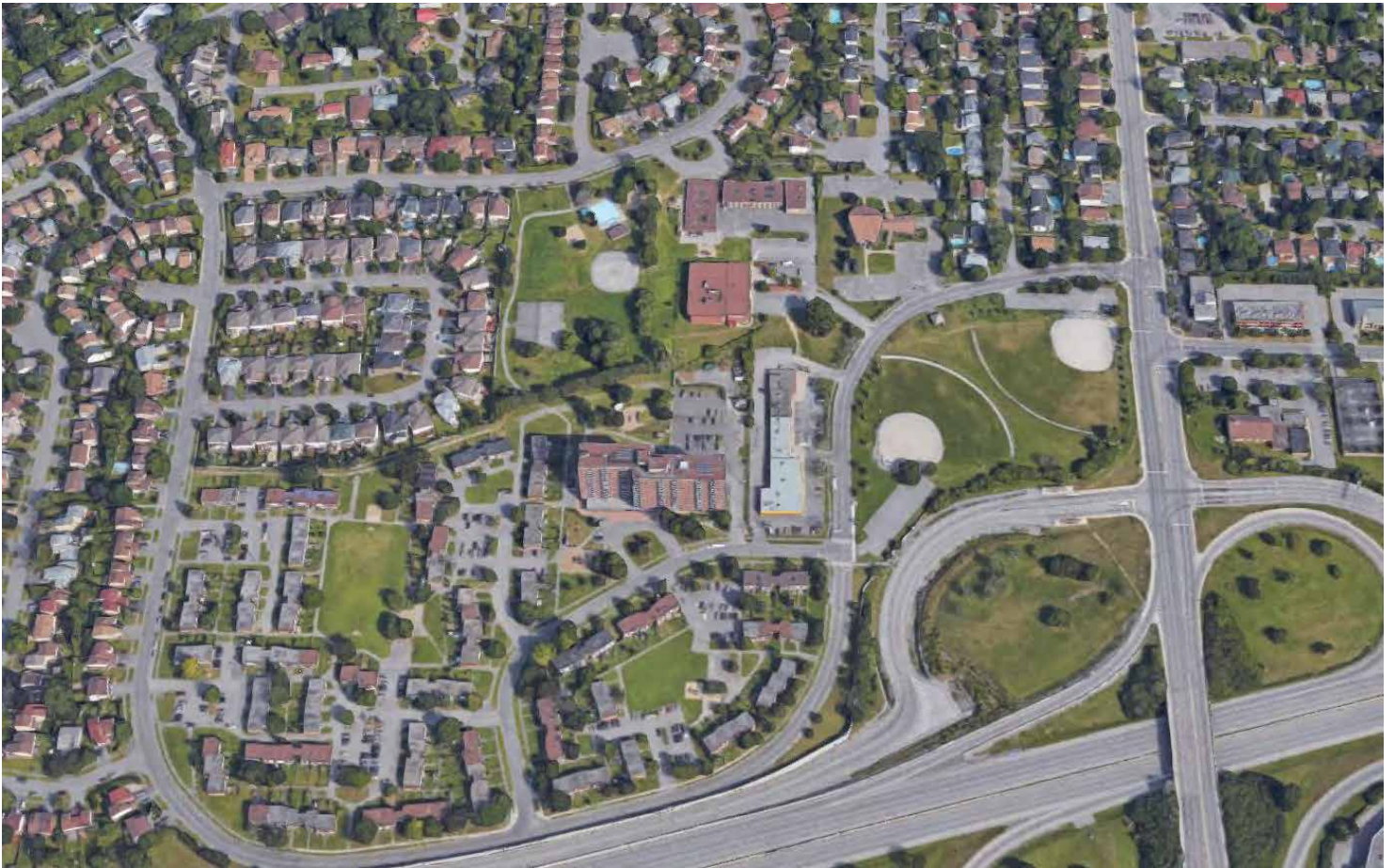


FORWARD THINKING:

A TOD Concept Plan for
the Pinecrest Foster Farm Community



21 December 2018

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EXECUTIVE SUMMARY

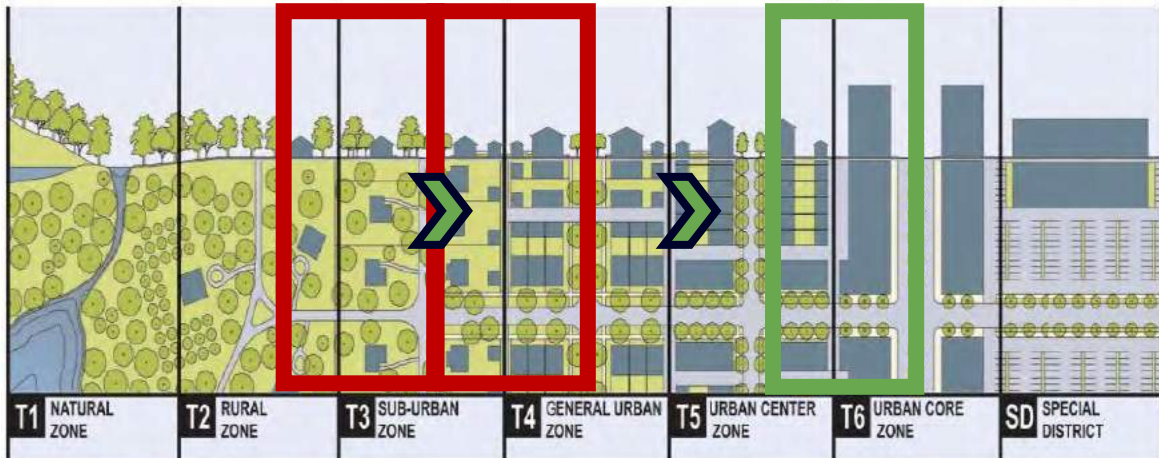
The Pinecrest Foster Farm community, located in the City of Ottawa's west end, is anticipating the arrival of the Pinecrest light rail transit (LRT) station in 2023. Ottawa Community Housing (OCH), as a major affordable housing provider in the City, and as a major property owner in the area, has a key interest in ensuring that affordable housing is provided near the LRT station. OCH, with support from the City of Ottawa, has retained the Project Team to create a concept plan of what Ottawa's Pinecrest Foster Farm community might look like if it were redeveloped according to transit-oriented development (TOD) principles. The Concept Plan is looking to a final build-out in 2035. The vision for Pinecrest Foster Farm is to create an inclusive, mixed-use, and transit-oriented community that is a safe and liveable environment for residents and visitors.

The geographic scope for this project is differentiated by the Study Area, the site, and OCH-owned property (Figure 1). The Study Area defines a broad area of interest surrounding the future Pinecrest LRT Station, with a focus on lands north of the Highway 417 and west of Pinecrest Road. The site, which is comprised of key lands to be considered for redevelopment, is the focus of the Concept Plan. The site itself is comprised of nineteen hectares of land, which include OCH, municipal, and provincial properties, as well as a few key non-residential private properties. The OCH lands have a mixture of affordable housing units in the form of two-storey townhomes and a fourteen-storey apartment building.



Figure 1: Map showing the Study Area, site, and OCH property.

Pinecrest Foster Farm currently functions as an isolated bedroom community that is heavily reliant on automobiles. Based on analysis of Duany and Talen's Urban to Rural transect, the community fell between a Rural (T2) and Suburban (T3) Zone in the 1970s; whereas, today the area falls within the category of Suburban (T3) or General Urban Zone (T4), which is comprised of many single- or semi-detached low-rise residential units (Figure 2). The introduction of the LRT station, and subsequent redevelopment, has the potential to bring Pinecrest Foster Farm into an Urban Centre (T5) or an Urban Core Zone (T6) on the transect.

Figure 2: Duany & Talen's Urban to Rural transect¹.

Strengths, Weaknesses, Opportunities, Challenges (SWOC) Analysis

A SWOC analysis was conducted for the Pinecrest Foster Farm community (Figure 3). The Study Area's proximity to major transportation corridors positions the community well for a transit-oriented redevelopment. OCH and the City's commitment to providing affordable housing near LRT stations is another strength of the site. However, the Study Area has several weaknesses, including a large brownfield, a discontinuous road network, inadequate infrastructure for pedestrians and cyclists, and a major physical barrier in the form of the highway and its associated sound wall. As such, while there are substantial opportunities for transit-oriented, affordable, mixed-use and mixed-density redevelopment, significant financial investment will be needed from the City, property owners, and developers to remediate the brownfield, construct new roads and connections to neighbouring communities, and support a safe and active public realm.

Strengths

- Pinecrest LRT station
- Located on prominent corridors
- Good access to public transit
- Land owned by OCH and City
- Existing apartment building
- Site's potential

Weaknesses

- Former landfill site
- Grading
- Highway sound barrier
- Stigmatization of the area
- Non-pedestrian friendly
- Lack of amenities

Opportunities

- Improve connectivity
- Establish a community centre
- Support from main stakeholders
- Surplus of recreational land
- Partnerships

Challenges

- Highway acts as a barrier
- Difficult to access external amenities
- Rigidity of road network
- Hesitation to welcome higher densities
- Leverage of funding



Figure 3: SWOC Analysis summary.

Concept Plan

The Concept Plan developed introduces a modified gridiron street network that supports multi-modal connections to the LRT station and throughout the community. The plan substantially increases the number of residential units onsite from 417 to over 3,800, a third of which are RGI or affordable units. It also provides equitably distributed green and open spaces for a diverse population, while setting aside spaces for institutional, retail, and office uses. A figure showing the site at full build-out with proposed building heights can be seen in Figure 4. A breakdown of key statistics for the proposed site, including dwelling units and density numbers, can be seen in Table 1.

Table 1: Summary of proposed statistics in Concept Plan.

Specifications	Existing Site	Proposed Site
Number of dwelling units	417	3,821
Number of residents	1,373	9,017
Office (GFA in sq.m.)	0	61,895
Retail (GFA in sq.m.)	1,660	14,924
Number of employees	95	4,187
Number of people and jobs per hectare	77	695
Institutional (GFA in sq.m.)	8,900	61,371
Average Net Floor Space Index (FSI)	0.50	4.44



Figure 4: Concept Plan with proposed building heights in storeys.

Implementation

Prior to beginning construction of new buildings in the Pinecrest Foster Farm community, many infrastructure projects and other activities will need to be undertaken. Table 2 below provides an overview of these projects.

Table 2: Pre-construction infrastructure projects.

Stage		Project	Approx. Timeline
Research	I	Form community engagement task force, work on master plans, secure financing, develop P3 strategies, conclude Pinecrest and Queensview Planning Study	0-3 years
Implementation	II	Conduct public engagement, construct LRT station, relocate softball diamonds, realign highway on/off-ramp, submit OPA and ZBLA applications	2-6 years
	III	Conduct public engagement, begin brownfield remediation, submit other planning applications, upgrade parks	6-9 years
	IV	Construct internal road network, re-house tenants, begin redevelopment	10-20 years

In Stage IV, redevelopment of the site can begin. The Project Team recommends that development be carried out in a manner consistent with Figure 6. This Phasing Plan prioritizes lands closest to the future Pinecrest LRT Station as well as substantial upgrades to Ruth Wildgen Park.



Figure 5: How the community might look in 2035.

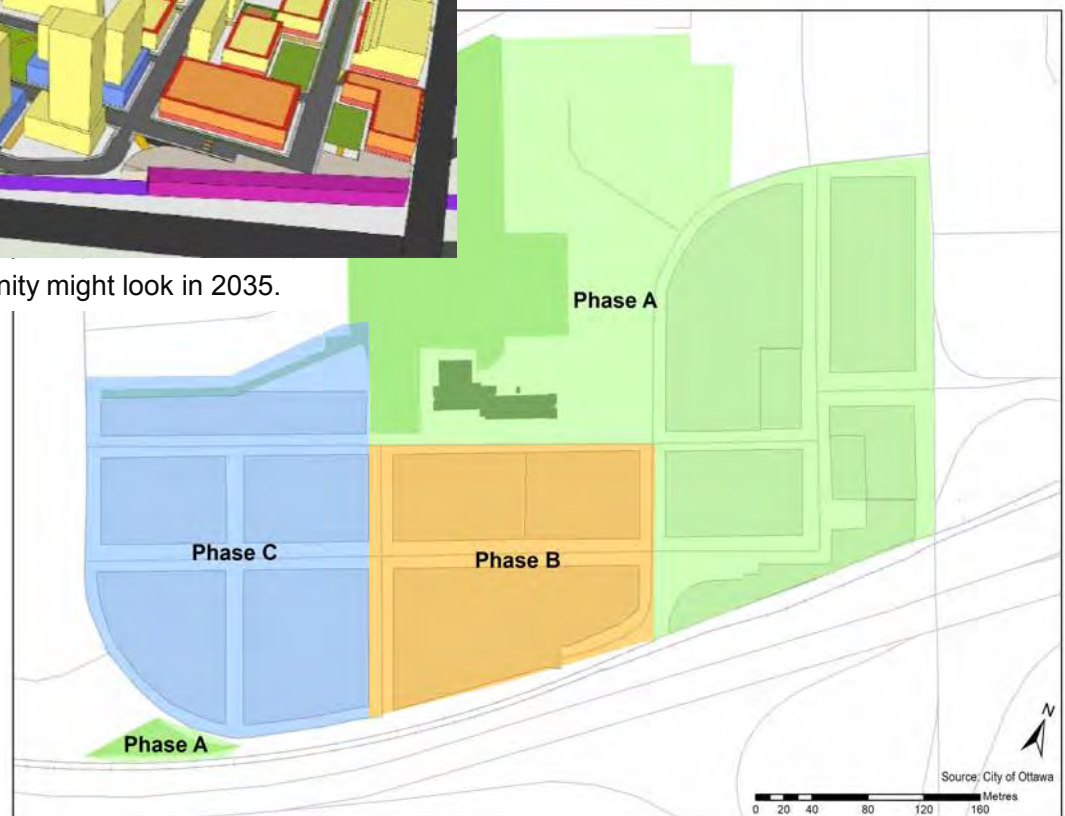


Figure 6: Phasing plan for redevelopment.

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This report is the result of the Land Use Planning Project Course at Queen's University's School of Urban and Regional Planning. Retained by Ottawa Community Housing (OCH), the Project Team presented the results of their work to OCH and City of Ottawa staff on December 10, 2018.

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The lands covered in this report are the traditional, unceded territory of the Algonquin people.

PROJECT TEAM



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01 INTRODUCTION

Rationale

The City of Ottawa is preparing for an expansion to its light rail transit (LRT) system in 2019, in the form of Stage 1 of the Confederation Line. This expansion of high order transit will provide new opportunities for growth in the urban area and it will transform the built environment in many neighbourhoods. The influx of growth and development to sprawling and less dense areas represents an opportunity for the City to ensure affordable housing is secured and protected.

One of the affected neighbourhoods, Pinecrest Foster Farm, is located adjacent to the future Pinecrest LRT Station, approximately 13 kilometres west of downtown Ottawa (Figure 1-1). The Pinecrest LRT Station forms part of Stage 2 of the Confederation Line, which is scheduled to begin service in 2023. Ottawa Community Housing (OCH), as a major affordable housing provider in the City and as a major property owner, has a key interest in ensuring that social and affordable housing continues to be provided in this neighbourhood.

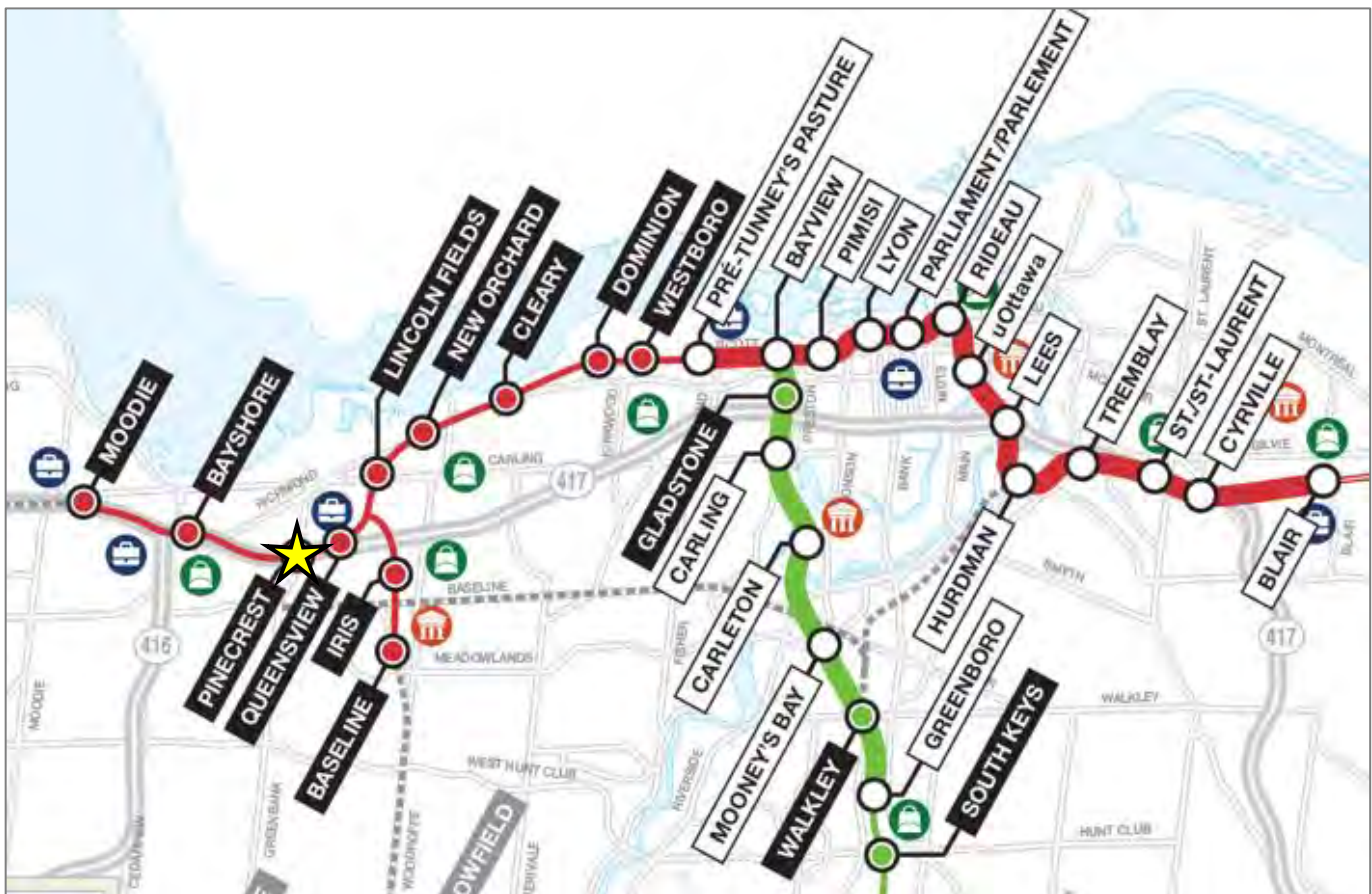


Figure 1-1: Confederation Line LRT stations, with Pinecrest highlighted².

OCH owns approximately nine hectares of land in Pinecrest Foster Farm, which includes an aging housing stock that will be replaced in approximately 10 years, following the introduction of LRT to the community. OCH, with support from the City of Ottawa, has retained the Project Team to create a plan of what Ottawa's Pinecrest Foster Farm community might look like if it were redeveloped according to transit-oriented development (TOD) principles.

Project Scope and Limitations

The geographic scope for this project is differentiated by the Study Area, the site, and OCH-owned property (Figure 1-2). The Study Area defines a broad area of interest surrounding the future Pinecrest LRT Station, with a focus on lands north of the Highway 417 and west of Pinecrest Road. The site is comprised of key lands to be considered for redevelopment and is the focus of the Concept Plan. The site itself is comprised of nineteen hectares of land, which include OCH-, municipal-, and province-owned properties, as well as a few key non-residential private properties. Finally, OCH-owned property, which forms part of the site and Study Area, includes a mixture of rent-geared-to-income (RGI) housing units in the form of two-storey townhomes and a fourteen-storey apartment building.



Figure 1-2: Map showing the Study Area, site, and OCH-owned property.

This report assesses the site conditions, as well as reviews the associated and relevant municipal, provincial, and federal policies. This work has been further informed by interviews with experts, site visits, and a review of local and international case studies. Equipped with this information, the Project Team has produced this report, which includes recommendations for development around the future Pinecrest LRT Station. This report is presented in tandem with a presentation to OCH and City of Ottawa staff.

This project did not include any form of consultation with residents in the Pinecrest Foster Farm community, or with the general public. The plan presented in this report is highly conceptual in nature and is assuming a final build-out date of 2035. At the time of writing, a City-led public consultation process, the Pinecrest and Queensview Planning Study, was underway to produce new transit-supportive policies and zoning in the community³. Should this Concept Plan be implemented in the future, it is recognized that substantive and ongoing public consultation would be a necessary and valued part in the redevelopment process.



Figure 1-3: The Pinecrest Foster Farm Study Area in relation to its surrounding area.

Study Area Context

Pinecrest Foster Farm is located thirteen kilometres west of Downtown Ottawa and two kilometres south of the Ottawa River. The area currently functions as an isolated bedroom community that is heavily reliant on automobiles. Based on analysis of Duany and Talen's Urban to Rural transect, the Pinecrest Foster Farm community fell between a Rural (T2) and Suburban (T3) Zone in the 1970s; however, the area has presently transitioned to falling within the category of Suburban (T3) or General Urban Zone (T4) (Figure 1-4). A T3 Zone primarily consists of single-detached homes on larger lots, while a T4 Zone is composed of primarily residential areas, consisting of single-detached homes and rowhouses on small- to medium-sized lots. The introduction of the Pinecrest LRT Station, scheduled in 2023, has the potential to bring the Pinecrest Foster Farm community into an Urban Centre (T5) or Urban Core (T6) Zone. A detailed overview of the history and context of the Pinecrest Foster Farm community can be found in Appendix A.

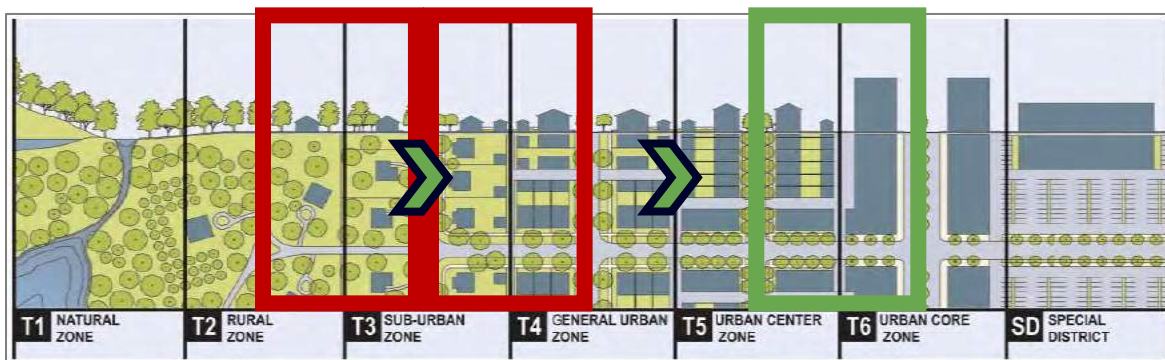


Figure 1-4: Duany and Talen's Urban to Rural transect⁴.



02 SITE CONDITIONS

Before exploring Pinecrest Foster Farm's potential, it is important to understand current conditions that could have major implications for community redevelopment. For a full overview of these conditions, please see Appendix B.

Natural Heritage and Open Space

As a future transit-oriented community, Pinecrest Foster Farm will see an increase in density that will put pressure on existing parks in the Study Area and will require park improvements to support the increase in population (Figure 2-1). New additions to municipal parkland and privately-owned public spaces (POPS) should be planned in a manner that connects and complements existing open spaces, while supporting a diversity of uses and users.



Figure 2-1: 400 metre buffers from municipal parks in the Study Area.

Environmental Constraints

The topography of the site, particularly the steep grading changes on the southern edge of Ruth Wildgen Park, will need to be taken into consideration for future development. This will be particularly important for the introduction of a new street network, which will affect mobility and future land uses. The contamination from a former landfill underneath Dumauiers Park also poses substantial challenges for the redevelopment of the community, and significant remediation will be required moving forward (Figure 2-2). Further study is needed to identify and prevent adverse impacts on human and ecological health as a result of the brownfield. A detailed overview of brownfield remediation strategies and recommendations for Dumauiers Park can be found in Appendix I.



Figure 2-2: The boundaries of the former landfill highlighting areas for potential contamination⁵.

Infrastructure Constraints

Concentrating growth in the urban area allows for a pattern and density of development that can better support active modes of transportation as alternatives to private automobiles. Road design enhancements have the potential to improve the level of service for all modes of transportation; however, vehicular traffic is currently very heavy in this area, so future development should seek to minimize an increase in vehicular traffic as much as possible. Ultimately, should existing infrastructure be inadequate for the proposed densities, costs of development in the subject area will rise as the developer will be responsible for providing the infrastructure upgrades.

Existing Built Environment

It is important to consider the existing land uses, buildings, and land ownership when examining the Study Area's built environment in order to understand the implications for redevelopment. Overall, the land uses onsite are quite separated and there is poor connectivity between properties (Figures 2-3 and 2-4). Work can be done to improve the built environment in order to form a more complete community.

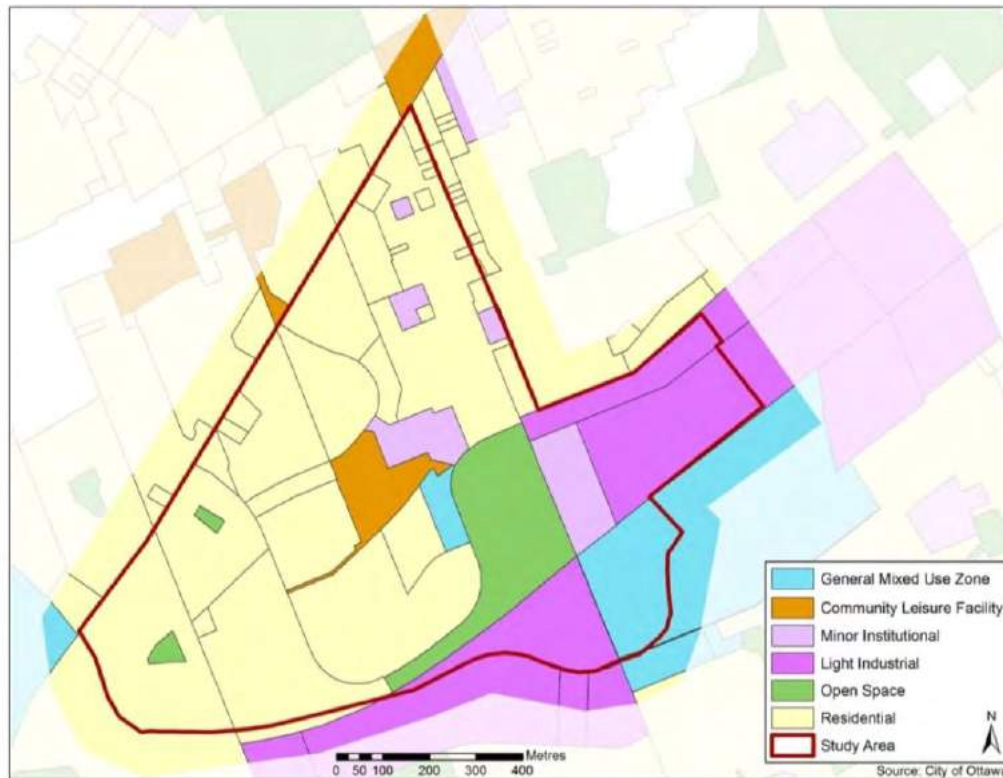


Figure 2-3: Simplified existing zoning of the Study Area.

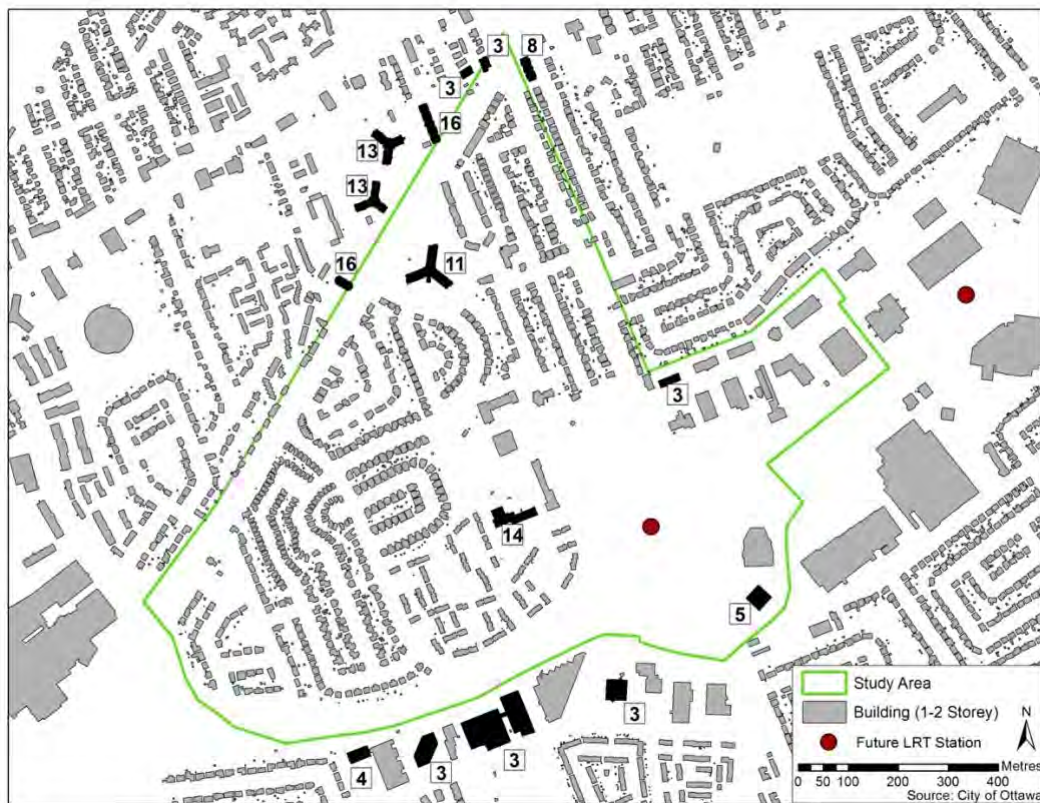


Figure 2-4: Figure-ground analysis with building heights for the Study Area.

The proposed Concept Plan will look to replace the rowhouses with TOD-supportive forms. Some of the existing buildings to be retained, including OCH's 14-storey apartment building, will need to be integrated into the redeveloped community. Fortunately, there are several large parcels of land, which will make a holistic re-development much easier (Figure 2-5).



Figure 2-5: Public and private land ownership in the Study Area and surrounding community.

Density Analysis

There are currently 417 residential units on the site with 1,373 residents total, all of which are located on OCH-owned property (Figure 2-6). As a result, the built gross density is 22 units per hectare, or 72 residents per hectare. When only OCH-owned lands are taken into consideration, the gross density increases to 47 units per hectare, or 153 residents per hectare. This makes the Pinecrest Foster Farm community comparable, in terms of density, to other TOD projects in Ottawa before their redevelopment, which ranged from 36 people per hectare (Cyrville) to 73 people per hectare (Blair)⁶.



Figure 2-6: Map showing the Study Area, the site, and OCH-owned property.

The City of Ottawa identifies gross density targets of 200 to 400 residents and jobs per hectare for transit-oriented developments⁷⁸. Aiming for similar targets would yield very much higher residential unit counts for the future Pinecrest Foster Farm community. Table 2-1 below shows the possible densities, populations, and unit numbers that could be planned for, consistent with City density targets. The ratio of 2.36 residents per unit was determined by calculating the average of residents per housing unit in the City of Ottawa. These numbers suggest that, to achieve the City's TOD density targets, the population on the site will need to increase to between 3,800 and 7,600 residents.

Table 2-1: A breakdown of resident density and associated units required.

Density Target Number of Residents per Hectare (gross density)	Numbers of Residents on the Pinecrest Village site (19 hectares)	Number of Units Required (Ratio: 2.36)
200	3,800	1,610
250	4,750	2,012
300	5,700	2,415
350	6,650	2,817
400	7,600	3,220

Circulation

It will be a challenge to create a more connected and cohesive network with the surrounding communities (Figures 2-7 through 2-10). The Highway 417 and its sound barrier isolate the Study Area, hindering connectivity to the southern commercial and employment areas.



Figure 2-7: The absence of sidewalks forces pedestrians to walk on the street.⁹



Figure 2-8: This is the sound barrier between the 417 and Dumaaurier Avenue. Sept 14, 2018.



Figure 2-9: These chainlink fences hinder connectivity. Sept 14, 2018.



Figure 2-10: This is a gravel path in the OCH-owned neighbourhood. Sept 14, 2018.

Expanding the cycling and pedestrian infrastructure will also be challenging due to the existing right-of-way widths, which limit development on, or adjacent to, arterial and collector roadways¹⁰. However, developing this infrastructure is crucial to improving connectivity, particularly to the future Pinecrest LRT Station, as the area intensifies and the volume of vehicular, bicycle, and pedestrian traffic increases.

The Study Area exhibits an oversupply of surface parking, and an almost non-existent cycling network. There are nine surface parking lots on OCH-owned lands, and separated surface parking lots for the Abraar School, the Boys and Girls Club, and the Paroisse St-Rémi Church. These amenities all experience different peak parking times, which creates the potential opportunity for shared parking if the fences between properties could be removed.

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03 ANALYSIS

A comprehensive analysis of economic variables, demographic trends, market indicators, and policy considerations was undertaken to understand the associated implications for the Pinecrest Foster Farm redevelopment. This insight will be used for the development of the Concept Plan, its implementation strategy, and the recommendations.

Economic Analysis

The economic analysis, located in Appendix C, examined economic variables on a variety of scales. Nationally, the long-term economic outlook is ambiguous as a result of uncertainties related to trade partners; however, the short-term outlook is much more positive as job growth and real estate investment volume increased significantly in 2017¹¹. Regionally, the economic outlook for Ontario is positive with steadily increasing gross domestic product (GDP) rates and strong employment trends; however, consumer costs and spending have increased¹². Locally, the technology industry is still growing at a healthy rate in Ottawa, counteracting job losses in other markets such as tourism¹³. Overall, Ottawa's unemployment in 2017 hit a 30-year low due to growth in the technology, public service, and construction industries¹⁴.

Implications for Redevelopment

The economic analysis conducted on national and regional scales indicates that the Canadian economy is performing well and that growth and investment levels are no cause for concern. However, the findings of increased consumer costs and spending have implications on redevelopment. If these trends continue, the need for affordable housing will increase, which puts more pressure on a successful redevelopment with the provision of additional affordable units to meet local demand. The growth in the technology, public service, and the construction industry has led to record employment levels, which bodes well for the provision of additional dwelling units in the urban area.

Demographic Analysis

An in-depth demographic analysis is essential to understanding the trends in housing, infrastructure, and service needs of communities, to inform visions of future growth and development. A detailed demographic analysis of Ottawa and the 0028.00 census tract (CT) can be found in Appendix C.

The population-based analysis found that between 2006 and 2016, the Ottawa census subdivision (CSD) population experienced significant growth, increasing by fifteen percent¹⁵. In contrast, the Study Area CT experienced population loss during this time, dropping from a total population of 6,800 to 6,650 people – a 2.2 percent decline¹⁶. The City of Ottawa projects that the City's population will increase between eleven percent and 21 percent by 2031¹⁷. Furthermore, populations of both the Study Area CT and the Ottawa CSD are aging; however, the Ottawa CSD population is aging at an increasingly accelerated rate. The median age of the Ottawa CSD population has increased by 4.4 percent between 2006 and 2016, from 38.4 to 40.1 years¹⁸. The population aged 65 and over in the Ottawa CSD had increased in proportion by 24 percent between 2006 and 2016¹⁹. In both the Ottawa CSD and Study Area CT, approximately half of private households in 2016 were comprised of two people and nearly three quarters were comprised of three people or less²⁰. Between 2006 and 2016, the average census family size decreased from 3.0 to 2.9 people in both the Ottawa CSD and Study Area CT²¹.

In 2016, 26.3 percent of the Ottawa CSD population identified as belonging to the visible minority population, increasing 6.1 percent from 2006²². In 2016, the proportion of the population identifying as belonging to the visible minority population was greater in the Study Area CT than in the Ottawa CSD at 37.7 percent; furthermore, the proportion identifying as visible minorities in both Ottawa and the Study Area CT increased rapidly from 2006 to 2016²³. This increase in the visible minority population corresponds with steadily increasing immigration rates, in recent decades, at the Ottawa CSD and Study Area CT scales.

In 2016, there were 373,756 private dwellings occupied in the Ottawa CSD, representing a 16.4 percent increase from 2006²⁴. Between 2006 and 2016, the dwelling types experiencing the most proportional increase were rowhouses and duplexes in the Ottawa CSD and Study Area CT, respectively. Homeownership was the most prominent tenure in the Ottawa CSD and Study Area CT. In 2016, 65.7 percent of populations at both geographic scales owned their homes²⁵. Despite making up the majority, the proportions of the populations owning homes at both geographic scales slowly

declined between 2006 and 2016²⁶. However, in both the Ottawa CSD and Study Area CT, slightly more than three quarters of the population spent less than 30 percent of income on shelter costs in 2016²⁷.

The median after-tax income of Study Area CT households was lower than that of Ottawa CSD households, and experienced significantly slower growth in household income over time. Between 2006 and 2016, the median after-tax incomes of the Study Area CT increased by 17.5 percent, from \$53,450 to \$62,805; whereas, the Ottawa CSD increased by 26.2 percent, from \$58,437 to \$73,745²⁸. In 2016, almost three quarters of the Ottawa CSD population aged 25 to 64 years had a post-secondary education, which is a 4.1 percent increase from 2006 rates²⁹. Academic attainment was lower in the Study Area CT, with 64.4 percent of the population aged 25 to 64 having completed post-secondary education in 2016³⁰.

Implications for Redevelopment

The demographic analysis found that Ottawa CSD and Study Area CT populations are changing, which will inevitably affect individual- and community-level needs. Moving forward, it will be crucial to consider these significant demographic changes in terms of the services and public amenities that would best fulfill such needs. Population growth on a City-wide scale will largely direct the need for housing in the future. The rapid population growth suggests that, if the current trends are to continue, additional housing and services will be needed throughout Ottawa. The growing visible minority population, and their prominence in the Study Area, suggests that significant consideration for their needs will need to be accounted for in the redevelopment.

Market Analysis

A detailed market analysis was conducted to guide the direction of building forms for the site's redevelopment, which can be found in Appendix C. The City of Ottawa is currently experiencing a hot real estate market, which is characterized by an overall low supply and affordable prices relative to other large Canadian cities³¹. The summer of 2018 was a seller's market with eighteen percent fewer listings than the previous year at the same time, and residential properties were selling for an average of \$433,684³².

Although a majority of Ottawa's residential market has been in high demand, condo units are still recovering from the large surplus of units. In 2012 and 2013, Ottawa saw 4,653 condo starts, more than double the yearly average over the past ten years³³. The condo construction boom led to an influx of condo completions between 2014 and 2016. This rising supply, coupled with weak demand, led to a high number of units remaining unsold³⁴. The recovery of Ottawa's condo market was largely enabled by a low vacancy rate in the rental market. Condo owners opted to rent out excess units, nearly doubling the number of condo units for rent between 2012 and 2016³⁵.

Despite past issues in the condo market, the stress test and the associated need for affordable units led to multiple proposed condo projects along the LRT line³⁶. There are currently several proposals for condos west of the City's downtown core, which contain several thousand units³⁷. Although the condo market has nearly recovered from the oversaturation of the 2014 to 2016 completion period, it is entirely possible that this could happen again given the highly variable construction market, as well as due to the proposals for residential projects containing up to 1,200 units, such as those at the Bayview LRT Station.

Ottawa's office market is supported by the federal government and the high-tech industry, both which are competing for prime office space for expansion purposes³⁸. It is expected that flexible office spaces along LRT lines will be desirable commodity with low vacancy rates, even reducing the high rates observed in Ottawa's eastern market³⁹. Many private groups are looking for larger spaces within the City on medium-term three- to nine-year leases⁴⁰. Currently, Ottawa's western office market contains just 550,000 square metres of the City's total office space, leading to quick lease-up of prime spaces when they become available⁴¹. Ottawa's office market looks promising, despite large federal office space restructurings. The site, located along a 417 LRT stop between Kanata, the new Department of National Defence campus, and downtown, is promising for leasing by both public and private sectors looking for a centralized location with advertising opportunities. It is also possible to locate a hotel onsite, due to the same location-based benefits.

Ottawa's retail market, like many other large cities, is one of the few real estate sectors experiencing significant challenges. In 2017, the overall retail space vacancy rate was 5.5 percent⁴². With the continued growth of e-commerce, minimum wage increases, higher interest rates, and a weakened Canadian dollar, Ottawa's retail market will likely continue to struggle⁴³.

Implications for Redevelopment

The demand for rental and mid-market housing is increasing. That being said, it will be critical to consider how the unstable condo market may affect the project. In previous years, Ottawa condo developments have had limited success, experiencing low absorption rates and remaining on the market for significantly longer than the previous average. The real estate market is predicted to experience greater uncertainty in the coming years, as multiple condo developments have been proposed along future LRT lines. Though condo development in the Study Area is highly appropriate given its general urban area designation and its proximity to transit, condo market oversaturation is a risk that could impact the project's profitability and its overall success.

Furthermore, extensive retail development will be difficult; therefore, it is recommended that convenience stores and neighbourhood-level retail are most appropriate for the site. As seen with Ottawa's condo market, the period in which a project is completed will largely influence its success due to rapidly changing market conditions. Planning when and what will be added to the market, relative to other projects in the city, will be critical to ensure successful leasing. Ensuring that the project aligns with economic, market, and demographic trends will enable financial success. Continuously evaluating these factors throughout the project will ensure these units are successful.

Given the rising costs of homeownership, the low number of three or more bedroom units available, and the large proportion of households with 3 or more members, there is a need for three or more bedroom units. This is especially important in the Study Area, where a large proportion of residents are immigrants and families, who earn less on average than the rest of the City. Providing affordable units in the Study Area, with a suitable number of bedrooms, will fill a need in the current and future markets. Unlike the typical real estate cycles seen in the past, the current trend of high investment, low vacancy rates, and growing rents and sale prices is not expected to slow in the near future, providing a promising outlook for large-scale residential development in the Study Area⁴⁴.

Policy Analysis

This section of the report assesses the impact of federal, provincial, and municipal policies on the Study Area, and their implications for the redevelopment of Pinecrest Foster Farm. For more information regarding these policies, please see Appendix C.

The federal policies reviewed were found to be only tangentially linked to the Study Area, as none of the lands within the Study Area are federally-owned. However, federal policies that call for an integrated, safe, and vibrant public realm connect with the vision and guiding principles of this project.

Provincial documents reviewed, including the *Provincial Policy Statement* and the Ministry of Transportation of Ontario (MTO)'s *Transit-Supportive Guidelines*, strongly support the aims of this project. Provincial policy endorses a safe, active, and pedestrian-oriented public realm that has equitably distributed open spaces, provides intensified affordable housing, and has transit-supportive land uses.

Almost all municipal policies and documents reviewed strongly support the vision and guiding principles of this project. The City of Ottawa's *Official Plan* supports compact, mixed-use development that provides affordable housing near rapid transit stations. This support is also reflected in approved and pending changes apparent in Official Plan Amendments (OPA) 150 and 180, which reinforce active transportation, taller building heights, and higher densities near high-order transit.⁴⁵ Additionally, the City's *Transportation Master Plan*, *Cycling Plan*, and *Pedestrian Plan* strongly support transit-oriented development that prioritizes safety and connectivity for non-vehicular modes of transportation.

However, the City's zoning provisions for the Study Area, which cover ten different zones, conflict with the vision and guiding principles of this project. Current zoning in the Pinecrest Foster Farm community reflects an automobile-dependent, low-density, and widely-dispersed built environment.⁴⁶ This zoning does not support a compact built form, mixed-uses, increased transit ridership, or a safe and connected environment for pedestrians and cyclists. The zoning provisions for the site will need to change to appropriately support transit and affordable housing in the area.

Implications for Redevelopment

The City of Ottawa's *Official Plan* directs growth to be concentrated in areas designated as Central Area, Mixed-Use Centres, Employment Areas, Enterprise Areas, Developing Communities, and Main Streets; whereas, the Study Area is classified as General Urban Area under the City's *Policy Plan*.⁴⁷ However, the City supports intensification in the General Urban Area in the case of lands within 600 metres of future or existing rapid transit stations, which positions the Study Area well for intensification. The City's *Urban Design Guidelines for High-rise Buildings*, which establishes guidance for the design of buildings ten-storeys or greater in height, will eventually be accompanied by zoning amendments for minimum tower separation distances, massing, shadow impact, and the provision of public and open space provisions⁴⁸. The Concept Plan has incorporated these guidelines for the Pinecrest Foster Farm community.

The Study Area forms part of an ongoing public consultation process in the form of the Pinecrest and Queensview Planning Study, which is reviewing adjacent lands to produce new policies and zoning for the area⁴⁹. The future Pinecrest and Queensview LRT stations will significantly change the surrounding urban fabric; therefore, new land use policy designations will be necessary to account for this change.

There is potential to introduce site-specific TOD policies for the Study Area, similar to those in place for the Tremblay, St. Laurent, Cyrville, Blair, and Hurdman LRT stations, as identified in Annex 6 of the *Official Plan*⁵⁰. TOD areas have a minimum density target of 120 people and jobs per gross hectare⁵¹. These policies should be accompanied by new zoning provisions for the site, along with a secondary plan covering the communities immediately surrounding the future Pinecrest and Queensview LRT stations.

While current parking provisions for the Study Area reflect an auto-dependent built environment, there is significant potential to reduce the supply of parking and support transit-oriented development. Section 101 of the *Zoning By-law* states that where a non-residential or mixed-use building has an active entrance located within 300 metres of a rapid transit station, such as Pinecrest LRT Station, minimum parking provisions will be calculated using the rates for the Inner Urban Area, where much lower minimum parking ratios apply and the requirement for off-street parking is waived in some cases.⁵² Similarly, Section 103 of *Zoning By-law* establishes maximum parking space provisions for lots located within 600 metres of a rapid transit station.⁵³ However, the Project Team finds these maximum parking ratios are too generous for the Study Area, and will be recommending much lower parking provisions to support high-order transit into the future.

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04 DESIGN PROCESS

Public consultation was not part of this report; however, it is recognized as a necessary and valued part of the redevelopment process. In lieu of that public consultation for this report, the Project Team conducted a design process, which consisted of weekly client consultation, industry expert interviews, a stakeholder analysis, a SWOC analysis, a design charrette, as well as a thorough analysis of City policies, case studies, and precedents. Each of these exercises informed the Vision Statement and Guiding Principles for the Concept Plan. More information on the design process can be found in Appendix D.

SWOC Analysis

Table 4-1: SWOC analysis chart.

	Internal	External
	<i>Strengths</i>	<i>Opportunities</i>
Positive	<ul style="list-style-type: none"> The site is close to the future LRT station The site is located on a prominent east-west, north-south corridor The site is well-served by public transit There is a large amount of land involved The site lends itself well to mixed densities, uses and incomes The ability to introduce mixed-uses and employment opportunities on the site The mixed-residential target markets (mid-market, true market, and RGI, as well as ownership and rental) to form an inclusive community The existing apartment building has a strong concrete foundation 	<ul style="list-style-type: none"> To improve site connectivity to the surrounding area, particularly with cycling and pedestrian infrastructure links to the adjacent area To establish a new, larger community centre to welcome the surrounding community to the site The main stakeholders, OCH and the City, are flexible and supportive of redevelopment There is an above-average supply of recreational land in the area, which could possibly be used for the relocation of the baseball diamonds To introduce sustainable, large-scale energy delivery systems on the site
Negative	<i>Weaknesses</i>	<i>Challenges</i>
	<ul style="list-style-type: none"> The former landfill/brownfield site (Dumaurier Park) will require remediation The current urban fabric makes developing a gridiron street pattern difficult The grading differences in Ruth Wildgen Park and around the north-west cloverleaf limit potential road network expansion through the area The sound barrier for the highway creates a hostile environment The current housing is relatively low density for a future TOD site The SURP Project Team is unable to hold public consultation for this plan The stigmatization in the area due to the history of social housing on the site The Pinecrest Road corridor is an unsafe space for pedestrians and cyclists The lack of amenities on the site The proximity of the softball diamonds to the future LRT Station Currently a very car-dependent community 	<ul style="list-style-type: none"> The highway acts as a barrier to the neighbourhoods to the south The lack of pedestrian and cyclist infrastructure makes it difficult to access external amenities without the use of an automobile The surrounding community's road network is fairly rigid and must be taken into consideration for the future street pattern's external connectivity The community surrounding the site is low density and these stakeholders may be hesitant to welcome higher densities to accommodate future population growth The ability to leverage enough funding for this large-scale redevelopment

Table 4-2: SWOC implications for redevelopment.

SWOC Implications for Redevelopment	
Circulation and Connectivity	<ul style="list-style-type: none"> • The road network will need to be revised to improve connectivity • The conditions along the highway sound barrier need to be improved • Grade changes on the site will limit the design of the new road network • OC Transpo buses will need a new connection to the future LRT station • Infrastructure for cyclists and pedestrians must be developed
Transit-Oriented Developments	<ul style="list-style-type: none"> • Concentrate the highest densities, including employment and commercial uses, near the future LRT station • The existing BRT loop will require rethinking to better integrate with the future LRT station • There is a need for an extensive, multi-year public engagement project for TODs/intensification • There needs to be a transition in the built form to appropriately relate to the surrounding low-rise neighbourhoods • There is potential to use density bonusing to leverage community amenities from developers
Affordable Housing Redevelopment	<ul style="list-style-type: none"> • There is a need to phase redevelopment to minimize tenant displacement and community disturbance • There needs to be consideration for opportunities to re-house existing tenants on site • The family-sized units (3+ bedrooms) should be located at grade, in low-rise developments
Parks, Open Spaces, and Community Amenities	<ul style="list-style-type: none"> • There is an abundant supply of parks/green spaces, but they are currently poorly connected • The future intensification will put pressure on the existing greenspace • The soil contamination in Dumaui Park will require remediation, if it is to be developed • The existing Foster Farm community centre will not be able to accommodate the growing population • There is potential to co-locate schools, community centres, parks, and other community amenities

Implications for Implementation

Strengths

The Study Area's proximity to two major transportation corridors makes it a promising site for a transit-oriented, mixed-use and mixed-income redevelopment. OCH is the largest landowner within the Study Area, and both OCH and the City are committed to increasing affordable housing close to the future Pinecrest Station. This highly co-operative relationship between OCH and the City is beneficial to the planning of an inclusive, sustainable, transit-oriented community in the Study Area. This combination of OCH and City-owned land provides significant potential for a comprehensive planning and development process that considers multiple property parcels.

Weaknesses

In terms of weaknesses, a major parcel of City-owned land, Dumaurier Park, and several adjacent private properties to the north were formerly a landfill. If development is to occur on this land immediately adjacent to the LRT station, soil remediation will have to be financed and coordinated within the development process. Furthermore, the existing road network in the Study Area features discontinuous, looping roads that obstruct connectivity for all modes of transportation. This is especially relevant with the ramps used to access the Highway 417, and the streets surrounding OCH-owned properties. Improvements to the road infrastructure will also need to address grade changes across the Study Area. Additionally, the sound barrier on Dumaurier Avenue running parallel to Highway 417 creates a hostile environment. This condition should be addressed as part of the plans for the low-rise townhouse and associated parking lots redevelopment. Finally, due to the long-term nature of any plan to redevelop the Study Area, the Project Team will be unable to engage with the public on any matters with respect to this report. As such, it must be understood that the findings and recommendations of this report do not substantively take resident perspectives into consideration.

Opportunities

The Study Area offers many opportunities for transit-oriented, mixed-use and mixed-income redevelopment. The large amount of land owned by OCH and the City provides the opportunity to re-orient the street network, to improve the local community amenities, and to consider the implementation of a district energy system.

Challenges

A redevelopment on this scale will require a significant financial investment from OCH. In particular, the costs to remediate the landfill and to relocate the softball diamonds in Dumaurier Park to facilitate redevelopment could be prohibitively expensive for a social housing provider. Highway 417 also acts as a barrier to the communities south of the Study Area. This problem compounds the lack of access to local amenities within walking distance. The largely low-rise residential area that surrounds the Study Area may be opposed to redevelopment within the Study Area; particularly high-rise development proposals.

Design Charrette

Overview

The Project Team hosted a design charrette at Queen's University located in Kingston, Ontario. There was a total of 22 participants representing OCH, the City of Ottawa, the City of Kingston, Fotenn Consultants, David Schaeffer Engineering Limited, and Queen's University. The charrette encouraged participants to consider the conditions of the Study Area and create design options to inform the final vision for the Pinecrest Foster Farm community. The charrette included several presentations by the Project Team to inform participants of several considerations to the future development of the subject site (Table 4-3). After the four workshops, participants were divided into four teams to sketch out design options and Project Team members were available to answer questions and facilitate discussion.



Figure 4-1: Break out drawing group sessions at the charrette discussing design ideas. October 23, 2018.

Table 4-3: Key discussion points from workshop stations.

Workshop Station	Key Discussion Points
Affordable housing redevelopment case studies	<ul style="list-style-type: none"> • Phase redevelopment to minimize tenant displacement • Consider opportunities to re-house existing tenants on-site • Family-sized units should be located at grade in low-rise areas
Circulation in the Study Area	<ul style="list-style-type: none"> • The road network needs to be revised to improve connectivity • The conditions along the sound barrier are unattractive and unsafe • Grade changes through the Study Area may limit the future road network • Local buses will need a way to connect to the future LRT station • Need to improve cycling/pedestrian infrastructure and connectivity
TOD case studies	<ul style="list-style-type: none"> • Highest densities should be concentrated near the future LRT station • Redesign existing BRT loop to better integrate with future development • Need for a multi-year public engagement process • Transition the built form to respect the surrounding low-rise neighbourhood • Use density bonusing to leverage community amenities from developers
Open spaces in the Study Area	<ul style="list-style-type: none"> • There is an abundant supply of parks, but they are poorly connected • Intensification will put pressure on existing green spaces • Contamination under Dumaurier Park will require soil remediation • Existing community centre will not be able to accommodate a growing population • Potential to co-locate schools, community centres, parks, and other amenities

Implications

Participants provided invaluable insight based on their experience and expertise to the Project Team during these sessions (Figure 4-2). Images of some of the drawings that were produced can be found in Appendix D. Although there were many significant differences between the approaches taken by the various design groups, some common elements included the following:

- Concentrate the highest heights and densities adjacent to the future Pinecrest LRT Station and along the 417, with appropriate building transitions in closer proximity to the existing low-rise residential neighbourhood.
- Create a road extension from Ramsey Crescent westward, to connect to Dumaurier Avenue.
- Re-alignment of the double T-intersections at Dumaurier Avenue, Queensview and Pinecrest Road was not found to be necessary and, in fact, was seen as a positive traffic calming measure.
- Acknowledged need for efficient bus access to the LRT station.
- There is potential for a pedestrian bridge connection across Highway 417, to connect the LRT station and Study Area to the community to the south.
- Co-locate a larger community centre with other institutional uses and services.



Figure 4-2: Final sharing sessions at the design charrette at Queen's University. October 23, 2018.

Case Studies and Precedents

A total of 77 case studies from eight countries were evaluated to inform the design concepts for the Study Area. From this list, 17 cases were selected for detailed review. Projects were categorized into three themes: Transit-oriented development, affordable housing redevelopment, and rapid transit station design. Appendix D provides the full list of case studies examined, the evaluation rubric for shortlisting cases, and the 17 case studies examined in-depth.

Transit-Oriented Development

Transit-oriented developments (TODs) are mixed-use, walkable, urban communities built around a rapid transit station. TODs seek to provide road networks, land uses, densities, and urban forms to support transit use. TODs have been implemented in many cities worldwide. Planners and decision-makers cite TODs as solutions to problems associated with sprawl, and TODs are being recognized for their potential to transform automobile-centric built form.

Relevance to Pinecrest Foster Farm

The Pinecrest Foster Farm community is ideally situated for a TOD. There is a large amount of land immediately surrounding the future LRT station that is owned by major property owners including the province of Ontario, the City of Ottawa, and OCH. However, the current road network and surrounding commercial and industrial uses are automobile-oriented, with large open spaces dedicated to surface parking.

As part of this study, more than 20 TOD case studies were evaluated for those that were most applicable to the Study Area, among which seven were chosen for in-depth study, including the following:

- Brentwood Station, Calgary, AB
- Collingwood Village, Vancouver, BC
- Hurdman Station, Ottawa, ON
- Oakridge, Vancouver, BC
- Orenco Station, Portland, OR
- Pleasant Hill, Contra Costa, CA
- Westbrook Station, Calgary, AB

Lessons Learned

- Parking should be limited to promote other modes of transportation, including walking, cycling, and transit;
- Large surface parking lots and auto-oriented uses are not appropriate in TOD areas;
- Appropriate building height transitions should be ensured between high-rise and low-rise areas;
- TOD areas should form complete communities, featuring a balance of uses;
- A coordinating agency may be needed to coordinate development between adjacent property owners;
- Brownfields in TOD areas represent key opportunities for mixed uses and higher densities;
- Public investment and a long-term, highly engaged consultation process are needed to support TODs;
- A long-term, highly engaged public consultation process is crucial for TODs; and
- TODs need to include housing and amenities that can support families: schools, daycare, recreation, etc.

Social Housing Redevelopment

The case studies below feature the redevelopment of affordable housing communities in proximity to transit options. 20 affordable housing case studies were chosen, among which the following four were selected for in-depth analysis:

- Benny Farm, Montreal, QC
- Kabelwerk, Vienna, Austria
- Lawrence Heights, Toronto, ON
- St. Lawrence Neighbourhood, Toronto, ON

Lessons Learned

- A collaborative, public planning process is key to ensuring resident satisfaction in the redevelopment;
- An effective phasing strategy is necessary to minimize disruptions for tenants due to displacement;
- Energy efficient building design can lower long-term costs for property owners and residents; and
- Providing affordable housing in proximity to transit can reduce car reliance.

Station Design and Mobility Hubs

Given that the future Pinecrest Light Rail Transit (LRT) Station is scheduled for completion in 2023, station design case studies and mobility hubs were also considered to examine the built environment immediately surrounding rapid transit stations. More than 30 case studies were reviewed, among which the following seven were selected for in-depth study:

- Bayview Station, Ottawa, ON
- Galatyn Park, Richardson, TX
- Mockingbird Station, Dallas, TX
- New Westminster Station, BC
- Pimisi Station, Ottawa, ON
- Sheridan Station Area, Denver, CO

Lessons Learned

- Multi-modal connectivity to the transit station must be ensured throughout the Study Area, with pedestrian access given the highest priority and vehicular access the lowest priority;
- Public spaces near transit stations assist in placemaking to create a vibrant public realm; and
- The phasing of redevelopment in relation to a new transit station needs to be properly timed to ensure transit-supportive planning.

Vision Statement and Guiding Principles

Informed by background research, engagement with key stakeholders, the site visit, and case study review, the Project Team developed the following vision statement and principles to guide the TOD Concept Plan for the Pinecrest Foster Farm community.

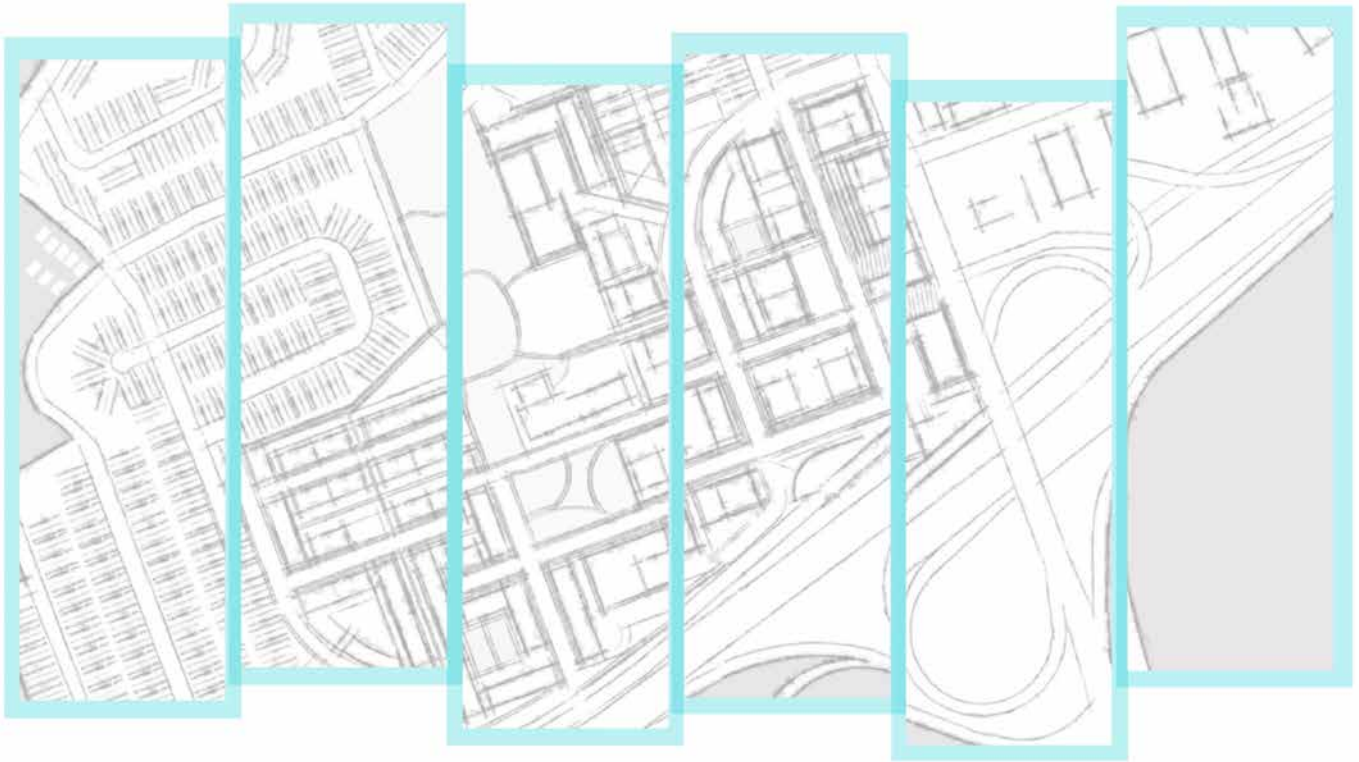
Vision Statement

Pinecrest Foster Farm will become an inclusive, mixed-use, and transit-oriented community that is a safe and liveable environment for residents and visitors.

Guiding Principles

1. *Provide compact residential development with a variety of housing forms and tenures*^{54;55;56;57;58}.
2. *Prioritize safe and efficient multi-modal connections, with an emphasis on pedestrians, cyclists, and transit riders*^{59;60;61;62}.
3. *Create an inclusive public realm that fosters a sense of belonging*^{63;64;65;66;67;68}.
4. *Establish community resources in walking distance of the future Pinecrest LRT Station*^{69;70;71;72;73}.
5. *Promote environmental stewardship and energy efficiency through sustainable design*^{74;75;76;77}.

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05 CONCEPT PLAN

This chapter provides an overview of the Project Team's Concept Plan for a future, transit-supportive Pinecrest Foster Farm Community, including the proposed circulation network, public realm plan and distribution of land uses. For the complete Concept Plan, see Figure 5-26.

Circulation and Connectivity Plan

The Concept Plan includes a modified gridiron street network that was developed to optimize the amount of developable land, while improving connectivity to the future LRT station and the adjacent neighbourhoods. The current road network lacks east-west connectivity, making it difficult to navigate the site. In addition, the curvilinear nature of Dumaurier Avenue posed difficulties when designing a street network that does not create challenging parcel sizes and shapes. This was a key consideration in the conceptualization of the new road network. The proposed rights-of-way (ROWs) provide options for efficient circulation, as the volume of pedestrian, cyclist, and vehicular traffic will increase with the introduction of the LRT and subsequent redevelopment.

Road Network

The City of Ottawa's *Road Corridor Planning & Design Guidelines* played an integral role in determining appropriate widths and in deciding the distribution of uses within a designated ROW (Figure 5-1)⁷⁸.

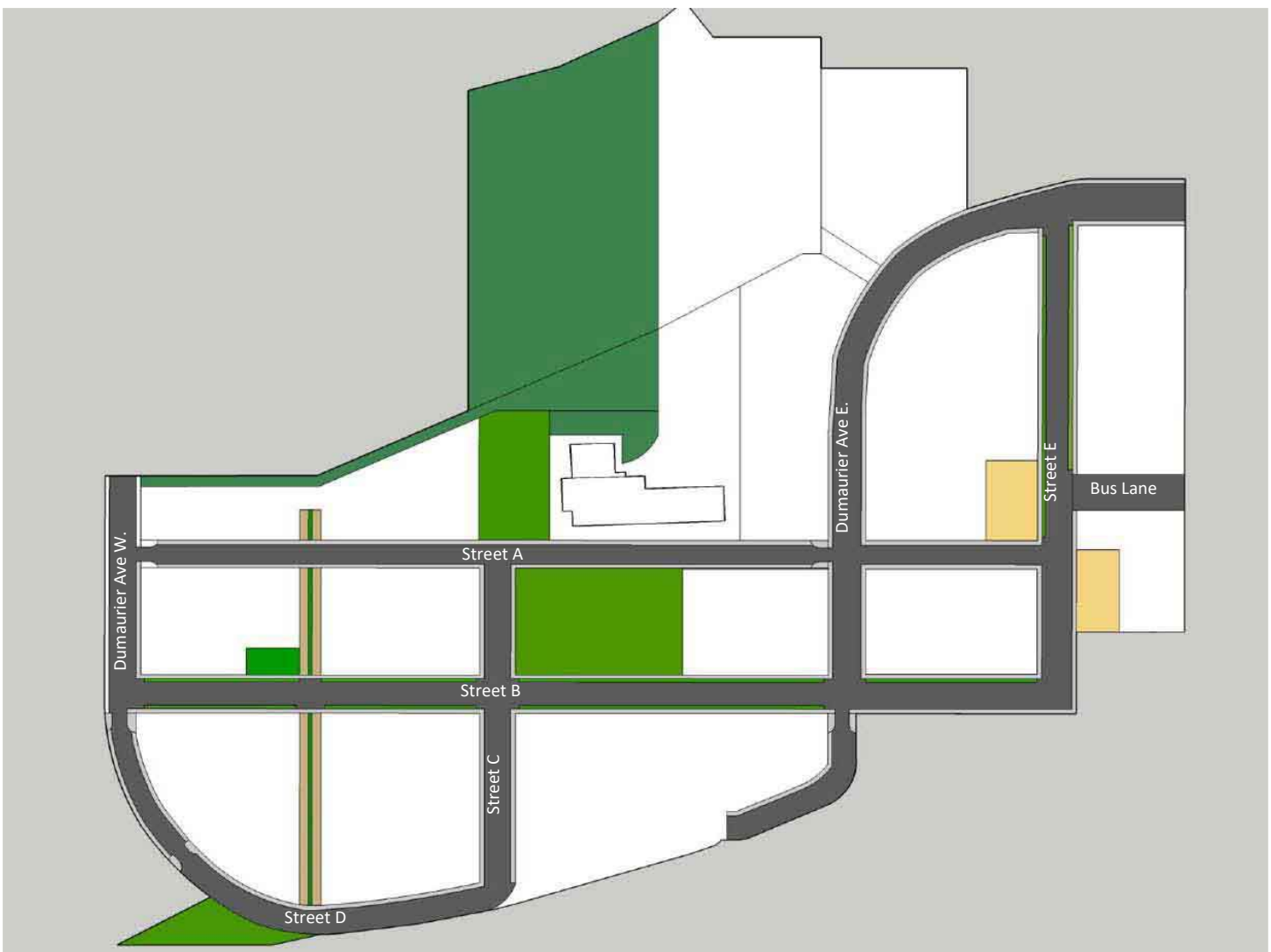


Figure 5-1: The new modified grid road network and open space system.

Street A (New Local street)

Street A is an east-west connection that has been proposed on the site (Figure 5-2). It aligns with the original Dumaurier-Ramsey intersection; however, it runs parallel across the site, intersecting with Dumaurier Avenue West. This street is intended to be a local street with a width of 16.5 metres. Street A can accommodate on-street parking, which is appropriate given its access to the multiple parks in the area. One change to note in this ROW is the addition of sidewalks on both sides of the street, as well as landscaping on the north side of the street.

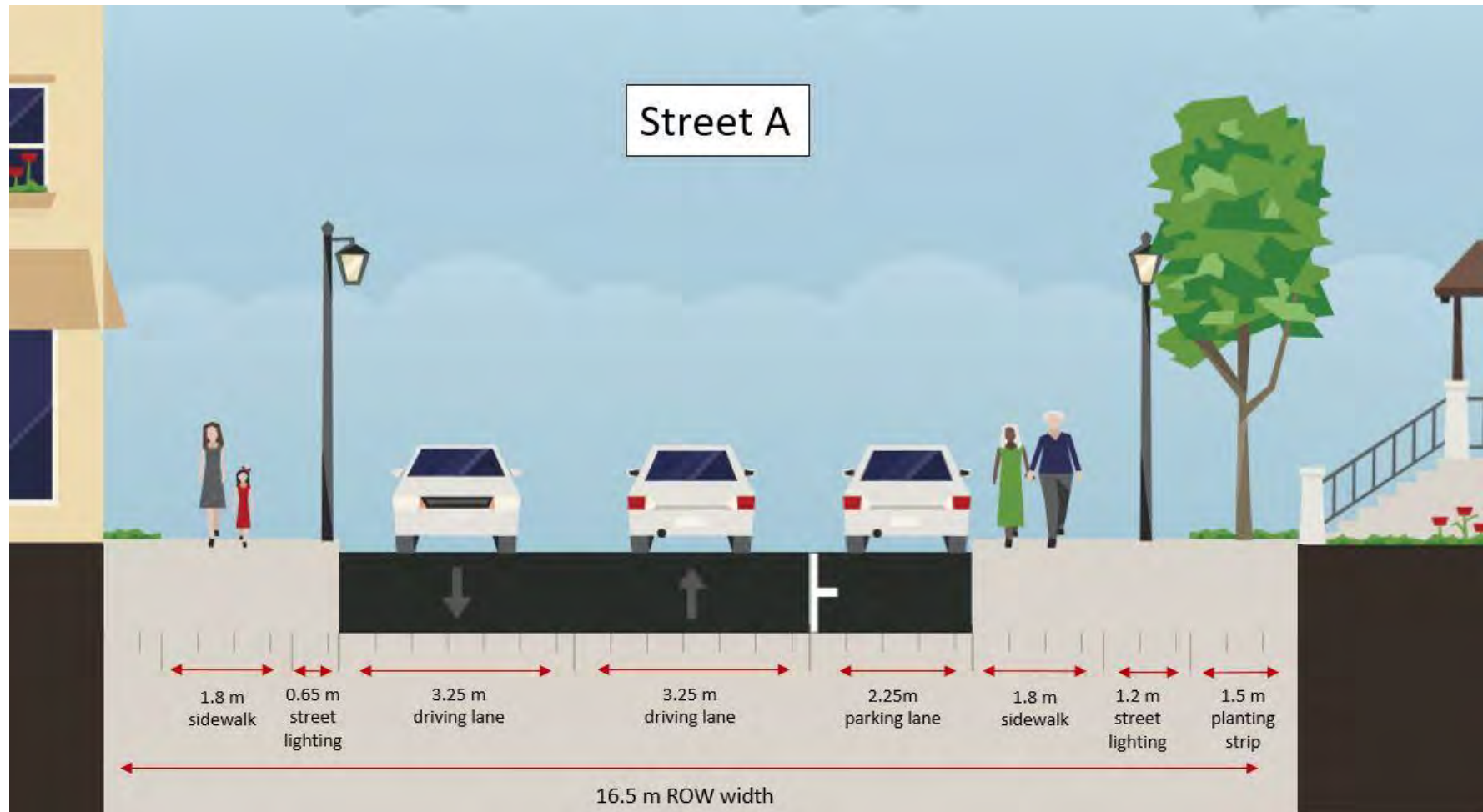


Figure 5-2: Street A ROW cross-section.

Street B (New collector/complete street)

Street B is an entirely new east-west connection, which runs directly through the Pinecrest Foster Farm community (Figure 5-3). The road is 22 metres wide and accommodates two traffic lanes, dedicated bike lanes, and landscaped sidewalks. The purpose of Street B is to create a direct connection to the LRT station, which is important given the proposed densities. Generous landscaping along the road will provide a boulevard pedestrian experience, allowing residents to safely and efficiently access transit by foot or bicycle. Once connected to the LRT station, Street B turns north and aligns with Street E.

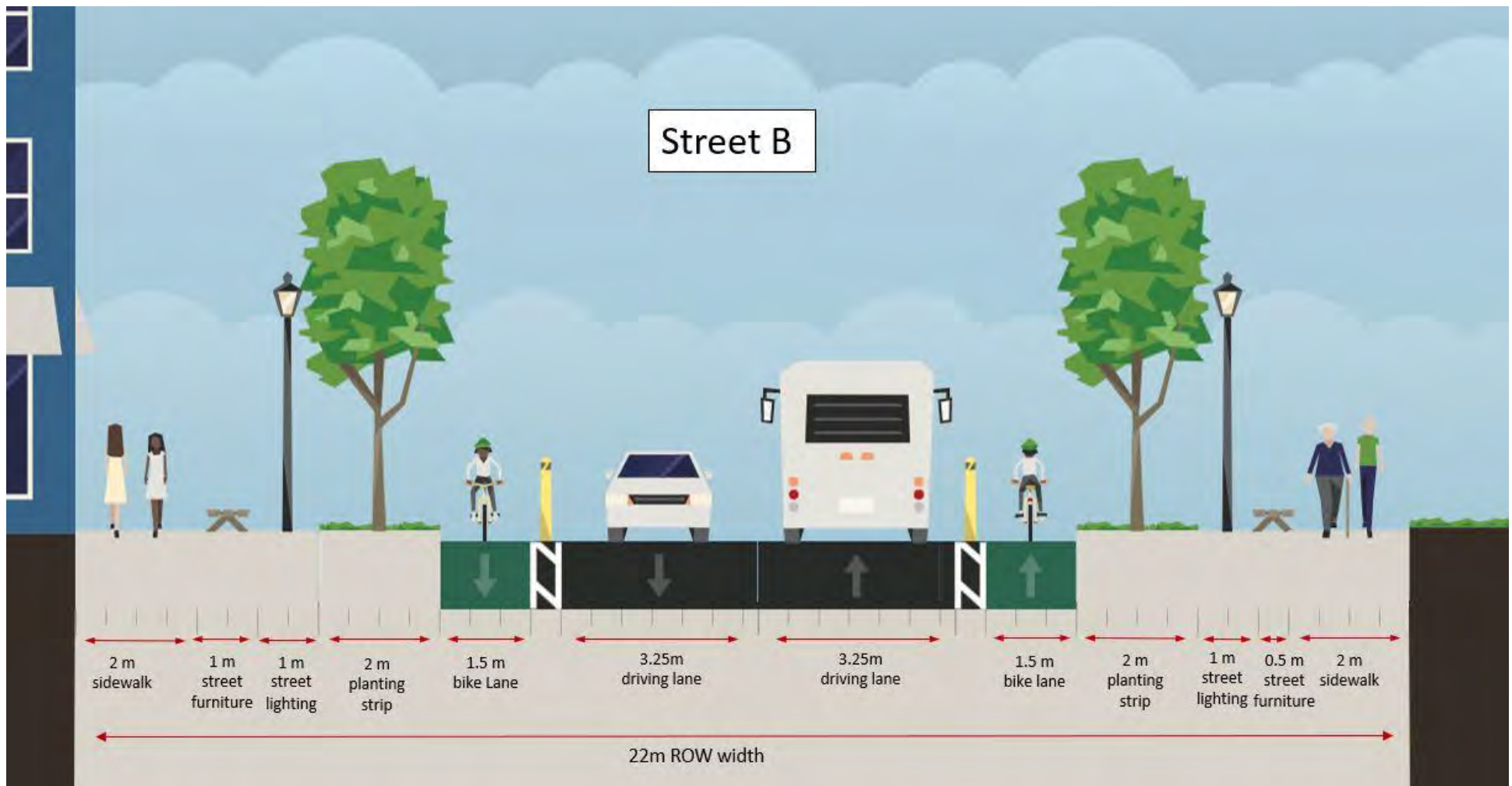


Figure 5-3: Street B ROW cross-section.

Street C (New local)

Street C is a semi-new street that aligns with the previous intersection of Ramsey Crescent and Dumaui Avenue, at the southern extent of the site (Figure 5-4). It is situated on top of major pre-existing subsurface infrastructure. The street runs north-south through the centre of OCH property and links directly into Ruth Wildgen Park. This street creates a clear view towards the park and allows residents to easily access these amenities. Future considerations may include potential for a pedestrian and cycling bridge to link the redeveloped site with neighbourhoods south of the Highway 417.

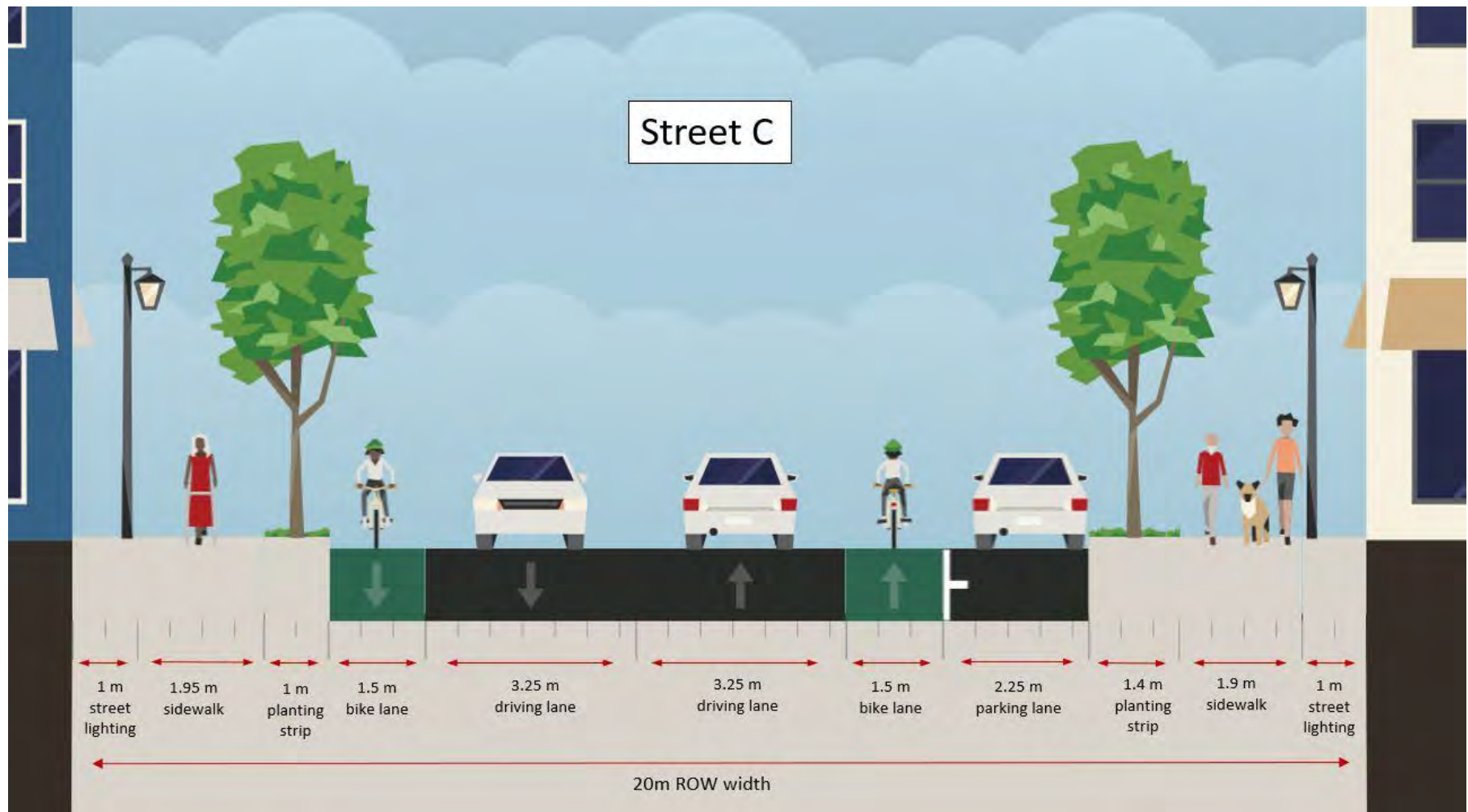


Figure 5-4: Street C ROW cross-section.

Street D (Existing/backlane)

Street D is the existing portion of Dumaurier Avenue, south of Street B, which connects with Street C (Figure 5-5). This road has been repurposed into a back lane/local street condition, not a collector. The key purpose of this roadway will be to access buildings on blocks C and E. It was determined that Dumaurier Avenue contains significant municipal infrastructure that will continue to service the site and will require upgrades as the area develops. The back lane will be reduced to 16.5 metres and feature a single loaded sidewalk on the north side of the street. This will preserve access to the existing subsurface infrastructure, reducing the costs associated with their relocation.

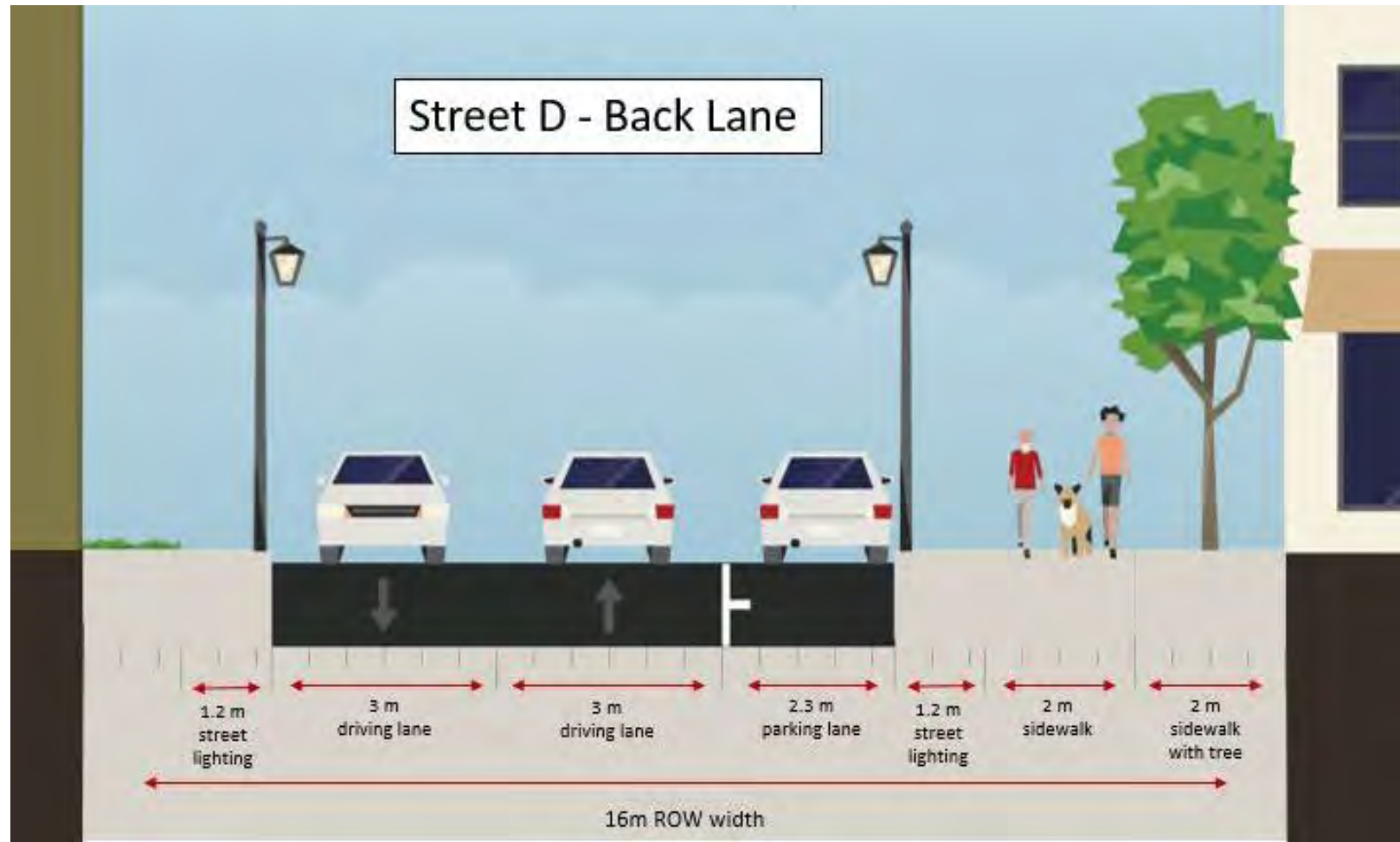


Figure 5-5: Street D ROW cross-section.

STREET E (NEW COMPLETE STREET)

Street E will create a vista south towards the future LRT station (Figure 5-6). Frontages lining this north-south section will be animated with commercial uses at grade, in combination with landscaping and bicycle lanes to provide a pleasant pedestrian and cycling experience.

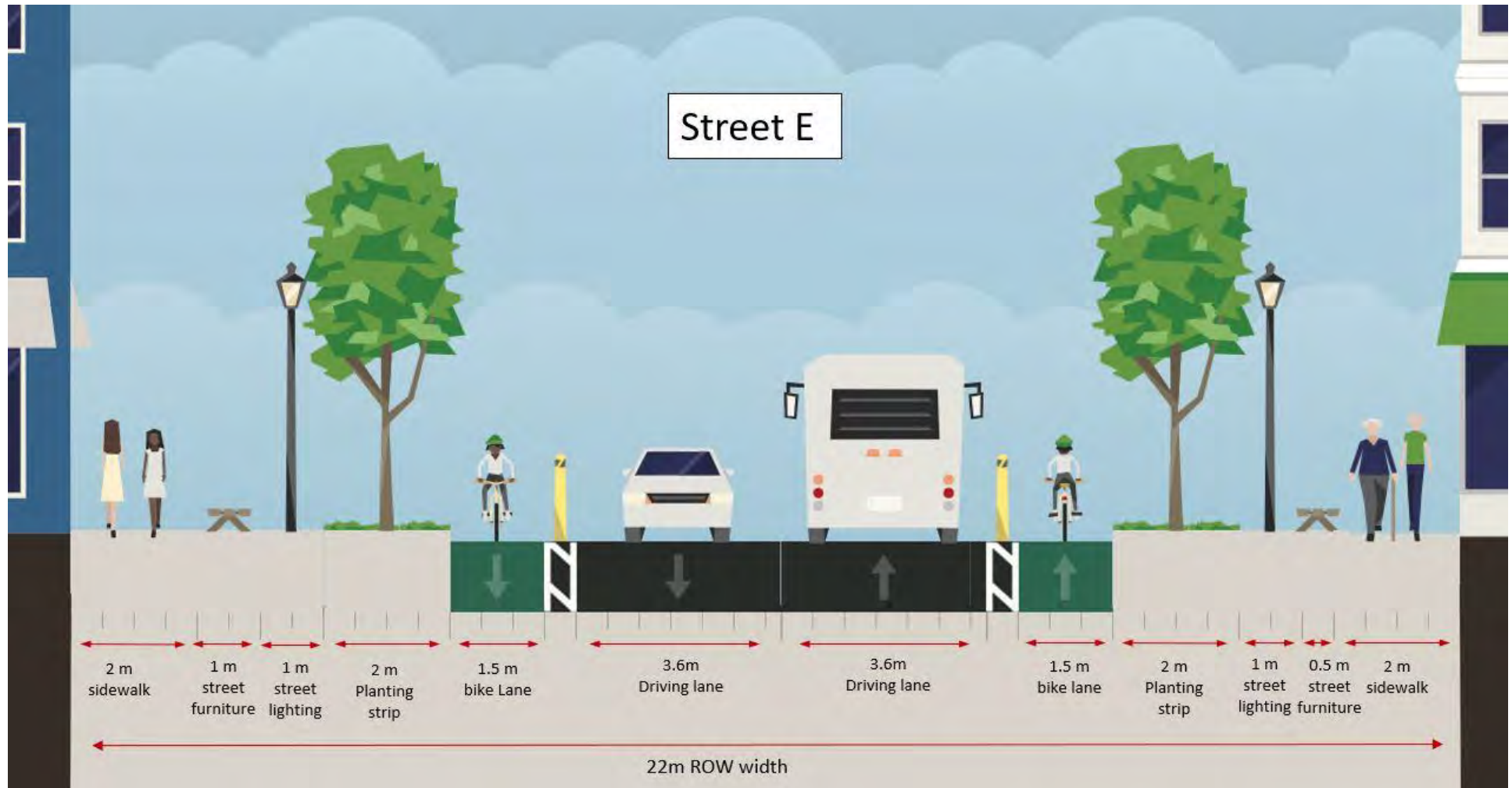


Figure 5-6: Street E ROW cross-section.

BUS LANE (DEDICATED ACCESS)

Bus circulation to the new LRT station is integral to the success of the site (Figure 5-7). The Project Team drew inspiration from Orenco Station in Oregon in designing a bus loop. Buses will enter off Pinecrest Road onto Dumaui Avenue East, circulate around a block immediately north of the LRT Station, and then exit using a bus-only lane. The bus-only lane will minimize delays in service and make use of an existing signalized intersection on Pinecrest Road.

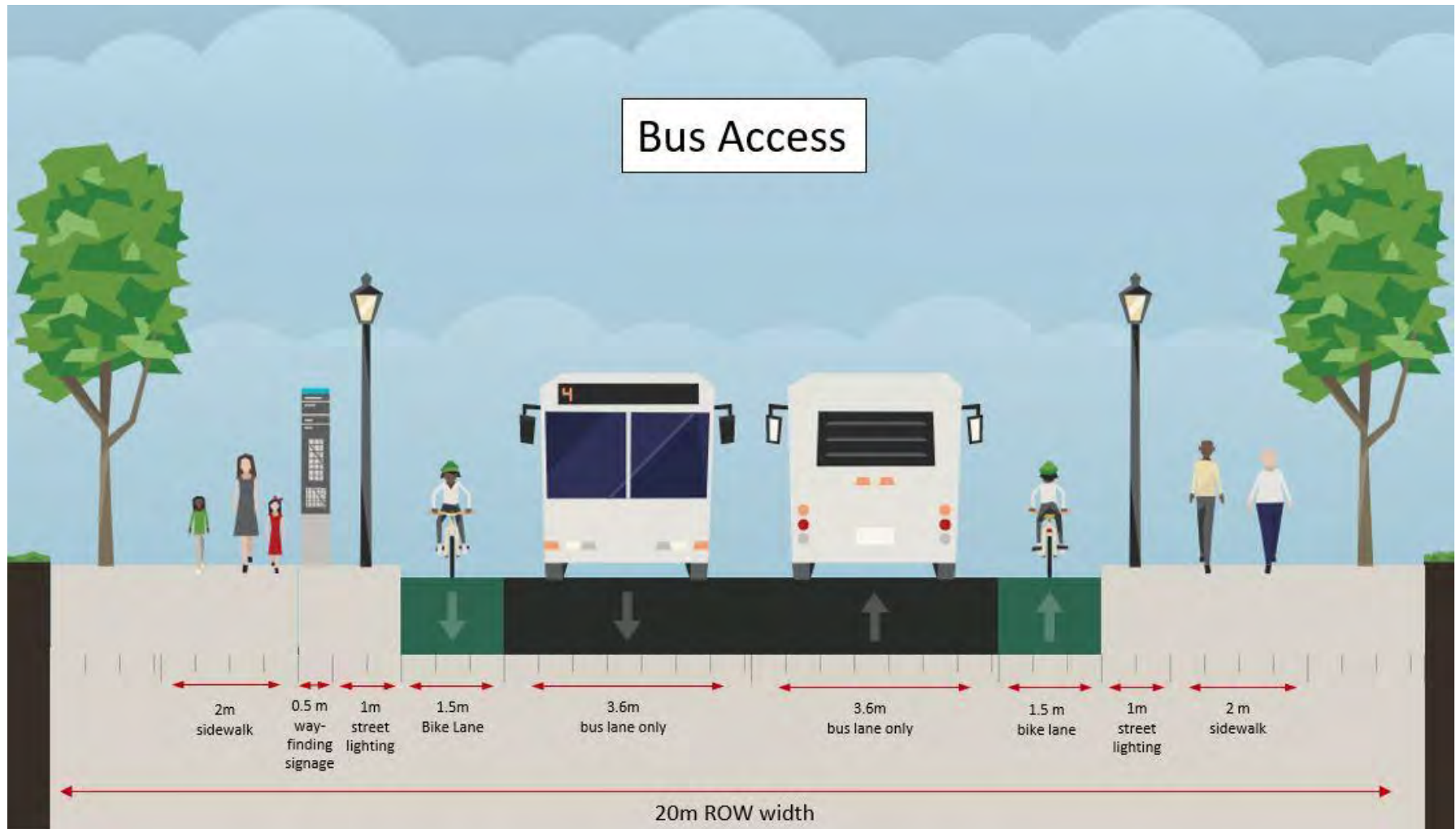


Figure 5-7: Bus Lane ROW cross-section.

Block Layout

The following block layout was established based on developable parcel dimensions, which could support the building precedents outlined in Appendix D (Figure 5-8). Ottawa's *TOD Design Guidelines* state that block lengths should not exceed 150 metres; furthermore, this guideline was supported by multiple other TOD case studies (Figures 5-9 through 5-12)⁷⁹. Blocks G and H do exceed 150 metres in length; however, mid-block pedestrian connections were incorporated to allow connectivity and block separation.



Figure 5-8: Road network and block layout with dimensions.

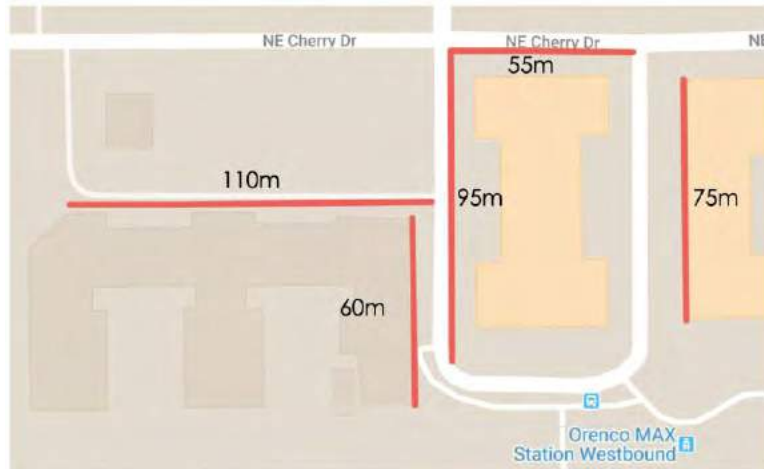


Figure 5-9: Orenco Station block widths and frontages⁸⁰.



Figure 5-10: Collingwood Village block widths and frontages⁸¹.



Figure 5-11: Rio Vista west block widths and frontages⁸².



Figure 5-12: Mockingbird Station Block widths and frontages⁸³.

Pedestrian Circulation

The Concept Plan encourages pedestrian activity by providing a well-connected network with a variety of route options for safe and easy access to the LRT station and other amenities (Figures 5-13 and 5-14). Sidewalks are a minimum of 2.5 metres wide and include street furniture on complete streets to support a pedestrian-friendly environment. There is also an opportunity to create a pedestrian connection over the Highway 417, mirroring the proposed pedestrian bridge at the future Queensview LRT Station. This connection would improve linkages between the site and the neighbouring employment and residential areas south of the highway.

Boulevards

A green boulevard will extend east-west on Street B and north-south on Street E, bringing greenery to the site. Generous landscaping and sidewalks will provide pedestrians with a pleasant experience while navigating the site.

Woonerfs

The purpose of each woonerf is to provide additional pedestrian connectivity, where cars are allowed only for accessing the parking lots (Figure 5-15). Street trees, located in the middle of the woonerf, will act as a traffic calming measure and will beautify the space.

Mid-Block Connections

Mid-block connections will be semi-public spaces created to provide access for pedestrians and cyclists.



Figure 5-13: Labelled blocks with mid-block connections (yellow) and woonerfs (black) highlighted.



Figure 5-14: Ruth Wildgen Park's multi-use path.



Figure 5-15: A woonerf rendering from the Zibi Master Plan⁸⁴.

Cycling

The Concept Plan encourages cycling as a mode of transportation by providing efficient linkages to the LRT station, commercial areas, and other amenities via multi-use paths and bike lanes. It also improves bike connections between Pinecrest Road and Richmond Road. Streets B and E have dedicated bike lanes, as well as Dumaaurier Avenue, on both the east and west portions of the site; furthermore, the site's local roads will have marked shared lanes.

Crime Prevention through Environmental Design

Safety is prioritized in the Pinecrest Foster Farm community using the natural surveillance and territorial reinforcement principles of Crime Prevention through Environmental Design (CPTED). Natural surveillance is associated with the establishment of clear sightlines; whereas, territorial reinforcement uses physical design to create and develop a sense of ownership over spaces⁸⁵.

To achieve natural surveillance, multiple mid-block connections were added to allow multiple points of entry and exit. Additionally, Block E contains an internal courtyard amenity space with three points of entry. The windows on the surrounding buildings enhance the natural surveillance of the space. This concept is further applied with active street frontages on all streets throughout the site, with windows and building entrances to ensure pedestrians feel safe at all times. Furthermore, the new central community park is fronted by buildings on all sides. This was to promote optimal usage while not creating an isolated park area. Finally, all spaces have been given a specific purpose that is intended to add a positive element to the community and contribute to the functionality of the site with residents developing a sense of ownership over the spaces for territorial reinforcement.

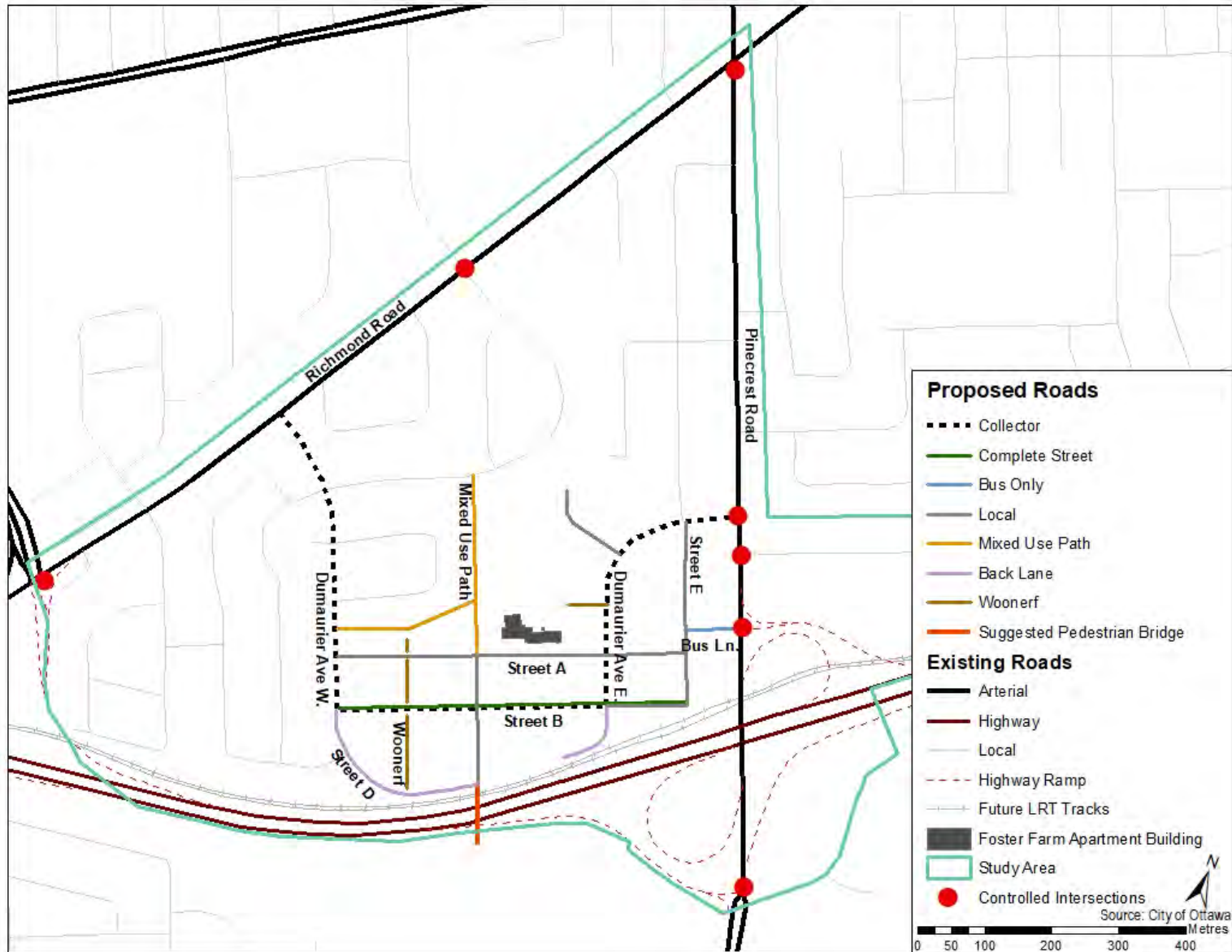


Figure 5-16: The proposed road network.



Figure 5-17: The proposed pedestrian network.

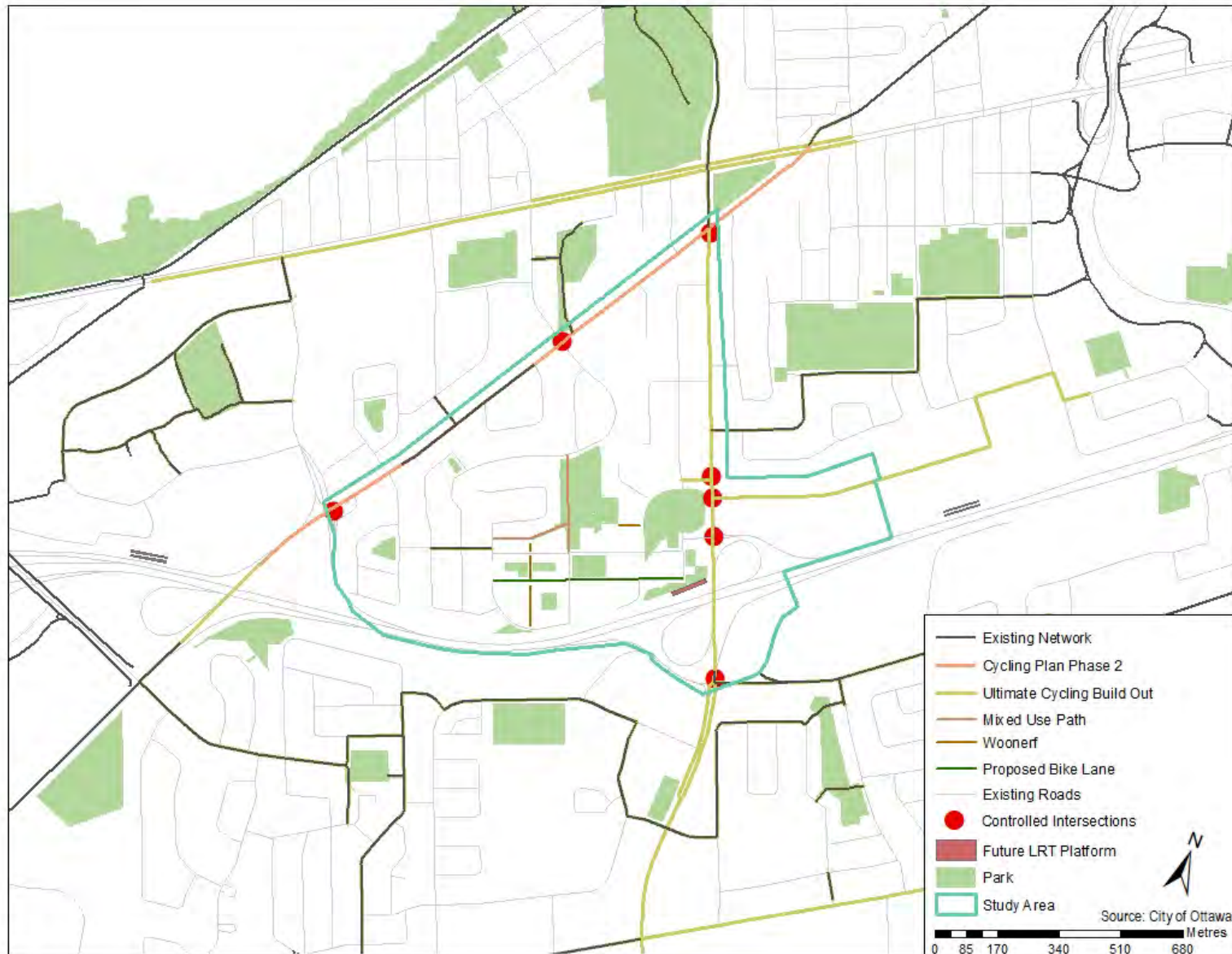


Figure 5-18: The proposed cycling network.

Parking

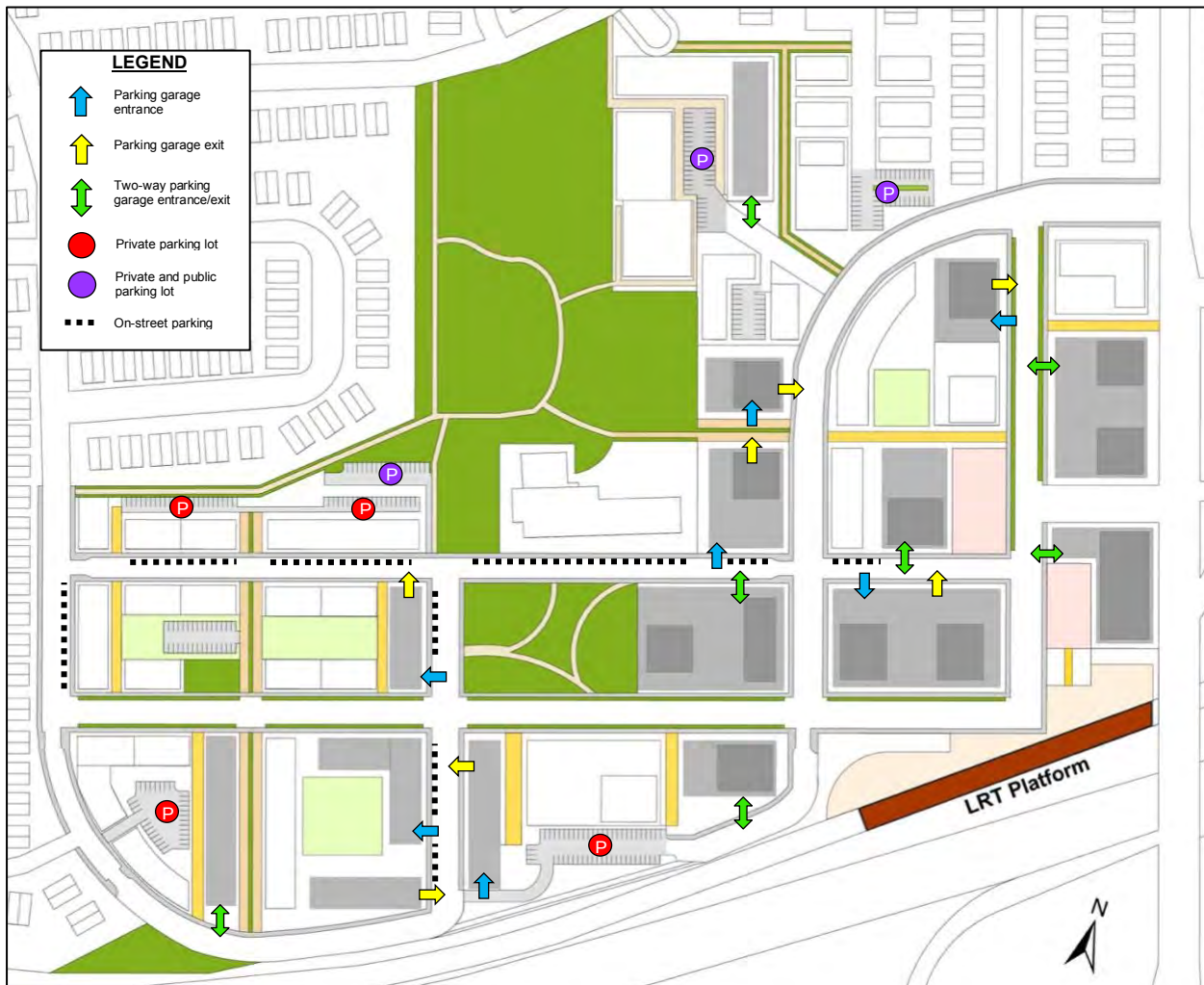


Figure 5-19: Proposed parking locations.

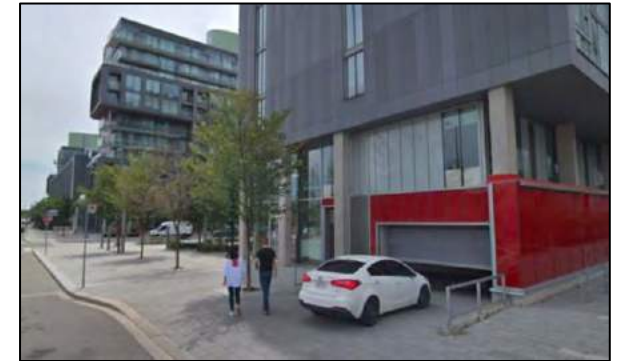


Figure 5-20: Parking garage entrance, Toronto⁸⁶.

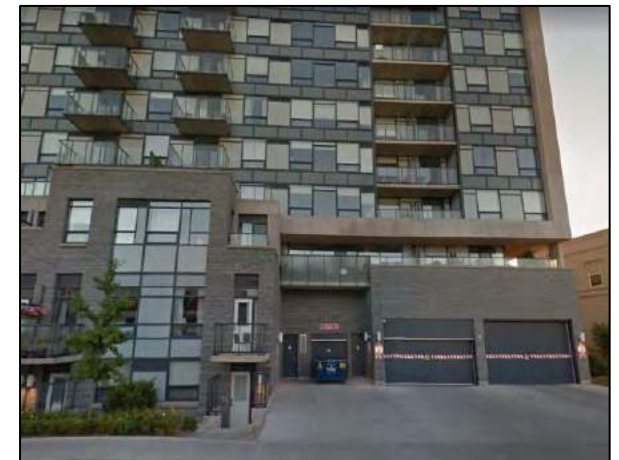


Figure 5-21: Two-way Parking garage entrance/exit, Kingston⁸⁷.

The proposed parking breakdown pushes the boundaries of parking minimums in Ottawa; however, the minimums in this Concept Plan are reflective of many TOD and affordable housing precedents, particularly those in areas of Toronto and Montreal that are well-served by transit. Although some ratios are below those outlined in the City's parking provisions⁸⁸, the Project Team believes that this Concept Plan is an innovative TOD design specifically planned to discourage car use and promote more sustainable means of transportation (Tables 5-1 & 5-2). For a more detailed overview, see Appendix E.

Table 5-1: Proposed parking by location.

Type of Parking	Amount
Surface parking proposed	282
On-street parking proposed	115
Underground parking proposed	2110
Total spaces proposed	2507

Table 5-2: Proposed parking by location.

Type of parking	Amount
Residential parking	1546
Visitor parking	391
Non-residential parking	570
Total spaces proposed	2507

The low-rise areas in District A has surface parking lots for residents, whereas Districts B and C contain parking lots with a mix of private and public parking for the amenities in the area. Parking is also found on local streets or underground, and there will be a mix of permit parking for residents and public parking for visitors. Residents in need of an occasional car can use the recommended neighbourhood car-sharing service.

Bicycle parking should also be located near building entrances and at community destinations, such as the LRT station and parks. It is recommended that areas with low-rise buildings have secure bicycle parking outside, and mid- to high-rise buildings have secure bicycle parking indoors.

Public Realm Plan

The proposed public realm plan was developed to provide an equitable distribution of publicly accessible open spaces through the site that can accommodate a diverse range of activities (Figure 5-22). The Project Team consulted several municipal policy and planning documents in creating the plan, which was informed by the following objectives:

- To incorporate streetscape elements such as benches, lighting, and trees to animate streets;
- To ensure an adequate supply of street trees to provide shade and protection from the elements, support good stormwater management, and mitigate urban heat island effects;
- To cater to different uses and accommodate different levels of recreational and leisure activities; and
- To provide enough seating areas in open spaces for passive recreation.



Figure 5-22: Open spaces highlighted in Study Area.

Proposed open spaces on the site include Ruth Wildgen Park, which is to be retained in its entirety; land to be dedicated to the City for parks; and several privately-owned public spaces (POPS) (Figure 5-23). The plan identifies 1.97 hectares of parkland to be dedicated to the City of Ottawa.

The team developed conceptual designs for each of the proposed municipal parks described below. For more renderings and typologies for each of these parks and sizes, please see Appendix E.

1) Ruth Wildgen Park

Ruth Wildgen Park will be redeveloped to accommodate multi-purpose recreational uses that will serve the Pinecrest Foster Farm Community and adjacent neighbourhoods. The team recommends substantial upgrades to the sports fields and activity areas to support active recreational uses.

2) Ruth Wildgen Park Extension

The southern and eastern extensions to Ruth Wildgen Park will incorporate elements that support passive recreation and social gatherings, such as picnic tables, barbecues, and a pavilion. The extensions will serve as a gateway to better connect Ruth Wildgen Park with the Pinecrest Foster Farm community.

3) Community Park

The new community park is located in the centre of the re-developed site adjacent to several institutional uses, including a proposed community centre. The park will be comprised of mostly soft landscaping that provides a flexible open space for leisure activities. A portion of the park will be dedicated for a children's playground.

4) Local Neighbourhood Park – Children's Playground

The local neighbourhood park on Street B will provide families with a children's playground. The park will be comprised of soft landscaping with trees and seating areas to support passive recreation and social interaction.

5) Pinecrest Dog Park

The lands southwest of the site will accommodate a dog park that will be low maintenance and provide the community with a safe space for dogs to roam around off-leash. The park's site along the sound barrier is an ideal location for a public art installation to foster a sense of ownership and community identity.

6) North Square

The North Square, located on Street E, will be comprised of a mostly hard landscaping with planted trees to provide shade and greenery. Adjacent buildings will face the square and allow for active frontages from businesses at grade to animate the space.

7) LRT Plaza

The LRT plaza will serve as a gathering, welcoming, and transitional space between the LRT station and the community. The plaza will be comprised of ample seating, soft and hard landscaping, and public art. The plaza's location at the site's main intersection will act as the focal point of the LRT station and the centre of commercial activities.

8) Privately-Owned Public Spaces (POPS)

Private courtyards and open spaces are designated for residents living within the block. These spaces can be programmed to suit resident needs and could potentially provide amenities at grade as well as greenspaces that would contribute to the health and wellbeing of residents.



Figure 5-23: The public realm plan.

Land Use Master Plan

Residential Areas



Figure 5-24: Proposed residential areas.

The Concept Plan expands the types of residential buildings and tenures onsite (Figure 5-24). A more compact built form, with higher densities near the LRT station, and appropriate transitions to the existing neighborhood are recommended for the site. It is also recommended that building heights range from ten to 40 storeys, in order to maximize density within 600 metres of the future LRT station. Higher densities near the LRT line have the potential to increase transit ridership and are in line with the City's TOD Guidelines.

On the western extent of the Concept Plan, building heights are scaled down and stacked townhomes are proposed along Dumaurier Ave West, which provides a smooth transition to the existing neighborhood. In the area surrounding the existing fourteen-storey OCH apartment building, the proposal suggests heights ranging from three to 10 storeys.

Overall, this plan provides 3,821 residential units in the community, including over 300 units with three or more bedrooms.

Institutional Areas

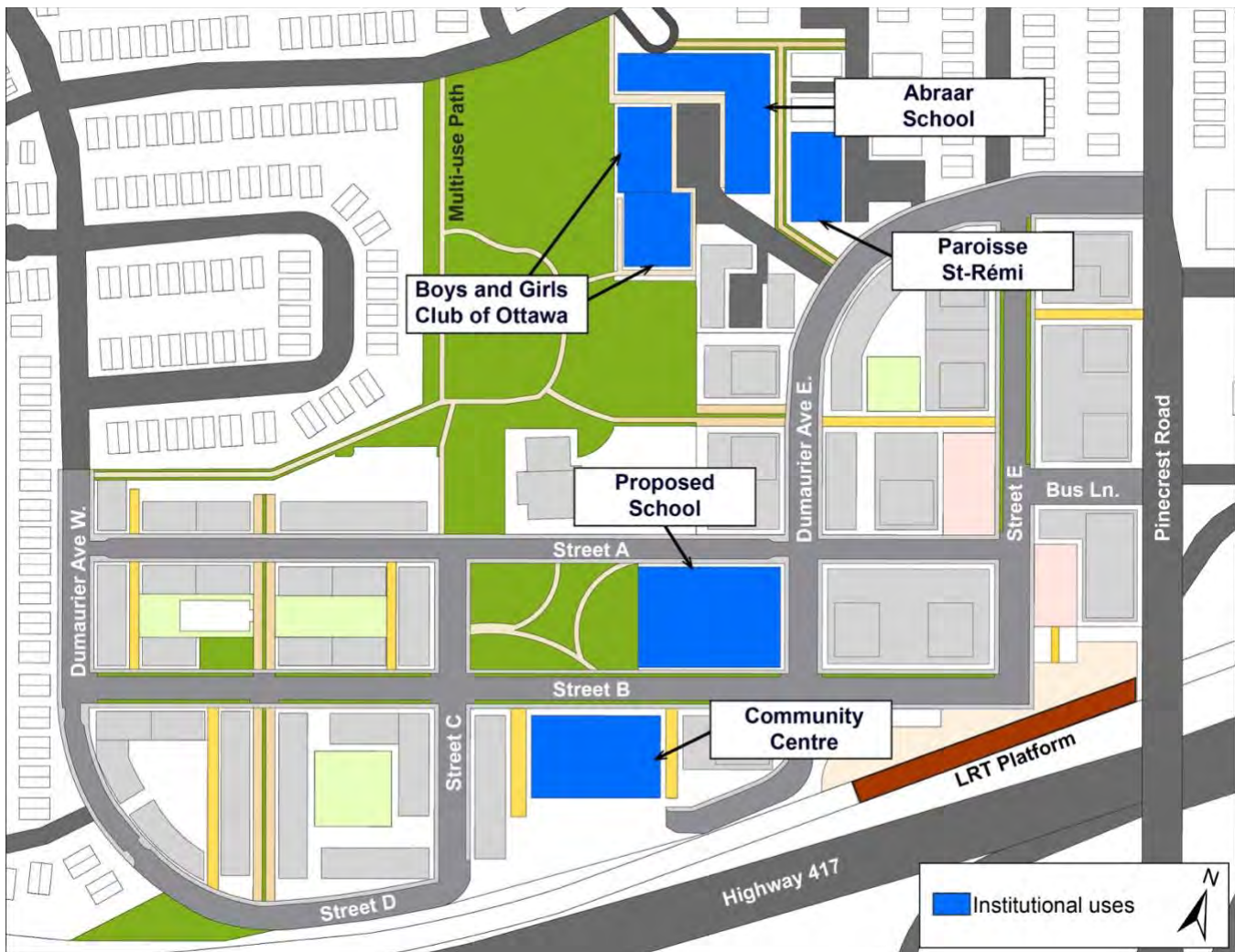


Figure 5-25: Proposed institutional areas.

The Concept Plan proposes new institutional uses at the centre of the site and retains the existing institutional spaces on the northern extent (Figure 5-25). New institutional uses include a future school and community centre; furthermore, it is recommended that both institutional uses to be located within four-storey podiums that support residential uses above. Sharing the green space between community organizations would allow the nearby park to be used at multiple times of the day, maximizing safety and utility.

The Boys and Girls Club, Abraar School, and Paroisse St Rémi have been retained in this Concept Plan. It is likely that, as the new LRT platform comes online and the rest of the site begins to develop, these sites will also respond by increasing in density and expanding in use. The Boys and Girls Club could expand with an addition to accommodate the increasing population. Paroisse St. Rémi would be encouraged to add residential uses to their site, for social or seniors' housing, by reducing the amount of parking on their property. The Abraar School could be redeveloped into a mixed-use site that would provide the existing services of the school, as well as accommodate some new residential uses.

In total, this Concept Plan provides 61,000 square metres of institutional space in the community.

Retail Areas

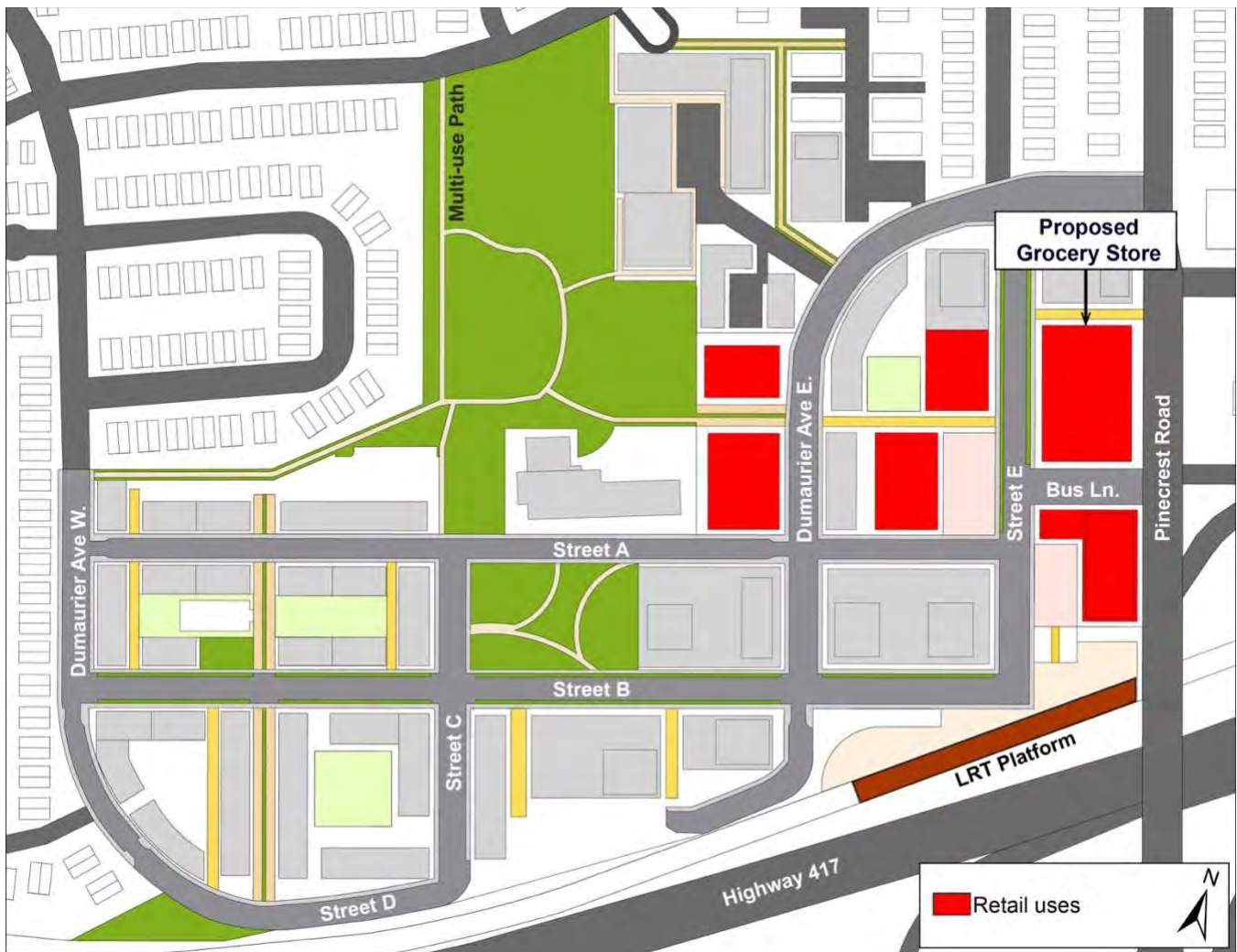


Figure 5-26: Proposed retail areas.

Retail is proposed to be located on the east side of the site, near the LRT station and Pinecrest Road (Figure 5-26). Retail uses in these locations would serve the surrounding residents, while benefiting from the proximity to the LRT station and other high traffic areas. These locations will also help to animate the pedestrian realm leading up to the LRT station.

This Concept Plan has identified a potential location for a grocery store, so that it has frontage on both Pinecrest Road and Street E to serve both local residents and the greater community. For other retail spaces, stores with large floor areas would not be suitable as they would directly compete with Bayshore Shopping Centre and the large commercial areas south of the 417. This means that the site is not intended to be a shopping destination, but rather cater to the needs of residents.

In total, this Concept Plan contains 15,000 square metres of retail space.

Office Areas



Figure 5-27: Proposed office areas.

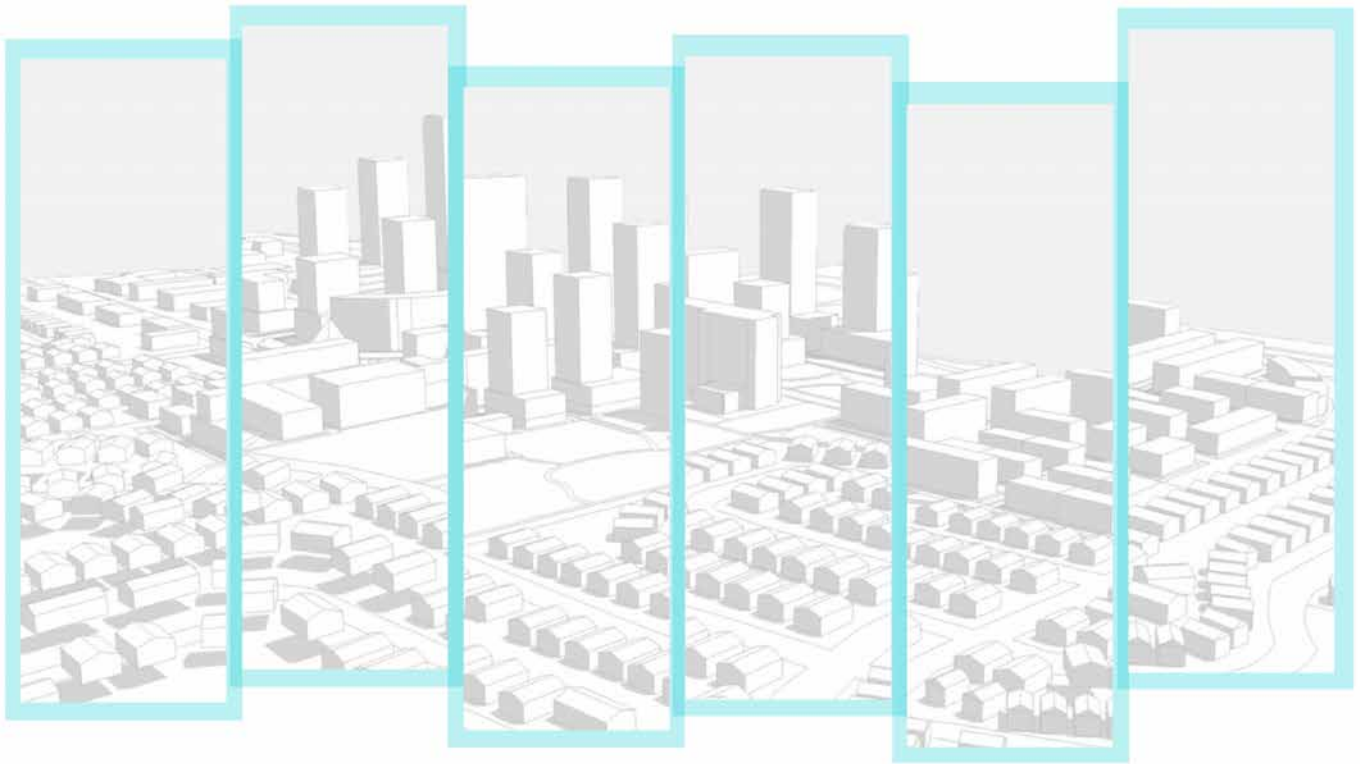
Office spaces are designated in two separate buildings, both located adjacent to the future LRT station (Figure 5-27). Office space to the west of Street E is suggested to be located within a four-storey podium, and the office space to the east is in a 40-storey building. These locations will benefit from the proximity to transit and possibly encourage future employees to commute via the LRT. However, if office space is not in demand during the development phases, the podium can be used as retail, and the 40-storey building as a residential tower or hotel.

Overall, this Concept Plan has a total of 62,000 square metres of office space between the two buildings.



Figure 5-28: Proposed Concept Plan with building heights indicated in storeys.

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06 IMPLEMENTATION

Preliminary Research

The public will be engaged throughout the City of Ottawa's consultation process for the necessary development applications, including an Official Plan Amendment, a Zoning By-law Amendment, a Plan of Subdivision, and Site Plan Control. Major servicing and infrastructure upgrades will be necessary to accommodate future intensification in the Pinecrest Foster Farm community. Future zoning, policy, and development in the Study Area will be heavily informed by the municipally-led Pinecrest and Queensview Planning Study.⁸⁹

Plans and studies required as part of development applications may include: a planning rationale; a plan of survey; transportation impact assessments (TIA); site servicing, grade control, and drainage plans; an erosion and sediment control plan; a stormwater management report and plan; geotechnical, noise/vibration, shadow, and wind studies; phase I and potentially phase II environmental site assessments (ESA); an environmental impact statement (EIS); tree conservation reports (TCRs); landscape plans; building elevations; and, design briefs⁹⁰. Some of these plans and studies, including the TIA, engineering plans and studies, ESA, EIS, and TCR plans may begin immediately. Additional documents, including the planning rationale, building elevations, and design briefs, should be prepared in consultation with residents and property owners in the Study Area.

Partnerships between public and private stakeholders are essential for the redevelopment of the Pinecrest Foster Farm community into an affordable, safe, transit-oriented, mixed-use, and mixed density community. Public-private partnerships (P3) are an effective means to complete infrastructure projects, transit station construction, as well as new builds. The City of Ottawa has engaged in several P3 projects in the past, including the redevelopment of Lansdowne Park and the newly constructed Ottawa Art Gallery building alongside Le Germain hotel. Other P3 projects featuring affordable housing providers include Toronto's St. Lawrence neighbourhood and Lawrence Heights, Montreal's Benny Farm, and the Kabelwerk housing project in Vienna. OCH should encourage the City of Ottawa and government partners, as well as the non-profit and private sectors, to collaborate in building a sustainable and inclusive community around the future Pinecrest LRT Station⁹¹. These partnerships can ensure that vital community amenities, such as a community centre, health and cultural services, artistic spaces, recreation, and educational opportunities, are provided in the Study Area.

Pre-Construction Infrastructure Projects

Prior to construction of new buildings in the area, many infrastructure projects and other activities need to be undertaken. These activities and a timeline for action, based on the team's research of similar projects, are suggested below (Table 6-1). These timelines assume OCH and the City of Ottawa are the lead developers of the public properties, though coordination with the private sector (including the sale of land) could result in an expedited construction process on some parcels. Stage IV marks the beginning of building construction.

Table 6-1: Pre-construction infrastructure projects.

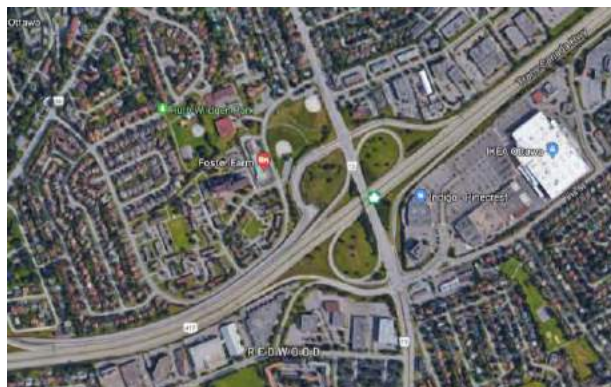
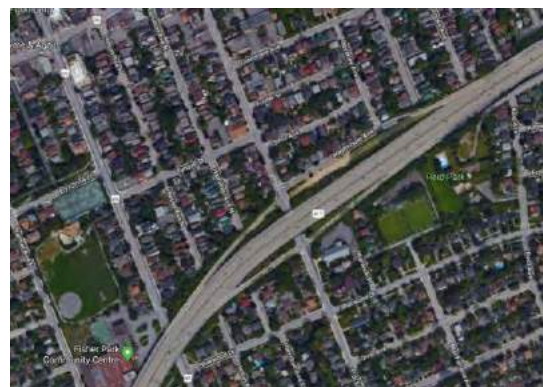
Stage		Project	Approx. Timeline
Research	I	Form community engagement task force, work on master plans, secure financing, develop P3 strategies, conclude Pinecrest and Queensview Planning Study	0-3 years
Implementation	II	Conduct public engagement, construct LRT station, relocate softball diamonds, realign highway on/off-ramp, submit OPA and ZBLA applications	2-6 years
	III	Conduct public engagement, begin brownfield remediation, submit other planning applications, upgrade parks	6-9 years
	IV	Construct internal road network, re-house tenants, begin redevelopment	10-20 years

Stage I: 0 to 3 Years

- Engage residents and property owners on the redevelopment of the community.
- Completion of the Pinecrest-Queensview Planning Study, which will inform future development.
- City of Ottawa acquisition of provincial parcel for site of future LRT station.
- Conduct preliminary plans and studies to inform future development applications.
- Conduct research and determine options and costs for the brownfield remediation.
- Develop collaborative partnerships to ensure the success of redevelopment efforts.

Stage II: 2 to 6 Years

- Ongoing public engagement with facilitated focus groups and public events.
- Relocate the softball diamonds and use Dumauiers park as a construction area for the Pinecrest LRT Station.
- Replace existing highway ramps with urban intersections (Figures 6-1 and 6-2).
- Submit Official Plan Amendment and Zoning By-law Amendment applications.

Figure 6-1: Highway interchange in Study Area⁹².Figure 6-2: At-grade highway interchange on Parkdale Ave⁹³.

Stage III: 6 to 9 Years

- Ongoing community engagement.
- Following the construction of the LRT station, remediate the brownfield under Dumauiers Park.
- Upgrade Ruth Wildgen Park and create a municipal off-leash dog park on the southwestern corner of the site.
- Submit Plan of Subdivision application.

Stage IV: 10 to 20 Years

- Ongoing community engagement regarding neighbourhood redevelopment, including changes to the built form, the street network, and the design of public open spaces.
- Begin construction of new buildings based on the Phasing Plan outlined (Figure 6-3).

- Re-house tenants in keeping with the Affordable Housing Strategy, making housing available on site to minimize forced tenant displacement.
- Construct major internal streets on OCH property.
- Surplus OCH lands to be sold and redeveloped by the private sector, subject to new zoning and policies for the Study Area.

Development Phasing Plan

The timing of the redevelopment of OCH-, municipal- and provincially-owned properties is largely associated with the introduction of LRT to the neighbourhood; as such, the phasing plan is intended as a guideline only. This plan, which begins during Stage IV of the pre-construction infrastructure projects outlined earlier, has been developed in an order that establishes a sense of place at the earliest opportunity; furthermore, it ensures a balance between dwelling unit occupancy and provision of local amenities, while ensuring efficient construction, minimizing disruption and displacement, and supporting the overall financial viability of the project.



Figure 6-3: Phasing plan for redevelopment.

Construction Phase A

Preceded by the introduction of LRT, upgrades to existing parks and open spaces, and the remediation of the former landfill, this phase would be dominated by private development in close proximity to the LRT station. This report also recommends that OCH acquire several parcels of land in Phase 1 for development, to provide onsite relocation options for tenants in the later phases. For more information regarding lands to be retained, acquired, or sold, please see the Land Ownership Plan in Appendix F. It is also assumed that privately-owned parcels on the site are likely to be redeveloped in the earlier phases of this redevelopment project.

Construction Phase B

This phase will begin by re-housing OCH tenants who currently reside within the areas marked for Phases 2 and 3, either within the site or elsewhere within OCH's portfolio. Phase 2 will include the construction of buildings to house major institutional uses in the community, including a new community centre and a school. Phase 2 will also include the creation of new parks and open spaces in the middle of the site.

Construction Phase C

This phase will build out the remainder of the site, complete the internal road network, and connect the site to the wider neighbourhood. This final stage will include the construction of many ground-oriented units, with multiple bedrooms, to better support large households.

Recommended Zoning

To support the built form, open spaces, and uses, the following general zoning is recommended for the Study Area in the future (Figure 6-4). Each of these blocks will require site-specific exemptions for setbacks and/or building heights, as well as exceptions to permit residential uses in non-residential zone areas, as appropriate. As such, the zoning plan below does not include the specific exceptions that would be necessary on a site-by-site basis, as approved through a Zoning By-Law Amendment process. The zoning provisions for each of the general codes provided below can be found in the City of Ottawa's Zoning By-Law 2008-250⁹⁴.

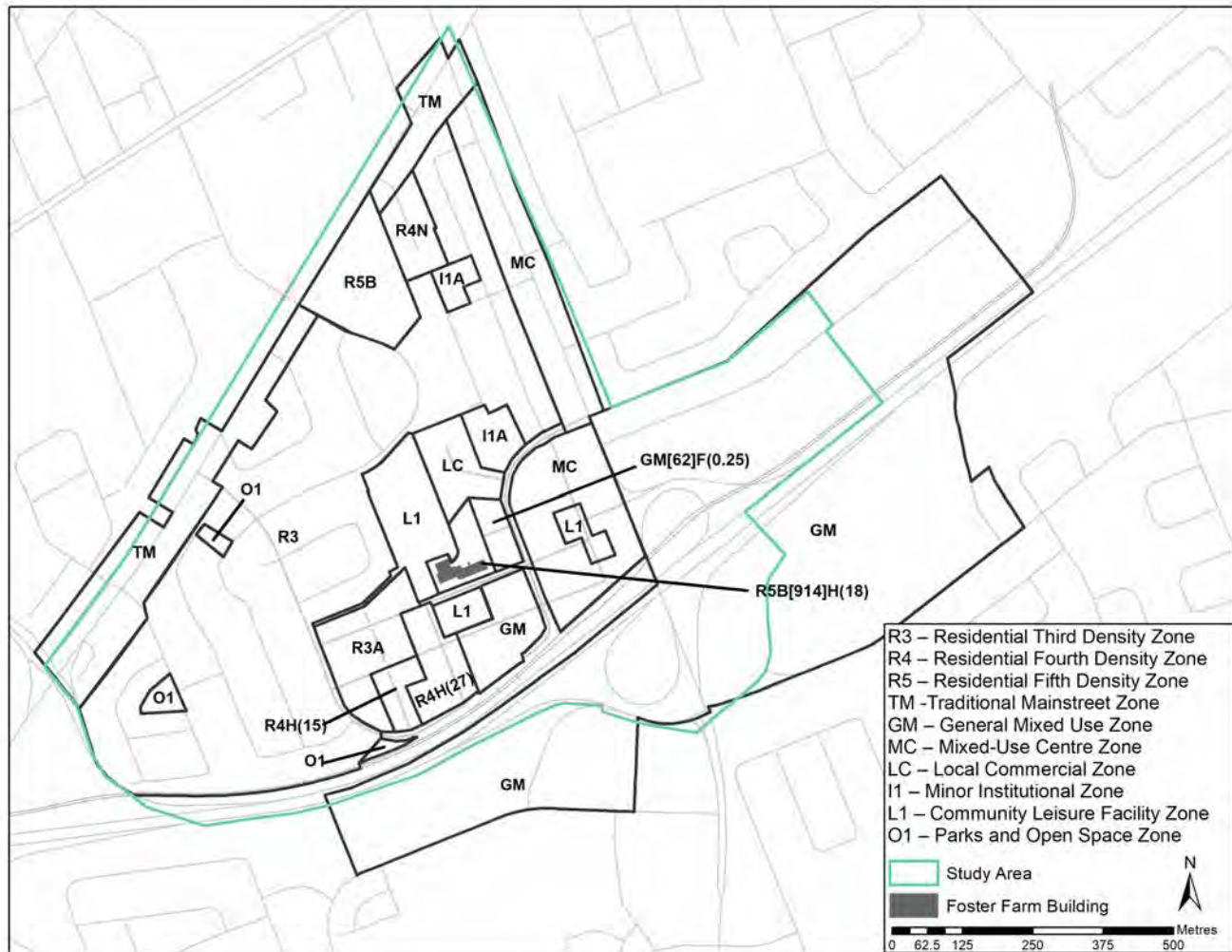


Figure 6-4: Recommended zoning provisions for the Study Area.



07 RECOMMENDATIONS

The following is a consolidated list of recommendations for this project and additional recommendations for public engagement and the post-redevelopment period that are important to consider moving forward.

Table 7-1: Recommendations for the redevelopment of the Pinecrest Foster Farm community.

Category	Recommendations
Transit-Oriented Development	<p><i>Streets and Vehicular Parking</i></p> <ul style="list-style-type: none"> • Implement a modified grid street pattern to improve connectivity to the LRT station and create easily developable parcels • Discourage design and development that is automobile-oriented • Retain the double T-intersection at Dumaurier Avenue, Queensview Drive, and Pinecrest Road, which acts as a traffic-calming measure • Use woonerfs to enhance pedestrian connectivity • Connect complete streets directly to the LRT station through the centre of the site and through the more built-up areas off Pinecrest Road • Limit at-grade vehicular parking where possible • Encourage car-sharing spaces to reduce the need for vehicular parking
	<p><i>Cycling and Public Transportation</i></p> <ul style="list-style-type: none"> • Establish various forms of cycling lanes on local roads • Provide bicycle parking racks at destinations, secure outdoor bicycle storage in low-rise areas, and secure indoor bicycle storage in high-rise buildings • Integrate OC Transpo bus service through the community with efficient connections to the future LRT station
	<p><i>Pedestrians and Walkability</i></p> <ul style="list-style-type: none"> • Prioritize pedestrian movement by providing a well-connected pedestrian network with a variety of route options to/from the LRT station and nearby amenities • Design sidewalks to be 3 metres wide on main streets to improve walkability • Limit barriers that restrict connectivity, such as the fencing separating the Abraar School and the Boys and Girls Club from Ruth Wildgen Park • Construct a pedestrian bridge to connect the site to the neighbourhood south of the highway, in partnership with the City, businesses, and property owners • Provide safe, easy pedestrian connections to the future Pinecrest LRT Station from the east side of Pinecrest Road, and from the south side of the highway
	<p><i>Built Form</i></p> <ul style="list-style-type: none"> • Concentrate the tallest buildings and commercial uses near the future LRT Station, with appropriate transitions to the surrounding low-rise residential neighbourhoods • Point towers with mixed-use podiums should be built adjacent to the LRT station • Foster a 'transit village' experience at grade, with active frontages, adequate seating and lighting, and other design elements.
Community Design	<ul style="list-style-type: none"> • Ensure an equitable distribution and of public spaces to serve diverse uses • Integrate nature and strategic landscaping on the site to ensure adequate shade and wind protection, and to improve stormwater management • Create a flexible open space in front of the LRT station • Ensure the adequate provision of lighting, wayfinding, and street furniture along public rights-of-way to ensure a safe, animated, and connected public realm • Upgrade Ruth Wildgen Park to provide a sports field, a splash pad, a fieldhouse, and a new wading pool to serve residents and community institutions • Convert the green space at the southwest corner of the Study Area into a fenced off-leash municipal dog park • Create streetscapes that promote 'eyes on the street' and improve public safety • Improve conditions along the sound barrier with public art and landscaping • Consider the shadow impacts of buildings on parks and open spaces

Sustainability	<p><i>Environmental Sustainability</i></p> <ul style="list-style-type: none"> • Consider implementing a district energy system • Set ambitious sustainability targets that prioritize energy efficient building features, materials, and construction methods to create durable buildings that reduce costs associated with renewal and maintenance efforts • Consider associated accreditations, such as passive house designs and LEED • Create an energy conservation plan that aligns with affordable housing policies, as discussed in the Affordable Housing Strategy in Appendix H
Residential and Affordability	<p><i>Residential</i></p> <ul style="list-style-type: none"> • Increase the amount of three or more bedroom units • Incorporate income-mixing housing models to create an inclusive community • Incorporate a minimum of 50 percent market units for financial viability • Include a minimum of 33 percent affordable residential units • Include conditions of sale to secure the long-term supply of affordable units • Develop a Tenant Retention Plan to minimize resident disruptions and to reduce forced displacement during redevelopment <p><i>Funding</i></p> <ul style="list-style-type: none"> • Include market units onsite to help subsidize affordable units • Consider the multiple funding opportunities outlined in the Affordable Housing Strategy, including federal and provincial grants • Explore public private partnerships (P3s) to increase the affordable housing onsite and to provide a wide-range of programming and services • Leverage existing assets to fund subsidized units • Consider using density bonusing to leverage community amenities from developers • Allocate funds to energy efficient construction to save on associated costs over time
Non-residential Uses	<p><i>Commercial and Retail</i></p> <ul style="list-style-type: none"> • To be concentrated along Pinecrest Road and adjacent to the LRT station: <ul style="list-style-type: none"> • Grocery store, bulk foods store • Pharmacy • Thrift shop, dollar store • Offices, co-working spaces • Multi-purpose hall/rental space • Restaurant, bakery, café, take-away • Car-sharing service • Bank • Bike and repair shop • Pet supply and care • Specialized fitness • Hotel and conference space <p><i>Institutional Uses</i></p> <ul style="list-style-type: none"> • To be placed in a location that best serves the community: <ul style="list-style-type: none"> • Community centre, youth centre • School • Library • Social and supportive services: Service Ontario, employment, mental health, immigration, housing • Health clinic and services • Neighbourhood house • Childcare <p><i>Recreational</i></p> <ul style="list-style-type: none"> • Our plan allocates approximately 1.97 hectares (4.87 acres), which represents more than 10 percent of the gross land area of the site, for municipal parkland dedication, and a series of privately-owned public spaces (POPS) • Park features include playgrounds, a splash pad, a wading pool, sports fields, and green paths connecting the parks • Flexible open space will be provided for community gathering and events

Community and Public Engagement	<ul style="list-style-type: none"> • Create a Public Engagement and Consultation Strategy that ensures all stakeholders are thoroughly consulted throughout the project • Support the establishment of a permanent resident association to give a voice to local needs and concerns • Collaborate with the government, private sector, non-profits, and local councillors to share knowledge and provide needed services • Offer a variety of public engagement opportunities at different times of day to accommodate differing schedules • Pop-up workshops are effective for those who have limited time • Focus groups provide the opportunity to share and discuss ideas on specific ideas • Public meetings with drop-in hours accommodate those with busy schedules • Design charrettes involve a variety of professionals to provide input on the project, such as engineers, affordable housing experts, and landscape architects
Pre-Construction and Development Phasing	<p><i>Pre-Construction Infrastructure Projects (Stage IV and onward)</i></p> <ul style="list-style-type: none"> • Community engagement will occur throughout entire redevelopment. • Stage I: Conduct plans and studies, secure financing, develop P3s, support a community engagement task-force • Stage II: LRT station construction, re-locate softball diamonds, highway on/off-ramp re-alignment, OPA and ZBA applications • Stage III: Brownfield remediation, Plan of Subdivision and Site Plan Control applications, upgrade retained parks and open spaces • Stage IV: Plan of Condominium applications, re-house tenants, construct major internal streets, begin construction <p><i>Development Phasing Plan</i></p> <ul style="list-style-type: none"> • Phase A: Begin development near LRT station • Phase B: Begin redevelopment with construction of community facilities and amenities • Phase C: Complete site build out
Post-Redevelopment	<ul style="list-style-type: none"> • Monitor unit affordability and buildings' environmental performance to ensure sustainability targets are being met • Be flexible with housing tenures, amenities, and public spaces to meet changing market demands, demographics, and residents' needs • Consult with resident association monthly or bi-monthly to ensure problems are promptly addressed



08 CONCLUSION

Project Summary

1. The Pinecrest Foster Farm community presents a unique opportunity for transit-oriented, affordable redevelopment with mixed uses, densities and incomes.
2. The Forward Thinking Concept Plan is designed to achieve the vision and guiding principles for the community.
3. Redevelopment should be implemented consistent with the proposed implementation plan.
4. Moving forward, stakeholders and local residents should be continuously consulted.

Review of Guiding Principles

Table 8-1: Evaluation using the guiding principles.

(1) Provide compact residential development with a variety of housing forms and tenures <ul style="list-style-type: none"> • Built form ranges from 4-storey townhomes to condo apartment towers • Highest densities are concentrated near Pinecrest Road and the LRT station • Built form gradually transitions down in density to the surrounding low-rise communities • Unit sizes range from bachelor to five-bedrooms to accommodate a variety of households • A mix of affordable and market-rate units to creates a diverse and inclusive community
(2) Prioritize safe and efficient multi-modal connections, with an emphasis on pedestrians, cyclists, and transit riders <ul style="list-style-type: none"> • A modified grid network of public streets that improves connectivity and circulation • Complete streets with separated bicycle lanes, high-quality landscaping, and street furniture • Using woonerfs to prioritize pedestrians and cyclists while still allowing vehicular access for local traffic • Integrated bus loop network that drops off transit users directly beside the LRT station • Potential location for a future pedestrian bridge across the 417 to further connectivity to the LRT Station • Removing fences and other physical barriers, where possible, for efficient connections
(3) Create an inclusive public realm that fosters a sense of belonging <ul style="list-style-type: none"> • Increased security and safety with enhanced lighting and an 'eyes on the street' built form design • Provide seating and other street furniture that caters to a variety of different users and their needs • Accessible street crossing and sidewalk design to allows for the safe movement of all users • Signage to improve accessibility, wayfinding, and connectivity of spaces • Open space design that caters to both spontaneous and programmed social gatherings • Consideration for existing informal desire paths and open spaces to inform the design and function of new pedestrian paths and open spaces
(4) Establish community resources in walking distance of the future Pinecrest LRT Station <ul style="list-style-type: none"> • Equitable distribution of parks and open spaces with diverse forms and function (sports fields, flexible open space, playground equipment, etc.) • Ensuring space for a new community centre and other institutional uses, such as a library, childcare facility, elementary school, health clinic, and other social services • Office space to create a complete community where residents can live, work, and play • Enhanced small-scale retail that will serve the daily needs of residents through a grocery store, pharmacy, coffee shops, restaurants, and other retail services
(5) Promote environmental stewardship and energy efficiency through sustainable design <ul style="list-style-type: none"> • A transit-oriented development minimizes car-dependency, which limits fossil fuels consumption – the largest household source of greenhouse gas emissions • A network of parks and open spaces with stormwater management techniques and a design that limits urban heat island effects • Support for sustainable construction techniques, green building design, and renewable energy • Potential to integrate a district energy system or geothermal exchange energy system into the site

Presentation Feedback

On December 10th, 2018, the Project Team travelled to the City of Ottawa to give a presentation titled: *Forward Thinking: A TOD Concept Plan for the Pinecrest Foster Farm Community* (Figures 8-1 & 8-2). The presentation was attended by City staff, councillors, professional planners, and OCH stakeholders. Attendees were invited to ask questions and provide feedback to the Project Team, which are detailed and responded to below.

One audience member expressed concern for back-of-house services including postal delivery, loading, and garbage collection access. Similar questions were raised about drop-off zones for the proposed school site, and children crossing the main collector road to get to the community park. Most of these concerns would be addressed at the site plan control stage, which is beyond the scope of this project.

Mobility and access concerns, particularly for seniors, were also raised during the presentation. The Project Team did not explicitly outline requirements for accessible units in this TOD community. Another audience member brought up ideas of incorporating district energy systems and electric vehicle charging stations in this community. Accessible, age-friendly and environmentally sustainable design initiatives are important factors to consider as the design for this community moves forward.

Audience members responded positively to the potential for a grocery store in the community, which is a food desert, but questioned if there would be adequate parking for the proposed location on Pinecrest Road. The team's transit-supportive Concept Plan for Pinecrest Foster Farm sought to minimize surface parking and provide most of the supply underground. Concerns about parking were extended to the low ratios for the five-bedroom units in particular. The Project Team emphasized the need for City of Ottawa policies to support car sharing services and bicycle parking, which would substantially reduce the demand for vehicular parking. Ultimately, Pinecrest Foster Farm will be a TOD community where active modes of transportation will be encouraged and prioritized.

Some audience members were concerned amount the provision of certain land uses, or lack thereof. Questions arose surrounding a potentially excessive amount of office space and its associated absorption rate in what was thought to be an isolated employment node. While these are important factors to consider, there is a significant employment and commercial area east of Pinecrest Road on Queensview Drive. Should office be deemed an unsuitable land use in the coming years, the market analysis stated a hotel could also be an alternative appropriate land use for this area.

Concerns were raised about an increased population density with a reduced quantity of public space, particularly with the introduction of hard surfaces. While valid concerns, the Concept Plan significantly improves the quality of the public space onsite and only introduces two new hard-surfaced plazas, while the rest remain green, soft surfaces. This was an important consideration for improved stormwater management and reduced heat island effects. The use of green roofs in new developments would represent a significant improvement in the Study Area, which currently has a very large percentage of paved asphalt.

With the removal of the softball diamonds in Dumaaurier Park, concerns arose around the financial considerations of the former landfill's redevelopment. Although a costly initiative, brownfield redevelopment can be accomplished with the help of incentive programs and City of Ottawa policies that encourage brownfield remediation in proximity to LRT stations. Hurdman Station serves as an excellent example for this site moving forward as an example of a much larger landfill near an LRT station that is planned for remediation. It was recognized that further studies will need to take place prior to redevelopment to fully understand the levels of contamination and associated financial commitment required for clean-up.

Overall, the presentation questions and feedback session raised a number of important considerations that the Project Team was able to further reflect on. Needless to say, the redevelopment of the site will present many challenges; however, should the Forward Thinking Concept Plan be realized, Pinecrest Foster Farm could be an inclusive, mixed-use, and transit-oriented community that is safe and liveable environment for all residents and visitors.



Figure 8-1: Photo taken during the post-presentation question period⁹⁵.



Figure 8-2: Photo taken during the post-presentation question period⁹⁶.

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10 APPENDICES

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Appendix A – Study Area History and Context

History

Before proposing any new development, it is important to understand the history of the Pinecrest Foster Farm community. An overview of the transition from rural to suburban to urban will explain the area's evolution and assist in developing future goals.

From 1820 to 1880, Nepean Township was dominated by the agricultural industry, with the most successful farms bordering Richmond Road. Some of Nepean Township's most valuable farms were located near the current Pinecrest Foster Farm community. John Bell was the original owner of the Foster Farm site, which, in 1861, was evaluated at \$15,000 (Figure A-1)⁹⁷. Steady improvements to the Township led to rising property values, which made landowners reluctant to divide up their estates. Smaller farmers were unable to increase their holdings and, thus, the next generation of Nepean residents began to move westward.



Figure A-1: Approximate location of the original Foster Farm land parcel belonging to John Bell⁹⁸.

Twentieth century development patterns were largely driven by speculative suburban expansion. The establishment of “street car suburbs” became quite common, as electric rail lines extended west into Nepean from downtown Ottawa⁹⁹. The opening of the Britannia Line in 1900 brought thousands of hectares of Nepean within easy commuting distance of Ottawa¹⁰⁰.

Post-World War II, the City of Ottawa was faced with massive population increases. During 1945 to 1960, Ottawa would increase from 230,000 to 400,000 residents. The City was in desperate need of land to accommodate improved transportation networks, housing, and educational facilities¹⁰¹.

In 1945, Nepean Township attempted to impose order on post-war growth. Council met with the Federal District Commission to discuss their planning concerns and to emphasize the most pressing issues, including zoning, recreational facilities, and a master plan for the area¹⁰². Council would meet that same year with Jacques Gréber and the National Capital Planning Service¹⁰³. The Township of Nepean was supportive of the collaborative effort to implement long-term planning for the region; however, this was halted when the City of Ottawa unilaterally applied to the Ontario Municipal Board to annex approximately 5,200 hectares of the Township¹⁰⁴. Although contentious, an agreement was reached in 1949 reducing the annexation from 5,200 hectares to approximately 3,000 hectares (Figure A-2)¹⁰⁵. This annexation would mark the furthest western extent of Ottawa to date.

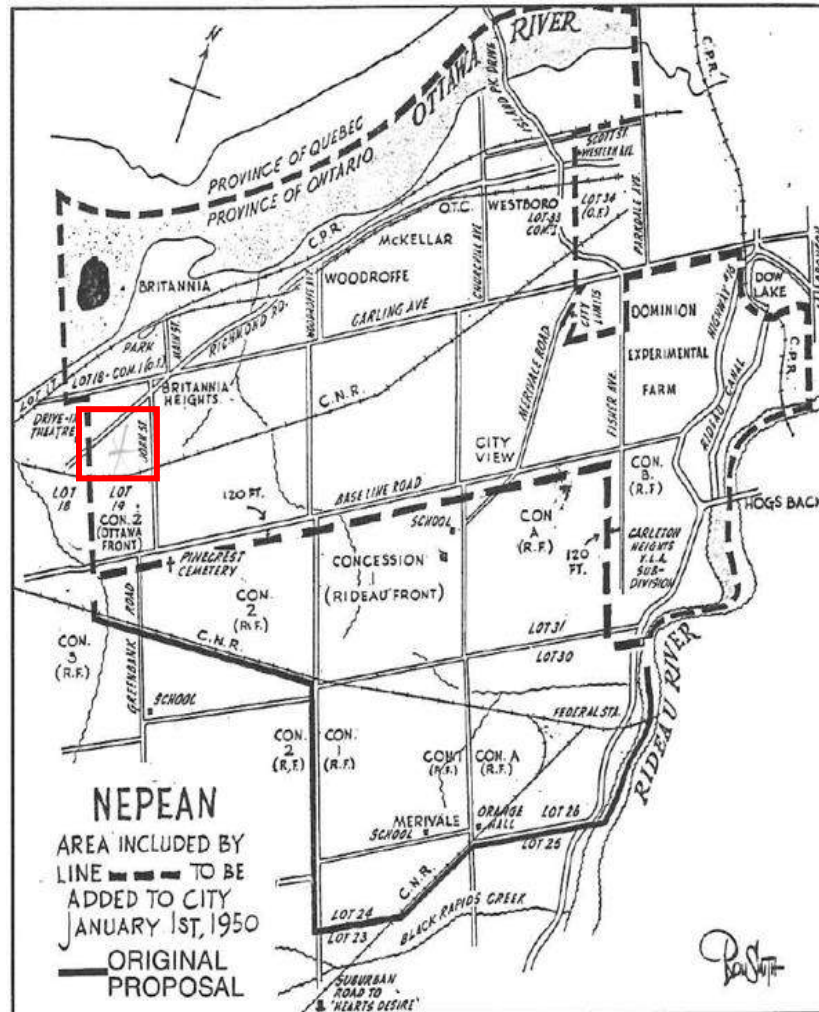


Figure A-2: Annexation of Nepean (1949), approximate location of Foster Farm in red¹⁰⁶.

Jacques Gréber's *Plan for the National Capital* was subsequently published in 1950. The *Plan* outlined an extensive land acquisitions program to relocate railways and industry, create new automobile parkways, and establish a greenbelt¹⁰⁷. The most notable infrastructure project adjacent to Foster Farm was the construction of the Queensway beginning in 1957¹⁰⁸. This opened up large opportunities for suburban development from 1958 to 1969. Notable subdivisions include Bayshore, Bellands, Graham Park, Bruce Park, and Fair Field Heights. By 1965, the Queensway interchange had been established adjacent to the future Foster Farm site, as well as a clear divide between a small residential pocket of Nepean next to the empty fields in Ottawa's east end (Figure A-3).



Figure A-3: The Foster Farm site (red) with the annexation border highlighted in white (1965)¹⁰⁹.

At the far west end of Ottawa, with access to a major highway, Foster Farm was thought to be an ideal location to provide affordable housing. Under direction from the Ontario Housing Corporation, the original site plans for Foster Farm were developed in 1971 by E.I. Richmond B Architects from Toronto, Ontario, as well as the engineering consulting firm, John Garay and Associates. Ottawa Carleton Community Housing in partnership with the Ontario Housing Corporation would see Foster Farm constructed in 1973 (Figure A-4).



Figure A-4: Foster Farm construction (1976)¹¹⁰.

The City of Ottawa would officially amalgamate with Nepean through the *City of Ottawa Act* in 1999, along with Kanata, Gloucester, Vanier, and Cumberland¹¹¹. This also included the former townships of West Carleton, Goulbourn, Rideau, Osgoode, and Rockcliffe Park.

In 1998, Foster Farm underwent a building condition assessment, conducted by Greer Galloway Inc. Architects and Engineers. The purpose of this report was to assist the Ontario Housing Corporation and Ottawa Carleton Housing manage their properties' life cycle. The assessment identified major items for repair such as recladding exterior walls, reconditioning windows, replacement of stoves and balcony doors¹¹². Overall the estimated costs of all upgrades totalled \$1,269,000¹¹³.

In 2000, under direction of the Provincial Government, Bill 128, The *Social Housing Reform Act* was introduced. This legislation transferred ownership of Foster Farm from the Ontario Housing Corporation to OCH (formerly the Ottawa-

Carleton Housing Authority)¹¹⁴. Today, as Foster Farm buildings near the end of their lifecycle, conversations surrounding the community's redevelopment can proceed in a collaborative and constructive manner.

Site Context

Regional Context

On a regional scale, the Pinecrest Foster Farm community is located northwest of Nepean and functions as an isolated bedroom community that is heavily reliant on automobiles. Based on analysis of Duany and Talen's Urban to Rural transect, the Pinecrest Foster Farm community fell between a Rural (T2) and Suburban (T3) Zone in the 1970s; whereas, today, the area falls within the category of Suburban (T3) or General Urban Zone (T4) (Figure A-5). A T3 zone primarily consists of single-detached homes on larger lots, while a T4 zone is composed of primarily residential areas consisting of single-detached homes and rowhouses on small- to medium-sized lots.

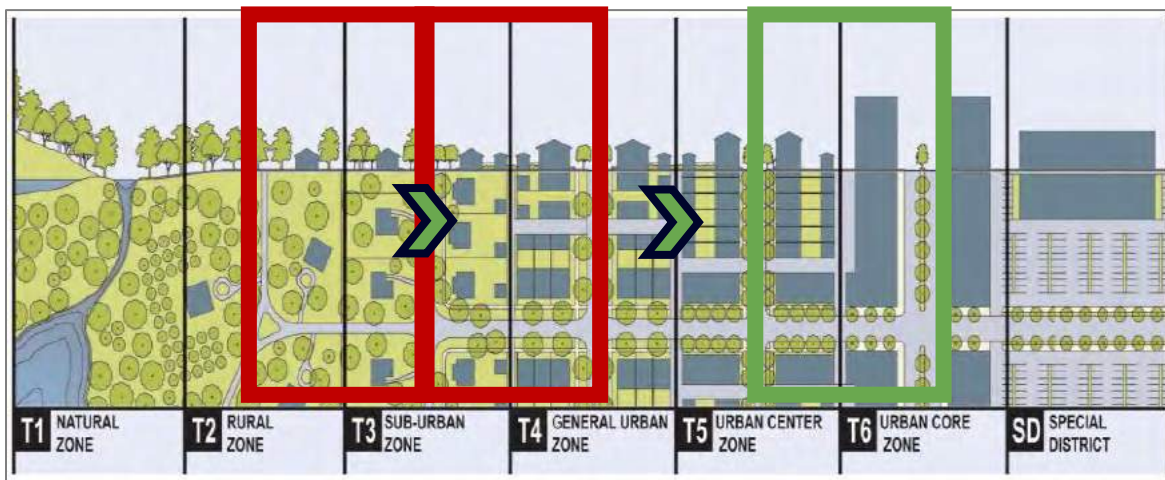


Figure A-5: Duany and Talen's Urban to Rural transect¹¹⁵.

In 2023, Stage 2 of the Confederation Line will establish an LRT station at Pinecrest Road (Figure A-6). This station and subsequent redevelopment have the potential to bring the Pinecrest Foster Farm community into an Urban Centre (T5) or an Urban Core Zone (T6) on the transect.

Local Context

Within the Study Area is Foster Farm, a parcel of approximately nine hectares, that is owned by Ottawa Community Housing (OCH). The site contains a mix of rent-geared-to-income (RGI) social housing rentals, including townhomes and a fourteen-storey apartment complex. Foster Farm is bound by Dumaui Avenue on three sides and is separated at the northern extent by an informal walkway. Major streets in close proximity include two arterial roads: Pinecrest Road to the east, and Richmond Road to the north. In addition, Highway 417 is located south of Dumaui, creating a significant barrier for pedestrian traffic. Finally, directly east of the Foster Farm site is a bus rapid transit (BRT) loop containing Pinecrest Station 1A and 2A.

As per the City's *Official Plan*, Foster Farm is designated as General Urban Area. The lands are comprised of a mix of greenspace, residential, commercial, and employment uses. The site has access to two major parks, Dumaui Park to the east, and Ruth Wildgen Park to the north. Immediately east of Pinecrest is a large swath of designated employment lands bordering Highway 417. To the northeast is Queensway Terrace North, an established low-density residential area. To the immediate north of Foster Farm is a mix of detached low- and medium-density housing. North of Richmond Road is Fairfield Heights, which consists of numerous mid- to high-rise apartment buildings. West of the site is additional low- and medium-density housing, as well as the Bayshore Shopping Centre. Southeast of the site is a collection of large box stores such as IKEA, Michaels, and Indigo. South of the site is Lee Valley, a large office and industrial park that also borders Highway 417.



Figure A-6: The Study Area in relation to the surrounding community.

Appendix B – Site Conditions

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Natural Heritage and Open Space

Greenspaces in the Study Area exist in the form of open spaces and City-owned parks. According to the *Greenspace Master Plan: Strategies for Ottawa's Urban Greenspaces*, the grounds surrounding public institutions, employment lands, and parkways provide residents with places for active and passive recreation. Council's objective is to provide two hectares of greenspace per 1,000 people¹¹⁶. Table B-1 outlines the municipal parks within the Study Area, for a total of 4.55 hectares of greenspace.

Table-B-1: List of municipal parks in the Study Area¹¹⁷.

Name/Address	Area (ha)	Type of Activities	Dogs in Park
Dumaurier Park (2850 Dumaurier Ave.)	~2.1	Active recreation (two softball diamonds)	Dogs may be off leash, under control of handler. Cannot be within 5 metres of children's play areas and pools.
Ruth Wildgen Park (1099 Grenon Ave.)	~2.1	Active recreation (baseball diamond, tennis court, basketball court, wading pool, ice rink, playground)	Dogs may be off leash, under control of handler. Cannot be within 5 metres of children's play areas and pools.
Barwell Park (921 Alenmede Cr.)	~0.08	Active recreation (playground)	Dogs are not allowed.
Bellfield Park (18 Bellfield St.)	~0.3	Passive recreation	Dogs must be on leash at all times, always under control of their handler. Prohibited from being within 5 metres of children's play areas and pools.

Quality of Greenspaces

Beyond the quantity of parks and open spaces in the Study Area, it is also important to consider the quality of these greenspaces. A well-designed, high quality park will have character, continuity and enclosure, quality of public realm, ease of movement, legibility, adaptability, and diversity¹¹⁸. Table B-2 indicates the quality of parks in the Study Area. Based on these criteria, Ruth Wildgen Park would be considered a great park because of its various infrastructure elements, sports courts, wading pool, playground, swings, and gazebo. These features allow residents to use the park according to their needs. Alternatively, Bellfield Park was designated as passive recreation, since it does not provide any active amenities (Figure B-1)¹¹⁹.

Table-B-2: Quality of greenspaces in the Study Area.





























	Character	Community and enclosure	Quality of public realm	Ease of movement	Legibility	Adaptability	Diversity
Dumaurier Park							
Ruth Wildgen Park							
Barwell Park							
Bellfield Park							



Figure B-1: Bellfield Park, Ottawa, Ontario. September 14, 2018.

Current Conditions

In addition to the City-owned parks, the Study Area also has greenspaces located along the highway and on OCH-owned property. The latter are maintained by OCH for their tenants' use and can be classified either as playgrounds, fields, or open spaces. Alternatively, the baseball diamonds at Dumauiier Park are used by residents from across the City, as softball tournaments are held there.

Connectivity

Distance and users' mobility are factors that affect greenspace accessibility. Ottawa's *Official Plan* states that within a 400-metre radius is the optimal distance between residential areas and greenspaces¹²⁰. The Study Area meets this target; however, the measurement is narrow in scope because it assumes a straight path and does not consider physical barriers that would increase the distance travelled in order to reach the park. There are pathways between greenspaces in Foster Farm; however, they are only used in the summer since there is no winter maintenance and the lack of illumination makes them unsafe at night.

Environmental Constraints

There are several constraints to the redevelopment of Pinecrest Foster Farm. It is important to consider aspects such as topography, geology, contamination, as well as noise and air quality when creating a plan for the future of the community.

Topography

The topography of the Study Area is relatively flat; however, there is a noticeable grade change at the southern edge of Dumauiier Park as it slopes south toward where the future Pinecrest LRT Station will be located. There is also a steep incline through Ruth Wildgen Park, which limits the potential to implement a roadway through the park¹²¹.

Geology

The geology of the Study Area is comprised of sedimentary rocks (Paleozoic)¹²². Along Dumauiier Avenue, the bedrock geology has been measured to be between 3.8 metres and 4.6 metres underground¹²³.

Contamination

Contamination is a known issue within the Study Area. A landfill, operational between November 1953 and May 1957, covers approximately 51,000 square metres of land (Figure B-2)¹²⁴. The former landfill is located 1.3 km northwest from the Ottawa River and a creek located 400 metres south¹²⁵. The estimated depth of refuse in the former landfill is

between three and five metres, with fill at the southern end reaching at least six metres but thinning towards the north end¹²⁶. The landfill is thought to consist mostly of domestic waste, with some commercial and industrial waste¹²⁷. Currently, human contact with the contaminated soils is possible given the recreational use of the softball diamonds; however, the waste is reportedly overlain by sufficient soil cover, estimated to be between 0.6 and 1.4 metres of sandy fill¹²⁸. Combustible gases greater than five percent of the lower explosive limit (LEL) were detected in observation wells in 1980 and 1981¹²⁹. There is monthly gas monitoring onsite; however, no methane was detected inside houses and the surrounding buildings in a 1982 survey¹³⁰¹³¹. No recent data on the landfill was available for review. More information on the Remediation Plan can be found in Appendix I.



Figure B-2: Approximate boundaries of the former landfill.

In addition to the landfill, other properties in the Study Area, currently occupied by light industrial and commercial uses to the east of Pinecrest Road, may also be contaminated. Before development can proceed, these properties will require testing and assessment to determine if contamination exists, as well as possible remediation for those sites as necessary.

Noise and Air Quality

The Study Area is subject to traffic noise due to the heavy volumes of fast-moving traffic on Highway 417 and Pinecrest Road. An existing highway sound barrier is installed along the south side of Dumaurier Avenue, reducing some of the impacts of noise in the adjacent neighbourhood. Air quality on the site is also severely affected from the proximity to high volumes of traffic. Despite the noise and air quality issues, neither are expected to affect redevelopment due to the high demand for intensification near LRT stations.

To combat noise and air quality issues, design features such as triple glazing windows and central air-conditioning systems would allow windows and exterior doors to remain closed, ensuring that the indoor sound levels are within the City of Ottawa's and the Ministry of the Environment's noise criteria. Securing a qualified acoustic consultant to inspect future building plans will ensure that the window and wall components selected for construction will be adequate to meet the indoor noise criteria outlined by the City of Ottawa.

Infrastructure Constraints

According to the City of Ottawa's *Official Plan*, the City will manage population growth by directing it to the urban area where services already exist or where they can be provided efficiently¹³². Concentrating growth within the designated urban area also allows for a pattern and density of development that supports transit, cycling, and walking as viable and attractive alternatives to private automobiles.

Water and Sanitary

The Study Area is within the water and wastewater service area for Ottawa and is fully serviced by separated water and sanitary pipe systems, most of which are public except for several private watermain that serve Foster Farm. The sanitary system drains to the Pinecrest Collector, and City of Ottawa staff have confirmed that the existing water and sewer system is capable of conveying additional flow volumes; however, percentages of intensification are required to confirm to what extent the existing services are adequate¹³³. Water, wastewater, stormwater management, and geotechnical studies must be conducted as part of the development application process and will shed light on the capacity of the existing systems.

Stormwater and Drainage

The Study Area is located in the Pinecrest Creek Watershed. This area was urbanized and developed prior to the City of Ottawa's requirement to manage stormwater; therefore, there are very few facilities to treat stormwater runoff in the local area¹³⁴. The existing storm sewer pipes date back to the 1950s and 1960s¹³⁵. Existing environmental concerns, such as erosion, water quality, and the degraded health of the Pinecrest Creek, stem in part from uncontrolled stormwater runoff in the Study Area.

A 2011 stormwater management study was conducted to introduce stormwater management guidelines for the Pinecrest Creek and Westboro areas. The purpose of the report was to minimize the risk of flooding in the low-lying areas adjacent to Pinecrest Creek¹³⁶. Development in the Study Area must meet the guidelines outlined in the report, as well as provide a stormwater management (SWM) plan for approval of commercial sites. Due to the lack of SWM facilities in the Study Area, significant onsite storage may be required for redevelopment to proceed in the Study Area.

Road Capacity

The major roads in the Study Area include Highway 417, a multi-lane provincial highway, as well as Richmond Road and Pinecrest Road which are both designated as arterial roads in the *Official Plan*. Arterial roads serve through traffic, and limited direct access is provided only to major parcels of abutting properties. The only collector road in the Study Area is Dumaurier Avenue, with All other roads being local roads that provide direct access to abutting properties and serve neighbourhood travel to and from collector or arterial roads.

Currently, the intersection at Pinecrest Road and Highway 417 is operating at an acceptable overall level of service for automobiles during peak periods; however, through northbound traffic on Pinecrest and left-hand turns onto the east-bound 417 currently exceed capacity during peak periods¹³⁷. This is a result of the significant level of vehicular traffic destined to and from the 417 at this location. Furthermore, the level of service at this intersection, for both pedestrians and cyclists, has been given a rating of 'F' by the Engineering Department at the City of Ottawa due to the lack of physical barriers to separate pedestrians and cyclists from the high operating vehicle speeds which exceed 60 kilometres per hour¹³⁸.

Existing Built Environment

An examination of the built environment in the Study Area includes consideration for the existing land uses, buildings, and existing land ownership. The lands are predominantly zoned for residential land uses, followed by industrial and institutional land uses, respectively (Figures B-3 & B-4). Along with these land uses, there is a large amount of surface parking on the site. Overall, the land uses on the site are quite separated and lack connectivity in between. Work can be done to improve the built environment, in order to form a more complete community.

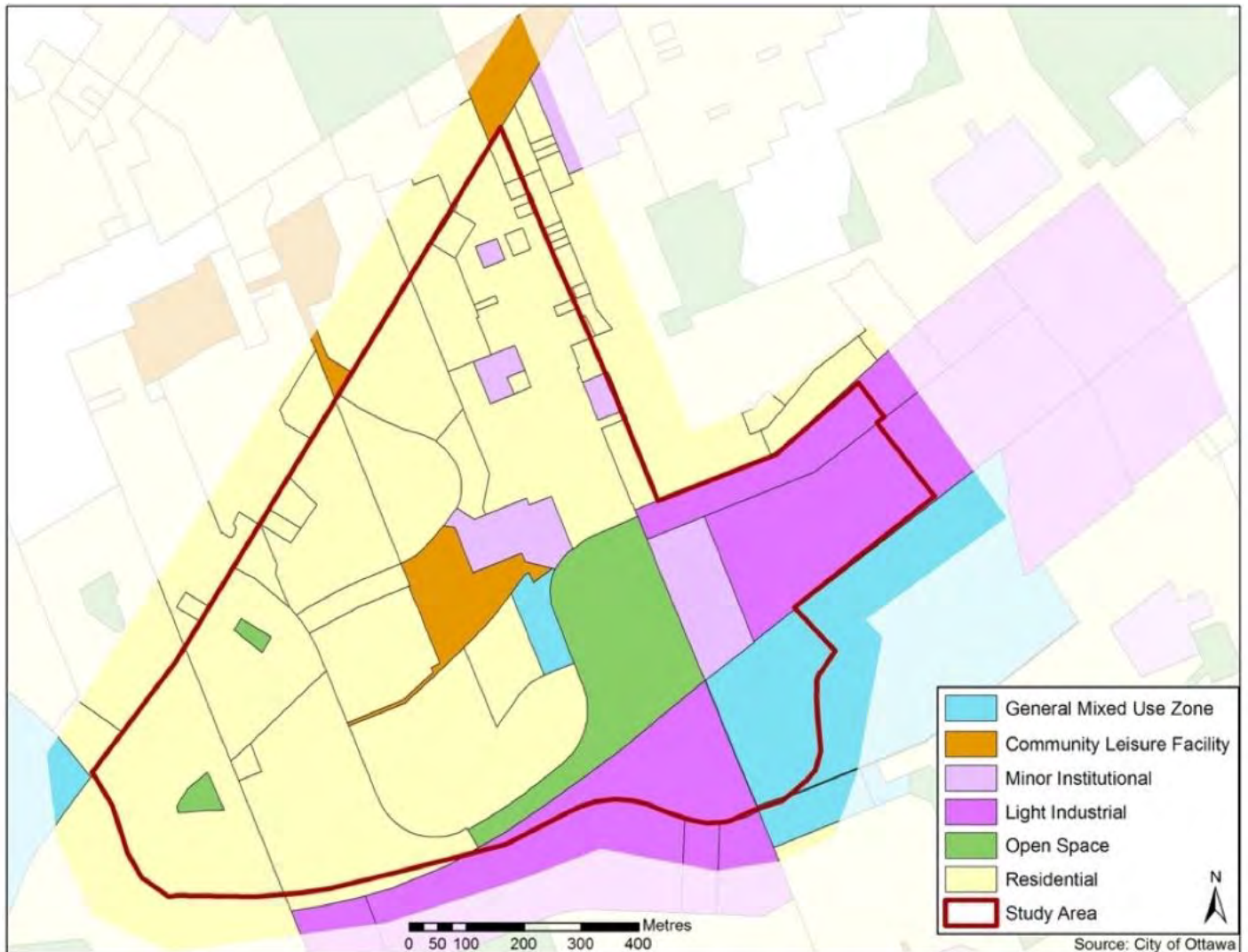


Figure B-3: Simplified existing zoning of the Study Area.



Figure B-4: Existing zoning in the Study Area, most of which is residential, industrial, or institutional.

Residential

A significant portion of the Study Area is composed of residential land uses. The residential area closest to the future Pinecrest LRT Station is on OCH-owned land, which includes 417 residential units, split between a fourteen-storey apartment building and a series of two-storey townhomes, as well as several underused surface parking lots. Other residential lands in the Study Area are dominated by two-storey single-detached and semi-detached units. Overall, higher density housing forms will need to be introduced to reach TOD-appropriate densities around the future Pinecrest LRT Station.

Commercial

A central parcel in the Study Area is the single-storey commercial block on Dumaurier Avenue. The development is anchored by a Giant Tiger and contains other small local food and retail establishments. There is also a GoodLife fitness centre across Pinecrest on Queensview Drive. On the south side of the highway, there is another commercial block, which includes some food and retail establishments; however, the highway causes a disconnect between this area and the rest of the site. That being said, there is an overall lack of commercial land uses in the Study Area and introducing some mixed-use and commercial developments will add to the vibrancy of this future complete community.

Industrial

The lands of the Study Area east of Pinecrest Road are occupied by industrial uses. The buildings are of varying heights and ages, and contain light industrial uses, such as warehouses, auto repair shops, and offices. These industrial lands will be vital in the redevelopment of Pinecrest Foster Farm and its surrounding area by providing employment opportunities in close proximity to an intensifying community.

Community Services and Amenities

In the Study Area, there are a few key community services and amenities to note. First, there are a number of churches in the area serving a variety of Christian denominations. Some of the churches are more specific to the surrounding community in their language or ethnicity of their congregation, such as the French Catholic Paroisse St-Rémi. The community is also reflected with the presence of the private secondary Abraar School on the site, which is located next to the local Boys and Girls Club. There are also multiple community parks and greenspaces in the site, including Dumaourier Park and Ruth Wildgen Park. Although they are both well-used, these parks could be improved or better oriented within the community as part of its redevelopment.

Building Heights

Within the Study Area, there are a variety of building types with varying heights (Figure B-5). Most of the buildings are two storeys; however, there are some other notable ten-plus storey buildings. These buildings will be looked to for examples of how to potentially intensify the Study Area as part of its redevelopment.

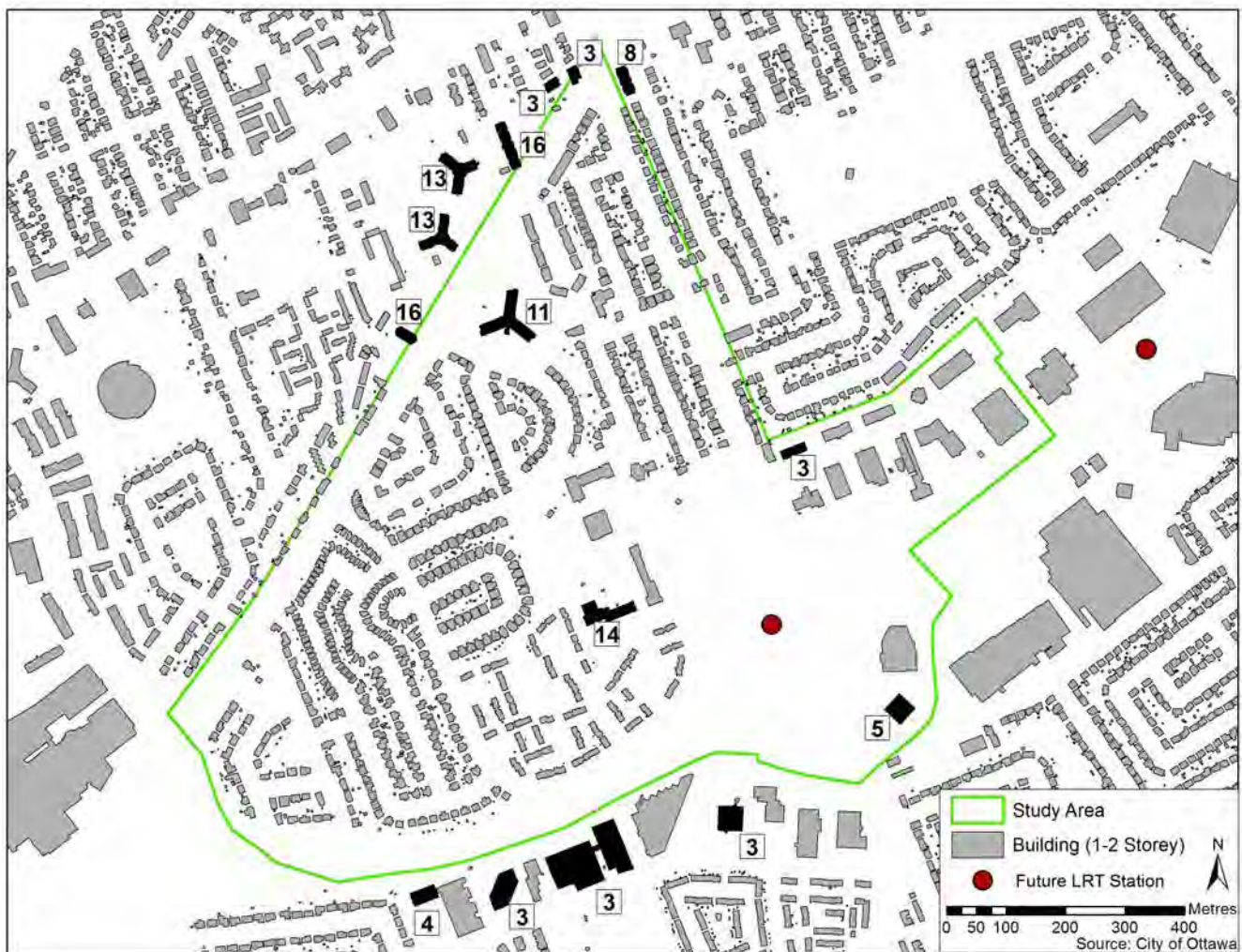


Figure B-5: Building heights within the Study Area, most of which are two storey buildings.

Land Ownership

Land ownership in the Study Area and surrounding community plays a key role in its future potential (Figure B-6). Publicly-owned lands will see the most immediate changes moving forward, as a result of this Concept Plan, as they will be targeted for redevelopment with new uses and building types. Land exchanges have been proposed in the interest of creating a more cohesive and complete community. Privately-owned lands may benefit from the proposed Zoning By-law Amendments which, thinking long-term about the community, may encourage owners to intensify these areas themselves.



Figure B-6: Land ownership, public versus private, in the Study Area and surrounding community.

Figure-Ground Analysis

The figure-ground analysis highlights the density of the existing built environment by showcasing each building's footprint and the overall urban fabric (Figures B-7 & B-8). This analysis highlights the current arrangement of the rowhouses, and how they take up a lot of space unnecessarily on the site. There is a stark difference between the urban fabric of Foster Farm and that of the surrounding area. The analysis also highlights the amount of land available to be considered for redevelopment near the future LRT station. Future redevelopment will look to using the land more efficiently through intensified uses, such as mixed-use developments, to create a more transit-oriented development.

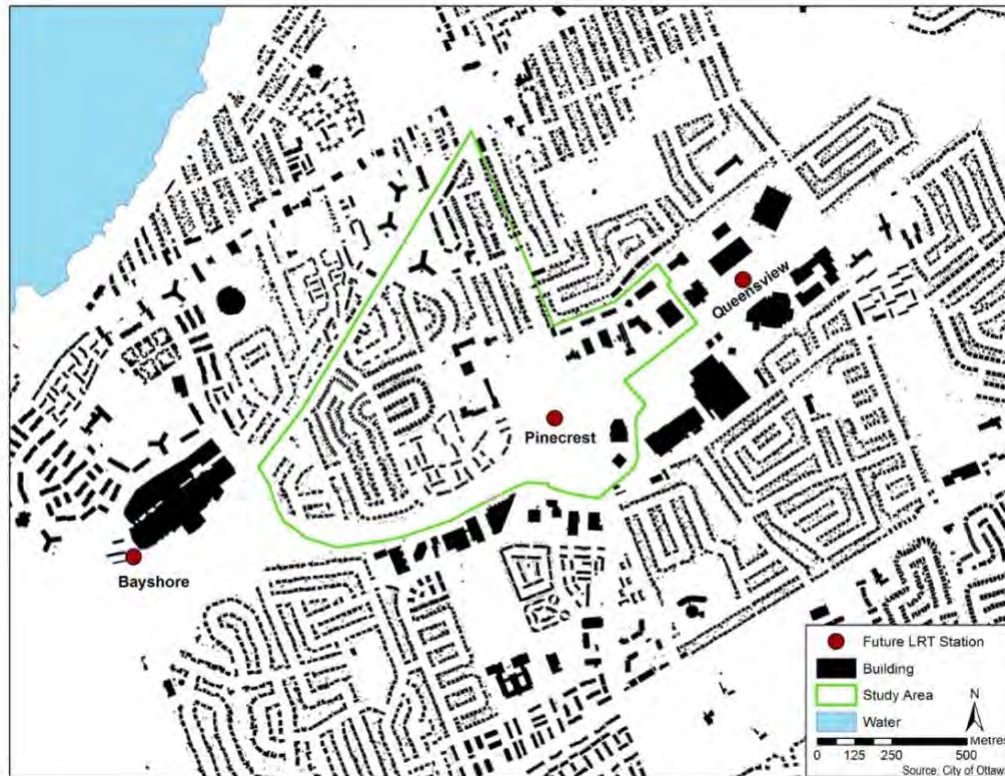


Figure B-7: Figure-ground analysis for the Study Area and surrounding communities.



Figure B-8: Figure-ground analysis for the Study Area.

Density Analysis

This analysis provides an overview of current densities on major properties in the Study Area, as well as an indication of target densities for these same areas as part of the redevelopment process. This analysis includes key properties within the Study Area comprising a total of 17 hectares (47 acres), including the Ministry of Transportation lands (the future site of the Pinecrest LRT Station), the City lands (Dumaurier Park), adjacent private lands (the Giant Tiger plaza, the Boys and Girls Club, and the Abraar Private School), and the OCH lands (Foster Farm). There are currently 417 residential units on the site, all located on OCH land; more specifically, there are 209 units in the form of the two-storey townhouses and 208 residential units within a fourteen-storey apartment building. This puts the built gross density for the site defined above at 22 units per hectare. When only OCH lands are taken into consideration, the gross density increases to 47 units per hectare.



Figure B-9: Map showing the Study Area, site, and OCH property.

There are currently 1,373 residents on the Foster Farm site which means there are currently 153 residents per hectare on OCH-owned lands, specifically, and 72 residents per hectare on the larger site. This makes the Pinecrest Foster Farm community comparable, in terms of density, to existing TOD projects in Ottawa before their redevelopment, which ranged from 36 people per hectare (Cyrville) to 73 people per hectare (Blair)¹³⁹. The City of Ottawa does not define a clear target for density in its *Official Plan*; rather, it defines and controls density through the built form via its *Zoning By-Laws*. However, minimum densities for target areas are outlined under its *Residential Land Strategy*; furthermore, the Study Area could fall under the designation of an emerging mixed-use centre or even a mixed-use centre at a key transfer station (Table B-3).

Table B-3: Minimum densities for select target areas¹⁴⁰.

OP Target Area	People and jobs per gross hectare	People and jobs per net hectare
Central Area	500	700
Major Mixed-Use Centres	250	350
Target Arterial Main Street (Richmond North of Carling St)	200	285
Mixed Use Centres at Key Transfer Stations	200	285
Emerging Mixed Use Centres	120	170

The City of Ottawa also has a *TOD Plans Document*, which provides density targets for its existing TOD plans at the Lees, Hurdman, Tremblay, St-Laurent, Cyrville, and Blair stations. This document identifies gross target densities of 200 to 400 residents and jobs per hectare, with an average of their numbers yielding 350 residents and jobs per hectare^{141;142}. Aiming for similar targets would yield very much higher residential unit counts for the future Pinecrest Foster Farm community. Table B-4 below shows the possible densities, populations, and unit numbers that could be planned for, consistent with City density targets. The ratio of 2.36 residents per unit was determined by calculating the average of residents per housing unit in the City of Ottawa. These numbers suggest that, to achieve the City's TOD density targets, the population on the site will need to increase to between 3,800 and 7,600 residents.

Table B-4: A breakdown of resident density and associated units required.

Density Target Number of Residents per Hectare (gross density)	Numbers of Residents on the Pinecrest Village site (19 hectares)	Number of Units Required (Ratio: 2.36)
200	3800	1610
250	4750	2012
300	5700	2415
350	6650	2817
400	7600	3220

Circulation

Circulation and connectivity are major issues that the Project Team plans to address throughout the Study Area. An area of focus will be to improve linkages to the future Pinecrest LRT Station and enhance the active transportation infrastructure onsite, in order to create more efficient and safer connections with the surrounding areas. Currently, drive time is significantly faster than public transit (Table B-5).

Table B-5: Distance and travel time to destinations in Ottawa.¹⁴³

Destinations in Ottawa	Driving Distance from Study Area	Drive Time	Public Transit Time
Queensway Carleton Hospital	3.1 km	6 min	20 min
Downtown Ottawa	13.2 km	15 min	30 min
Carleton University	13.5 km	15 min	42 min
University of Ottawa	14 km	12 min	37 min
CF Rideau Centre	15.3 km	15 min	33 min
Via Rail Station	15.5 km	13 min	50 min
Ottawa International Airport	16.5 km - 20 km	20 min	1h 15m

Public Transit

The Study Area is well-served by multiple public transit routes day and night (Figure B-10). These routes connect residents to districts and amenities in the area and throughout Ottawa, including transportation hubs, the downtown, and post-secondary institutions. The bus stops are found along arterial and collector roads. Some of these have pedestrian shelters, and almost all routes travel through the Pinecrest Road Transitway Station (adjacent to the future LRT Station). This station links with an east-west designated bus rapid transit route that runs parallel to the 417.

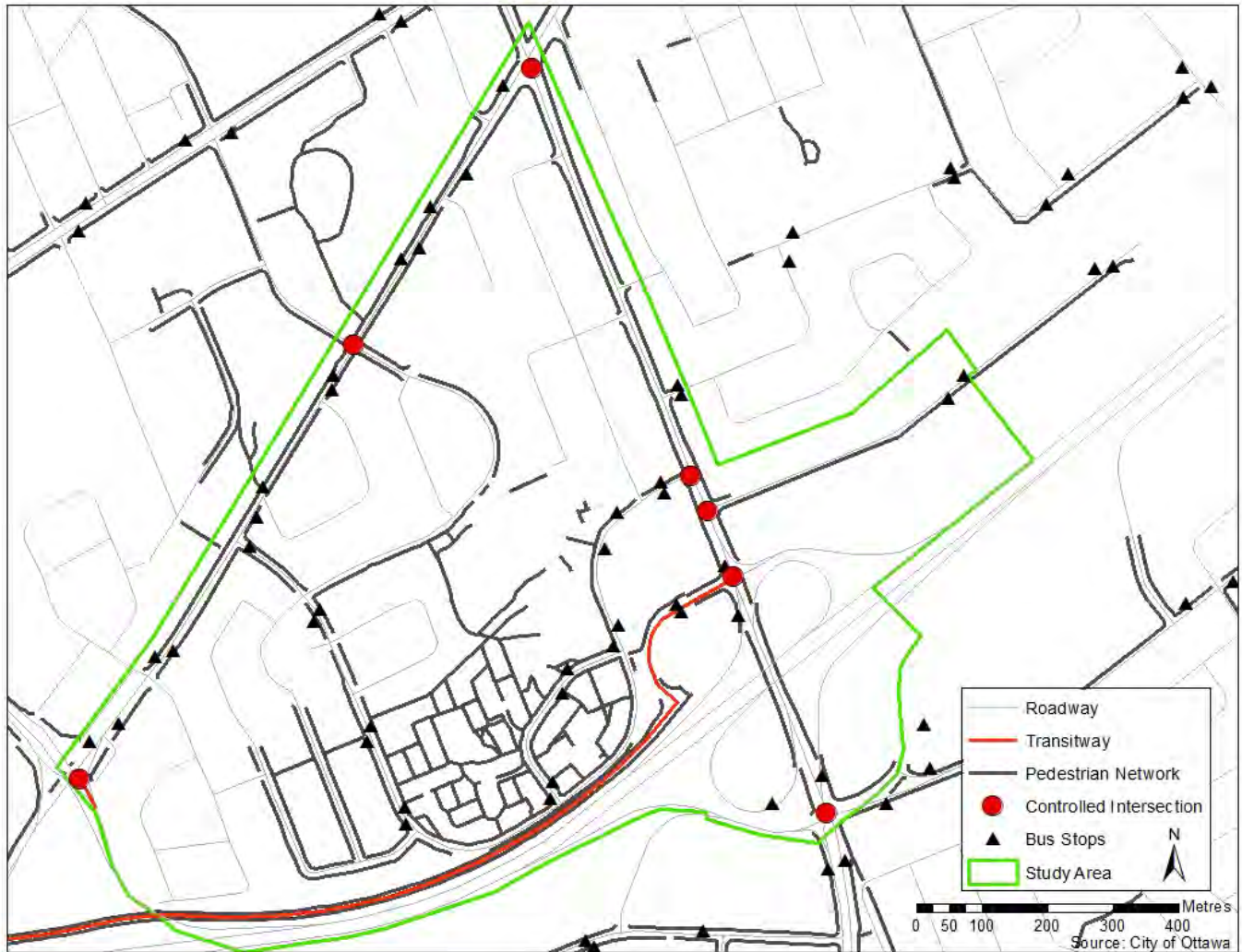


Figure B-10: Pedestrian network, public transit stops and transitway.

Walking

The quality of the pedestrian realm is poor in the residential parts of the Study Area due to hostile settings with inadequate infrastructure. Sidewalks are inconsistent, some abruptly ending or some completely missing, which forces pedestrians to walk on the street (Figure B-11). The sidewalks also have very little seating for pedestrians to linger or take a rest. There are also physical barriers in the southern extent of the Study Area that create an inhospitable environment for walking and affect the perception of safety for residents. For example, Highway 417 sound barrier provides an unpleasant setting (Figure B-12). Chain fences along property lines also act as a visual and physical barrier that contribute to an unwelcoming atmosphere and reduce connectivity (Figure B-13). The streets in this area are lined with streetlights placed 40 to 60 metres apart, which causes inconsistent illumination that creates a potentially unsafe environment at night. Lastly, there are little to no amenities that can be accessed within a fifteen-minute walk

from the centre of the neighbourhood (Figure B-14). All of these factors affect the volume and flow of pedestrian traffic, as residents may opt for safer and more convenient modes of transportation.



Figure B-11: The lack of sidewalks in some areas force pedestrians to walk on the street¹⁴⁴.



Figure B-12: The sound barrier between the Highway 417 and Dumaaurier Avenue. September 14, 2018.



Figure B-13: The chain fences hinder connectivity. September 14, 2018.

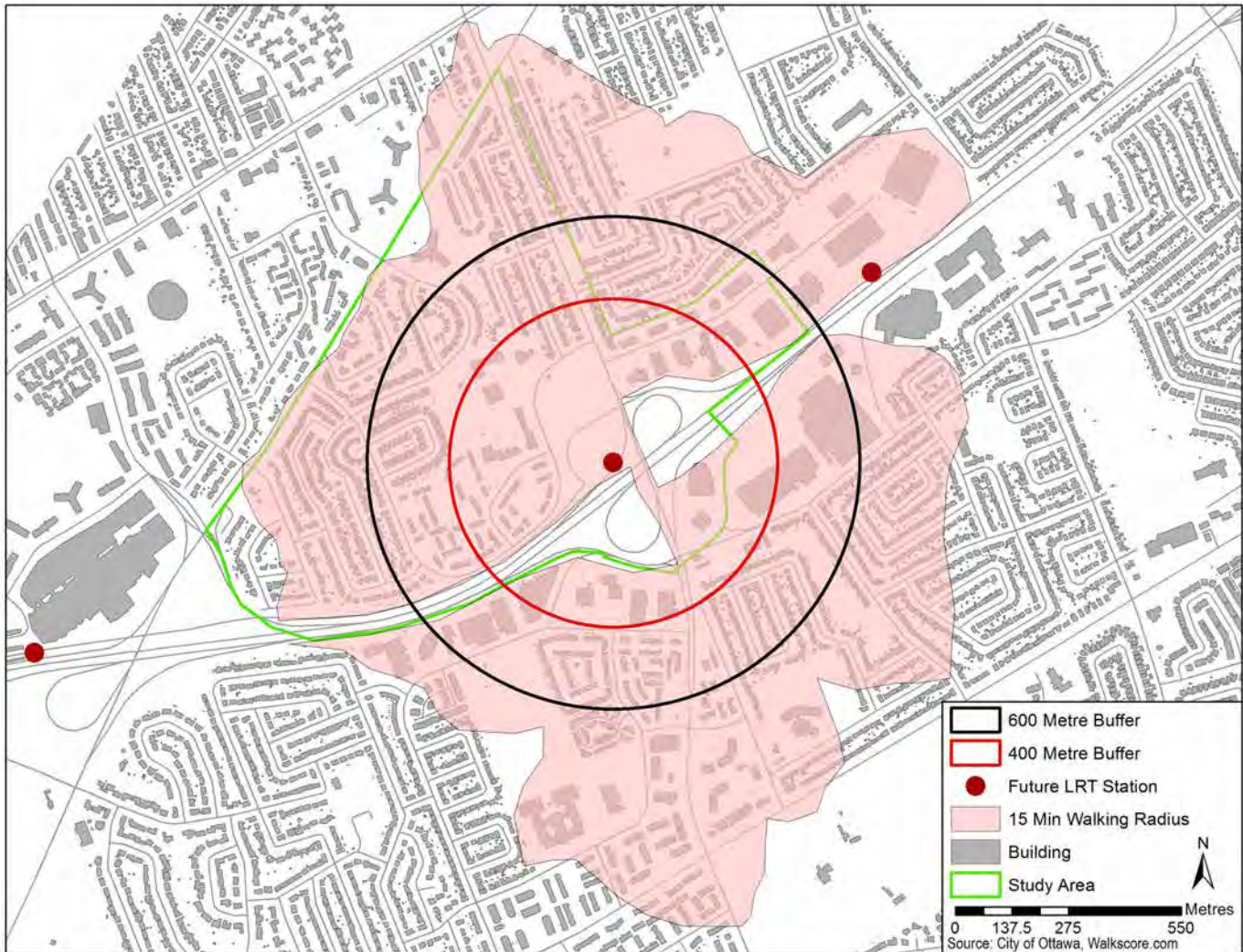


Figure B-14: Within a fifteen-minute walk from the future LRT station.

The OCH-owned lands contain a network of paved and gravel pathways that connect pedestrians to houses, parking lots, parks, the commercial plaza, and the Pinecrest transit station. Some of these pathways seem well-used but are not lit after dark, are in poor condition, and are not maintained in the winter (Figure B-15). This makes them inaccessible to those who have mobility issues, as well as being aesthetically displeasing in the community. There are also informal pathways that act as shortcuts, such as those from the Boys and Girls Club to Ruth Wildgen Park and to the commercial plaza.

Along Queensview Drive and the Pinecrest Road overpass, there is no buffer separating pedestrians from the multiple lanes of fast-moving traffic (Figure B-16). When approaching the intersection of Greenbank Road and Iris Street, there is no marked pedestrian crossing at the off-ramp turn, causing a pedestrian to wait for gaps in cars to cross. At the intersection, there is no crossing on the north side of the intersection toward the commercial area. Therefore, if walking southbound from the Study Area to the commercial area, pedestrians would have to either:

- 1) Cross before the overpass at Queensview Drive to the east sidewalk;
- 2) Cross the intersection three times to reach northern side; or,
- 3) Illegally jaywalk over eight lanes of traffic at a busy intersection.



Figure B-15: A gravel path in the OCH-owned neighbourhood.



Figure B-16: No sidewalk buffer on the Pinecrest-Greenbank overpass.

Cycling

The Study Area is close to a City-wide cycling network and a multi-use trail system, which connect to the greenbelt and other important destinations. However, the cycling infrastructure within the Study Area is almost non-existent, which further hinders connectivity. Within the residential area, there are no designated bike lanes and only two multi-use paths; therefore, cyclists must often navigate on the road. On Richmond Road, between Highfield Crescent and Bellfield Street, there is only one on-road bicycle lane and a paved shoulder that appears for 450 metres and then abruptly disappears. The paved shoulder is 1.5 metres in width, which is the minimum required for a cycling lane on an urban arterial or collector road¹⁴⁵. That being said, there was no marked lane for cycling. Additionally, the asphalt on the shoulders was in poor condition, which is not conducive to cycling (Figure B-17). Nevertheless, there is great opportunity to improve connectivity within the Study Area and to the surrounding cycling networks (Figure B-18).



Figure B-17: Broken asphalt on paved shoulder of Richmond Road.

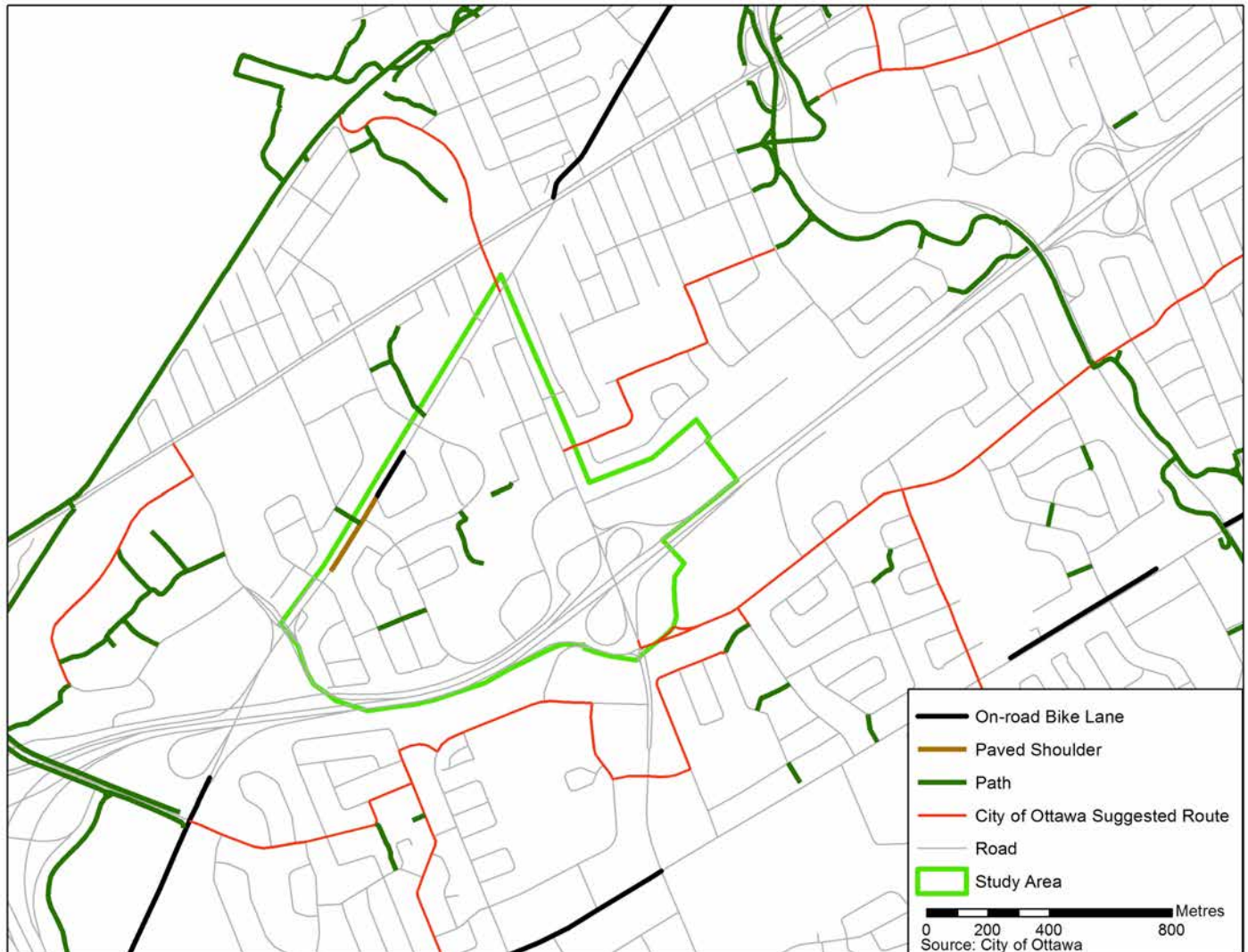


Figure B-18: Ottawa's cycling routes near the Study Area.

Driving

The Study Area is bordered by two arterial roads, Richmond Road in the northeast-southwest and Pinecrest Road in the north-south (Figure B-19). To enter the Study Area, vehicles must take one of these roads, which both experience high volumes of traffic. The 417 provides a connection to the rest of Ottawa, as well as a way to leave the City. The only direct access to the Queensview employment area, and the commercial properties south of the Queensway, is via Pinecrest Road. The Dumaui Avenue-Pinecrest Road intersection is one part of a double T-Junction (Figure B-20). This double intersection disrupts the flow of traffic, further reducing connectivity throughout the site, and increases congestion in the area. Within the residential section of the Study Area, Dumaui Avenue is a winding collector road that connects residents to both Richmond Road and Pinecrest Road. All other roads in this area are intended for local traffic only with low volumes of traffic.

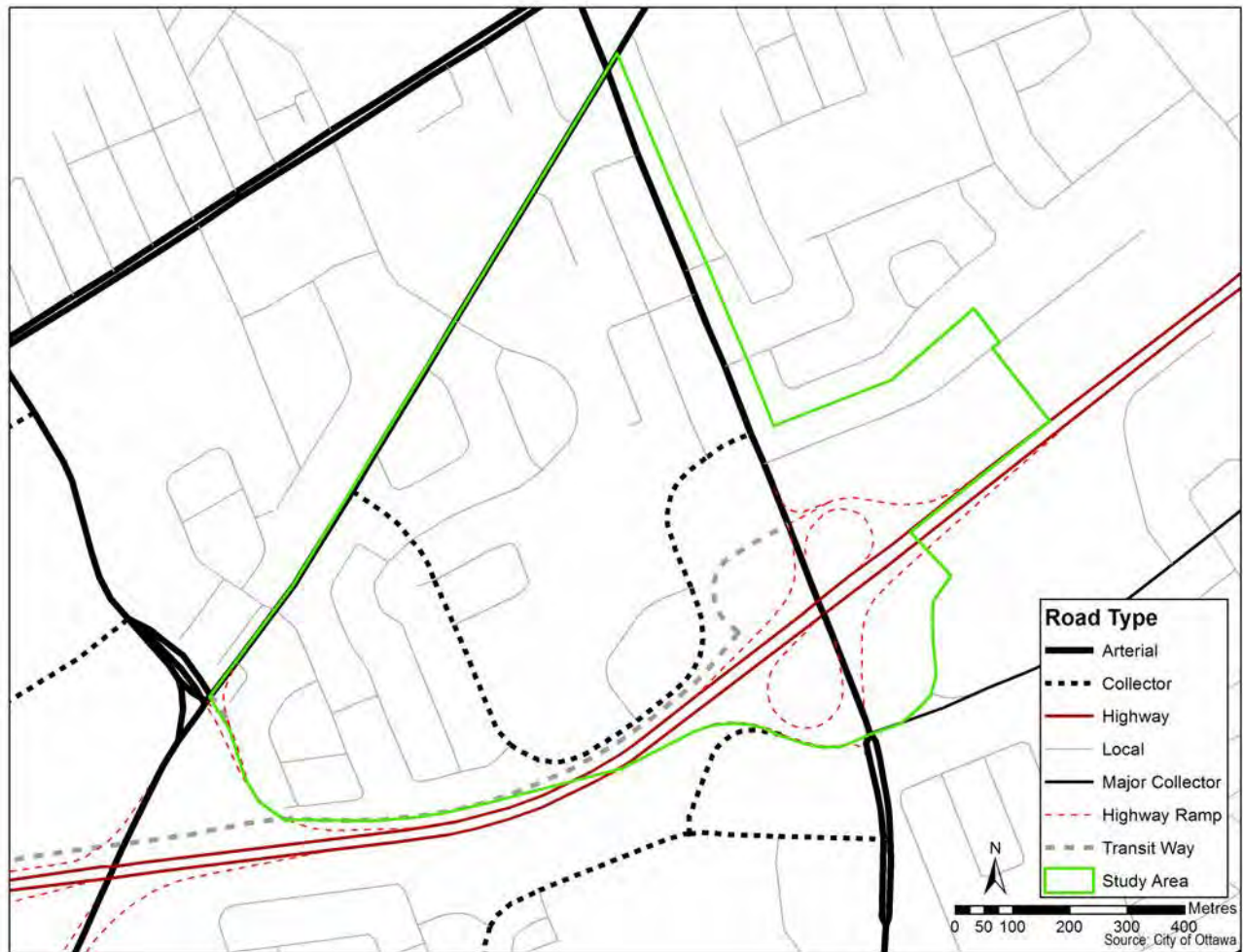


Figure B-19: Classification of the existing road network.



Figure B-20: Double T-Junction at Pinecrest Road, Dumaurier Avenue and Queensview Drive.

Parking

Street parking is not permitted on many major streets, including Ramsey Crescent, Pinecrest Road, Richmond Road, and part of Dumaurier Avenue – specifically where it turns east-west, south of the OCH-owned property. Parking is also not permitted in certain areas, including in front of the condominium complex at 1025 Grenon Avenue, on Queensview Drive west of the U-Haul building, and on any street curves. Parking on Watson Street, south of Farrell Street, is by permit only between May and September. There is a surface parking lot in Dumaurier Park that provides free vehicular parking.

Within the residential area, there are nine vehicular parking lots of various sizes that account for approximately 2.71 hectares (Table B-6). Notably, the nine residential lots on OCH-owned property (which have a few spaces reserved for visitor parking) are underutilized. There is also little bicycle parking within the Study Area.

There are also separate surface parking lots for the Abraar School, the Boys and Girls Club, and the Paroisse St-Rémi church, all of which have different peak parking times. This presents the potential for shared parking if the fences between property lines could be removed.

Table B-6: Parking lot size within the residential section of the Study Area.

Lot Purpose	Number of Lots	Hectares	Acres
Residential lots	9	1.4 ha	3.46 ac
Commercial lot	1	0.26 ha	0.64 ac
Church lots	3	0.7 ha	1.72 ac
Baseball lot	1	0.11 ha	0.27 ac
School/Boys and Girls Club lot	1	0.24 ha	0.59 ac
Total	15	2.71 ha	6.68 ac

Appendix C – Analysis

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Economy

National

Canada's national economy has an uncertain long-term outlook with the rise of new trade powers, Brexit, and the American influence on Canadian trade¹⁴⁶. Although Canada's economy is heavily dependent on trade partners, which limits the ability to forecast into the distant future, the short-term trends are not a cause for concern¹⁴⁷. Canada's GDP grew by 3.0 percent in 2017, but will return to a lower, stable growth rate of an estimated 1.7 percent between 2019 and 2022¹⁴⁸. Over the past decade, Canada led G7 nations in GDP growth, while the unemployment rate has been reduced¹⁴⁹. In 2017, 329,000 new jobs were created in Canada, making it the fastest growing G7 nation¹⁵⁰. Despite this growth, the household debt to disposable income ratio in Canada has hit a record high, leading to increasing interest rates¹⁵¹. Although rising interest rates will likely lead to a small spending recession, the impacts on foreign direct investment are expected to be minimal¹⁵². In 2017, Canada saw the highest recorded commercial real estate investment volume of \$43.1 billion, despite the rising rates¹⁵³.

Regional

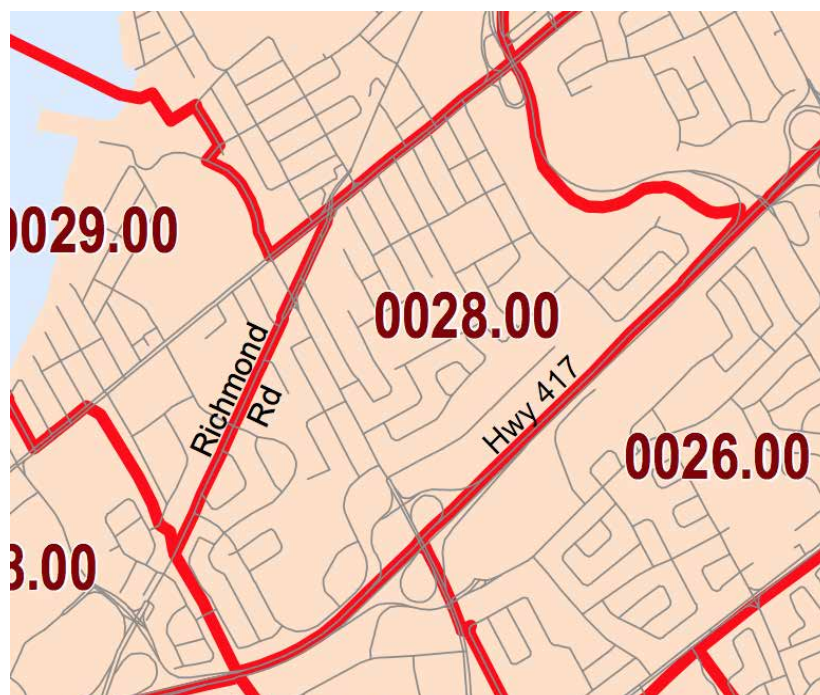
Despite the national GDP growth rate projected to decline to 1.7 percent, Ontario's GDP growth is expected to rise around 2.0 percent annually from 2019 to 2022¹⁵⁴. The first quarter of 2018 saw GDP growth from increased consumer spending and gains in business investment¹⁵⁵. However, provincial growth was moderated from weaker exports and residential construction rates, largely associated with federal activities¹⁵⁶. Indicators showed growth in most areas, including income and business sector profits through the start of 2018¹⁵⁷. Ontario's labour market has been highly variable with the loss of 22,500 jobs in the first quarter of 2018; however, there was an addition of 33,900 jobs in the second quarter¹⁵⁸. Overall, the provincial unemployment rate is 5.9 percent and has been under the national average for over three years¹⁵⁹. Household expenditures have increased due to the increasing prices of vehicles, clothing, food, and gasoline¹⁶⁰. Ontario's economic future looks promising with steady GDP rates and strong employment trends, despite rising consumer costs.

Local

Unlike the strong national and provincial GDP growth rates, the Ottawa market is expected to experience a lower rate of GDP growth from 3.1 percent in 2017 to about 1.9 percent in 2019¹⁶¹. The Ottawa-Gatineau job market is expected to see a net 11,300 new jobs; however, this job growth will be highly uneven¹⁶². In 2017, Ottawa's technology sector gained 9,700 jobs, but the tourism industry saw a decline of around 5,900 jobs¹⁶³. Overall, Ottawa's 2017 unemployment rate shrunk to 4.4 percent, a three-decade historical low for the City¹⁶⁴. The high-tech sector and the federal government are key factors in the local economy, which is also supported by growing construction and transportation industries¹⁶⁵. With an economy more diverse than those with just lumber or oil, Ottawa's market provides some stability amongst the national and regional uncertainties¹⁶⁶. Despite small declines in GDP growth, Ottawa's economy has an overall positive outlook due to strong employment and investment trends.

Demographics

In-depth demographic analysis is essential to understanding the trends in housing, infrastructure, and service needs of communities, which informs visions of future growth and development. The Pinecrest Foster Farm community belongs to census tract (CT) 0028.00 (Figure C-1) and the City of Ottawa census subdivision (Ottawa CSD).

Figure C-1: Census Tract 0028.00¹⁶⁷.

Population

In 2016, the population of the Ottawa CSD was approximately 934,243. Between 2006 and 2016, the Ottawa CSD population experienced significant growth, increasing by fifteen percent. In contrast, the Study Area CT experienced a population decline during this time, dropping from a total of 6,800 to 6,650 – a 2.2 percent decline. The City of Ottawa projects that their population will increase between eleven percent and 21 percent by 2031¹⁶⁸.

Populations of both the Study Area CT and the Ottawa CSD are aging; however, the Ottawa CSD population is aging at an increasingly accelerated rate (Table C-1). The median age of the Ottawa CSD population has increased by 4.4 percent between 2006 and 2016, from 38.4 to 40.1 years. Between 2006 and 2016, the proportion of the population aged 0 to 14 in the Ottawa CSD had decreased by five percent; furthermore, that of the Study Area CT has seen a similar drop of 2.7 percent. Though to a lesser degree, the proportions of Ottawa CSD and Study Area CT populations aged 15 to 65 have decreased within this 10-year period – by three percent and 0.1 percent respectively. The 65 and over cohort had experienced significant increase, with the Ottawa CSD increasing by 24 percent between 2006 and 2016; whereas, the Study Area CT proportion experienced a subtle increase of 3.1 percent. According to City of Ottawa population projections, the 65 and over age cohort will experience the most continuous and strong growth between 2016 and 2031¹⁶⁹.

Table C-1: Distribution of the population by broad age groups^{170;171}.

	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Total population	812,130	934,243	15.0	6,800	6,650	-2.2
0 to 14 years	17.6	16.7	-5.0	18.1	17.6	-2.7
15 to 64 years	70.0	67.9	-3.0	66.8	66.7	-0.1
65 to 84 years	12.4	15.4	24.0	15.2	15.7	3.1
85 years and over	1.6	2.1	28.4	1.8	2.1	14.2
Median age of the population	38.4	40.1	4.4	39.6	39.5	-0.3

In both the Ottawa CSD and Study Area CT, approximately half of private households in 2016 were comprised of two people and nearly three quarters were comprised of three people or less. Between 2006 and 2016, the average census family size decreased from 3.0 to 2.9 people in both the Ottawa CSD and Study Area CT (Table C-2).

Table C-2: Percent of families in private households by family size in 2016¹⁷².

Family size	Ottawa	Census tract 0028.00
2 persons	48.6	51.9
3 persons	21.4	22.0
4 persons	21.0	15.6
5 or more persons	9.0	10.2
Average size of census families	2.9	2.9
2006 Average size of census families	3.0	3.0

Visible Minority Population

In 2016, 26.3 percent of the Ottawa CSD population identified as belonging to the visible minority population, increasing 6.1 percent from 2006 (Table C-3). The proportion of the population identifying as belonging to the visible minority population was greater in the Study Area CT than in the Ottawa CSD at 37.7 percent in 2016. The proportion identifying as visible minorities in both the Ottawa CSD and the Study Area CT increased rapidly from 2006 to 2016.

Table C-3: Visible minority population as proportions of the total population^{173 174}.

Status	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Total visible minority population	20.2	26.3	30.4	34.6	37.7	8.9
Not a visible minority	79.8	73.7	-7.7	65.4	62.3	-4.7
South Asian	3.8	4.2	10.1	4.0	3.2	-21.2
Chinese	3.3	4.5	35.0	3.7	4.9	31.7
Black	4.9	6.6	34.7	12.4	13.8	11.7
Filipino	0.9	1.3	47.8	0.8	1.6	93.4
Latin American	1.0	1.2	20.7	1.0	2.0	110.4
Arab	1.3	4.5	244.0	3.4	3.1	-7.7
Southeast Asian	3.0	1.3	-55.2	5.2	4.8	-7.4
West Asian	0.8	1.0	29.9	1.9	1.7	-10.4
Korean	0.3	0.3	22.1	0.0	0.0	/
Japanese	0.2	0.3	25.8	0.3	0.2	-49.4
Visible minority; n.i.e.	0.2	0.3	40.5	0.7	1.3	91.3

In the Ottawa CSD, populations identifying as Black, Chinese, and Arab were the largest visible minority groups, respectively representing 6.6 percent, 4.5 percent, and 4.5 percent of the total population in 2016. Meanwhile, the Study Area CT populations identifying as Black, Chinese, and Southeast Asian were the largest visible minority groups, respectively representing 13.8 percent, 4.9 percent, and 4.8 percent of the total 2016 population. Notably, the Arab visible minority group experienced the most growth between 2006 and 2016, increasing by 244 percent and 110 percent in the Ottawa CSD and the Study Area CT, respectively. The increasing visible minority population corresponds with recent immigration rates, which have steadily been increasing in recent decades (Tables C-4 and C-5). Approximately a quarter of the Ottawa CSD and the Study Area CT immigrant populations arrived in Canada between 2001 and 2010, and the proportion arriving between 2011 and 2020 is on track to surpass this rate.

Table C-4: Immigration status and period of immigration^{175 176}.

Type of dwelling	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Non-immigrants	76.7	74.7	-2.6	67.7	66.8	-1.3
Immigrants	22.3	23.6	6.0	30.6	31.9	4.2
Non-permanent residents	1.0	1.6	67.1	1.6	1.2	-22.8

Table C-5: Period of immigration¹⁷⁷.

Period	Ottawa	Census tract 0028.00
Before 1981	24.8	23.6
1981 to 1990	13.7	16.8
1991 to 2000	22.9	23.6
2001 to 2010	24.6	24.6
2011 to 2016	13.9	11.8

Housing

Total dwellings

In 2016, there were 373,756 private dwellings occupied in the Ottawa CSD, representing a 16.4 percent change from 2006¹⁷⁸. The number of private dwellings occupied in the Study Area remained relatively constant between 2006 and 2016, with a less than a one percent increase to 2,635 dwellings.

Dwelling type

Single-detached houses are the most prominent dwelling type in the Ottawa CSD and the Study Area CT, despite their proportional prevalence decreasing over time (Table C-6). Between 2006 and 2016, the proportion of single-detached homes decreased from 43.3 percent to 42.3 percent in the Ottawa CSD, and 36.7 percent to 36.6 percent in the Study Area CT. Other prominent dwelling types include rowhouses and apartments greater than four-storeys in the Ottawa CSD, and semi-detached houses and apartments greater than four-storeys in the Study Area CT. Between 2006 and 2016, the dwelling types experiencing the most proportional increase were rowhouses and duplexes in the Ottawa CSD and Study Area CT, respectively.

Table C-6: Total percent of occupied private dwellings by type of dwelling^{179;180}.

Dwelling type	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Single-detached houses	43.3	42.3	-2.3	36.7	36.6	-0.3
Semi-detached houses	5.6	5.4	-3.6	17.6	16.7	-5.1
Row houses	19.2	21.2	10.4	10.5	10.8	2.9
Apartments; duplex	2.0	1.9	-5.0	3.4	5.5	61.8
Apartments in buildings with fewer than five storeys	10.6	10.5	-0.9	8.6	8.0	-7.0
Apartments in buildings with five or more storeys	19.0	18.4	-3.2	22.8	22.0	-3.5

Tenure

Homeownership was the most prominent tenure in the Ottawa CSD and Study Area CT. In 2016, 65.7 percent of populations at both geographic scales owned their homes. Despite making up the majority, the proportions of the populations owning homes at both geographic scales slowly declined between 2006 and 2016 (Table C-7).

Table C-7: Tenure distribution^{181 182}.

Tenure type	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Ownership	66.0	65.7	-0.5	68.4	65.7	-4.0
Renting	34.0	34.3	0.9	31.6	34.3	8.7

Dwelling Value and Shelter Costs

Between 2006 and 2016, Study Area CT dwelling values remained lower than those of the Ottawa CSD, with respective median values of \$349,012 and \$400,148 (Table C-8). The median dwelling values in the Study Area CT increased at a faster rate in this decade, by 41.6 percent, than those in the Ottawa CSD, increasing by 34.4 percent. Similarly, the median monthly cost for rented dwellings was higher in the Ottawa CSD; however, the rate in which such costs increased, between 2006 and 2016, was higher in the Study Area CT.

Table C-8: Median dwelling values and monthly shelter costs^{183 184}.

	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Median value of dwellings	\$297,718 (average)	\$400,148	34.4	\$246,517	\$349,012	41.6
Median monthly shelter costs for rented dwellings	\$849	\$1112	31.0	\$701	\$947	35.1
Median monthly shelter costs for owned dwellings	\$1151	\$1434	24.6	\$997	\$1150	15.3

In both the Ottawa CSD and the Study Area CT, slightly more than three quarters of the population spent less than 30 percent of their income on shelter costs in 2016 (Table C-9).

Table C-9: Percentage of income spent less on shelter costs in 2016¹⁸⁵.

Percentage of income	Ottawa	Census tract 0028.00
Spending less than 30% of income on shelter costs	76.2	79.3
Spending 30% or more of income on shelter costs	23.8	20.7

Period of Construction

Housing in the Study Area CT is generally older than that within the Ottawa CSD. Approximately 64 percent of housing in the Study Area CT was constructed in 1980 or earlier, compared to 48.2 percent in the Ottawa CSD (Table C-10). Furthermore, 5.4 percent of total dwellings in the Study Area CT were constructed between 2001 and 2016, compared to 23.3 percent in the Ottawa CSD.

Table C-10: Period of construction as a proportion of total dwellings^{186 187}.

Construction period	Ottawa	Census tract 0028.00
1960 or before	17.6	21.4
1961 to 1980	30.6	42.1
1981 to 1990	16.6	22.2
1991 to 2000	11.9	8.7
2001 to 2005	7.8	1.1
2006 to 2010	8.1	2.8
2011 to 2016	7.4	1.5

Housing Suitability and Condition

According to Statistics Canada, a dwelling is deemed suitable when it “has enough bedrooms for the size and composition of the household” as per the National Occupancy Standard (NOS)¹⁸⁸. In 2016, the proportion of dwellings deemed suitable was high in both Ottawa CSD and Study Area CT, constituting a respective 95.4 percent and 93 percent (Table C-12).

Table C-11: Proportional share of occupied private dwellings by number of bedrooms in 2016¹⁸⁹.

Number of bedrooms	Ottawa	Census tract 0028.00
No bedrooms	0.7	0.4
1 bedroom	14.3	10.8
2 bedrooms	20.6	22.6
3 bedrooms	38.0	47.6
4 or more bedrooms	26.5	19.0

Table C-12: Total private households by housing suitability in 2016¹⁹⁰.

Percentage of income	Ottawa	Census tract 0028.00
Suitable	95.4	93.0
Not suitable	4.6	7.2

Table C-13: Number of persons per room per private households^{191 192}.

Type of dwelling	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
One person or fewer per room	98.7	98.4	-0.27	96.9	96.2	-0.7
More than 1 person per room	1.3	1.6	20.61	3.1	4.0	28.5

At both geographic scales, dwelling conditions are improving. Between 2006 and 2016, dwellings requiring major repairs decreased by 15.1 percent and 2.9 percent in the Ottawa CSD and Study Area CT, respectively (Table C-14). In 2016, 5.3 percent of Ottawa CSD dwellings required major repairs, while this proportion was slightly higher in the Study Area CT, at 8.3 percent.

Table C-14: Total occupied private dwellings by dwelling condition^{193 194}.

Type of dwelling	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Only regular maintenance or minor repairs needed	93.7	94.7	1.0	91.4	91.7	0.3
Major repairs needed	6.3	5.3	-15.1	8.6	8.3	-2.9

Employment and Income

In the last decade, the proportion of the Ottawa CSD and the Study Area CT populations in the labour force has declined to 67.5 percent and 59.9 percent, respectively. Of those in the labour force, a respective 92.8 percent and 90.8 percent of Ottawa CSD and Study Area CT residents were employed in 2016 (Table C-15). City of Ottawa projections indicate that labour force participation rates will continue to decline as a result of population aging¹⁹⁵.

Table C-15: Population aged 15 years and over by labour force status^{196 197}.

Status	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
In the labour force	69.3	67.5	-2.7	62.4	59.9	-4.0
Employed	94.1	92.8	-1.4	90.8	90.8	0.0
Unemployed	5.9	7.2	22.6	9.1	9.0	-0.3
Not in the labour force	30.7	32.5	6.1	37.6	40.2	6.9

Table C-16: Distribution of population by work sector^{198 199}.

Sector	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Management occupations	11.9	12.0	1.3	10.6	7.2	-32.2
Business; finance and administration occupations	20.8	18.2	-12.3	18.0	16.2	-10.1
Natural and applied sciences and related occupations	13.2	12.3	-6.8	15.1	13.4	-11.8
Health occupations	5.4	6.6	22.2	5.0	7.0	38.6
Occupations in social science; education; government service and religion	12.1	16.3	35.3	9.6	15.6	61.7
Occupations in art; culture; recreation and sport	4.5	3.9	-13.4	3.1	3.7	19.6
Sales and service occupations	22.0	21.5	-2.2	25.1	27.0	7.8
Trades; transport and equipment operators and related occupations	7.6	7.3	-3.6	9.3	7.3	-21.6
Natural resources; agriculture and related production occupations	1.2	0.9	-27.8	1.2	0.8	-35.0
Occupations in manufacturing and utilities	1.4	1.0	-31.1	2.9	1.9	-34.3

At both geographic scales, the sales and service sector employed the greatest number of people between 2006 and 2016. Occupations in business, finance and administration, and those in social science; education; government service and religion, respectively, employed the second and third greatest shares of people during this ten-year period. Notably, there has been a significant increase in the latter, as well as in health, during this time (Table C-16).

The median after-tax income of Study Area CT households was lower than that of Ottawa CSD households, and experienced significantly slower growth over time. Between 2006 and 2016, the median after-tax incomes of the Study Area CT increased by 17.5 percent, from \$53,450 to \$62,805; meanwhile, that of the Ottawa CSD increased by 26.2 percent, from \$58,437 to \$73,745 (Tables C-17 & C-18).

Table C-17: After-tax income of households in 2015²⁰⁰.

Income range	Ottawa	Census tract 0028.00
\$25,000 or less	11.9	12.7
\$25,001 to \$50,000	19.1	25.9
\$50,001 to \$79,999	23.8	25.4
\$80,000 to \$99,999	12.9	13.8
\$100,000 or more	32.4	22.2

Table C-18: Median after-tax income of households²⁰¹.

Year	Ottawa	Census tract 0028.00
2005	\$58,437	\$53,450
2015	\$73,745	\$62,805
Change in % (2005 to 2015)	26.2	17.5

Table C-19: Main mode of commuting as proportion of total population^{202 203}.

Sector	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
Car; truck; van; as driver	59.6	62.7	5.1	54.5	56.8	4.2
Car; truck; van; as passenger	7.5	5.7	-23.6	8.7	5.8	-33.9
Public transit	21.9	20.6	-5.8	29.3	29.3	0.0
Walked or bicycled	10.1	10.0	-0.8	7.1	7.9	0.0
All other modes	0.9	1.0	10.4	0.0	0.4	/

Knowledge of Official Languages

At both geographic scales, the largest proportion of the population spoke only English, as far as official languages, in 2016, which represented 59.5 percent of the Ottawa CSD and 67.1 percent of the Study Area CT populations. Bilingual individuals made up the second-largest share of the population at these scales; however, the bilingualism rate was approximately ten percent higher among the Ottawa CSD population. Between 2006 and 2016, those who spoke French only or neither English nor French each represented less than three percent of total Ottawa CSD and Study Area CT populations. It is also important to note that the share of the Study Area CT population that spoke neither English nor French increased by approximately 60 percent between 2006 and 2016 (Table C-20).

Table C-20: Knowledge of official languages for the total population^{204 205}.

Known languages	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
English only	59.9	59.5	-0.7	68.4	67.1	-2.0
French only	1.6	1.4	-12.5	1.6	1.3	-18.1
English and French	37.2	37.6	1.1	28.1	28.7	2.0
Neither English nor French	1.3	1.5	15.4	1.8	2.9	60.2

Education

In 2016, almost three quarters of the Ottawa CSD population aged 25 to 64 years had a post-secondary education. This represents a 4.1 percent increase from 2006 rates. Academic attainment was lower in the Study Area CT, with 64.4 percent of the population aged 25 to 64 having completed post-secondary education in 2016. In 2016, the proportion of the Study Area CT population that reported not receiving a high school diploma or equivalency certificate was more than double that of the Ottawa CSD population, with respective rates of 13.6 percent and 6.3 percent (Table C-21).

Table C-21: Highest certificate, diploma or degree of individuals aged 25 to 64 years^{206 207}.

Level of attainment	Ottawa			Census tract 0028.00		
	2006	2016	Change (%)	2006	2016	Change (%)
No certificate; diploma or degree	8.0	6.3	-21.3	13.0	13.6	4.6
Secondary (high) school diploma or equivalency certificate	20.4	19.2	-5.9	24.6	22.0	-10.6
Postsecondary certificate; diploma or degree	71.6	74.6	4.2	62.4	64.4	3.2

Implications

Demographic analysis found that the Ottawa CSD and Study Area CT populations are changing, which will inevitably impact individual- and community-level needs. Moving forward, it will be crucial to consider these significant demographic changes in terms of the services and amenities that would best fulfill such needs.

Market

Understanding Ottawa's real estate market is crucial for selecting the best redevelopment options for the site. The Study Area is located in Ottawa's west end, in the CMHC's Carlington/Iris study zone (Figure C-2), which allows for analysis on a variety of scales. The market analysis will examine a variety of market types which currently exist on the site, or have the potential to be located on the site.

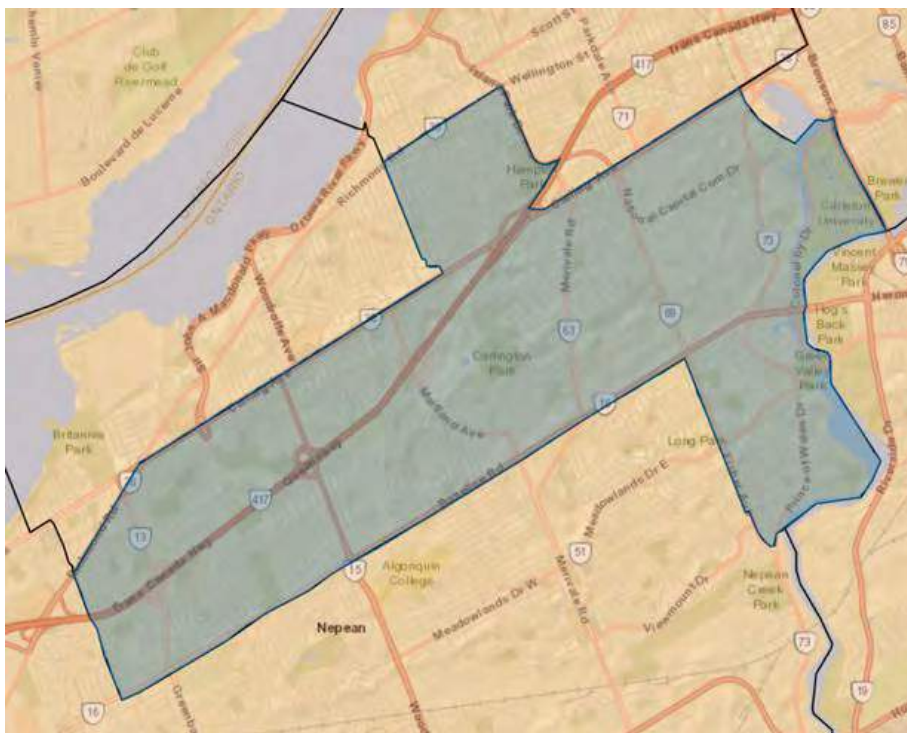


Figure C-2: The Carlington/Iris study zone²⁰⁸.

Residential

Market

On a national level, the residential market will be slightly hindered by the new mortgage stress test, which came into effect on January 1, 2018. This test ensures consumers can afford their interest rate if it were to rise two percent, limiting the purchasing power for many Canadians. The stress test sent the first half of 2018 into a five-year low of home sales; furthermore, the stress test is expected to reduce the average home prices and turn more consumers towards the low- to mid-ranged market over the next several years²⁰⁹.

Despite small setbacks on the national level, the City of Ottawa is currently experiencing a hot real estate market, which is characterized by an overall low supply with affordable prices relative to other large Canadian cities²¹⁰. The summer of 2018 was a seller's market, with eighteen percent fewer listings than the previous year at the same time, and residential properties were selling for an average of \$433,684²¹¹. A majority (45 percent) of the home sales in Ottawa were in the \$300,000 to \$449,999 price range, while the \$500,000 to \$750,000 range only accounted for 22 percent of the market²¹². In the condominium market, condos sold on average for \$276,720 in the summer of 2018²¹³. The overall demand for condos is on the rise, as a result of the lack of rental options available and affordability issues for the purchasing of other dwelling types. Ottawa's dwelling completion rates have remained fairly stable year over year, but with varying levels of absorption success (Figures C-3 & C-4).

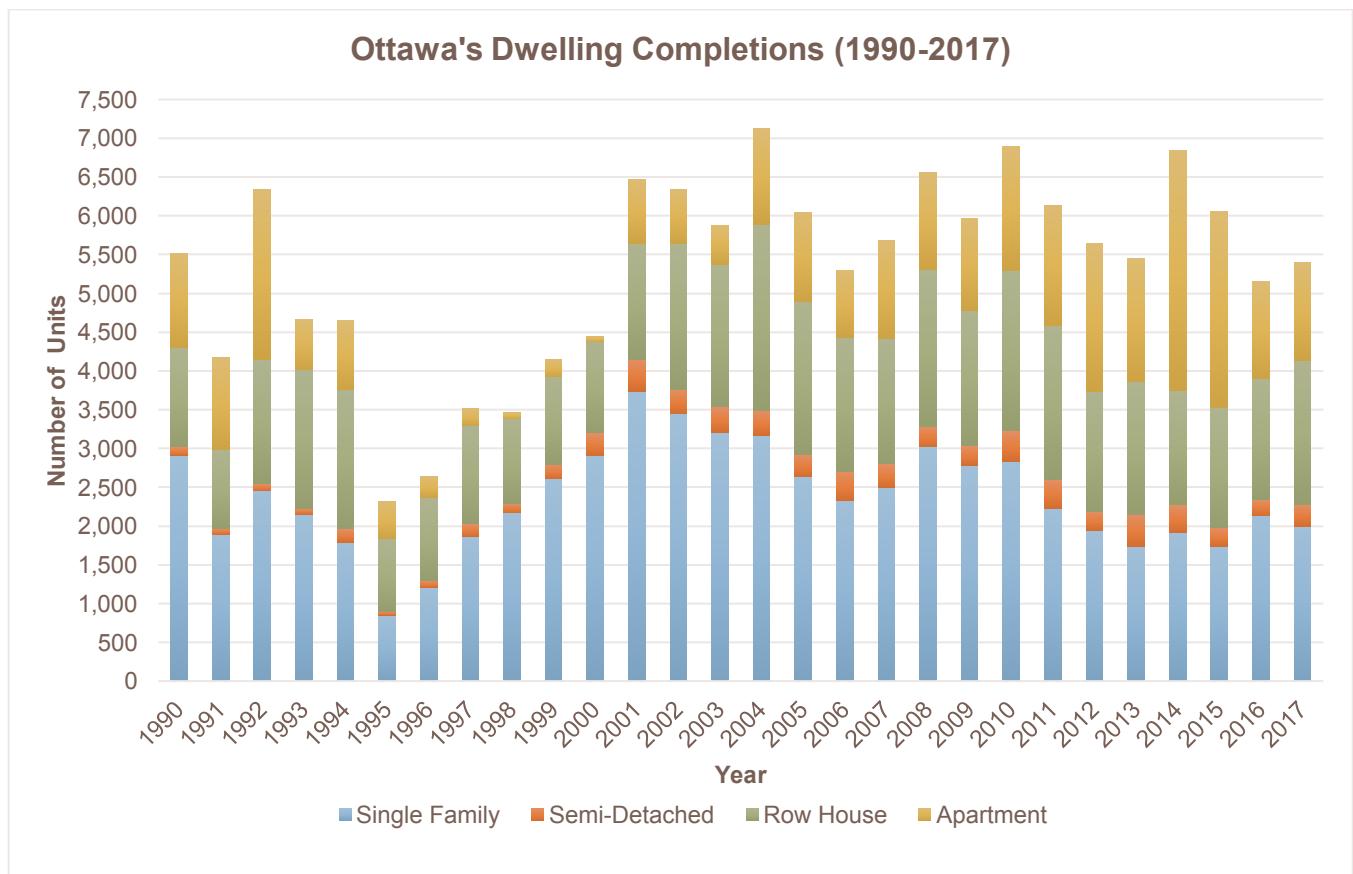


Figure C-3: Ottawa's dwelling completions (1990-2017)^{214 1}.

¹ Apartments includes all dwellings other than single family homes, semi-detached homes, and single level row homes, such as traditional apartment buildings, stacked townhouses, duplexes, triplexes, double duplexes and row duplexes.

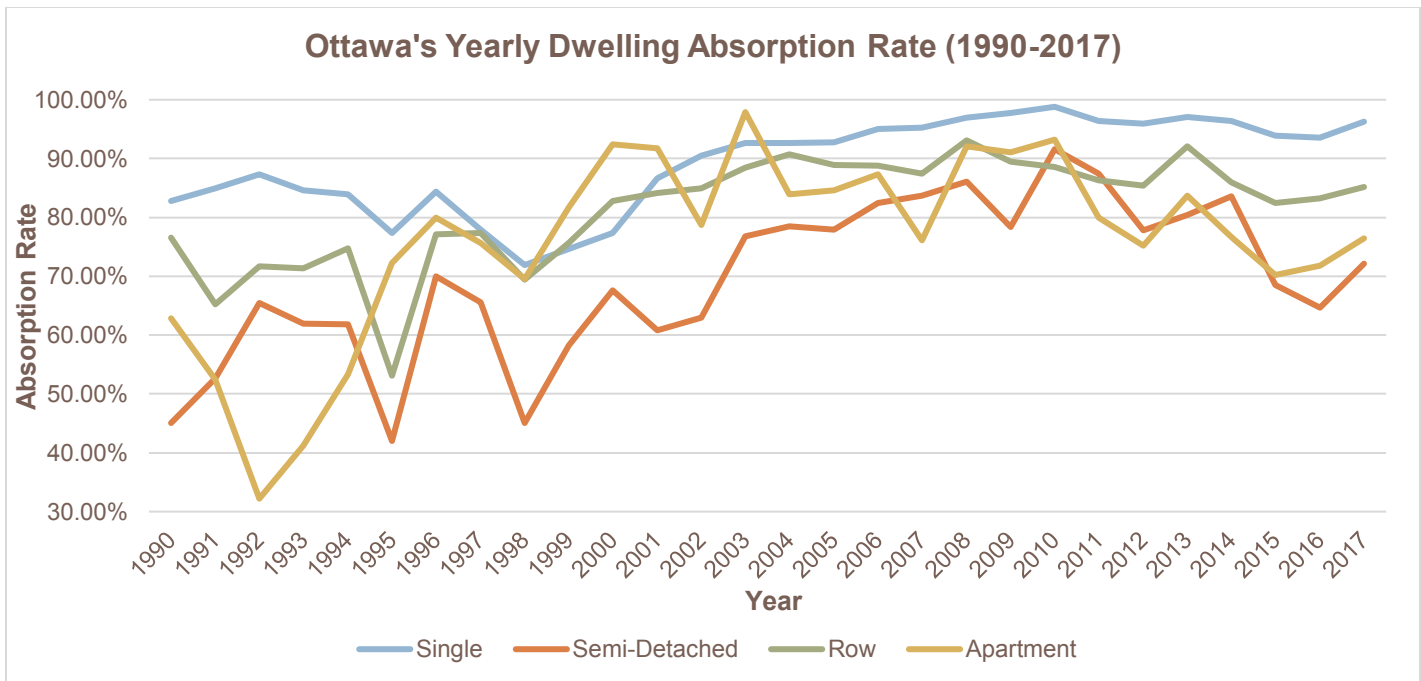


Figure C-4: Ottawa's yearly homeownership absorption rates²¹⁵.

Condominiums

Condominiums are a form of apartment tenure where the unit is owned rather than rented. Condos account for a most apartments sold, and therefore it is necessary to examine them individually. Although a majority of Ottawa's residential market has been in high demand, condo units are still recovering from the large surplus of units. In 2012 and 2013, Ottawa saw 4,653 condo starts, numbers which were more than double the yearly average over the past ten years²¹⁶. The condo construction boom led to an influx of condo completions between 2014 and 2016. This rising supply coupled with weak demand led to a high number of units remaining unsold (Figure C-5)²¹⁷. Although the excess supply has declined consistently since 2016, there were price declines for four consecutive years and the average time on the market for condo units has almost quadrupled^{218;219}.

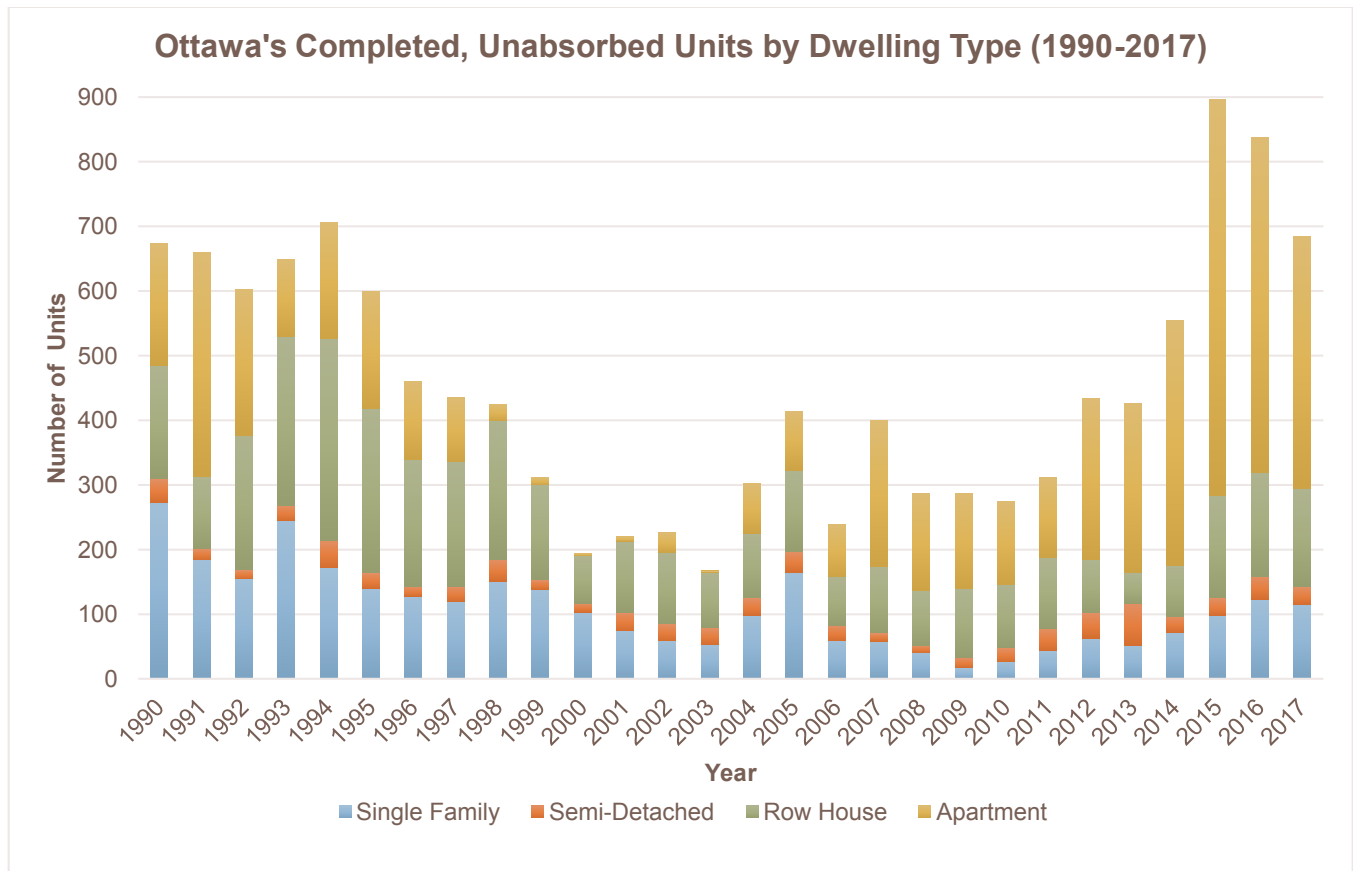


Figure C-5: Ottawa's completed and unabsorbed homeownership units (1990-2017)²²⁰.

The recovery of the condo market in Ottawa was largely enabled due to a low vacancy rate in the rental market. Condo owners opted to rent out excess units, nearly doubling the number of condo units for rent between 2012 and 2016²²¹. In turn, this shift to rentals filled a void in the market, especially the need for newer buildings. However, this is not to say that turning condos into rentals was an efficient solution for developers, as the growth in condo rents is slower or has declined when compared to purpose-built rentals²²².

Despite past issues in the condo market, the stress test and the associated need for affordable units led to multiple proposed condo projects along the new LRT lines²²³. There are currently several proposals for condos west of the City's downtown core containing several thousand units²²⁴. Although the condo market has nearly recovered from the previous oversaturation period, it is entirely possible that this could happen again given the highly variable construction market and the proposals for residential projects which contain up to 1,200 units, such as those at the Bayview LRT Station.

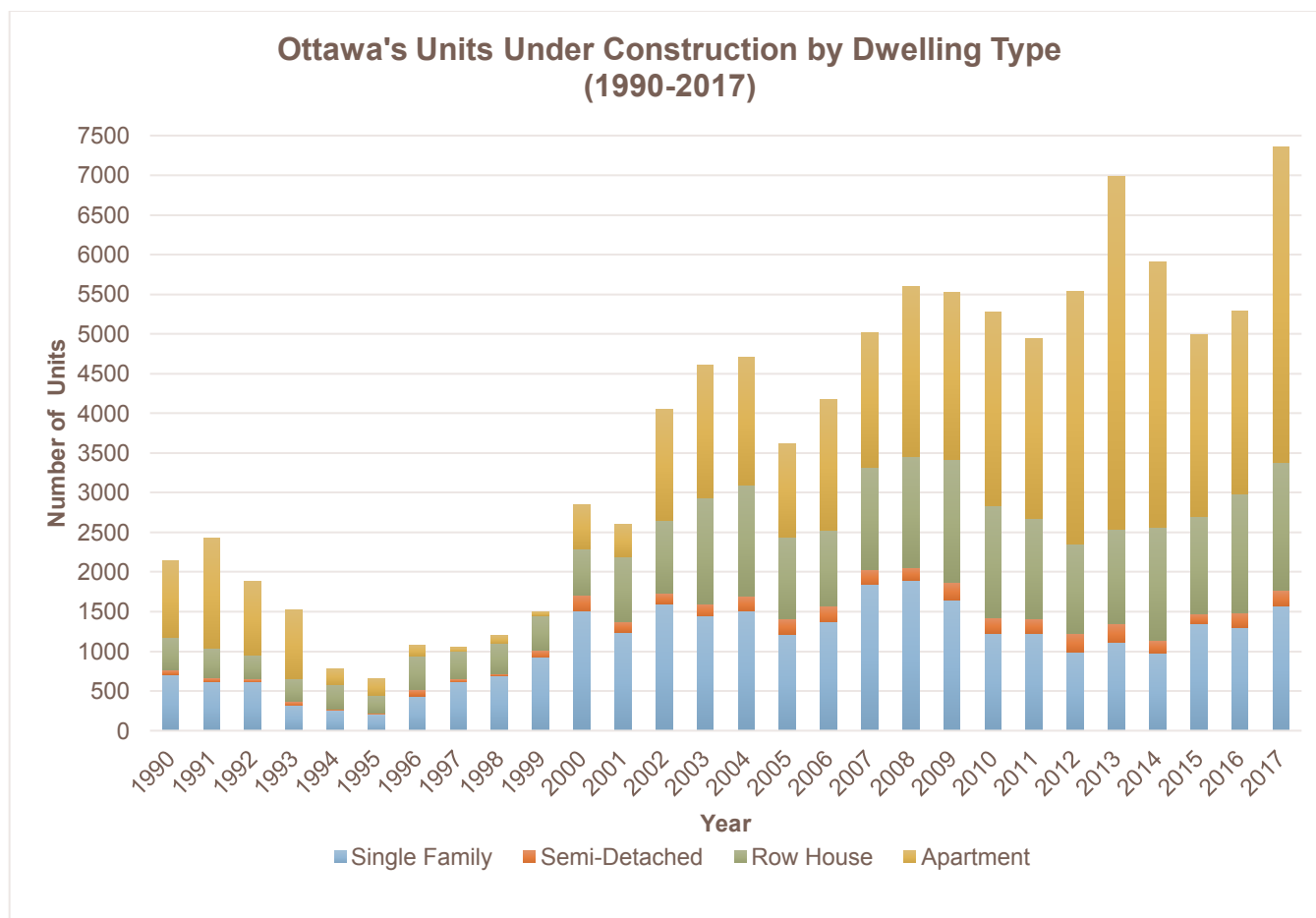


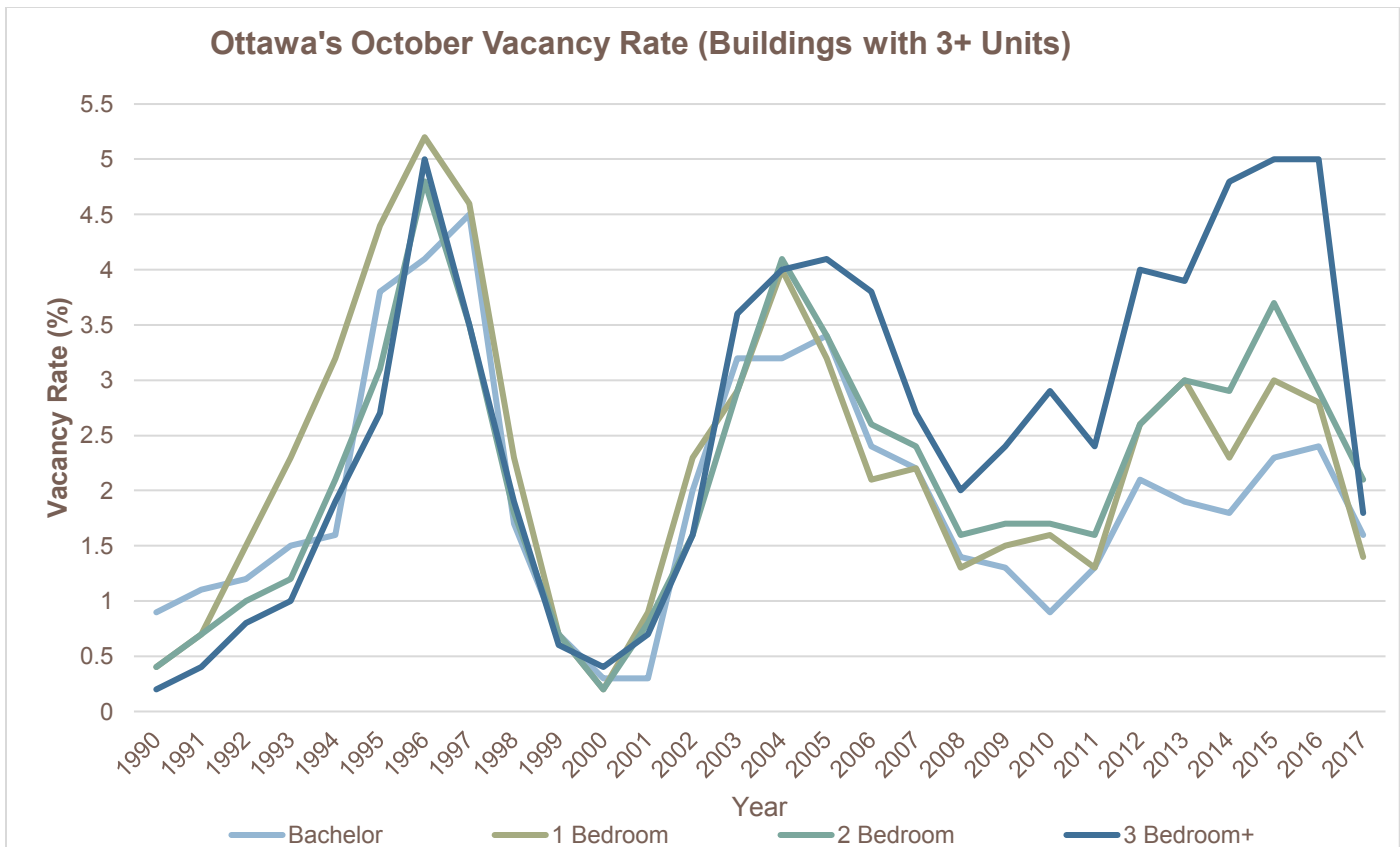
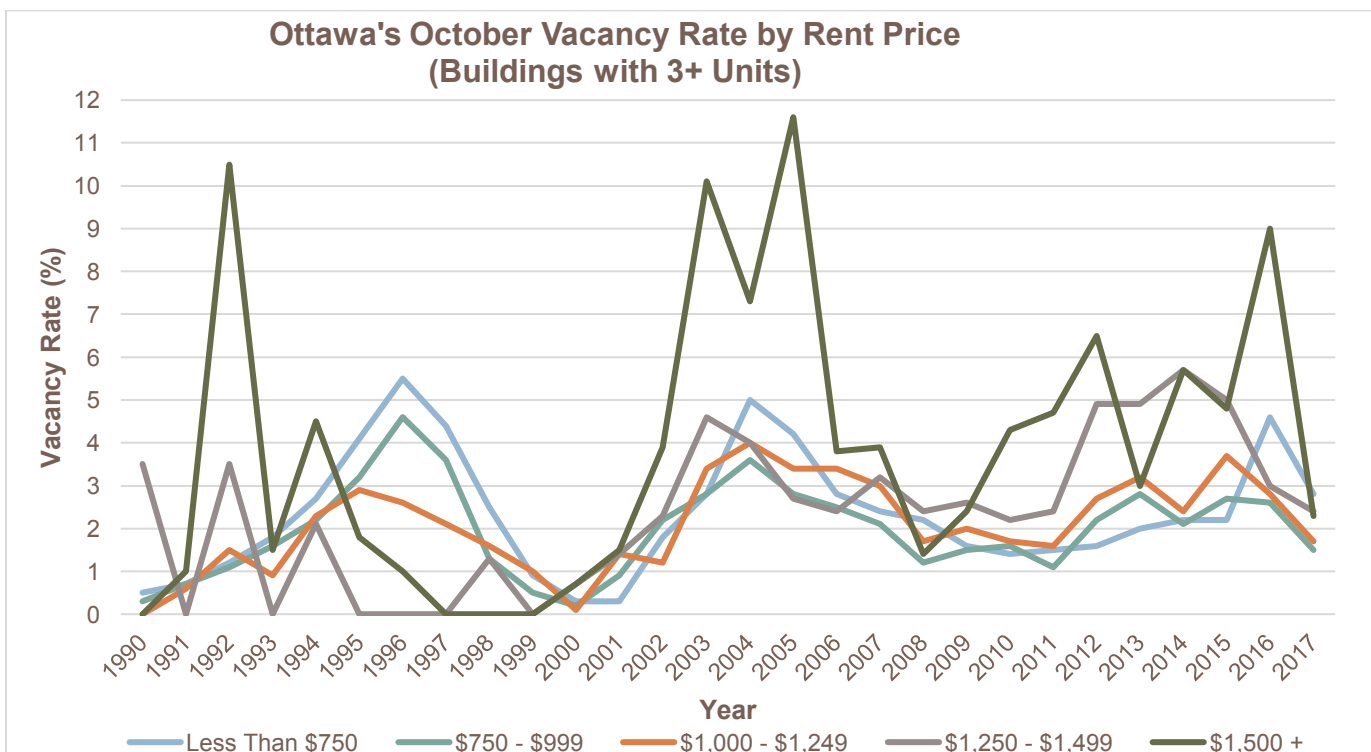
Figure C-6: Ottawa's units under construction by dwelling type (1990-2017)²²⁵.

Rental Market

Within the City of Ottawa, 65.7 percent of households are owned, while only 34.3 percent are rented²²⁶. In 2017, the City's rental vacancy rate was 1.7 percent, down from 3 percent in the year prior as a result of stronger demand²²⁷. The City of Ottawa recognizes that a vacancy rate of 3 percent or lower is problematic for renters and the associated affordability of units²²⁸. The vacancy rates in multi-unit buildings are often grouped closely together (Figure C-7). Some exceptions are units with three or more bedrooms as well as those with rents over the \$1,500 mark, which often have vacancy rates higher than the average unit (Figure C-8)². Ottawa also has an issue with the lifecycle of its rental units, as 76 percent of the City's apartment rental stock was built prior to 1980, and only five percent were built after 2000, as of 2017²²⁹.

In the Carlington/Iris CMHC study zone, the average rent is just over \$1,000, which increased at a rate of 1.9 percent from 2016 (Figure C-9).²³⁰ Despite this area having the third most units of all areas in Ottawa, after Downtown and Nepean, it has a vacancy rate of 1.4 percent, lower than the City's average²³¹. The low vacancy rates in Ottawa's rental market are a cause for concern as low supply will only drive up rents; however, more consumers will still opt to rent over buying as a result of the stress test and other market conditions. These factors illustrate that there is a clear need for more affordable rental units.

² The CMHC's Rental Market Survey is conducted yearly in October to estimate the relative strength of the rental market. The survey is done on a sample basis and targets only privately initiated structures with at least three residential units which have been on the market for at least 3 months.

Figure C-7: Ottawa's October vacancy rate for buildings with 3+ units²³².Figure C-8: Ottawa's October vacancy rate by rent price in building with 3+ units²³³.

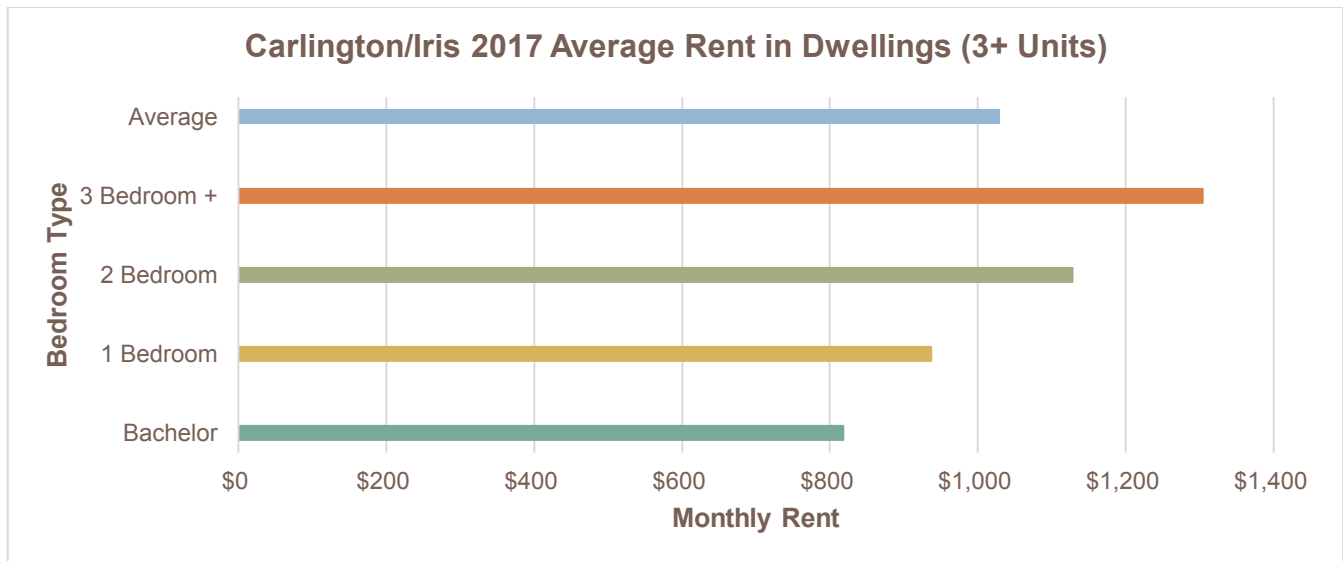


Figure C-9: Carlington/Iris 2017 average rent in dwelling with 3+ units²³⁴.

Housing Characteristics

In 2016, there were 2,635 private residential units within the census tract, where single-detached homes and units in apartment buildings accounted for over 36 percent and 30 percent of the total private residences, respectively²³⁵. The average household size for the census tract was 2.5 individuals; however, 38 percent of households had three or more people in them²³⁶. On a larger scale, the Carlington/Iris CMHC study zone has very few rental units in multi-unit structures containing three bedrooms, despite the demand (Figure C-10). That being said, three or more-bedroom units are more prevalent in the homeownership market, where an estimated 66.6 percent of dwellings have three or bedrooms.

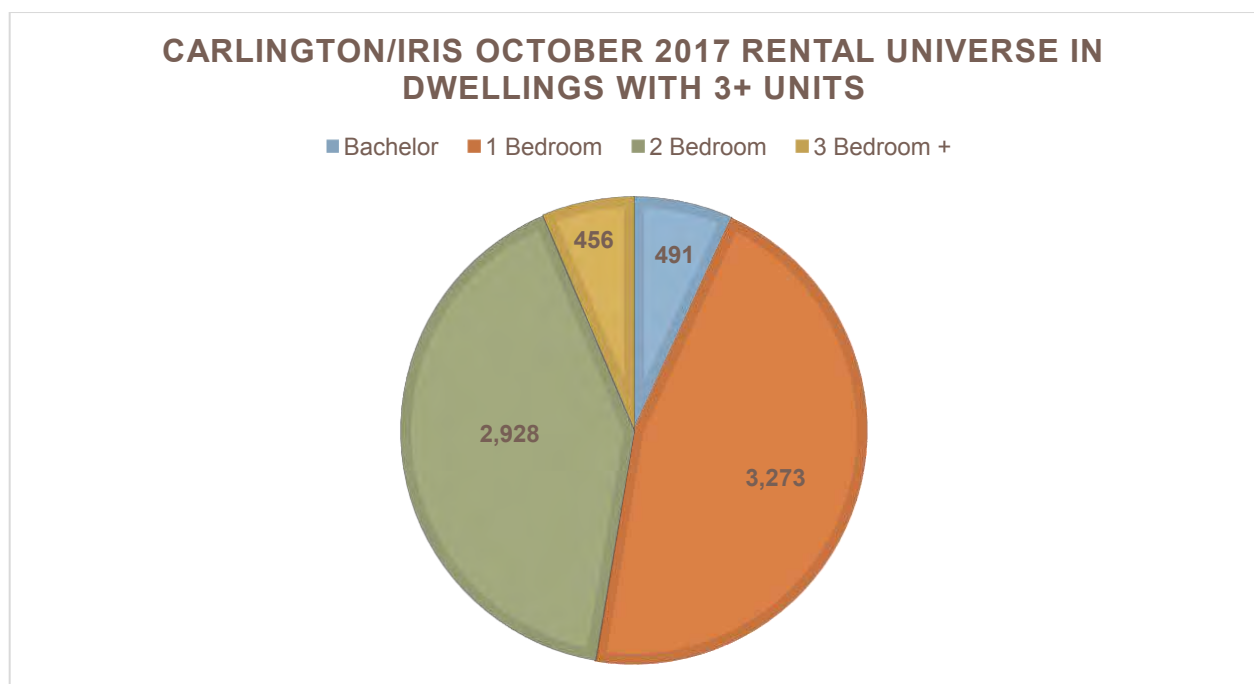


Figure C-10: Carlington/Iris October 2017 rental universe in dwellings with 3+ units²³⁷.

Table C-22: 2016 private households by household size²³⁸.

	#	(%)
1 person	700	26.6
2 persons	910	34.5
3 persons	450	17.1
4 persons	315	12.0
5 or more persons	255	9.7

Table C-23: 2016 occupied private dwellings by number of bedrooms (25 percent sample)²³⁹.

	#	(%)
No bedrooms	10	0.4
1 bedroom	285	10.8
2 bedrooms	595	22.6
3 bedrooms	1255	47.6
4 or more bedrooms	500	19.0

Opportunities and Implications

Despite the City of Ottawa issuing 6,095 residential permits in 2017, only 26.8 percent were located within the NCC Greenbelt's limits, and only 16.3 percent were located in the City's target areas for intensification²⁴⁰. The City is currently experiencing a shift in housing stock composition, as single-family homes no longer dominate the construction market, and apartment units are being built in greater quantities²⁴¹. Single-detached homes saw a price increase of 1.6 percent in 2017, despite inflation accounting for only about 0.2 percent²⁴². There is a clear need to develop additional units, with higher density-built forms, in the Pinecrest Foster Farm community.

If condos are selected as an option for homeownership in the Study Area, the timing and number of units will be crucial to ensuring sufficient absorption rates due to high yearly variability in construction rates. As the market changes over the redevelopment period, flexibility will be key when determining tenures for buildings.

Given the rising costs of homeownership, the low amount of three or more-bedroom units available for rent, and the large proportion of households with three or more members, there is a need for three or more bedroom units in both Ottawa and the Carlington/Iris study zone. This is especially important in the Study Area, where a large proportion of residents are immigrants and families, who earn less on average than the rest of the City. Unlike the typical real estate cycles seen in the past, the current trend of high investment, low vacancy rates, and growing rents and sale prices are not expected to slow in the near future; therefore, there is a promising outlook for large-scale residential development in the Study Area²⁴³.

Office

In 2017, Ottawa's office market was comprised of over 3.8 million square metres of floor space, half of which is Class A space; furthermore, there was an overall vacancy rate of 11.4 percent, down from 12.4 percent in 2016²⁴⁴. There was a 2.5 percent vacancy rate decline in Class A buildings, to a total of 9.6 percent vacancy; however, Class B buildings moved up to 13.1 percent and Class C offices moved to a rate of 17.3 percent²⁴⁵. One note of caution is that, although the vacancy rates of Class A buildings decreased, the average rent per square foot also decreased from 2017 to 2018²⁴⁶.

The City of Ottawa did not experience any new net supply of office space from 2015 to 2017, with several declines in office space over this period²⁴⁷. However, there are a series of mixed-use development proposals, which could add a significant amount of office space to the market²⁴⁸. The absorption rate of office space in Ottawa has been highly variable over the past several years; that being said, the second quarter of 2018 saw 23,216 square metres of space absorbed, with significantly more space expected to be absorbed in the near future^{249;250}.

Ottawa's office market is supported by the federal government and the high-tech industry, both of which are competing for prime office space to expand into²⁵¹. It is expected that flexible office spaces along LRT lines will be desirable with low vacancy rates, even reducing the high rates observed in Ottawa's eastern market²⁵². Many private groups are looking for larger spaces within the City on medium-term three- to nine-year leases²⁵³.

Currently, Ottawa's western office market contains just 550,000 square metres of the City's total office space, leading to quick lease-up of prime spaces when they do become available²⁵⁴. Ottawa's office market looks promising, despite large federal office space restructurings. Located along a 417 LRT stop between Kanata, the new Department of National Defence campus, and downtown, the site is promising for leasing by both public and private sectors, as it is a centralized location with advertising opportunities.

Retail

Ottawa's retail market, like many other large cities, is one of the few real estate sectors which is experiencing significant challenges. In 2017, the overall retail space vacancy rate was 5.5 percent with an accompanied increase of floor space, which totalled 3.6 million square metres in the City²⁵⁵. Community shopping centres had the largest increase in vacancy rate in 2017, totaling 7.9 percent; meanwhile regional shopping centres actually saw a decline in vacancy rates^{256;257}. The closing of Sears shopping centres led to almost 55,000 square metres of vacant retail space in Ottawa²⁵⁸. With the continued growth of e-commerce, minimum wage increases, higher interest rates, and a weakened Canadian dollar, Ottawa's retail market will likely continue to struggle in community shopping centres²⁵⁹.

In fact, the minimum populations needed to support a community shopping centre illustrate that the Study Area is not suited for something of that size, particularly given its proximity to other retail centres (Table C-24). The site is suited for convenience and neighborhood shopping centres, which would support the community, but not draw in customers from outside the Study Area. This could include coffee shops, specialty food stores, flower shops, small retailers, and a grocery supermarket, based on available land and local needs.

Table C-24: The minimum populations needed to support a community shopping centre²⁶⁰.

Center Type	Leading Tenant	Site Area (ha)	Site Area (ac)	Minimum Population	Examples
Convenience	Small Grocer	0.2 - 0.8	½ - 2	2,500 - 3000	Mac's Convenience
Neighborhood	Supermarket	1.2 - 4	3 - 10	3,000 - 40,000	Food Basics
Community	Junior Department	4 - 12.1	10 - 30	40,000 - 150,000	Indigo
Regional	One or more department stores	4 - 24.3	10 - 60	150,000	Iris Street Shopping Centre
Super Regional	Three or More Department Stores	6.1 - 40+	15 - 100+	300,000	Bayshore Shopping Center; Tanger Outlets; CF Rideau Centre

Commercial

In the City of Ottawa, there has been a growing trend for industrial activities to relocate to the suburbs²⁶¹. Distribution has recently become very important in the City due to increasing consumer shipping traffic, as Amazon and UPS develop new distribution centres and cannabis is legalized²⁶². Despite the central-west area of Ottawa having some of the lowest amounts of commercial space, the buildings are very sought after, with consistently low availability rates and higher rents than most other parts of the City²⁶³. Overall prices are being driven up as a result of commercial and industrial space experiencing the lowest vacancy rates since 2006²⁶⁴. Although commercial areas in the City's west end are valued by businesses, the trend for moving to the urban fringe will likely continue as the pressure for redevelopment results in rent increases for commercial areas. However, there may be some interest in the commercial areas if distribution centres desire to take advantage of the central location and access to two major highways.

Hotel

Nationally the Canadian hotel investment market saw a sustained period of high transaction volumes, strong price metrics, and large operating gains over 2017²⁶⁵. This market has seen several thousand rooms added annually with increasing daily rates; however, the occupancy rate has remained relatively stable over the past three years²⁶⁶. Ottawa's hotel industry is expected to be comprised of just over eleven thousand rooms by the end of 2018, which is an increase of nearly eight hundred over the past three years. Although occupancy is expected to decline to 73 percent for 2018, the average daily rate is expected to be around \$178²⁶⁷. With a record eleven million visitors in Ottawa in 2017, a hotel could do well in the area if the market does not become oversaturated with additional rooms²⁶⁸.

Implications

Understanding market trends for all relevant forms of real estate is important for dictating what should be located in a development at a certain time. Timing real estate development with the cycles and trends is important for ensuring lease-up and the sale of units. Ensuring that this is done throughout the project will be important to ensure that funding shortfalls do not occur, which could hinder subsequent phases of development.

Provincial Policies

Provincial Policy Statement

The *Provincial Policy Statement* (PPS), issued under section 3 of the *Planning Act*, provides land use planning principles that municipal planning decisions must be consistent with²⁶⁹. The PPS strongly endorses the creation of various greenspaces as part of healthy communities, and that there should be equitable distribution of publicly accessible built and natural settings²⁷⁰. It also promotes the planning of public spaces that are safe, foster social interactions, and facilitate active transportation and connectivity²⁷¹. The PPS also ensures that planners plan for, protect, and preserve employment areas for current uses and that the necessary infrastructure is provided for future uses²⁷². The PPS also provides guidelines for housing and has planners maintain the ability to accommodate growth for a minimum of ten years, through residential intensification and redevelopment, which includes affordable housing for low- and moderate-income households^{273;274;275}.

Ministry of Transportation of Ontario's *Transit-Supportive Guidelines*

The Ministry of Transportation of Ontario's *Transit-Supportive Guidelines* provide policies to support planning for transportation and mobility, in different community structures, at the local and regional levels²⁷⁶. This document includes community-wide guidelines on how to implement a node and covers land use, design, and planning strategies, while also providing site-specific guidance on how to create a transit-supportive urban form²⁷⁷. There are also transit improvement and implementation guidelines to see projects through to completion.

Municipal Policies

Official Plan

The Pinecrest Foster Farm community is classified as General Urban Area in the City's *Urban Policy Plan*²⁷⁸. The General Urban Area designation permits the development of a range of uses and building types to develop complete and sustainable communities, including mid-rise and mixed-use buildings. Proposals that include residential intensification must demonstrate sensitivity to existing community character and serve a range of resident demographics. Major urban facilities are permitted within this designation, as are small convenience and service uses that can serve the local population²⁷⁹.

The portion of the Study Area located east of Pinecrest, immediately north of the highway is designated Urban Employment Area in the City's *Urban Policy Plan*. The Urban Employment Area designation seeks to preserve lands for business and economic activity and requires that the land be able to accommodate a minimum of 2,000 jobs. These areas have large land parcels to allow for the warehousing, transportation, and storage uses anticipated on these sites²⁸⁰.

The proposed redevelopment of Pinecrest Foster Farm supports the City's aim of concentrating growth within the greenbelt and supporting walking, cycling, and transit as alternatives to the private automobile. The City's *Official Plan* supports intensification in the General Urban Area and calls for the highest densities in proximity to transit, similar to that of the future Pinecrest LRT Station²⁸¹.

The area forms part of the Pinecrest and Queensview Planning Study, which is reviewing lands adjacent to the associated future LRT stations, to produce new policies and zoning for the area.²⁸² There are no secondary plans covering the community, and the site is not currently a Design Priority Area, meaning that any development applications submitted would not be subject to formal review by the Ottawa Urban Design Review Panel²⁸³. Most of the Study Area is located within 600 metres of a transit station, with the exception of the most northern portion along Richmond Road, and parcels located west of Dumaaurier Avenue.

Official Plan Amendments 150 and 180

In 2013, the City undertook a comprehensive five-year review, as required under Section 26 of the *Planning Act*, to implement changes to the City's *Official Plan*. Official Plan Amendment (OPA) #150 was approved by the Minister of Municipal Affairs and Housing in April 2014, which was subsequently appealed by several parties. Following a review of some of the appeals by the Ontario Municipal Board, select repeals of OPA 150 were made that resulted in OPA #180. Some parts of OPA 150 remain under appeal, while other parts came into effect in November 2017 and have now been consolidated into the *Official Plan* (Table C-25)²⁸⁴.

Table C-25: OPA 150 highlights pertinent to the Study Area²⁸⁵.

Section	Description
2.3.1	Prioritizes cycling and walking within 800 metres walking distance of rapid transit stations
3.6.1	Maximum building heights in the General Urban Area are limited to four storeys, except on streets near rapid transit
3.6.2	Establishes new criteria for the consideration of new Mixed-Use Centres: Located within an 800m walking distance of one or more rapid transit stations; contains one or more arterial roads with frequent transit service; able to accommodate high-rises and an employment target of at least 5,000 jobs; the area is suitable for a mix of uses and can be linked within the greenspace network
4.3	Parking requirements are removed in areas within transit and intensification areas

Zoning By-law 2008-250

The City's *Zoning By-law No. 2008-250* regulates development with provisions for setbacks, floor area ratios (FAR), ground floor areas (GFA), floor space index (FSI), maximum heights, and parking requirements. The Study Area currently encompasses ten zones, not including site-specific subzones and exceptions (Table C-26).

Table C-26: Zoning provisions in the Study Area²⁸⁶.

Zoning	Code
Residential First, Second, Third, Fourth, and Fifth Densities	R1, R2, R3, R4, R5
Parks and Open Space	O1
Community Leisure Facility	L1
General Mixed-Use	GM
Minor Institutional	I1
Light Industrial	IL

The Residential zones permit residential uses across a wide variety of building forms and densities, from detached dwellings no more than eleven metres in height (R1), to high-rise apartment buildings of no more than 36 metres in height - R5B H(36)²⁸⁷.

The Open Space and Leisure zones include three Parks and Open Space zones (O1). There are two small areas on the western portions of the Study Area, as well as the large area encompassing Dumaaurier Park and the cloverleaf, which together form the northwestern corner at the intersection of Pinecrest Road and the highway. This zone seeks to preserve low-scale and low-intensity open spaces in these areas. There is also Ruth Wildgen Park and the adjacent Boys and Girls Club, which are in the middle of the Study Area and are zoned Community Leisure Facility (L1). The L1 zone permits recreational uses compatible with the surrounding residential area, including a community centre, day care, emergency service, library, municipal service centre, recreational and athletic facility, farmer's market, sports arena, and urban agriculture, in addition to a park.²⁸⁸

The General Mixed-Use zone includes the small strip mall immediately west of Dumaaurier Park, and the buildings located on the southeastern corner at the intersection of Pinecrest Road and the highway. This zone permits residential, commercial, and institutional uses, including mixed-use development. The GM zone often includes uses that serve areas beyond the immediate community, and establishes a maximum building height limit of eighteen metres and a maximum FSI of two.²⁸⁹

The Minor Institutional zone includes a school and a church located immediately east of Ruth Wildgen Park, a church one block north from there on Stephen Street, and two more churches located on the east side of Pinecrest Road. The I1 zone permits a range of community and institutional uses at a scale that is appropriate to the neighbourhood character. The I1A subzone that is present across the Study Area sets a maximum building height of fifteen metres.²⁹⁰

The Light Industrial zone includes a series of buildings east of Pinecrest Road, along both sides of Queensview Drive, and the southwestern corner of the intersection of Pinecrest Road and the highway.²⁹¹

Parking Requirements

Parking requirements vary depending on land use and proximity to rapid transit stations.

Section 101 of the *Zoning By-law* provides that, where a non-residential or mixed-use building has an active entrance located within 300 metres of a rapid transit station, minimum parking provisions will be calculated using the rates for the Inner Urban Area, which has much lower minimum parking rates and where the requirement for off-street parking can be waived.²⁹²

Section 103 of *Zoning By-law* establishes maximum parking space provisions for lots located within 600 metres of a rapid transit station. These rates are defined by use and the lot's location on Schedule 1 of the *Zoning By-law*. The Study Area belongs to two different areas, with east of Pinecrest Road in the Outer Urban/Inner Suburban Area and everything located west of Pinecrest Road in the Suburban Area (Table C-27)²⁹³.

Table C-27: Maximum parking spaces permitted within 600m of a rapid transit station²⁹⁴.

Land Use	Outer Urban/Inner Suburban Area	Suburban Area
Apartment Building - Low-High Rise	1.75 per DU (resident/visitor)	1.75 per DU (resident/visitor)
Medical Facility	5.0 per 100m squared of GFA	5.0 per 100m squared of GFA
Office	2.2 per 100m squared of GFA	2.7 per 100m squared of GFA
Post-Secondary Institution	1.2 per 100m squared of GFA	1.5 per 100m squared of GFA
Research and Development Centre; Technology Industry	1.0 per 100m squared of GFA	1.0 per 100m squared of GFA
Retail Store, Retail Food Store	3.6 per 100m squared of GFA	4.0 per 100m squared of GFA

Associated Master Plans

Transportation Master Plan

The City's *Transportation Master Plan* (TMP) outlines the City's broad strategy for the design, development, and operations of its walking, cycling, transit, and road networks over the next 20 years. It focuses on creating effective strategies to improve walking and cycling within the City, integrating complete streets, creating updated modal share targets, and supporting transit-oriented development. Additionally, the TMP provides recommendations for improving road and transit infrastructure that are adjusted for future growth patterns, resident and business needs, and strategic opportunities. The TMP identifies a future road widening on Richmond Road between Bayshore Drive and Pinecrest Road, from two to four lanes, to improve future bus service on this road; although, it is unclear when that project will begin²⁹⁵.

Ottawa Cycling Plan

The *Ottawa Cycling Plan* provides policy direction and facilities to support an efficient, interconnected cycling network to meet resident needs and integrate cycling with other alternative transportation methods, such as walking and transit. The *Plan* includes a recommendation that, whenever roadway designs for reconstruction or resurfacing are initiated, staff should consult to determine whether cycling infrastructure should be added to the road. The *Plan* also recommends that major transit projects include funding for cycling linkages, and includes plans to add cycling infrastructure on Richmond Road as well as along a portion of Dumaaurier Avenue²⁹⁶.

Pedestrian Plan

The *City of Ottawa Pedestrian Plan* aims to enhance, expand, and improve its pedestrian network to encourage year-round walking with guidelines for safety, maintenance, rehabilitation, planning, and design concepts. The *Plan's* top priorities are missing links, pedestrian connections in transit-oriented developments, and the expansion of multi-use pathways throughout the pedestrian network. The *Plan* also aims for an increase in the walking mode share from 9.5 percent to ten percent during morning peak times by the year 2031²⁹⁷.

Greenspace Master Plan

The *Greenspace Master Plan* aims to create a vision for Ottawa's greenspaces and set policies to achieve the vision for 2020. The *Plan* requires that greenspaces be accessible with connectivity and movement through high quality green corridors, with minimum human intervention. The *Plan* includes an inventory of current and potential natural and leisure lands²⁹⁸. To achieve an adequate amount of greenspace, the City will protect land that is intended for leisure or recreational activities by zoning City-owned parks as open spaces²⁹⁹. Despite intensification and development pressures, the City aims to maintain its target of two hectares of greenspace per 1,000 residents. As such, any redevelopment of the Pinecrest Foster Farm community will need to be sensitive to the impacts that intensification, and any proposed re-zoning of parks, will have on the supply of greenspace³⁰⁰.

Applicable Design Guidelines

Transit-Oriented Development Guidelines

The City of Ottawa's *Transit-Oriented Development Guidelines* seek to ensure the development of a healthy urban fabric that maximizes the potential of nearby rapid transit stations. The *Guidelines* include five key areas of intervention to make a development more transit-oriented, including land use, layout, built form, pedestrians and cyclists, vehicles and parking, and streetscape and environment³⁰¹. Table C-28 outlines these five key areas and highlights the select notable guidelines for the Pinecrest Foster Farm community.

Table C-28: City of Ottawa select TOD guidelines³⁰²

Category	Guidelines
Land Use	1. Discourage non-transit-supportive land uses oriented toward automobiles
Layout	2. Design street blocks no more than 150 metres in length with pedestrian friendly intersections 3. Locate the highest densities and mixed-uses immediately adjacent to the transit station 4. Create transitions between higher intensity development around transit and lower intensity adjacent communities by stepping down building heights and densities
Pedestrians and Cyclists	5. Design pedestrian connections that are convenient, comfortable, safe, easily navigable, continuous, and that lead directly to transit 6. Design infrastructure to enhance the cycling environment and to help increase access to transit for cyclists
Vehicles and Parking	7. Provide no more than the required number of vehicle parking spaces, as per the <i>Zoning By-law</i> 8. Encourage underground parking or parking structures, over surface parking lots, and design them to have active street-level facades without impeding pedestrians
Streetscape and Environment	9. Design ground-oriented multi-unit dwellings with shared driveways to maximize on-street parking and limit the physical disruption of sidewalks 10. Concentrate amenities at transit stops for convenience and to reduce visual clutter along the streetscape

Urban Design Guidelines for High-rise Buildings

The City's *Urban Design Guidelines for High-rise Building* focus on the design of high-rise buildings, which are defined as ten storeys or higher under the *Official Plan*. The *Guidelines* seek to create human scale, pedestrian-friendly streets and public spaces, while integrating parking and loading series in the design of the building, among other goals. Building heights of between ten and 30 storeys are encouraged in transit-oriented development areas, along arterial main streets, and in town centres under the *Official Plan*. Transition in scale will play a vital role in the development of high-rise buildings in the Study Area. The *Guidelines* propose a gradual transition in height, using setbacks and steps, to mitigate height differences between proposed towers and low-rise residential areas.

Applicable Strategic Plans

Residential Land Strategy for Ottawa, 2006-2031

The *Residential Land Strategy* consolidates municipal planning policies, the PPS, and City Council direction to assign density targets to areas identified by the OP (Table C-25). The General Urban Area is not one of the target areas for intensification; however, the City aims to achieve higher employment and residential densities around existing and planned rapid transit stations in designated Mixed-Use Centre areas³⁰³. Therefore, the Mixed-Use Centres that are close to new or existing rail transit lines will have priority in setting precedent density targets. To make LRT viable, the *Strategy* recommends a density range of 170 to 285 dwellings and jobs per net hectare. At the very minimum, the *Strategy* states that densities of 115 to 170 dwelling units and jobs per net hectare are needed to accommodate higher order transit, such as BRT and LRT. The *Strategy* sets the percentage of growth, attributed to intensification, to be 40 percent between 2012 and 2021, and 44 percent between 2022 and 2031. In total, the *Strategy* expects approximately 53,700 new residential units to be constructed by 2031, 71 percent of which would be as apartments (Table C-30)³⁰⁴. Furthermore, in terms of managing parkland, the *Strategy* encourages large passive spaces to be combined with school yards, sports fields, and other land-extensive recreational uses, in order to minimize the amount of land consumed for recreation³⁰⁵.

Table C-29: Minimum densities for select target areas.

Target Area	People and Jobs (Per Gross Hectare)	People and Jobs (Per Net Hectare)
Central Area	500	700
Major Mixed-Use Centres	250	350
Target Arterial Main Street (Richmond North of Carling St)	200	285
Mixed-Use Centres at Key Transfer Stations	200	285
Emerging Mixed-Use Centres	120	170

Table C-30: Anticipated construction of residential units, 2022 to 2031³⁰⁶.

Dwelling Type	Units Created	Share (%)
Single-detached houses	3,225	6
Semi-detached houses	2,150	4
Rowhouses	10,200	19
Apartments	38,125	71

Table C-31: Classification of policy support for redevelopment.

Level of Support	Classification Definition
Strong Support	Policy supports transit-oriented redevelopment of the site per the aim of the report.
Moderate Support	Policy generally supports transit-oriented redevelopment of the site per the aim of the report.
Weak Support	Policy supports redevelopment of the site in part, but less than desired per the aim of the report.
No Support	Policy does not support the redevelopment of the site.
N/A	Policy does not apply to the redevelopment of the site.

Table C-32: Policy analysis.

Author	Policy Title (Year)	Support for Redevelopment
NCC	<i>Plan for Canada's National Capital (2017)</i>	N/A: This <i>Plan</i> focuses on federally-owned land, none of which is in the Study Area.
	<i>Capital Urban Lands Plan (2017)</i>	N/A: This <i>Plan</i> applies to federal urban lands, none of which are located in the Study Area.
	<i>Greenbelt Master Plan (2013)</i>	N/A: The Study Area is not located on the greenbelt.
Ontario	<i>Provincial Policy Statement (2014)</i>	Strong Support: The PPS supports redevelopments that support a safe, active, and pedestrian-oriented public realm; an equitable distribution of open space; residential intensification; and the provision of affordable housing.
	<i>MTO's Transit-Supportive Guidelines (2012)</i>	Strong Support: The <i>Guidelines</i> support TOD compatible land uses and policies, as well as guidelines and examples for design and policies.

City of Ottawa	<i>City of Ottawa Official Plan (2003)</i>	Strong Support: The <i>Plan</i> supports compact, mixed-use development within the greenbelt that increases density and provides affordable housing near rapid transit stations.
	<i>City of Ottawa Zoning By-law No. 2008-250 (2008)</i>	Weak Support: Some aspects of the zoning for the Study Area align with community needs, such as permitting recreational, institutional, and commercial uses; however, current zoning does not permit the higher densities and mixed-uses appropriate for a TOD community.
	Master Plans	
	<i>Transportation Master Plan (2013)</i>	Strong Support: The <i>Plan</i> supports transit-oriented development that facilitates alternative modes of transportation and improves connectivity through the Study Area.
	<i>Ottawa Cycling Plan (2013)</i>	Strong Support: The <i>Plan</i> supports the integration of cycling facilities into the Study Area to improve connectivity and multi-modal forms of transportation.
	<i>Ottawa Pedestrian Plan (2013)</i>	Strong Support: The <i>Plan</i> supports transit-oriented development that creates a safe and attractive pedestrian experience and encourages walking throughout the Study Area.
	<i>Greenspace Master Plan (2006)</i>	Moderate Support: The <i>Plan</i> does not explicitly comment on land development; however, the document refers to the challenges associated with the provision of adequate greenspaces for a growing population.
	Design Guidelines	
	<i>Transit-Oriented Development Guidelines (2007)</i>	Strong Support: The <i>Guidelines</i> supports compact, mixed-use development, connectivity for cyclists and pedestrians, and the provision of affordable housing near rapid transit stations.
	<i>Design Guidelines for High-rise Buildings (2018)</i>	Strong Support: The <i>Guidelines</i> supports high-rise buildings in close proximity to transit stations, and for building design that is sensitive to the surrounding context at grade.
	Strategic Plans	
	<i>Residential Land Strategy for Ottawa, 2006-2031</i>	Strong Support: The <i>Plan</i> supports intensification, infill, and mixed-uses near rapid transit stations.

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Stakeholder Analysis

This stakeholder analysis accounts for all parties of interest to the redevelopment of the Pinecrest Foster Farm community, describes their perceived interests, power, and capabilities, which helps to formulate an approach to development based on these assumptions.

Public Sector

City of Ottawa

The City of Ottawa is a client stakeholder and one of the main drivers of the project, which also owns the current site of the proposed LRT station as well as the Dumaaurier Park baseball field.

Ottawa Community Housing (OCH)

OCH is also a client stakeholder with a large amount of land (approximately nine hectares) directly next to the proposed LRT station and is currently looking to replace aging housing stock through TOD redevelopment.

OC Transpo

OC Transpo will be closely involved in the matters of the LRT station and the reorganization of the bus lines in the area affected by development of the future Pinecrest Station.

Ministry of Transportation of Ontario (MTO)

MTO will be interested in any redevelopment proposals that aim to alter the highway or cloverleafs near the future Pinecrest Station.

Private Sector

Adjacent Property Owners

There are many sites around the future location of the Pinecrest LRT Station that are currently privately owned and be directly impacted by any proposed change around the station site. The owners may exert direct or indirect influence on the project by appealing to their city councillor.

OCH Tenants

The current tenants of OCH-owned townhouses and apartment building units on the site will be affected by the re-development. Tenants will need to be thoroughly engaged and supported throughout the re-development and re-housing process to ensure their participation. Residents may oppose relocation without a guarantee of return.

Private Developers

Private developers and investors may be interested in starting residential, commercial, or industrial projects in and around the projected Pinecrest Station.

Stakeholder Consultation

A first round of stakeholder interviews was conducted on September 14, 2018, during which key staff from various City departments participated including Planning, Transportation, Parks and Recreation, Real Estate, as well as representatives from the primary client, Ottawa Community Housing. The objective of the interviews was to gather the following information about these key stakeholders, their opinions on the situation within the Study Area, as well as recommendations in terms of precedents and vision for the site.

Ottawa Community Housing (OCH)

The primary stakeholder and largest landholder wished to retain the number of units in their affordable housing stock on the site; however, they need to replace their current townhouses. They were very open to the reinvention of the site and to integrate it to a wider TOD area around the future Pinecrest Station. They were also open to severing off lands for future development, including a new street network using as much of the existing roads as possible.

The City of Ottawa

Planning Department

The Planning Department was interested in creating a more pedestrian friendly area, with an emphasis on sustainability for new buildings well-phased into the development.

Parks and Recreation Department

The Parks and Recreation Department was concerned with the availability of green spaces and recreational spaces in the City core. Their primary objective is to retain and expand their current portfolio in the area, but are willing to be flexible with the location of future greenspaces as long as suitable facilities are provided.

Transportation Department

The Transportation Department desired the creation of an integrated TOD development around the future Pinecrest Station, with a plaza outside of the station and adequate bus infrastructure near the station without having to stop on Pinecrest.

Real Estate Department

The Real Estate Department was focused on matching the expansion in housing stock, as well as office and commercial space, to proportional investment in infrastructure and services. They also stressed the need for a strong financial rational when it comes to expansion, and were open to prime lands being sold to private developers to help finance the project.

Design Implications

- The development of a modified gridiron street network around the future Pinecrest LRT station.
- The proposed development plan and design guidelines should emphasize strong placemaking at human scale, with multimodal connectivity stitched into the existing urban fabric surrounding the future LRT station; furthermore, a desire to increase density should not be automatically translated into more verticality.
- The provision of open spaces, parks, recreation facilities in the area should consider the expected increase in population and meet the needs of local residents.
- There is need for multi-sector, public-private partnerships in the development of the site.
- There should be a mix of private and public housing, organized in such a way that they are both well integrated and inconspicuous.
- A need to create permeability between the area surrounding the future Pinecrest Station and the surrounding neighbourhoods, in order to ensure that residents can access transit in the near future and decrease automobile dependence.

Design Charrette Drawings

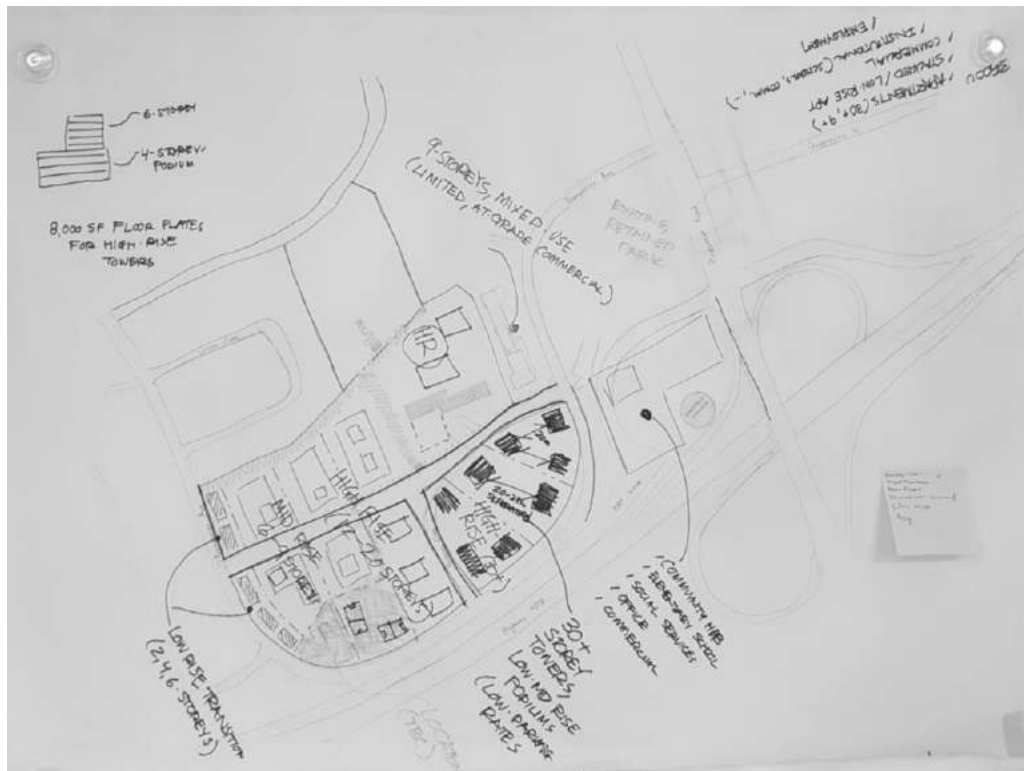


Figure D-1: A sketched drawing produced during the design charrette, identifying locations for different amenities and building heights.

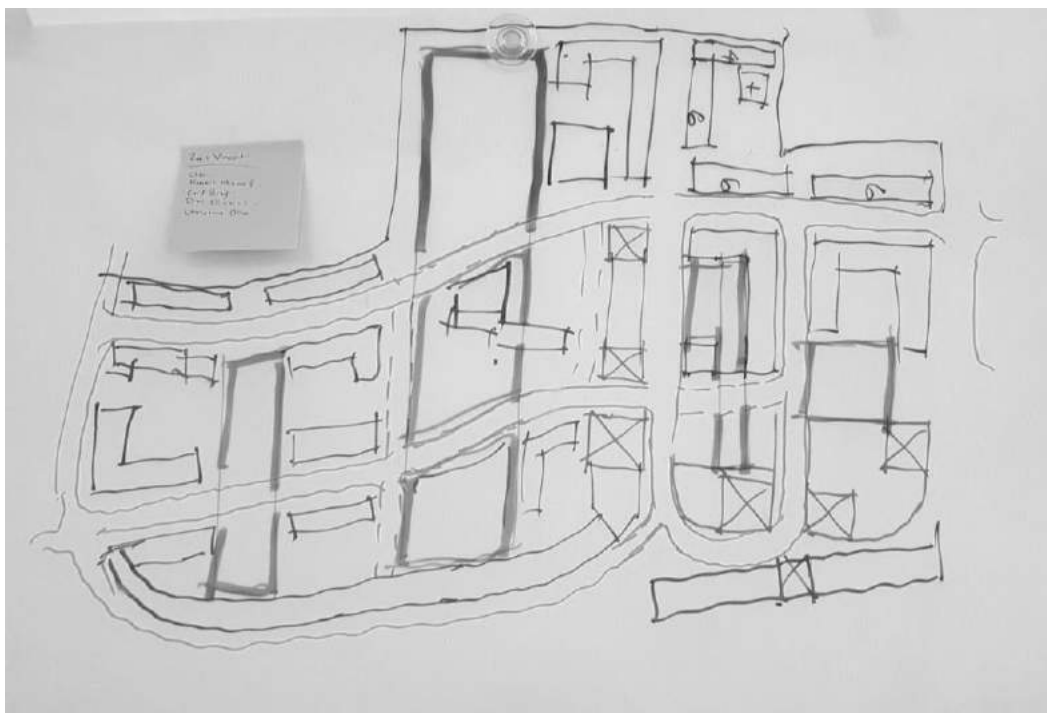


Figure D-2: A sketched drawing produced during the design charrette, showing a modified street network.

Case Studies Preliminary Research

Table D-1: Summary list of all case studies reviewed in research.

Theme	Case Studies Reviewed
Social Housing Redevelopment	<ol style="list-style-type: none"> 1. Allenbury Gardens TCHC (Toronto, ON) 2. Beaver Barracks (Ottawa, ON) 3. Benny Farm (Montreal, QC) 4. Crown Street (Glasgow, UK) 5. Gladstone Station District (Ottawa, ON) 6. Hope VI Project (Boston, MA) 7. Isle of Dogs (London, UK) 8. Jeanne Mance (Montreal, QC) 9. Kabelwerk (Vienna, AT) 10. Lawrence Heights (Toronto, ON) 11. Milkwood Road (London, UK) 12. Murray Court Affordable Housing Complex (Collingwood, ON) 13. New Jubilee House (Vancouver, BC) 14. Poplar HARCA (London, UK) 15. Regent Park (Toronto, ON) 16. Rochester Heights (Ottawa, ON) 17. St. Lawrence Neighbourhood (Toronto, ON) 18. Strathcona Heights (Ottawa, ON) 19. West Don Lands (Toronto, ON) 20. Woodward's (Vancouver, BC)
Transit-Oriented Developments	<ol style="list-style-type: none"> 1. Hurdman (Ottawa, ON) 2. Anderson Station (Calgary, AB) 3. Brentwood Station (Calgary, AB) 4. Collingwood Village (Vancouver, BC) 5. Cornell (Markham, ON) 6. Del Mar Station Transit Village (Pasadena, CA) 7. False Creek (Vancouver, ON) 8. Gatineau BRT Rapibus Station at UQO (Gatineau, QC) 9. Gladstone Station (Ottawa, ON) 10. Holland Cross (Ottawa, ON) 11. Lawrence Heights (Toronto, ON) 12. Metropole (Ottawa, ON) 13. Mountain View (Oakland, CA) 14. NCC - LeBreton Flats (Ottawa, ON) 15. Niagara Region GO Transit Station Secondary Plan (Niagara, ON) 16. North Toronto Collegiate Institute (Toronto, ON) 17. Oakridge (Vancouver, ON) 18. Pleasant Hill (Contra Costa, CA) 19. South Waterfront District (Portland, OR) 20. The Bridges (Calgary, AB) 21. The Equinox (Toronto, ON) 22. Tunney's Pasture (Ottawa, ON) 23. Westbrook Station (Calgary, AB)

**Station Design /
Mobility Hubs**

1. **Bayview Station (Ottawa, ON)**
2. Central Park Station ONE (Denver, CO)
3. Changyang Station TOD (Beijing, CN)
4. Collingwood Station (Vancouver, BC)
5. Commercial-Broadway Station (Vancouver, BC)
6. **Galatyn Park (Richardson, TX)**
7. George Hub (Surrey City Centre, BC)
8. Gresham Central Transit Station (Portland, OR)
9. Hamburg-Altona Station (Hamburg, DE)
10. Kipling Station (Toronto, ON)
11. Longueuil metro (Montreal, QC)
12. Metrotown (Burnaby, BC)
13. Mississauga City Centre Mississauga, ON)
14. **Mockingbird Station (Dallas, TX)**
15. Montmorency Station (Laval, QC)
16. **New West Station (New Westminster, BC)**
17. **Orenco Station (Portland, OR)**
18. **Pimisi Station (Ottawa, ON)**
19. Redesign in Cornell Viva / LRT (Cornell, ON)
20. Rio Vista West Station (San Diego, CA)
21. Rosa Parks Transit Centre (Detroit, MI)
22. Seaton Hub (Pickering, ON)
23. **Sheridan Station Area (Plan, Denver, CO)**
24. Smart Centres Place (Vaughan, ON)
25. Surrey Central City Station (Surrey, BC)
26. Target Field Station (Minnesota, MN)
27. Tempe Transportation Centre (Tempe, AZ)
28. Transbay Transit Center (San Francisco, CA)
29. Union Station (Toronto, ON)
30. UP stations – Bloor and Weston (Toronto, ON)
31. Village de la Gare (Mont Saint-Hilaire, QC)
32. Viva in Markham (Markham, ON)
33. Westlake Link Station (Seattle, WA)
34. Yonge Eglinton (Toronto, ON)

Social Housing Redevelopment

Benny Farm (Montreal, QC)

Case Study Rationale and Contextual Overview

In 1947, the Benny Farm community was developed by the Canada Mortgage and Housing Corporation (CMHC) and served as a social housing development for World War II veterans³⁰⁷. Though the community thrived for roughly its first 20 years, the three-story walk-up buildings became unfit for its aging population by the 1980s.³⁰⁸ After ownership of the community was transferred to the Canada Lands Company (CLC), it was established that 35 percent of the original buildings could be maintained; however, planning for redevelopment commenced in 2002³⁰⁹. The redevelopment consisted of a total of 797 units, geared toward diverse market segments: 42 percent of units were market-rate, 30 percent were for original tenants, and 28 percent were social housing³¹⁰. Tenure options were equally diverse with rental, co-operative, and ownership units offered onsite³¹¹. In Benny Farm, residential areas, parks and open spaces, and community facilities are the central focus³¹². Additionally, Benny Farm is an ideal case study given the recognition for its innovative approach to sustainability³¹³.

Table D-2: Benny Farm summary chart³¹⁴.

Project Location	Notre-Dame-de-Grâce, Montreal, Canada
Location Type	Inner suburb
Project Timeline	Planning: 2002 to 2004 Implementation: 2005 to 2010
Project Type	Mixed residential and mixed use
Site Area	7.3 hectares, 18 acres
Developer	Public-private and public-public partnerships <ul style="list-style-type: none"> • Benny Farm Land Condominium (developer) • Canada Lands Company • 4 non-profit developers • 2 co-operative developers • Multiple private developers • City of Montreal • Société d'habitation et de développement de Montreal
Objectives	<ul style="list-style-type: none"> • Replacement of RGI units for veterans • Creation of additional affordable and market-rate housing • Integration with the surrounding community • Use of green building methods
Previous Site Use	Post-WWII housing for veterans
Future Land Use	Mixed-use (residential, community facilities, open spaces/parks)
Projected Residential Population	Approx. 2,000 people
Number of Residential Units	Original development: 384 units Post-redevelopment: 797 units

Key Lessons for Pinecrest Foster Farm

- Use of public input: Public input had a significant influence on the final Benny Farm Master Plan. In addition to public consultation with the original tenants and the broader community, a representative task force was assembled to voice community concerns throughout the planning process³¹⁵. As a result, current and new tenants were satisfied with the redevelopment of the Benny Farm community³¹⁶.
- Public-private and public-public partnerships: The success of the Benny Farm redevelopment is largely attributed to effective partnerships with public and private entities.

- Integration with surrounding community: Extensive public consultation was held to understand how to best integrate Benny Farm with the broader Notre-Dame-de-Grâce community³¹⁷. These efforts to create transitions between Benny Farm and neighboring residential developments had very positive outcomes³¹⁸.
- Energy efficiency: Benny Farm has been recognized as a model of sustainable redevelopment given its use of numerous green building practices, including:
 - Construction of buildings with energy-efficient features (such as polyurethane insulation, fiberglass windows);
 - Minimized consumption of resources (such as implementing a water management model, reusing materials and equipment from original buildings); and,
 - Use of innovative energy systems (such as implementation of an onsite geothermal system and solar technology)³¹⁹.



Figure D-5: Benny Farm Master Plan, September 2013³²⁰.



Figure D-6: 3D rendering of Benny Farm³²¹.



Figure D-7: Mid-block connections, in Phase II and III of Benny Farm³²².

Kabelwerk (Vienna, Austria)

Case Study Rationale and Contextual Overview

Kabelwerk is an affordable housing community and a great example of a needs-oriented, lower-income development with the goal of total resident satisfaction. It carried out Europe's most extensive public consultation process at the time, which was one of the reasons for the project's success. The site was designed to limit vehicular use; therefore, it is well connected with public transit, is adjacent to the metro, and has access to everyday amenities. Kabelwerk has won numerous national and international planning awards for its innovative design and unique mixture of amenities.

Table D-3: Kabelwerk summary chart³²³.

Project Location		Vienna, Austria
Location Type		Suburban, urban edge
Project Timeline		<ul style="list-style-type: none"> Planning and consultation: 1996 to 2004 Implementation: 2004 to 2010³²⁴
Project Type		Planned social housing neighbourhood, mixed-use
Site Area		<ul style="list-style-type: none"> Site: 10 hectares, 24.7 acres Park: 17 square metres Housing net area: 69.799 square metres
Objectives		<ul style="list-style-type: none"> Create a high density neighbourhood Provide access, by foot, to everyday amenities Mend the physical and emotional gap left by the closed factory Learn from past development mistakes in the area
Previous Site Use		<ul style="list-style-type: none"> Industrial: Cable and wire factory
Future Land Uses		<ul style="list-style-type: none"> Mixed-use, commercial, institutional, residential, and open space
Parking		<ul style="list-style-type: none"> 742 underground parking spaces Savings from the reduction in parking spaces were redirected to community amenities Visitor parking is on the periphery of the site, beside the train tracks
Population		<ul style="list-style-type: none"> 3,500 residents
Number of Residential Units		<ul style="list-style-type: none"> 1,004 units at 100 units per hectare One- to five-bedroom units with varying floor plans
Tenure Split		<ul style="list-style-type: none"> 61 percent (614) subsidized, renovated, or newly-built, with ownership option 21 percent (213) subsidized furnished apartments 18 percent (177) subsidized newly built condos
Public Consultation ³²⁵		<ul style="list-style-type: none"> Large-scale public consultation took place before any vision for site was created³²⁶ A local citizens' advisory board was created for the planners The extensive involvement of the citizens allowed them to gain trust in the development, identify with the project, and feel a sense of pride in their community Various architecture firms collaborated with community organizations and residents to design housing types and built forms to suit community needs
Amenities ³²⁷		<ul style="list-style-type: none"> Private gardens, play areas, parks with sport fields Outdoor spaces, daycare, community pool Shops, grocery stores, and health services Bank, hotel, offices, cultural institutions
Total Cost		€150 Million (€40M from City subsidies)

Key Lessons for Pinecrest Foster Farm

- The collaborative planning process led to feelings of community pride and civic responsibility.
- When there is excellent connectivity to amenities, transit, and the City, there is a decline in car use.
- There is value in having less personal space and more communal space.
- Providing the same amenities for people of all socio-economic classes, and creating a mix of uses, tenures, incomes, housing types creates a dynamic and livable community where residents can age in place.



Figure D-8: Open space with small play area and pathways in Kabelwerk³²⁸.



Figure D-9: Buildings are brightly coloured and of the same quality as civic architecture in Kabelwerk³²⁹.



Figure D-10: Kabelwerk Site Plan showing green and open spaces, with yellow circles showing play areas³³⁰.

Lawrence Heights (Toronto, ON)

Case Study Rationale and Contextual Overview

The Lawrence Heights revitalization includes:

- Development of mixed-income housing, involving increased density;
- Use of private-public and public-public partnerships;
- Improvements to greenspaces;
- Replacement of all existing rent-geared-to-income (RGI) units;
- Development of retail space and community facilities; and,
- Connection of community road networks with surrounding neighborhoods.

The Lawrence Heights community was built by Toronto Community Housing (TCH) in 1958³³¹. Prior to redevelopment, the community was home to approximately 3,500 tenants, with over 50 percent being youth. Like many affordable housing developments of the time, the built form of Lawrence Heights contributed to its isolation from neighboring communities. Limited street connections made navigation challenging for visitors and the limited mix of land uses also contributed to its isolation.

In an effort to remediate these issues and revitalize the community, TCH aims to reconnect Lawrence Heights with the broader neighborhood by transforming it into an integrated, mixed-income and mixed-use community. The revitalization will include the creation of new retail spaces, public parks, an elementary school, and a community centre.

Table D-4: Lawrence Heights summary chart³³².

Project Location	Yorkdale / Lawrence Heights, Toronto, Canada
Location Type	Inner suburb
Project Timeline ³³³	Start: October 2015 Anticipated completion: 2035
Project Type	Residential and mixed-use
Site Area ³³⁴	40.5 hectares, 100 acres
Developer ³³⁵	Toronto Community Housing: Landlord, project lead Context: Developer partner Metropia (Heights Development Inc.): Developer partner
Objectives ³³⁶	<ul style="list-style-type: none"> • Replacement of 1,208 Toronto Community Housing units • Connecting Lawrence Heights and surrounding communities • Improving connections to transit • Developing a mixed-income and mixed-use community • Improving recreation and service opportunities
Previous Site Use	Residential, Toronto Community Housing units
Future Land Uses	Toronto Community Housing development
Number of Residential Units ³³⁷	5,300 units 4,092 private units 1,208 Toronto Community Housing

Key Lessons for Pinecrest Foster Farm

- Minimized hardship associated with tenant displacement: Throughout the Lawrence Heights revitalization, all existing tenants will have the opportunity to remain in the community. While tenants may choose to be displaced outside of the community, they also have the option to relocate to vacant units in Lawrence Heights. This option was made possible by having an effective phasing strategy, which aided moving tenants, as well as by intensive community consultation.

- Pedestrian access to transit and retail: Currently, pedestrian access to nearby transit and shopping facilities from the Lawrence Heights community are deemed unsafe and uninviting, as a result of the car-oriented design of the area. A major objective of the Lawrence Heights revitalization is to increase the accessibility and attractiveness of pedestrian routes.



Figure D-11: Rendering of Lawrence Heights³³⁸.

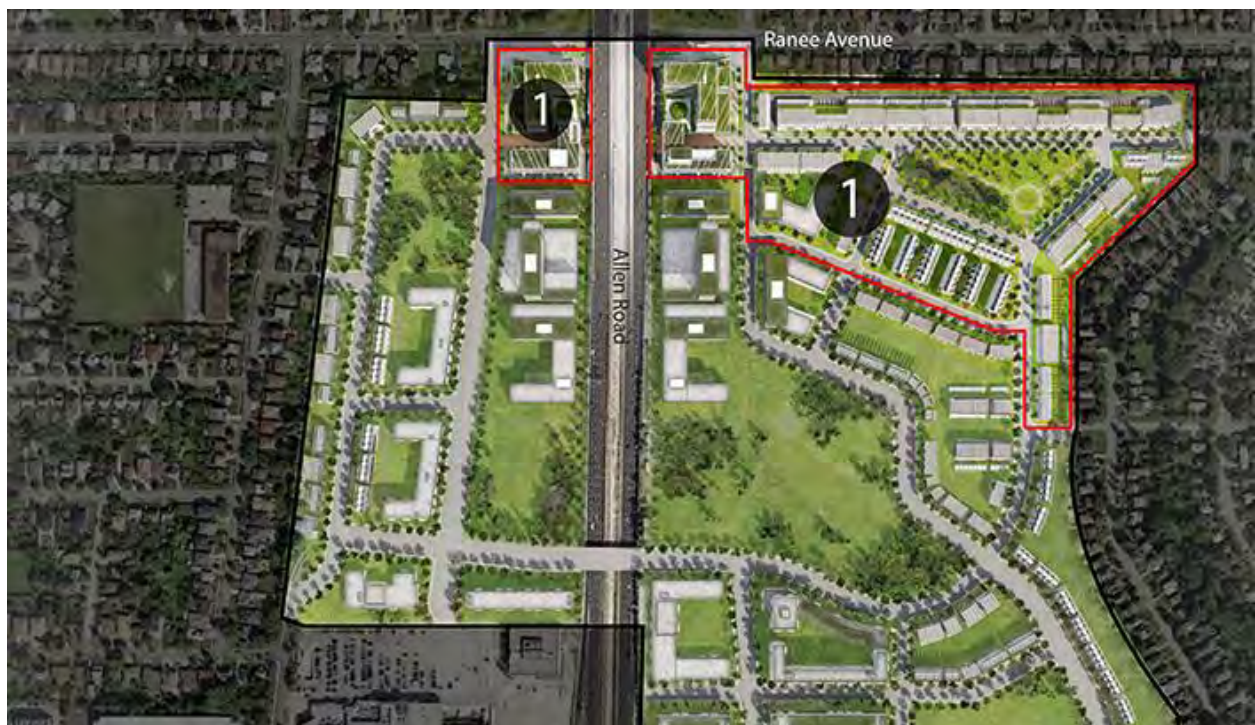


Figure D-12: Lawrence Heights and the delineation of Phase 1 of redevelopment³³⁹.

St. Lawrence Neighbourhood (Toronto, ON)

Case Study Rationale and Contextual Overview

The St. Lawrence neighbourhood is a dense mixed-use residential community in Toronto, located adjacent to the downtown and bordered to the south by railroad tracks and an expressway. The neighbourhood acts as a transition between the newer developments of the downtown and the older City of York³⁴⁰. It is regarded as a great example of a complete community that contained a significant social planning element as part of the planning process. St. Lawrence is resident-oriented and mixed-income and has been praised for its ability to achieve such high densities and amenities while maintaining a human scale.

Table D-5: St. Lawrence Neighbourhood summary chart³⁴¹.

Project Location	Toronto, Ontario, Canada
Location Type	Urban, central city
Project Timeline	1974 to present day (last site in construction in 2018)
Project Type	Social housing neighbourhood, mixed-income, mixed-use
Site Area ³⁴²	Site area: 23 hectares, 56 acres Total floor area: 535,000 square metres Parks and open space: 4.11 hectares (18 percent) Density: 190 units per hectare, 77 units per acre Building parcels: 130,286 square metres Streets: 5.58 hectares (24 percent)
Developer	<ul style="list-style-type: none"> City of Toronto, Chris Smith & Associates, Camrost Developments (proposal call), Konvey, Ramparts Development (proposal call), Cityhome, AVRO Development Non-profits/Foundations: Labour Council Development Foundation, Cecil Heinrichs Foundation, City of Toronto Non-Profit Housing Corporation, Harmony Housing Co-Operative Corporation, Co-Operative Housing Federation of Toronto, Lantana Non-profit Homes Corp., Les Cetres d'Accueil Heritage, New Canadians from the Soviet Union
Objectives	<ul style="list-style-type: none"> Revitalize the area and create a transition from the modern downtown Create a mixed-income and high-density community with to basic necessities To develop according to good planning principles, not market forces To foster a community atmosphere
Previous Site Use	Industrial and underutilized land
Future Land Uses	Mixed-use, commercial, institutional, residential
Number of Residential Units ³⁴³	4,310 units with 57 percent social housing <ul style="list-style-type: none"> Bachelors to three or more bedrooms Average unit size: <ul style="list-style-type: none"> Assisted living – 84.6 square metres Market housing – 106.7 square metres
Tenure Split ³⁴⁴	<ul style="list-style-type: none"> 39 percent condominium apartments 30 percent non-profits co-operatives and private non-profit rental 27 percent municipal non-profit rental 4 percent ownership townhouses
Public Consultation ³⁴⁵	<ul style="list-style-type: none"> Public participation in the planning process started in the early stages of the project Local involvement from the beginning was key to foster a stronger sense of community
Amenities	Parks, play areas, shops and personal services, restaurants and cafes, health services, schools, a daycare, community centre and community services
Total Cost	Acquisition and development: \$42 million Total project investment: \$200 million

Key Lessons for Pinecrest Foster Farm

- Efficient land use distribution can increase density and circulation without having high-rise apartments towers, superblocks, and curvilinear street patterns.
- A mix of tenures, housing types, household types, and income levels, combined with mixed-uses that generates employment opportunities, create a dynamic neighbourhood.
- Open and democratic community engagement from the early stages, which continues after implementation, is vital to a community's success.
- Flexibility can be built into the neighbourhood to respond to changing demographics and economic conditions.

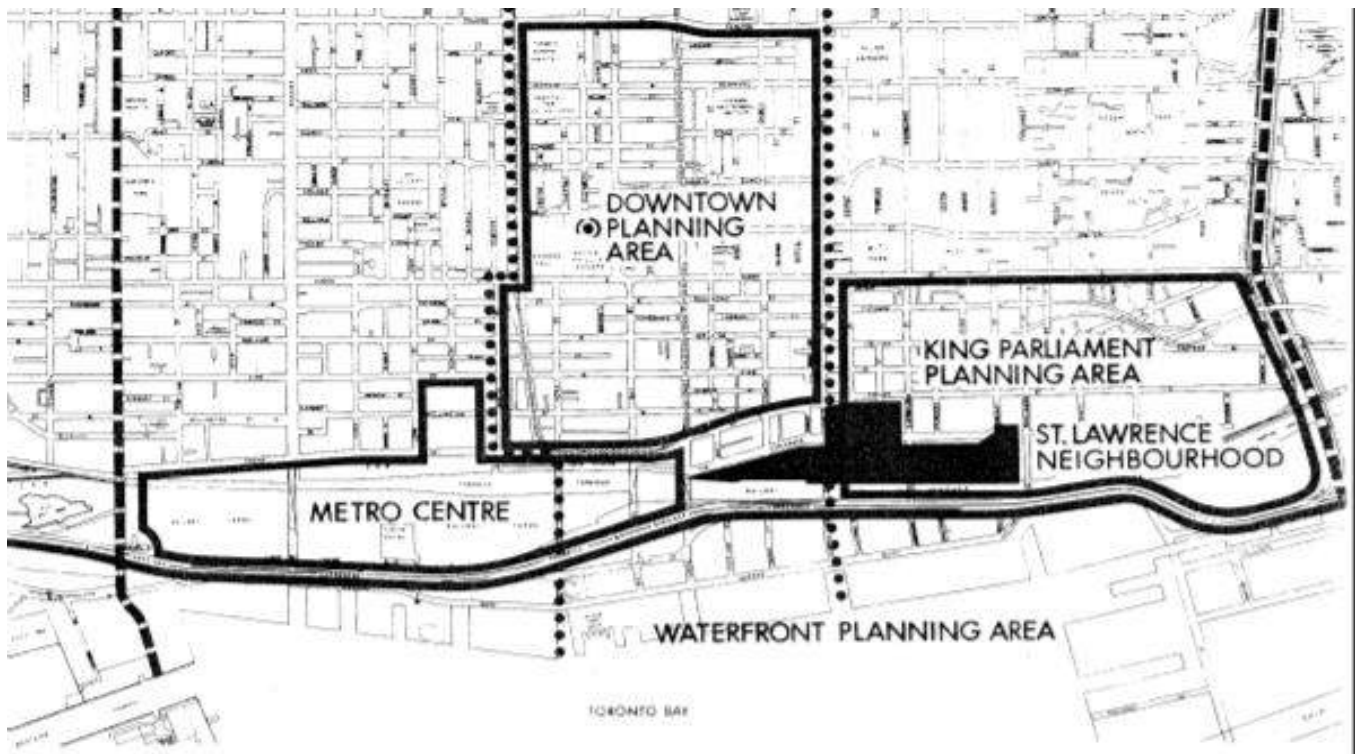


Figure D-13: St. Lawrence and adjacent neighbourhoods³⁴⁶.

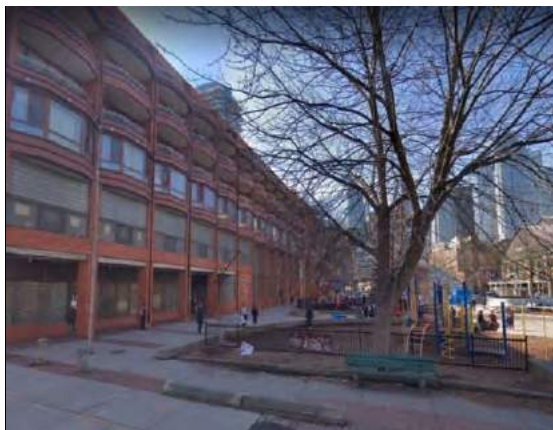


Figure D-14: A school in a mixed-use building, with a playground open to the public after hours³⁴⁷.

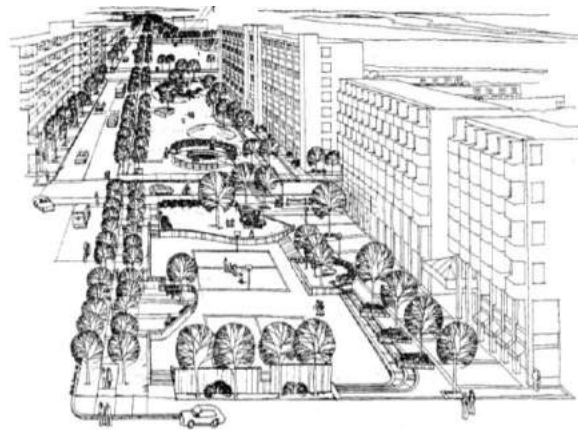


Figure D-15: Crombie Park runs through the centre of the neighbourhood³⁴⁸.

Transit-Oriented Development

Hurdman Station (Ottawa, ON)

Case Study Rationale and Contextual Overview

Hurdman Station a planned TOD development located around an LRT stop on the first phase of Ottawa's expansion project. Although the project is in the early stages of development, it will provide critical insight into how the City of Ottawa desires development around LRT stations due to its large swaths of undeveloped land. Hurdman Station also provides lessons on how former landfills in prime development locations are to be treated within the City.

Table D-6: Hurdman Station summary chart³⁴⁹.

Project Location	East Industrial Neighborhood, Ottawa, Canada
Location Type	Industrial area, urban fringe
Project Timeline	Planning: 2012 to 2014 (TOD); Development plans ongoing Implementation: 2014 to Present
Project Type	Mixed-use, brownfield reclamation, transportation corridor, open space
Site Area	67.5 hectares, 166.8 acres
Developer	City of Ottawa: Land owner/ developer NCC: Land owner
Objectives	<ul style="list-style-type: none"> • Create a complete mixed-use community • Accommodate people and jobs in a compact built form • Reduce automobile use • Respect established neighbourhoods
Previous Site Use	Landfill, open space, vacant land, apartments
Future Land Uses	Mixed use, open space, transit
Number of Residential Units	10,700

Key Lessons for Pinecrest Foster Farm

- **Pedestrians and Transit:** The *Transit-Oriented Development (TOD) Plan* for Hurdman Station puts a key focus on pedestrians by highlighting the need for crossings and pathways. Connections to existing pathways are prioritized, and sidewalks are required on both sides of public streets unless a multi-use pathway is present³⁵⁰. Special consideration is given to areas where pedestrians do have to cross roads, by implementing wider, textured crossings and by ensuring that any junctions are appropriate³⁵¹.
- **Former Landfills:** Hurdman Station also has a former landfill within close proximity to its LRT station. The most significant part of the landfill is currently represented by a mound of earth to the southwest of the LRT station, on prime development land for a high density-built form³⁵². The *Ottawa Brownfields Community Improvement Plan (BCIP)* prioritizes redevelopment of lands within 600 meters of existing or planned rapid transit stations³⁵³. There is also a rehabilitation grant program as part of the BCIP which covers up to 50 percent of the remediation costs³⁵⁴. The plan clearly recognizes that, although open space is suitable for the area for now, the future proximity to rapid transit does not coincide with the landfill remaining un-remediated.
- **Density:** The minimum density under TOD zoning is about 200 jobs and people per gross hectare, and the estimated maximum is likely around 365 jobs and people³⁵⁵. This option includes 110 attached dwellings, 90 stacked dwellings, 10,500 apparent dwellings, and almost 150,00 square meters of non-residential space³⁵⁶.



Figure D-16: Hurdman Station TOD rendering³⁵⁷.



Figure D-17: Former landfills near Hurdman Station³⁵⁸.

Brentwood Station (Calgary, AB)

Case Study Rationale and Contextual Overview

Brentwood Station is located on an LRT line near a major shopping centre. The previous uses of the site no longer met the needs of the area and new development was needed to make better use of the existing transit services. The redevelopment recognized the need for intensification and the difficulty of doing so on private parcels and near lower density residential areas.

Table D-7: Brentwood Station summary chart³⁵⁹.

Project Location	Brentwood, Calgary, Canada
Location Type	Employment area, urban core
Project Timeline	Planning: 2009 Implementation: 2007 to Present
Site Area	36 hectares, 89 acres
Developer	City of Calgary: Facilitator Knightsbridge Homes: Developer Riddell Kurczaba Architecture: Developer/Designer
Objectives	<ul style="list-style-type: none"> • Repair the urban fabric of the area • Intensify the land uses • Create a vibrant community • Make better use of transit systems
Previous Site Use	Commercial, parking, retail
Future Land Uses	Mixed-use TOD
Number of Residential Units	272,248 square metres

Key Lessons for Pinecrest Foster Farm

- Brentwood illustrates how a TOD can stagger its building heights by developing zones within the redevelopment area and designating each one with a maximum height, with taller heights concentrated at the transit station³⁶⁰.
- The Brentwood Station project recognized that large surface parking lots with commercial buildings in the middle are not suited for the transit-supported area and acted as a barrier for integrating and connecting the community³⁶¹. The plan focused on developing transit-supported built forms and integrated a wide variety of non-auto dependent land uses into the development³⁶².
- Circulation was key to the redevelopment as it ensured that the series of transportation methods all worked together as a network. The network focused on movement between key destinations in ways that were safe, efficient, comfortable, and universally accessible³⁶³. Although cars were permitted, it was the least prioritized form of transportation, with pedestrians as the top priority.



Figure D-18: The first phase of intensification at Brentwood Station³⁶⁴.



Figure D-19: Concept plan for a proposed development at Brentwood Station³⁶⁵.

Oakridge Centre (Vancouver, BC)

Case Study Rationale and Contextual Overview

The Oakridge Centre development will create a more compact community adjacent to the Canada Line transit station. The neighbourhood will also provide residents with shops and services to meet their daily needs³⁶⁶. One of the goals of the development is to create a walkable, mixed-use neighbourhood with more indoor recreational programming spaces and a community policing office to ensure the safety of residents. The development will also have several housing types and tenures; more specifically, 20 percent of the units will be for affordable housing, 50 percent of which will be for families, and to provide 25 percent at market rates for families³⁶⁷.

Table D-8: Oakridge Centre summary chart³⁶⁸.

Project Location	Oakridge, Vancouver, Canada
Location Type	Suburban
Project Timeline	Rezoning of the site approved in 2014
Project Type	Mixed use, servicing centre
Overall Site Area	11 hectares, 27.2 acres
Developer	QuadReal Property Group and Westbank Development
Objectives ³⁶⁹	<ul style="list-style-type: none"> To provide high quality neighbourhood amenities and facilities To allow for retail expansion and to become an economically viable development To promote sustainable, mixed-use development in a walkable community
Previous Site Use	Commercial, office, and some residential
Land Uses	Commercial, mixed-use residential, office
Parking ³⁷⁰	<ul style="list-style-type: none"> 5,400 for commercial use 1,570 for residential use 75 for car-share use Bicycle storage will include 3,500 stalls
# of Residential Units ³⁷¹	<ul style="list-style-type: none"> Social housing 290 units Market rental 290 units Market strata 2,334 units

Key Lessons for Pinecrest Foster Farm

Oakridge Centre will integrate a bus stop and drop off areas with the transit station, creating a transit hub and contributing to the overall site's security. It will also design housing for families in ground-oriented units to animate and define the street and public spaces. There will also be consideration for pedestrians and cyclist by creating an accessible network of paths, through an integrated pattern of streets, to promote mobility and provides linkages to the surrounding neighbourhoods.



Figure D-20: Oakridge Centre, Vancouver, 2014³⁷².

Collingwood Village (Vancouver, BC)

Case Study Rationale and Contextual Overview

Collingwood Village is a master-planned, high-density, mixed-use urban village centred around the Joyce-Collingwood SkyTrain Station in Vancouver, British Columbia. Collingwood Village was developed within the context of a regional transportation and land use planning system that aims to focus growth around regional centres well-served by transit. The community is comprised of sixteen buildings (four-storey townhouses, garden apartments, and six- to 26-storey apartments) providing 1,917 condo units and 783 rental units³⁷³.

Extensive communication with neighbourhood groups resulted in strong support for the development. A well-conceived phasing plan incorporated the community's concerns and long-term objectives, in order to ease the transition from light industrial to residential use over the course of sixteen years³⁷⁴. Density increases were negotiated in exchange for significant community amenities and design features, such as mid-rise podiums around high-rise towers and stepping the towers back from the street³⁷⁵. A community centre, school, health centre, and neighbourhood policing centre compliment the retail uses, which include a grocery store, drugstore, and other small-scale retail³⁷⁶.

Proximity and connectivity to the transit station were of key consideration for the developer. The development made use of short blocks with mid-block connections and pathways between buildings; in addition, they used street trees, pedestrian sidewalk bulges, and the creation of a central street to make for a pleasant walk or cycle through the area³⁷⁷. The high volume of pedestrian traffic contributes to the feelings of safety in the community.

A key component to the success of the project were the reduced parking requirements. The municipality lowered the minimums from 1.75 spaces per unit to 1.34 and, in later phases, 1.04 since over 60 percent of Collingwood Village residents used public transit as their main mode of transportation³⁷⁸. All unit parking is underground in order to keep transit supportive land uses at grade.

Table D-9: Collingwood Village summary chart³⁷⁹.

Project Location	Renfrew-Collingwood, Vancouver, Canada
Location Type	Central, suburban
Project Timeline	<ul style="list-style-type: none"> Developed over sixteen years Completed November 2006
Project Type	Mixed-use transit-oriented development
Overall Site Area	11.3 hectares, 28 acres
Developer	<ul style="list-style-type: none"> Concert Properties: Land owner, developer City of Vancouver: Rental housing provided in partnership with the developer
Objectives ³⁸⁰	<ul style="list-style-type: none"> To reduce sprawl by identifying industrial lands appropriate for redevelopment and increasing density along transit stations
Previous Site Use	Brownfield site due to industrial uses, mainly rail yard
Future Land Uses	Residential, commercial, institutional (community centre)
Parking ³⁸¹	2,173 underground parking spaces; 2,408 bicycle parking spaces
Projected Population	Residential density: 239 units per hectare; 4,500 people total
Gross Residential Density	239 units per hectare
Number of Residential Units	<ul style="list-style-type: none"> 2,700 suites (1,917 condominium and 783 rental) within sixteen buildings (11 condominium and 5 rental) including four-storey townhouses and mid- and high-rise apartment buildings Unit sizes range from 34 square metres to 134 square metres
Total Cost	\$420 million

Key Lessons for Pinecrest Foster Farm

- Community amenities and higher densities helped to create the feeling of an urban village. The amenities were only possible in exchange for density bonuses that were awarded to the developer.
- Designing for the community's needs ensures that land is dedicated to the highest and best uses for the residents.
- Urban design guidelines, such as transitioning buildings heights down to the existing communities in an appropriate way, ensure that existing residents are supportive of future development in their community.



Figure D-21: Aerial view of Collingwood Village³⁸².



Figure D-22: The Remington at Collingwood Village³⁸³.

Westbrook Village (Calgary, AB)

Case Study Rationale and Contextual Overview

Westbrook Village is currently under development, within an approximate 53-acre area, and it includes the creation of a new urban fabric in close proximity to shopping malls, highways, low-density residential areas and high-rise condo towers. The plan is intended to be implemented over the next 20-30 years, depending on the market absorption rate³⁸⁴.

Table D-10: Westbrook Village summary chart³⁸⁵.

Project Location	Calgary, Canada
Location Type	Central business district, suburban, small town/rural
Project Timeline	Planning: 2009 Implementation: Over the next 20 to 30 years
Project Type	Residential, commercial, and office space
Site Area	21.4 hectares, 53 acres
Objectives	<ul style="list-style-type: none"> Redevelopment of former school site, followed by redevelopment of current shopping centre site
Previous Site Use	Commercial and institutional greyfield
Future Land Uses	Mixed-use urban village

Key Lessons for Pinecrest Foster Farm

- Westbrook Village is an example of selling off land, from a much larger parcel, for private development³⁸⁶. Overall, there will be a transit-plaza precinct, a transit hub precinct, a regional retail mixed-use precinct, and urban residential precincts.
- The Westbrook Village's redevelopment plan identifies six major building typologies, including mixed-use mid-rise, podiums with point towers, podiums with slab towers, mid-rise residential, low- to mid-rise residential, and civic/community buildings.
- The Westbrook Village guidelines use transitions to low-density residential as part of the redevelopment plan.



Figure D-23: Density map from the Westbrook Village redevelopment plan³⁸⁷.

Pleasant Hill - Contra Costa Center (Walnut Creek, CA)

Case Study Rationale and Contextual Overview

The Walnut Creek Transit Village has imagined a coherent urban fabric on six hectares, in order to integrate a Bay Area Rapid Transit (BART) station expansion and make it align more firmly with transit-oriented development standards. This project placed an emphasis on creating complete streets, public spaces, and amenities. It has planned for mid-rise buildings, instead of attempting to achieve higher densities with verticality.

Table D-11: Pleasant Hill - Contra Costa Center summary chart³⁸⁸.

Project Location	Walnut Creek, Contra Costa County, California, USA
Location Type	Inner suburban
Project Timeline	Planning: 2000 to 2017 Implementation: 2017, Phase 1 to be finished in 2022
Project Type	Medium to high density residential, with some mixed-use at grade
Overall Site Area	6 hectares, 15 acres
Developer	Walnut Creek Transit Lifestyle Associates, LLC Transit Village Associates, LLC Blake-Griggs Properties San Francisco BART District: Landowner
Objectives	<ul style="list-style-type: none"> Redevelopment of a parking lot into a parking structure liberated land for redevelopment, leading the BART authority to consider residential development around its station and surrounding properties
Previous Site Use	Greyfield (parking lots)
Future Land Uses	Residential, with mixed-use at-grade
Number of Residential Units	596 units total, 350 units in Phase 1

Key Lessons for Pinecrest Foster Farm

- Walnut Creek Village has planned for a mid-rise, high density community, without excessive building heights, around a transit station.



Figure D-24: A vision of the future of Walnut Creek Village³⁸⁹.



Figure D-25: Another view of the future of Walnut Creek Village³⁹⁰.

Station Design / Mobility Hub

Bayview Station (Ottawa, ON)

Case Study Rationale and Contextual Overview

Bayview Station is an intersection of two LRT lines, the Trillium Line and Confederation Line, approximately 2.5 kilometres west of Downtown Ottawa. In 2013, MMM Group in partnership with the City of Ottawa developed the *Bayview Station District Community Design Plan*. The vision supports both public and private development around the station, while preserving established neighbourhoods, to take advantage of the future LRT. It is a great example of prioritizing transit integration into a surrounding mixed-use district; furthermore, adjacent lands at Bayview Yards are a brownfield and will need to be remediated before development occurs.

Table D-12: Bayview Station summary chart³⁹¹.

Project Location	Mechanicsville, Ottawa, Canada
Location Type	Central, urban residential
Project Timeline	Station Implementation: 2018 to 2019 District Plan Conceptualization: 2005 to 2013 District Plan Implementation: TBD
Project Type	District plan, complete community, mixed use, transit transfer point
Overall Site Area	28.3 hectares, 70 acres
Developer	Station Developer: OC Transpo. Consultant: MMM Group
Objectives³⁹²	<ul style="list-style-type: none"> • Create complete, well-designed mixed-use communities • Establish development that respects existing conditions • Prioritize pedestrians, cyclists, and transit users • Create greenspaces and urban places • Manage parking effectively
Previous Site Use	Bayview Yards - industrial (brownfield), vacant
Future Land Uses	Mixed use, retail, parks and open space, cycling networks
Parking Recommendations	<ul style="list-style-type: none"> • Minimum and maximum parking requirements shall be reduced • Surface parking is discouraged in all areas.
Total Cost	\$2.1 Billion (Total Confederation Line), Bayview District Plan: TBD

Key Lessons for Pinecrest Foster Farm

Five public consultation events were carried out throughout the development of the community design plan. Residents supported accessibility to Bayview Station, reasonable transitions in building height, integrated open spaces, and connections with development to the Ottawa River³⁹³.



Figure D-26: Rendering of Bayview Station³⁹⁴.



Figure D-27: Bayview Station district area³⁹⁵.

Pimisi Station (Ottawa, ON)

Case Study Rationale and Contextual Overview

Pimisi is an LRT station on Ottawa's Confederation Line West approximately two kilometres west of Ottawa's downtown. Pimisi Station is nearing completion in the final quarter of 2018 and provides a unique design to allow pedestrian connections from Booth Street, as well as integration into existing cycling networks. In addition, Pimisi Station is located south of LeBreton Flats, a major site for redevelopment which has already garnered attention from the National Capital Commission and Rendezvous LeBreton Group³⁹⁶. The long-term plan and vision for LeBreton Flats, IllumiNATION, emphasizes heritage, vibrancy, connectivity, placemaking, and sustainability³⁹⁷. The Algonquin community was consulted to determine an appropriate station name (Pimisi, meaning eel in the Algonquin language)³⁹⁸.

Table D-13: Pimisi Station summary chart³⁹⁹.

Project Location	LeBreton, Ottawa, Canada
Location Type	Inner suburban, downtown periphery
Project Timeline	Planning: 2012 Implementation: 2018 to 2019
Project Type	Transit station
Developer	OC Transpo: Operator City of Ottawa: Owner
Objectives	<ul style="list-style-type: none"> • Easy connection to buses⁴⁰⁰ • Integrated pedestrian and cycling networks • Theme celebrating the culture of the Algonquin people
Previous Site Use	Industrial and vacant lands
Land Uses Post-Development	Current: Transit station Future Uses as per IllumiNation: Mixed use, open space, recreation, retail, office
Total Cost	\$2.1 billion (Total Confederation Line)

Key Lessons for Pinecrest Foster Farm

Despite the challenge of Booth Street Bridge, Pimisi Station has taken measures to ensure its accessibility to pedestrians from both walking paths at-grade and escalators from the bridge level. Another key aspect is the development of LeBreton Flats, with Phase 1 expected to occur between 2017 and 2026 and continuing well beyond 2036⁴⁰¹.



Figure D-28: Rendering of Pimisi Station's north side pedestrian walkway and aqueduct⁴⁰².

Mockingbird Station (Dallas, TX)

Case Study Rationale and Contextual Overview

Mockingbird Station is a transit-oriented development located approximately 6.5 kilometres north of downtown Dallas. It was transformed into an urban, mixed-use development boasting pedestrian-friendly design and amenities. The development has won numerous awards for its integration of land uses, including housing, with the adjacent Dallas Area Rapid Transit (DART) light rail system⁴⁰³.

Table D-14: Mockingbird Station summary chart⁴⁰⁴.

Project Location	Dallas, Texas, USA
Location Type	Outer suburban and suburban business district
Project Timeline	Construction: 1997 Completion: 1999
Project Type	Adaptive re-use, mixed use, TOD, pedestrian-friendly design
Site Area	4.04 hectares, 10 acres
Developer	Developer: Hughes Development Designers: RTKL Associates Inc, Selzer Associates Inc, and Envirodesign
Objectives	<ul style="list-style-type: none"> • Connect transit users with amenities • Maximize potential of land around the station • Create a vibrant, bustling development
Previous Site Use	Office, industrial
Future Land Uses	Mixed use, commercial, residential, office
Parking	1440 parking spaces (underground)
Number of Residential Units	211 loft style apartments ⁴⁰⁵
Total Cost	\$145,000,000

Key Lessons for Pinecrest Foster Farm

When building TODs, the consultation process will be time-consuming and complex, as higher densities can be controversial; however, proactive engagement with residents can help this process⁴⁰⁶. Cities can provide incentives for developers to create pedestrian-friendly environments that support neighborhood services, a variety of uses, and higher densities⁴⁰⁷.



Figure D-29: Mockingbird Station entrance and pedestrian plaza⁴⁰⁸.



Figure D-30: Station platform with pedestrian access⁴⁰⁹.

The Shops at New West Station (New Westminster, BC)

Case Study Rationale and Contextual Overview

The Shops at New West Station (formerly Plaza 88) is a mixed-use development surrounding New Westminster's self-titled SkyTrain station located in the centre of Metro Vancouver. The project has of four residential towers, as well as commercial retail spaces on the five-acre site⁴¹⁰. This project is North America's first shopping space to fully integrate rapid transit with retail and residential development, as it has a direct connection to the SkyTrain platform⁴¹¹. Some criticisms of the project include the above ground parking, as well as the level of density previously unheard of in New Westminster⁴¹². That being said, the project is a promising example of collaboration between the City, transit authority, developer, and architect.

Table D-15: New West Station summary chart⁴¹³.

Project Location	Vancouver, Canada
Location Type	Inner suburb
Project Timeline	Completed: November 2012
Project Type	Mixed-use, transit-oriented development
Overall Site Area	2.02 hectares, 5 acres
Developer	First Capital Realty
Previous Site Use	Surface parking, New Westminster SkyTrain Station
Land Uses Post-Development	Residential, commercial, light rail transit, bus loop, parking structure
Number of Residential Units	1,050

Key Lessons for Pinecrest Foster Farm

- Market demand for transit-oriented residential development is high, even in areas that do not already have higher density residential precedents.
- Retailers and other commercial outlets understand the value of situating their businesses in transit accessible locations.
- A high degree of collaboration between stakeholders ensures the successful development of complex sites.

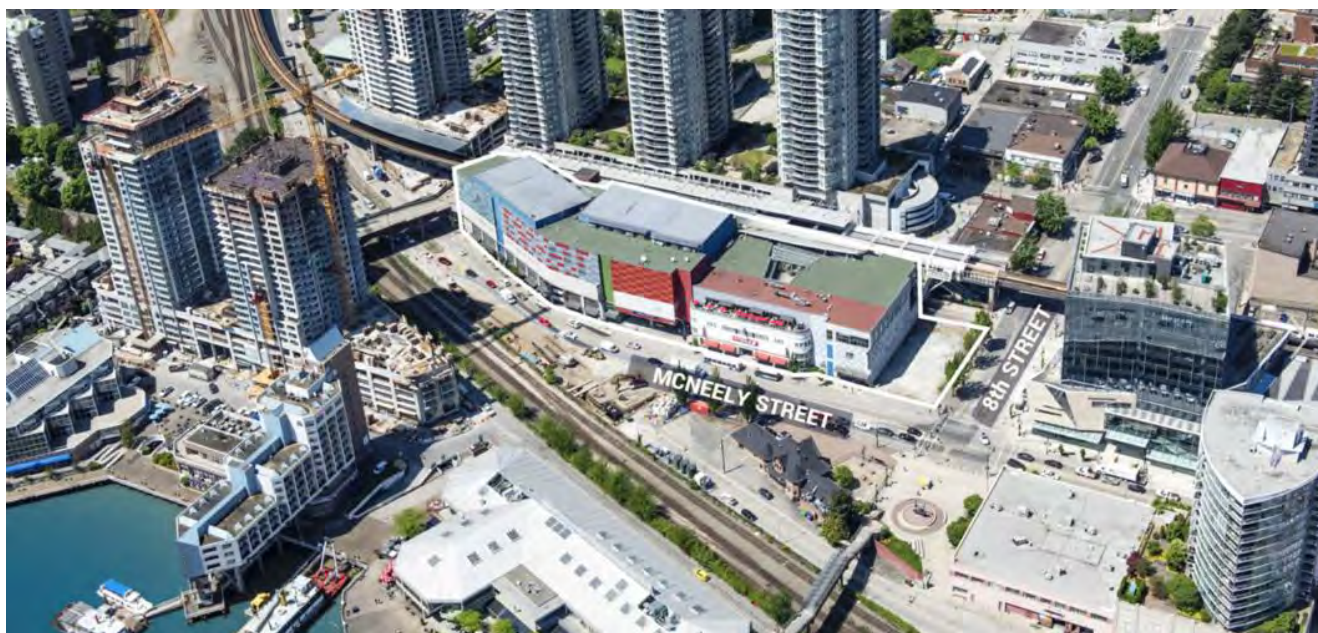


Figure D-31: Aerial view of the Shops at New West⁴¹⁴.

Galatyn Park Station (Richardson, FL)

Case Study Rationale and Contextual Overview

- Galatyn Park Station is located 25 kilometres from downtown Richardson, next to Interstate 75.
- Development was focused around the theme of technology, a resilient employment sector and strong civic presence, and happened incrementally with the Corporate Campus⁴¹⁵.
- Walkability is challenged by a bland street scape that features a lot of blank walls⁴¹⁶.

Table D-16: Galatyn Park Station summary chart⁴¹⁷.

Project Location	Richardson, Texas, USA
Location Type	Outer suburban employment area, suburban infill
Project Type	Transit-oriented development, destination station
Overall Site Area	202 hectares, 499 acres
Developer	City of Richardson
Land Uses Post-Development	Mostly commercial and office uses, some residential
Parking	Two four-storey garages for site, no parking for transit riders
Number of Residential Units	270 (The Venue Building), and 1 vacant lot zoned Residential

Key Lessons for Pinecrest Foster Farm

- The development was focused around one central theme that guided its trajectory.
- There are multiple parking lots and structures on the site, yet no parking for the transit station.
- A large parcel of residential-zoned land currently sits vacant due to poor uptake.
- Public art surrounds the transit station, but the overall walkability of the site is challenged due to the lack of pedestrian-friendly streetscapes beyond the LRT platform.



Figure D-32: Looking northwest at Charles W. Eisemann Center for Performing Arts⁴¹⁸.



Figure D-33: Southeast portion of Galatyn Park, adjacent to the LRT platform⁴¹⁹.

Sheridan Station Area Plan (Denver, CO)

Case Study Rationale and Contextual Overview

- The Sheridan Station redevelopment revolves around the 20-minute neighbourhood with a transfer point for bus service⁴²⁰.
- The urban station is supported by multi-family residential buildings, grid and alley block patterns, main streets, corner stores, and multi-modal connections⁴²¹.
- Parking for the site is encouraged to be unbundled from residential units and sold separately.⁴²²

Table D-17: Sheridan Station summary chart⁴²³.

Project Location	Lakewood, Denver, Colorado, USA
Location Type	Suburban, commuter station
Project Type	Transit-oriented development, destination station
Project Timeline	<ul style="list-style-type: none"> • Station opened in 2013 • 20-minute neighborhood, and redevelopment is currently in progress
Project Type	LRT station, bus connection
Developer	Regional Transportation District
Objectives	<ul style="list-style-type: none"> • Establish a walkable and efficient neighborhood, centred on an LRT station, that will promote public transit ridership and walkability
Parking	Five- to six-storey parking structure with 800 spaces

Key Lessons for Pinecrest Foster Farm

- The redevelopment was not properly timed, with ridership mostly relying on commuters who drive and park at the station. More residential development prior to the construction of the LRT station may have increased ridership of the LRT.
- The transit station incorporates a very simple design that allows riders to descent to the LRT platform, located below the bus stop.



Figure D-34. Bus-sleeve and overpass connection to LRT platform below⁴²⁴.



Figure D-35. LRT platform, looking southeast⁴²⁵.

Rio Vista West Station (San Diego, CA)

Case Study Rationale and Contextual Overview

- Rio Vista West Station is located approximately 20 minutes from downtown San Diego by LRT, and is San Diego's first TOD project⁴²⁶.
- Its intensified bus loop is surrounded by six-storey, mixed-use buildings that contain residential units, offices, and retail at-grade. The middle of the bus loop is a public greenspace that acts as a promenade or park at the heart of the community.
- The site was developed incrementally starting with the construction of a traditional shopping centre just north of the site; however, transit ridership is due to the public parking for commuters⁴²⁷.

Table D-18: Rio Vista West Station summary chart⁴²⁸.

Project Location	San Diego, California, USA
Location Type	Suburban TOD
Project Type	Transit-oriented development, destination station
Project Timeline	Station opened in 2007
Project Type	Transit-oriented development, mixed-use district
Site Area	38 hectares, 94 acres
Developer	CalMat Properties Co. & Greystone Development Company
Objectives	<ul style="list-style-type: none"> • Develop a transit-oriented community and connection between LRT and bus
Land Uses Post-Development	Retail, residential, office
Parking	Large surface parking lot, located at the shopping centre, acts as a commuter lot for transit riders
Number of Residential Units	Approx. 1,000

Key Lessons for Pinecrest Foster Farm

- The bus loop incorporates greenspace with high-density residential uses on the periphery.
- The mixed-use nature of this development creates a complete community.
- Walkability and the pedestrian realm were at the forefront of this development⁴²⁹.



Figure D-36. Land uses surrounding LRT platform⁴³⁰.



Figure D-37. Retail at grade, and interaction between built environment and LRT line⁴³¹.

Orenco Station (Hillsboro, OR)

Case Study Rationale and Contextual Overview

- Orenco Station is located on a former nursery site that started to develop in the 1980s in an attempt to attract the high-tech industry. The LRT station was the backbone for the area's development⁴³².
- Orenco Station is one of the most cited TODs in literature, as the design of the site adheres to Peter Calthorpe's eight TOD principles giving it a "village-like" feel⁴³³.
- Instead of the bus loop existing as a standalone feature, it becomes a part of the street network and contains a six-storey mixed-use building in the centre.
- The success of the LRT station can be traced to the availability of parking for commuters, which was built to exceed the minimum required parking standard⁴³⁴.

Table D-19: Orenco Station summary chart⁴³⁵.

Project Location	Hillsboro, Oregon, USA
Location Type	Suburban TOD
Project Timeline	<ul style="list-style-type: none"> • Planning started in the 1980s • Redevelopment began in 1997 • The latest residential development was completed in 2017
Project Type	Transit-oriented development, mixed-use district
Site Area	84.5 hectares, 208.8 acres
Developer	PacTrust partnered with Hillsboro
Objectives	<ul style="list-style-type: none"> • Redevelopment of a former nursery site
Future Land Uses	Retail, residential, office
Parking	More than required parking integrated into buildings and surface lots
Number of Residential Units	1,800 ⁴³⁶
Amenities	<ul style="list-style-type: none"> • The public square is activated by retail at-grade and programming • Seamless integration of the LRT platform, bus transfer point, and public plaza • Pedestrian realm enhanced by public art and compatible building heights

Key Lessons for Pinecrest Foster Farm

- The interaction between the LRT station platform, the public plaza, and ground-level retail contribute to a vibrant public realm.
- Parking for the transit riders exceeds the minimums set out by the municipality⁴³⁷.
- Housing prices are higher in Orenco Station than surrounding areas; therefore, a policy mechanism is needed to ensure affordable housing is retained⁴³⁸.



Figure D-38. LRT platform, public plaza and retail at grade⁴³⁹.



Figure D-39. Mixed-use with retail at grade directly adjacent to the LRT Platform⁴⁴⁰.

Building Precedents

Table D-20: Building precedent examples found in research.

Theme	Examples
Re-Design of an Arterial Road	<ol style="list-style-type: none"> 1. Bank Street (Ottawa, ON) 2. Blair Avenue (Ottawa, ON) 3. Bronson Avenue (Ottawa, ON) 4. George Street (Sydney, AU)
Integrated Community Centre	<ol style="list-style-type: none"> 5. Benny Farm (Montreal, QC) 6. Linked community centre/library/station (Chicago, IL) 7. Olympic Village (Vancouver, BC) 8. Regent Park (Toronto, ON) 9. St. Lawrence (Toronto, ON) 10. Surry Hills Library and Community Centre (Sydney, AU)
Church Redevelopment	<ol style="list-style-type: none"> 11. All Saints Event Space (Ottawa, ON) 12. Central Presbyterian Church (Vancouver, BC) 13. St. Charles Market luxury condos (Ottawa, ON) 14. The Sanctuary/Queen CrossFit (Kingston, ON)
Redevelopment of Greyfield	<ol style="list-style-type: none"> 15. Bronte Village Mall (Oakville, ON) 16. Westgate Shopping Centre, proposed (Ottawa, ON)
Employment Areas	<ol style="list-style-type: none"> 17. Baltimore State Center (Baltimore, MA) 18. Discover Place (Burnaby, BC) 19. Harbourside Business Park (Auckland, NZ) 20. Metro Office Park (San Juan, PR) 21. Rosslyn Station Area (Arlington, VA) 22. Stockley Park (London, UK) 23. Technopole Angus (Montreal, QC) 24. The Yards (Washington, DC)

Appendix E - Concept Plan

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PARKING BREAKDOWN	E-33

Design Catalog

Low-rise buildings (4 or fewer storeys)

Greystone Village 'The Grove'



Figure E-1: Greystone Village - 'The Grove'⁴⁴¹.

Location	375 Deschâtelets Avenue, Ottawa, Ontario.
Description	The Grove is a proposed three-and-a-half-storey residential building with 14 stacked townhomes and four flats. The massing consists of a four-bay recessed central portion with two flanking three-bay pavilions enclosed with shallow hip roofs.
Storeys	Three-and-a-half storeys
Height	77.49 metres
Units	18
Site Area	1,540 m ²
Building Area	864 m ²
GFA	2,265 m ²
FSI	1.48
Parking	21 spaces below grade

Minto Longbranch

Figure E-2: Rendering of Minto Longbranch development⁴⁴².

Location	3526 Lake Shore Boulevard West, Toronto, Ontario
Description	The proposed residential development has 351 stacked townhouse units, 36 on-street townhouses and 34 walk-up apartments. Of the 421 units, 12 are one-bedroom, 341 are two-bedroom, and 68 are three or more bedrooms.
Storeys	Four
Height	15.5 metres
Units	421
Site Area	39,910 m ²
Building Area	15,884 m ²
GFA	47,057 m ²
FSI	1.17
Parking	517 spaces

Agenda



Figure E-3: Agenda located at 13321 102a Avenue, Surrey⁴⁴³.

Location	13321 102a Avenue, Surrey, British Columbia
Description	Agenda is a U-shaped residential building that includes one-and two-bedroom units, studios, and two-storey townhomes. It is located close to a bus loop, Surrey Central SkyTrain Station, and the Surrey Civic Centre.
Storeys	Four
Height	17.6 metres
Units	135
Site Area	5,859 m ²
Building Area	3,255 m ²

637-655 Johnson Street

Figure E-4: 637-655 Johnson Street, Kingston townhouses⁴⁴⁴.

Location	637-655 Johnson Street, Kingston, Ontario
Storeys	Three
Height	11 metres
Units	28; 101 rooms
Site Area	3,335 m ²
Building Area	973 m ²
Parking	28 underground spaces, 1 surface parking space

Mid-rise buildings (5 – 9 storeys)

Athletes Village Housing Co-Op

Figure E-5: Athletes Village housing co-op⁴⁴⁵.

Location	151 West 1st Avenue, Vancouver, British Columbia
Description	The First Avenue Athletes Village Housing Co-operative is a non-profit housing co-op in Southeast False Creek. Unit sizes range from 640 square feet for a one-bedroom, 868 ft ² for a two-bedroom suite, and 1,159 ft ² for a three-bedroom unit.
Storeys	Five
Units	84 (7 one-bedroom suites (4 of which are designed for wheelchair accessibility) 60 two-bedroom suites; 17 three-bedroom suites)
Property Area	6,013m ²
Building Area	2,708 m ²
GFA	8,901 m ²
Parking	90 residential; 10 visitor

1300 Gordon Street

Figure E-6: Rendering of 1300 Gordon Street⁴⁴⁶.

Location	1300 Gordon Street, Guelph, Ontario
Description	Proposed six-storey residential apartment located in Guelph, Ontario.
Storeys	Six
Units	32
Site Area	2,420 m ²
Building Area	1,065 m ²
GFA	5,373 m ²
FSI	1.9
Parking	46 residential; 2 visitor

Duke Condos

Figure E-7: Rendering of Duke condos⁴⁴⁷.

Location	2803 Dundas St. W. Toronto, Ontario
Description	The Duke is a seven-storey mixed-use building containing retail uses at grade and a total of 109 residential units ranging from studios to 3-bedrooms and including 5 live-work units.
Storeys	Seven
Height	26.13 metres
Units	109
Property Area	1,729.9 m ²
Building Area	1,094 m ²
GFA	8,645 m ²
FSI	5
Parking	99 spaces

Smart House



Figure E-8: Rendering of the once proposed Smart House development with micro-condo units⁴⁴⁸.

Location	488 Bank Street, Ottawa Ontario
Description	Mixed-use development with micro-sized units ranging from studio to 3-bedroom
Storeys	Nine
Height	31 metres
Units	151
Property Area	1,217.74 m ²
GFA	6,195.7 m ²
Parking	16 residential; 7 visitor

The Code Condo

Figure E-9: The Code Condos terraced condominium building⁴⁴⁹.

Location	6 Parkwood Ave, Toronto, Ontario
Description	Nine-storey condominium building with 118 dwelling units.
Storeys	Nine
Height	34.975 metres
Units	118 (2 Bachelor, 49 one-bedroom, 58 two-bedroom, 9 townhomes)
Property Area	2,209 m ²
Building Area	1,024 m ²
GFA	10,051 m ²
FSI	4.55
Parking	111 spaces, all below grade

Anna Lane Condos and Live/Work Townhomes



Figure E-10: Anna Lane condos and live/work townhomes⁴⁵⁰.

Location	121 Queen Street, Kingston, Ontario
Description	Nine-storey apartment tower with ground oriented live/work units ranging from one- to three-bedrooms.
Storeys	Nine
Units	11
Property Area	2,680 m ²

High-rise buildings (10+ storeys)

Mount Pleasant Community Centre, Library, and Rental Housing Complex



Figure E-11: Mount Pleasant community centre and rental apartments⁴⁵¹.

Location	1 Kingsway, Vancouver British Columbia
Description	This mixed-use project includes residential, institutional, small-scale retail, and recreational uses. The 98-unit rental building atop a public library with a community centre with daycare and fitness centre beside it.
Storeys	10
Units	98
Site Area	37,81.897 m ²
GFA	5,500 m ² (2,856 m ² community centre; 1,115 m ² library; 632 m ² childcare facility)

Galleria 2 Luxury Condos

Figure E-12: The Galleria 2 luxury condo mixed-use tower⁴⁵².

Location	238 Besserer Street, Ottawa, Ontario
Description	Mixed-use tower located on the edge of the ByWard Market. Units range in size from 590 ft ² to 2,021 ft ² .
Storeys	15
Height	42.5 metres
Units	197
Property Area	1,205 m ²
GFA	20,000 m ²

The Remington at Collingwood Village



Figure E-13: The Remington at Collingwood Village by Concert Properties⁴⁵³.

Location	3528 Vanness Boulevard, Vancouver, BC
Description	20-storey concrete high-rise located in Collingwood Village offers 30 different styles of contemporary studios, one- and two-bedroom units. The Remington is one block south of the Joyce SkyTrain station and close to services and shopping.
Storeys	20 with a six-storey podium
Height	57.3 metres
Units	257
Property Area	5,188 m ²
GFA	18,000 m ²

350 Sparks Street and 137 Bay Street

Figure E-14: Rendering of the proposed development at 350 Sparks Street and 137 Bay Street⁴⁵⁴.

Location	350 Sparks Street and 137 Bay Street, Ottawa Ontario
Description	At 250 units, the residential tower occupies the northwest portion of the site and sits on a six-storey podium base with an overall height of 23 storeys and a total Gross Floor Area of 14,744 m ² . The proposed 303 suite hotel tower is located on the southwest corner, at Queen Street and Bay Street, with an overall height of 27 storeys including a 3 storey podium with a total GFA of 18,618 m ² .
Storeys	23 (six-storey podium) residential tower; 27 (three-storey podium) hotel tower
Height	77.55 metre residential tower, 84.55 metre hotel
Units	250 residential; 303 hotel units
Property Area	7,463.70 m ²
Building Area	6,194.87 m ²
GFA	14,744 m ² residential; 18,618m ² hotel
FSI	7.1
Parking	348 parking spaces broken down as follows: 142 cars serving the existing office building, 93 spaces for hotel parking and 113 spaces for residential parking (including 15 visitor spaces and the potential for 3 car share spaces).

Railyard Housing Cooperative



Figure E-15: Railyard Housing Cooperative with a roof top play area and in-home daycare units⁴⁵⁵.

Location	95 East 1st Avenue, Vancouver, British Columbia (Olympic Village)
Description	10 units rented at income assistance rates to residents previously in support programs, 54 units at rent geared to 30% of income for people who earn up to the housing income limits, and 71 units rented at the low end of market rent.
Height	15 storeys
Units	135
Property Area	1,866 m ²
GFA	9,716 m ²
Parking	75 spaces

1960 Scott Street

Figure E-16: Rendering of 1960 Scott Street located in Ottawa⁴⁵⁶.

Location	1960 Scott Street, Ottawa, Ontario
Description	Proposed 24 storey mixed-use commercial and residential building. Estimated date of completion is May 1, 2020.
Height	74.5 metres (24 storeys)
Units	250
Property Area	2,304 m ²
Building Area	1,841.3 m ²
GFA	17,194 m ²
FSI	7.2
Parking	150 spaces

Minto Metropole Ottawa



Figure E-17: Minto Metropole and the development's surrounding low-rise townhomes⁴⁵⁷.

Location	38 Metropole Private, Ottawa, Ontario
Description	Ottawa's Transitway abuts the south side of the site and the Westboro Station is located less than 200 metres from the site. 68 three-storey townhouses are located beside the tower and they are a part of the development. This is the second tallest tower in Ottawa and it is located in a primarily low-rise residential, single-family home neighbourhood.
Height	108 metres (33 storeys)
Units	153
Property Area	4,550 m ²
Building Area	750 m ²
GFA	26,942 m ²
FSI	1.53

District Overview

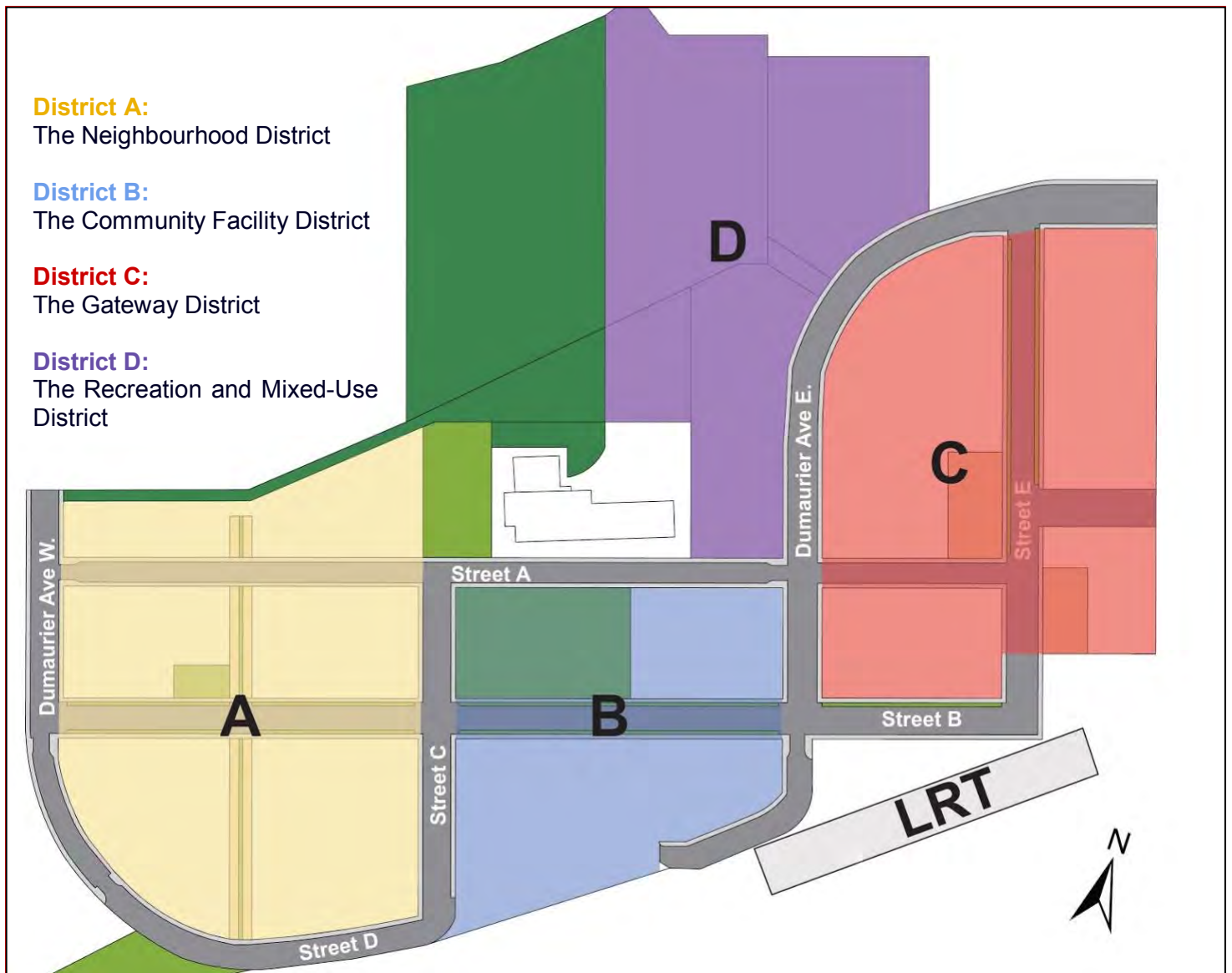


Figure E-18: District Map

Building Forms and Uses by District

District A: The Neighbourhood District (Blocks A through E)

Located on the western edge of the site, District A mostly consists of low-rise townhomes, three- to four-storeys in height, with surface parking. This district makes a smooth transition to the surrounding neighbourhood, while accommodating approximately 583 residential units ranging from one-bedrooms to five-bedrooms. 143 of these units will be four- to five-bedroom units for families, who will also be able to enjoy the municipal park and playground on Block B. Block E includes an internal courtyard amenity space that could be designed and programmed to suit a wide variety of needs. Finally, the existing green space in the southwest corner of District A will become an off-leash dog park, with appropriate lighting, seating, and other elements to make it a safe and viable public space.



Figure E-19: District A height map – looking north.

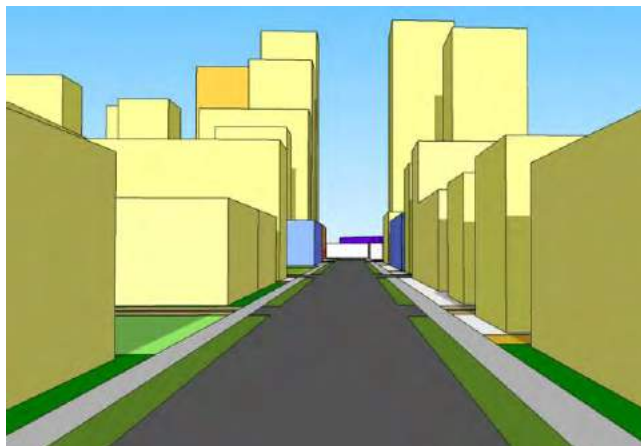


Figure E-20 - District A – looking east on Street B.

District B: The Community Facility District (Blocks F through G)

District B is designed with taller building heights, between nine- and 30-storeys, to accommodate more residential units. This district is oriented around a new community park, community centre (CC), school (S), places of worship, and other institutional uses. The ground floors of buildings on Blocks F and G are intended to accommodate limited, small-scale commercial uses, such as a daycare, pharmacy, or coffee shop. Approximately 750 residential units can be accommodated in this district, ranging from bachelors to three-bedrooms.



Figure E-21: District B height map – looking north.



Figure E-22: District B – looking east.

District C: The Gateway District (Block H through K)

District C, which borders Pinecrest Road and the site of the future Pinecrest LRT station, is designed with the tallest building heights and the greatest diversity of uses. This district includes two public spaces (on Blocks H and K) that are intended to serve as urban plazas and space for at-grade amenity areas or privately-owned public spaces (POPS). Office space is provided on Blocks I and K, and at-grade retail space is available on Blocks H, I, J, and K. Approximately 1,918 residential units, ranging from bachelors to three-bedrooms, can be accommodated in this district.



Figure E-23: District C height map – looking south east.



Figure E-24: District C – looking north east.



Figure E-25: District C – looking south to LRT.

District D: The Recreation and Mixed-Use District (Block L through M)

The three private parcels at the northern extent of the site will likely also be redeveloped in the future. In this Concept Plan, approximately 359 residential units can be accommodated in District D, ranging from bachelors to five-bedroom units.



Figure E-26: Existing built form of Blocks L, M, and N.



Figure E-27: District D height map – looking north.

Block L – Commercial Plaza

In order to maximize development potential, it is recommended that this block develop two towers on separate podiums. Their respective heights have been massed at 20- and fifteen-storeys (including podiums), as they fall within 250 metres of the future Pinecrest LRT Station. The podiums are encouraged to permit commercial or institutional services at-grade to benefit the surrounding community. The residential towers will have excellent views into Ruth Wildgen Park, as well as easy access to public transit. On the north extent of Block L are two smaller residential buildings. The L-shaped building is a set of three-storey back-to-back townhomes with frontages looking onto Ruth Wildgen Park. The building fronting Dumaurier Avenue is a six-storey apartment. Both smaller residential buildings have an internal courtyard area that could be parking space but should be made into amenity space for residents.

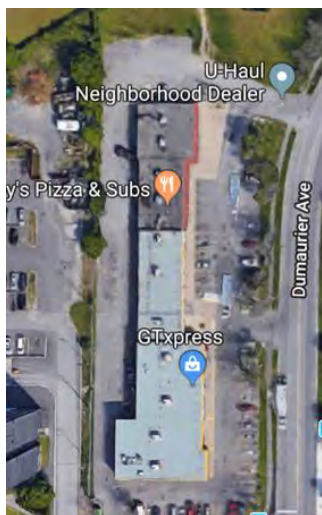


Figure E-28: Block L – existing commercial plaza⁴⁵⁸.



Figure E-29: Building heights in storeys indicated.

Block M – Boys and Girls Club and Abraar School

The Boys and Girls Club was built in the 1990s and is still in relatively good working condition; therefore, in this Concept Plan, the building has been retained. To support future population growth, a four-storey addition has been proposed to the north. The Abraar School will be redeveloped into an L-shaped building. Due to the large footprint of the school, a new daycare is recommended to be situated in this building, along with residential units above the east extent of the new school.



Figure E-30: Block M and N with the existing Boys and Girls Club, Abraar School, and church.

The redevelopment of this district could also include a major recreational hub, with a new soccer field, basketball court, and outdoor ice rink. The soccer pitch could double as a cricket pitch, or be used as an additional outdoor rink surface in the winter. In order to maximize use, installation of a turf soccer field is recommended to allow extended periods of play and quicker turnaround time from the spring to summer months.

The lands for the proposed ice rink and basketball court are owned by OCH and currently serve as a parking lot. A potential land exchange could occur between the three parties – the commercial plaza, OCH, and the Boys and Girls Club. The plaza owners must dedicate park space for their redevelopment, which can be met through the purchase of OCH's parking lot. The developers of the plaza could then convert this area into greenspace. OCH could then require that underground parking be provided for its tenants under the park or under the newly developed towers. Once this exchange is complete, the Boys and Girls Club may look to purchase portions of this parkland to expand its recreational facilities. This would maximize the recreational uses onsite, in order to make up for the loss of Dumaurier Park.



Figure E-31: Block M – Conceptual design with heights.

Block N – Paroisse St-Rémi

This proposal looks to redevelop the church lands to accommodate three-storey back-to-back townhomes on the north extent, which are accessed by a road extension of Farrell Street. It is important to remain cognizant of the single-detached homes adjacent to the existing church site; therefore, buildings immediately adjacent should not exceed nine metres in height. A new church would be constructed with the same square footage, as well as flexibility to house residential units above on the north portion of the building. The steeple will extend above all buildings on this parcel, as well as the adjacent refurbished school and Boys and Girls Club. Residential units on this parcel are encouraged to be used for seniors or those looking to access affordable housing services through the church. Parking on the site would be reduced to accommodate more units given its proximity to the LRT station.



Figure E-32: Block N conceptual design with heights.

Conceptual Design

Ruth Wildgen Park



Total area approx. 0.88 hectares
To accommodate a small soccer field, cricket field, and hockey rink

Total area approx. 0.52 hectares
To accommodate a field house, splash pad, and wading pool

Total area approx. 0.25 hectares
To accommodate a playground

Figure E-33: Ruth Wildgen Park details.

Inspiration and Illustrations



Figure E-34: Hockey rink, Ruth Wildgen Park⁴⁵⁹.



Figure E-35: Lansdowne Park, Ottawa⁴⁶⁰.



Figure E-36: Cricket Kilbirnie Park, Wellington, New Zealand⁴⁶¹.



Figure E-37: Millennium Park, Orleans⁴⁶².

Extension to Ruth Wildgen Park



Approximately
0.74 hectares of
land added to
Ruth Wildgen
Park

Figure E-38: Ruth Wildgen Park extension details.

Inspiration and Illustrations



Figure E-39: Vincent Massey Park, Ottawa⁴⁶³.

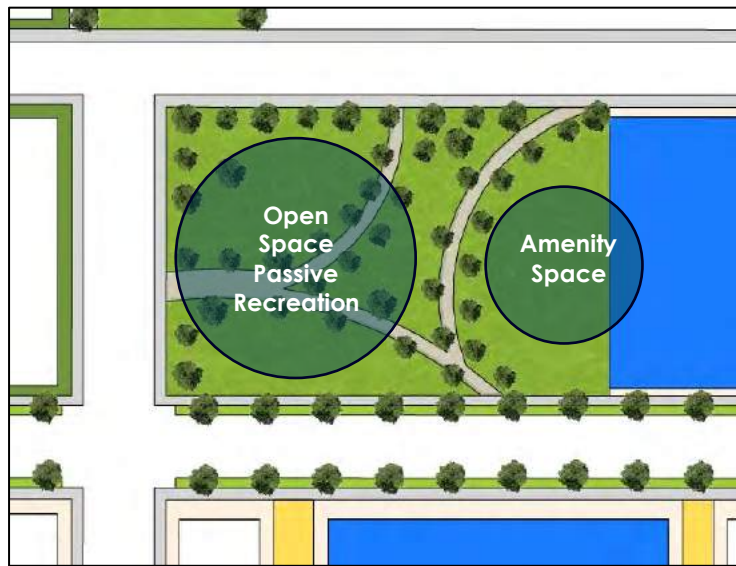


Figure E-40: Lansdowne Park, Ottawa⁴⁶⁴.



Figure E-41: Leamy Lake Park, Gatineau⁴⁶⁵.

Community Park



Total area approximately 0.55 hectares

Institutional Uses

Figure E-42: Community park details.

Inspiration and Illustrations



Figure E-43: Brewer Park Community Garden, Ottawa⁴⁶⁶.



Figure E-44: Commissioners Park, Ottawa⁴⁶⁷.

Local Neighbourhood Park



Total area approximately 0.05 hectares

Figure E-45: Local neighbourhood park details.

Inspiration and Illustrations

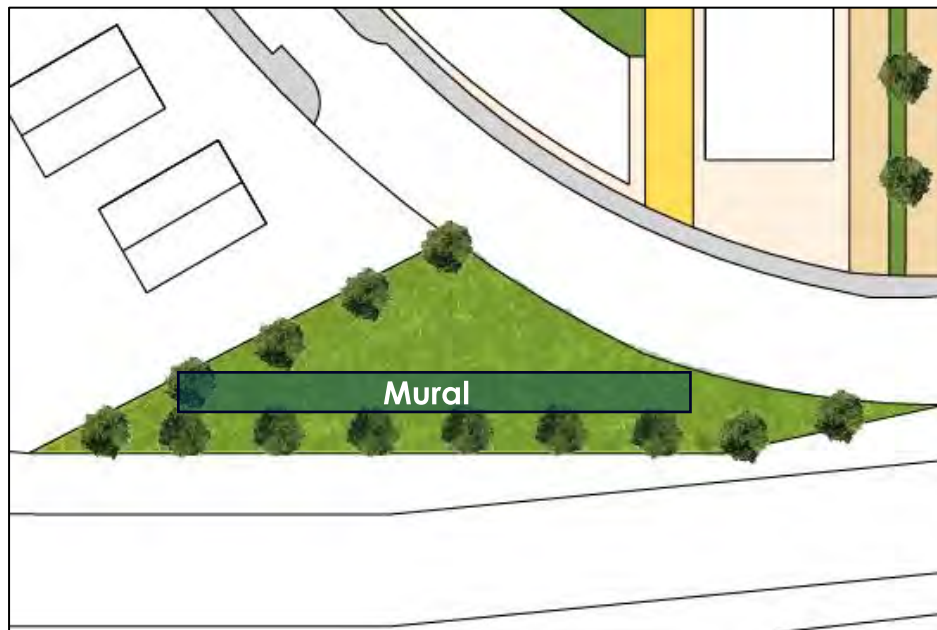


Figure E-46: Brewer Park, Ottawa⁴⁶⁸.



Figure E-47: Westboro Kiwanis Park, Ottawa⁴⁶⁹.

Pinecrest Dog Park



Total area approximately 0.14 hectares

Figure E-48: Municipal dog park details.

Inspiration and Illustrations

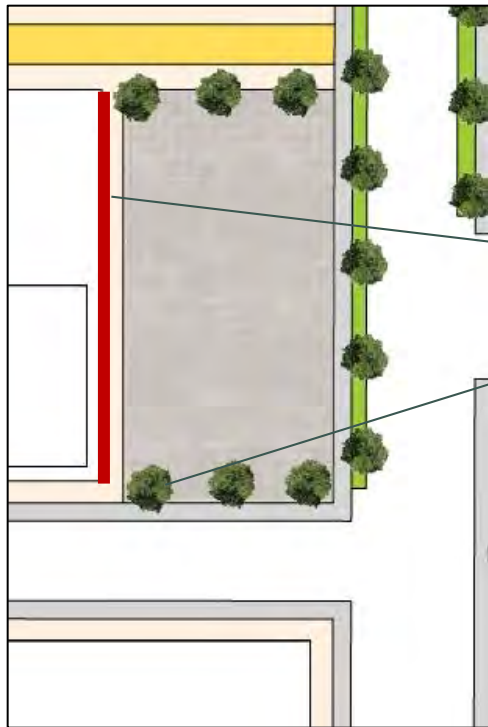


Figure E-49: Tunnganarniq (Inuit youth artists from Kinngait, Cape Dorset, Nunavut), Mural, Ottawa⁴⁷⁰.



Figure E-50: Jack Purcell Dog Park, Ottawa⁴⁷¹.

North Square



Total area approximately 0.17 hectares

Building to face the square with active frontages

Landscaping around the square

Figure E-51: North Square details.

Inspiration and Illustrations



Figure E-52: George Street plaza, Ottawa⁴⁷².



Figure E-53: Bank of Canada Plaza, Ottawa⁴⁷³.

LRT Plaza

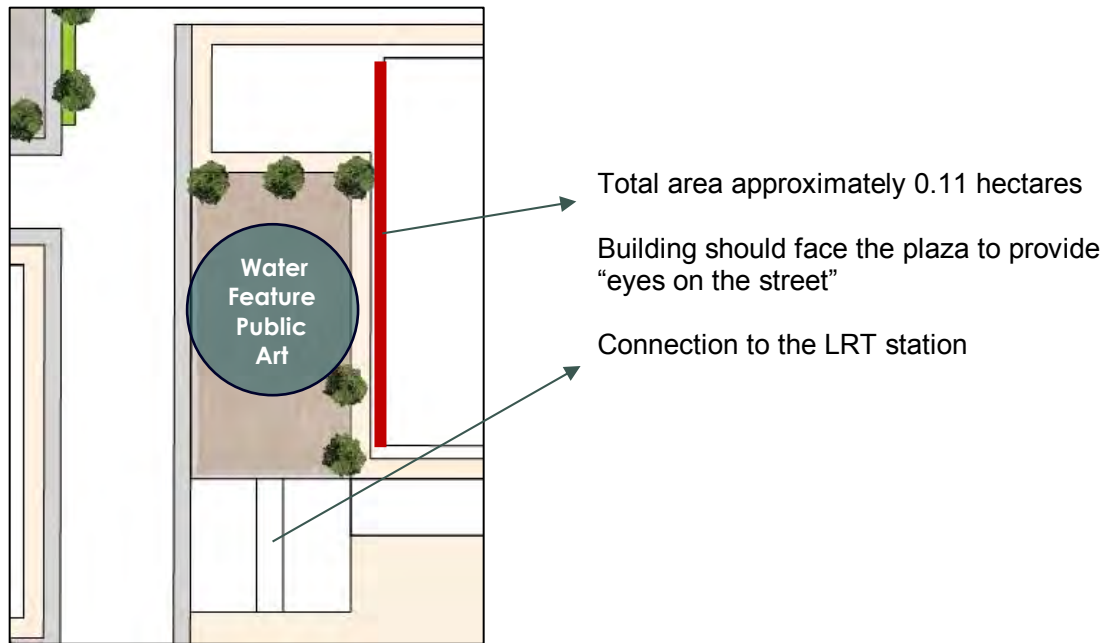


Figure E-54: LRT plaza details.

Inspiration and Illustrations



Figure E-55: Dancing Bear sculpture, Ottawa⁴⁷⁴.



Figure E-56: World Exchange Plaza, Ottawa⁴⁷⁵.

Parking Breakdown

The proposed parking breakdown pushes the boundaries of parking minimums in Ottawa, but they are reflective of current TOD and social housing precedents. Additionally, these parking provisions are tailored given the proximity to the LRT station and the number of bedrooms in a dwelling unit.

Blocks A to E have their own private parking lots for residents, and blocks and L to M contain parking lots with a mix of private and public parking for the amenities in the area. Parking is also found on local streets or underground, and there will be a mix of permit parking for residents and public parking for visitors. Residents in need of an occasional car can use the recommended neighbourhood car-sharing service.

Table E-1: Total parking on site.

Parking Summary	
Specification	Amount
Total parking	2,190
Resident parking	1,256
Visitor parking	363
Non-residential parking	570
Private lot parking	264
On-street parking	118
Underground parking	1,827

Table E-2: Parking rates used for calculations.

Land Use	Parking rate	
Bachelors and one-bedrooms	0.33	per dwelling unit
Two- and three-bedrooms	0.50	per dwelling unit
Four- and five-bedrooms	1.00	per dwelling unit
Bachelors and one-bedrooms adjacent to the LRT	0.25	per dwelling unit
Bachelors and one-bedrooms adjacent to the LRT	0.33	per dwelling unit
Visitors	0.10	per dwelling unit
Non-residential	0.50	per 100 square metres
Church	4.0	per 100 square metres
Office and school	0.33	per 100 square metres

Table E-3: Summary of parking spaces in concept plan by type and location.

Block	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Proposed parking spaces by use															
Total needed	66	45	78	84	416	166	261	315	307	235	168	203	94	54	2490
Residential	60	41	67	73	364	56	162	219	174	161		103	21	28	1546
Visitor	6	4	11	12	52	20	56	76	61	55	0	33	5	3	391
Non-residential	0	0	0	0	0	90	44	20	71	19	168	67	68	23	570
Proposed parking spaces by location															
Surface lots	62	30	31	0	0	0	52	0	0	0	0	20	47	40	282
On-street	20	15	0	15	12	12	0	15	8	0	0	10	0	8	115
Underground	0	0	47	69	404	154	209	300	299	235	168	173	47	6	2110

Table E-4: Total parking spaces on Block A.

Block A	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total	Notes
Total	0	37	21	57	
Residential parking	0	19	21	40	
Visitor parking	-	-	-	6	
Private lot parking	-	-	-	44	Use 1 space from RW Lot
On-street parking	-	-	-	20	
Ruth Wildgen Lot	-	-	-	18	

Table E-5: Total parking spaces on Blocks B and D.

Blocks B and D	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	29	50	63	142
Residential parking	10	25	63	98
Visitor parking	-	-	-	14
Private lot parking	-	-	-	30
On-street parking	-	-	-	41
Underground parking	-	-	-	41

Table E-6: Total parking spaces on Blocks C and E.

Blocks C and E	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	116	196	46	358
Residential parking	38	98	46	182
Visitor parking	-	-	-	36
Private lot parking	-	-	-	31
On-street parking	-	-	-	12
Underground parking	-	-	-	175

Table E-7: Total parking spaces on Block F.

Block F	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	104	91	0	195
Residential parking	26	30	0	56
Visitor parking	-	-	-	20
Non-residential parking	-	-	-	90
On-street parking	-	-	-	12
Underground parking	-	-	-	154

Table E-8: Total parking spaces on Block G.

Block G	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	265	291	0	555
Residential parking	66	96	0	162
Visitor parking	-	-	-	56
Non-residential parking	-	-	-	44
On-street parking	-	-	-	0
Underground parking	-	-	-	210

Table E-9: Total parking spaces on Block H.

Block H	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	380	376	0	756
Residential parking	95	124	0	219
Visitor parking	-	-	-	76
Non-residential parking	-	-	-	20
On-street parking	-	-	-	15
Underground parking	-	-	-	300

Table E-10: Total parking spaces on Block I.

Block I	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	356	259	0	615
Residential parking	89	85	0	174
Visitor parking	-	-	-	61
Non-residential parking	-	-	-	71
On-street parking	-	-	-	0
Underground parking	-	-	-	307

Table E-11: Total parking spaces on Block J.

Block J	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	250	298	0	548
Residential parking	63	98	0	161
Visitor parking	-	-	-	55
Non-residential parking	-	-	-	19
On-street parking	-	-	-	0
Underground parking	-	-	-	235

Table E-12: Total parking spaces on Block K.

Block K	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	0	0	0	0
Residential parking	0	0	0	0
Visitor parking	-	-	-	0
Non-residential parking	-	-	-	168
On-street parking	-	-	-	0
Underground parking	-	-	-	168

Table E-13: Total parking spaces on Block L.

Block L	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	170	154	4	328
Residential parking	43	77	4	124
Visitor parking	-	-	-	33
Non-residential parking	-	-	-	67
Private lot parking	-	-	-	20
On-street parking	-	-	-	10
Underground parking	-	-	-	193

Table E-14: Total parking spaces on Block M.

Block M	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	24	23	0	47
Residential parking	8	12	0	19
Visitor parking	-	-	-	5
Non-residential parking	-	-	-	68
Private lot parking	-	-	-	47
On-street parking	-	-	-	0
Underground parking	-	-	-	45

Table E-15: Total parking spaces on Block N.

Block N	Bachelor and One-Bedrooms	Two- and Three-Bedrooms	Four- and Five-Bedrooms	Total
Total	0	23	10	33
Residential parking	0	12	10	22
Visitor parking	-	-	-	3
Non-residential parking	-	-	-	23
Private lot parking	-	-	-	40
On-street parking	-	-	-	8
Underground parking	-	-	-	0

Appendix F – Implementation

OCH and the City will need to determine which lands in the Pinecrest Foster Farm community they deem surplus, want to retain, and seek to acquire, in order to facilitate its successful redevelopment. The Project Team recommends that lands be exchanged to reflect the lands disposition plan and the plan of subdivision below (Figures F-1 & F-2). This plan sees OCH retaining a large portion of their property to the west, with approximately 1.69 hectares of OCH property conveyed to the City for parkland dedication. OCH would either sell off a parcel of land immediately east of the proposed community park to the private sector or exchange it with the City for property in District C, close to the future Pinecrest LRT Station. This land exchange would be for the express purpose of acquiring vacant land for development so that OCH tenants could be re-housed within the community, and to minimize forced tenant displacement.

The lands currently owned by the City of Ottawa, as well as the land owned by the Ministry of Transportation (which the City aims to acquire) would be sold for private development, and/or exchanged with OCH to provide affordable and RGI units close to the LRT station. Approximately 0.28 hectares are set aside for parkland dedication amongst these properties.

The model for land surplus, retention, and acquisition was developed to align with the vision statement and guiding principles for the Concept Plan. This ownership model was strongly based around the need for OCH to leverage funding, financing, and partnership opportunities, while ensuring that the same number of units with higher bedroom counts are retained in the redevelopment. Furthermore, the ownership model was strongly influenced by the Affordable Housing Strategy (Appendix H), which identified the need for a minimum of 50 percent market rate units to ensure the financial feasibility of the development.

Table F-1: Existing units on site.

Total	417
Bachelor	3
1 Bed	0
2 Bed	205
3 Bed	144
4 Bed	20
5 Bed	43
Community House	2

Table F-2: Development assumptions.

Existing units to be retained	208
Approx. units to be developed	3613
Total units on full build out	3821

Table F-3: RGI and market unit breakdown.

OCH RGI Units	417
OCH affordable units	880
Market Rate Units	2524
Total units	3821

Table F-4: Residential units on OCH property

OCH Land Breakdown	#	%	Block														
Existing to be retained	208		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Existing
Bachelor	114	9%	0	0	0	0	0	38	0	66	0	7	0	0	0	0	3
1 Bed	342	26%	0	0	0	0	30	66	0	188	0	58	0	0	0	0	0
2 Bed	528	41%	0	0	0	0	23	61	0	166	0	73	0	0	0	0	205
3 Bed	165	13%	0	0	0	0	28	30	0	97	0	10	0	0	0	0	0
4 Bed	80	6%	14	22	15	20	9	0	0	0	0	0	0	0	0	0	0
5 Bed	68	5%	12	19	13	17	7	0	0	0	0	0	0	0	0	0	0
Total Units	1297	100%	26	41	28	37	97	196	0	517	0	148	0	0	0	0	208

Table F-5: Residential units on non-OCH property

Non-OCH Breakdown			A	B	C	D	E	F	G	H	I	J	K	L	M	N	Existing
Bachelor	328	13%	0	0	0	0	0	0	98	43	135	27	0	49	9	0	0
1 Bed	893	35%	0	0	29	29	57	0	167	90	264	157	0	84	15	0	0
2 Bed	829	33%	20	0	26	30	44	0	162	78	186	170	0	87	16	10	0
3 Bed	453	18%	17	0	15	20	60	0	129	35	73	45	0	39	11	17	0
4 Bed	22	1%	0	0	4	0	0	0	0	0	0	0	0	3	0	14	0
5 Bed	8	0%	0	0	5	0	0	0	0	0	0	0	0	3	0	0	0
Total Residential Units	2524	100%	37	0	79	79	161	0	556	246	615	399	0	265	51	41	0



Figure F-1: Public land retention, acquisition, and disposition plan.

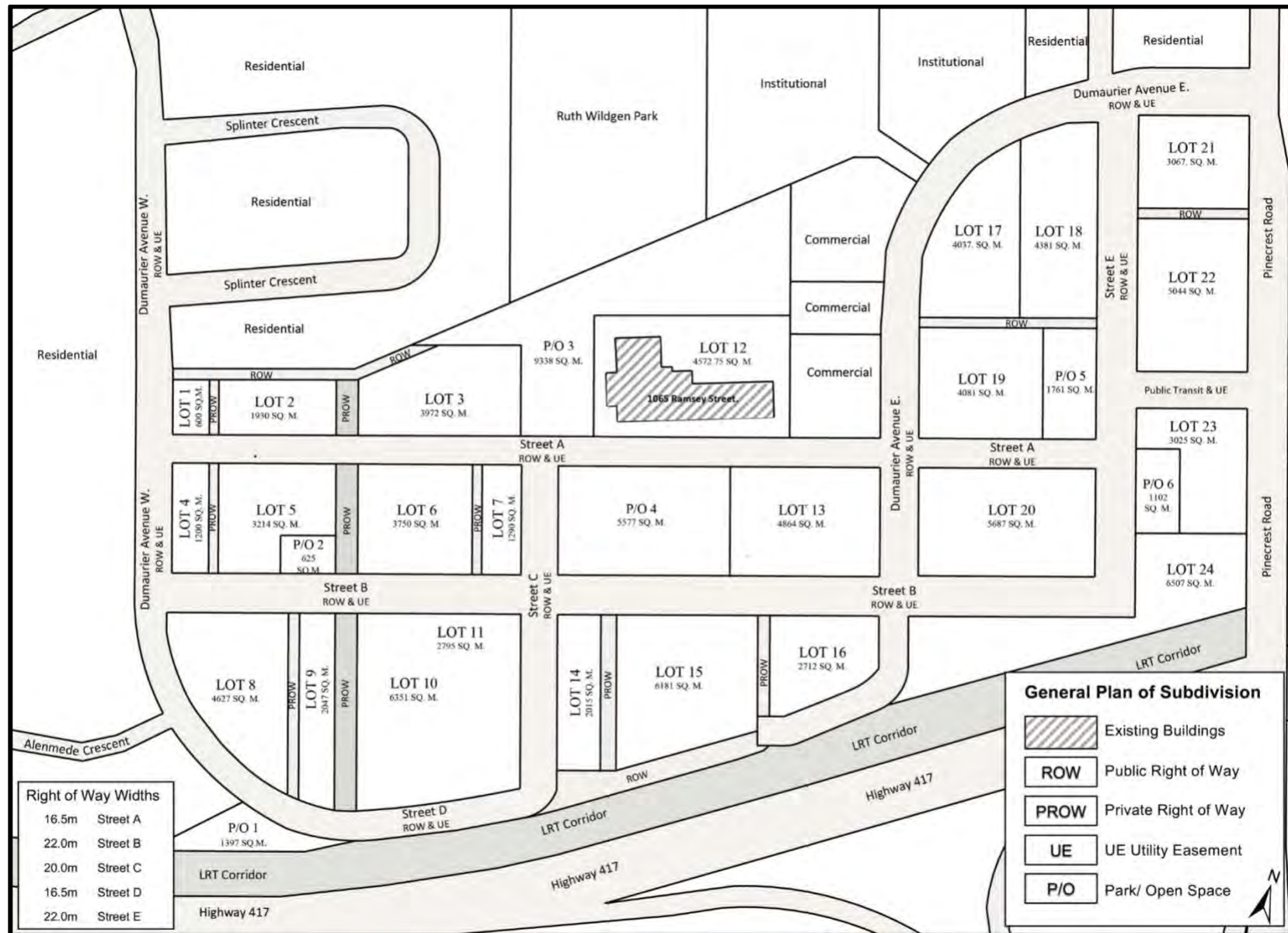


Figure F-2: Proposed Plan of Subdivision.

Appendix G – Unit Count Spreadsheets

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 Density AssumptionsG-5

 Employment AssumptionsG-5

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NON-OCH PROPERTY COUNT G-16

LANDFILL BUILT-UP G-18

FSI CALCULATIONS G-21

REFERENCE FIGURES G-23

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Summary Tables

Project Summary	Existing	Proposed
Number of dwelling units	417	3,821
Number of residents	1,373	9,017
Office Use GFA (sq.m.)	0	61,895
Retail Use GFA (sq.m.)	1,660	14,924
Number of employees	95	4,187
People and jobs per hectare	77	695
Institutional Use GFA (sq.m.)	8,900	61,371
Site coverage	0	3
Average Net FSI	1	4.4

Achieved Unit Mix	Amount	Percent
Studios	432	11%
1-bedroom	1,235	32%
2-bedroom	1,357	36%
3-bedroom	619	16%
4-bedroom	101	3%
5-bedroom	77	2%
Total	3,821	100%

District	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total
A	0	145	143	132	84	74	578
B	136	233	222	159	0	0	750
C	235	758	672	260	0	0	1,925
D	58	100	114	67	17	3	359

Former Landfill Development Potential - Number of Residential Units							
	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total
Total	144	493	497	204	14	0	1,353

Former Landfill Development Potential - Gross Floor Area (sq.m.)				
Residential	Institutional	Commercial	Office	Parking
134,474	1,353	0	7,865	1,014

Residential Units on OCH Property							
Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total
139,928	113	342	528	166	79	69	1,296

Residential Units on Other Property							
Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total
187,130	328	893	829	453	22	8	2,524

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Assumptions

Density Assumptions

The size of units was derived from a comparative analysis of existing and advertised Homestead units in the region of Ottawa and in Ontario. An average was determined for all dwelling unit types and standardized to use in this study.

Table G-1: High.

High	
Unit Type	Unit Size (sq.m.)
Bachelor	40
1-bedroom	70
2-bedroom	90
3-bedroom	160
4-bedroom	190
5-bedroom	220

Table G-2: Low.

Low	
Unit Type	Unit Size (sq.m.)
Bachelor	40
1-bedroom	70
2-bedroom	90
3-bedroom	100
4-bedroom	Not Applicable
5-bedroom	Not Applicable

Desired OCH Unit Mix	
Studios	10%
1-bedroom	38%
2-bedroom	30%
3-bedroom	14%
4-bedroom	5%
5-bedroom	3%
Total	100%

Employment Assumptions³

Due to lack of reliable methods of estimating the number of institutional employees per square metres, the number of school staff was estimated at 30, community centre staff (both OCH and Boys and Girls Clubs), was also estimated at 30, the church to be 5, and the Commercial Plaza to be another 30.

³ 15 sq. m. employee is derived from the 3rd edition of the Employment Density Guide. (Homes and Community Agency, 2015).

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Block Counts

Please see Figure G-1 for reference.

Floor Area by Use (square metres)												Comments
BLOCK A	Length	Width	Storeys	Height (m)	GFA Sq. m	Residential	No. of Units	Institutional	Commercial	Office	Parking	
BLDG A1	28	16	3	9	1,346	1,346	7	0	0	0	0	Western Extent - Townhomes
BLDG A2	30	16	4	12	1,920	1,920	9	0	0	0	0	Stacked Townhomes
BLDG A3	30	16	4	12	1,920	1,920	9	0	0	0	0	Stacked Townhomes
BLDG A4	82	16	6	18	7,872	7,872	36	0	0	0	0	Eastern Extent - Slab Apartment
PRKG A1	59	13	0	0	1,686	0	0	0	0	0	1,686	
PRKG A2	160	8	0	0	1,062	0	0	0	0	0	1,062	
Subtotal					15,806	13,058	62	0	0	0	2,748	
BLOCK B												
BLDG B1	56	16	3	9	2,696	2,696	13	0	0	0	0	Western Extent - Townhomes
BLDG B2	30	16	4	12	1,920	1,920	9	0	0	0	0	North Stacked Townhomes
BLDG B3	30	16	4	12	1,920	1,920	9	0	0	0	0	North Stacked Townhomes
BLDG B4	30	16	4	12	1,920	1,920	9	0	0	0	0	South Stacked Townhomes
PK B1	41	17			681	0	0	0	0	0	681	
Subtotal					8,456	8,456	41	0	0	0	681	
BLOCK C												
BLDG C1	31	16	4	12	1,967	1,967	10	0	0	0	0	North Stacked Townhomes
BLDG C2	30	16	4	12	1,920	1,920	9	0	0	0	0	North Stacked Townhomes
BLDG C3	Floor plate	573	3	9	1,719	1,719	8	0	0	0	0	SW Extent Townhomes (Curved Building)
BLDG C4	Floor plate	707	3	9	2,121	2,121	10	0	0	0	0	Curved Building 2
BLDG C5	92	16	5	15	7,360	7,360	70	0	0	0	0	
PRKG C1					1,056						1,056	
Subtotal					16,144	15,087	108	0	0	0	1,056	
BLOCK D												
BLDG D1	30	16	4	12	1,920	1,920	9	0	0	0	0	North Stacked Townhomes
BLDG D2	30	16	4	12	1,920	1,920	9	0	0	0	0	North Stacked Townhomes
BLDG D3	30	16	4	12	1,920	1,920	8	0	0	0	0	South Stacked Townhomes
BLDG D4	30	16	4	12	1,920	1,920	9	0	0	0	0	South Stacked Townhomes
BLDG D5	55	17	9	27	8,415	8,415	79	0	0	0	0	Eastern Extent Slab
Subtotal					16,095	16,095	117	0	0	0	0	
BLOCK E												
BLDG E1	92	16	5	15	7,360	7,360	68	0	0	0	0	Western Extent - Slab Apartment
BLDG E2	38	17	5	15	3,230	3,230	16	0	0	0		North Stacked Townhomes
BLDG E3	57	17	9	27	8,721	8,721	81	0	0	0	0	Eastern Extent Slab Apartment
BLDG E4	60	17	9	27	9,180	9,180	85	0	0	0		South Extent Slab Apt above Parking Garage
Subtotal					28,491	28,491	251	0	0	0	0	Western Extent - Slab Apartment

Floor Area by Use (square metres)												Comments
BLOCK F	Length	Width	Storeys	Height (m)	GFA Sq. m	Residential	No. of Units	Institutional	Commercial	Office	Parking	
BLDG F1	80	56	4	16	17,920			17,920	0	0	0	New Community Centre/Podium
BLDG F2	25	25	11	33	6,875	6,875	73	0	0	0	0	Western Extent Tower
BLDG F3	45	17	16	48	12,240	12,240	122	0	0	0	0	Eastern Extent Tower
Subtotal					37,035	19,115	195	17,920	0	0	0	New Community Centre/Podium
BLOCK G												
BLDG G1	80	17	10	30	13,600	13,600	132	0	0	0	0	Western Extent - Slab Apartment
BLDG G2	72	46	4	16	13,248			13,248	0	0	0	New School Site (Institutional Podium)
BLDG G3	25	30	21	63	15,750	15,750	167	0	0	0	0	Tower on School
BLDG G4	50	30	6	24	9,000	9,000	50	0	0	0	0	Eastern Extent Podium - At Grade Retail/Commercial Uses (5-metre height)
BLDG G5	30	25	26	78	19,500	19,500	206	0	0	0	0	Eastern Extent Tower on Podium
PRKING G1	85	21		N/A	1,785			0	0	0	1,785	Surface Parking at Rear of School Podium
Subtotal					72,883	57,850	555	13,248	0	0	1,785	
BLOCK H												
BLDG H1	Using Fl. Plate	1,527	10	30	15,270	15,270	162	0	0	0	0	Western Extent - Slab Apartment (Curved)
BLDG H2	90	35	4	16	12,600	11,025	106	0	1,575	0	0	Eastern Extent - Podium (New Grocery Store at grade and other uses)
BLDG H3	30	25	10	30	7,500	7,500	79	0	0	0	0	North Tower on Podium
BLDG H4	25	25	16	48	10,000	10,000	106	0	0	0	0	South Tower on Podium
BLDG H5	54	35	4	16	9,958	7,469	63	0	2,490	0	0	South Extent Podium (At Grade Retail/Commercial Uses)
BLDG H6	30	25	21	63	12,750	12,750	150	0	0	0	0	Tower on South Extent Podium
BLDG H7	54	17	10	30	9,180	9,180	97			0	0	Southwest Extent - Slab Apartment
Subtotal					68,078	64,014	763	0	4,065	0	0	
BLOCK I												
BLDG I1	90	53	4	16	19,080	14,310	145	0	4,770	14,310	0	Podium (Commercial/Retail at grade, office space above)
BLDG I2	30	25	26	78	19,500	19,500	211	0	0	0	0	West Tower on Podium
BLDG I3	30	25	35	105	26,250	26,250	258	0	0	0	0	East Tower on Podium
Subtotal					64,830	60,060	615	0	4,770	14,310	0	

Floor Area by Use (square metres)												Comments
BLOCK J	Length	Width	Storeys	Height (m)	GFA Sq. m	Residential	No. of Units	Institutional	Commercial	Office	Parking	
BLDG J1	40	50	4	16	8,000	8,000	82	0	0	0	0	Northern Extent - Residential Podium
BLDG J2	Floor Plate area	1,086	6	18	6,516	6,516	66	0	0	0	0	Northern Extent - L - Block above podium
BLDG J3		50	4	16	15,200	11,400	117	0	3,800	0	0	South Extent - Podium (At grade Commercial/mixed use podium)
BLDG J3A	76	45	1	3	3,420	3,420	35	0	0	0	0	South Extent BLDG - Level 2 Residential
BLDG J3B	76	40	1	3	3,040	3,040	31	0	0	0	0	South Extent BLDG - Level 3 Residential
BLDG J3C	76	35	1	3	2,660	2,660	27	0	0	0	0	South Extent BLDG - Level 4 Residential
BLDG J4	25	25	13	39	8,125	8,125	83	0	0	0	0	South Extent BLDG - North Tower
BLDG J5	25	25	17	51	10,625	10,625	108	0	0	0	0	South Extent BLDG - South Tower
Subtotal					57,586	53,786	548	0	3,800	0	0	
BLOCK K												
BLDG K1		2,290	4	16	9,158	0	0	0	2,290	6,869	0	Podium - Mixed use with at Grade Retail/Commercial/Office
BLDG K2	58	27	26	78	40,716	0	0	0		40,716	0	Office tower on Podium
Subtotal					49,874	0	0	0	2,290	47,585	0	
BLOCK L												
BLDG L1	40	53	4	0	8,480	0	0	8,480	0	0	0	South Podium
BLDG L2	25	25	20	0	12,500	12,500	132	0	0	0	0	Tower
BLDG L3	42	29	4	0	4,872	0	0	4,872	0	0	0	North Podium
BLDG L4	25	25	15	0	9,375	9,375	99	0	0	0	0	Tower
BLDG L5	30	15	6	0	2,700	2,700	29	0	0	0	0	6-storey Wood Frame Apt.
BLDG L6	30	13	3	0	1,170	1,170	6	0	0	0	0	3-storey back to back Townhome
Subtotal					35,227	21,875	266	13,352	0	0	0	
BLOCK M												
BLDG M1	48	30	5	0	7,200	0	0	7,200	0	0	0	New Boys and Girls Addition
BLDG M2	Floor Plate	3,217	3	0	9,651	0	0	9,651	0	0	0	New School (L-Shape)
BLDG M3	75	15	4	0	4,500	4,500	51	0	0	0	0	Residential Above School
PK M1					3,010						3,010	
Subtotal					24,361	4,500	51	16,851	0	0	3,010	

Floor Area by Use (square metres)												Comments
BLOCK N	Length	Width	Storeys	Height (m)	GFA Sq. m	Residential	No. of Units	Institutional	Commercial	Office	Parking	
BLDG N1	28	13	3	0	1,092	1,092	6	0	0	0		Back to Back Townhomes
BLDG N2	28	13	3	0	1,092	1,092	6	0	0	0		Back to Back Townhomes
BLDG N3	28	13	3	0	1,092	1,092	6	0	0	0		Back to Back Townhomes
BLDG N4	28	13	3	0	1,092	1,092	6	0	0	0		Back to Back Townhomes
BLDG N5	28	13	3	0	1,092	1,092	6	0	0	0		Back to Back Townhomes
BLDG N6	50	28	1	0	1,400	0	0	0	0	0		New Church (1 storey at 9 metres)
BLDG N7	24	13	3	0	936	936	10	0	0	0		Residential Above Church
PK N1					1,014						1,014	
Subtotal					8,810	6,396	42	0	0	0	1,014	
BLOCK O												
BLDG O1	Floor Plate	1,556	14	42	21,784	17,427	208					OCH Apartment Building
Subtotal					21,784	17,427	208					
					Total GFA	Residential		Institutional	Commercial	Office	Parking	
Total (sq.m)					503,675	364,283		61,371	14,924	61,895	10,294	
80% Building Efficiency						291,426		49,097	11,939	49,516	N/A	
Sq. Ft.					5,421,517	3,921,105		660,592	160,641	666,227	110,804	

** Does not include Blocks A, B, C, D, E of rear surface parking**

Podium Height in M	
Residential: 3m	3
Commercial: 4m	4
At Grade podium: 5m	5

Gross Employee Density	
Office Space	Employee
49,516	3,301
* See assumptions	
Retail Space	Employee
11,939	796
Institutional Space	Employee
49,097	90
Total amount of employees	4,187

*Calculated at 1 employee per 15 sq.m.

*This number is purely for estimation.
Actual number of retail employees would very likely be much lower

Gross Number of Employees per Hectare
220
*See assumptions

Building Density Calculations

Please see Figure G-1 for reference.

Unit Breakdown		Residential Unity Type						Total	Comments
BLOCK A	GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG A1	1,346	0	0	0	0	4	3	7	Western Extent - Townhomes (50% 4BED, 50% 5BED)
BLDG A2	1,920	0	0	0	0	5	4	9	Stacked Townhomes
BLDG A3	1,920	0	0	0	0	5	4	9	Stacked Townhomes
BLDG A4	6,298	0	0	20	17	0	0	36	Eastern Extent - Slab Apartment
Subtotal	11,484	0	0	20	17	14	12	62	*Numbers have been rounded
BLOCK B									
BLDG B1	2,696	0	0	0	0	7	6	13	Western Extent - Townhomes
BLDG B2	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG B3	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG B4	1,920	0	0	0	0	5	4	9	South Stacked Townhomes
Subtotal	8,456	0	0	0	0	22	19	41	*Numbers have been rounded
BLOCK C									
BLDG C1	1,967	0	0	0	0	5	4	10	North Stacked Townhomes
BLDG C2	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG C3	1,719	0	0	0	0	4	4	8	SW Extent Townhomes (Curved Building)
BLDG C4	1,697	0	0	0	0	4	5	10	Curved Building 2
BLDG C5	5,888	0	29	26	15	0	0	70	Eastern Extent - Slab Apartment
Subtotal	13,191	0	29	26	15	19	18	108	*Numbers have been rounded
BLOCK D									
BLDG D1	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG D2	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG D3	1,920	0	0	0	0	5	4	9	South Stacked Townhomes
BLDG D4	1,920	0	0	0	0	5	4	9	South Stacked Townhomes
BLDG D5	6,732	0	29	30	20	0	0	79	Eastern Extent Slab
Subtotal	14,412	0	29	30	20	20	17	117	*Numbers have been rounded
BLOCK E									
BLDG E1	5,888	0	25	20	24	0	0	68	Western Extent - Slab Apartment
BLDG E2	3,230	0	0	0		9	7	16	North Stacked Townhomes
BLDG E3	6,977	0	30	23	28	0	0	81	Eastern Extent Slab Apartment
BLDG E4	7,344	0	31	24	29	0	0	85	South Extent Slab Apt
Subtotal	23,439	0	87	67	81	9	7	251	*Numbers have been rounded
District A Total:	47,542	0	145	143	132	84	74	578	

Unit Breakdown		Residential Unity Type						Total	Comments
BLOCK F	GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG F1	0	0	0	0	0	0	0	0	New Community Centre/Podium
BLDG F2	5,500	14	24	24	11	0	0	73	Western Extent Tower
BLDG F3	9,792	24	42	36	20	0	0	122	Eastern Extent Tower
Subtotal	15,292	38	66	61	31	0	0	195	*Numbers have been rounded
BLOCK G									
BLDG G1	10,880	27	47	36	22	0	0	132	Western Extent - Slab Apartment
BLDG G2	0	0	0	0	0	0	0	0	New School Site (Institutional Podium)
BLDG G3	12,600	32	54	56	25	0	0	167	Tower on School
BLDG G4	7,200	0	0	0	50	0	0	50	Eastern Extent Podium - At Grade Retail (5m height)
BLDG G5	15,600	39	67	69	31	0	0	206	Eastern Extent Tower on Podium
PRKING G6	0	0	0	0	0	0	0	0	Surface Parking at Rear of School Podium
Subtotal	46,280	98	167	162	129	0	0	555	*Numbers have been rounded
BLOCK H									
BLDG H1	12,216	31	52	54	24	0	0	162	Western Extent - Slab Apartment (Curved)
BLDG H2	8,820	0	50	29	26	0	0	106	Eastern Extent - Podium
BLDG H3	6,000	15	26	27	12	0	0	79	North Tower on Podium
BLDG H4	8,000	20	34	36	16	0	0	106	South Tower on Podium
BLDG H5	5,975	0	26	20	18	0	0	63	South Extent Podium (At Grade Retail Uses)
BLDG H6	10,200	26	58	45	20	0	0	150	Tower on South Extent Podium
BLDG H7	7,344	18	31	33	15	0	0	97	Southwest Extent - Slab Apartment
Subtotal	58,555	109	278	244	132	0	0	763	*Numbers have been rounded
BLOCK I									
BLDG I1	11,448	0	82	64	0	0	0	145	Podium (Retail at grade, office space above)
BLDG I2	15,600	39	89	52	31	0	0	211	West Tower on Podium
BLDG I3	21,000	53	93	70	42	0	0	258	East Tower on Podium
Subtotal	48,048	92	264	186	73	0	0	615	*Numbers have been rounded
BLOCK J									
BLDG J1	6,400	0	32	50	0	0	0	82	Northern Extent - Residential Podium
BLDG J2	5,213	7	26	23	10	0	0	66	Northern Extent - L - Block above podium
BLDG J3	9,120	0	46	71	0	0	0	117	South Extent - Podium
BLDG J3A	2,736	3	14	12	5	0	0	35	South Extent BLDG - Level 2 Residential
BLDG J3B	2,432	3	12	11	5	0	0	31	South Extent BLDG - Level 3 Residential
BLDG J3C	2,128	3	11	9	4	0	0	27	South Extent BLDG - Level 4 Residential
BLDG J4	6,500	8	33	29	13	0	0	83	South Extent BLDG - North Tower
BLDG J5	8,500	11	43	38	17	0	0	108	South Extent BLDG - South Tower
Subtotal	43,029	34	215	243	55	0	0	548	*Numbers have been rounded

Unit Breakdown		Residential Unity Type						Total	Comments
BLOCK K	GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG K1		0	0	0	0	0	0	0	Podium - Mixed use with at Grade Retail/Office
BLDG K2		0	0	0	0	0	0	0	Office tower on Podium
Subtotal		0	0	0	0	0	0	0	*Numbers have been rounded
District C Total	235	235	758	672	260	0	0	1,925	
BLOCK L									
BLDG L1	0	0	0	0	0	0	0		South Podium
BLDG L2	10,000	25	43	44	20	0	0	132	Tower
BLDG L3	0	0	0	0	0	0	0		North Podium
BLDG L4	7,500	19	32	33	15	0	0	99	Tower
BLDG L5	2,160	5	9	10	4	0	0	29	6-storey Wood Frame Apt.
BLDG L6	1,170	0	0	0	0	3	3	6	3-storey back to back Townhome
Subtotal	20,830	49	84	87	39	3	3	266	*Numbers have been rounded
BLOCK M									
BLDG M1	0	0	0	0	0	0	0	0	New Boys and Girls Addition
BLDG M2	0	0	0	0	0	0	0	0	New School (L-Shape)
BLDG M3	3,600	9	15	16	11	0	0	51	Residential Above School
Subtotal	3,600	9	15	16	11	0	0	51	*Numbers have been rounded
BLOCK N									
BLOCK N									Back to Back Townhomes
BLDG N1	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N2	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N3	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N4	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N5	1,092	0	0	0	3	3	0	6	New Church (1 storey at 9 metres)
BLDG N6	0	0	0	0	0	0	0		Residential Above Church
BLDG N7	936	0	0	10	0	0	0	10	Back to Back Townhomes
Subtotal	6,396	0	0	10	17	14	0	42	*Numbers have been rounded
District D Total	30,826	58	100	114	67	17	3	359	
BLOCK O									
BLDG O1		3	0	205	0	0	0	208	
Subtotal		3	0	205	0	0	0	208	
TOTAL		432	1,235	1,357	619	101	77	3,821	
PERCENTAGE		0	0	0	0	0	0	1%	

Gross Resident Density a 2.36 resident per Unit	
Number of units	Number of Residents
3,821	9,017

*See Density Analysis

Residents Per Hectare
475

*Calculated for Pinecrest Foster Farm area - See Density Analysis

OCH Property Unit Count

Please see Figure G-1 for reference

Unit Type	Existing Unit Composition on OCH property						Total
	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	
Townhouses				144	20	45	209
Apartment	3		205				208
Total	3		205	144	20	45	417

Proposed Unit Composition									Comments
BLOCK A	Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total	
BLDG A1	2,696	0	0	0	0	4	3	7	Townhomes (50% 4BED, 50% 5BED)
BLDG A2	1,920	0	0	0	0	5	4	9	Stacked Townhomes
BLDG A3	1,920	0	0	0	0	5	4	9	Stacked Townhomes
Total	6,536	0	0	0	0	14	12	25	
BLOCK B									
BLDG B1	1,920	0	0	0	0	7	6	13	Western Extent - Townhomes
BLDG B2	8,456	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG B3	0	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG B4	0	0	0	0	0	5	4	9	South Stacked Townhomes
Total	10,376	0	0	0	0	22	19	41	
BLOCK C									
BLDG C1	2,121	0	0	0	0	5	4	10	North Stacked Townhomes
BLDG C2	7,360	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG C3	15,087	0	0	0	0	4	4	8	SW Extent Townhomes (Curved Building)
Total	24,568	0	0	0	0	15	13	27	
BLOCK D									
BLDG D1	0	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG D2	1,920	0	0	0	0	5	4	9	North Stacked Townhomes
BLDG D3	1,920	0	0	0	0	4	4	9	South Stacked Townhomes
BLDG D4	1,920	0	0	0	0	5	4	9	South Stacked Townhomes
Total	5,760	0	0	0	0	20	17	37	
BLOCK E									
BLDG E2	8,415	0	0	0		9	7	16	North Stacked Townhomes
BLDG E3	12,876	0	30	23	28	0	0	81	Eastern Extent Slab Apartment
Total	21,291	0	30	23	28	9	7	97	
BLOCK F									
BLDG F2	2,584	14	24	24	11	0	0	73	Western Extent Tower
BLDG F3	6,977	24	42	36	20	0	0	122	Eastern Extent Tower
Total	9,561	38	66	61	31	0	0	195	

BLOCK H	Proposed Unit Composition							Total	Comments
	Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG H1	0	31	52	54	24			162	Western Extent - Slab Apartment (Curved)
BLDG H2	0	0	50	29	26	0	0	106	Eastern Extent - Podium
BLDG H3	5,500	15	26	27	12			79	North Tower on Podium
BLDG H4	9,792	20	34	36	16			106	South Tower on Podium
BLDG H5	15,292	0	26	20	18	0	0	63	South Extent Podium
Total	30,584	66	188	166	97	0	0	517	
BLOCK J									
BLDG J1	6,400	0	32	50	0	0	0	82	
BLDG J2	5,213	7	26	23	10	0	0	66	
Total	11,613	7	58	73	10	0	0	148	
BLOCK O									
BLDG O1	19,640	3		205				208	
Total	19,640	3		205				208	
TOTAL	139,928	113	342	528	166	79	69	1,296	
PERCENTAGE	-	9%	26%	41%	13%	6%	5%	100%	

Non-OCH Property Count

Please see Figure G-1 for reference

Unit Breakdown		Residential Unit type						Total	Comments
BLOCK A	Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG A4	6,298	0	0	20	17	0	0	37	Eastern Extent - Slab Apartment
Subtotal	6,298	0	0	20	17	0	0	36	*Numbers have been rounded
BLOCK C									
BLDG C4	1,697	0	0	0	0	4	5	10	Curved Building 2
BLDG C5	5,888	0	29	26	15	0	0	70	Eastern Extent - Slab Apartment
Subtotal	7,585	0	29	26	15	4	5	80	*Numbers have been rounded
BLOCK D									
BLDG D5	6,732	0	29	30	20	0	0	79	Eastern Extent Slab
Subtotal	6,732	0	29	30	20	0	0	79	*Numbers have been rounded
BLOCK E									
BLDG E1	5,888	0	25	20	24	0	0	68	Western Extent - Slab Apartment
BLDG E4	7,344	0	31	24	29	0	0	85	South Extent Slab Apt
Subtotal	13,232	0	57	44	53	0	0	154	*Numbers have been rounded
District A Total:	33,846	0	115	120	104	4	5	349	
BLOCK G									
BLDG G1	10,880	27	47	36	22	0	0	132	Western Extent - Slab Apartment
BLDG G2	0	0	0	0	0	0	0	0	New School Site (Institutional Podium)
BLDG G3	12,600	32	54	56	25	0	0	167	Tower on School
BLDG G4	7,200	0	0	0	50	0	0	50	Eastern Extent Podium - At Grade Retail Uses (5-metre height)
BLDG G5	15,600	39	67	69	31	0	0	206	Eastern Extent Tower on Podium
PRKING G6	0	0	0	0	0	0	0	0	Surface Parking at Rear of School Podium
Subtotal	46,280	98	167	162	129	0	0	555	*Numbers have been rounded
District B Total:	46,280	98	167	162	129	0	0	555	
BLOCK H									
BLDG H6	10,200	26	58	45	20	0	0	150	Tower on South Extent Podium
BLDG H7	7,344	18	31	33	15	0	0	97	Southwest Extent - Slab Apartment
Subtotal	17,544	44	90	78	35	0	0	247	*Numbers have been rounded
BLOCK I									
BLDG I1	11,448	0	82	64	0	0	0	145	Podium (Commercial/Retail at grade, office space above)
BLDG I2	15,600	39	89	52	31	0	0	211	West Tower on Podium
BLDG I3	21,000	53	93	70	42	0	0	258	East Tower on Podium
Subtotal	48,048	92	264	186	73	0	0	615	*Numbers have been rounded

Unit Breakdown		Residential Unit type						Total	Comments
BLOCK J	Residential GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom		
BLDG J3	9,120	0	46	71	0	0	0	117	South Extent - Podium (At grade retail/mixed use podium)
BLDG J3A	2,736	3	14	12	5	0	0	35	South Extent BLDG - Level 2 Residential
BLDG J3B	2,432	3	12	11	5	0	0	31	South Extent BLDG - Level 3 Residential
BLDG J3C	2,128	3	11	9	4	0	0	27	South Extent BLDG - Level 4 Residential
BLDG J4	6,500	8	33	29	13	0	0	83	South Extent BLDG - North Tower
BLDG J5	8,500	11	43	38	17	0	0	108	South Extent BLDG - South Tower
Subtotal	31,416	28	157	170	45	0	0	400	*Numbers have been rounded
District C Total	97,008	163	511	434	153	0	0	1,261	
BLOCK L									
BLDG L1	0	0	0	0	0	0	0		South Podium
BLDG L2	10,000	25	43	44	20	0	0	132	Tower
BLDG L3	0	0	0	0	0	0	0		North Podium
BLDG L4	7,500	19	32	33	15	0	0	99	Tower
BLDG L5	2,160	5	9	10	4	0	0	29	6-storey Wood Frame Apt.
BLDG L6	1,170	0	0	0	0	3	3	6	3-storey back to back Townhome
Subtotal	20,830	49	84	87	39	3	3	266	*Numbers have been rounded
BLOCK M									
BLDG M1	0	0	0	0	0	0	0	0	New Boys and Girls Addition
BLDG M2	0	0	0	0	0	0	0	0	New School (L-Shape)
BLDG M3	3,600	9	15	16	11	0	0	51	Residential Above School
Subtotal	3,600	9	15	16	11	0	0	51	*Numbers have been rounded
BLOCK N									
BLDG N1	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N2	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N3	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N4	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N5	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N6	0	0	0	0	0	0	0		New Church (1 storey at 9 metres)
BLDG N7	936	0	0	10	0	0	0	10	Residential Above Church
Subtotal	6,396	0	0	10	17	14	0	42	*Numbers have been rounded
District D Total	30,826	58	100	114	67	17	3	359	
TOTAL	187,130	328	893	829	453	22	8	2,524	
PERCENTAGE		0	0	0	0	0	0	1%	

Total Residents @ 2.36 resident per Unit	
No. of Units	No. of Residents
2,524	5,957

*See Density Analysis

Residents per Hecate
314

*See Density Analysis

Landfill Built-up

Please see Figure G-2 for reference

Landfill Built-out Residential Only									
BLOCK H	GFA	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	5 Bedroom	Total	Comments
BLDG H1	12,216	31	52	54	24	0	0	162	Western Extent - Slab Apartment (Curved)
BLDG H2	8,820	0	50	29	26	0	0	106	Eastern Extent - Podium
BLDG H3	6,000	15	26	27	12	0	0	79	North Tower on Podium
BLDG H4	8,000	20	34	36	16	0	0	106	South Tower on Podium
BLDG H5	5,975	0	26	20	18	0	0	63	South Extent Podium (At Grade Retail Uses)
BLDG H6	10,200	26	58	45	20	0	0	150	Tower on South Extent Podium
BLDG H7	7,344	18	31	33	15	0	0	97	Southwest Extent - Slab Apartment
Subtotal	58,555	109	278	244	132	0	0	763	*Numbers have been rounded
BLOCK J									North Stacked Townhomes
BLDG J1	6,400	0	32	50	0	0	0	82	Northern Extent - Residential Podium
BLDG J2	5,213	7	26	23	10	0	0	66	Northern Extent - L - Block above podium
BLDG J3	9,120	0	46	71	0	0	0	117	South Extent - Podium
BLDG J3A	2,736	3	14	12	5	0	0	35	South Extent BLDG - Level 2 Residential
BLDG J3B	2,432	3	12	11	5	0	0	31	South Extent BLDG - Level 3 Residential
BLDG J3C	2,128	3	11	9	4	0	0	27	South Extent BLDG - Level 4 Residential
BLDG J4	6,500	8	33	29	13	0	0	83	South Extent BLDG - North Tower
BLDG J5	8,500	11	43	38	17	0	0	108	South Extent BLDG - South Tower
Subtotal	43,029	34	215	243	55	0	0	548	*Numbers have been rounded
BLOCK N									
BLDG N1	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N2	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N3	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N4	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N5	1,092	0	0	0	3	3	0	6	Back to Back Townhomes
BLDG N6	0	0	0	0	0	0	0	0	New Church (1 storey at 9 metres)
BLDG N7	936	0	0	10	0	0	0	10	Residential Above Church
Subtotal	6,396	0	0	10	17	14	0	42	*Numbers have been rounded
Total		144	493	497	204	14	0	1,353	North Stacked Townhomes

Floor Area by Use (sq.m.)												
	Length	Width	Storeys	Height(m)	GFA sq.m.	Residential	Residential Units	Institutional	Commercial	Office	Parking	Comments
BLOCK H												
BLDG H1	Floor Plate	1,527	10	30	15,270	15,270	162	0	0	0	0	
BLDG H2	90	35	4	16	12,600	11,025	106	0	1,575	0	0	
BLDG H3	30	25	10	30	7,500	7,500	79	0	0	0	0	
BLDG H4	25	25	16	48	10,000	10,000	106	0	0	0	0	
BLDG H5	54	35	4	16	9,958	7,469	63	0	2,490	0	0	
BLDG H6	30	25	21	63	12,750	12,750	150	0	0	0	0	
BLDG H7	54	17	10	30	9,180	9,180	97	0	0	0	0	
Subtotal	0	0	0	0	68,078	64,014	763	0	4,065	0	0	
BLOCK J												
BLDG J1	40	50	4	16	8,000	8,000	82	0	0	0	0	
BLDG J2	Floor Plate	1,086	6	18	6,516	6,516	66	0	0	0	0	
BLDG J3	76	50	4	16	15,200	11,400	117	0	3,800	0	0	
BLDG J3A	76	45	1	3	3,420	3,420	35	0	0	0	0	
BLDG J3B	76	40	1	3	3,040	3,040	31	0	0	0	0	
BLDG J3C	76	35	1	3	2,660	2,660	27	0	0	0	0	
BLDG J5	8,500	11	43	38	17	0	0	108	0	0	0	
Subtotal	43,029	34	215	243	55	0	0	548	3,800	0	0	
BLOCK N												
BLDG N1	28	13	3	0	1,092	1,092	6	0	0	0	0	Back to Back Townhomes
BLDG N2	28	13	3	0	1,092	1,092	6	0	0	0	0	Back to Back Townhomes
BLDG N3	28	13	3	0	1,092	1,092	6	0	0	0	0	Back to Back Townhomes
BLDG N4	28	13	3	0	1,092	1,092	6	0	0	0	0	Back to Back Townhomes
BLDG N5	28	13	3	0	1,092	1,092	6	0	0	0	0	Back to Back Townhomes
BLDG N6	50	28	1	0	1,400	0	0	0	0	0	0	New Church (1 storey at 9 metres)
BLDG N7	24	13	3	0	936	936	10	0	0	0	0	Residential Above Church
Subtotal		0	0	0	8,810	6,396	42	0	0	0	1,014	
Total					134,474	124,196	1,353	0	7,865		1,014	

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FSI Calculations

Please see Figure G-1, G-3 & G-4 for reference

Existing Conditions	
Residential GFA	
Townhouses	25,140
Apartment complex	19,640
Total:	44,780
Retail GFA	
Giant Tiger plaza	14,000
Total:	14,000
Institutional GFA	
B+G Club	3,600
Abraar School	4,000
St-Remi Church	1,300
Total	8,900
Total Built Form	67,680

Green Space	
Dumaurier Park	20,822
Ruth Wildgen Park	18,483
Total	39,305

NET FSI	0.50	* Site coverage for Foster Farm
GROSS FSI	0.35	*Site Coverage for Pinecrest - Foster Farm

Block	Area (sq.m)	GFA (sq.m)	NET FSI
A	7,243	15,806	2.18
B	4,901	8,456	1.73
C	7,278	16,144	2.22
D	5,351	16,095	3.01
E	9,145	28,491	3.12
F	4,864	37,035	7.61
G	13,240	72,883	5.50
H	13,484	68,078	5.05
I	5,687	64,830	11.40
J	8,444	57,586	6.82
K	3,025	49,874	16.48
L	8,787	35,227	4.01
M	13,198	24,361	1.85
N	7,787	8,810	1.13
O	5,896	21,784	3.69
TOTAL	118,333	525,459	4.44

Green Space	
P1	21,080
P2	3,397
P3	3,007
P4	5,577
P5	535
P6	1,397
P7	1,659
P8	1,101
TOTAL	37,753

Surface Parking	
PK A1	1,686
PK A2	1,062
PK B1	681
PK C1	1,056
PK G1	1,785
PK M1	3,010
PK N1	1,014
Total	10,294

Road Space	
RD1	1,948
RD2	2,130
RD3	924
RD4	2,674
RD5	1,295
RD6	3,590
RD7	2,695
RD8	2,126
RD9	2,382
RD10	3,830
RD11	1,450
RD12	1,443
RD13	1,117
RD14	1,876
RD15	1,754
RD16	2,343
RD17	1,238
RD18	1,259
RD19	1,249
RD20	1,251
RD21	598
TOTAL	38,573

TOTAL Area (sq.m)	194,659
TOTAL in Area in (ha)	19.47
GROSS FSI	2.70
GROSS FSI*	3.03

*Excluding Ruth Wildgen Park

Reference Figures



Figure G-1: Site plan showing buildings and parking spaces by block.



Figure G-2: Environmental and infrastructure constraints.



Figure G-3: Current land ownership.⁴⁷⁶



Figure G-4: Open spaces and roads.

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Appendix H – Affordable Housing Strategy

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Overview

The Affordable Housing Strategy was developed to guide the Concept Plan in order to ensure significant consideration was given to the affordable housing aspect of this redevelopment. This strategy provides both an overview of the need for redevelopment as well as considerations for how it should occur.

Introduction

A hot real estate market and the rising cost of home ownership has resulted in numerous people turning towards rental housing. In combination with a strengthened economy and growing immigration rates, this has led to a decrease in vacancy rates across Ontario, reaching lows not seen since 2000⁴⁷⁷. This lower vacancy rate has contributed to higher rents, which are now rising above the rates set out by the provincial guidelines⁴⁷⁸. Persistent affordability issues in urban markets have placed a greater demand on an already limited supply of affordable housing and new production has been extremely limited⁴⁷⁹. The low turnover rate has led to it taking multiple years for spots to open up on subsidized housing waiting lists, as reflected in the 171,360 households on the Social Housing Register of Ontario as of 2015⁴⁸⁰. The shift in governmental approaches to housing has been problematic for associated programs with the disengagement and reengagement of various funding models.

Ottawa Community Housing recognizes the need to replace their units within the Study Area, as well as increase the overall supply to meet the demand of individuals on the waiting lists. The current stock of OCH housing at Foster Farm, which needs replacement, consists of townhomes built in the 1970s. As these buildings near the end of their lifecycle, it is integral that new units are developed in an efficient and user-friendly manner. The Pinecrest Foster Farm redevelopment has the potential to add several hundred units to Ottawa's affordable housing portfolio.

Facilitating Redevelopment

In order to facilitate the replacement of the existing townhomes and the addition of new affordable housing units, political and financial considerations need to be thoroughly examined. Policies, costs, and funding options are outlined below to highlight key factors which will constrain or enable redevelopment.

Policy

There are many notable policies that include affordable housing provisions within them, whether directly or indirectly. OCH should look to capitalize on these policies to facilitate the Pinecrest Foster Farm redevelopment.

National Housing Strategy

The National Housing Strategy (NHS) is a ten-year, \$40-billion plan that will provide Canadians with 100,000 new housing units, as well as provide repairs to 300,000 housing units⁴⁸¹. The NHS plans to "...build housing that is sustainable, accessible, mixed-income, and mixed-use. [It] will build housing that is fully integrated into the community—close to transit, close to work, and close to public services"⁴⁸². The vision of the NHS closely aligns with the Pinecrest Foster Farm proposal of creating a community with mixed-incomes and mixed-housing types located near a transit station.

The program will focus on a rights-based approach that will enable the provision of housing to those needing it the most (seniors, Indigenous people, those experiencing abuse, people with disabilities, people with mental health issues, people suffering addiction, and young adults)⁴⁸³. Also, housing will be considered a human right ensuring everyone has access to a home⁴⁸⁴. The program will involve local organizations representing those in need of housing to "...participate in housing policy and housing project decision-making"⁴⁸⁵. The government will increase federal investment by \$2.3 billion, in addition to its annual investment of \$1.7 billion, to provide support for affordable housing. Investment to expand affordable housing over two years at the provincial and territorial level will be of \$1.4 billion, and \$870 million at the federal level to support federal run programs⁴⁸⁶. The investment will provide the following:

- Provincial and Territorial Level⁴⁸⁷
 - Double the investment in affordable housing (IAH);
 - Increase in affordable housing for seniors (IAH);
 - Increase affordable housing for victims of family violence (IAH);

- Support energy- and water-efficiency retrofits to existing community housing (IAH);
- Support northern housing (IAH)
- Federal Level⁴⁸⁸
 - Renovate and retrofit existing federally-administered community housing;
 - Rent subsidies for federally-administered community housing providers;
 - Tackle homelessness;
 - Improve housing in First Nations communities;
 - Support Inuit housing;
 - Develop a housing internship initiative for First Nations and Inuit youth;
 - Support the construction of affordable rental housing – Affordable Rental Innovation Fund;
 - Support the Rental Construction Financing Initiative;
 - Assist homeowners affected by pyrrhotite;
 - Offer prepayment flexibilities for co-operative and non-profit housing;
 - Address gaps in housing market information and data

Planning Act, 1990

The private sector often plays an important role in the development of affordable housing; therefore, the City could use Section 37 of the *Planning Act* to encourage private developers to provide new affordable housing units. Since the Pinecrest Foster Farm community is located within the General Urban Area, the City would prefer a development that incorporates mixed-incomes and a variety housing types that will create a diverse population and urban fabric⁴⁸⁹.

City of Ottawa's Official Plan

The City's *Official Plan* (OP) acknowledges the need to build in a sustainable and compact manner, while increasing density and developing on transit hubs to provide municipal services and affordable housing⁴⁹⁰. Section 2 of the OP notes that affordable housing should be provided in new and complete communities⁴⁹¹. Furthermore, the OP provides an overview of affordable housing, including policies that will "...contribute to improving the supply of affordable housing in concert with other City initiatives to support the construction of affordable units"⁴⁹².

There is an undersupply of housing, which puts pressure on the current housing stock⁴⁹³. Additionally, the demolition of affordable housing to make way for new development would potentially put more stress on an already undersupplied program. Therefore, the policies in the OP focus on the inclusion of diverse housing types and mixed-incomes for future residential developments⁴⁹⁴.

Table H-1: City of Ottawa's Official Plan affordable housing policies⁴⁹⁵.

Policies ⁴⁹⁶
Criteria for development and redevelopment of affordable housing: <ul style="list-style-type: none"> - 25 percent of all new rental housing is to be affordable - 25 percent of all new ownership housing is to be affordable, where households will pay no more than 40 percent of their gross annual income
Update housing strategy every five years with annual monitoring: <ul style="list-style-type: none"> - Establish targets for the distribution of affordable housing by tenure and size of unit - Ensure distribution of a variety of affordable housing in all areas of Ottawa
Investigate means to increase the supply of affordable housing by involving the private sector, non-profits, and corporate housing providers
Surplus land that is suitable for residential development will be prioritized for affordable housing before any other use
The City will prioritize applications for affordable housing developments from non-profit housing corporations and housing co-operatives
The City will exempt its processing fees for social housing projects

Community Design Plans

The City of Ottawa uses Community Design Plans to inform neighbourhood development and affordable housing policies can be included in these plans. The *Official Plan* outlines the purpose of CDPs as a way to use a collaborative planning approach involving stakeholders and residents in the area to create complete communities⁴⁹⁷. Incorporating affordable housing into a CDP for the Pinecrest Foster Farm community will create a mixed-income housing approach that will help to eliminate stigmatization surrounding affordable housing.

10 Year Housing and Homelessness Plan

The City of Ottawa's *10 Year Housing and Homelessness Plan* focuses on prevention and support. Through the development of the plan, the City will create "...an integrated system that aligns assets, funding, services, supports, policies and programs to respond to our clients' needs in a holistic manner"⁴⁹⁸.

The key priorities would increase affordable housing by maintaining, building, and acquiring homes to meet people's needs; furthermore, houses will be located in mixed-income communities close to transportation, shops, and jobs⁴⁹⁹. The program will follow a housing first approach by providing support to those suffering from domestic abuse, Indigenous peoples, seniors, and youth. The last priority seeks to create an integrated system that focuses on preventing homelessness, instead of only responding to it⁵⁰⁰. This approach will allow the City and housing organizations to work together to "...develop thriving communities where people want to live"⁵⁰¹.

Cost Considerations

Although the costs per unit will vary based on the building forms proposed, some rough assumptions for the hard costs of construction can be detailed. Although hard costs are more readily accounted for, soft costs are not accounted for and can include a multitude of factors, including land related costs, architectural and engineering fees, municipal fees, property taxes, permit costs, insurance costs, legal fees, and more.

Table H-2: Ottawa's 2018 construction costs⁵⁰².

Building Type	Unit Type	\$/Sq. Ft.
Condominiums / Apartments	Up to six-storeys (hybrid construction)	190 – 235
	Up to twelve-storeys	200 - 255
	Thirteen- to 39-storeys	205 - 275
	Premium for high quality	55-160
	Row townhouse with unfinished basement	110 - 150
Wood-Framed Residential	Three-storey stacked townhouse	140 - 170
	Up to four-storey wood-framed condo	150 - 185
	Five- to six-storey wood-framed condo	150 - 185
	Additional cost for one level of underground parking	95-130
Housing for Seniors	Independent / supportive living residences	160 - 245
	Assisted living residences	190 - 250

Table H-3: General building cost estimates⁵⁰³.

Structure	Total Sq.Ft	Cost (Avg of \$/Sq. Ft. Range)
Six-storey apartment	50,000	\$10,625,000
Twelve-storey apartment	100,000	\$22,750,000
30-storey apartment	300,000	\$72,000,000
Five row townhouse units	11,000	\$1,430,000
Five three-storey stacked townhouse units (ten units)	20,000	\$3,100,000
*Total square feet of structures are estimates		

Feasibility

Making effective use of assets and existing resources is essential for the success of affordable housing developments. Understanding how income-mixing in developments has occurred in the past, and highlighting some financial considerations for the project, will allow for greater success in the planning of the Pinecrest Foster Farm community. When examining income-mixing across the United States, United Kingdom, Australia, New Zealand, and Canada, the average proportion of low-income households in the developments varied between five percent and 50 percent⁵⁰⁴. However, the majority of projects saw only ten percent to 25 percent of the total units allocated to lower-income households. In Canada, targets for low-income housing ranged from 50 to 100 percent, but completed projects usually fell to the 30 to 70 percent range⁵⁰⁵.

The research and related case studies on income mixing, as well as the case studies examined, illustrate that the minimum proportion of market units is often around 50 percent. This is thought to occur for a number of reasons, but primarily for financial viability, marketing of units, and property management⁵⁰⁶. The proportions of each type of unit in the Pinecrest Foster Farm redevelopment will be directed by the funding and partnerships achieved for redevelopment but will likely see similar mixing of rents and income levels. However, due to the long redevelopment timeframe and uncertainties around funding, it is not incorrect to set an ambitious goal of up to 50 percent affordable housing units for the redevelopment.

Table H-4: Income-mixing case study highlights.

Project	Project Overview	Income Mix	Cost of Development
Beaver Barracks, Ottawa, Ontario, Canada ^{507;508}	245 units in five buildings, developed on a brownfield site	45 percent low income (RGI), fifteen percent moderate income, 40 percent market	\$84 million \$342,857 per unit
CNSP Project, Summerside, PEI, Canada ⁵⁰⁹	Fourteen affordable rental three-bedroom townhomes in a much larger residential development	Less than five percent affordable, 95 percent market	\$1.3 million \$93,000 per unit
Seguin Place, Parry Sound, Ontario, Canada ⁵¹⁰	Ten affordable senior rental units in five-plex condominiums	33 percent affordable, 66 percent market	N/A
Weyerhaeuser, Ucluelet, British Columbia, Canada ⁵¹¹	198 multi-family residential and resort style condominium units, rented at 80 percent of market rent	12.7 percent affordable, 87.3 percent market	N/A
Lawrence Heights, Toronto, Ontario, Canada ⁵¹²	1,208 RGI units, with 4,092 market units	22.8 percent affordable, 77.2 percent market	Not yet completed
Regent Park, Toronto, Ontario, Canada ⁵¹³	2,083 RGI units 448 affordable units 5,400 market condominiums	26.3 percent RGI, 5.6 percent affordable, 68.1 percent market	Not yet completed, \$1 billion (estimate)
Northern Glen Innes, Auckland, New Zealand ⁵¹⁴	160 new units, 40 renovated units	30 percent low-income, fifteen percent affordable, 55 percent market	N/A
Tapestry, East Harlem, New York City, USA ⁵¹⁵	Twelve-storey rental building, completed in 2010	20 percent low-income, 30 percent affordable, 50 percent market	\$70 million USD

Public Funding Opportunities

Funding availability will be instrumental in the realization and success of the Pinecrest Foster Farm community's redevelopment. As such, it is important that redevelopment plans meet the criteria of diverse funding programs and grants. Though some of the funding programs examined are slated to terminate prior to the estimated start of this project and their extensions are uncertain, these programs provide valuable information on general affordable housing project funding and development requirements. A summary of these funding options is provided at the end of this section.

National Housing Co-Investment Fund

Per the National Housing Co-Investment Fund, the Pinecrest Foster Farm community's redevelopment may be eligible for two different streams of financial support: New construction financing and rental construction financing⁵¹⁶.

To be eligible under the new construction financing or rental construction streams, projects must meet the criteria listed in Table 97. Additionally, the Canada Mortgage and Housing Corporation (CMHC) has indicated several project features that prioritize a project's funding by embracing the notion of 'complete communities' (i.e. good integration of public transit, services, retail, community facilities, and employment opportunities) and social inclusion (i.e. providing housing and related services to a diverse demographic)⁵¹⁷. For example, projects that exceed accessibility, affordability, and sustainability requirements are given funding priority above those that are only sufficient in satisfying them⁵¹⁸.

Seed Funding

CMHC's Seed Funding program aims to develop and preserve affordable housing by assisting with planning stage costs which include, but are not limited to, surveys, studies, audits, and planning and permit fees⁵¹⁹. Assistance is provided under the new construction and affordable housing preservation streams, for which this redevelopment may be eligible for both.

Relative to other funding programs, CMHC's Seed Funding program has minimal eligibility requirements, which are limited to the number of affordable units and the proportion dedicated to residential development⁵²⁰. However, it is important to note that, like other funding programs, funding priority is given to projects that exceed these minimum requirements; furthermore, funding is also prioritized to those projects that service vulnerable and high need populations, have partnerships, and foster social, economic, and environmental sustainability⁵²¹.

Mortgage Loan Insurance: Affordable Housing

Mortgage loan insurance promotes the construction and preservation of affordable rental housing by reducing financial barriers to development. With mortgage loan insurance, developers may qualify for mortgages of up to 95 percent of total project costs and may benefit from loan advances, extended amortization periods, and reduced premiums⁵²². Mortgage loan insurance is available for affordable housing projects involving either new construction or preservation of existing properties.

The majority of the eligibility requirements of this program relate to the quantity and affordability of units being developed or preserved, the duration of their affordability, and the proportion of residential and non-residential development being proposed. Generally, these requirements aim to ensure that affordable housing projects are predominantly residential in composition and that units achieve a minimum of mid-market level affordability for a minimum of ten years⁵²³. Beyond these minimum requirements, energy efficiency is incentivized by offering eligible projects ten to fifteen percent refunds on their insurance premiums⁵²⁴.

Investment in Affordable Housing for Ontario

Under the Investment in Affordable Housing for Ontario (IAH) program, community housing corporations fall under the Rental Housing or Ontario Renovates: Multi-unit Residences streams; however, provisions from these two streams may not be combined and applied to the same units⁵²⁵.

The aim of the Rental Housing component is to increase rental housing stock to address long social housing waitlists. To be eligible for funding, housing projects must meet the minimum requirements, which are largely related to the level and duration of unit affordability, unit size, amenity provision, and target population⁵²⁶. To be eligible, projects

must also have equity and have completed preliminary planning-stage activities (i.e. have attained zoning, site plan, permit, etc.)⁵²⁷.

Under the Ontario Renovates stream, community housing projects are eligible for funding through the Multi-Unit Rehabilitation sub-component, which has the aim to increase affordable rental housing supply by providing financial assistance to landlords for major unit repairs and accessibility upgrades⁵²⁸. To be eligible under this subcomponent, renovated units must be comparable in size to other units in the area; furthermore, they must be rented at rates equal or lesser than the average market rent of the area, for the duration of the program-provided loan⁵²⁹.

This program prioritizes projects that exceed minimum requirements and include socially-, financially- and environmentally-beneficial features, such as having strategic partnerships, long-term affordable housing units (more than the required 20-year term), energy-efficient features, accessible units, housing for seniors, and funding reserved for community services⁵³⁰.

City of Ottawa Affordable Housing Incentives

Notable support for affordable housing is also provided at the municipal level. The City of Ottawa has policies in place to relieve the financial pressures of affordable housing development and is responsible for relevant provincial and federal programs. Under the City's *Affordable Housing Strategy*, incentives, involving property tax breaks, waived development fees, waived building permit fees, land and grant provisions, are available for projects meeting eligibility criteria. Eligibility criteria relate to key qualities of affordable housing in a given project, such as its degree, duration, and proportion. The City is also responsible for distributing funds allocated by the Investment in Affordable Housing (IAH) for Ontario Program⁵³¹.

Table H-5: Development fees⁵³².

Housing Type	Single- and Semi-Detached	Apartment Dwelling, Back-to-Back/Stacked Townhomes	Apartment (less than two-bedrooms)	Multiple, Row and Mobile Dwelling
Development fees per unit	\$25,113.00	\$14,835.00	\$10,591.00	\$19,399.00
Savings per 100 units	\$ 2,511,300.00	\$ 1,483,500.00	\$ 1,059,100.00	\$ 1,939,900.00
Saving per 1000 units	\$25,113,000.00	\$14,835,000.00	\$10,591,000.00	\$19,399,000.00

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Table H-6: Summary of funding available, by program.

Program		Type and Amount of Available Funding (or Equivalent)
Federal	Co-investment fund program – New Construction Stream	Loan A maximum of a 95 percent loan for the cost of residential space A maximum of a 75 percent loan for the cost of non-residential space Capital contribution Variable
	Co-investment fund program – Rental Construction Financing	Loans only A maximum of a 100 percent loan for the cost of residential space A maximum of a 75 percent loan for the cost of non-residential space
	Seed funding: New Construction	Interest-free loans A maximum of \$350,000 Non-repayable contributions A maximum of 30 percent of the total approved funding, to a maximum of \$150,000 (whichever is less)
	Seed funding: Preservation	Capital contribution \$50,000 per community housing project (may be increased to \$75,000 if proposed project involves an elevated number of units and/or community supports)
	Mortgage Loan Insurance: Affordable Housing	Loan for new construction 95 percent loan-to-cost for residential 75 percent loan-to-cost for non-residential Loan for existing properties 85 percent loan-to-cost for residential 75 percent loan-to-cost for non-residential
Federal-Provincial	Investment in Affordable Housing for Ontario – Rental component	Capital contribution/forgivable loan A maximum of 75 percent of the total capital cost per unit, to a maximum of \$150,000 (whichever is less) <i>Program to end March 21, 2020</i> <u>May not be eligible:</u> Social housing projects/units that receive ongoing federal and/or provincial subsidies are not eligible (e.g. demolition and replacement of existing social housing units)* <i>Units may not draw from funding from this program in combination with Ontario Renovates funding.</i>
	Investment in Affordable Housing for Ontario – Ontario Renovates – Multi-unit Rehabilitation	Capital contribution/forgivable loan A maximum of \$50,000 per renovated unit Average per unit amount must not exceed \$25,000 Contribution for accessibility-related renovations A maximum of \$5,000 per unit
Municipal	City of Ottawa affordable housing incentives	Reduced property taxes Relieved development and building permit fees Provision of land and grants Increased number and duration of rent supplements Variable

*May be eligible if additional affordable housing rental units are developed (i.e. more than replacement of existing units)

** Only affordable rental units to receive funding

Table H-7: Minimum requirements for diverse housing grants, benefits and programs summary table.

Program		Accessibility	Target population	Sustainability and energy consumption	No. of Units	Affordability (criteria and proportion)	Proportion of project dedicated to housing	Financial conditions	Partnerships	Additional requirements
Federal	Co-investment fund program – New Construction Stream	Minimum 20 percent of units accessible OR Full universal accessibility design (entire project)	Not specified	25 percent decrease in energy consumption and greenhouse gas (GHG) emissions*	Five	Minimum 30 percent of units below 80 percent market rental rate for minimum 20 years	Primary use is residential	Proof of financial viability	Partnership required (i.e. governmental)	Not specified
	Co-investment fund program – Rental Construction Financing	Minimum ten percent of units accessible	Addresses local housing needs and target tenant groups****	Fifteen percent decrease in energy consumption and greenhouse gas (GHG) emissions*	Five	Minimum 20 percent of units below 30 percent of the median total family income for minimum ten years	Primary use is residential**	Minimum loan size of \$1 million Meet minimum debt coverage ratio (DCR) requirements	Not specified	Must have zoning, site plan, and building permit (advanced in planning process)
	Seed funding: New Construction	Not specified	No restrictions Projects housing vulnerable and high need populations given priority	Not specified	Five	Proposed rents deemed affordable*** Minimum five affordable units	Primary use must be residential	Not specified	Not specified	Not specified
	Seed funding: Preservation	Not specified	No restrictions Projects housing vulnerable, high need populations given priority	Not specified	Five	Proposed rents deemed affordable*** Minimum five affordable units	Primary use must be residential	Not specified	Not specified	Not specified
	Mortgage Loan Insurance: Affordable Housing New Construction	Not specified	Not specified	Not required but incentivised (ten to fifteen percent refund on loan insurance premiums)	Five	Minimum ten percent lower than market rental rate for minimum ten years 20 percent of unit rent less than 30 percent of the median household income	Minimum 70 percent residential (both in GFA and total loan value)	Proof of good credit Borrowing group net worth minimum 25 percent of loan value	Not specified	Proof of completion of similar projects Experience operating similar project for minimum of five years
	Mortgage Loan Insurance: Affordable Housing Existing Properties	Not specified	Not specified	Not required but incentivised (ten to fifteen percent refund on loan insurance premiums)	Five	80 percent of units must be at, or below, the 30th percentile of rents of subject market for minimum of ten years	Minimum 70 percent residential (both in GFA and total loan value)	Proof of good credit Borrowing group net worth minimum 25 percent of loan value	Not specified	Proof of completion of similar projects Experience operating similar project for minimum of five years

Program		Accessibility	Target population	Sustainability and energy consumption	No. of Units	Affordability (criteria and proportion)	Proportion of project dedicated to housing	Financial conditions	Partnerships	Additional requirements
FEDERAL-PROVINCIAL	Investment in Affordable Housing for Ontario (IAH) – Rental Housing	Recommended ten percent, but not required	Addresses local housing needs and target tenant groups**** Recommended fifteen percent for seniors, but not required	Recommended, not required	Not specified	Unit rents below 80 percent market rental rate for minimum 20 years	Not specified	Has a minimum of four percent equity	Recommended, not required	Must have zoning, site plan and building permit (advanced in planning process) Has occupancy plan Unit size requirements set by service manager or provincial requirements
	Investment in Affordable Housing for Ontario (IAH) – Ontario Renovates—Multi-unit Rehab.	Recommended, but not required	Seniors Persons with disabilities Victims of domestic violence Indigenous peoples living off-reserve Low- to moderate-income singles and families	Recommended, not required	Not specified	Rents must remain at average market rent rate or below for a minimum of fifteen years (loan period)	Not specified	Not specified	Not specified	Units must be comparable in size to other units in the community
MUNICIPAL	City of Ottawa affordable housing incentives	Not specified	Households on the Ottawa Social Housing Registry centralized waitlist	Not specified	Not specified	Rents cannot exceed CMHC's average market rent rate Minimum 60 percent of units reserved for low income households***** Affordable housing maintained for minimum of 20 years	Not specified	Not specified	Not specified	Not specified

* Relative to the most recent national building and energy codes (i.e. 2015 National Energy Code for Buildings or the 2015 National Building Code)

** Non-residential component not to exceed 30 percent of the total gross floor space, nor 30 percent of the total cost

*** According to standards of municipality, province or territory, or CMHC

**** For example, people on social housing waitlists or those in core housing need

***** Must be affordable for these households (RGI, rent 30 percent of household income)

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Alternative Funding Methods

Although significant public funding options are available, OCH will still be required to fund a large proportion of the redevelopment. Given the amount of equity required to fund the development, the below methods highlight additional options for ensuring more affordable housing is provided on site.

Private Development Options

Although municipal tools for encouraging development may help, these measures alone will not enable the large-scale redevelopment of Pinecrest Foster Farm. Leveraging the assets onsite is just one way that OCH can fund the development of affordable units. Developers are often concerned with land and construction costs which affect the success of the project⁵³³. Leveraging OCH-owned land and surplus municipal lands could increase the amount of equity available for investment, by selling land to private developers. This method would likely see OCH develop their own buildings, or parts of buildings, using money obtained from subdividing and selling or leasing parcels to other developers. This method can include conditions on the sale of parcels, which ensure that developers maintain a percentage of affordable units on the site over a period of time. This is an excellent way to increase the number of affordable units on the site, while making use of underutilized municipal lands.

Development-ready parcels of land near LRT stations are hot commodities on the Ottawa real estate market, as developers attempt to capitalize on the City's rapid transit transformation. There are very few vacant land listings on the open market in proximity to future or current LRT stations. Based on previous sales, land near LRT stations is being sold for several million dollars per acre. A parcel of land abutting the LRT Phase 2 Gladstone Station stop, comprised of 7.26 acres of land, was purchased for \$7 million from the Canada Lands Company⁵³⁴. When purchased from private groups, the purchase price will likely be significantly higher, especially in the future as the amount of developable land near LRT stations diminishes. With the arrival of the LRT, land prices will rise an estimated ten to 20 percent, but premiums of up to 72 percent have been observed in other cities who implemented light rail⁵³⁵.

Public Private Partnerships

Public-private partnerships are one option to enable high cost developments by reducing the public equity input into projects and transfusing risk between partners. Private groups want to ensure that there are no abrupt changes in housing policies, regulations, tax structures, and time-limited government funding⁵³⁶. Binding contracts, that set out rules and responsibilities, have been used in Regent Park and other larger scale developments. The Pan American Games Athletes' Village in Toronto is another model of how a municipality partnered with a developer for a large-scale redevelopment, which resulted in both value for money savings and the production of affordable units⁵³⁷.

Non-Profit Partnerships

Partnering with other non-profit organizations is an excellent way to increase the amount affordable housing in the community. This can be achieved through 99-year leaseholds and renting the land for the provision of additional non-profit housing from another provider. This model would see small but consistent returns for the lease period and no equity inputs on behalf of OCH. Although this option will provide less upfront capital, it will provide steady cash-flows for the duration of the lease to offset expenses and rents over time, in order to be financially sustainable without selling the asset.

Tenure mixing may also be desirable in the Pinecrest Foster Farm community. Shared equity models are another option for increasing affordable homeownership units in the redevelopment. This hybrid form of homeownership is for lower- to moderate-income households and allows for more individuals to become homeowners⁵³⁸. This model reduces the equity needed for a mortgage down payment, as non-profits maintain a stake in the project's capital and receive a share in the appreciation of property value upon sale.

Considerations for Redevelopment

During the planning and development stages, several factors will enable the overall success of the project. Displacement, support, accessibility, social cohesion, affordability, and safety are all significant concerns of any affordable housing redevelopment.

Tenant Retention

In order to alleviate concerns surrounding redevelopment-caused resident displacement, the development of a Tenant Retention Plan is recommended. Supports need to be in place to assist vulnerable residential tenants during the transition and redevelopment⁵³⁹. Best practices have been identified based on five case studies (Table H-8).

False Creek South, British Columbia

The False Creek South *Resident Protection and Retention Plan* is based on six principles: Minimizing displacement; right to return; affordability; right to relocate; mitigation of hardship; and, advanced notice⁵⁴⁰. With regards to minimizing displacement, the focus is on reducing disruptions by building replacement units first, if possible, or by providing interim affordable housing offsite, as required; furthermore, these interim options must also be affordable, which can be achieved through hardship mitigation efforts such as moving expenses assistance and other compensation⁵⁴¹. The focus on the right to return is to prioritize returning tenants upon completion of the redevelopment, at the same rental rate as prior to redevelopment; however, the right to relocate supports a tenant's choice to not return to the development and instead be provided with assistance to find alternative affordable housing options within ten percent of existing rents⁵⁴². Overall, regardless of a tenant's choices or requirements for assistance, advanced notice of at least 60 days should be provided to the tenant in order to give them adequate time to make decisions about their housing situation⁵⁴³.

Richmond, British Columbia

The City of Richmond, in British Columbia, requires a Tenant Relocation Plan when a developer is displacing tenants⁵⁴⁴. It must include the right-of-first-refusal to the replacement affordable units for the associated displaced tenants, as well as notice at least four months in advance of the end of their tenancy⁵⁴⁵. In terms of relocation assistance, three months of free rent must be provided for tenants that have resided in affordable units for over a year⁵⁴⁶.

Greenville, South Carolina

The City of Greenville in South Carolina has developed a *Residential Anti-Displacement and Relocation Assistance Plan*. This plan stipulates that detailed written notice and an associated timeline must be provided to residents, which ensures that replacement housing will be provided within three years of demolition⁵⁴⁷. For relocation assistance, tenants are offered a choice of either moving expenses or an expenses allowance, in addition to other advisory services⁵⁴⁸.

San Francisco, California

San Francisco's Hope SF development focused on a policy of phased development without displacement by providing residents with options to remain during construction, or live elsewhere, at the same rate, with the right to return⁵⁴⁹. A key staple of the program is using onsite financial workshops, job training, family nights, and food bank programs to maintain a sense of community⁵⁵⁰.

Charlottesville, Virginia

Friendship Court in Charlottesville, Virginia created a no displacement redevelopment plan by building where there are no existing units on the site⁵⁵¹. This phasing details the timeline of events, including incremental and dispersed relocation to avoid a concentration of one housing tenure type in any one building⁵⁵². Buffers between construction zones and inhabited units were suggested to reduce negative impacts to residents' quality of life⁵⁵³.

Table H-8: Affordable housing case studies summary and key takeaways.

Case Study	Key Takeaways
False Creek South, BC	<ul style="list-style-type: none"> • Minimizing displacement by providing interim housing; • Right to return; • Affordability; • Right to relocate with assistance; • Mitigation of hardship with compensation; and, • 60 days of advanced notice⁵⁵⁴
Richmond, BC	<ul style="list-style-type: none"> • Four months advanced notice; • Right-of-first-refusal; • Relocation assistance; and, • Three months of free rent for tenants with a year or longer residencies⁵⁵⁵
Greenville, SC	<ul style="list-style-type: none"> • Detailed written notice and timeline; • Replacement housing within three years of demolition; • Either moving expenses or an expenses allowance; and, • Advisory services⁵⁵⁶
San Francisco, CA	<ul style="list-style-type: none"> • Phased development; • Options to remain during construction, or live elsewhere at the same rate; • Right to return; and, • Community programs⁵⁵⁷
Charlottesville, VA	<ul style="list-style-type: none"> • No displacement; • Building where there are no existing units on the site; • Phasing the timeline of events; and, • Buffers between construction zones and inhabited units⁵⁵⁸

In these five tenant retention case studies, there was a focus on minimizing displacement as much as possible, with advanced notice of redevelopment. Many of these examples explicitly stated the right to return for existing residents to the new units, as well as financial compensation to help mitigate their interim hardship. The Hope SF project in San Francisco seemed to be very successful, likely in part due to the use of well-phased development and community-building programs⁵⁵⁹. These aspects will be critical to the success of the Pinecrest Foster Farm tenant retention plan.

Building Typology

Social and affordable housing development require special building consideration to ensure there are no physical barriers to access the site, and that significant social consideration is given to the layout. The layout of housing developments, especially those which contain social or low-income housing, can significantly affect crime rates, the perception of safety, access to services, and social cohesion. Below are three case studies whose building type was designed with consideration for these factors.

Beaver Barracks, Ottawa Ontario



Figure H-1: Argyle Apartments, Beaver Barracks⁵⁶⁰.



Figure H-2: Catherine mixed-use building⁵⁶¹.

Beaver Barracks is an affordable housing development in Ottawa, Ontario initiated by Centretown Citizens Ottawa Corporation, a non-profit affordable housing provider. This project redeveloped a vacant lot to provide 254 units, of which 150 are rent geared to income, or pay below market rent⁵⁶². The site boasts an excellent mix of building typologies including two mixed use buildings (7 and 8 storeys), a 4-storey apartment, and two 3-storey stacked townhouses⁵⁶³. Amenity space and a community garden are also provided in the interior of the site. The project also utilizes geo-thermal heating as well as Energy Star appliances to promote sustainability among its residents. These building typologies are conducive to the built form envisioned for the western extent of Pinecrest Foster Farm as they support a transition into lower density neighbourhoods. The stacked townhouses would be beneficial immediately adjacent to existing single-detached homes with the Argyle apartments contributing more density toward the centre of the site. Moreover, the Metcalfe and Catherine mixed-use buildings can be used to frame the new central park or the intersection of Foster Street and Dumauiur north of the LRT station.

Table H-9: Beaver Barracks building dimensions⁵⁶⁴.

Building	Dimensions	Storeys
Metcalfe Mixed Use	35m x 35m	8
Argyle Apartments	55m x 20m	4
Catherine Mixed Use	45m x 20m	7
Stacked Townhouses	18m x 22m	3

Regent Park Revitalization, Toronto

The original Regent Park was an urban renewal project proposed in 1947 following the Second World War. The aim of the project was to provide affordable housing and alleviate issues of crime, poverty and social problems. However, the project fell into a state of disrepair in the mid 1960's and would continue to deteriorate in decades to come. In 2003, the City of Toronto approved the Regent Park Revitalization Plan in an effort to redevelop the 69-acre plot of land into a mixed income, mixed use community with amenities for all residents⁵⁶⁵. The housing objectives of the project was to replace all 2,083 rent-geared-to-income (RGI) units, create 448 new affordable rental units, and provide 5,400 new market condo units.⁵⁶⁶

Phase 1 and 2 were completed in 2012, and 2014 respectively⁵⁶⁷. These blocks contain a number of buildings that are suitable for the Pinecrest Foster Farm site. The first building form is stacked townhomes along Cole Street in Phase 1. The four rectangular buildings in the centre of Phase 1 (purple) are 3-storey stacked town homes with dimensions of approximately 20m x 65m. The townhomes are oriented north – south and are accessed from a rear laneway. This allows the streetscape to provide “eyes on the street” and create a neighbourhood character along the road. These townhomes have been sold at market rate as well as rented.

Two other buildings that have been constructed in Regent Park that should be considered are 230 and 180 Sackville Street. 230 Sackville is a 10-storey mixed-use building with a dental clinic at grade. The building is U-shaped with 60 m of frontage on each side and has an 20m wide interior courtyard amenity space. There are also community gardens on the 9th floor⁵⁶⁸. Fifty units of affordable housing are provided at 230 Sackville St. as part of the Regent Park Revitalization Plan⁵⁶⁹. This building typology would be best utilized along the south side of Dumaaurier facing the 417 or framing the new central park. Providing a health clinic would add value to the Pinecrest Foster Farm community.

180 Sackville is an 11-storey residential building with 86 mid-rise units, 32 rental town houses at grade, and one level of underground parking⁵⁷⁰. Out of the total of 118 units, 78 are RGI units while the remaining 40 are affordable rental units⁵⁷¹. The building is a slab apartment with dimensions of 40m x 25m. This building would be best suited at the intersection of Dumaaurier and Pinecrest or bordering the 417 on Dumaaurier to reduce sound impacts from the highway.



Figure H-3: Street view of Cole Street townhomes⁵⁷². Figure H-4: Aerial view of Cole Street townhomes⁵⁷³.

St. Lawrence Neighbourhood, Toronto

The St. Lawrence neighbourhood is a highly dense, mixed-use residential community in Toronto, located adjacent to the downtown. The neighbourhood is regarded as an excellent example of a complete community planning.

The project utilized good planning principles and emphasized a mix of housing tenures as part of the planning process. 39 percent of the total units are condo apartments, 30 percent are non-profit co-ops and private non-profit rentals, 27 percent are municipal non-profits rentals and 4 percent are ownership townhouses.⁵⁷⁴ The two building typologies are found in the St. Lawrence neighbourhood are 3 storey townhomes and 7 to 10 storey mid-rise, mixed-use buildings.⁵⁷⁵ The arrangement of these built forms allowed St. Lawrence neighbourhood to feel human scale, despite being in downtown Toronto.

The 3-storey town home footprints are 40m by 10m and have frontage on tree-lined streets. Parking is accessible from back lanes or building frontages with each resident having their own street address. This building typology would be best utilized on the western extent of the site adjacent to existing low-density residential areas.

The 7-10 storey mixed-use buildings front David Crombie Park, a linear park which runs parallel to the Esplanade. These building provide at grade community amenities such as a grocery store, recreation centre, and health clinic.⁵⁷⁶ These amenities serve the surrounding residents as well as the broader area. The Study Area should prioritize mixed-use buildings north of the LRT station with animated frontages along the complete street. This will promote an active corridor for transit users.

Energy

One often overlooked reason that housing is becoming less affordable is the rising cost of energy, a critical resource for constructing, operating, and maintaining buildings⁵⁷⁷. Increasing energy costs in Ontario are making housing more expensive; furthermore, in 2006, electricity costs increased by as much as ten percent in the province⁵⁷⁸. As such, energy efficiency of affordable housing is an important financial consideration for providers and a quality-of-life consideration for their tenants⁵⁷⁹.

A common perception is that building green costs more and is therefore not suitable for affordable housing projects. Fortunately, in recent years, innovations and experience in more sustainable housing development have made incorporating energy efficient technologies more accessible and financially viable to all. Recent studies have documented the costs and benefits of green buildings, reporting that green buildings have a modest initial cost premium, averaging 2.42 percent of total development costs; however, the long-term benefits, such as cost savings per unit, far exceed the initial capital costs⁵⁸⁰.

Environmental and social policies are not always compatible because of their priorities. Affordable housing policies focus on the short-term immediate needs of low-income households for adequate shelter; whereas, environmental policies focus on the long-term impact of greenhouse gas emissions and climate change on the environment⁵⁸¹. However, energy conservation and affordable housing policies can complement each other. The advantages of reducing energy costs in affordable housing are substantial. As energy costs per unit are lowered, the operating costs are reduced and initial capital investments to improve energy efficiency can be recovered in lifecycle energy savings⁵⁸². The value of improved comfort and health for residents, as well as reduced environmental impacts, are considerable advantages to reducing energy costs⁵⁸³.

To encourage future construction of more energy efficient affordable housing in Ottawa, energy conservation and social housing policies must be aligned, more funds must be allocated to cover the premium of green building design, grants and funding should be established to incentivize energy efficient construction, and affordable housing funding must be modified to provide more flexibility in spending⁵⁸⁴. Despite each sector facing its own challenges and constraints, energy efficiency and affordable housing remain inextricably linked, although not through a one size fits all solution.

Energy Efficient Housing Construction and Appliances – The Haven, Barrhaven, Nepean

The Haven, located in Barrhaven, is a recently constructed affordable housing project by the Multifaith Housing Initiative that features a mix of townhomes and two low-rise apartment buildings, multi-use community space, an outdoor children's playground, and a community garden that together promote a healthy and engaging environment for residents⁵⁸⁵. The project, located at 455 Via Verona Avenue, is situated along a walking path that is within 200 metres of OC Transpo's transitway, which helps to reduce car travel and greenhouse gas emissions⁵⁸⁶. The \$19.3 million project is targeting LEED Gold Certification due to the high energy saving features incorporated into the design and construction of the project⁵⁸⁷.

The construction of The Haven used local, recycled, renewable, natural, and/or durable building materials whenever possible, increasing the energy efficiency of a building over its lifecycle by reducing the frequency of building maintenance and associated renewal efforts^{588;589}. Furthermore, the buildings were constructed with wood framing and lumber that was rated by the Forest Stewardship Council and comes from sustainable resources, which require less energy and labour to manufacture than concrete^{590;591}. The Haven also ensured that waste was minimized during construction and was carefully sorted to recycle and reuse the majority of the materials⁵⁹². Recycling building materials is essential to reducing the embodied energy in a building; additionally, reusing resources results in considerable energy savings of 40 to 90 percent, compared to using new materials⁵⁹³.



Figure H-5: One of two apartment buildings located at The Haven⁵⁹⁴.



Figure H-6: Townhomes located at The Haven⁵⁹⁵.

Energy efficiency was also considered when designing the interiors of the units within The Haven. Each unit has high efficiency appliances, lighting, furnaces and hot water heaters, double glazed windows with two “low-e” coatings to reflect heat back into the home, walls with special insulation, and low-water-consumption toilets, showers and faucets⁵⁹⁶.

The Haven illustrates that energy consumption is not only contained within the home; energy is also consumed when homes are built and when people travel to and from their homes. The sustainable design features and construction methods of The Haven demonstrate how simple exchanges for energy efficient models and techniques can come together to create a LEED Gold certified affordable housing development in Ottawa.

Passive House Design – Karen’s Place, Billings-Bridge, Ottawa

‘Passive House’ is the term used to describe the world’s leading standard in vigorous energy efficient design and construction practice. Passive House sets extremely ambitious targets in terms of energy performance but also significantly improves indoor air quality and therefore tenant comfort, health, and overall wellbeing⁵⁹⁷. Passive House buildings consume up to 90 percent less heating and cooling energy than conventional buildings⁵⁹⁸. Design fundamentals integral to Passive House include efficient building shape, high solar exposure, superinsulation, triple-glazed and insulated windows, airtight construction, ventilation with heat recovery and air preheating, and thermal bridge-free construction⁵⁹⁹.

In October 2016, Ottawa Salus opened the doors of its first Passive House affordable housing project, the \$7.4 million building titled “Karen’s Place”⁶⁰⁰. Located at 1490 Clementine Boulevard, Karen’s Place is a four-storey building with 42 bachelor apartments for individuals living with mental health challenges⁶⁰¹. The development is the first Passive House structure in North America to be built with light steel and is the first and largest multi-unit residential affordable housing project in Canada to be built meeting the Passive House environmental standard⁶⁰².



Figure H-7: Karen’s Place is built to extremely high environmental standards⁶⁰³.

By achieving the Passive House Standard, the heating demand for Karen's Place is reduced by 85 percent compared to the current Ontario Building Code⁶⁰⁴. In addition, greenhouse gas emissions are reduced by 75 percent on heating⁶⁰⁵. The building operates on a small amount of heat, totalling \$27 per year per 400 square foot unit, which is retained within the building through the use of very high levels of insulation, extremely efficient windows and doors, and very low air leakage⁶⁰⁶. Tilt and turn high performance windows, interior solar shades, energy efficient appliances, water saving fixtures, sound attenuation, and accessibility features are all incorporated in the building's design⁶⁰⁷. Savings on energy allows Salus to not only reduce the building operating costs and its own environmental footprint, but also to focus their budget on services that support their clients⁶⁰⁸.

Karen's Place is a true testament of commitment and dedication of all parties involved to start something radically new with affordable housing, while setting a standard for environmental stewardship⁶⁰⁹. The success of incorporating energy efficient Passive House design with affordable housing in Karen's Place will be an example for the future for affordable housing in Ontario and beyond.

District Energy System – Beaver Barracks, Centretown, Ottawa

Beaver Barracks is a highly sustainable housing development by non-profit housing provider Centretown Citizens Ottawa Corporation (CCOC). The \$65 million project includes 254 homes in five buildings spread across a 1.7-acre brownfield site, and is considered to be a beacon of the mixed-income model of affordable housing. The development, located at 464 Metcalfe Street and 160 Argyle Avenue, offers a blend of market, below-market, and deeply subsidized rents for tenants on a range of incomes. Units range in size from studio flats to three-bedrooms, and there is ground floor retail allocated in two buildings as well as a meeting space for community groups⁶¹⁰.



Figure H-8: The inner courtyard and early stages of the community garden at Beaver Barracks⁶¹¹.

A central element of the project's sustainability mandate is an innovative GeoExchange district energy system which heats, cools, and provides hot water to all of the units in the project. GeoExchange, also known as geothermal heat pump technology, takes advantage of the abundant low-grade solar thermal energy that is stored in the ground⁶¹². This energy is captured by use of a ground-heat exchanger and standard heat pump technology. Geothermal heating and cooling are very ideally suited to Ottawa, given that the city experiences extremes in both summer and winter temperatures.

The GeoExchange system at Beaver Barracks includes 60 boreholes drilled 137 metres deep through soil and limestone bedrock⁶¹³. The individual loop pipes are thermally fused together into a continuous parallel piping network that forms one large GeoExchange field⁶¹⁴. Only a small amount of electricity is used to operate the system, resulting in overall energy efficiencies 300 to 500 percent greater than common natural gas or electric equipment, dramatically reducing greenhouse gas emissions⁶¹⁵.

Outside the innovative geothermal installation, which was the largest of its kind in Canada at the time, Beaver Barracks as a whole was built to a high environmental standard⁶¹⁶. The development includes a green roof, tenant-run gardens, high performance building envelope, and triple-glazed windows to ensure the buildings use 40 per cent less energy than comparable buildings⁶¹⁷.

Beyond its design features, Beaver Barracks actively encourages its tenants to live a sustainable lifestyle and make environmentally-conscientious consumer choices. Responsible waste diversion is encouraged by not providing rubbish chutes and having waste sorted in a common room⁶¹⁸. Tenants of the complex must also buy-in to the environmentally-conscientious lifestyle by signing a Green Commitment Pledge to reduce their environmental footprint⁶¹⁹. During their annual lease renewal, residents must provide a summary of their past year's pledges and calculate the reduction in their carbon footprint⁶²⁰. It is uncontested that Beaver Barracks is one of the most sustainable rental housing developments in Ottawa from both a design and lifestyle perspective.

Amenities

Successful developments should focus on creating a needs-oriented community through quality social infrastructure, including various amenities and services for people of all ages and socio-economic backgrounds. This infrastructure is fundamental in creating a sustainable, safe, and complete community that provides opportunities to socialize and become engaged through cultural, leisure, sport, or other activities. Providing high quality amenities can increase community support, create a sense of identity, and provide employment opportunities close to home, while giving the development a competitive advantage. Amenities help to attract investment, future residents, and retain existing assets, while playing a role in raising property values. This is an important factor to consider when developing the area, especially since a certain percentage of the units will be market rentals and ownership.

Decisions on which amenities and services to choose are based on the area's demographics and growth trends, community input, City standards and policies, as well as existing amenities in the area. This social infrastructure needs to be appropriately selected and placed to best serve the community, flexible enough to evolve with changing community needs, and be prioritized for funding allocation. Suitable amenities can be implemented through partnerships with the community, various levels of government, and other agencies. The City of Ottawa typically will fund public services, such as childcare facilities, public parks, community centres, and libraries. This funding comes from property taxes, utility fees, various levels of government, and facility revenues.

Most Desired and Used Amenities

Amenities and services should be selected based on an individual community's needs; however, the precedents outlined provide insight on which amenities and services are most desired and used in affordable housing communities (Table H-10). Research conducted by the City of Calgary identified a preferred maximum walking distance for common services and amenities based on family type and vehicle ownership. Notably, families and single parents want to be within a zero to 500 metre distance of a park with a playground, a fifteen to 20-minute walk from an elementary school, and all residents want to be within a fifteen to 20-minute walk to a medical clinic, grocery store and/or convenience store⁶²¹. Additionally, it is recommended that buildings of eight-storeys or more have indoor amenities, such as secure bicycle parking⁶²². Moving forward it is also recommended that supports such as car- and bike-sharing services are available to create a neighbourhood less reliant on personal vehicles.

Table H-10: Additional recommended amenities.

Amenity	Main Users	Benefit(s) to Community	Notes
Neighbourhood house	Adults	Existing amenity that offers a comfortable space for programming addressing community-specific needs, such as a newcomer program	Well-used community-asset that is important to retain during redevelopment in a suitable location
Car-sharing service	Adults	Reduces parking demands and supports less dependency on owning a personal vehicle, yet offers the convenience, when needed, at a more affordable cost	These services are best-suited to TODs and are becoming increasingly popular in cities across Canada, due to their convenience and affordability ⁴
Bike and repair shop	Everyone	Supports active transportation and teaches important skills	Offers bike rentals, sales, and workshops (repairs, riding classes)
Pet supply and care	Adults	Meets a pet's and owner's needs, since 41 percent and 37 percent of Canadian households have dogs and cats, respectively ⁵	In addition to supplies, this could include a dog walking service, basic animal care, or shelter
Fitness facility	Teens / Adults	Fulfills fitness needs of community	Specialized fitness spaces are increasingly popular
Service Ontario	Everyone	Widely used by the general population for easy access to government services	Recommended in the Pinecrest Foster Farm community due to its larger population of immigrants and families who may need these services more frequently
Youth centre	Teens	Provides a space for youth to be actively engaged, develop skills, and express themselves	This can include a hangout space with games as well as educational and social programming

⁴ Dentel-Post, Colin. (2012). *Less Parking, More Carsharing: Supporting Small-Scale Transit-Oriented Development*. Institute of Urban and Regional Development, University of California Berkeley.

⁵ Canadian Animal Health Institute. (2017). *Latest Canadian Pet Population Figures Released*.

Table H-11: Amenity details

Amenity	Specific Amenity or Service	Main User(s)	Degree of Use	Benefit(s) to Community	Preferred Maximum Walking Distance to Service ⁶	Precedents	
Park and open spaces	Playground, splashpad, sports fields, plaza	Everyone	Frequent	Allows for active and passive recreation, and can meet a variety of other community needs	500 m – 1 km	<ul style="list-style-type: none">Beaver Barracks, OttawaBenny Farm, MontrealCanary District, Toronto⁷	<ul style="list-style-type: none">Kabelwerk, ViennaRegent Park, TorontoSt. Lawrence, Toronto
Community Centre	Fitness centre, youth centre, meeting rooms, pool, YMCA	Everyone	Frequent	Acts as community anchor, provides a safe indoor space for physical activities and programming	8 km – 12 km	<ul style="list-style-type: none">Regent Park, TorontoSt. Lawrence, Toronto	<ul style="list-style-type: none">Canary District, Toronto
General Retail	Clothing, thrift, books, active/sport, dollar store, toys	Everyone	Frequent	Promotes walkability, increases investment, provides employment	1.5 km – 3 km	<ul style="list-style-type: none">Beaver Barracks, OttawaCanary District, TorontoLawrence heights, Toronto	<ul style="list-style-type: none">Crown Street, GlasgowKabelwerk, ViennaSt. Lawrence, Toronto
Grocery	Large grocery, Bulk store, specialty foods (ethnic)	Mainly adults	Once a week	Prevents food desert, saves residents' time, convenience	1.5 km – 2 km	<ul style="list-style-type: none">Kabelwerk, ViennaRegent Park, Toronto	<ul style="list-style-type: none">Woodwards, Vancouver
Childcare	Daycare, single parent services	Families	Frequent	Ensures safe place near house for children, saves parents' time and money	On route to employment	<ul style="list-style-type: none">Kabelwerk, Vienna	<ul style="list-style-type: none">St. Lawrence, Toronto
School	Elementary and high school	Children, families	Frequent	Necessary amenity in neighbourhood, facilitates education	1.5 km – 2 km	<ul style="list-style-type: none">St. Lawrence, Toronto	<ul style="list-style-type: none">Lawrence heights, Toronto
Library	Including a computer centre	Everyone	Frequent	Provides opportunities for learning, resources and programs that address community needs	Not surveyed	<ul style="list-style-type: none">Benny Farm, Montreal	<ul style="list-style-type: none">New Jubilee House, Vancouver
Offices	Co-working space, general office	Adults	Frequent	Provides employment opportunities	Not surveyed	<ul style="list-style-type: none">Kabelwerk, ViennaWoodwards, Vancouver	<ul style="list-style-type: none">Crown Street, Glasgow
Multipurpose space	Non-profit, conference, meeting rooms	Adults	Often, when needed	Provides community with an event space that fits their needs	Not surveyed	<ul style="list-style-type: none">Canary District, TorontoWoodwards, Vancouver	<ul style="list-style-type: none">Marpole, Vancouver
Health and Pharmacy	Walk-in Clinic, Dentist, Optometrist, specialized health, drug store	Everyone	When needed	Provides access to healthcare	Health Clinic: 1.5 km – 3 km Pharmacy: 1.5 km – 2 km	<ul style="list-style-type: none">Kabelwerk, ViennaRegent Park, Toronto	<ul style="list-style-type: none">St. Lawrence, TorontoWoodwards, Vancouver
Supportive services	Employment service, immigration, mental health service, senior	Teens, adults, seniors	When needed	Offers services and programs that address community needs, often offered through non-profits	Not surveyed	<ul style="list-style-type: none">Regent Park, Toronto	<ul style="list-style-type: none">St. Lawrence, Toronto
Bank	Bank	Adults	Once a week	Allows convenient access to money management and related services	1.5 km – 2.5 km	<ul style="list-style-type: none">Kabelwerk, Vienna	<ul style="list-style-type: none">Regent Park, Toronto
Food	Cafes, restaurants, bakery, take-away	Teens, adults	Once a week	Creates street-level animation, supports local economy, and provides “third spaces” for community life	Not surveyed	<ul style="list-style-type: none">Canary District, TorontoCrown Street, Glasgow	<ul style="list-style-type: none">Kabelwerk, ViennaSt. Lawrence, Toronto

⁶ Sawatsky, J. & Stroick, S.M. (2005). *Thresholds for locating affordable housing: applying the literature to the local context*. The City of Calgary.
⁷ Harvey, Ian. *Rise of a fledgling neighbourhood*. The Toronto Star. March 12, 2015.

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Parking

The City of Ottawa's *Official Plan* also encourages reducing parking requirements with regards to the development of affordable housing. Provision of parking is subject to the *Zoning By-law*, where the minimum parking space for a low-rise apartment building is 1.2 spaces per dwelling unit⁶²³. However, the parking requirements may be reduced to provide "...alternative development standards for affordable housing by reducing parking standards in areas serviced by transit"⁶²⁴. Furthermore, the TOD Guidelines state that shared parking spaces between offices and commercial uses is an opportunity to reduce the amount of parking due to increased transit use⁶²⁵. However, regardless of the proximity to the LRT station, ensuring parking for cars is provided will still be essential to enable seniors and those with disabilities to live and work onsite.

Tenure and Bedroom Type

OCH currently has 32,000 tenants, 28 percent of which are seniors, 30 percent are single households or couples without children, and 42 percent are families with one or more children⁶²⁶. That said, Foster Farm is an overwhelmingly young community, with 41 percent of residents being under the age of seventeen; furthermore, family households and single parents with children households are making up 86 percent of townhouse tenants and 68 percent of apartment tenants⁶²⁷. This demographic weight of children and families would support the claim for the need for social amenities in the community, such as schools, daycare, and sports facilities.

The unit types mirror the current tenant make up, with the absence of bachelor and one-bedroom apartments which suit single and senior households. Redevelopment should consider adding one-bedroom apartments and bachelor units to respond to the growing need for these units; however, this should not be to the detriment of providing two-bedrooms, three-bedrooms, and even four- and five-bedroom apartments. Consideration should be given to meet the needs of seniors by creating more accessible and adaptable units.

Financial Considerations

For the units located at the Pinecrest Foster Farm redevelopment, OCH's operating income will come from the newly developed subsidized and affordable units. With both RGI and affordable programs being based around the CMHC's market rates for the previous year, it is important to understand current market trends, and how they may be changing. Ottawa's rental housing market is experiencing growth of around three percent yearly and has a rental market vacancy rate of 1.7 percent in 2018, although a three percent vacancy rate is more desirable in the long term⁶²⁸.

Table H-12: Ottawa's market and affordable rents⁶²⁹.

Bedroom Type: Average Market Rent and Rent at 80 Percent								
Year	Bachelor	80%	1 Bed	80%	2 Bed	80%	+3 Bed	80%
2007	\$643.00	\$514.40	\$798.00	\$638.40	\$962.00	\$769.60	\$1,124.00	\$899.20
2008	\$671.00	\$536.80	\$827.00	\$661.60	\$994.00	\$795.20	\$1,162.00	\$929.60
2009	\$688.00	\$550.40	\$853.00	\$682.40	\$1,029.00	\$823.20	\$1,206.00	\$964.80
2010	\$715.00	\$572.00	\$877.00	\$701.60	\$1,049.00	\$839.20	\$1,227.00	\$981.60
2011	\$728.00	\$582.40	\$899.00	\$719.20	\$1,086.00	\$868.80	\$1,256.00	\$1,004.80
2012	\$754.00	\$603.20	\$916.00	\$732.80	\$1,115.00	\$892.00	\$1,295.00	\$1,036.00
2013	\$766.00	\$612.80	\$932.00	\$745.60	\$1,132.00	\$905.60	\$1,320.00	\$1,056.00
2014	\$780.00	\$624.00	\$936.00	\$748.80	\$1,131.00	\$904.80	\$1,320.00	\$1,056.00
2015	\$801.00	\$640.80	\$972.00	\$777.60	\$1,174.00	\$939.20	\$1,329.00	\$1,063.20
2016	\$812.00	\$649.60	\$982.00	\$785.60	\$1,201.00	\$960.80	\$1,372.00	\$1,097.60
2017	\$836.00	\$668.80	\$1,022.00	\$817.60	\$1,231.00	\$984.80	\$1,435.00	\$1,148.00
10-Year Growth	30.02%		28.07%		27.96%		27.67%	
2027 Rent at Same Growth	\$1,086.93	\$869.54	\$1,308.88	\$1,047.10	\$1,575.22	\$1,260.18	\$1,832.05	\$1,465.64

For RGI units, 30 percent of gross monthly household income is paid by the tenant to the landlord, and the remainder of the unit's rent, based on the average market rent for that unit size, is made up for by a rent subsidy from the government⁶³⁰. With the median annual tenant income in 2015 being around \$15,860, for individuals not on Ontario Works or the Ontario Disability Support Program, the average rent paid per month would be just under \$400⁶³¹. Depending on the number of bedrooms in the unit, this will require a rent subsidy of several hundred dollars per unit on a monthly basis for RGI units. The gross income for affordable units is easier to calculate, as the difference between market rent and the affordable price does not affect the total amount received by the landlord. Affordable units are priced at 80 percent of the market rental rate for the specific bedroom type based on the previous year's average market price. Table 103 illustrates what current market and affordable rents are in Ottawa by bedroom type, and how rents have and may change over a ten-year period.

Conclusions

Given the need to replace the existing OCH townhomes and the possibility to add more affordable housing onsite, several considerations have been highlighted in this Affordable Housing Strategy. The following highlights some key considerations for the planning and development process.

Facilitating Redevelopment

Policy

- Federal, provincial, and municipal policies both encourage the provision of affordable housing, and provide options for facilitating development
- Policy can be used to both fund and justify a development of this nature

Cost

- Making effective use of assets and existing resources is essential for the success of affordable housing developments
- Understanding the costs related to development will enable the creation of realistic development goals

Feasibility

- Incorporating income-mixing with a minimum of 50 percent market units will be essential for the financial and social success of a redevelopment
- Setting ambitious goals for the number of affordable units is positive for encouraging redevelopment, regardless of the mixing outcome

Funding

- Considering the multiple funding opportunities will maximize possible funding
- Public funding options have the potential to contribute to a significant amount of capital, reduce overall costs, minimize interest charges, and provide indirect cost savings
- Consider the requirements a project must meet to qualify for funding from the variety of programs available
- Explore public-private partnerships (P3s) to increase affordable housing capacity and provide a wide-range of programming and services
- Leverage existing assets to fund subsidized and affordable units, such as selling surplus lands to developers
- Include conditions of sale to ensure developers maintain a set percentage of affordable units
- Partner with other non-profits to increase the amount of affordable housing provided

Considerations for Redevelopment

Tenant Retention

- Provide detailed written notice and an associated timeline of events to tenants
- Aim for zero forced displacement of current tenants
- Maintain the right-of-first-refusal for tenants who choose to relocate offsite
- Provide relocation assistance for all current tenants
- Strengthen and develop community-building programs
- Use construction buffers to maintain a good quality of life for current tenants who wish to remain in onsite housing
- Provide additional advisory services and hardship compensation, where possible

Building Typology

- Ensure that there are no physical barriers to access the site
- Ensure that the layout of housing developments is such that the perception of safety, access to services, and social cohesion are increased

Energy Efficiency and Sustainability

- Encourage energy efficient and sustainable building practices, materials, and designs
- Align energy conservation and social housing strategies

Amenities

- Focus on creating an inclusive, needs-oriented community through quality of social infrastructure
- To increase community support, create a sense of identity, and provide employment opportunities close to home

Parking

- Encourage transit usage without limiting the mobility of those who require alternative transportation methods

Tenure and Bedroom Type

- Provide housing for families, immigrants, singles, and the growing population of seniors
- Maintain four- and five-bedroom units for large families, while providing smaller unit options on site
- Allow for a variety of tenure options
- Provide significant consideration for those with accessibility needs both now and, in the future

Financial Considerations

- Understand how rental income and funding is changing both at the time of redevelopment and into the foreseeable future

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Dumaurier Park

Located under Dumaurier Park and some of the surrounding area is a former landfill, which was operational between 1953 and 1957. The area covers approximately 51,000 square metres of land, with the refuse at an estimated depth of three to five metres⁶³². Based on the spatial data, it appears that only about half of the landfill falls on City-owned property, with the remainder located under private property and surrounding rights-of-way (Figure I-1).

It is thought that the landfill is made up of mostly domestic waste, along with some commercial and industrial waste⁶³³. With the exception of methane levels, little information is available for review and the data which is available is at least fourteen years old. No evidence was found to suggest that the site was in any way cleaned up after the landfill was closed or brought up to a standard that would be appropriate for use as a public open space today. Therefore, before the site undergoes any significant changes, new studies are needed to better understand remediation options and associated costs.



Figure I-1: Former landfill area under Dumaurier Park.

Landfill Clean-Up Case Studies

Landfill Clean-up in Ottawa

Brownfield remediation projects are often a significant obstacle to development due to cost and uncertainty. However, there are examples of former landfill clean-ups and funding tools used to finance the remediation process. The City's *Transit Oriented Development (TOD) Plan* states that, as the City progresses with more compact built forms around rapid transit stations, former landfills in close proximity will need to be remediated⁶³⁴.

For example, the *Transit- Oriented Development (TOD) Plan* for Hurdman Station recognizes that former landfills in the area should eventually be remediated and developed with a high density-built form⁶³⁵. Within the 800-metre study buffer around the Hurdman LRT Station, landfills account for a significant portion of the undeveloped land. Although current plans find it suitable for passive open space, it is recognized that these lands should be remediated for further, more compact development⁶³⁶.

As in the case of Hurdman Station, the landfill under Dumaaurier Park is both within 600 metres of the LRT station and within the City's greenbelt. However, the landfill located under Dumaaurier Park is significantly smaller in both size and volume, and presumably much cheaper to remediate than that of Hurdman Station. The *Brownfield Community Improvement Plan (BCIP)* and the *Transit-Oriented Development (TOD) Plan* are two possible tools which could facilitate the Dumaaurier landfill remediation. Specifically, the BCIP places "...the highest priority for brownfield redevelopment in the Central Area, Mixed Use Centres, Along Main streets and within 600 metres of an existing or planned rapid transit station"⁶³⁷. The BCIP redevelopment program applies to non-government owned lands and can provide up to a maximum of 50 percent of the eligible clean-up costs⁶³⁸. The program includes funding for:

- the Project Feasibility Study Grant;
- the Environmental Assessment Grant Program;
- the Property Tax Assistance Program;
- the Rehabilitation Grant Program;
- the Building Permit Fee Program; and,
- the Development Charge Reduction Program.

Landfill Clean-up in Calgary

In preparation for an extension of Calgary's LRT system, the City set aside money for the clean-up of two former industrial landfills as part of the \$4.6 billion project. The two landfills located in the Highfield and Ogden areas will see 600,000 cubic metres of waste removed from the sites over a three-year period⁶³⁹. The industrial waste will be almost entirely removed from the Highfield location and partially from the Ogden landfill. The project is expected to cost around \$90 million and, once completed, will allow for the LRT line to be created and for the land to be developed into commercial or residential uses⁶⁴⁰. The \$90 million is part of a \$250 million fund given to the City as part of the Enabling Works Program by federal and provincial governments; however, more money may be required for this project due to unknown amounts of contamination and remediation costs⁶⁴¹.

Landfill Clean-up in New Jersey

In New Jersey, six former landfill sites were redeveloped into a range of commercial, retail, institutional, and residential uses between 1988 and 2002⁶⁴². In most of these cases, the landfills were located where land is scarce and values ranged from \$100,000 to \$300,000 per acre for development-ready land⁶⁴³. The landfills were remediated with highly variable costs based on site-specific factors. In all cases, the remediation process was expensive, ranging from \$10,000 to \$100,000 per acre⁶⁴⁴. The landfill sites redeveloped were just a few of the several hundred closed landfills in the state⁶⁴⁵. Ultimately, these projects occurred as a result of development benefits outweighing the costs of remediation.

The main lesson takeaway is that, "The main factors that affect landfill redevelopment are: size of site, degree of contamination, type of waste, depth of waste, location, wetlands and open water bodies, use of recyclable materials for remediation and development purposes, land value, willing developer, regulatory agency policy/roles, engineering solutions, and financial initiatives"⁶⁴⁶.

Legislation and Financial Backing of Brownfield Remediation

Planning Act, R.S.O. 1990, c. P13

Section 28 allows municipalities to establish a Community Improvement Area to direct funds to in order to implement policy initiatives. It provides a toolbox that allows the municipality to:

- Acquire, hold, clear, grade, or otherwise prepare land for community improvement;
- Construct, repair, rehabilitate, or improve buildings on land acquired or held by the municipality;
- Sell, lease, or dispose of any lands and buildings acquired or held by the municipality; and,
- Make grants or loans to owners and tenants of land and buildings within the Community Improvement Area to pay for the whole, or any part, of the eligible costs of the Community Improvement Plan.

Municipal Act, 2001, S. O. 2001, c. 25

Section 365.1 allows municipalities to provide tax assistance to an eligible property in the form of a deferral or cancellation of part, or all, of the taxes levied on that property for municipal and education purposes during the rehabilitation and development periods of the property.

Development Charges Act, 1997, S.O. 1997, c.27

Section 5 allows the municipality to offer development charge exemptions for certain types of development. This can include exemptions to private property owners to incentivize brownfield clean-ups.

Brownfields Financial Tax Incentive Program (BFTIP)

The BFTIP provides an exemption to the provincial education component of property tax for private property owners.⁶⁴⁷ The BFTIP also matches municipal tax assistance for clean-up of eligible brownfield properties.

Federation of Canadian Municipalities' Green Municipal Fund (GMF)

The GMF "...provides funding for municipal environmental initiatives that improve air, water, and soil"⁶⁴⁸. The GMF funds various initiatives that include plans, feasibility studies, pilot projects, and capital projects. Specifically, it provides funding for brownfield redevelopment, including the removal and disposal of contaminated soil and material⁶⁴⁹. This fund is available to municipal governments and their partners.

Policy Context

Provincial Policy Statement (PPS)

Section 1.1.3.3 of the PPS states that,

"Planning authorities shall identify appropriate locations and promote opportunities for *intensification* and *redevelopment* where this can be accommodated taking into account existing building stock or areas, including *brownfield sites*, and the availability of suitable existing or planned *infrastructure* and *public service facilities* required to accommodate projected needs."

Section 1.7 of the PPS outlines strategies surrounding long-term economic prosperity, in particular through the redevelopment of brownfield sites.

City of Ottawa Official Plan

Section 3, Policy 10(e) states that, "In order to demonstrate its commitment to development within Mixed-Use Centres, the City will consider [these centres] to be priority locations for... [the] creation of brownfield redevelopment strategies"⁶⁵⁰.

Park Relocation Case Studies

Softball Diamonds Overview

The Canadian Amateur Softball Association, known as Softball Canada, is a federally-supported organization, which outlines the dimensions of playing fields for both fast-pitch and slow-pitch leagues. Fast-pitch fields have 18.3 metre baselines, with a minimum field radius of 68.58 metres⁶⁵¹. On the other hand, slow-pitch softball plays on 19.81 to 21.34 metre baselines, with a minimum field radius of 83.3 metres⁶⁵². The field sizes also alter based on youth, male, or female leagues, which further complicates the area required. Knowing which of these fields is required will influence the land requirements for development; furthermore, consultation with local leagues and players will be important. Also, a majority of current softball field developments occur in groups of four, allowing for both the existing fast- and slow-pitch fields to be replaced elsewhere with two additional fields.

Barrie Community Sports Complex – Barrie, ON

The City of Barrie, with a population of 141,000, developed the 47.75 hectare Barrie Community Sports Complex in 2000. The site features ten ball diamonds, eight turf fields, a playground, tennis courts, and beach volleyball courts, while also having enough parking for 1,200 vehicles⁶⁵³. Although this facility is massive, what should be noted is the arrangement of the softball fields and the location of the facility, outside of the urban area and off the highway.

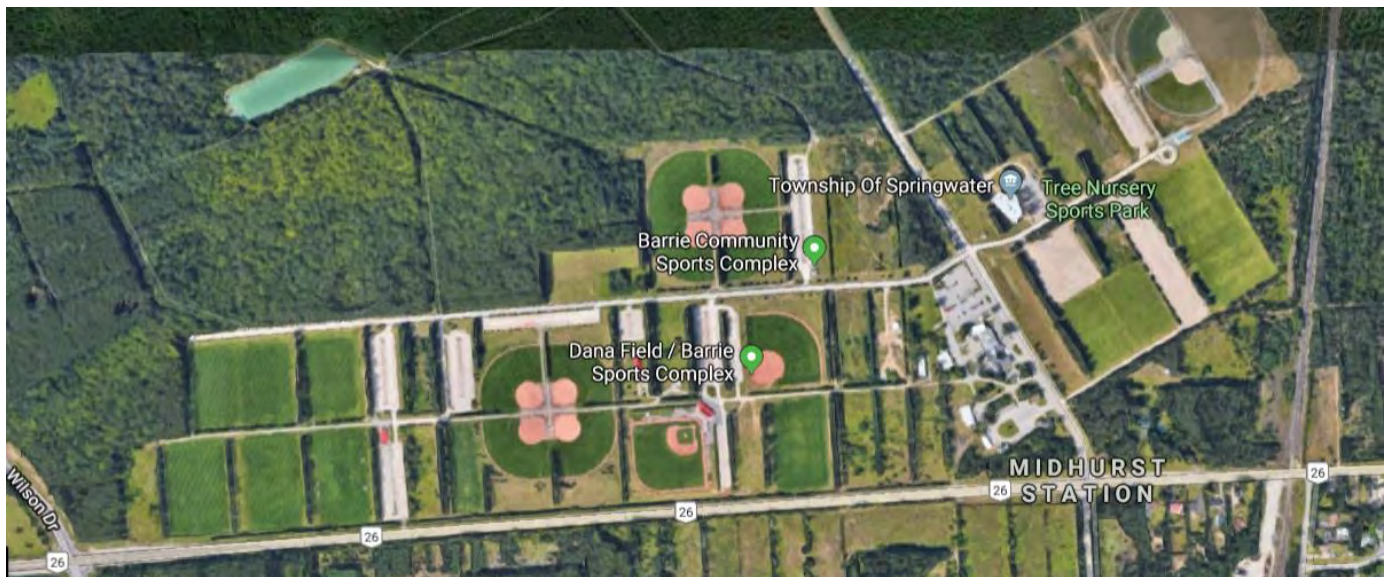


Figure I-2: Google Maps satellite view of Barrie Community Sports Complex⁶⁵⁴.

Tournament Capital Ranch (TCR) Rayleigh Ball Diamond – Kamloops, BC

The TCR opened in July 2011 on over 121 hectares of property just on the outskirts of Kamloops, BC. The facility offers eight slow pitch diamonds across 50 hectares, along with scoreboards, seating, concession areas, washrooms, overnight RV parking, walking paths, and landscaped grounds⁶⁵⁵. This is another example with a suburban location and similar arrangement of diamonds.



Figure I-3: Google Maps satellite view of Tournament Capital Ranch⁶⁵⁶.



Figure I-4: Riverside Park Master Plan⁶⁵⁷.

Riverside Park - Evans, Colorado

The Riverside Park development in Evans, Colorado is an ongoing project to repair park infrastructure damage from a 2013 flood⁶⁵⁸. The current redevelopment includes four softball diamonds located in close proximity together, which is estimated to save maintenance hours by 30 percent compared to when ballparks are separated from one another⁶⁵⁹. The total cost of all structures, including the four ball fields, two play areas, a concession building, and several other small park amenities, was estimated to be \$1,450,00 2014 USD, not including servicing and preparation⁶⁶⁰. This example provides insight into how modern softball fields are developed to enable a variety of activities, while reducing maintenance costs.

Langdon, Alberta

Langdon, Alberta, a town of 5,060 people, is located 36 kilometres east of Calgary and is in the process of developing a quad ball diamond facility. The proposal stemmed from growing demand and the lack of adequate facilities in the town⁶⁶¹. The project was directed for the use of two organizations, the Langdon Softball Association and Langdon Little League, but also recognized that tournaments at the park will bring in community visitors⁶⁶². The total capital costs for the project were estimated at \$3.4 million, without the cost of land or site servicing, but could be reduced if it was completed in a single phase⁶⁶³. The land for the site was purchased in a partnership between a Community Facility Board, the School Division, and the County⁶⁶⁴. Located on less than half of a larger 18.5-hectare site, the diamonds are just a section of a much larger project. The funding for the project was expected to have one third of the contributions come from fundraising and capital sponsorship, while two thirds would come from municipal and senior levels of government⁶⁶⁵. The costs of the project are broken down in Figure I-5.

Item	Description	Cost (\$M)
Phase 1	Playing surface, shale infield and warning track, fencing, supporting building, tournament board and shelter area	\$1,900,000
Phase 2	Lighting, permanent bleachers, kids play area	\$1,000,000
Fees and Contingencies	Professional fees, unexpected project costs, FFE	\$500,000
Estimated Total Project Cost		\$3,400,000

* Cost estimates reflect 2017 dollars

It is important to note that additional cost efficiencies are likely to be accrued should the project be developed in a single phase. Detailed project costing will occur during the detailed design and engineering phase.

Figure I-5: Costs of development⁶⁶⁶.



Figure I-6: Langdon softball diamond rendering⁶⁶⁷.

Recommendations

Recommendation 1: Commission a study to understand the level of contamination in Dumarier Park and the cost of clean-up

According to the currently policies in place, it is in the best interest of the City and its residents that the former landfill, encompassing Dumaaurier Park, be cleaned up and remediated. Prior to this area being redeveloped, it is imperative that a study is undertaken to better understand the degree of contamination and the cost of clean-up. Leaving the landfill untouched may result in a decrease in property values, and also affect the health of individuals that live around the site. Furthermore, considering the landfill extends onto private property beyond the park boundary, it may be beneficial to engage with neighbouring private property owners to encourage their cooperation. It is best to begin this process as soon as possible, in order to prevent any major surprises going forward with the area's redevelopment.

Recommendation 2: form community partnerships to find a suitable location outside of the urban area for a new quad-diamond facility

The softball diamonds at Dumaaurier Park are heavily used by various leagues throughout the City during the summer months. The associated need for free parking indicates that the site is most likely used by individuals coming from outside of the community. The lack of passive recreational opportunities means the park sits vacant for most of the day and during the winter months. Because of this vacancy, the park can be seen as an underutilized asset.

Not including Ruth Wildgen Park and the surrounding private properties, Dumaaurier Park makes up 19.7 percent of developable land within 400 metres of the future Pinecrest Station, and sixteen percent of developable land within 600 metres of the station. These values do not consider the amount of land that will be used in the new road network. Assuming that 25 percent of all developed lands will be consumed by roads, Dumaaurier Park ends up being 26 percent of all developable land within 400 metres and 21.3 percent within 600 metres of the future LRT station, respectively. The former rural and suburban nature of the area may have been appropriate for softball fields in the past. However, as the population and land values begin to grow, softball fields become an inappropriate land use next to a high order transit station.

Table I-1: Total amount of developable land surrounding Foster Farm site.

Hectares of developable land within 400 metres of LRT station	13.2 ha
Hectares of developable land within 600 metres of LRT station	16.3 ha
Hectares used by Dumaaurier Park	2.6 ha
Park as % of total land within 400 metres	19.7%
Park as % of total land within 600 metres	16.0%
Hectares of land needed for roads (25%) within 400 metres of station	3.3 ha
Hectares of land needed for roads (25%) within 600 metres of station	4.08 ha
Park as % of total land within 400 metres excluding land needed for roads	26%
Park as % of total land within 600 metres excluding land needed for roads	21.3%

Recommendation 3: Capitalize on financial mechanisms for Brownfield Remediation

The clean-up of a former landfill is expensive; fortunately, there are existing financial mechanisms in place to assist with the cost of brownfield remediation, such as the *Ottawa Brownfields Community Improvement Plan* and the provincial Brownfields Financial Tax Incentive Program (BFTIP)⁶⁶⁸.

Recommendation 4: Close the park and use it as a construction staging area

To minimize the impact on softball programming, it is recommended that the park is closed during the offseason, to begin use as a construction staging area during redevelopment. Furthermore, it would be best to replace the diamonds as soon as possible; in the past, the removal of former or temporary parks has been met with fierce public opposition, even when the land use rationale is sound. Once new residents move into the area, there will be strong community pressure to retain the greenspace, and they may resist the introduction of the dusty and dirty work for the brownfield clean-up.

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11 ENDNOTES

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