition maintains the typical home-yard-yard-home arrangement structure between the built and unbuilt environment of the current model. Within this model, relationships between interior spaces of each unit are at a minimal level.



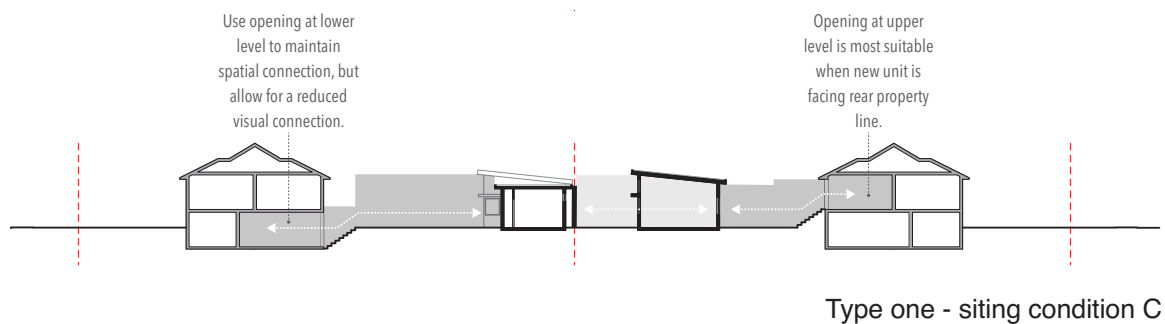
Type one - siting condition B

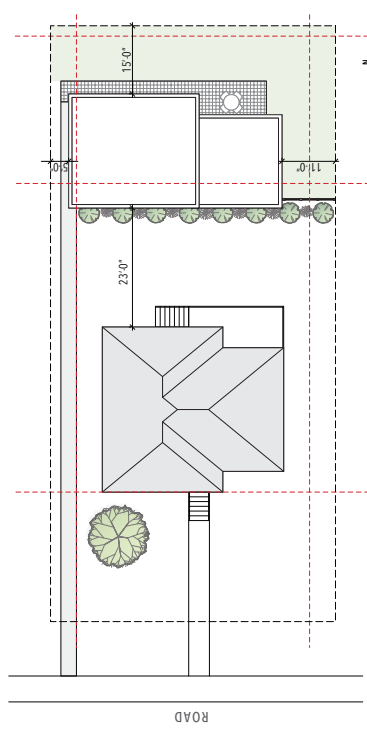
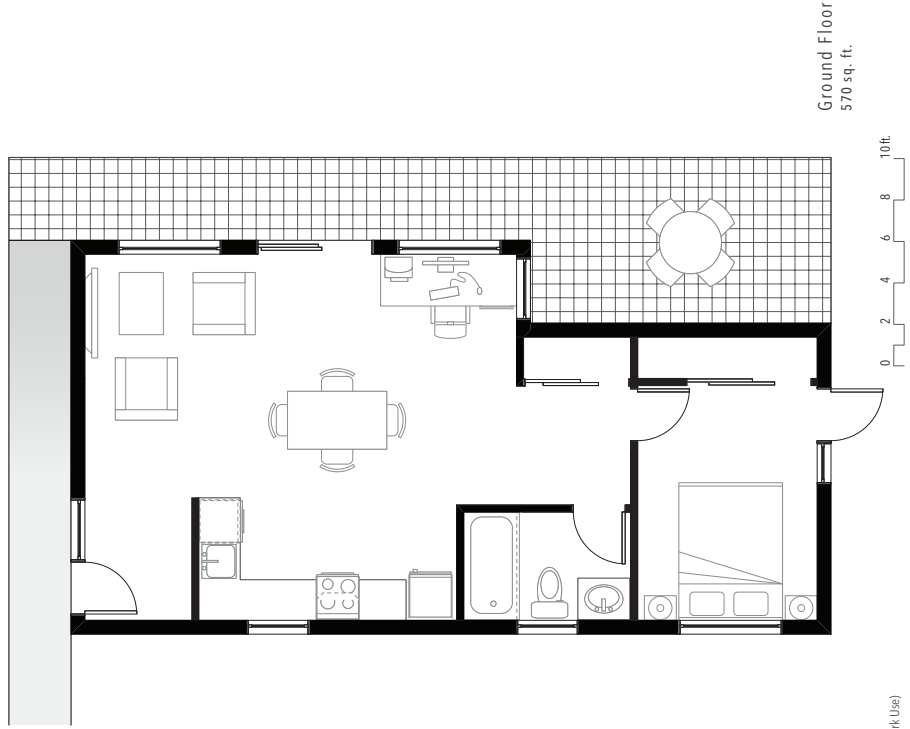
The final combination, condition C, includes each property using differing siting strategies. This creates a condition where there is one shared yard space between the exist-

ing and new construction on one property, while the other includes a new yard space for the new unit. This yard space will face towards the rear of the unit on the neighbouring property, and through vegetation and fencing any overlook or privacy issues can be mitigated. Main glazing in this area is at clerestory height and causes lesser privacy issues. The new spatial relationships created on site would be similar to those in conditions A and B.

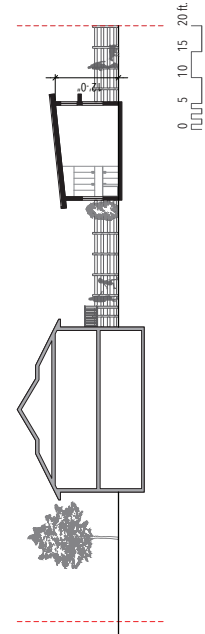
In terms of the size of the units, each has an overall floor area of 570 square feet, which at one storey is 10% site coverage. This is only an increase by 3% to what is currently allowed for an accessory building. The height of this unit is a single storey, which as mentioned previously aids in mitigating overlook impact on neighbouring properties — the primary issues come from the rear bordering property. Access to the unit would come through a path that runs from the front of the property.

This unit would increase the use of the property from a single family home housing approximately three persons to a site that could accommodate four or five inhabitants. Therefore creating an occupancy ratio of 1.5:1 as compared to the existing conditions.





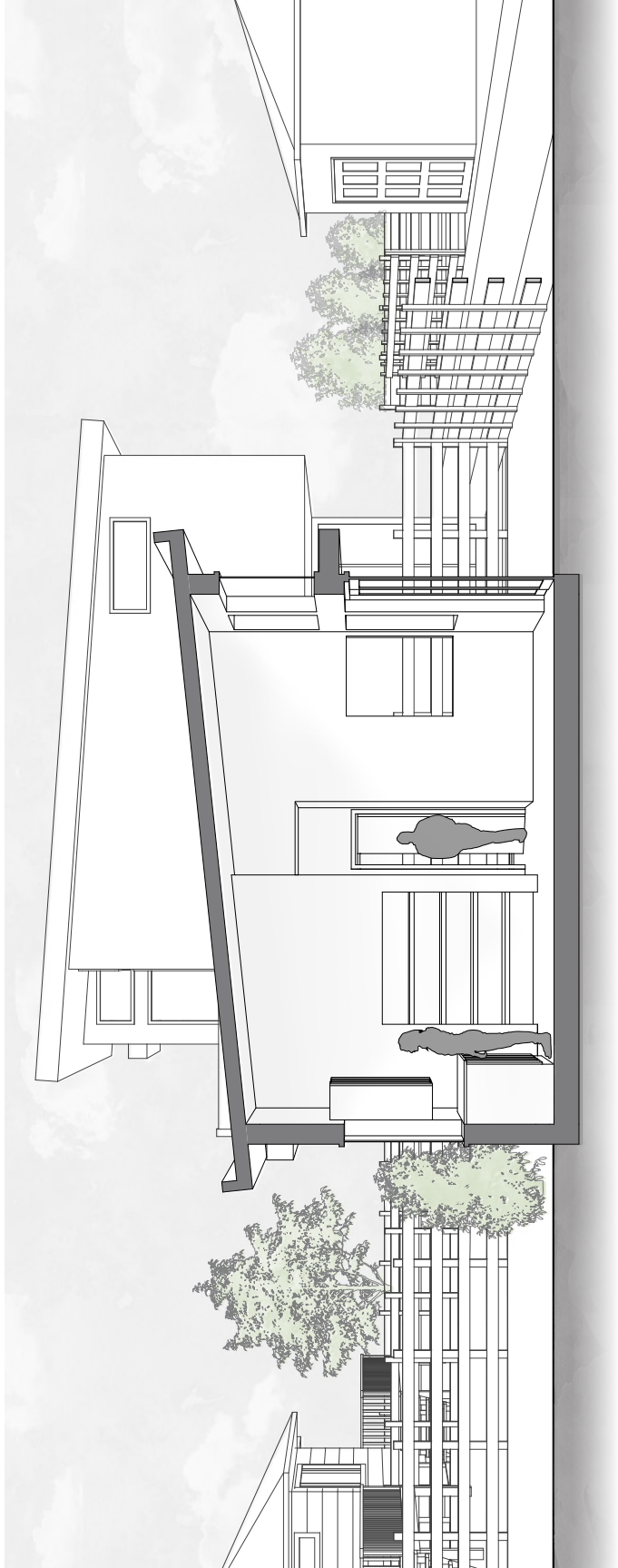
Site Plan



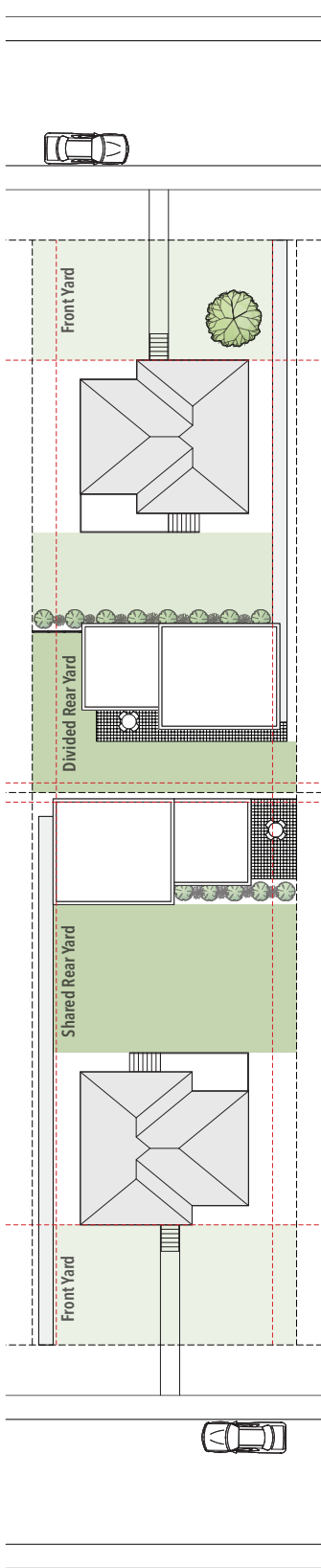
Site Section

- Floor Area - 570 sq. ft.
- Gross Floor Area - 640 sq. ft.
- Site Coverage - 10%
- Addition to FAR - 0.10
- Building Height - 12'-0"
- Rear Setback - 14'-6"
- Interior Setback A - 5'-0"
- Interior Setback B - 11'-0"
- Setback from Existing Home - 23'-0"
- Increase to Site Population - 2 persons (+ Work Use)

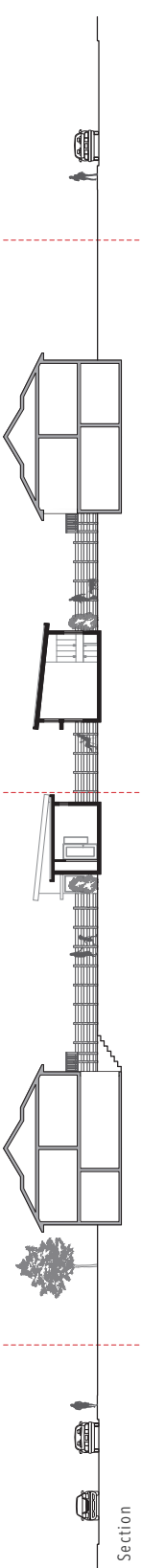
Type one - site plan, site section, plan



Type one - sectional perspective

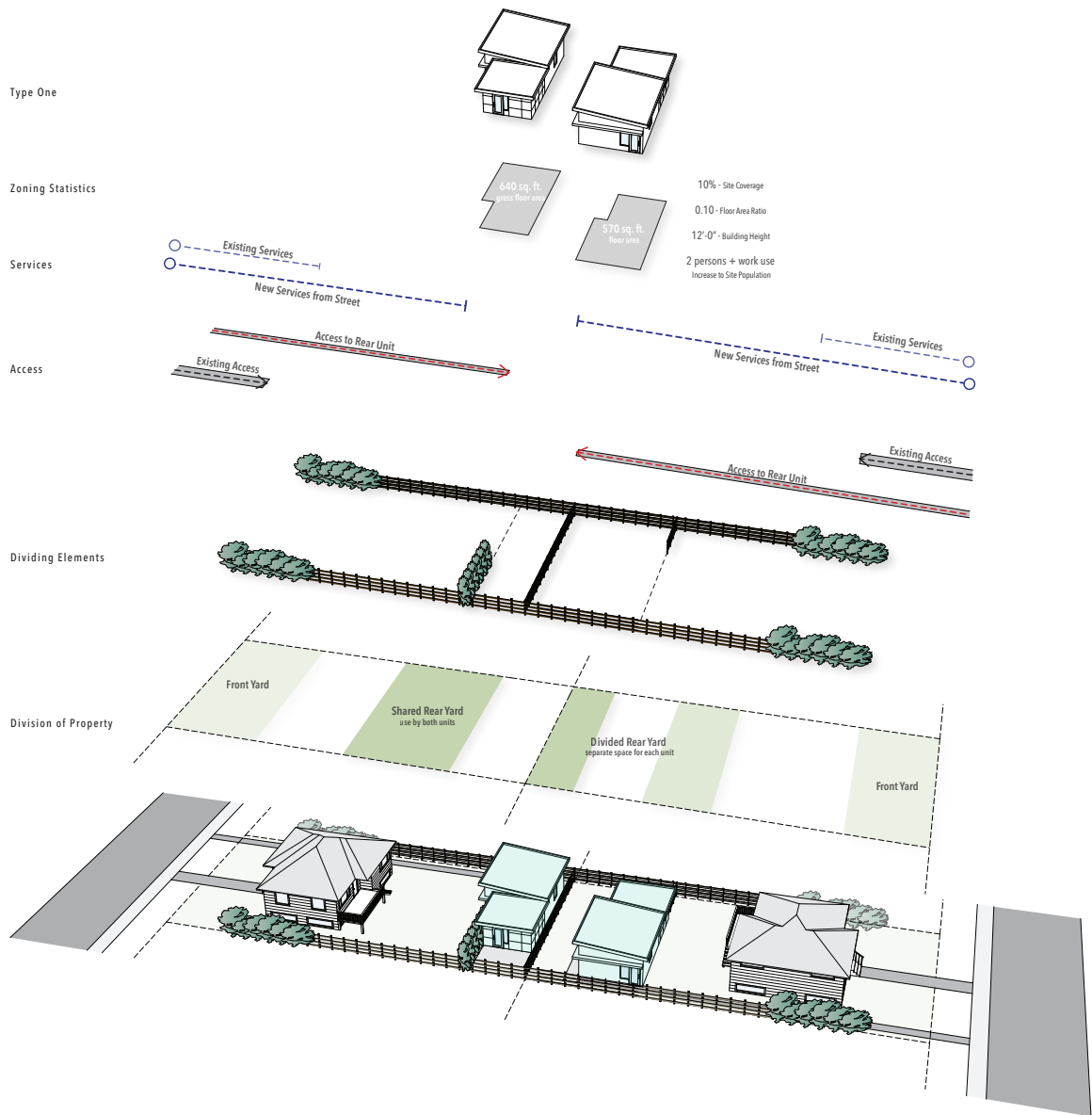


Context Plan



Context Section

Type one - site conditions

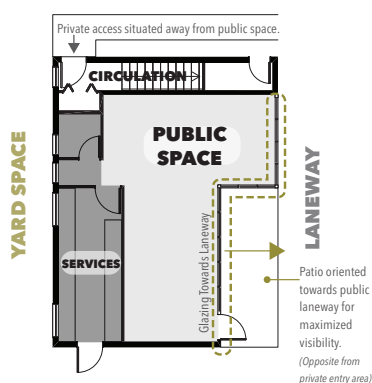


Type one - site systems

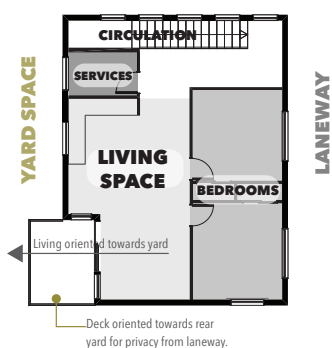
Type Two

The second typology is situated on a property that includes laneway access at the rear of the lot. This model consists of a two bedroom living unit, with a working space integrated in to the unit on the main floor. This unit could house a family moving in to the rear yard of their parent's family home. They would be able to use the main floor space to run a restaurant or shop facing the laneway, while maintaining their separated living space on the second floor.

The primary design strategies in this unit are to face the public space on the main floor towards the laneway for ease of access and to face the living spaces on the upper floor towards the yard space. The integrated outdoor space associated with the public use must also face on to the lane, aiding in increasing its use and visibility. This public facade is primarily glazed to allow a visible connection between the laneway and the activities within the interior space. This organization allows for the rear yard space to remain private for the inhabitants. The service area of the main floor unit faces towards the rear yard allowing a buffer zone between the public realm of the laneway and interior public space and the private realm of the yard.



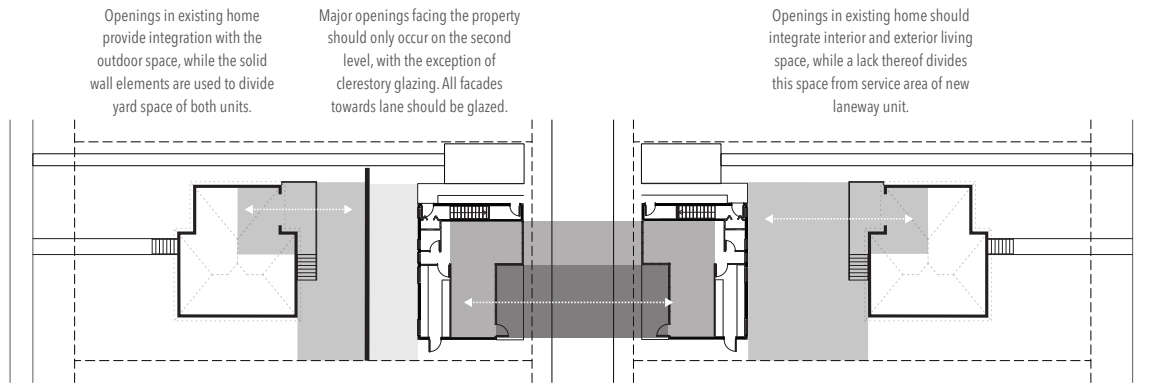
Type two - design strategies
(main floor)



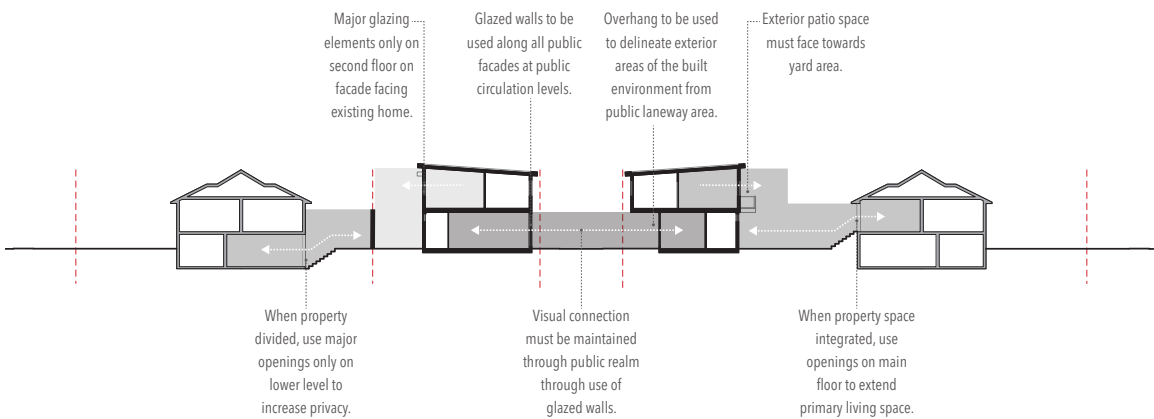
Type two - design strategies
(second floor)

On the second floor, the living and kitchen spaces are oriented towards the rear yard, rather than the laneway. This provides a visual and proximal connection towards the yard space while also allowing an increased level of privacy from the street. This orientation justifies an increase in glazed space and the presence of a deck space. The bedroom units face towards the lane, and as this space is a level above the lane, issues of passers-by peering in are avoided. Full sized windows can then be used rather than simply clerestory.

Due to the size of the unit, and its proximity to the laneway, there is a single siting strategy for this type. The unit would sit with very little setback from the rear property line to allow for the yard space behind to be maximized. The primary conditions regarding siting are whether or not the yard space is divided between the two units to create two back yards, through the introduction of a wall element. As with type one, spatial relationships between site areas are created based on the articulation of walls as solids or perforated elements. As the living area is on the second floor of the new unit, these relationships are less direct. Other consideration can be made based on its neighbouring properties towards which side of the property holds access to the residential unit and its parking space.



Type two - siting strategies

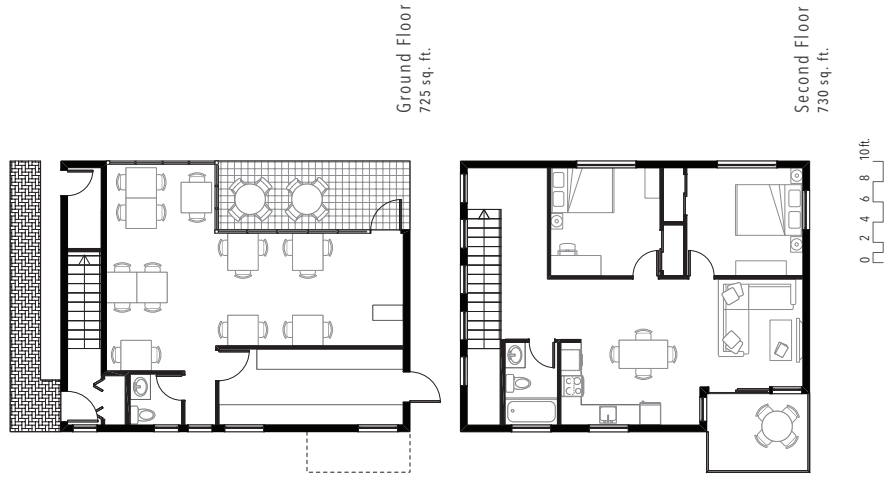


Type two - siting conditions

In terms of the size of the unit, the overall floor area is approximately 1500 square feet. The first storey spaces is 800 square feet, which accounts for approximately 12% site coverage. This is nearly twice what is currently allowed on site for an accessory building, but still 10-15% lower than what is allowed for the primary home on the property. The unit includes two storeys, and therefore surpasses what is currently allowed for height of accessory buildings based on the current zoning regulations of 10 foot building height maximum. The floor area ratio on the site suffers the greatest impact, as this unit adds 0.26 to the current maximum of 0.4, nearly doubling the ratio.

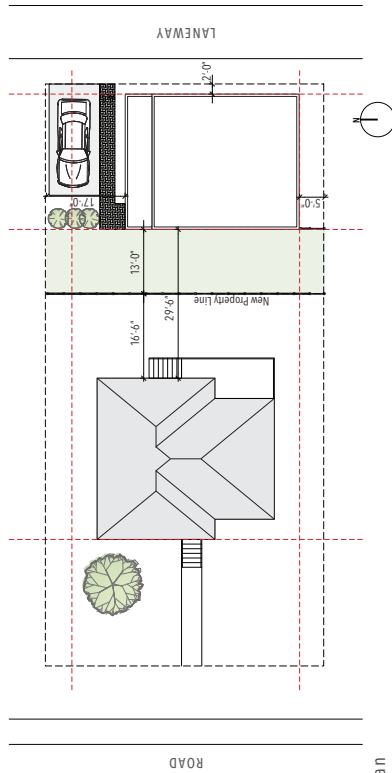
Having the second storey on the unit can be justified in the allowance for a larger working or public space on the main level, as well as allowing for the inclusion of a second bedroom in the living unit. The second storey is not highly imposing on a rear neighbour as the laneway would provide a buffer zone between properties, as would the setback from the existing home. The only issues would arise from the neighbouring properties towards the interior property lines. Glazing should be minimized on these faces of the unit, while being used in higher surface area on the other facades.

This unit would increase the use of the property from a single family home housing approximately three persons to a site that could accommodate the equivalent of two single family homes. This would create an occupancy ratio of 2:1 compared to the existing conditions.

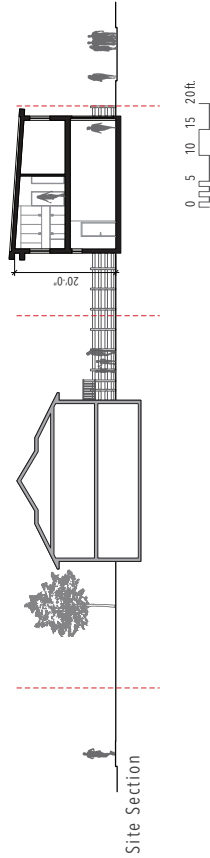


Ground Floor
725 sq. ft.

Second Floor
730 sq. ft.



Site Plan



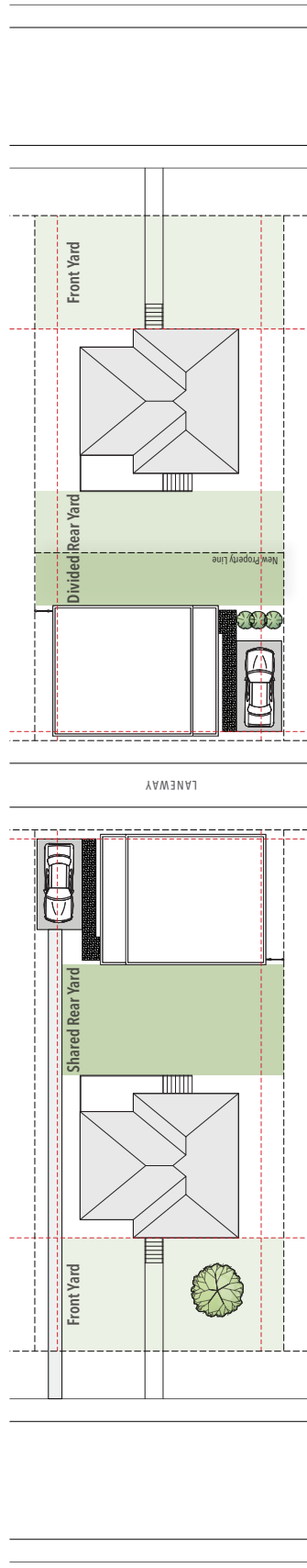
Site Section

- Floor Area - 725 sq. ft. main
- 730 sq. ft. second
- Gross Floor Area - 800 sq. ft. main
- 835 sq. ft. second
- Site Coverage - 12%
- Addition to FAR - 0.26
- Building Height - 20'-0"
- Rear Setback - 2'-0"
- Interior Setback A - 5'-0"
- Interior Setback B - 17'-0"
- Setback from Existing Home - 29'-6"
- Setback from New Property Line - 13'-0"
- Increase to Site Population - 3 persons (+ Restaurant Use)

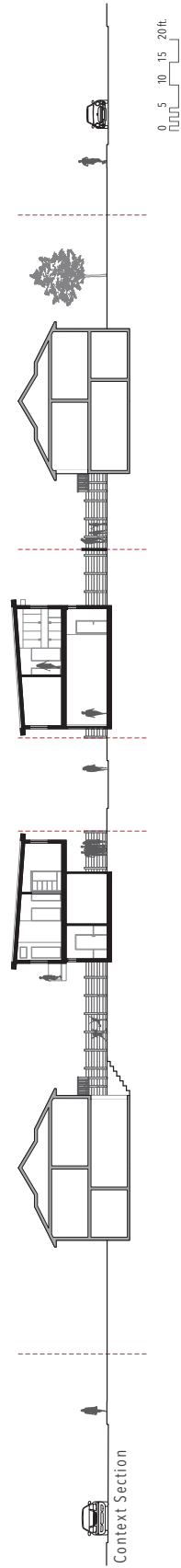
Type two - site plan, site section, plan



Type two - sectional perspective

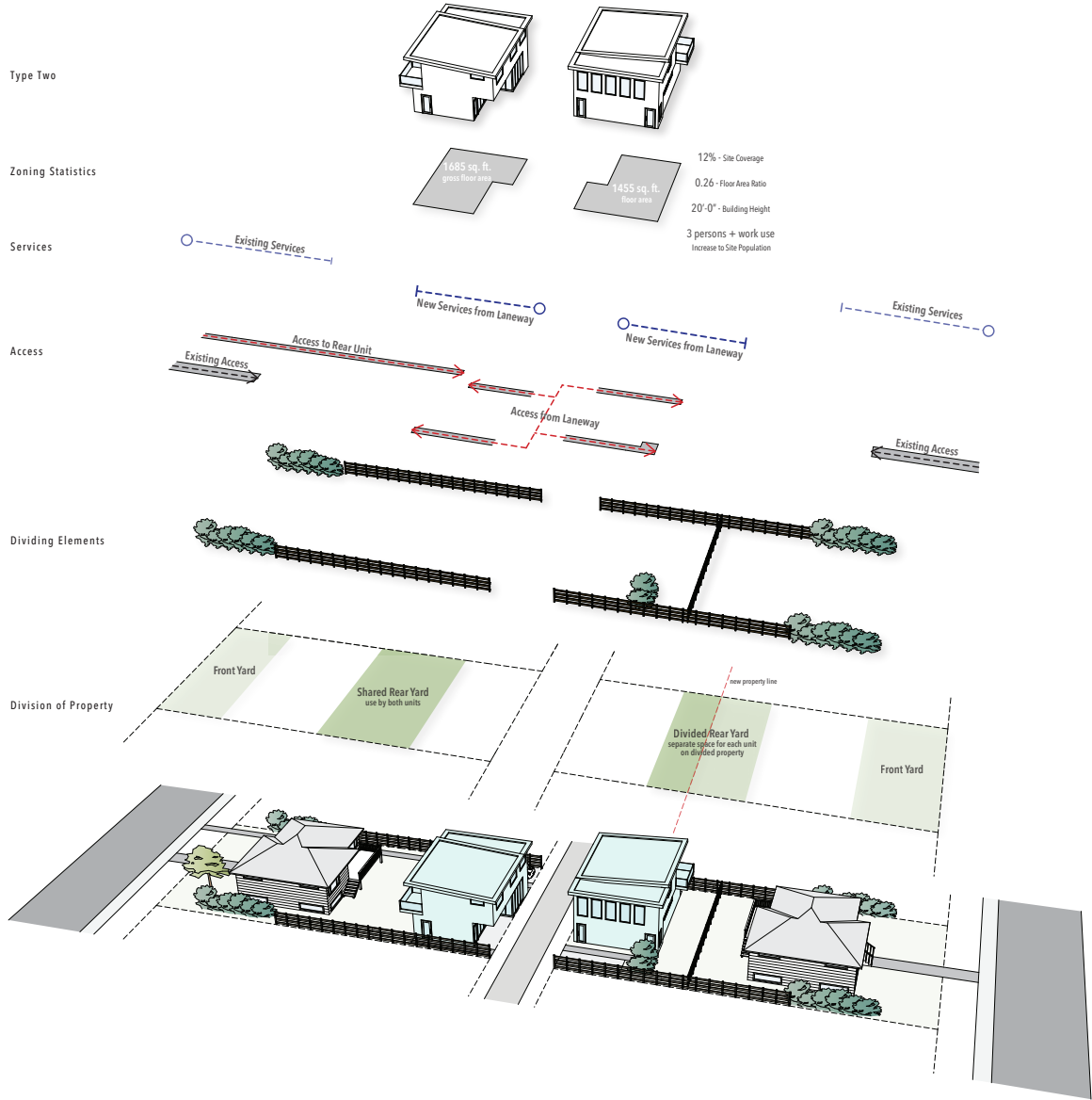


Context Plan



Context Section

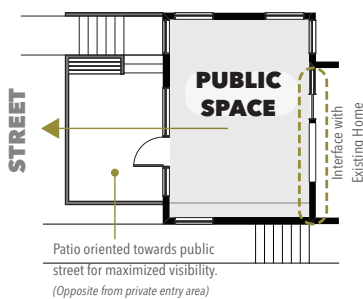
Type two - site conditions



Type two - site systems

Type Three

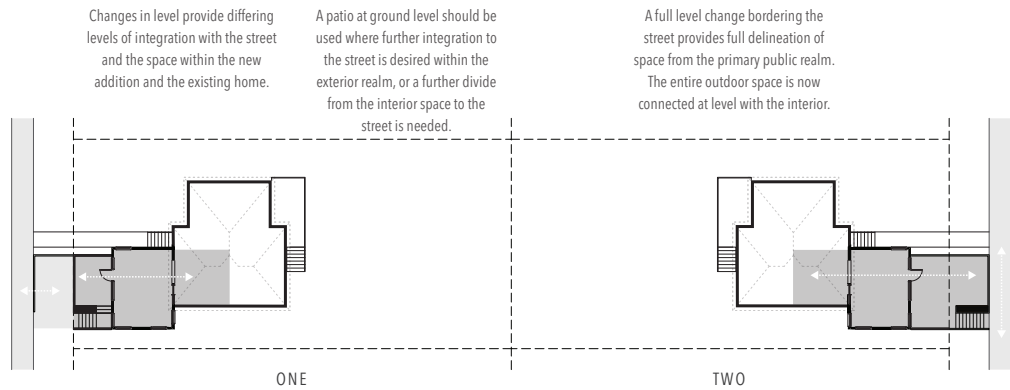
The final typology to be considered is the addition to the front of an existing home to introduce additional public programme along the street front, or allows the possibility of use as a space forming part of a secondary suite on the lower level of the home. The latter option would become available if zoning were to change to allow secondary suites within the area. This infill intervention allows for the under-utilized front yard to gain new use and life. It also allows for a modernized interpretation of the suburban streetscape. The chosen scenario for design consists of an adjoining unit being added to the front of the home for the purpose of housing a café. This addition could serve multiple other public use purposes, such as housing retail or office space. The access to this space would be from the front of the sidewalk bordering the property.



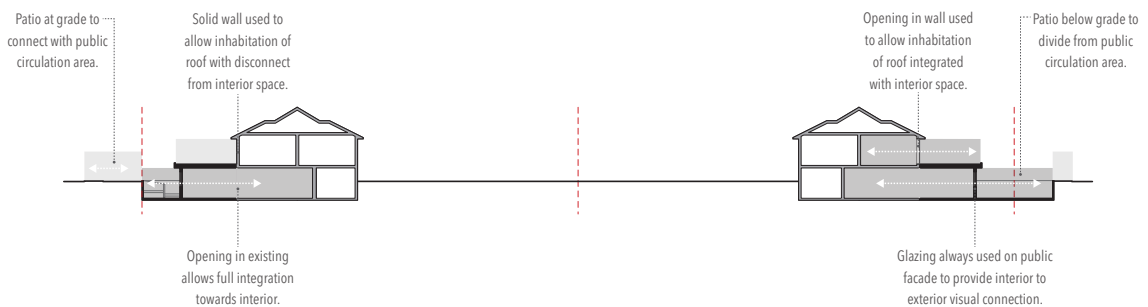
Type three - design strategies

Primary design strategies for this type include an integration with the existing context, while increasing use of the front yard space. The space is sunken to match the level of the basement of the existing home to minimize impact on the streetscape, as well as allowing for an occupiable roof space that is not a full storey above grade. To allow for a connection of the interior of the unit to the street, the primary facade is largely glazed. Other design considerations for this type include size of the unit, how far it extends outwards towards the sidewalk, as well as the inclusion of patio space at grade or below grade. Inhabitation of the roof of the space can also be a consideration for the design as well as who is able to inhabit this occupiable roof. This type is very flexible to modifications and for a more dynamic streetscape to be achieved.

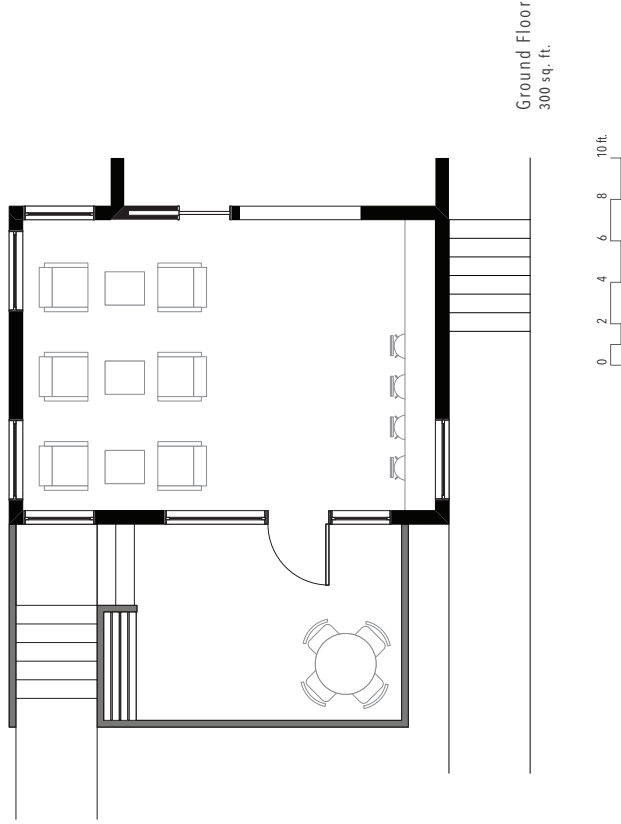
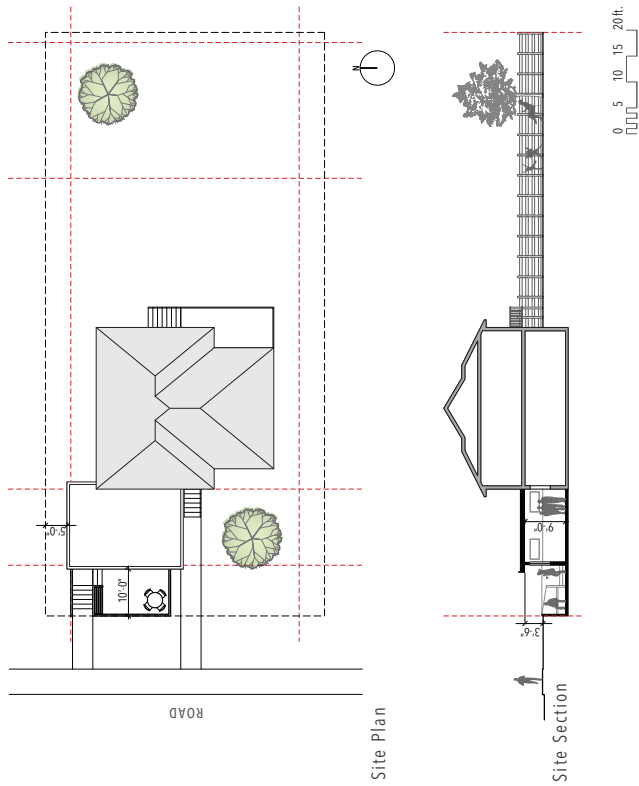
There is one primary siting strategy for this type, that situates it within the front yard of the property, offset towards one of the interior property lines and terminating at the edge of the entry walkway to the home. Other siting choices include the extension of the patio space to border the sidewalk, or extending the built space to the property line. A unique condition within the properties of investigation is strip of city property between the property line and the sidewalk area. There are possibilities available for the use of this space, but ownership may cause issues and play a role in allowable uses. Another consideration is the use of the roof space and its relationship with the existing. A solid wall discourages any interaction from interior to exterior, while openings allow integration of interior spaces with the new outdoor realm on the roof.



Type three - siting strategies



Type three - siting conditions



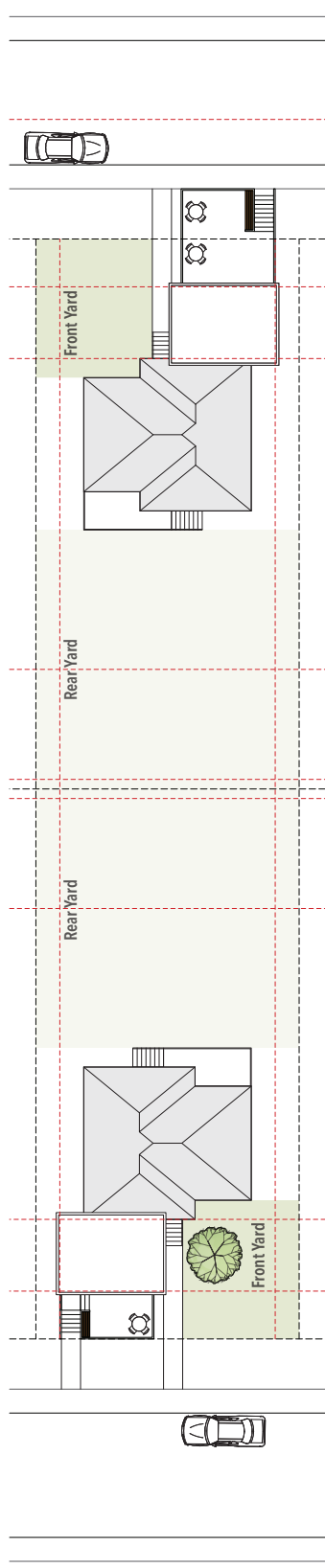
Floor Area - 300 sq. ft.
 Gross Floor Area - 325 sq. ft.
 Site Coverage - 5%
 Addition to FAR - 0.05
 Building Height - 4'-6" above grade

Front Setback - 10'-0"
 Interior Setback A - 5'-0"
 Interior Setback B - 28'-0"
 Increase to Site Population - Public Use

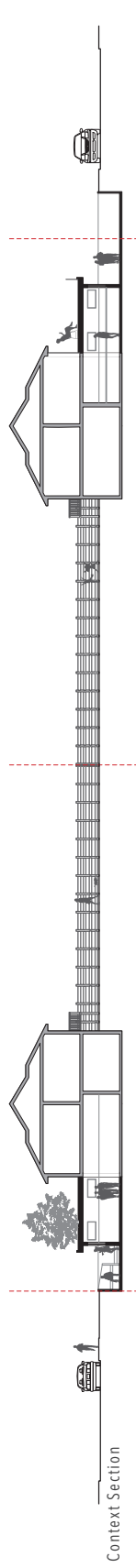
Type three - site plan, site section, plan



Type three - sectional perspective

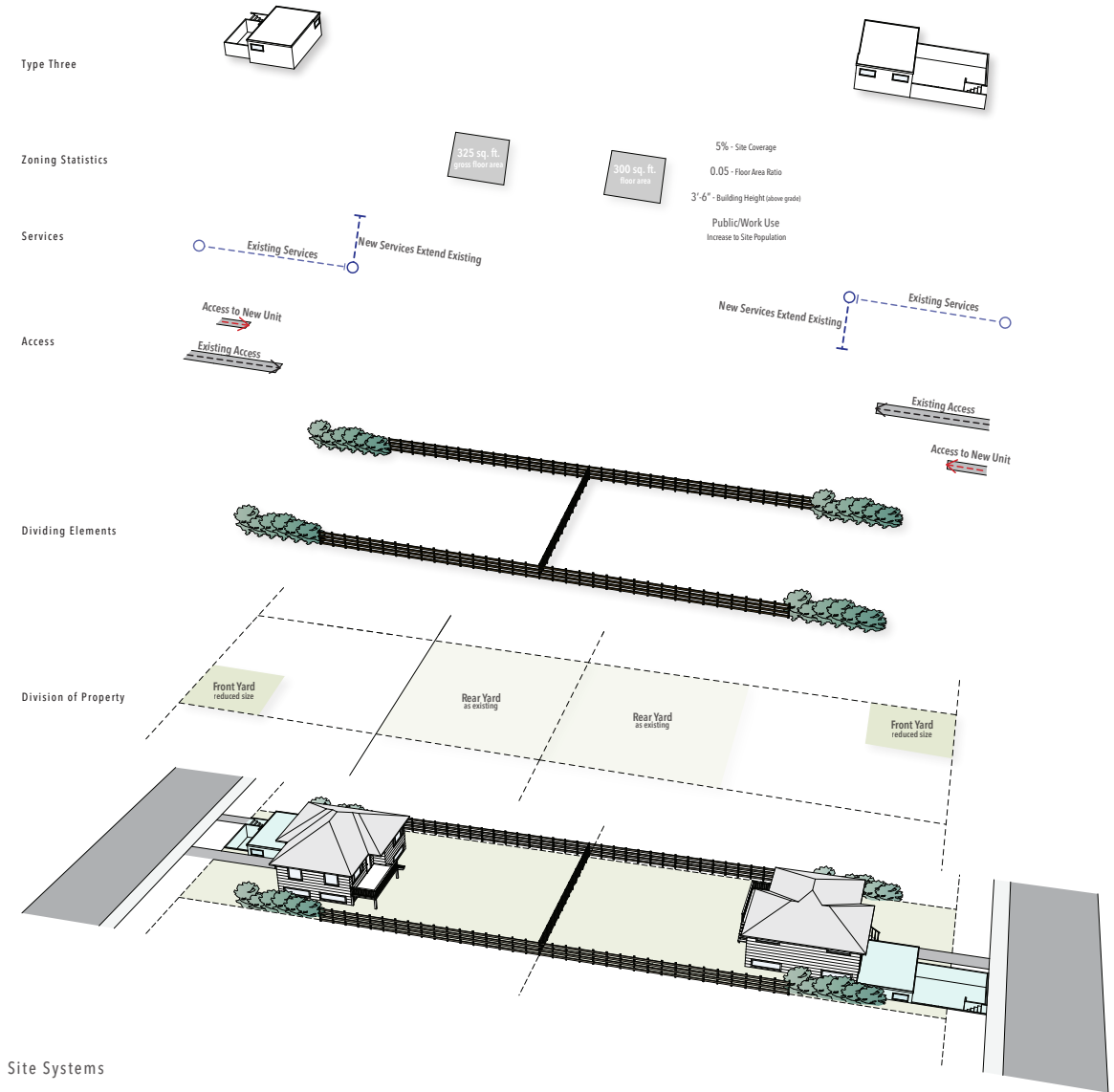


Context Plan



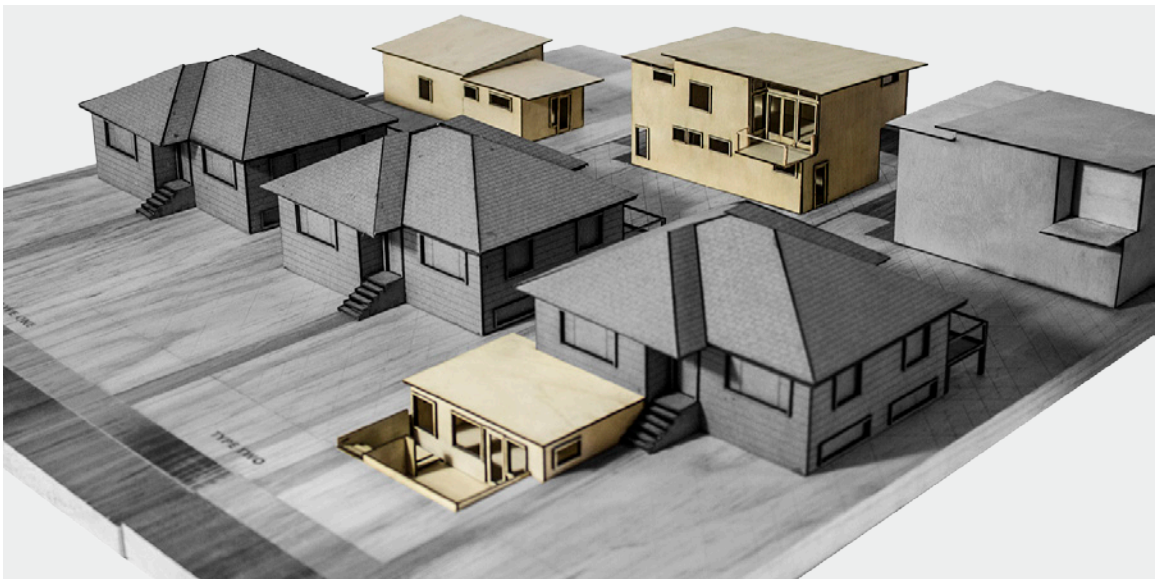
Context Section

Type three - site conditions

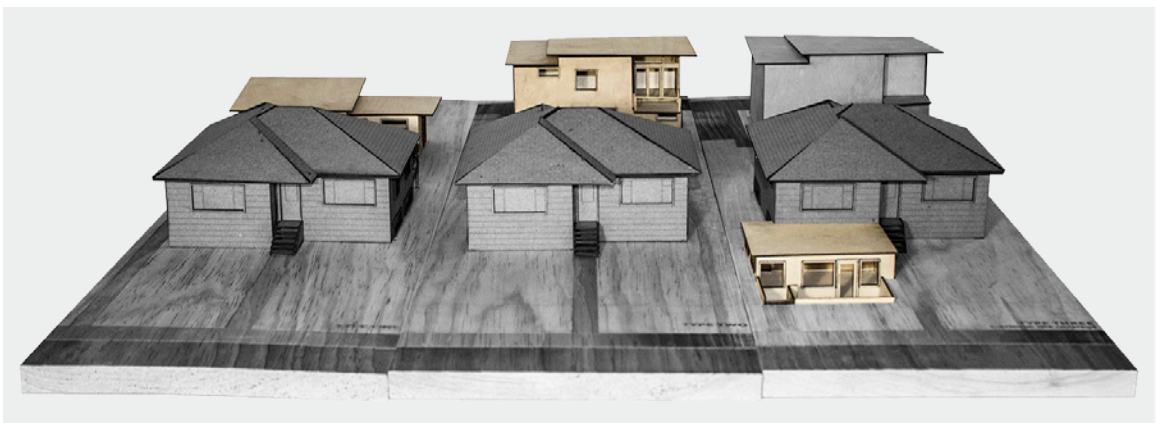


Type three - site systems

The third typology, if combined with type one or type two would allow for a maximization of overall site coverage, pushing the use of the property to its perceived limits. It would allow for the greatest increase in the density on the site. The approximate floor area this intervention would add is 300 square feet. This would be an addition of 5% to the existing site coverage. The greatest impact of this typology would not be the site area, though, but the impact on the character of the street. For this reason, and the resulting impact of increased site use, this typology should only be considered along primary circulation routes, or near existing villages or areas of increased density.



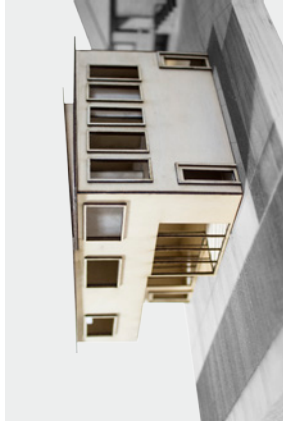
Typologies shown within neighbouring properties - view from above right (scale - 3/16" = 1'-0")



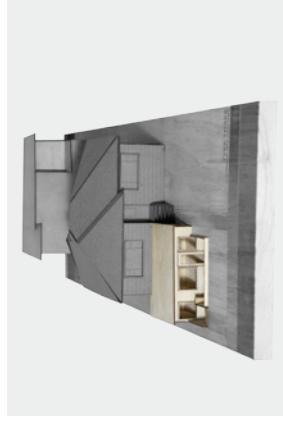
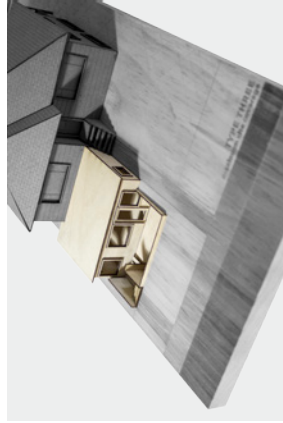
Typologies shown within neighbouring properties - view from above (scale - 3/16" = 1'-0")



Type one (scale - 3/16" = 1'-0")



Type two (scale - 3/16" = 1'-0")



Type three (scale - 3/16" = 1'-0")

Methods of Implementation

The three typologies explored test the limits of not only the site, but the entire community. They serve to demonstrate an increase in density of not only just a single site, but an entire block, and further a community as a whole. The typologies challenge the existing conditions to create an argument for the implementation of new zoning regulations — in terms of use, site coverage, height restrictions, and occupancy limitations.

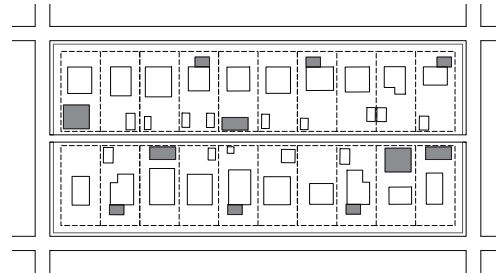
There are multiple methods of implementation of these typologies. The three primary methods for implementation can be described as follows: (1) minimal impact to existing site; (2) a standard increase in density; or (3) peak density conditions.

The first two methods are most considerate towards the existing site conditions, such as structures and vegetation, while the third aims to test the impact of maximum intervention on a site. Other considerations are impact on existing site conditions, relationships to neighbours, as well as the street front and laneway conditions created.

Implementation Method One: Minimal Site Impact

The first model of implementation aims to minimize impact on the existing site. In this method, existing structures would not be removed from a site, and consideration for existing significant vegetation and strategies to not disturb it would be used. The size of the existing home and the extent of the rear of front yard spaces would determine which typologies are allowable for construction. For example, if the existing home is large, including a small rear yard space,

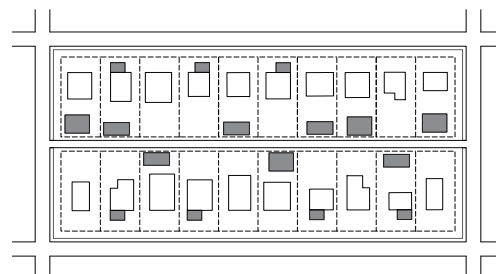
then solely types one and three could be added to the site, while type three would still only be considered on properties along primary street or near villages. This model would still allow for secondary structures to be built that follow existing zoning regulations, such as gazebos, sheds, garages, or workshops.



Implementation method one - minimal impact

Implementation Method Two: Average Density

The second model of implementation considers many of the same conditions of impact on the site as the first model. The primary differences would be that larger construction, such as type two, may be allowed on properties with larger existing homes, or smaller rear yard spaces, and that existing accessory buildings could be removed. This model includes a greater mix of typologies such as varying combinations of type one, two, and three, as well as existing or new structures that meet current zoning regulations.

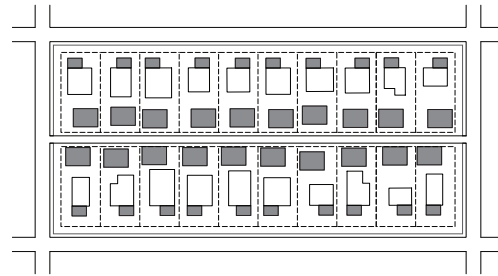


Implementation method two - average density

Implementation Method Three: Maximum Density

The third model of implementation has been identified and devised meant to test the maximum capacity of the site as

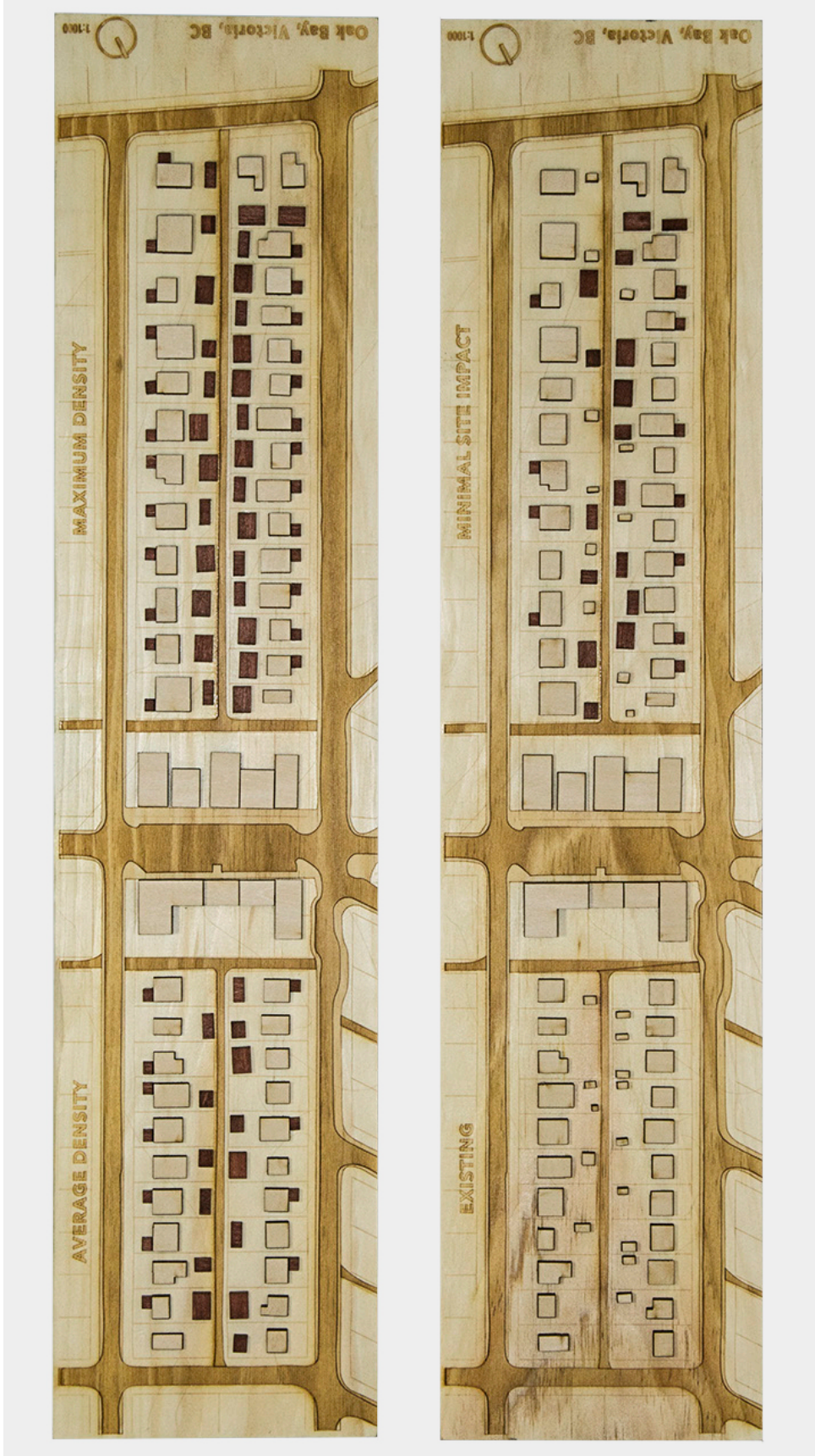
well as the overall community. With this model of implementation, site coverage would be maximized through the construction of the largest type that can be situated in the rear yard of the property, as well as including the addition to the front of the home. There is little consideration to the creation of or impact on yard space in this method. This method would have the greatest impact on the overall character of the community.



Implementation method three - maximum density

Another consideration for implementation, specifically on properties bordering laneways is the quality and character of the street facade that is being created along the laneway. The new development can be positioned in such a way that it creates either a new uniform minimal to zero setback condition, or it can be situated to allow for a yard space to be created for both the new development as well as the existing home, in the case of type one being introduced on a laneway property.

Each model of implementation provides both benefits and detriments to both the site, the block, and the community. The most effective method of implementation would consider a combination of all of the defined models dependant on the existing site, its context, and its situating within the community. Each of these models is dynamic to further alteration to meet changing needs of society, as do each of the proposed typologies.



Methods of implementation within site context (scale - 1:1000)



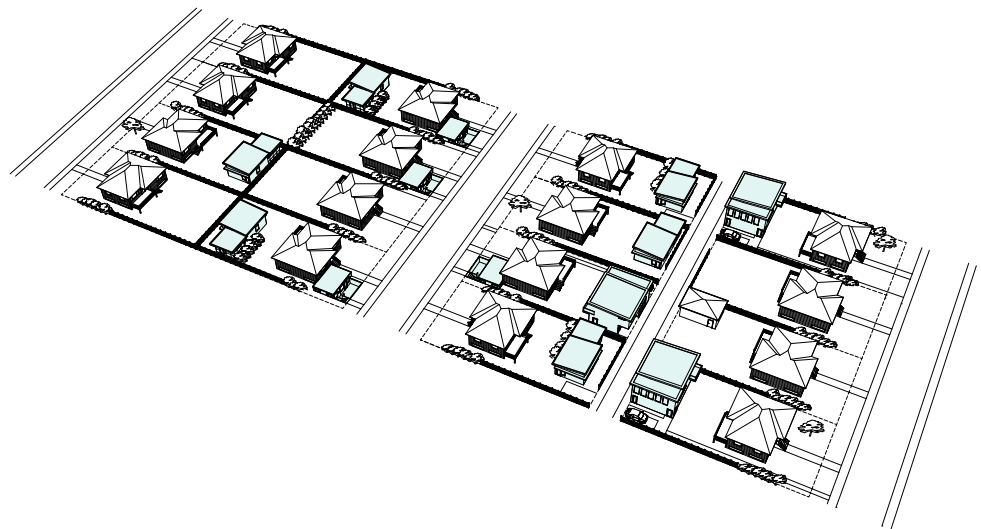
Methods of implementation within site context - detail (scale - 1:1000)

Impact of Scheme on Neighbourhood Block

One of the biggest considerations with the methods of implementation utilized, as well as the typologies chosen to be introduced, is the impact on the community in which they are situated. The following analysis of impact is based upon an implementation method incurring an average increase in density.

With the conditions demonstrated, four public use units are added (type three), with six single bedroom units (type one), and three two bedroom units (type two) are introduced to the block. This is an addition of nine residential units to the existing, for a total of twelve additional bedrooms added to the overall block.

Based on a typical occupancy of three persons in a two bedroom unit, and two persons in a single bedroom, this would increase the population of the sixteen property block by 21 inhabitants. With the initial occupancy of the block area at an average of 2.5 persons per unit, totalling 40 persons, the population density can be increased at a ratio of 1.5:1, new to existing, with this level of intervention.



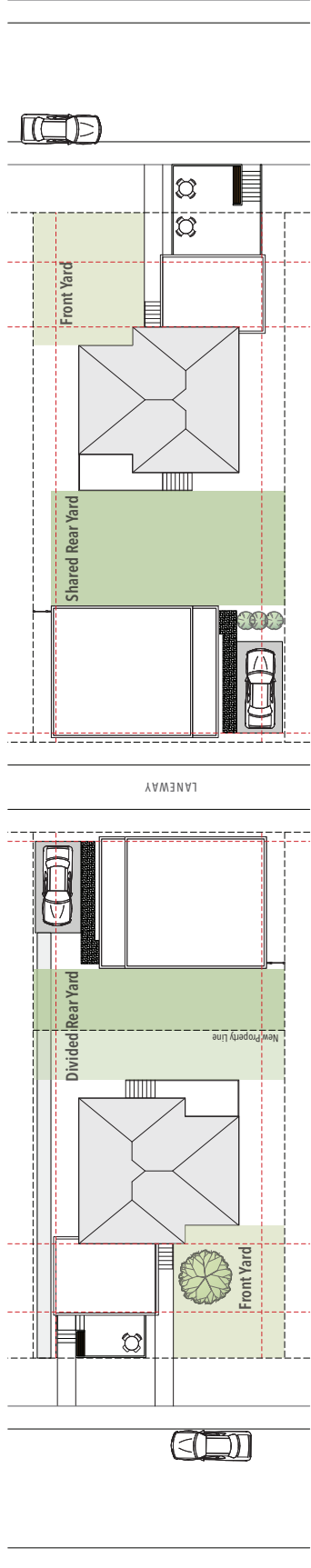
Impact on block - introduction of new typologies

The Modern Mid-Urb

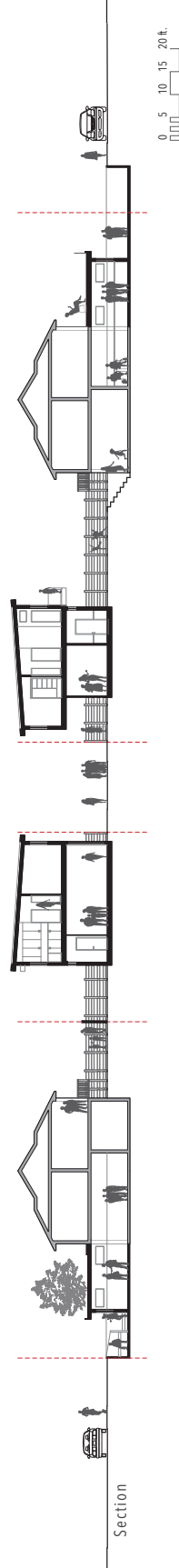
Through the implementation of the typologies derived in this study, a modern model is developed for the mid-urb. No longer are the open and unoccupied spaces on properties wasted, as their use is now encouraged through the architecture. Through infill development the existing character of the area can be enhanced. The site can now become a more dynamic unit within the neighbourhood, with maximized occupation from street to street.

The laneway spaces are no longer simply spaces for a casual stroll, but are areas of greater public use and can now become hubs for activity. The front yard is no longer a formal space based on an antiquated model. The front yard can now be used to house a variety of activities and hold greater purpose and use. Unbuilt areas on this portion of the site can be used as patio spaces at grade, or sunken patios below. The roof space, created by type three within the front yard, may also become inhabited to increase useable area on the site.

This model demonstrates a new, enhanced way of living that brings the mid-urb to a state of maturation which further meets the increased density and housing needs of the twenty-first century.

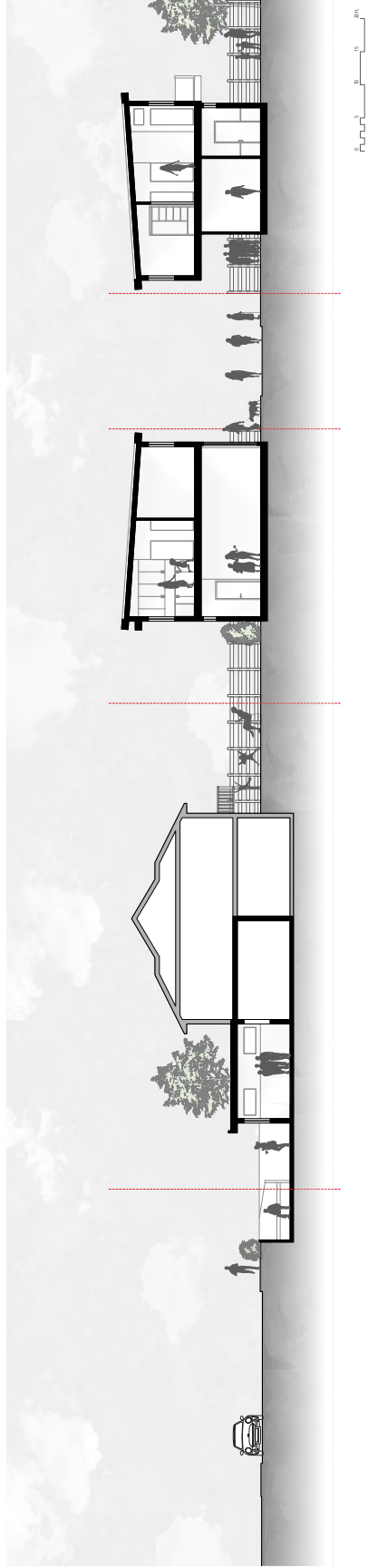


Plan



Section

The modern mid-urb - maximum site occupation



The modern mid-urb - inhabitation of site



The modern mid-urb - inhabitation of the public realm (the street, the property, the laneway)



The modern mid-urb - in habitation of streetscape



The modern mid-urb - inhabitation of laneway

CHAPTER 6: CONCLUSION

The suburban model as it is currently known is at risk of becoming obsolete. Vacant land within cities is becoming increasingly scarce, and with this scarcity comes a desire to increase density on currently occupied properties. Areas within and near urban centres are the most vulnerable to this changing environment. Communities, such as mid-urbs, situated near the downtown core do not typically fall in to the pitfalls of what has become known as the sprawl. Consequently, solutions to resolve the issue of sprawl do not suit the needs of these communities.

The previously prominent phenomena of the “American Dream” is falling by the wayside and has been replaced by the concept of complete and sustainable communities. The suburbs must go through a maturation phase to remain relevant to the changing needs of modern society. Without an improvement through a strategic methodology, higher density forms of housing models may be introduced to replace blocks of single family detached homes. The introduction of high density models within the suburban fabric will consequently become synonymous with that of the downtown core, or an extension thereof, and the concept of the suburb will cease to exist within this context.

A typological intervention, specifically in the form of infill development, is the most effective model to introduce increased density within suburbia, particularly within neighbourhoods that may already be considered “complete communities.” This method allows for an effective study of the existing conditions, and an analysis of what is successful and what aspects of the current model may be problematic.

An investigation of the existing conditions and typological interventions does not begin with the assumption that all aspects of the suburban model are failing, rather that the current model is something that can be improved upon. This part of the strategy and framework is key in allowing this model to be dynamic and flexible to existing conditions. It allows for this model to be implemented in a variety of neighbourhood contexts.

Beginning with a typological method allows for zoning regulations to be made based on a solution that is proven, rather than developing rules without a contextual framework to base decisions off of. With this method, the testing of new interventions within their context is possible to allow a justified decision to be made of what fits within existing communities and what does not. It also allows for an evaluation of the impact of an array of typologies being introduced within the community. This method does not work on the pretense that a “catch-all” method can be created to suit all site conditions. These methods allow for properties to reach their full potential and decrease wasted space created by the current model. A typological investigation allows development of new housing models that allow for the suburb to move in to a new era without losing the desirable characteristics that we have come to know within suburbia.

Models of both new housing typologies and their implementation devised in this thesis have shown that an increase in density can be achieved through infill development while maintaining and enhancing the character of the existing suburban or residential community. This creation of new housing typologies allows for an increased market and would have an impact the currently high cost of housing within mid-urb

communities. Finally, this thesis demonstrates that the current suburban model need not be erased, but must simply undergo a maturation phase to meet the housing needs of the twenty-first century.

APPENDIX: COST ANALYSIS

Through the Residential Real Estate Development elective taught by Professor Grant Wanzel, a basic feasibility study was completed on the residential typologies developed in this thesis. The question explored was whether or not the rental income from the unit would cover the cost of construction and allow the owner to gain additional income from building a rental unit on their property.

The model was completed under the assumption that the owner would acquire a 30 year mortgage with a down payment of 20%, to be able to gain a prime rate (currently set at 2.7%). The study also accounts for the condition that the owner is already making mortgage payments on their existing home. The payments calculated are based on the average home sale price from January 2016, which was \$857,300, with the same mortgage terms as noted above.³⁸

It was found that most scenarios tested that the cost of the new construction could be covered by the rent charged. The most profitable option for the owner was to construct a one bedroom unit similar to Type 01, move in to the unit, and rent their existing home. This could become a popular practice due to the number of seniors living alone within the area.

The tables on the proceeding pages the results of the feasibility study completed.

Cost Impact - Garden Suite (1A)

Construction Scheme				
	Homeowner has existing mortgage on home, and wants to construct secondary building as rental property to supplement current mortgage cost. The rental unit is: One Bedroom Garden Suite			
Construction Costs				
	Building Form	Detached Home	Construction Quality	Mid Spec
	Floor Area	600	Cost per Square Foot	\$175.00
	Construction Cost	\$105,000.00	Soft Costs (@25%)	\$26,250.00
	Total Construction Cost	\$131,250.00		
Construction Loan / Mortgage				
	<i>Terms: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	20% down payment	\$26,250.00	Monthly Payment	\$425.00
Net Rental Cash Flow (Monthly)				
	Rental Rate	\$900.00		
	<i>*rental rate does not include utilities</i>			
	Management Fee (@10%)	\$90.00	Increase in Property Tax	\$87.50
	Net Income	\$722.50		
Impact on Mortgage				
	Current Home Mortgage Cost (per month)	\$2,776.00	% of income	25.3
	Affordable Mortgage Rate (per month)	\$3,291.93	% of income	30
	New Mortgage Cost (per month)	\$2,478.50	% of income	22.6
	<i>*home mortgage based on: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	<i>*affordable shelter cost based on average annual household income of: \$131,677.00</i>			
Income from Rental Property				
	With Home Mortgage		Without Home Mortgage	
	Monthly Income/Cost	\$297.50	Monthly Income	\$722.50
	Yearly Income/Cost	\$3,570.00	Yearly Income	\$8,670.00
	<i>*with home mortgage considers income as amount that is gained from lower mortgage payments</i>			
	<i>*without home mortgage considers a scenario where homeowner has repaid their mortgage in full</i>			

Table 1 - cost analysis of type one (A)

Cost Impact - Garden Suite(1B)

Construction Scheme				
	Homeowner has existing mortgage on home, and wants to construct secondary building as rental property to supplement current mortgage cost. The rental unit is: One Bedroom Garden Suite			
Construction Costs				
	Building Form	Detached Home	Construction Quality	High Spec
	Floor Area	600	Cost per Square Foot	\$275.00
	Construction Cost	\$165,000.00	Soft Costs (@25%)	\$41,250.00
	Total Construction Cost	\$206,250.00		
Construction Loan / Mortgage				
	<i>Terms: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	20% down payment	\$41,250.00	Monthly Payment	\$668.00
Net Rental Cash Flow (Monthly)				
	Rental Rate	\$900.00		
	<i>*rental rate does not include utilities</i>			
	Management Fee (@10%)	\$90.00	Increase in Property Tax	\$137.50
	Net Income	\$672.50		
Impact on Mortgage				
	Current Home Mortgage Cost (per month)	\$2,776.00	% of income	25.3
	Affordable Mortgage Rate (per month)	\$3,291.93	% of income	30
	New Mortgage Cost (per month)	\$2,771.50	% of income	25.3
	<i>*home mortgage based on: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	<i>*affordable shelter cost based on average annual household income of: \$131,677.00</i>			
Income from Rental Property				
	With Home Mortgage		Without Home Mortgage	
	Monthly Income/Cost	\$4.50	Monthly Income	\$672.50
	Yearly Income/Cost	\$54.00	Yearly Income	\$8,070.00
	<i>*with home mortgage considers income as amount that is gained from lower mortgage payments</i>			
	<i>*without home mortgage considers a scenario where homeowner has repaid their mortgage in full</i>			

Table 2 - cost analysis of type one (B)

Cost Impact - Laneway House (2A)

Construction Scheme				
Homeowner has existing mortgage on home, and wants to construct secondary building as rental property to supplement current mortgage cost. The rental unit is: Two Bedroom Laneway House				
Construction Costs				
	Building Form	Detached Home	Construction Quality	Mid Spec
	Floor Area	1200	Cost per Square Foot	\$175.00
	Construction Cost	\$210,000.00	Soft Costs (@25%)	\$52,500.00
	Total Construction Cost	\$262,500.00		
Construction Loan / Mortgage				
<i>Terms: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>				
	20% down payment	\$52,500.00	Monthly Payment	\$850.00
Net Rental Cash Flow (Monthly)				
	Rental Rate	\$1,300.00		
<i>*rental rate does not include utilities</i>				
	Management Fee (@10%)	\$130.00	Increase in Property Tax	\$175.00
	Net Income	\$995.00		
Impact on Mortgage				
	Current Home Mortgage Cost (per month)	\$2,776.00	% of income	25.3
	Affordable Mortgage Rate (per month)	\$3,291.93	% of income	30
	New Mortgage Cost (per month)	\$2,631.00	% of income	24.0
<i>*home mortgage based on: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>				
<i>*affordable shelter cost based on average annual household income of: \$131,677.00</i>				
Income from Rental Property				
	With Home Mortgage		Without Home Mortgage	
	Monthly Income/Cost	\$145.00	Monthly Income	\$995.00
	Yearly Income/Cost	\$1,740.00	Yearly Income	\$11,940.00
<i>*with home mortgage considers income as amount that is gained from lower mortgage payments</i>				
<i>*without home mortgage considers a scenario where homeowner has repaid their mortgage in full</i>				

Table 3 - cost analysis of type two (A)

Cost Impact - Laneway House (2B)

Construction Scheme				
Homeowner has existing mortgage on home, and wants to construct secondary building as rental property to supplement current mortgage cost. The rental unit is: Two Bedroom Laneway House				
Construction Costs				
	Building Form	Detached Home	Construction Quality	High Spec
	Floor Area	1200	Cost per Square Foot	\$275.00
	Construction Cost	\$330,000.00	Soft Costs (@25%)	\$82,500.00
	Total Construction Cost	\$412,500.00		
Construction Loan / Mortgage				
<i>Terms: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>				
	20% down payment	\$82,500.00	Monthly Payment	\$1,336.00
Net Rental Cash Flow (Monthly)				
	Rental Rate	\$1300.00		
<i>*rental rate does not include utilities</i>				
	Management Fee (@10%)	\$130.00	Increase in Property Tax	\$275.00
	Net Income	\$895.00		
Impact on Mortgage				
	Current Home Mortgage Cost (per month)	\$2,776.00	% of income	25.3
	Affordable Mortgage Rate (per month)	\$3,291.93	% of income	30
	New Mortgage Cost (per month)	\$3,217.00	% of income	29.3
<i>*home mortgage based on: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>				
<i>*affordable shelter cost based on average annual household income of: \$131,677.00</i>				
Income from Rental Property				
	With Home Mortgage		Without Home Mortgage	
	Monthly Income/Cost	-\$441.00	Monthly Income	\$895.00
	Yearly Income/Cost	-\$5,292.00	Yearly Income	\$10,740.00
<i>*with home mortgage considers income as amount that is gained from lower mortgage payments</i>				
<i>*without home mortgage considers a scenario where homeowner has repaid their mortgage in full</i>				

Table 4 - cost analysis of type two (B)

Cost Impact - Rental of Existing Home

Construction Scheme				
	Homeowner has existing mortgage on home, and wants to construct secondary building to move in to while renting out the primary building on site. Their new unit is a One Bedroom Garden Suite.			
Construction Costs				
	Building Form	Detached Home	Construction Quality	High Spec
	Floor Area	600	Cost per Square Foot	\$275.00
	Construction Cost	\$165,000.00	Soft Costs (@25%)	\$41,250.00
	Total Construction Cost	\$206,250.00		
Construction Loan / Mortgage				
	<i>Terms: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	20% down payment	\$41,250.00	Monthly Payment	\$668.00
Net Rental Cash Flow (Monthly)				
	Rental Rate	\$2,250.00		
	<i>*rental rate does not include utilities</i>			
	Management Fee (@10%)	\$225.00	Increase in Property Tax	\$137.50
	Net Income	\$1,887.50		
Impact on Mortgage				
	Current Home Mortgage Cost (per month)	\$2,776.00	% of income	25.3
	Affordable Mortgage Rate (per month)	\$3,291.93	% of income	30
	New Mortgage Cost (per month)	\$1,556.50	% of income	14.2
	<i>*home mortgage based on: 30 year mortgage at 2.7% - bi-weekly payments - 2 year closed - 20% down</i>			
	<i>*affordable shelter cost based on average annual household income of: \$131,677.00</i>			
Income from Rental Property				
	With Home Mortgage		Without Home Mortgage	
	Monthly Income/Cost	\$1,219.50	Monthly Income	\$1,887.50
	Yearly Income/Cost	\$14,634.00	Yearly Income	\$22,650.00
	<i>*with home mortgage considers income as amount that is gained from lower mortgage payments</i>			
	<i>*without home mortgage considers a scenario where homeowner has repaid their mortgage in full</i>			

Table 5 - cost analysis of construction of type one and rental of existing home

NOTES

1. Richard Harris, *Creeping Conformity: How Canada Became Suburban, 1900-1960. Themes in Canadian History*; 7 (Toronto: University of Toronto Press, 2004), 7.
2. Avi Friedman, David Krawitz, and Gibson Library Connections, Inc., *Planning the New Suburbia: Flexibility by Design*, Canadian Electronic Library, Books Collection, Vancouver, BC (UBC Press, 2002), 27.
3. Richard Harris, *Creeping Conformity*, 18-19.
4. Charles Montgomery, *Happy City: Transforming Our Lives through Urban Design* (New York: Routledge, 2013), 66.
5. Dolores Hayden, *Redesigning the American Dream : The Future of Housing, Work, and Family Life*, Rev. and Expanded ed. (New York: W.W. Norton, 2002), 14.
6. Avi Friedman, *Planning the New Suburbia*, 53.
7. Ellen Dunham-Jones, and June Williamson, *Retrofitting Suburbia : Urban Design Solutions for Redesigning Suburbs* (Hoboken, NJ: Wiley, 2009), 22.
8. Ibid., 114.
9. Statistics Canada, 2012, *Oak Bay, British Columbia (Code 5917030) and Capital, British Columbia (Code 5917) (table)*, Census Profile, 2011 Census, Statistics Canada Catalogue no. 98316XWE, Ottawa, released October 24, 2012, accessed October 25, 2015, http://www12.statcan.gc.ca/censusrecensement/2011/dp_pd/prof/index.cfm?Lang=E.
10. "Data and Statistics by Citified," Skyscraper Source Media Inc. (Citified), accessed February 13, 2016, <http://victoria.citified.ca/data/>.
11. Statistics Canada, Census 2011.
12. 27% of the Oak Bay population is above the age of 65. Statistics Canada, Census 2011.
13. George Murdoch, The History of the Municipality of Oak Bay, accessed October, 2015, <https://www.oakbay.ca/sites/default/files/History/murdoch.pdf>.
14. Victoria Real Estate Board, "January 2016. Statistics Package for Media," January, 2016, <http://www.vreb.org/pdf/VREBNewsReleaseFull.pdf>.
15. Canadian Mortgage and Housing Corporation, "Rental Market Report: Victoria CMA," Fall 2015, accessed November 15, 2015, http://www.cmhc-schl.gc.ca/odpub/esub/64471/64471_2015_A01.pdf?fr=1453688314660.
16. Ibid.

17. As of February 19th, 2016, the Canadian Dollar was valued at 0.72 U.S. dollars. Bank of Canada, "Exchange Rates," accessed February 19, 2016, <http://www.bankofcanada.ca/rates/exchange/>.
18. Canadian Mortgage and Housing Corporation, "Housing Market Information Portal," accessed January 31, 2016, <https://www03.cmhc-schl.gc.ca/hmiportal/en/#Profile/244008/5/Oak%20Bay>.
19. Ibid.
20. Statistics Canada, Census 2011.
21. 4,425 (25% of the overall Oak Bay population) of the senior population are living in private households. Out of those 4,425 seniors, 1,630 are not in census families and 1435 (88%) of those seniors are living alone. Statistics Canada, Census 2011.
22. The population of Oak Bay changed by 0.6% between 2006 and 2011. Statistics Canada, Census 2011.
23. 1945 of 7370 households in Oak Bay are couples with children, while 2390 households are couples without children. "Housing Market Information Portal," accessed January 31, 2016.
24. Statistics Canada, Census 2011.
25. District of Oak Bay (Oak Bay), 2015, "Zoning Bylaw 3531," accessed August 01, 2015, <https://www.oakbay.ca/sites/default/files/municipal-hall/Consolidated%20Zoning%20Bylaw%20as%20of%20June%2022%202015.pdf>.
26. District of Oak Bay (Oak Bay), 2014, "District of Oak Bay Official Community Plan," accessed August 01 2015, [https://www.oakbay.ca/sites/default/files/ocp/2014/OakBay-OCP-Final-Web site-dec0414.pdf](https://www.oakbay.ca/sites/default/files/ocp/2014/OakBay-OCP-Final-Web%20site-dec0414.pdf).
27. Oak Bay, "District of Oak Bay Official Community Plan," 77.
28. Ibid., 175.
29. Ibid., 80.
30. Avi Friedman, *Planning the New Suburbia*, 136.
31. Statistics Canada, Census 2011.
32. Ibid.
33. District of Oak Bay (Oak Bay), "Zoning Bylaw 3531."
34. Statistics Canada, Census 2011.

35. City of Victoria, "The Garden Suite Policy," accessed January 21, 2016, <http://www.victoria.ca/assets/Departments/Planning~Development/Development~Services/Documents/Garden%20Suite%20Policy.pdf>.
36. Bill Cleverley, "No rush to build garden suites in Victoria," *Times Colonist*, May 03, 2014, accessed January 21, 2016, <http://www.timescolonist.com/news/local/no-rush-to-build-garden-suites-in-victoria-1.1020472>.
37. City of Vancouver, "Laneway Housing How-To Guide," accessed February 04, 2016, <http://vancouver.ca/files/cov/laneway-housing-howto-guide.pdf>.
38. Victoria Real Estate Board, "January 2016. Statistics Package for Media."

BIBLIOGRAPHY

- Bank of Canada. "Exchange Rates." Accessed February 19, 2016. <http://www.bankofcanada.ca/rates/exchange/>.
- Canadian Mortgage and Housing Corporation. "Housing Market Information Portal." Accessed January 31, 2016. <https://www03.cmhc-schl.gc.ca/hmiportal/en/#Profile/244008/5/Oak%20Bay>.
- Capital Regional District. *CRD Regional Map. Visual Scale*. "Map of Capital Regional District." Victoria, BC: CRD. 2015. <https://maps.crd.bc.ca/Html5Viewer/?viewer=public>. (Sept 25, 2015).
- City of Vancouver. "Laneway Housing How-To Guide." November 2013. Accessed January 15, 2016. <http://vancouver.ca/files/cov/laneway-housing-howto-guide.pdf>.
- City of Victoria. "Garden Suites Policy." September 2011. Accessed January 10, 2015. <http://www.victoria.ca/assets/Departments/Planning~Development/Development~Services/Documents/Garden%20Suite%20Policy.pdf>.
- . "Rental Market Report: Victoria CMA." Fall 2015. Accessed November 15, 2015. http://www.cmhc-schl.gc.ca/odpub/esub/64471/64471_2015_A01.pdf?fr=1453688314660.
- Cleverley, Bill. "No Rush to Build Garden Suites in Victoria." *Times Colonist*. May 03, 2014. Accessed January 21, 2016. <http://www.timescolonist.com/news/local/no-rush-to-build-garden-suites-in-victoria-1.1020472>.
- Corporation of the District of Oak Bay, Engineering Department - GIS Office. *Community Maps: Municipal Street Maps. Visual Scale*. "East-Central." 2014. https://www.oakbay.ca/sites/default/files/maps/eastCentral_oakbay_marina_map.pdf. (Oct 01, 2015).
- . *Community Maps: Municipal Street Maps. 1:4,000*. "The Corporation of the District of Oak Bay: Street Addresses." 2014. <https://www.oakbay.ca/sites/default/files/maps/Street%20Address.pdf>. (Oct 01, 2015).
- District of Oak Bay (Oak Bay). 2014. "District of Oak Bay Official Community Plan." Accessed August 01, 2015. [https://www.oakbay.ca/sites/default/files/ocp/2014/OakBay-OCP-Final-Web site-dec0414.pdf](https://www.oakbay.ca/sites/default/files/ocp/2014/OakBay-OCP-Final-Web%20site-dec0414.pdf).
- . 2015. "Zoning Bylaw 3531." Accessed August 01 2015. <https://www.oakbay.ca/sites/default/files/municipal-hall/Consolidated%20Zoning%20Bylaw%20as%20of%20June%2022%202015.pdf>.
- Dunham-Jones, Ellen, and June Williamson. *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*. Hoboken, NJ: Wiley, 2009.

- Friedman, Avi, Krawitz, David, and Gibson Library Connections, Inc. *Planning the New Suburbia Flexibility by Design*. Canadian Electronic Library. Books Collection. Vancouver: UBC Press, 2002.
- Harris, Richard. *Creeping Conformity: How Canada Became Suburban, 1900-1960*. Themes in Canadian History; 7. Toronto, ON: University of Toronto Press, 2004.
- Hayden, Dolores. *Redesigning the American Dream: The Future of Housing, Work, and Family Life*. Rev. and Expanded ed. New York: W.W. Norton, 2002.
- Montgomery, Charles. *Happy City: Transforming Our Lives through Urban Design*. First ed. New York : Farrar, Straus and Giroux, 2013.
- Murdoch, George. *The History of the Municipality of Oak Bay*. Accessed October, 2015. <https://www.oakbay.ca/sites/default/files/History/murdoch.pdf>.
- OpenStreetMap. *Standard Map*. No Scale Given. GeoGratis. <https://www.openstreetmap.org/#map=11/48.5518/-123.5152> (Sept 25, 2015).
- Skyscraper Source Media Inc. (Citified). "Data and Statistics by Citified." Accessed February 13, 2016, <http://victoria.citified.ca/data/>.
- Statistics Canada. *Oak Bay, British Columbia (Code 5917030) and Capital, British Columbia (Code 5917) (table)*. 2012. Census Profile. 2011 Census. Statistics Canada Catalogue no. 98316XWE. Ottawa. Released October 24, 2012. Accessed October 25, 2015. http://www12.statcan.gc.ca/censusrecensement/2011/dp_pd/prof/index.cfm?Lang=E.
- . *Oak Bay, DM, British Columbia (Code 5917030) (table)*. 2013. *National Household Survey (NHS) Profile*. 2011 National Household Survey. Statistics Canada Catalogue no. 99-004-XWE. Ottawa. Released September 11, 2013. Accessed January 24, 2016. <http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E>.
- Victoria Real Estate Board. "January 2016. Statistics Package for Media." <http://www.vreb.org/pdf/VREBNewsReleaseFull.pdf>.