Smaller Homes, Bigger Community: Cluster Housing as a Suburban Redevelopment Strategy in Ottawa

by

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ABSTRACT

Smaller Homes, Bigger Community: Cluster Housing as a Suburban Redevelopment Strategy in Ottawa

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University of Guelph, 2019
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Brendan Stewart
Sean Kelly

Suburban detached houses have become unaffordable to own for a portion of the Canadian population. This low-density housing form is associated with increased distrust between neighbours and social isolation. Cottage Style Pocket Neighbourhoods [CSPN] are houses around a common courtyard, promoting community. The cottage size results in a decreased cost. This research explores the feasibility of CSPN as a strategy for the redevelopment Ottawa inner ring suburbs. Case studies of existing CSPN in North American suburbs are compared to Canadian Provincial and Municipal policy and by-laws. Semi-structured interviews with experts from planning, land development, design, and consulting practices are used to analyze the affordability and market of CSPN. The study concludes that CSPN conforms with policy and most by-law requirements, can provide market priced units and that there is a small but growing market for this housing type. CSPN could be a style of housing redevelopment that reimagines the suburbs.

Key Words: Cottage Housing, Courtyard Housing, Pocket Neighbourhoods, Shared Outdoor Space, Gentle Densification, Landscape Architecture
ACKNOWLEDGEMENTS

I would like to thank my wonderful wife, Angela, for supporting me through this process and for moving to Ontario with me so that I could pursue my dream. Thank you for caring for me, feeding me, and putting up with all the papers and books I scattered around the house. Without you I would never have been able to complete this thesis.

Brendan Stewart and Sean Kelly, you both have my deepest gratitude for walking by my side. Your patience and guidance through this difficult year allowed me to be able to complete something to be proud of. You were essential, and this thesis would not have been half the project it is without you. Brendan, thank you for introducing and informing my interest in housing forms. Thanks to Nate Perkins for being on my committee and Karen Landman for chairing my defense.

Thank you to Ian Panabaker, Leith Moore, Ross Chapin, and Chris Stevens for offering their time and knowledge as experts, providing key insights to this research.

Thank you to my parents, Hank and Annette, who have encouraged me every step of the way. Thank you to my family back home, Aaron and Emma (Reid and Everet), Hanah and Carson, and my late brother Levi. Thank you for understanding when I would disappear for weeks on end, and continually reaching out to keep in touch. I love you all. This one is for you Boo.

Finally thank you to my classmates. It was a great three years. Aiden, Ashley, Carleigh, and Kaja, your friendship and support was fundamental in the work I accomplished this year. Thanks for giving me a reason to come to school.
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<table>
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<tr>
<td>CSPN</td>
<td>Cottage Style Pocket Neighbourhoods</td>
</tr>
<tr>
<td>DBH</td>
<td>Diameter at Breast Height</td>
</tr>
<tr>
<td>DC</td>
<td>Development Costs</td>
</tr>
<tr>
<td>FL</td>
<td>Feasibility Lens</td>
</tr>
<tr>
<td>ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>m</td>
<td>Meters</td>
</tr>
<tr>
<td>ppl/ha</td>
<td>People per hectare</td>
</tr>
<tr>
<td>OPP</td>
<td>Ontario Provincial Policy</td>
</tr>
<tr>
<td>SCA</td>
<td>Streetscape Character Analysis</td>
</tr>
<tr>
<td>s.f</td>
<td>Square feet</td>
</tr>
<tr>
<td>s.m</td>
<td>Square meters</td>
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1 Introduction

1.1 Background

Owning a detached suburban home is still considered a major threshold in living the American Dream (Dunham-Jones & Williamson, 2009; Kilman, 2016). This milestone is increasingly becoming harder to achieve because of high costs associated with the conventional forms of suburban housing (Kilman, 2016). Affordability is not the only pitfall of the conventional suburban form, for it is also associated with decreased rates of social interaction and trust between neighbours (Montgomery, 2017).

Research has suggested that increasing the density of suburban communities will have a positive impact on the social wellbeing of the inhabitants (Montgomery, 2017), as well as environmental benefits through requiring residents to travel shorter distances (Kopits, McConnell, & Miles, 2012).

Smart growth proponents are also interested in suburban form for they have identified the inner ring suburbs as being a pivotal area for housing a larger portion of the population in the future because of its low density and its proximity to city centers (Lee & Leigh, 2005; Danielsen, Lang, & Fulton, 2010). The houses in these suburbs are beginning to age out and will soon require redevelopment (Lee & Leigh, 2005), therefore possible alternative forms of housing should be explored now.

Cottage Style Pocket Neighbourhoods could be one such form of housing used to redevelop the inner ring suburbs at a higher density and in a character and form that promotes social interaction and connectedness.
This thesis concentrates on exploring the potential of Cottage Style Pocket Neighbourhoods as a form of suburban redevelopment in a Canadian inner ring suburb.
1.2 Goals and Objectives

1.2.1 Research Goal

The aim of this research is:

- to explore the feasibility of Cottage Style Pocket Neighbourhoods (CSPN) as an infill strategy within an Ottawa inner ring suburb.

1.2.2 Research Objectives

Feasibility will be analyzed through four lenses.

1. Policy: To what extent do CSPN support Provincial and Municipal policy?
2. By-laws: To what extent do CSPN conform with Municipal by-laws?
3. Affordability: How do the market costs of a CSPN unit compare to comparable units in the same neighbourhood?
4. Market: Is there market demand for CSPN, and if so, what is it’s character?

1.2.3 Lens Development

These lenses were developed because no framework for establishing housing development feasibility was found within the literature. Feasibility Lenses [FL] were created through summarizing three documents relating to housing and feasibility. The resources were: a website from the Canada Mortgage and Housing Corporation on the feasibility of developing affordable housing (Canada Mortgage and Housing Corporation, 2018), a document from Cohousing Development Consultants with tools for determining feasibility of cohousing communities (Cohousing Development Consulting, n.d.), and a study exploring the feasibility of pocket neighbourhoods in
McBride, B.C. (McBride's CASE Homes Feasibility Study, 2017). All components identified in the resources were thematically organized and summarized before aspects beyond the scope of this research were removed (such as establishing estimated completed condo fees or proving housing concept viability to lenders). A summary table of complete feasibility components can be found in Table 1.1 Feasibility Components.

An additional lens titled “Neighbourhood Context” was removed following analysis of FL1 and FL2. Provincial and Municipal Policy and By-laws identified matching the character and context of the existing neighbourhood as a key requirement for redevelopment projects. This component was therefore removed as it was addressed in FL1 and FL.
<table>
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<tr>
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<tbody>
<tr>
<td>Fits Neighbourhood Context</td>
<td>Acceptable to Community</td>
<td>Acceptability/Integration</td>
<td>Establish Character and Form of desired community</td>
<td>Identified through Ottawa comparison site compared to case studies</td>
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<td>Establish definite need in community</td>
<td>Demand</td>
<td></td>
<td>Identified through semi-structured expert interviews</td>
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<tr>
<td>Secure lending for development</td>
<td>Prove to Lenders plan is workable</td>
<td></td>
<td>Identify and coordinate investment/equity</td>
<td>Beyond Scope of research</td>
</tr>
<tr>
<td>Anticipated Living Costs</td>
<td>Establish:</td>
<td>Establish:</td>
<td></td>
<td>Beyond Scope of research</td>
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<td></td>
<td>Rent/Lease price</td>
<td>Rent/Lease price</td>
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<td></td>
<td>Utilities</td>
<td>Condo Fees</td>
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<td>Reliance on Car</td>
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<td>Anticipated Developmental Costs</td>
<td>Capital costs:</td>
<td>Developmental:</td>
<td>Developmental:</td>
<td>Identify:</td>
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<td></td>
<td>Purchase price</td>
<td>Land cost</td>
<td>Land cost</td>
<td>Land cost through identifying price of similar homes in neighbourhood.</td>
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<td></td>
<td>Construction Costs</td>
<td>Construction costs</td>
<td>Construction costs</td>
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<tr>
<td>Anticipated Developmental Costs - continued</td>
<td>Fees and permits</td>
<td>Zoning Amendment</td>
<td>Pro forma for anticipated</td>
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<td>Survey</td>
<td>completed house</td>
<td>Construction related costs through semi-structured expert interviews</td>
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<td>Marketing</td>
<td>Servicing</td>
<td>Cashflow requirements</td>
<td>Costs associated with zoning/servicing through City of Ottawa resources</td>
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<td>Financing/funding:</td>
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<td>Mortgages/Loans</td>
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<td>Governmental subsidies and grants</td>
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<tr>
<td>Meets zoning requirements</td>
<td></td>
<td>Building codes</td>
<td>Site zoning can accommodate type of community</td>
<td>Identified through comparing case studies to City of Ottawa zoning bylaws</td>
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<tr>
<td></td>
<td></td>
<td>Fit/requires new zoning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticipated project challenges</td>
<td></td>
<td></td>
<td>Identify challenges</td>
<td>Identified through semi-structured expert interviews</td>
</tr>
<tr>
<td>Anticipated project strengths</td>
<td></td>
<td>Expansion opportunities of proposed community</td>
<td>Identify challenges</td>
<td>Identified through semi-structured expert interviews</td>
</tr>
<tr>
<td>Realtor costs</td>
<td></td>
<td></td>
<td>Negotiate agreement for land</td>
<td>Beyond scope of research</td>
</tr>
</tbody>
</table>
1.3 Research Design

Ottawa Comparison Site
Identify:
- Provincial Policy
- Municipal Policy
- Municipal By-laws

Case Studies
Criteria:
- Located in North American Inner ring suburbs
- Meet Definition of CSPN
- Published on Merit

Semi-structured Expert Interviews
Criteria:
- Identified as Key Players in readings
- Involved in Residential Industry

Compare

FL1 Policy
FL2 By-laws

FL3 Affordability
FL4 Market

Figure 1.1 General Research Design
This research follows the approach of combining data collected from an Ottawa comparison site and case studies with information synthesized from expert interviews. Key variables will be measured and identified in both the Ottawa comparison site and the case studies. Provincial and Municipal policy and by-laws relating to the Ottawa comparison site will be collected and analyzed. The case studies’ measurements will be averaged and then compared to the Ottawa comparison site and policy and by-laws. Variables from the case studies will be used to interview experts relating to the affordability and potential market of CSPN.
1.4 Methods

A matrix was developed to identify which method could provide data for each FL. Semi-structured expert interviews were further segmented to identify which industries could provide information for each FL. The matrix can be viewed in Table 1.2 Feasibility Matrix.

A Canadian comparison site was selected as the site to analyze in relation to CSPN feasibility. Case studies of existing CSPN were selected and analyzed to compare against the Canadian comparison site and applicable policies and by-laws. Experts were identified and interviewed to address the lenses that could not be addressed through the case studies and comparison site.

1.4.1 Comparison Site

A potential site was required in order to analyze all FL that would pertain to creating a theoretical CSPN in a Canadian context.

1.4.1.1 Selection

To identify a potential site for CSPN in Canada, MoneySense’s annual “Top Places to Live in Canada” rankings were referenced. MoneySense’s 2018 methodology ranks cities across Canada based on ten categories. Economy (20), Affordability (20), Health (11), Weather (10), Commute (10), Crime (7), Taxes (7), Demographics (6), Culture (5), and Amenities (4) for a total of 100 points. Categories are weighted based on what an average person, according to MoneySense, values the most. A comprehensive breakdown of their methodology can be found on their website.
<table>
<thead>
<tr>
<th>Case Studies</th>
<th>Method</th>
<th>Industry</th>
<th>Expert</th>
<th>Qualifications</th>
<th>Feasibility Criteria</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Semi-structured Expert Interviews</td>
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<td>Development</td>
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<td></td>
<td>Architecture</td>
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<td></td>
<td>Co-Housing Consultant</td>
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<tr>
<td>Ian Panabaker</td>
<td>Architect</td>
<td>Planner</td>
<td>Developer</td>
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</tr>
<tr>
<td>Leith Moore</td>
<td>Planner</td>
<td>Developer</td>
<td>Laneway Housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jake Fry</td>
<td>Planner</td>
<td>Developer</td>
<td>Small House BC</td>
<td></td>
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<tr>
<td>Ross Chapin</td>
<td>Architect</td>
<td>Developer</td>
<td>Pocket Neighbourhoods</td>
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<td>Ronaye Matthew</td>
<td>Co-housing Consultant</td>
<td></td>
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<td>Kristopher Stevens</td>
<td>Co-housing Consultant</td>
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</table>
Rankings for the last six years were compiled for any city that ranked in the top 25 within any of those six years and an average was calculated. The top 10 cities according to the average of the last 6 years can be found in Appendix 1: MoneySense’s Top Places to Live in Canada. Ottawa was identified as the top ranked city with an average ranking of 2.67 through this process and therefore became the city from which to select a Comparison Site for the feasibility study.

Inner ring suburbs were identified in the literature as being a pivot point for smart growth strategies through redevelopment and infill projects. They are considered key areas for housing a larger portion of the population in the future for they are located close to city centers and have a low population and built form density (Dunham-Jones & Williamson, 2009; Lee & Leigh, 2005). Therefore, these suburbs became the focus of a search for a potential site.

Ottawa inner ring suburbs were located based on the key indicators identified in literature and a typical neighbourhood, Carlington, was chosen. Carlington is located approximately 7km South West from downtown Ottawa. Six contiguous lots within the Carlington neighbourhood were identified that represented the original development style of inner ring suburbs as indicated in the literature and became the chosen Ottawa comparison site. The Ottawa comparison site encompasses the properties of 180, 184, 188, 192, 196, and 200 Anna Ave, Ottawa, Ontario.
1.4.1.2 Collection

Google Maps was used to do a Streetscape Character Analysis [SCA]. 26 properties, including the six that were selected as the Ottawa comparison site, were included in the SCA. Google Streetview was used to assess the street engagement and number of storeys for houses located on the 26 properties. Screenshots of typical houses and streetscape were captured and included in chapter 3. A completed SCA Form can be found in Appendix 2: Ottawa Streetscape Character Analysis.

Google Earth Pro was used to measure variables such as front yard setback, back yard setback, total lot area, dedicated parking space, and total building footprint. A diagram detailing these can be seen in Figure 1.2.

Provincial Policy was explored using key word searches and relevant excerpts were collected. Keywords used can be found in Table 1.3 Keyword Search Terms.

Table 1.3 Keyword Search Terms

<table>
<thead>
<tr>
<th>Topic</th>
<th>Keywords</th>
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<tr>
<td>Density</td>
<td>Density, Growth, RS1, Population</td>
</tr>
<tr>
<td>Design Guidelines</td>
<td>Carlington, Merivale, General Urban Area, Infill, Redevelopment, Streetscape Character Analysis</td>
</tr>
<tr>
<td>Bylaw</td>
<td>Drainage, Green, Greenspace, Permeable Surfaces, Yard, Landscape, Tree, Zoning, RS1, Offsets, Setbacks,</td>
</tr>
</tbody>
</table>

The Ottawa Official Plan was explored for relevant policies using the keywords in Table 1.3 Keyword Search Terms. The City of Ottawa website was used to identify
other relevant policy and guidelines. A complete list can be found in Table 1.4 Relevant Provincial and Municipal Policy for Ottawa Comparison Site.

Table 1.4 Relevant Provincial and Municipal Policy for Ottawa Comparison Site

<table>
<thead>
<tr>
<th>Policies</th>
<th>By-laws</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merivale Road (North) Community Design Plan (2018)</td>
<td>Tree Conservation By-law 2009-200</td>
</tr>
<tr>
<td>Building better and smarter suburbs: Strategic directions and action plan (2015)</td>
<td></td>
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<tr>
<td>Urban Design Guidelines for Low-rise Infill Housing (2012)</td>
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</table>

The zoning of the Ottawa comparison site was identified and used to identify applicable Municipal by-laws. Keywords, in Table 1.3 Keyword Search Terms, were also used to search the City of Ottawa’s website. No by-law relating to required greenspace was identified through this process.

1.4.1.3 Analysis

The measured variables and relevant policy and by-laws were later compared to established CSPN case studies and in the partial formulation of an estimated cost per unit.
Figure 1.2 SCA Measurements
1.4.2 Case Studies

Case studies allow for the documentation and evaluation of specific phenomena of interest (Marshall & Rossman, 1999). As there are existing CSPN in inner ring suburbs and the intent of this research is to explore the possibility of CSPN infill in an Ottawa inner ring suburb, case study was determined to be one method. Existing CSPN were identified so that their form and function could be evaluated and compared to relevant policy and by-laws. When case studies do not meet required policy and bylaws a brief analysis is provided discussing required design alterations to allow existing CSPN to meet the policy and bylaws, or, if the creation of a new policy/by-law would be required.

1.4.2.1 Selection

Potential case studies were limited to North America due to a need to understand the cultural aspects surrounding the context of the case study. Twenty potential pocket neighbourhood case study sites were identified through Ross Chapin Architect’s website and an additional six case studies were identified through reading publications such as Ross Chapin’s book *Pocket Neighborhoods* (2011) and the City of Portland’s “Infill Design Toolkit” (2008). In total 26 potential case studies were identified. 20 case studies were removed as they did not meet the definition of CSPN, were in non-suburban contexts, or were not published on merit. The remaining six case studies were Greenwood Avenue Cottages, Kirkland, WA, and Danielson Grove, Shoreline, WA designed by Ross Chapin Architects, Hastings Green Cottage Cluster Phase 1 and...
Phase 2, Portland, OR, designed by JDA Architects and Planners, Ravenna Cottages, Seattle, WA, designed by Architect Paul Pierce, and Pine Street Cottages, Seattle, WA.

After the variables were measured and calculated, Ravenna Cottages had a population density that surpassed all other examples and was considered an outlier. Ravenna Cottages’ results were therefore removed from the CSPN average calculations as it did not represent the typical CSPN identified. A conservative estimate was preferred in establishing what a typical CSPN was rather than a liberal estimate that was likely to come into fruition. The measurements and calculations for Ravenna Cottages was included however, in the corresponding tables for the case studies in this study as it does represent what could be possible in the creation of CSPN.

1.4.2.2 Collection

Google Maps Streetview and images found online were consulted to do a SCA for the case studies. The surrounding neighbourhoods were not included in the SCA as the case study CSPN were being compared to the comparison site, not their surrounding neighbourhood.

The surrounding neighbourhoods were included in the collection of measurements as it is important to understand the context when evaluating case studies (Deming & Swaffield, 2011). The case studies were located on Google Earth Pro, where measurements of four variables, the lot size (in ha), total building footprint (in s.m), street frontage (in m) and dedicated parking space (in s.m) were taken. Google Earth Pro measure tool was used to calculate the dedicated parking space, building
footprint and associated lot sizes of the surrounding context of each of the case studies. Landscape identifiers, such as fence and tree lines were used to approximate the associated lot sizes of the neighbouring context. Where no identifier was present, the landscape was viewed at a larger scale to understand where lot divisions were likely to be, i.e extending a fence line from the three contiguous neighbouring properties.

Two more indicators, open common space (in s.m) and population density (ppl/ha), were also calculated. Open green space was calculated by subtracting the total building footprint and dedicated parking space from the total lot size. Population density for each development was calculated by taking information identified in publications about total square footage or number of bedrooms to make an informed estimate about the average number of occupants in a typical cottage. This average was then multiplied by total number of cottages in the development resulting in a total population of the development. Total population of the development was then divided by the total lot size to calculate the people per ha.

Averages for these six indicators, lot size, building footprint, street frontage, dedicated parking space, open green space and population density (ppl/ha), were calculated for comparison to the Ottawa comparison site. To ensure consistency all measurements were done in Google Earth Pro.

1.4.2.3 Analysis

The measured variables were averaged and compared to the variables of the Ottawa comparison site and identified policy and by-laws.
1.4.3 Semi-structured Expert Interviews

The two remaining FL (FL3 and FL4) addressed complex topics that could not be identified through exploring existing CSPN alone. Experts with knowledge relevant to this research are therefore required, therefore semi-structured expert interviews are the second method used (Deming & Swaffield, 2011; Marshall & Rossman, 1999). This method allows for follow-up questions to be asked for clarification or elaboration (Marshall & Rossman, 1999).

Prior to the interview, thematic open-ended questions addressing the FL were established and related to the specific interests and industry of each expert to provide a starting point for the interview (Marshall & Rossman, 1999).

1.4.3.1 Selection

Experts were identified through readings as being key players (Marshall & Rossman, 1999) involved in developing pocket neighbourhoods or other forms of related housing and intentional communities.

Experts were contacted by email, briefly explaining the research and requesting their participation in the form of a semi-structured interview. Four interviews were conducted, two in person, one via video, and one via phone call.
1.4.3.2 Collection

At the beginning of the interview experts were asked if they approved of the conversation being recorded and notified that they could end the interview at any time.

The interviews began by briefly establishing the expert’s credentials and introducing the interviewer. When aspects of an expert’s credentials, beyond what the interviewer knew prior to beginning the interview, were uncovered and were deemed relevant, the interviewer adapted questions to pursue this knowledge.

The interviewer then asked the first open-ended question allowing the expert to answer and direct the conversation as they saw fit. Follow-up questions for clarification or elaboration were asked by the interviewer. When the conversation naturally ended, and if there was still time available, another thematic question was asked. Interviews were limited to a maximum of one and a half hours.

The interviews were recorded using an app on the interviewer’s phone called Otter Voice Notes. Otter was used as it had high reviews in the google app store and is currently being used by UCLA and Western Kentucky University, among others (Otter Voice Notes, n.d.). Otter Voice Notes provided audio transcription of the interview through voice recognition software. Transcriptions were edited for clarity and to ensure they accurately reflected what was said in the interview when the transcription software misinterpreted what it heard.
1.4.3.3 Analysis

The transcriptions from the interviews were then analyzed and coded. Themes relating to the feasibility criteria were identified and consolidated to inform the feasibility lenses.

1.5 Final Evaluation

Case studies were used to evaluate FL1 Policy and FL2 By-laws through comparing the case study averages to the Ottawa comparison site and the relevant policy and by-laws. When case study averages could not meet a portion or all the policies/by-laws it was further discussed to identify what changes would be required to do so.

Case studies and semi-structured expert interviews were used to evaluate FL3 Affordability. A simplified pro forma comprised of information collected through the semi-structured expert Interviews (estimated building and servicing costs) online listings (estimated land value) and City of Ottawa resources (development costs and fees) were used to establish the potential price per unit of creating a CSPN on the selected site. The average building footprint from the case studies was used to establish a theoretical cottage size from which to complete the pro forma. The case studies' average lot to cottage ratio established how many cottages could be built on the Ottawa comparison site.

The potential price per unit was compared to listings in the same neighbourhood to assess the affordability. If the price was not considered comparable for a similar
house, alternative ratios, of units to lot, were explored to identify what ratio would result in a comparable cost if any.

Semi-structured expert interviews were used to evaluate FL4 Market. Experts were questioned regarding the potential of CSPN in a Canadian context. Experts were also questioned regarding potential market trends in housing to establish if there could be interest in the future for CSPN.

Finally, all experts were questioned regarding if there are any other feasibility components not identified that should be included.
2 Literature Review

2.1 Introduction

The focus of this study incorporates a wide variety of topics surrounding housing, population growth, and generational values. This literature review creates a foundation from which to understand the key topics surrounding this research. This literature review is divided into three parts: 1. CSPN 2. Redevelopment 3. Generational Values.

Part 1 discusses Cottage housing and pocket neighbourhoods as well as the components that are foundational to their design. Existing by-laws and related projects that CSPN are based on are identified. Shared outdoor space and places for social interaction are discussed as is the importance of providing affordable housing. The Canadian Housing Strategy is then briefly touched on.

Part 2 discusses the need for redevelopment in inner ring suburbs using smart growth techniques. Precedent projects relating to CSPN in the Canadian context are discussed.

Part 3 addresses generational values, discussing trends that could impact the acceptance of CSPN.

2.2 Part 1. CSPN

2.2.1 Cottage Housing:

Cottage Housing has different connotations depending on what part of North America you are living in, and for this reason it is important to have a set definition. Cottage housing was referenced in municipal codes and literature using three terms,
cottage housing, cottage cluster and cottage housing clusters. The municipal codes and scholarly definitions agree that cottage housing consists of a grouping of between 4 and 12 small single-family homes clustered around a common open space. (Chapin, 2011; Seattle Municipal Code 23.43.012.B.4.; Spokane Municipal Code 17C.110.350; City of Calgary Land Use Bylaw 1P2007 Part 5: Division 1: 365.1 Cottage Housing Cluster). They do not agree upon the size of homes in such developments. We will then use the examples in the book, *Pocket Neighborhoods* (2011), to establish the range in size of cottage housing as the books author, Ross Chapin, has been at the forefront of developing this form of housing. 37 square meters [s.m] (400 square feet [s.f]) is the smallest example of a cottage, while 111 s.m (1,200 s.f) seems to be the upper limit and point where Chapin (2011) seems to differentiate between a cottage and a house. 11 municipalities in the USA were identified as having dedicated cottage court by-laws. Calgary was the only municipality identified in Canada to have a cottage court by-law but no completed developments were identified at this time.

To further dissect the definition of cottage housing, we need to define clustered around a common open space. Most of the bylaws require that a minimum of 50% of houses directly face the common open space with the rest being located within 18 meters (60 feet) of it (Seattle Municipal Code; Spokane Municipal Code; Langley (WA) Municipal Code) while the City of Calgary was the only one identified requiring all houses to face the common open space.
For the purposes of this paper we define cottage housing as: A grouping of 4 to 12 houses between 37 s.m and 111 s.m around a common open space, where more than 50% of units face the common open space.

2.2.2 Pocket Neighborhoods:

Pocket neighborhoods have been defined in Ross Chapin’s book *Pocket Neighborhoods* (2011) as “a cohesive cluster of homes gathered around some kind of common ground within a larger surrounding context” (pg. 10). Shared outdoor space, in the form of a courtyard, alleyway, pedestrian street or joined backyard, designed for people before vehicles are key characteristics of a pocket neighbourhood (Chapin, 2011).

This form of housing is rare rather than new in North America according to Chapin (2011) and is based off the Hofje Almshouses in the Netherlands, The Workingmen’s Cottages in Brooklyn, Letchworth Garden City, London, Sunnyside Gardens, New York and the town of Radburn, New Jersey (Chapin, 2011). Bungalow courtyards in California also have been referenced as having an impact on the contemporary pocket neighbourhood (Chapin, 2011).

2.2.3 Tiny House Movement

The tiny house movement has received increased interest in recent years because of people seeking to live simpler with less material objects in smaller spaces (Ford & Gomez-Lanier, 2017). There are aspects of the tiny house movement that are
realized and support housing developments like CSPN, however CSPN are not part of the tiny house movement.

2.2.4 Shared Outdoor Space

The role shared outdoor space plays in creating community and connecting neighbours is well established by Clare Cooper Marcus. The seven components of successful shared outdoor spaces identified in Clare Cooper Marcus’s article, “Shared Outdoor Space and Community Life” (2003) are 1. houses circle the outdoor space, 2. There are clear thresholds delineating public from private space, 3. Designed at a human scale, 4. Private outdoor space abuts the shared outdoor space, 5. and there are clear boundaries delineating these shared and private areas, 6. The shared space is designed to serve the residents, and 7. The shared areas can vary widely in form but meet the other 6 criteria (Cooper Marcus, 2003).

2.2.5 Social/Psychological Benefits of Good Communities

Cities and municipalities are increasingly aiming to create complete neighbourhoods that can improve resident’s life. Companies and researchers are dedicating their work to help create communities that are live-able and counter the social isolation and loneliness that North American residents are feeling (Happy City, 2017). Happy city is one such company. Happy City is an urban planning, design and architecture consultancy company based out of Vancouver, BC, that conducts research on connections between housing forms, social interactions and wellbeing.
According to Happy City (2017), living alone “is the condition most associated with poor mental health”. Both auto-dependent suburbs and high-density apartments are associated with low levels of neighbourly trust and an unwillingness to socialize with those living next door (Happy City, 2017). Happy City has identified ten principles that decrease social isolation (Happy City, n.d.). These principles are: 1. Doing things together 2. Exposure 3. Tenure 4. Social group size 5. Feeling safe 6. Participation 7. Walkability 8. Nature 9. Comfort 10. Culture and values (Happy City, n.d.). Similarly, cohousing developments (see discussion in 2.3.3.1), which incorporate these principles in practice, if not by name, claim that residents consistently experience an increased sense of community, belonging and lower levels of isolation. (Cohousing Development Consulting, n.d.). Other research has shown that increasing density within the suburbs is associated with healthier living environments (Whittemore & Bendor, 2018).

2.2.6 Affordable Housing:

Housing is considered affordable when the living costs associated with housing (rent, mortgage payments, electrical bills, etc.) costs less than 30% of all members of the house’s monthly income (Canada Mortgage and Housing Corporation [CMHC], 2018; Statistics Canada, 2016; Khashan & Bolden, 2018). The portions of the population that experience unaffordable housing most often are: seniors and women who live alone, recent immigrants, those living in large cities, lone-parents or those who have had a recent change in their family structure (Statistics Canada, 2016).

Housing that is affordable is important as it is the most commonly cited problem of the three measures (affordability, condition and suitability), for acceptable housing
(Statistics Canada, 2016). One’s ability to find acceptable housing is an important indicator, for those in unacceptable housing, “are more likely than those with adequate housing to experience physical and mental health problems” (Statistics Canada, 2016).

There are more benefits associated with acceptable housing than improved health. Innovation, entrepreneurism, and increased creativity are associated with acceptable housing as it allows people to experiment and take chances (Ikeda, 2018). The ability of all people, irrelevant of age, to explore is important (Jane Jacobs in Ikeda, 2018). When people feel financially stressed they are less likely to take chances with their money and therefore be less innovative, opting for established forms of expression, be it business models or art forms (Ikeda, 2018).

2.2.7 Canadian Housing Strategy

The Canadian Housing Strategy is aiming to provide more Canadian’s with affordable housing (CMHC, 2018). CMHC plans on doing this through researching new forms of housing and creating demonstration projects (CMHC, 2018). Their plan targets vulnerable populations first, who they identified as “women and children fleeing domestic violence, seniors, Indigenous peoples, homeless people, people with disabilities, those dealing with mental health and addiction issues, veterans, young adults, racialized groups, and newcomers” (CMHC, 2018). This strategy is a $40-billion plan that will be carried out over 10 years (CMHC, 2018).
2.3 Part 2. Redevelopment

2.3.1 Inner Ring Suburbs:

The role of aging suburban neighbourhoods and the potential they could play in the growth of North American cities is explored in Lee and Leigh’s article “The Role of Inner Ring Suburbs in Metropolitan Smart Growth Strategies” (2005) and Dunham-Jones and Williamson’s book *Retrofitting Suburbia* (2009). Lee and Leigh (2005) synthesized the different terminology used to describe inner ring suburbs in literature. Table 2.1 is a list of the different terms that Lee and Leigh identified as being synonymous with inner ring suburbs. For this paper we will be using the definition they identified. Inner ring suburbs are, “the post-World War II suburbs constructed between 1950 and 1969 for which the primary mode of transportation access has been the automobile” (pg 333. Lee & Leigh, 2005). The mode of transportation is used to differentiate these suburbs from the suburbs built earlier around streetcar transportation.

### Table 2.1 Inner Ring Suburb Terminology

| Terminology identified in Lee & Leigh (2005) synonymous with inner ring suburbs |
|---------------------------------|-------------------------------|
| Inner ring suburbs              | Old suburbs                   |
| Inner suburbs                   | Older inner ring suburbs      |
| Sitcom suburbs                  | Post-World War II suburbs     |
| First suburbs                   | First ring suburbs            |
| First tier suburbs              |                               |
(Lee & Leigh, 2005). These neighbourhoods are often further characterized as being located near city centers, comprised of low-density housing with a low building footprint to lot ratio and being segregated as a result of their reliance upon personal automobiles (Chapin, 2011; Dunham-Jones & Williamson, 2009; Perrin & Grant, 2014). These neighbourhoods often have mature vegetation for many of the trees are the ones planted when these suburbs were first created.

Though a definition has been established, literature suggests that there is no set method for identifying inner ring suburbs based on geographical location alone, therefore they should be identified based upon their physical characteristics along with their physical proximity to city centers (Dunham-Jones & Williamson, 2009; Lee & Leigh, 2005).

Many of these inner ring suburbs have aging infrastructure and will require redevelopment in the coming years (Dunham-Jones & Williamson, 2009). The low population density, proximity to city cores and this need for redevelopment make inner ring suburbs a pivot area when developing smart growth policies (Dunham-Jones & Williamson, 2009; Lee & Leigh, 2005).

2.3.2 Smart Growth:

Smart growth has become a popular term when addressing community development and provincial/municipal growth plans. It has been suggested that smart growth is not all together a new idea, but instead is a repackaged version of previous ideas such as ‘sustainable development’, ‘carrying capacity’ and ‘growth management’
Lee and Leigh (2005) synthesized definitions of smart growth from literature and concluded that there was no one definition being used, however they did identify four main principles addressed in the definitions. The four principles are:

“1. Preserving open space and protecting the quality of the environment. 2. Redeveloping inner core areas and developing infill sites. 3. Removing barriers to urban design innovation in both cities and new suburbs, and 4. Creating a greater sense of community.” (pg 337 Lee & Leigh, 2005)

The underlying goals of these four principles are the densification and revitalization of established communities to create complete neighbourhoods (Dunham-Jones & Williamson, 2009; Lee & Leigh, 2005; Danielsen, Lang, & Fulton, 2010). The Province of Ontario defines a complete community as, “communities that are well designed to meet people’s needs for daily living throughout an entire lifetime by providing convenient access to an appropriate mix of jobs, local services, public service facilities, and a full range of housing to accommodate a range of incomes and household sizes” (pg 10 Province of Ontario, 2017). The aim is to limit distances travelled to both work and retail centers, providing increased housing near where people work, and more employment, retail, and amenities close to home (Dunham-Jones & Williamson, 2009).

The goals of complete neighbourhoods seem to align with the benefits associated with increasing suburban population density: healthier living environments, more walkable streets and community character, and an increase in cultural vitality.
Denser suburban communities are also associated with benefits for local governments through greater financial stability (Whittemore & Bendor, 2018).

2.3.3 Community Focused Development Precedent

Although no CSPN have been identified as having been developed within Canada yet, there are a few precedent movements that we can look to, to see how related developments have been created. The Canadian cohousing movement and the introduction of both accessory dwelling units and cottage housing cluster by-laws in major Canadian cities can provide some insights.

2.3.3.1 Cohousing Movement

Cohousing communities are intentional communities focused on a social home environment (Canadian Cohousing Network, n.d.). The Canadian Cohousing Network describes cohousing on their website as, “neighbourhoods that combine the autonomy of private dwellings with the advantages of shared resources and community living” (Canadian Cohousing Network, n.d.). 10 to 35 self-contained homes or apartments, usually privately owned, are clustered around a communally owned amenity area/building where regular communal meals occur (Canadian Cohousing Network, n.d.; McCamant & Durrett, 2011). Residents are involved in all aspects of design, creation, maintenance and management of their community (Canadian Cohousing Network, n.d.). Shared resources can range from utilities, like washers and dryers, to tools and cars (Canadian Cohousing Network, n.d.).
Cohousing communities are either set up as a strata title or a condominium (Allderdice, 2016). Condominiums and strata titles are set up, so residents have ownership of their individual unit, while the remainder of the property is shared ownership in the form of a corporation (Strata Community Association, n.d.). Across the majority of Canada there is no difference between the terms condominium and strata, however in Alberta and BC the slight difference is that townhouses are set up as a strata, not a condo (Government of British Columbia, n.d.).

According to the Canadian Cohousing Network there have been approximately 160 communities created in North America since 1991 with another 100 in development. 14 cohousing communities have been completed in Canada, the only one in Ontario is located in Ottawa (located 4.6 km away from the study site), the rest are located in Saskatchewan (1), Alberta (2), and BC (10) (Canadian Cohousing Network, n.d.). Two of the 22 cohousing communities currently in the development stages are planned for Ottawa, Ontario (Canadian Cohousing Network, n.d.). This shows there is a precedent for community focused housing being created.

2.3.3.2 Accessory Dwelling Units

Many Canadian cities are allowing the creation of Accessory Dwelling Units (ADUs) for which there are several terms being used including: backyard cottages, granny-flats, laneway houses, and in-law apartments (Koones, 2019). Though the bylaws surrounding such units differ from city to city, there are a few typical consistencies: the new unit must meet the existing building codes of the lot, cannot be separated from the lot and a minimum and maximum livable area must be met (Koones,
In the Ottawa context this livable area is measured as the lesser of 40% of rear yard, 40% of existing house’s footprint, or 80 s.m (861 s.f) (Planning, Infrastructure and Economic Development Department, 2017). There is a precedent for incorporating multiple detached units onto a property as well as allowing the creation of smaller sized units.

**2.3.3.3 Cottage Clusters**

Municipalities across Canada are beginning to explore the potential of allowing CSPN. The City of Calgary introduced Cottage Housing Clusters in their zoning bylaws in 2007 (City of Calgary Land Use Bylaw 1P2007 Part 5: Division 1: 365.1 Cottage Housing Cluster). McBride, BC, completed a feasibility study in 2017 to establish if pocket neighbourhoods would meet the town’s goals, the result of which was that the city, “creates a Residential Pocket Neighbourhood Zone (RPN) to enable Cottage Cluster Housing” (pg 4 McBride’s CASE Homes Feasibility Study, 2017). The City of Coquitlam, BC, also identified CSPN’s as a potential form of residential intensification in a 2008 study on housing choices (Ramsay Worden Architects, 2008).

**2.4 Part 3. Generational Values**

There seems to be an ongoing change in generational values that may not be represented in the housing market yet. There are few to no indicators identified within housing market literature to suggest that this change is currently taking place, however there are other trends occurring that may provide some insights. These are: the rise of the Yes in My Backyard [YIMBY] movement to counter the Not in My Backyard [NIMBY] voices, the expansion of the shared economy, and the rise of cohousing.
2.4.1 YIMBY/NIMBY:

Historically NIMBYism has been a loud voice in opposition of any sort of development that was perceived as negatively affecting an established neighbourhood (Driscoll, 2013). But recently another movement has begun to rise to oppose the NIMBY movement, the YIMBYs.

The YIMBY movement has primarily been supported by millennials with increased interest from other younger generations, while NIMBYism has primarily seen support from older established homeowners (Khashan & Bolden, 2018). Previously lines between those in support of YIMBY and those in support of NIMBY were clearly associated with generational divides, however more recently this is beginning to blur as some members of the baby boomer generation want their kids to be able to live nearby and so are supporting the YIMBY cause (Khashan & Bolden, 2018).

The NIMBY phenomenon supports the preservation, and continuation of the previously established (Ikeda, 2018), which, in the context of housing, is the large backyard, detached suburban house, while the YIMBY movement supports affordable homes created through denser neighbourhoods and more flexible zoning (Khashan & Bolden, 2018).

The subject of affordable housing is a sensitive issue, for it pits two voices against each other. On the one side established homeowners are either likely to not view affordability as an important issue (Whittemore & Bendor, 2018) or are more concerned with not wanting their homes price to decrease as a result of an increase in
available housing or of proximity to ‘less desirable’ forms of housing (Ikeda, 2018). On the other side, potential homeowners can be priced out of the market as a result of either the limited supply of existing housing, driving up the price, or limiting zoning by-laws that result in high costs of development (Ikeda, 2018). One group wants to keep the value of their house, while the other cannot afford it.

2.4.2 Shared Economy:

Literature on the shared economy points out that the trend towards shared resources is on the rise, and that people who may previously have viewed using a collective resource negatively may be more open to doing so now (Cohen & Kietzmann, 2014). There could be different reasons for this rise. For example, someone’s participation in the shared economy may be a result of their need to make a dollar go farther, doing it out of necessity (Nica & Potcovaru, 2015; Novikova, 2017). Others may be participating because of an increased awareness of their environmental footprint (Cohen & Kietzmann, 2014; Novikova, 2017). This shows that a cultural shift may be underway as more people are participating in the shared economy.

Another cultural change implicit in the shared economy is a greater willingness to trust strangers. The shared economy relies on strangers mutually consuming selected resources even though there is no guarantee of an established code of conduct like there is when sharing resources within one’s community circle (Novikova, 2017). People are becoming more willing to rely on people outside of their community (Novikova, 2017).
Beyond how the shared economy is impacting culture, it is suggested by Cohen and Kietzmann (2014) that this enhanced version of sharing, facilitated through the internet, may be shifting how economies operate.

2.4.3 Cohousing

The increased interest in cohousing (section 2.3.3.1) shows that people are seeking different things from housing beyond what has historically been created. Further, different generations may be more open to unconventional housing that is currently rarely represented within the housing market.

2.5 Conclusion

The literature review presents a foundation for establishing what a CSPN is. The fundamental design aspects of CSPN are then situated within the literature through exploring the importance of creating housing that has both shared outdoor space and places for social interaction while remaining affordable.

This information combined with the literature on deteriorating inner ring suburbs and the opportunity for smart growth presents the potential that CSPN has in redeveloping such areas. Precedent projects that are related to CSPN are discussed to establish that it is possible that such developments could be created in the Canadian context.

Changing generational values were then explored by examining the generations that support YIMBY/NIMBY, the rise of the shared economy, and the cohousing movement. This was used to establish that different generations may value alternative
things in the places they choose to live that are not represented in conventional housing.
3 Ottawa Comparison Site

The six selected lots on Anna ave, deemed, the Ottawa comparison site, are zoned R1S and identified as General Urban Area according to City of Ottawa Official Plan – Schedule B – Urban Policy Plan. The total area of the six lots is 0.38 ha.

3.1 Location

The Ottawa comparison site is in the Carlington neighbourhood. It is located south west of the downtown center (Image 3.1). The Ottawa comparison site and surrounding Streetscape Character Analysis (SCA) area is in the north east quadrant of the Carlington neighbourhood (Image 3.2). The SCA area is comprised of 26 properties including the six lots selected as the Ottawa comparison site (Image 3.3).
Image 3.2 Carlington Neighbourhood

Carlington Neighbourhood

Mervale Road

SCA Area

Source: Google

Image 3.3 Ottawa Comparison Site and SCA Area

Ottawa comparison site

Anna Ave

SCA Area

Admiral Ave

Source: Google
3.2 Streetscape Character Analysis

A SCA is required by the City of Ottawa for redevelopment in an existing neighbourhood. They require the closest 21 houses to be assessed according to three variables: Front yard character, access and parking character, and main door character. Further the Ottawa Official Plan establishes front yard and rear yard setbacks for redevelopment and infill projects according to the prevailing character of an existing character.

A SCA was done for the 26 Houses seen in Image 3.3 (including the six that make up the Ottawa comparison site). The completed Ottawa SCA can be found at Appendix 2: Ottawa Streetscape Character Analysis. A summarized version can be found in Table 3.1 Ottawa Comparison Site Streetscape Character Analysis Summary

15 of the 26 analyzed houses were 2 storeys, 10 were single storey and one house was a two storey with an obvious basement.

All 26 houses had a building entrance that faced the street.
All houses except one had driveways accessed from Anna avenue. The lone house was located on the corner and had a driveway off the other street – Admiral Ave. 18 houses had a shared doublewide driveway with the neighbouring property (Image 3.6). These shared double wide driveways were located at the property line and split between the two properties. Five houses had a single driveway. Two houses had double wide driveways located completely on their lot.

22 of the 25 houses with driveways accessed via Anna Avenue, had driveways that ran at least to the back of the house, 10 continued beyond, terminating at a garage located behind the house. The remaining three driveways terminated either at the front of the house or between the front and back of the house.

22 of the 26 houses had landscaping across the entire front of the house. Three houses had partial landscaping in front of the house, as the driveway was either widened to allow parking both beside and in front of
### Table 3.1 Ottawa Comparison Site Streetscape Character Analysis Summary

<table>
<thead>
<tr>
<th>SCA</th>
<th>Number of Storeys</th>
<th>Street Engagement</th>
<th>Parking Pattern</th>
<th>Parking Access</th>
<th>Landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna Ave</td>
<td>Both single and two</td>
<td>All entrances visible from street</td>
<td>On-site and off-site</td>
<td>Overwhelmingly Single Access per house</td>
<td>Overwhelmingly landscaping in front house</td>
</tr>
</tbody>
</table>

### Table 3.2 Ottawa Comparison Site Variable Measurement Results

<table>
<thead>
<tr>
<th>SCA</th>
<th>Total Combined Lot Sizes (ha)</th>
<th>Frontage average (m)</th>
<th>Front Yard Setback average (m)</th>
<th>Rear Yard Setback average (m)</th>
<th>Total Houses</th>
<th>Population Density (ppl/ha)</th>
<th>East Carlington Pop. Dens. (ppl/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna Ave</td>
<td>1.59</td>
<td>16.6</td>
<td>10.2</td>
<td>16.6</td>
<td>26</td>
<td>33.85</td>
<td>74.04</td>
</tr>
</tbody>
</table>

### Table 3.3 Ottawa Comparison Site Conditions Ratios

<table>
<thead>
<tr>
<th>SCA</th>
<th>On-Site Parking Area to Lot Ratio Area</th>
<th>On-Site Building Footprint to Lot Ratio</th>
<th>On-Site Greenspace to Lot Ratio</th>
<th>Neighbourhood Context Pop. Dens. to Population Density Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna Ave</td>
<td>0.11</td>
<td>0.14</td>
<td>0.75</td>
<td>0.46</td>
</tr>
</tbody>
</table>
the house, or the driveway was entirely located in front of the house. One house was landscaped from lot line to lot line, as the driveway was located on another street. 23 houses had driveway width that was less than 33% of the lot width. 1 house had a driveway width that was between 33% and 50% of the lot width and 1 house had a driveway width that was wider than 50% of the lot.

3.3 Ottawa Comparison Site Measurements

The 26 houses used for the SCA were also used to calculate other variables such as total lot area, total parking area, total building footprint, lot frontage, front yard and rear yard setbacks, and population density. Results for these variables can be found in Table 3.2 Ottawa Comparison Site Variable Measurement Results and ratios comparing the built form to lot area can be found in Table 3.3 Ottawa Comparison Site Conditions Ratios.

Total lot space of all 26 lots was 1.59 ha (15,900 s.m). The total dedicated parking space of all lots was 1,687 s.m. The total building footprint of all houses was 2,210 s.m. The total open greenspace was 12,000 s.m.

The average street frontage was 16.56 m. The average front yard setback was 10.23 m and the average rear yard setback was 16.60 m.

The population density was calculated by using a census mapping tool to find the population and then dividing by the associated tract of land. Information was used from the 2016 Canada Census, found at censusmapper.ca. The population for east
Carlington (East of Merivale Road) is approximately 74.04 ppl/ha. There were 34 tracts measured, and the tract associated with the study site was the 5th least dense tract at 33.85 ppl/ha. Tracts ranged from 23.81 ppl/ha to 220.58 ppl/ha. The 220.58 ppl/ha tract was an anomaly as it was the only tract in the east Carlington neighbourhood that had apartment buildings. Removing this tract from the east Carlington average resulted in a population density of 62.62 ppl/ha. Three of the other top 5 least dense tracts were abutting tracts to the one containing the Ottawa comparison site (Image 3.8).
4 Case Studies

The five selected existing CSPN, deemed, the case studies, were located in the states of Oregon and Washington, USA.

4.1 Streetscape Character Analysis

A SCA was done for the five selected case studies. The summarized results can be found in Table 4.1 Case Study Character Analysis Summary.

Two case studies comprised of only single storey buildings. The other three case studies had a mixture ranging between single and two storey buildings.

Three case studies had entrances visible from the street (Image 4.1). One case study had no entrances visible from the street, and one case study could not be viewed from public streets as it had a private laneway that was not accessible from Google Map’s Streetview. Cottages were separated from streets by vegetation (Image 4.2).
### Table 4.1 Case Study Character Analysis Summary

<table>
<thead>
<tr>
<th>CSPN</th>
<th>Number of Storeys</th>
<th>Street Engagement</th>
<th>Parking Pattern</th>
<th>Parking Access</th>
<th>Landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danielson Grove</td>
<td>Single and one and a half</td>
<td>No entrances visible from street</td>
<td>On-site and street</td>
<td>Single access and two private driveways</td>
<td>Landscape buffer between units and street</td>
</tr>
<tr>
<td>Greenwood Avenue Cottages</td>
<td>Single</td>
<td>Unknown</td>
<td>On-site</td>
<td>Single access through private laneway</td>
<td>Unknown</td>
</tr>
<tr>
<td>Hastings Green Cottage Phase 1</td>
<td>Single and Two</td>
<td>Entrances Visible from Street</td>
<td>On-site and street</td>
<td>Single access</td>
<td>Landscaped fronts of units</td>
</tr>
<tr>
<td>Hastings Green Cottage Phase 2</td>
<td>Single and Two</td>
<td>Entrances Visible from Street</td>
<td>On-site and street</td>
<td>Single access</td>
<td>Landscaped fronts of units</td>
</tr>
<tr>
<td>Pine Street Cottages</td>
<td>Single</td>
<td>Entrances Visible from Street</td>
<td>On-site and street</td>
<td>Single access</td>
<td>Landscaped fronts of units</td>
</tr>
<tr>
<td>Ravenna Cottages</td>
<td>Two</td>
<td>Entrances visible from side of unit</td>
<td>On-site and street</td>
<td>Laneway access</td>
<td>Landscaped fronts of units</td>
</tr>
<tr>
<td>Case Study Average*2</td>
<td>Both Single and Two</td>
<td>Entrances primarily visible from street</td>
<td>On-site and street parking</td>
<td>Primarily single access</td>
<td>Landscaping between units and street</td>
</tr>
</tbody>
</table>
Case studies typically used a combination of on-street and on-site parking. Greenwood Avenue Cottages only used on-site parking via a newly developed private alleyway (Image 4.3). Four of the five case studies provided on-site parking in the form of private garages (Image 4.4), while Pine Street Cottage provided on-site outdoor parking for the development.

Case studies on-site parking access was primarily via a single point. Danielson Grove had an additional two private entries off the street in addition to a single access point to the developments on-site parking.

All case studies had landscape areas between the cottages and the streets.

4.2 Case Study Measurements

The five case studies were measured for the same variables in 3.3 Ottawa Comparison Site Measurements. The summarized results can be seen in Table 4.2 Case Study Variable Measurement Results.
Their built forms can be seen in (Figure 4.1 - Figure 4.5).

The lot size average was 0.36 ha ranging from 0.52 ha at Danielson Grove to 0.21 ha at Pine Street Cottages.

The frontage average was 52m Ranging from 60m at Danielson Grove to 43m at Pine Street Cottages.

The front yard setback average was 7.1m ranging from 10.3m at Danielson Grove to 5.3m at Hastings Green Cottage Phase 2. The rear yard setback average was 2.6m ranging from 2.0m Hastings Green Cottage Phase 1 to 3.0m at Greenwood Avenue Cottages. The side yard setback average was 2.8m ranging from 2.0m at Hastings Green Cottage Phase 1 to 3.8m at Pine Street Cottages. These measurements can be seen in Table 4.3 Case Study Setbacks.

The total cottages average was 10. Ranging from 8 at Greenwood Avenue Cottages to 13 at Hastings Green Cottage Phase 2.
The total development population average was 19.0, ranging from 15 at Pine Street Cottages to 26 at Hastings Green Cottage Phase 2.

The population density of the case studies averaged 56.0 ppl/ha, ranging from 34.6 ppl/ha at Danielson Grove to 71.4 ppl/ha at Pine Street Cottages.

The population density for the case study’s corresponding neighbourhood was calculated by locating each case study on statisticalatlas.com, a mapping website that provides information from the 2010 US Census. The block group level and the specific block level data was located. A corresponding people per square mile of land number was identified and converted into a ppl/ha for comparison purposes.

The population density at the block group level of each case study averaged 26.7 ppl/ha ranging from 2.92 ppl/ha in the neighbourhood of Greenwood Avenue Cottages to 56.96 ppl/ha in the neighbourhood of Pine Street Cottages (Statistical Atlas, 2018).
The population density at the block level of each case study averaged 29.4 ppl/ha, ranging from 21.48 ppl/ha of the block containing Greenwood Avenue Cottages to 42.13 ppl/ha in the block containing Pine Street Cottages (Statistical Atlas, 2018).

The population density ratio (population density block group level/population density of case study) at the block group level averaged 4.7, ranging from Pine Street Cottages housing 1.25 times the ppl/ha of the total corresponding block group to Greenwood Avenue Cottages housing 15.25 times the ppl/ha of the total corresponding block group (Table 4.4).

The population density ratio (Population density block level/population density of case study) at the block level averaged 1.9, ranging from Danielson Grove housing 1.47 times the ppl/ha of the corresponding block to Hastings Green Cottage Phase 1 housing 2.16 times the ppl/ha of the corresponding block.

### 4.3 Conclusion

The five case studies varied largely in many of the variables measured. The
results of the case study character analysis (Table 4.1) and the front yard and rear yard setbacks found in the case study setbacks (Table 4.3) are the greatest indicators to be used when comparing existing CSPN to the policy and by-laws of the Ottawa comparison site (FL 1 and 2, Chapter 6). Results found in the case study variable measurements (Table 4.2) will be used for exploring the affordability and potential market of CSPN (FL 3 and 4, Chapter 6).
Table 4.2 Case Study Variable Measurement Results

<table>
<thead>
<tr>
<th>CSPN</th>
<th>Lot Size (ha)</th>
<th>Frontage (m)</th>
<th>Total Cottages</th>
<th>Lot to Cottage Ratio (Lot size/Total Cottages)</th>
<th>Cottage Size (s.m or # of bedrooms)¹</th>
<th>Estimated Average Population per Unit</th>
<th>Total Development Population (Cottages * Est. Ave. Pop.)</th>
<th>Population Density (ppl/ha)</th>
<th>Context Pop. Dens. – Block Group (ppl/ha)</th>
<th>Context Pop. Dens. – Block (ppl/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danielson Grove Cottages</td>
<td>0.52</td>
<td>56</td>
<td>9</td>
<td>0.058</td>
<td>1 and 2</td>
<td>2</td>
<td>18</td>
<td>34.6</td>
<td>14.45</td>
<td>23.53</td>
</tr>
<tr>
<td>Greenwood Avenue Cottages</td>
<td>0.36</td>
<td>60</td>
<td>8</td>
<td>0.045</td>
<td>71 to 92</td>
<td>2</td>
<td>16</td>
<td>44.4</td>
<td>2.92</td>
<td>21.48</td>
</tr>
<tr>
<td>Hastings Green Cottage Phase 1</td>
<td>0.31</td>
<td>48</td>
<td>10</td>
<td>0.031</td>
<td>1 and 2</td>
<td>2</td>
<td>20</td>
<td>64.5</td>
<td>29.55</td>
<td>29.87</td>
</tr>
<tr>
<td>Hastings Green Cottage Phase 2</td>
<td>0.40</td>
<td>53</td>
<td>13</td>
<td>0.031</td>
<td>1 and 2</td>
<td>2</td>
<td>26</td>
<td>65.0</td>
<td>29.55</td>
<td>30.22</td>
</tr>
<tr>
<td>Pine Street Cottages</td>
<td>0.21</td>
<td>43</td>
<td>10</td>
<td>0.021</td>
<td>37</td>
<td>1.5</td>
<td>15</td>
<td>71.4</td>
<td>56.96</td>
<td>42.13</td>
</tr>
<tr>
<td>CSPN</td>
<td>Lot Size (ha)</td>
<td>Frontage (m)</td>
<td>Total Cottages</td>
<td>Lot to Cottage Ratio (Lot size/ Total Cottages)</td>
<td>Cottage Size (s.m or # of bedrooms)</td>
<td>Estimated Average Population per Unit</td>
<td>Total Development Population (Cottages * Est. Ave. Pop.)</td>
<td>Population Density (Persons per ha)</td>
<td>Context Pop. Dens. – Block Group (ppl/ha)</td>
<td>Context Pop. Dens. – Block (ppl/ha)</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>--------------</td>
<td>----------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------</td>
<td>----------------------------------------</td>
<td>------------------------------------------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Ravenna Cottages</td>
<td>0.12</td>
<td>32</td>
<td>9</td>
<td>0.013</td>
<td>79 to 83</td>
<td>1.5</td>
<td>13.5</td>
<td>112.5</td>
<td>36.53</td>
<td>69.55</td>
</tr>
<tr>
<td>Case Study Average(^2)</td>
<td>0.36</td>
<td>52</td>
<td>10</td>
<td>0.036</td>
<td>-</td>
<td>1.9</td>
<td>19.0</td>
<td>56.0</td>
<td>26.7</td>
<td>29.4</td>
</tr>
</tbody>
</table>

1 As found in the publication.

2 Average created without Ravenna Cottages numbers included as it had a population density that largely surpassed all other examples.
Table 4.3 Case Study Setbacks

<table>
<thead>
<tr>
<th>CSPN</th>
<th>Front Yard (m)</th>
<th>Rear Yard (m)</th>
<th>Side Yard (m)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danielson Grove</td>
<td>10.3</td>
<td>2.5</td>
<td>2.5</td>
<td>Corner lot with laneway</td>
</tr>
<tr>
<td>Greenwood Avenue Cottages</td>
<td>na</td>
<td>3.0</td>
<td>3.0</td>
<td>Private laneway through existing property</td>
</tr>
<tr>
<td>Hastings Green Cottage</td>
<td>5.9</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hastings Green Cottage</td>
<td>5.3</td>
<td>3.0</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine Street Cottages</td>
<td>6.8</td>
<td>-</td>
<td>3.8</td>
<td>Corner lot</td>
</tr>
<tr>
<td>Ravenna Cottages</td>
<td>6.6</td>
<td>0</td>
<td>1.5</td>
<td>Back units at property line/laneway</td>
</tr>
<tr>
<td>Case Study Average¹</td>
<td>7.1</td>
<td>2.6</td>
<td>2.8</td>
<td></td>
</tr>
</tbody>
</table>

1. Case Study Average calculated.
Table 4.4 Case Study Site Conditions to Context Ratios

<table>
<thead>
<tr>
<th>CSPN</th>
<th>On-Site Parking Area to Lot Ratio</th>
<th>Off-Site Parking Area to Lot Ratio</th>
<th>On-Site Building Footprint to Lot Ratio</th>
<th>Off-Site Building Footprint to Lot Ratio</th>
<th>On-Site Greenspace to Lot Ratio</th>
<th>Off-Site Greenspace to Lot Ratio</th>
<th>Off-Site Population Density – Block to Onsite Population Density Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danielson Grove</td>
<td>0.10</td>
<td>0.09</td>
<td>0.19</td>
<td>0.17</td>
<td>0.71</td>
<td>0.74</td>
<td>1.47</td>
</tr>
<tr>
<td>Greenwood Avenue Cottages</td>
<td>0.21</td>
<td>0.09</td>
<td>0.21</td>
<td>0.14</td>
<td>0.57</td>
<td>0.78</td>
<td>2.07</td>
</tr>
<tr>
<td>Hastings Green Cottage</td>
<td>0.11</td>
<td>0.07</td>
<td>0.30</td>
<td>0.22</td>
<td>0.58</td>
<td>0.71</td>
<td>2.16</td>
</tr>
<tr>
<td>Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hastings Green Cottage</td>
<td>0.10</td>
<td>0.05</td>
<td>0.35</td>
<td>0.18</td>
<td>0.55</td>
<td>0.77</td>
<td>2.15</td>
</tr>
<tr>
<td>Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine Street Cottages</td>
<td>0.15</td>
<td>0.08</td>
<td>0.23</td>
<td>0.24</td>
<td>0.62</td>
<td>0.68</td>
<td>1.70</td>
</tr>
<tr>
<td>Ravenna Cottages</td>
<td>-</td>
<td>0.05</td>
<td>0.36</td>
<td>0.24</td>
<td>0.64</td>
<td>0.71</td>
<td>1.62</td>
</tr>
<tr>
<td>Case Study Average¹</td>
<td>0.14</td>
<td>0.08</td>
<td>0.26</td>
<td>0.19</td>
<td>0.61</td>
<td>0.74</td>
<td>1.91</td>
</tr>
</tbody>
</table>

¹ Average created without Ravenna Cottages numbers included as it had a population density that largely surpassed all other examples.
5 Semi-structured Expert Interview Results

5.1 Introduction

Ian Panabaker, Leith Moore, Ross Chapin, and Chris Stevens were the subject of the semi-structured interviews.

Ian Panabaker worked as an architect for 10 years before working as an urban designer, heritage planner, and for the downtown renewal department at the City of Guelph. He now works for a development company focused on infill and intensification.

Leith Moore graduated from the University of Waterloo Planning School, before working for a development company for over 30 years. He has since started three companies involved in housing development/management. He was/is the chair of Evergreen, Ontario Homebuilders, and Toronto Homebuilders. He has also been on provincial panels for the Growth Plan and the Greenbelt Growth Plan. He is currently running a development company specializing in premade panelized homes.

Ross Chapin is an architect specializing in pocket neighbourhoods. He co-developed 6 pocket neighbourhoods and has gone on to design/consult on countless projects.

Richard Stevens has studied development and sustainability doing field work internationally. He did his masters at York University in Sustainable Energy and community planning. He ran the Ontario Sustainable Energy Association and currently runs two consulting companies. His cohousing consulting business has been operational for three years.
The following represents the information identified by experts in the semi-structured interviews. The interviews were transcribed and coded according to themes. Excerpts were taken from all interviews and consolidated into a single document arranged by theme. Opinions were summarized and presented in five overarching topics: Inner ring suburbs, market, construction costs, limitations and opportunities.

5.2 Inner Ring Suburbs

Moore identified the inner ring suburbs around Toronto as an area where there is a density gap that should be redeveloped. Panabaker confirmed this in the Guelph context as the city had previously identified the subdivisions developed in the 1950s and 60s as places that infill could happen as opposed to the higher density subdivisions created more recently. They were both concerned about the cost of land in such areas.

5.3 Market

Chapin and Panabaker agreed that CSPN would be for singles, young families, and empty nesters. Chapin went on to identify CSPN as a place for single-parent families and widows/widowers.

However, limitations in the size of those market segments were expressed. For example, Panabaker said the parking structure and house size of CSPN will attract a narrow segment of the market. Moore was more optimistic suggesting from experience that half the market does not require an attached

“50% of people said, ‘... if I can't walk from my car into the house and not be rained on and put my groceries down. I'm never buying a house.’”

- Moore
garage. Moore also suggested that the market for a 600 s.f house is a niche, but that there is considerable interest in a 1,200 to 1,600 s.f house. Chapin said they built their first CSPN speculatively for they did not want potential homeowners to dictate their need for conventional forms like attached garages.

Chapin and Moore suggest that the market may be growing as people look for alternative ways to live. Chapin and Stevens believe that a cultural shift is occurring as people are looking for more from their housing; a return to the historical version of community, where community is a proximity-based support system where one can count on one’s neighbours.

Chapin said that the CSPN that he developed in the US was met with considerable interest, and that he is approached almost daily to consult on new CSPN projects. Chapin also stated that he has received interest in his work internationally including, Canada, England and New Zealand. Moore suggested that it is difficult to compare the US and Canadian markets for there are different expectations for housing.

Panabaker suggested that in Canada, initial CSPN would be the result of a community taking it on, rather than a developer building it speculatively. Moore confirmed this, suggesting that developers are hesitant to develop an unconfirmed model, and co-housing groups, who traditionally self-develop their communities, would be the place to start.

“But if we just build more of the same old stuff, it's too expensive, and the market is really cratered.”
- Moore
Stevens suggests that interest in cohousing is growing and will likely become more prominent as people begin to realize the benefits of community living.

5.4 Construction Costs

Panabaker suggested that land value typically accounts for ¼ of the total cost of conventional development and that CSPN would likely be similar. Moore mused that a 3:1 unit to lot ratio may be needed to keep the land costs low enough to make CSPN viable. He also emphasized the importance of avoiding creating new roads, due to added costs, instead finding areas where roads/laneways exist allowing a CSPN development to be dropped on site.

Moore who runs a development company that creates a pre-manufactured paneled laneway unit, called the V2, suggested that custom lane-way homes would cost $500 a s.f and that building in a replicable style would allow costs to remain low. Chapin and Stevens confirmed that custom units are to be avoided in order to keep costs low, instead suggesting using high quality materials but build simpler. Moore suggested that repeatability is key. For example, using the V2 for a CSPN development would keep costs in the range of $280-$350 per s.f and reduce typical costs of conventional building such as consultants and waste.

Moore suggested that it would likely cost $10,000 per unit for services, and that it would be ideal to run the property as a land element condo limiting the number of hook-ups required. Chapin offered the same insight stating that through developing as a
condo up-front costs can be shared across multiple units as compared to conventional detached houses.

5.5 Limitations

The following are the limitations expressed by the experts in the semi-structured interviews as they related to CSPN.

5.5.1 Density Versus Conventional Housing

Panabaker suggested that conventional housing can provide the same number of units as CSPN for they can come with a variety of units built in such as: basement apartments, granny flats, backyard cottages, etc. He did however suggest that CSPN may be a better more honest version of it.

5.5.2 Unfamiliarity and Opposition

Each expert would expect opposition from municipal workers and the community to CSPN.

Panabaker said that it may require educating municipal workers for two reasons: 1. to show planners that CSPN does meet open greenspace requirements, just not in the typical way, and 2. to sell fire departments on the fact that all units can be accessed even though CSPN does not have driveway access to every unit. Chapin similarly stated that he uses every meeting as an

“we see every public meeting as an opportunity for communication.”

- Chapin
opportunity to educate not only municipal staff but also the neighbourhood audience that came to the meeting.

Moore has seen municipal planners and councilors be more in favour of his unconventional developments both because of the likelihood of not needing to go through a re-zoning process and of the speed that they could build their pre-manufactured panel homes. Stevens has seen similar situations as the Vancouver Co-housing group received their approvals faster than any other development because of having the community behind it already.

Panabaker thought that neighbours would likely be unfamiliar with CSPN and therefore oppose them because of the smaller side and rear yard setbacks created by such a development. Chapin and Stevens suggested this is true at the beginning of many projects and is a result of neighbours not understanding what is trying to be achieved with such developments or a fear that their voice will not be heard.

Chapin and Stevens stated that once the community is educated, and their concerns are heard, communities quickly become advocates of such developments. Panabaker thought this might be the case as CSPN matches the size and character of many existing neighbourhoods.

Chapin and Moore elaborated on character as they both suggested that the unit facades can be done in any form, matching the existing neighbourhood; making

“When we are working with (the local vernacular) it helps with people who are resistant. It softens the entry for them.”

- Chapin
buildings feel like they have been in the neighbourhood forever goes a long way in getting the communities support.

Moore suggested that using building techniques that minimized the impact and disruption in an established neighbourhood would also go a long way in gaining support from neighbours.

5.5.3 Price Point Comparison

Both Panabaker and Moore expressed concern about the affordability aspect of CSPN. If the per unit cost of a cottage was comparable to the market value of conventional detached houses, Panabaker and Moore thought it would be tough to convince potential homebuyers to save a fraction of the total price for half the house and half the land. It may be a better house, but the value of the common space is not part of their assessment suggests Chapin.

5.5.4 Financing

Panabaker and Moore suggested that it would be difficult to get a developer to buy into the CSPN model at this time especially because typical financing would be tough/expensive to secure. They both suggested that banks rarely see the value in small development until its complete. Panabaker suggested that a mortgage for a detached unit without parking right beside it would not come from the typical big banks.

Panabaker and Moore agreed that financing rules are archaic and slow movement is beginning to be seen, which may open options for less conventional forms of housing.
5.5.5 Municipal Costs

Panabaker and Moore identified the Development Costs [DC] as being one of the biggest hindrances to CSPN, as municipalities charge these on a per unit basis. Conventional housing allows these to be spread across the total s.f and have a smaller impact. Moore suggested that changing DC to a per s.f basis would make CSPN much more feasible from a price point perspective. Chapin confirmed this stating that municipal fees are stacked against small house developments.

Moore suggested that it may be possible to work with municipalities to get units in a CSPN to be classified under a different category for DC therefore alleviating some of the cost.

Panabaker also identified parkland dedication costs as being something that would likely have a large impact on the per unit price.

5.5.6 Condominiums

The community ownership aspect came up in interviews a few times with opposing views.

Panabaker suggested that CSPN would have a condo ownership that would likely be too small, requiring everyone to participate. He suggested that condos consisting of larger groups (500 people) become easier to run as those who want to be
involved can be, and those who want to carry on with their daily life can do so too. Large condominiums can be run as businesses.

Stevens suggested that smaller condo ownership structures are better as larger ones are overly bureaucratic, disconnected. He suggested that smaller groups (under 40 people) can more effectively manage themselves. Time and resources are required to aid in self-governance, nonviolent communication, and consensus decision making, as with larger condos, but its more effective with smaller groups.

Moore talked about condo ownership from a legal standpoint suggesting that the USA has more freedom to have different forms of shared ownership as people are bound to their responsibilities under civil law. In Canada this is not the case so condominium ownership is the default, even though he suggested they are less than optimal.

5.6 Opportunities

The following are the opportunities expressed by the experts in the semi-structured interviews.

“This is about creating those kind of small scale communities that I think people want.”

- Chapin

5.6.1 Contrary to Conventional

Moore, Stevens and Chapin all suggested that the conventional housing forms are not working for the entire population. People
are looking for alternative forms of housing, development, and community. Moore suggested that a CSPN would be much more desirable than buying a large conventional detached house and splitting it into four units.

5.6.2 Semis Versus Detached

Moore identified the possibility of doing a CSPN using semi-detached as there would be several cost savings in servicing and building, and an ability to increase density because of having a shared wall.

5.6.3 Beyond Privacy is Community

Stevens and Chapin suggest that privacy can be designed into housing developments. That there can be a balance between the shared open space and the private space. Chapin does this through creating layers from the street to the shared open space to the deck and into the house. An individual’s desire for privacy can be accommodated within a community focused development, suggests Chapin, through creating places to interact, and then places to retreat to.

This form of community focused living is not a new trend, it is a human desire, it is how humankind have lived up until recent history suggests Chapin. Stevens confirms this stating that people know something is missing, they just do not know what it is. They both suggest that privacy is a need whereas socialness is part of humankind’s nature.

“people are looking for a better way forward.”
- Stevens

“it's not that radical. It's radically human. And for most of human history, eons, not 60 years. This is how we lived.”
- Chapin
Further the benefits of living in community flow to all generations. Both Stevens and Chapin emphasized the benefits incurred from the ability for a child to be in the shared open space while the parents are preoccupied. Or how seniors can live longer in their home through the support of their neighbours.

5.6.4 Environmental

CSPN provides several opportunities to have a lower impact on the environment. Chapin suggests it starts with development. Designing with the contours of the land, requiring less soil to be disturbed and therefore requiring less trees to be unnecessarily removed. Panabaker confirms this suggesting that by removing the basements, cottages could be floated at grade requiring less disturbance of the landscape.

Chapin suggests that smaller building footprints and not needing to have a car access each house allows for more flexibility in layout allowing a design that is more sensitive to the landscape.

Stevens goes beyond development talking about economies of scale, requiring fewer resources: one lawn mower for the community, fewer cars as there is less need to travel when the community is right there.

“How’s life worth living? It’s relationship. It’s precious little things like enjoying a spot, this time of year when the sun is finally coming around again.”

- Chapin
5.6.5 Landscape Fundamental to Community

Chapin emphasized the need to design the landscape to be in communication with and work alongside the houses in a pocket neighbourhood. He designs the shared outdoor space as he is designing the community, it is not an afterthought.

5.6.6 Innovation

Moore suggests that the building industry has remained stagnant in recent history. He says there have been a few developments in terms of materials, greater efficiency in insulation, the wide spread adoption of new technology, but in terms of building technique, there is little. He suggests this is an issue for there is a large amount of waste involved; wasted time, wasted resources. These are things he is seeking to overcome through manufacturing off-site in a repeatable fashion. Through creating the same frame again and again they learn the most efficient use of materials, resulting in less waste, they also learn the most efficient process for building and solving problems as they arise. Less time is spent thinking of solutions for they solve a problem once and then next time it is no longer a problem. He suggests this is where the market may be heading as efficiency will go a long way in creating affordable places to live.

“(Landscape) is integral to the nature of the neighbourhood.”

- Chapin

“If everything that’s most important to you is within 5-10 minutes, a lot of it’s in the community that you live in. You don’t need to drive someplace”

- Stevens
Stevens had a different thought on innovation suggesting that the physical innovations, for the most part, are just toys, they are secondary to the people that are looking to get more from their communities. He suggests that the biggest innovation coming to the housing industry is this change in mentality in how we live and how community governance occurs; people opening their minds to different forms of housing and demanding homes that serve the community.

Stevens also suggests that though policy and by-laws play a large role in what is possible currently, they change. They change when the market begins to show a need for something different.

“Everybody gets hung up with the toys but it’s not about the toys, the people are the picture. So, the building is not the picture, it’s the frame.”

- Stevens

“Half of your labour is contingency walking around time. For people going, ‘Oh, there’s a pipe for that bulkhead’, tools down. Let’s figure it out

- Moore
6 Analysis

6.1 Lens 1: Provincial and Municipal Policy

Provincial and Municipal Policy identify the main criteria for infill and redevelopment as matching the character and scale of the surrounding neighbourhood. This will be explored more in 6.2 Lens 2: Municipal By-law. Table 6.1 Policy Comparison summarizes the comparison between policy and case study averages.

<table>
<thead>
<tr>
<th>Policy</th>
<th>CSPN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provincial Policy Statement</strong></td>
<td></td>
</tr>
<tr>
<td>1.1.3.3 – location of intensification and redevelopment</td>
<td>Intensifies at a scale that matches neighbourhood</td>
</tr>
<tr>
<td>1.1.3.5 – minimum targets for intensification and redevelopment</td>
<td></td>
</tr>
<tr>
<td><strong>Ottawa Official Plan</strong></td>
<td></td>
</tr>
<tr>
<td>Volume 1 – General Urban Areas mature in relation to context</td>
<td>Intensifies at a scale that matches neighbourhood</td>
</tr>
<tr>
<td><strong>Building better and smarter suburbs: Strategic directions and action plan</strong></td>
<td></td>
</tr>
<tr>
<td>3 Vision – offer a variety of housing</td>
<td>New housing form to Ottawa</td>
</tr>
<tr>
<td>5 Parking – control driveway widths to increase sustainability (permeable surfaces and street trees) and livability (include street parking to help slow traffic, reduce on-site parking requirements, and eyes on the street)</td>
<td>Single access point driveway for three lots. Lots of space for street parking and green front yards</td>
</tr>
<tr>
<td>7 Rear Lanes – remove cars from the front of houses, maximize green space and living space facing the street</td>
<td>Parking removed from houses allows livable areas to face street</td>
</tr>
<tr>
<td>8 Trees – ensure enough space for healthy tree development, retain existing trees</td>
<td>Designed around existing trees</td>
</tr>
<tr>
<td><strong>Urban Design Guidelines for Low-rise Infill Housing</strong></td>
<td></td>
</tr>
<tr>
<td>1.3 Infill and Intensification – intensification makes better use of existing infrastructure and allows people to live closer to places they work (city centers). Compact development protects greenspaces</td>
<td>Intensifies at a scale that matches neighbourhood</td>
</tr>
<tr>
<td>3.0 Landscape – 3.3 retain existing mature trees</td>
<td>Designed around existing trees</td>
</tr>
</tbody>
</table>
The tract population density of the Ottawa comparison site (33.9 ppl/ha) was identified as having the 5th smallest population density within the east Carlington neighbourhood, and is less than half of the average population density of the east Carlington neighbourhood (74.0 ppl/ha). This suggests that this block could stand to be redeveloped to increase its density to better match the neighbourhood context. Creating a CSPN at the case study average (56.0 ppl/ha) would still result in a population density that would be below the average, while creating a CSPN at the level of Pine Street Cottages (71.4 ppl/ha), or 3:1 units to lot ratio (further discussed in 6.3) would result in a population density very close to the average of the east Carlington neighbourhood. This fits with Ontario Provincial Policy Statement [PPS] (2014) 1.1.3.3 where it says, “Planning authorities shall identify appropriate locations and promote opportunities for intensification and redevelopment where this can be accommodated” and PPS 1.1.3.5 “Planning authorities shall establish and implement minimum targets for intensification and redevelopment within built-up areas, based on local conditions.” No minimum targets for intensification for our site could be found. The Ottawa Official Plan: Volume
1, states “Lands designated General Urban Area will continue to mature and evolve through intensification and infill but at a scale contingent on proximity to major roads and transit, and the area’s planned function.”

The “Merivale Road (North) Community Design Plan” (2018) does not address our site as it focuses on the properties abutting Merivale Road.

The guidelines presented in “Building better and smarter suburbs: Strategic directions and action plan” (2015) can all be accommodated through design of CSPN. The “Urban Design Guidelines for Low-rise Infill Housing” (2012) can be achieved apart from the requirement in 4.1.5 (front yard setback) and 4.1.9 (back yard setback) where the requirement is not to break the prevailing character of neighbouring homes.

### 6.2 Lens 2: Municipal By-law

The by-laws that relate to the Ottawa comparison site include: Zoning By-law 2008-250 Consolidation, Site Alteration By-law 2018-164 and Tree Conservation By-law 2009-200.

The Zoning By-law Part 5 – Residential Provisions Section 139 identified that a SCA was required to establish the prevailing character of the street for minimum setbacks and parking conditions among others.

The SCA done both for the Ottawa comparison site and the case studies show many similarities and can be seen in Table 6.2 Streetscape Character Analysis Comparison.
Creating a CSPN on the Ottawa comparison site would require multiple lots to be consolidated and only one driveway would be used for all on-site parking. This works with the “Streetscape Character Analysis Manual” where it states: “Parking is not required for buildings of 12 or fewer dwelling units. It is permitted ONLY if it is provided in a pattern that belongs to the Character Group most prevalent on your streetscape” (pg 1).

23 Houses had driveways that ran at least to the back of the house which matched the case studies as they typically had a driveway that ran beyond the house closest to the driveway.

The Zoning By-law Part 6 – Residential Zones Section 156 identified that there was no maximum coverage for a lot zoned R1S. It also identified that the, “min. rear
yard setback is 25% of the lot depth which must be comprised of at least 25% of the area of the lot."

As with section 6.1 CSPN can fit many of the characteristics of the surrounding context. Where they do not conform is front yard and rear yard setbacks. The Ottawa comparison site average front yard and rear yard setbacks (Table 3.2) were 10.2m and 16.6m respectively, whereas the case study average front yard and rear yard setbacks (Table 4.3) were 7.1m and 2.6m respectively. These setbacks can be seen in Figure 6.1.

A CSPN on the Ottawa comparison site would require that multiple lots be consolidated so that a collective ownership of the whole site could be created. Also, a CSPN development on the Ottawa comparison site could not conform with rear yard setback requirements. It is likely that a re-zoning, rather than a minor variance of the by-law would be required.

The Site Alteration By-law requires that the prevailing drainage pattern shall not be impeded or negatively impacted as the result of redevelopment. CSPN can meet these requirements for the intent as described by Chapin is to build with the contours of the land minimizing impact. This should mean that surrounding properties will not be negatively impacted by CSPN redevelopment.

The Tree Conservation By-law requires private properties less than 1 ha to protect or receive a permit to remove ‘distinctive trees’ (a tree with a DBH of ≥50 cm). They also emphasize the importance of existing vegetation. Though I have not been on-
site to measure the DBH of the trees, the case studies used have a precedent of protecting and retaining trees. Chapin further emphasizes this stating that the unconventional nature of CSPN, smaller building footprints and not requiring automobiles to access every house, allows for existing vegetation to be retained more often.

Stevens suggests that policy and by-laws are less important as they can change. If there is a desire for different forms of housing, those wanting to live there can put pressure on the planners to change such things.

6.3 Lens 3: Affordability

Affordability is a complex issue. The numbers discussed here are estimates made by experts and educated guesses made by the researcher. Further, the meaning of affordability can vary, say the experts. Moore and Panabaker both addressed the price point through a comparison to conventional housing. If the price point of a unit in a CSPN was to be in the relative area of a conventional house that was two or three times the size with a full lot of property, most people would not consider the CSPN unit. Stevens had an alternative opinion suggesting that community-oriented living, in the form of co-housing, is not about affordability. It is about people choosing to live in community and be willing to do so even if it is not more affordable than the alternatives. These are people seeking a way of life rather than trying to save money. Chapin had an altogether other opinion stating that CSPN does provide affordable housing for those who are looking to be able to get into the market. For him, the affordable issue is paired with the benefits of living in a community setting. Chapin said that he designed CSPN to
provide housing that was more affordable for the segments of the market that large-
scale detached houses were built for.

The insights provided by Chapin and Stevens diminishes the importance of
affordability, but not to a non-existing state. For the resulting houses cannot be well
above the market price of similar sized units in the area. A house within a community-
oriented development should be available at a comparable cost to an equally sized
alternative unit in the same neighbourhood according to Stevens.

To estimate the cost of building a CSPN at the Ottawa comparison site, the
ranges identified by Moore in the interviews were used in association with averages
from the case studies and fees identified on the City of Ottawa website. The average lot
size from the case studies was 0.36 ha holding 10 cottages (0.036 ha/cottage) with an
average of 89 s.m (957 s.f). The six selected sites total 0.38 ha and would hold 10.5
cottages. Round this up to 11 cottages for the six selected sites, a ratio just below 2:1 -
cottages to lots. Due to the complexity involved and higher price per s.f of a custom
house it was decided to use a prefab model such as the V-2 created by Moore. Moore
said that using a repeatable design could allow consultant costs (architecture, electrical,
etc.) and a 10-15% profit for the developer to be included in the $280 - $350 / s.f
building cost. The cost for a lot was calculated by locating similar lots in the
neighbourhood that were currently on the market and comparing the houses and lots.
Two comparable lots were identified in the Ottawa comparison site neighbourhood
(Image 6.1). One with a similar house and smaller lot (12mx 41m lot) on the market for
$369,900 (Image 6.2) and one with a larger house and smaller lot (15m x 30m lot) for
$449,900 (Image 6.3). The selected lots were 15m x 41m. The range of cost for the lot was decided to be between $400,000 and $440,000.

Two costs were calculated, a liberal\(^1\) using the lower costs of a range, and a conservative\(^1\) cost using the higher cost. The liberal cost for 11 units on 6 lots was $558,104 / unit and the conservative cost was $690,794 / unit. The cost breakdown can be seen in Table 6.3 2:1 Ratio Cost Analysis with a sample site layout in Figure 6.1.

\(^1\) For this research liberal meant a cost estimate that was viewed as ambitious or hopeful, resulting in a lower cost to the purchaser. Conservative meant costs estimated on the high/safe side, resulting in a higher cost to purchaser.
The estimated liberal price is over $100,000 more than the more expensive of the two units used to identify land cost. Other units were also identified for comparison purposes: a 2 bedroom 2 bathroom unit ($359,900) and a 1 bedroom 1 bathroom unit ($269,900) in the same condo building built in 2015, a 3 bedroom 1 bathroom detached house ($385,000) built in 1923, and a 4 bedroom 2 bathroom detached house ($509,900) built in 1955. The details for these listings can be found in Appendix 3: Carlington Listings.

For less than $539,000 an individual could get a detached house with 3 or 4 bedrooms on a full lot, or for approximately half the cost they could get a 1 bedroom unit in a condo unit. Therefore, at a 2:1 density, a cottage in a CSPN would cost too much.
Increasing the unit ratio from 2:1 to 3:1 or 4:1 makes the units more comparable in price to other detached houses in the neighbourhood. These ratios are not unprecedented; Pine Street Cottages 3:1 and Ravenna Cottages is more than 4:1. A 3:1 ratio or 4:1 ratio resulted in a liberal cost of $461,507 per unit and $423,558 per unit respectively. The breakdowns of these costs can be seen in Table 6.4 3:1 Ratio Cost Analysis and Table 6.5 4:1 Ratio Cost Analysis, and sample site layouts can be viewed in Figure 6.2 and Figure 6.3 respectively.

Increasing the unit to lot ratio makes a per unit cost more affordable but doing so begins to limit the layout and spacing of the units. As the unit to lot ratio increases, the building footprint of each unit is required to decrease to accommodate all units on-site. This then requires units to be built upwards to meet the chosen 89 s.m (950 s.f) home size. The sample layout for a 3:1 unit to lot ratio in Figure 6.2 would have a 55 s.m (600
s.f) building footprint and a second storey. It does however not provide on-site parking for all units. The sample layout for a 4:1 unit to lot ratio in Figure 6.3 would have two storey narrow houses (41 s.m – 450 s.f building footprint) located very near each other. Parking would also be required to be both on- and off-site.

In all sample layouts, houses were located in ways that maximized retaining existing trees. Removing existing trees would likely result in a more optimal site layout, especially when the unit to lot ratio increases.

Similarly, a large portion of the site was utilized for on-site parking. Removing or reducing the amount of parking could result in a better site layout and possibly a higher unit yield. The case studies used on-street parking to reduce the on-site requirements. The on-site parking requirement could be further reduced because of the cultural shift towards maximizing resource efficiency with regards to cars identified in sections 2.3.2 Smart Growth:, 2.4.2 Shared Economy:, and 5.6.4 Environmental. Residents may not each require their own car, making use of car sharing services or public transit as everything that they may need is located within their neighbourhood (a complete community).

Creating CSPN at a 3:1 unit to lot ratio is conceivable but would require careful attention to detail to ensure that layers of privacy are created. A CSPN at a 4:1 unit to lot ratio is less plausible because of the proximity of units. Removing existing trees or creating duplex units could result in acceptable site layout conditions.
### Table 6.3 2:1 Ratio Cost Analysis

<table>
<thead>
<tr>
<th></th>
<th># of units</th>
<th>Conservative</th>
<th>Liberal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of lots</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Hard Construction

- **Building costs (950 s.f)**
  - Conservative: $350 / s.f
  - Liberal: $280 / s.f
  - Total: $3,657,500
- **Servicing / unit**
  - Conservative: $20,000
  - Liberal: $10,000
  - Total: $220,000
- **Land costs / lot**
  - Conservative: $440,000
  - Liberal: $400,000
  - Total: $2,640,000
- **Landscape (10% of construction cost)**
  - Conservative: $365,750
  - Liberal: $292,600
  - Total: $658,350
- **Contingency (5-10% building costs)**
  - Conservative: $365,750
  - Liberal: $146,300
  - Total: $512,050
- **Development costs / unit**
  - Detached: $25,113
  - Multi/row: $276,243
  - Total: $3,001,656

#### Hard Total

<table>
<thead>
<tr>
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<th>Conservative</th>
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</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>$7,525,243</td>
<td>$6,088,289</td>
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<tr>
<td><strong>Per Unit Total</strong></td>
<td>$690,794</td>
<td>$558,104</td>
</tr>
</tbody>
</table>

#### Soft Construction

- **Landscape Design OALA fee estimates**
  - L2 Complex: 15.5% of Landscape: $56,691
  - L2 Standard: 13.5% of Landscape: $39,501

- **City/Inspection Fees**
  - Site Development Permit $10 / parking space: 2 / unit: $220
  - Building Permit: 0.42 / s.f: $4,389
  - Demolition Permit / unit: > 1,000 s.f - $100: $600, < 1,000 s.f - $25: $150
  - Electrical Permit: Included in BP
  - Plumbing Permit: Included in BP
  - Fence Permit: $50 / site: $50
  - Water Connection 150 * Pop Equivalent: 3.5 PE - $525 / unit: $5,775
  - Sewer Connection 150 * Pop Equivalent: 3.5 PE - $525 / unit: $5,775, 2.0 PE - $300 / unit: $3,300

- **Land and Real Estate costs**
  - Beyond Scope

- **Loan Interest and Accounting Fees**
  - Beyond Scope

- **Project Management**
  - Beyond Scope

- **Construction Insurance**
  - Beyond Scope

- **Professional Dues**
  - Beyond Scope

- **Local and State Taxes**
  - Beyond Scope

- **Advertising**
  - Beyond Scope

- **Additional Studies (survey, geotechnical, etc.)**
  - Beyond Scope

#### Soft Total

<table>
<thead>
<tr>
<th></th>
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<th>Liberal</th>
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<tr>
<td><strong>Total</strong></td>
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#### Total

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<td><strong>Per Unit Total</strong></td>
<td>$690,794</td>
<td>$558,104</td>
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</tbody>
</table>
Figure 6.1 Sample 2:1 Site Layout

- 89 s.m One Storey Units
- 12 Parking Spots On-site
- 13 Parking Spots Off-site
Table 6.4 3:1 Ratio Cost Analysis

<table>
<thead>
<tr>
<th></th>
<th># of units</th>
<th># of lots</th>
<th>Conservative</th>
<th>Liberal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hard Construction</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building costs (950 s.f)</td>
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<td>6</td>
<td>$350 / s.f</td>
<td>$5,985,000</td>
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<tr>
<td>Servicing / unit</td>
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<tr>
<td>Land costs / lot</td>
<td></td>
<td></td>
<td>$440,000</td>
<td>$2,640,000</td>
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<tr>
<td>(10% of 2:1 building costs)</td>
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<td></td>
<td>$365,750</td>
<td>$292,600</td>
</tr>
<tr>
<td>Contingency (5-10% building costs)</td>
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<td></td>
<td>$598,500</td>
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<td>Detached - $25,113</td>
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<tr>
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<td></td>
<td></td>
<td>$10,401,284</td>
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**Soft Construction**

| Landscape Design OALA fee estimates | L2 Complex 15.5% of Landscape | L2 Standard 13.5% of Landscape | $56,691 | $39,501 |
| City/Inspection Fees              | No Fee | | | | |
| Design Review                     | 2 / unit | 1.5 / unit | | $270 |
| Site Development Permit $10 / parking space | | | | $360 |
| Building Permit                   | 0.42 / s.f | $3,591 | | $3,591 |
| Demolition Permit / unit          | > 1,000 s.f - $100 | $600 | < 1,000 s.f - $25 | $150 |
| Electrical Permit                 | Included in BP | | | |
| Plumbing Permit                   | Included in BP | | | |
| Fence Permit                      | $50 / site | $50 | | $50 |
| Water Connection 150 * Pop Equivalent | 3.5 PE - $525 / unit | | $9,450 | $5,400 |
| Sewer Connection 150 * Pop Equivalent | 3.5 PE - $525 / unit | | $9,450 | $5,400 |
| Land and Real Estate costs        | Beyond Scope | | | |
| Demolition Costs                  | Beyond Scope | | | |
| Loan Interest and Accounting Fees | Beyond Scope | | | |
| Project Management                | Beyond Scope | | | |
| Construction Insurance            | Beyond Scope | | | |
| Professional Dues                 | Beyond Scope | | | |
| Local and State Taxes             | Beyond Scope | | | |
| Advertising                       | Beyond Scope | | | |
| Additional Studies (survey, geotechnical, etc.) | Beyond Scope | | | |
| **Soft Total**                    | $83,783 | | $57,953 | |
| **Total**                        | $10,485,067 | | $8,307,135 | |
| **Per Unit Total**               | $582,503 | | $461,507 | |

---

2 3:1 ratio would operate at a Pine Street Cottages Level. 18.0 units on a 0.38 ha lot.
3 Assuming that Landscape would not go up in price as more land is covered with units.
Figure 6.2 Sample 3:1 Site Layout

- 89 s.m Two Storey Units
- 55 s.m Building Footprint
- 12 Parking Spots On-site
- 13 Parking Spots Off-site
Table 6.5 4:1 Ratio Cost Analysis

<table>
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<tbody>
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<tr>
<td>Building costs (950 s.f)</td>
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<td>$280 / s.f</td>
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<td>Servicing / unit</td>
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<td>$10,000</td>
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<tr>
<td>Land costs / lot</td>
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<td>$400,000</td>
</tr>
<tr>
<td>Landscape (10% of 2:1 building costs)</td>
<td>$365,750</td>
<td>$292,600</td>
</tr>
<tr>
<td>Contingency (5-10% building costs)</td>
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<td>5%</td>
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<tr>
<td>Development costs / unit</td>
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<td>Landscape Design OALA fee estimates</td>
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<td>City/Inspection Fees</td>
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<tr>
<td>Plumbing Permit</td>
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<tr>
<td>Fence Permit</td>
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<td>$50</td>
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<tr>
<td>Water Connection 150 * Pop Equivalent</td>
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<td>2.0 PE - $300 / unit</td>
</tr>
<tr>
<td>Sewer Connection 150 * Pop Equivalent</td>
<td>3.5 PE - $12,600 / $25 / unit</td>
<td>2.0 PE - $300 / unit</td>
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<tr>
<td>Land and Real Estate costs</td>
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<tr>
<td>Demolition Costs</td>
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<tr>
<td>Loan Interest and Accounting Fees</td>
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<tr>
<td>Project Management</td>
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<tr>
<td>Construction Insurance</td>
<td>Beyond Scope</td>
<td>Beyond Scope</td>
</tr>
<tr>
<td>Professional Dues</td>
<td>Beyond Scope</td>
<td></td>
</tr>
<tr>
<td>Local and State Taxes</td>
<td>Beyond Scope</td>
<td></td>
</tr>
<tr>
<td>Advertising</td>
<td>Beyond Scope</td>
<td></td>
</tr>
<tr>
<td>Additional Studies (survey, geotechnical, etc.)</td>
<td>Beyond Scope</td>
<td>Beyond Scope</td>
</tr>
<tr>
<td><strong>Soft Total</strong></td>
<td>$92,597</td>
<td>$64,037</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$12,959,059</td>
<td>$10,165,413</td>
</tr>
<tr>
<td><strong>Per Unit Total</strong></td>
<td>$539,960</td>
<td>$423,558</td>
</tr>
</tbody>
</table>

4 4:1 ratio would operate at a Ravenna Cottages Level. 28.5 units on a 0.38 ha lot.
5 Assuming that Landscape would not go up in price as more land is covered with units.
Figure 6.3 Sample 4:1 Site Layout

- 89 s.m Two Storey Units
- 42 s.m Building Footprint
- 20 Parking Spots On-site
- 13 Parking Spots Off-site
6.4 Lens 4: Market

Experts had differing opinions on the market and size. The factors that limit the size of the market as identified by the experts were: the size of the house, the parking situation, the unconventional style, and the price (currently paying a similar price for half the house and land). The segment of the market that would fall into this area likely remains small as seen in Figure 6.4 Potential Market. This is an over generalization and there is likely to be larger overlap between the markets such as those wishing to live in a community setting and those willing to live in a smaller house. But this figure can be used to represent the way that CSPN may have a limited market.

Chapin has designed and built several CSPN and has said that they are meeting a need in the market as there are limited options for housing for those living in non-conventional households (single parents, single, widow/widower).

Stevens, Moore and Chapin identified that there is increasing interest in community-oriented living and therefore a growing market for CSPN. This is likely to continue as people search for alternative forms of housing and for different ways to be able to live in their own home longer.

At the current time Panabaker, Stevens and Moore all believe that this intentional form of
living is something that is to be pursued by groups rather than developed speculatively. This is important as there needs to be a desire to live in community, otherwise the community aspect will not be created. Developers can build the home, but they cannot force community to happen.
7 Discussion

7.1 Introduction

This chapter presents the overall applicability of the analysis through a discussion of the methods used.

7.2 Ottawa Comparison Site and Case Studies

A site in Ottawa was selected to be compared to the existing CSPN case studies. The case studies provided an in-depth understanding of the form of housing associated with CSPN and provided a way for evaluating if CSPN could be incorporated into an Ottawa inner ring suburb from a Provincial and Municipal policy and by-law perspective.

The case study method was effective in understanding CSPN from a policy and by-law perspective. But the value of this part of the research is likely to be diminished as time goes on for as identified in 5.6.6 Innovation, policy and by-laws can change. This is further supported by the precedent of CSPN by-laws in Canadian and American cities, identified in section 2.2.1. This means that, though this comparison seemed pivotal at the beginning of the research it will only be relevant as long as the policy and by-laws remain in place that it is based off of. Therefore, the policy and by-law comparison holds smaller significance then initially thought.

Despite this, comparing case studies to policy and by-laws was necessary for creating an understanding upon which to base the semi-structured expert interviews and price comparison.
7.3 Semi-structured Expert Interviews

Experts were selected for being prominent players in key sectors of the housing industry. Experts were able to use their professional knowledge to provide key pieces of information regarding the estimated affordability and potential market for CSPN within Canada. This information proved to be the more valuable portion of the research for it spoke to trends that remain beyond the policy and by-laws of today.

The experts were essential in establishing an estimated cost per unit and the potential market for CSPN. Experts also provided important information regarding building techniques that could be explored to try and keep costs down. The potential market was also discussed, with specific market segments being identified as being the most likely to be interested in this form of development.

Beyond the specific lenses addressed in this research, the experts were able to identify major points of contention with regards to CSPN developments. These issues within the housing industry need to be addressed to allow for greater flexibility in housing forms and ownership. Issues identified by experts were:

- The need to restructure the financing sector to provide alternative forms of ownership.

- A need to reformat municipal developmental fees so that smaller housing can be more affordable.
• The inefficiencies in construction techniques resulting in the wasting of resources.

• The need to balance the implementation of environmentally friendly building techniques with the need for affordable housing alternatives.

• A need to implement alternative forms of collective ownership apart from condominiums to allow for greater variety in ownership structure.

Addressing these issues would provide more opportunities for developments like CSPN to be incorporated into a Canadian context.

Other issues were identified by the experts that did not relate to the financial viability of CSPN. Instead these issues addressed the forms of development that are currently being created. They are:

• The fundamental desires for community that conventional housing does not address.

• The importance of landscapes being designed to work along with the housing in providing for residents’ needs and desires.

Creating alternative forms of development that address these two issues would result in enhancing the lives of the residents.
8 Conclusion

8.1 Conclusion

The aim of this research was to explore the feasibility of CSPN through four lenses: policy, by-laws, affordability, and market. To do so, an Ottawa comparison site and existing CSPN case studies were selected and their character, scale, and measurements were collected and analyzed. The Ottawa comparison site and case studies were compared establishing that CSPN can fit the applicable Provincial and Municipal policy and by-laws except for front yard and rear yard setbacks. Further the importance of meeting policy and by-law requirements was diminished as they both can change over time to meet market demand and/or encourage desirable forms of housing.

Semi-structured interviews with expert residential developers were used to estimate a per unit cost. Average measurements from the case studies were used to create the basis in terms of a unit size from which to talk to experts about. Experts determined an estimated per square foot construction cost for creating a CSPN as well as other relevant costs such as servicing a unit. Other key numbers were collected from the City of Ottawa website for costs such as development costs and fees. The resulting price was compared to other houses in the neighbourhood to determine the affordability of a CSPN unit. Building at a 2:1 unit to lot ratio resulted in a per unit cost that was higher than houses in the surrounding area, and therefore not deemed affordable. Building at a 3:1 or 4:1 ratio resulted in a per unit cost that was comparable to current neighbourhood listings but required creating units that would be located closer to each other and required utilizing on-street parking. A 3:1 ratio is more plausible than a 4:1
ratio when creating detached single units and preserving existing trees. If duplex units were to be created instead of detached singles and existing trees were to be removed, a 4:1 unit ratio could work on the Ottawa comparison site.

The importance of affordability was contested as one expert believed CSPN provided homes to those who could not afford conventional housing, while another expert believed that those who want to live in such a development have chosen to do so not for affordability reasons, but because they are seeking the community focused living above all else.

Semi-structured interviews with an expert co-housing consultant and an expert architect, who focuses on creating pocket neighbourhoods, were used to establish the potential market for CSPN. It was determined that there would likely be a small market currently, but that interest in such forms of housing is growing. It was also determined that a CSPN would likely not be taken on by developers speculatively until it had become a proven concept and would have to be developed first by a group interested in living in such a housing form.

Experts confirmed the need for increased density redevelopment within the inner ring suburbs. Though the high cost of land within these areas was an expressed concern.

Through the research several factors were addressed by experts that limit the implementation of CSPN including home financing, per unit municipal development
fees, construction techniques, and limited options for collective ownership. Updating and improving aspects of these factors could result in CSPN being more feasible.

### 8.2 Applicability of Research

The research presented here represents an assessment of the current state of the housing market, policy and by-laws as it relates to the feasibility of CSPN in an Ottawa inner ring suburb. The general progression of analysis in regard to feasibility could be used for different provinces, cities, or even a different site but the costs presented in this research will differ.

### 8.3 Limitations

Due to the limited resources and time of the researcher, only four semi-structured interviews occurred across a few professions. An attempt was made to ensure multiple experts from each profession were interviewed to attempt to confirm key pieces of information between experts. This was not attained as there was a limited segment of experts available that are currently dealing with the subjects addressed in the research. However, every attempt was made to ensure that the experts interviewed for this research contained key qualities that gave them the foundation from which they could credibly provide information on their relevant profession.

Another limitation was that the researcher was unable to visit any of the case studies or the comparison site. Google Maps Streetview and Google Earth Pro were relied on for completing the SCA as well as calculating key measurements. The measurements represented in this research should be treated as approximates as they...
would differ if measured in person. This limitation was sought to be reduced by ensuring all measurements were done in Google Earth Pro using the same settings. Doing this means that any error in measurement would likely be reflected equally across the on- and off-site comparisons of the case studies and the Ottawa comparison site.

The existing CSPN case studies may not accurately reflect the total population of such developments. Every effort was made to identify as many potential case studies as possible, but some may have been missed.

The established feasibility represents the findings as they relate to a specific place and time. Certain costs identified here will change from location to location, and city to city. Different land costs or labour market may result in a different outcome for feasibility with regards to affordability. Many conditions will change as time progresses which would also change the results of this research. Further this research does not analyze if the type of lot selected is optimal for creating CSPN. Lots with different contextual conditions will be faced with different limitations that could result in CSPN being more or less feasible. For example, lots with rear yards adjacent to parks and schools may be more viable for CSPN, as rear yard setback variances may pose a lesser constraint. Further, analysis of different lot consolidation options (ie: back to back or side to side) might yield different feasibility outcomes.

The costs identified in this research represent estimates established by experts and educated guesses made by the researcher. Further, there are other costs associated with development that were not included as they were beyond the scope and
ability of this research to include. Every attempt was made to be as thorough as possible, however these costs do not represent the actual cost to build such a development. The costs represented in this research should not be relied upon beyond a basic level from which to begin to analyze the costs associated with CSPN.

This research does not address the requirements imposed on a site/development by environmental aspects such as snow. More space may be required to appropriately deal with snow removal and the official responsibilities of the city/residents as per snow removal would need to be addressed.

8.4 Further Research

Further research is required to understand the true extent of the market for CSPN. This research could only provide generalizations in who would be interested in CSPN, and not provide hard numbers as to the potential size of the market.

More research is needed to understand the impact that updating home financing and development costs to better support smaller homes and the creation of alternative forms of collective ownership would have on the feasibility of CSPN.

CSPN has become an established form of housing in the USA. However, this does not mean that it will directly translate to the Canadian context. More research should be done understanding the changes, in form and layout, that would be required to incorporate CSPN into Canada.
Future research should also be done to explore why no cottage clusters have been built in Calgary despite a by-law allowing the creation of them existing since 2007.

Future research could also explore the role lot context has on the creation/implementation of CSPN. Corner lots, lots backing onto a laneway and lots backing onto other residential properties will all present different limitations for the implementation of CSPN. For example, a proposed CSPN on lots that back onto other residential properties will likely be faced with increased opposition from the residents of the lots that are backed onto as the new units would be located near the property line. Similarly, future research could explore the impact that re-zoning the lots would have on the creation of CSPN.
9 References


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The Housing Partnership (King County Housing Alliance). (2000). *Cottage Housing Development*. 100
The Housing Partnership (King County Housing Alliance). (2001). *Cottage Housing in Your Community: A Guide to Drafting a Cottage Housing Ordinance.*


### APPENDIX 1: MONEYSENSE’S TOP PLACES TO LIVE IN CANADA

<table>
<thead>
<tr>
<th>City</th>
<th>Province</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Average Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottawa</td>
<td>Ontario</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2.67</td>
</tr>
<tr>
<td>St. Albert</td>
<td>Alberta</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>19</td>
<td>6.17</td>
</tr>
<tr>
<td>Oakville</td>
<td>Ontario</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>3</td>
<td>15</td>
<td>1</td>
<td>6.17</td>
</tr>
<tr>
<td>Burlington</td>
<td>Ontario</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>31</td>
<td>8.83</td>
</tr>
<tr>
<td>Boucherville</td>
<td>Quebec</td>
<td>18</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>16</td>
<td>28</td>
<td>12.33</td>
</tr>
<tr>
<td>Levis</td>
<td>Quebec</td>
<td>29</td>
<td>12</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>17</td>
<td>14.17</td>
</tr>
<tr>
<td>Halton Hills</td>
<td>Ontario</td>
<td>13</td>
<td>29</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>10</td>
<td>20.00</td>
</tr>
<tr>
<td>Stratford</td>
<td>Ontario</td>
<td>14</td>
<td>23</td>
<td>7</td>
<td>15</td>
<td>12</td>
<td>74</td>
<td>24.17</td>
</tr>
<tr>
<td>North Vancouver</td>
<td>BC</td>
<td>21</td>
<td>25</td>
<td>9</td>
<td>8</td>
<td>20</td>
<td>64</td>
<td>24.50</td>
</tr>
<tr>
<td>Newmarket</td>
<td>Ontario</td>
<td>10</td>
<td>31</td>
<td>23</td>
<td>24</td>
<td>56</td>
<td>23</td>
<td>27.83</td>
</tr>
</tbody>
</table>
APPENDIX 2: OTTAWA STREETSCAPE CHARACTER ANALYSIS

STREETSCAPE CHARACTER ANALYSIS FORM

Name: ___________________________ Email: ___________________________ Address of proposed development: 184, 188, 192 Anna Ave

Type of Development Review Application Being Submitted: □ Zoning  □ Site Plan  □ Minor Variance  □ Severance  □ Private Approach  □ Building Permit

This form is required in order to determine zoning requirements and permissions with respect to front yards and corner side yards, access and parking, and front doors. When filling in this form, please bring and refer to the Streetscape Character Analysis Manual, available at Client Service Centres and at ottawa.ca/streetscapecharacter. This form must document 21 lots around your lot. See Manual for cases where less than 21 lots on a street. Once this form has been approved, then a development application will be considered complete. Submit this Form and photograph of each of the lots to sca-apr@ottawa.ca or to a Development Information Officer in a Client Service Centre, or at a pre-consultation meeting. Remember that your immediate neighbours’ front yard setbacks on either side of you must be measured. You must also measure each of the 21 lots’ actual lot width and driveway width by using GeoOttawa so you may know which Access and Parking Character Group in Table 2 identifies your streetscape.

<table>
<thead>
<tr>
<th>TABLE 1 FRONT AND CORNER SIDE YARD CHARACTER</th>
<th>HOW MANY LOTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character Group</td>
<td>Refer to S.140 Table 140(A) Zoning By-law 2008-250</td>
</tr>
<tr>
<td>A. Landscaped front yard and corner side yards (side lot line to side lot line) where there is no driveway off the street(s)</td>
<td>0</td>
</tr>
<tr>
<td>B. Mix of soft and hard landscaped front yard in front of the entire front wall of the house</td>
<td>26</td>
</tr>
<tr>
<td>C. Mix of soft and hard landscaped front yard in front of a portion of the front wall of the house</td>
<td></td>
</tr>
<tr>
<td>D. No front yard (buildings at or close to the front property line), or short, undersized front yard occupied mainly by permitted projections such as a front porch or stoop</td>
<td></td>
</tr>
</tbody>
</table>

Note: Lots containing a residential use dwelling(s) that is set back at least the minimum required front yard setback, and where the front yard consists mostly or entirely of parking spaces whose legal status has not been established, and where there is also a driveway providing access to garage, carport or surface parking, must be documented as Front Yard Character Group B.

<table>
<thead>
<tr>
<th>TABLE 2 ACCESS AND PARKING CHARACTER</th>
<th>HOW MANY LOTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEP 1. Character Group</td>
<td>Refer to Table 140(B) of Zoning By-law 2008-250</td>
</tr>
<tr>
<td>A. No driveways along lot lines abutting a street</td>
<td></td>
</tr>
<tr>
<td>B. Driveways are up to 1/4 of the lot width</td>
<td>Note: Lands used for front yard parking are not counted within the driveway width</td>
</tr>
<tr>
<td>C. Driveways are between 1/4 and 1/2 of the lot width</td>
<td>Note: Lands used for front yard parking are not counted within the driveway width</td>
</tr>
<tr>
<td>D. Driveways are 1/2 or more of the lot width</td>
<td>Note: Lands used for front yard parking are not counted within the driveway width</td>
</tr>
</tbody>
</table>

Date Submitted: __________ Date confirmed: __________ Staff signature: ___________________________ (Page 1 of 2)

(revised June 22, 2015)
TABLE 2 ACCESS AND PARKING CHARACTER

<table>
<thead>
<tr>
<th>HOW MANY LOTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEP 2. Parking Patterns must be identified for each lot: (see S. 139 (10) Zoning By-law)</td>
</tr>
<tr>
<td>ONLY fill this out if you want one of the following:</td>
</tr>
<tr>
<td>If you propose new front yard parking space (s), identify how many properties have legal front yard parking spaces 26</td>
</tr>
<tr>
<td>If you propose a garage that is set back the same distance from the front and/or corner side lot line as the dwelling unit itself, identify how many properties have garages that are set back the same as their dwelling unit 0</td>
</tr>
</tbody>
</table>

Table 3 MAIN DOOR CHARACTER

<table>
<thead>
<tr>
<th>HOW MANY LOTS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character Group</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>A. Main door faces the front lot line and the street, or is accessed by a structure located along the front wall of the dwelling but does not face the front lot line and street 26</td>
</tr>
<tr>
<td>B. Main door does not face the front lot line and doesn’t face the street</td>
</tr>
<tr>
<td>Note: If you have a corner lot, A and B also apply when documenting doors along the corner side lot line</td>
</tr>
</tbody>
</table>

Please draw your streetscape, including the street(s) on which your proposal will front, the 21 lots (or less) required for the Streetscape Character Analysis, and identify: 1) name of street; 2) street address number of the 21 lots on both sides of the street; 3) draw a star on your lot; 4) and for each lot, identify the Character Groups (represented by the numbered groups on page 1), and identify the pattern (represented by the roman numerals associated with each of the Character Groups) as shown in the example below. You must fill out two forms when developing a corner lot where one or more dwelling units front on one street, and one or more dwelling units front on the other street.

STREETSCAPE (Draw your streetscape here)

As seen on next page

(revised June 22, 2015)
$449,900 CAD
Source: point2homes.com

$385,000 CAD
Source: point2homes.com

$509,900 CAD
Source: point2homes.com