

Planning for Transit Oriented Development at Cambie and 57th Avenue
A Vancouver Case Study

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B.A., The University of British Columbia, 2007

A PROJECT SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS (PLANNING)

In

THE FACULTY OF GRADUATE STUDIES
School of Community and Regional Planning

We accept this project as conforming
to the required standard

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THE UNIVERSITY OF BRITISH COLUMBIA

August 2010

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Table of Contents

EXECUTIVE SUMMARY	3
INTRODUCTION.....	5
1. STUDY AREA.....	6
<i>Cambie Corridor and the Canada Line</i>	<i>6</i>
<i>Cambie Street and 57th Avenue.....</i>	<i>9</i>
<i>Langara Golf Course</i>	<i>10</i>
<i>George Pearson Centre</i>	<i>11</i>
<i>Langara Gardens.....</i>	<i>12</i>
<i>Proximity to Langara Station Amenities</i>	<i>13</i>
2. CAMBIE CORRIDOR PLANNING PROCESS	14
<i>Phase 1.....</i>	<i>14</i>
<i>Phase 2.....</i>	<i>15</i>
<i>Phase 3.....</i>	<i>16</i>
3. CAMBIE CORRIDOR PLANNING PRINCIPLES AND OTHER CITY OF VANCOUVER PLANNING PRINCIPLES	17
<i>Cambie Corridor Planning Principles and Guidelines</i>	<i>18</i>
<i>Principle 1: Provide land use that optimizes the investment in transit</i>	<i>19</i>
<i>Principle 2: Provide a complete community.....</i>	<i>19</i>
<i>Principle 3: Create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit.....</i>	<i>20</i>
<i>Principle 4: Focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity.....</i>	<i>20</i>
<i>Principle 5: Provide a range of housing choices and affordability</i>	<i>20</i>
<i>Principle 6: Balance city-wide and regional goals with the community and its context</i>	<i>21</i>
<i>Principle 7: Ensure job space and diversity</i>	<i>21</i>
<i>CityPlan</i>	<i>22</i>
<i>EcoDensity Principles</i>	<i>22</i>
<i>Other Guiding Principles</i>	<i>23</i>
4. TRANSIT ORIENTED DEVELOPMENT INFORMATION.....	23
<i>Literature Review</i>	<i>24</i>
<i>Aspects of TOD.....</i>	<i>26</i>
Density.....	26
Mixed Land Use	28
Urban Design	28
Housing Variety	29
General Observations.....	29
5. INCORPORATION OF PUBLIC OPEN SPACES INTO TOD (CASE STUDIES)	30
<i>Bellevue Station – Denver Metro Region</i>	<i>31</i>
<i>Orenco Station, Portland, Oregon.....</i>	<i>31</i>
<i>Clackamas County, Oregon.....</i>	<i>33</i>
<i>Maroochydore, Queensland, Australia</i>	<i>33</i>
<i>Shawnee-Evergreen, Calgary, Alberta</i>	<i>34</i>
<i>Shaganappi Point Station, Calgary, Alberta.....</i>	<i>35</i>
<i>The Bridges, Calgary, Alberta</i>	<i>36</i>
<i>Public Open Space Evaluation.....</i>	<i>37</i>
6. METHODOLOGY	38

7. TWO CAMBIE AND 57 TH AVENUE LAND USE ALTERNATIVES	39
<i>Low Density Approach (Alternative 1)</i>	42
<i>High Density Approach (Alternative 2)</i>	44
8. EVALUATION OF THE TWO LAND USE ALTERNATIVES	48
<i>Low Density Approach</i>	48
<i>High Density Approach</i>	51
9. RECOMMENDATION	53
CONCLUSION	57
REFERENCES	58

Table of Figures

FIGURE 1: CAMBIE CORRIDOR PLANNING PROCESS STUDY AREA	7
FIGURE 2: CAMBIE AND 57TH CATCHMENT AERIAL.....	10
FIGURE 3: PICTURE OF GEORGE PEARSON CENTRE.....	12
FIGURE 4: PICTURE OF LANGARA GARDENS	13
FIGURE 5: CAMBIE CORRIDOR PLANNING PROCESS SCHEMATIC.....	17
FIGURE 6: ORENCO STATION AERIAL	32
FIGURE 7: DRAFT EMERGING PLAN FOR THE CAMBIE CORRIDOR	41
FIGURE 8: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 1.....	43
FIGURE 9: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 2.....	45
FIGURE 10: PLAZA 88	47
FIGURE 11: LAND USE ALTERNATIVE EVALUATION COMPARISON.....	53

Table of Tables

TABLE 1: CAMBIE CORRIDOR PLANNING PRINCIPLES AND GUIDELINES.....	19
TABLE 2: CAMBIE AND 57TH AVENUE ALTERNATIVES COMPARISON	48
TABLE 3: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 1 SLIDING SCALE	49
TABLE 4: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 2 SLIDING SCALE	51

Executive Summary

The City of Vancouver is currently undertaking the Cambie Corridor Planning Process which will guide the development of the Cambie Street area from 16th Avenue to the Fraser River. The Cambie and 57th Avenue area, which is part of the study area, is the site of a future proposed Canada Line station. The area currently contains a city-owned 18-hole golf course, a hospital, an elementary and secondary school, and various low and medium density housing. If a rapid transit station is to be located in the area, the area would be expected to increase in land use density and function to take advantage of this amenity. Those goals of increased density and land use are fundamental to the principles of the Cambie Corridor Planning Process. The planning process is currently in its second of three phases, with the third phase being an optional phase. The first phase of the process resulted in the formation of an interim planning policy and seven planning principles that will guide the process moving forward. The same seven principles will be used, in this project, as criteria for evaluating the land use alternatives.

This project will develop two land use alternatives for the Cambie and 57th area for consideration. Both of these alternatives will be developed based on Transit Oriented Development (TOD) principles. Transit Oriented Development is the concept of having highly dense and mixed land uses near transit stations, with pedestrian and cyclist oriented urban design to encourage the use of sustainable transportation. Other aspects of TOD include housing variety, parking provisions, and transportation demand management initiatives.

Based on TOD principles, a golf course does not typically fit into a TOD. However, the reality is that golf courses situated near transit stations exist. There are cases of golf courses located close to transit, and there are other cases where golf courses are being redeveloped because of the introduction of rapid transit service. Case studies show that different jurisdictions have different ways of dealing with public amenities, and in some instances differentiate between different types of public amenities. Because of this, there is considerable variation in what type of public amenities are actually suitable for TOD.

The first of two Cambie and 57th Avenue area land use alternatives developed for this project is based on the draft emerging plan that was developed in preparation for phase two of the Cambie Corridor Planning Process. The emerging plan calls for the redevelopment of the sites currently occupied by Langara Gardens (residential) and the George Pearson Centre (hospital). The City would like to redevelop the area at a density higher than the current development, and is considering the implementation of district energy synergies for the site. This first alternative will be developed utilizing principles of the minimum land use density level for a district energy system. These levels represent the minimum level at which the City of Vancouver can develop based on the emerging plan.

The second land use alternative is more aggressive in both density and land use mix values for the Cambie and 57th Avenue area. Whereas the first land use alternative was restricted to the west side of Cambie, the second land use alternative will utilize a portion of the golf course which will be redesigned and redeveloped to make room for more mixed use development. The second land use alternative will meet the density thresholds for rapid transit station area planning that have been developed in this report and which are based on other studies.

When the two land use alternatives are evaluated based on criteria established in this paper, the second land use alternative scored better than the first based on the Cambie Corridor Planning Principles. To further encourage transit ridership, there are a number of ways the City can build on the second land use alternative; such as further redeveloping the golf course, increase the functionality of the Pearson Precinct, or increase the density and land use mix further along the corridor. Evidence suggests that the Cambie and 57th Avenue area as it currently exists can accommodate an increase in density and land use mix without the incentive of the implementation of a rapid transit station. However, if a rapid transit station is introduced to the area, the Cambie and 57th Avenue area should be redeveloped at a density and land use mix at least similar to that advocated by this project's Alternative 2, or, it may be suggested, the City is not realizing the EcoDensity and Greenest City initiatives put forward by the City.

Introduction

The City of Vancouver is currently in the process of fostering a development strategy for the Cambie Corridor. The planning program is currently under development due in part to the recent opening of the Canada Line, a “*rapid rail service to Metro Vancouver’s busiest north-south corridor*”¹, which connects downtown Vancouver with the Vancouver International Airport along Cambie Street. The proposed plan is intended to integrate existing and future development with existing and future transit along and around the Canada Line to support the City of Vancouver’s goals of *environmental sustainability, liveability, and affordability*². Past practices in station area planning have taken place on a “*one-station-at-a-time*” basis³. However, this proposed process will provide a more efficient approach, as well as provide an opportunity to address the Cambie Corridor as a whole, to thereby create a more coherent approach.

The City envisioned the structure and plan of the Cambie Corridor as functioning as a Transit Oriented Development which would help reinforce the Municipality’s proposed vision of being the *Greenest City in the world by 2020*⁴. Transit Oriented Development is usually characterized by high density development utilizing a variety of land uses, with an aspect of incorporating pedestrian and cyclist friendly urban design. As part of this project, research will be undertaken to investigate and assess Transit Oriented Development best practices.

Part of the study area for the City of Vancouver development strategy encompasses a future transit station at 57th Avenue and Cambie Street. Currently, the Cambie and 57th Avenue area has an 18-hole golf course to the east, and on the west a hospital, as well as existing low to medium density residential developments. With its current built form, the area does not have enough density and usage to make a rapid transit station viable. There are studies that indicate that transit stations with service frequency rates faster than 10 minutes, should have a density

¹ TransLink, “Canada Line,” TransLink, <http://www.translink.ca/en/rider-info/canada-line.aspx>

² City of Vancouver, “Cambie Corridor Planning Program Terms of Reference,” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/tor.pdf>

³ City of Vancouver, “Cambie Corridor Planning Program Terms of Reference,” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/tor.pdf>

⁴ City of Vancouver, “Greenest City 2020,” City of Vancouver, <http://vancouver.ca/greenestcity/>

of at least 148 units per hectare density around the station⁵. If this potential future station is to be implemented, the City of Vancouver must make drastic changes to the Cambie and 57th Avenue area in terms of its land use. These changes could include any modification that increases density and the floor area ratio (FAR); this may be accomplished by manipulating residential and commercial land uses. This project will investigate the viability of a transit station at this particular location. This project will develop two land use planning alternatives for the Cambie and 57th Avenue area in anticipation of a proposed future station at this site for the existing Canada Line. Based on the Cambie Corridor Planning Process and the principles of Transit Oriented Development, this project will make recommendations on how the area surrounding this proposed future station should be developed in order to justify developing a rapid transit station in the area.

1. Study Area

Cambie Corridor and the Canada Line

The study area for the Cambie Corridor Planning Process extends along Cambie Street between 16th Avenue to the north and the Fraser River to the south. Within the study area are four existing Canada Line stations and two proposed future stations; one station proposed for 33rd Avenue and the other at 57th Avenue. The four existing stations in the study area are, north to south, King Edward, Oakridge 41st, Langara 49th, and Marine Drive⁶. Figure 1 shows the four existing stations (black stars) and the two proposed stations (grey stars). Cambie Street is one of Vancouver's most important north-south arterial roads due to its east-west central location, and is home to one of the most important shopping centres in the City: the Oakridge Shopping Centre. The study area includes a number of neighbourhoods, each with its own distinct character. These neighbourhoods include Riley Park, Oakridge and Langara, and Marpole at the southernmost end of the corridor. The current land use along the corridor is quite diverse with commercial, industrial and residential all represented within the study area.

⁵ H. Dittmar and S. Poticha. 2004. "Defining transit-oriented development: the new regional building block" in Dittmar and Ohland, G. (eds.) *The New Transit Town: best practices in transit-oriented development*, 20-40 Island Press, Washington

⁶ City of Vancouver, "Cambie Corridor Planning Principles," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>



FIGURE 1: CAMBIE CORRIDOR PLANNING PROCESS STUDY AREA⁷

The Cambie Corridor Planning Process involves four existing stations (black stars) and two proposed stations (grey stars). The circle surrounding each station represents the study area for Phase 2 of the CCPP study.

Questions have been raised recently by the public as to whether or not the Canada Line is adequately able to handle more ridership just one year after the opening of the \$2 billion rapid

⁷ City of Vancouver, "Cambie Corridor Study Area," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/pdf/studyarea.pdf>

transit line. The Canada Line currently carries approximately 100,000 passengers daily, and at this point during peak periods, passengers may already have to wait for the 'next train' before they are able to get on the train personally⁸. This raises concern as to whether or not the Canada Line will be able to accommodate an increase in population around new or existing stations which would contribute to an even greater increase in ridership. As part of the Cambie Corridor Planning Process, TransLink (the South Coast British Columbia Transportation Authority), which is responsible for the Canada Line, released a statement postulating that the rapid transit line is able to accommodate approximately 150,000 passengers daily, based on current service levels. However, the 150,000 passenger capacity is based on the assumption that there is a constant flow of passengers boarding the train throughout the day, which is not currently the case as the line experiences most of its ridership during peak hours⁹. That is to say, the ridership pattern is 'double-peak loaded', with the majority of ridership occurring during 'rush hour' morning and afternoon. The high volume during peak times is usually restricted to Richmond bound trains and trains originated from Richmond-Brighouse, while there is still capacity on trains going to and from the airport. TransLink is expected to increase service levels on an "as needed" basis at this time, and will look to increase service at some point in the future as the Canada Line is still currently very young. There is a scheduled 12% increase in service, by adding two trains to operation, in August of 2011¹⁰. Based on these assumptions, the Canada Line should be able to accommodate the increase in density in the City of Vancouver. It is important to note that the service level of the Canada Line will be increased once all of the development proposed for the Cambie Corridor Planning Process is accounted for, the final completion date for which is still at least five to ten years away and perhaps more.

⁸ TransLink, "Addressing Canada Line Capacity Questions," TransLink, <http://www.translink.ca/en/About-TransLink/Media/2010/June/Addressing-Canada-Line-capacity-questions.aspx>

⁹ TransLink, "Addressing Canada Line Capacity Questions," TransLink, <http://www.translink.ca/en/About-TransLink/Media/2010/June/Addressing-Canada-Line-capacity-questions.aspx>

¹⁰ TransLink, "Addressing Canada Line Capacity Questions," TransLink, <http://www.translink.ca/en/About-TransLink/Media/2010/June/Addressing-Canada-Line-capacity-questions.aspx>

Cambie Street and 57th Avenue

The area in the vicinity of the proposed Cambie and 57th Avenue Canada Line station currently has a city-owned 18 hole golf course, the George Pearson Hospital and its neighbouring facilities, Langara Gardens, a medium density mixed used development with a variety of housing typologies, and as well as single family homes and duplexes. Figure 2 outlines some of the important features of the area. There is also a privately owned hospital and nursing home, Amherst Hospital and Nursing Home, on the east side adjacent to the golf course. A little further west of Cambie Street are two schools; one elementary and one secondary school: both within a short walking distance from the proposed Cambie and 57th Avenue station. The subject location is currently served by one standard bus route (#15) and is approximately 15 to 20 minutes walking distance to the closest current Canada Line station; which is either Langara-49th to the north or Marine Drive station to the south. This Cambie and 57th Avenue location within the Cambie Corridor is part of the heritage boulevard which is characterized by the green shoulders separating northbound and southbound traffic. At a greater distance away from Cambie Street on the west side, at the corner of Oak Street and 59th Avenue, is the Marpole-Oakridge Community Centre. The community centre has a large gymnasium, whirlpool and sauna, as well as a number of meeting rooms for available for rental purposes. The Marpole-Oakridge Community Centre represents the closest community centre in proximity to the subject area.



FIGURE 2: CAMBIE AND 57TH CATCHMENT AERIAL

This aerial illustrates the existing built structure to the east, and the Langara golf course to the west in the area around the proposed station.

Langara Golf Course

The east side of the Cambie and 57th area is dominated by the Langara golf course. Built originally by the Canadian Pacific Railway (CPR) in 1926, and subsequently added to using land purchased 50 years later from the CPR, the 18-hole Langara Golf Course is one of three city-owned golf courses¹¹. There is a vibrant clientele that uses the facility year round. There is a 2.7 km perimeter scenic walking trail that surrounds the 480,000m² golf course which residents of the neighbourhood use on a regular basis. Even though the proposed Cambie Corridor station would be adjacent to the golf course, the entrance to the golf course is located closer to the Langara-49th station as opposed to the proposed future 57th Avenue station.

¹¹ Vancouver Board of Parks and Recreation, "Vancouver Park Board – Langara Golf Course," Vancouver Board of Parks and Recreation, <http://vancouver.ca/parks/golf/langara/index.htm>

George Pearson Centre

The George Pearson Centre occupies a significant portion of the south-east quadrant of the study area. The Centre is currently being reviewed by the City of Vancouver and Vancouver Coastal Health as a potential area for replacement and/or expansion¹². The hospital was built in 1952 as a tuberculosis sanatorium. The hospital currently serves about 120 adults who are suffering from severe Alzheimer's or other dementia. The Dogwood Lodge was built in approximately 1979 to provide complex care for frail seniors¹³. Vancouver Coastal Health has already identified the Pearson Precinct, including the hospital as well as the Dogwood Lodge, for expansion to provide services to meet current and future demand of the community.

Due to limited resources and the Cambie Corridor Planning Process, the planning program for the Pearson Precinct is postponed. It is expected that the Cambie Corridor Planning Process will help guide the planning program for the Pearson Precinct.

¹² City of Vancouver, "Pearson Centre Site Policy Planning Program," City of Vancouver, <http://vancouver.ca/commsvcs/planning/pearson/index.htm>

¹³ City of Vancouver, "Pearson Centre Site Policy Planning Program," City of Vancouver, <http://vancouver.ca/commsvcs/planning/pearson/index.htm>



FIGURE 3: PICTURE OF GEORGE PEARSON CENTRE

The main building for the George Pearson Centre illustrates the current extent of the low density build environment. There are a number of other buildings in the Precinct where the maximum height for those buildings on site is no more than two stories.

Langara Gardens

Langara Gardens is a mixed use development situated at the north-east corner of the Cambie and 57th Avenue area directly across from the George Pearson Centre. The development consists of high-rise apartments, garden apartments and townhouses operating as rental accommodation. The complex incorporates has a number of retail spaces for rental as well. These retail spaces include a bank, a drug store and a yoga studio among other small-scale retail outlets. The development has 607 residential units and 2058 m² of commercial space. Even though the development contains high-rise buildings situated at 18 stories, the floor space ratio of the entire Langara Gardens development is approximately 0.78¹⁴.

¹⁴ City of Vancouver, "CD-1 (47) Langara Gardens By-law No. 4358," City of Vancouver, [http://vancouver.ca/commsvcs/Bylaws/cd-1/CD-1\(047\).pdf](http://vancouver.ca/commsvcs/Bylaws/cd-1/CD-1(047).pdf)



FIGURE 4: PICTURE OF LANGARA GARDENS

The Langara Gardens existing development consists of four highrise buildings as well as some townhouses, all of which are designed for rental purposes.

Proximity to Langara Station Amenities

The area in question is in the proximity of Langara College, a community college with approximately 23,000 students¹⁵. The Langara-49th Canada Line station currently serves the college as the main north-south connection. Located close to the Langara-49th station, is the local YMCA. Langara College, the entrance to the Langara Golf Course and the YMCA are all within close proximity of the Langara-49th station, which makes the area surrounding the station a vibrant place during most times of the day. Even though these amenities are not directly within the study area, these amenities are close enough that the residents in the community can access these amenities.

¹⁵ Langara College, “Langara College – About Langara College, “ Langara College, <http://langara.bc.ca/about-langara/index.html>

2. Cambie Corridor Planning Process

The existing built environment structures at the Cambie and 57th site reflect how previous planning decisions have influenced the development in this area. There was, at one point, less focus on density and floor area ratio(s). The Cambie Corridor Planning Process represents the most recent attempt to influence future development on the site. The Cambie Corridor Planning Process is the framework for driving development within the location and is divided into three separate phases. The process was to start at a broad level and focus on the immediate adjacent areas and then become increasingly specific in scope and larger in geographical area in the latter Phases (see figure 5). This is due to the size of the planning project, the broad scope of the project, and to the City's goal of ensuring that residents and other stakeholders are informed throughout the entire process. The Phase 1 of the project will develop principles and guidelines which will influence future planning processes and development direction, as well as an *'adjacent sites interim rezoning policy'* to guide development applications that are currently in process¹⁶. The second phase of the process is a core area development policy. Phase 2 will encompass a larger area, and develop more detailed land use, density, design, and site specifications for the corridor. Phase 3, which is an optional Phase, will expand the planning scope area an even greater distance away from the rapid transit stations to those areas that are within a 10 minute walk of the stations. The whole process was to be completed, including the optional Phase 3, in an estimated period of approximately 2 years, having started in the Fall of 2009, and was expected to be completed by the fall of 2011. Phase 2 was scheduled to be completed by Fall 2010; if the optional Phase 3 does not then go ahead, Fall 2010 will be the completion date of the planning process¹⁷.

Phase 1

The primary goal of Phase 1 of the Cambie Corridor Planning Process is to revise the principles from the July 2009 principles and guidelines report and to develop an interim rezoning policy to

¹⁶ City of Vancouver, "Cambie Corridor Planning Principles," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

¹⁷ City of Vancouver, "Cambie Corridor Planning Principles," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

guide development that may find its way through the approval process prior to the completion of the planning process.

The public consultation process in Phase 1 included a number of Open Houses, Workshops and Meetings. Phase 1 also set the foundation for future public consultation activities by recruiting for core area and city-wide groups. These activities were held in the Fall of 2009 to obtain feedback and suggestions from the community. Approximately 1,000 people attended these Open Houses, Workshops and Meetings¹⁸.

The interim rezoning policy was developed for the area in the immediate vicinity of the four stations south of 16th Avenue; King Edward, 41st Avenue, Langara - 49th Avenue and Marine Drive. The interim rezoning policy provides a framework for development within these areas adjacent to the stations to review development applications¹⁹. It is especially important to the City to develop the interim rezoning policy at this juncture, as there is a large-scale development slated for the area immediately next to the Marine Drive station. That proposed development is currently making its way through the development approval process. The interim rezoning policy will inform decision makers when reviewing the development application for this project.

Based on the feedback received from the public during Phase 1 of the public consultation process, the interim rezoning policy has evolved from the July 2009 report to include²⁰:

- *outline specific requirements that an applicant will need to provide as part of a rezoning application;*
- *revise the interim rezoning “areas” based on patterns of property ownership and logical adjacency issues; and*
- *provide specific direction on land use, height and scale expectations.*

Phase 2

The goal of Phase 2 of the Cambie Corridor Planning Process is to develop a core area development policy. City staff developed a draft Emerging Plan for the area based on Phase 1.

¹⁸ City of Vancouver, “Cambie Corridor Planning Principles,” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

¹⁹ City of Vancouver, “Cambie Corridor - Interim Rezoning Policy,” City of Vancouver, <http://vancouver.ca/commsvcs/guidelines/C030.pdf>

²⁰ City of Vancouver, “Cambie Corridor Planning Principles,” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

Based on the feedback and comments from the public and other working groups, staff will develop a core area development policy, a corridor strategy, and a discussion paper addressing how public transit influences local neighbourhoods. The core area development policy strategically identified areas of importance for the Cambie Corridor development. The development policy will outline the land use, density, layout, built form and design of the identified core area. The corridor strategy will consist of three sections, which includes a public benefits strategy, a corridors transportation plan, and a corridor servicing strategy. The discussion paper on transit-influenced development opportunities and issues will form the foundation for the optional Phase 3. Similar to Phase 1, Phase 2 of the planning process involved open houses, workshops and meetings. However, Phase 2 of the planning process will be more rigorous with more meetings and will include more participants²¹.

Phase 3

Phase 3 of the Cambie Corridor Planning Process is the optional Transit-Influenced Development Policy. While the previous two Phases focus primarily on the Cambie Street itself, including major intersections, Phase 3 of the process will include areas further away from Cambie Street and the existing and proposed rapid transit stations. Phase 3 will now include the low density residential areas that are within a 5 to 10 minute walking distance of each of the Canada Line stations. Phase 3 of the process is scheduled for 2011, should it be the case that the council approves the commencement of Phase 3 at the conclusion of Phase 2. The purpose of this Phase is to develop a policy plan for the 'outlying' areas that occur within an approximately 5 to 10 minute walking distance of transit stops on Cambie Street.

²¹ City of Vancouver, "Cambie Corridor Planning Principles," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

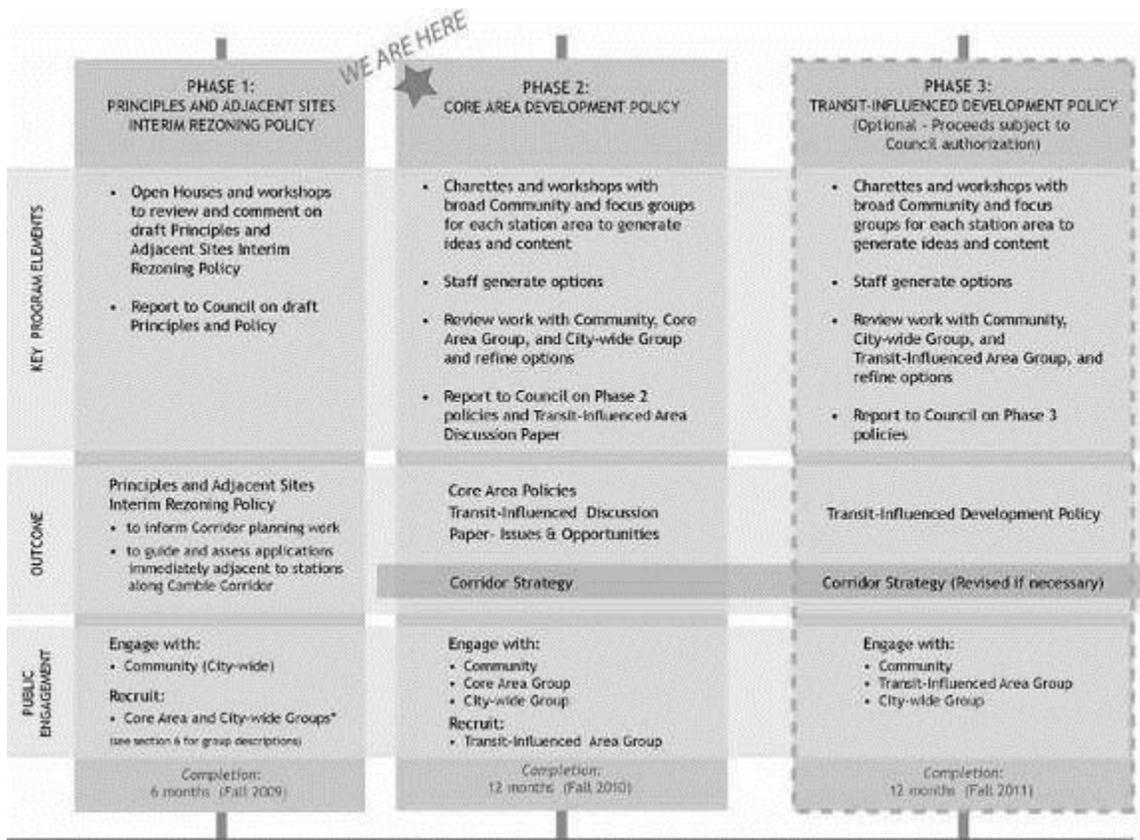


FIGURE 5: CAMBIE CORRIDOR PLANNING PROCESS SCHEMATIC²²

This schematic outlines the three Phases of the entire Cambie Corridor Planning Process. At the time of writing for this Cambie and 57th project, the CCPP process was in Phase 2.

3. Cambie Corridor Planning Principles and Other City of Vancouver Planning Principles

The City of Vancouver has adopted numerous planning strategies for the City as a whole, such as the CityPlan and the EcoDensity Charter. These two planning documents outline what the City would like to achieve through its planning processes in its bid to become the greenest city in the world. Specific to the Cambie Corridor, the City has adopted smaller and more local planning strategies that will lead the planning direction for the corridor. These Cambie Corridor specific planning guidelines include the recently adopted Cambie Corridor Planning Principles and

²² City of Vancouver, “Cambie Corridor Planning Program, Process,” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/process.htm>

Guidelines, the Riley Park South Cambie Community Visions, the South Vancouver Industrial Land Plan, the Oakridge Langara Policy Statement, and the Marpole Plan. Some of these plans have been developed recently (ie. The Cambie Corridor Planning Principles and Guidelines), whereas some of the plans were developed several decades ago (ie. The Marpole Plan). Due to the variances in time when these planning strategies were adopted, and the planning direction that the City of Vancouver had/has at the time of the adoption, these plans/guidelines are not necessarily complementary. Some of these legacy strategies or policies may in fact be in contradiction with one another.

This section will outline the overarching planning strategies for the City of Vancouver that will influence the planning of the Cambie Corridor, and the specific planning strategies that will directly affect the outcome of the planning process.

Cambie Corridor Planning Principles and Guidelines

As part of Phase 1 of the Cambie Corridor Planning Process, seven planning principles were developed to guide the planning process. These principles were based on the idea that the corridor should be developed in line with the City's goal of/to integrate land use, sustainable mobility and renewable energy as part of the Greenest City initiative. There were seven principles first developed in July 2009 when the initial report was approved. The seven principles and the guidelines associated with each principle were taken to the community for feedback as part of Phase 1 of the public consultation process at the end of 2009. Based on the consultation work done with the community in Phase 1 of the planning process, the seven principles as well as their guidelines were revised²³.

²³ City of Vancouver, "Cambie Corridor Planning Principles," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/resources/pdf/planningprinciples.pdf>

TABLE 1: CAMBIE CORRIDOR PLANNING PRINCIPLES AND GUIDELINES

The table below itemizes the 7 fundamental principles that are contained within the Cambie Corridor Planning Principles and Guidelines documents as set out the by City of Vancouver and that represent a framework for all development.

Principle 1: Provide land use that optimizes the investment in transit

New developments should significantly assist in optimizing a shift in travel choice to walking, biking and taking transit. Land uses will be primarily supportive of these sustainable movement modes. Non-supportive land uses will be avoided.

Supportive land uses are those that:

include high employee and residential densities, recognizing that the highest densities will be focused at stations and other areas with strategic opportunities for sustainability, and decrease with distance from these areas

1. ensure adequate and appropriate job space
2. encourage travel time outside of peak periods
3. attract reverse flow travel
4. encourage travel by walking and cycling

Non-supportive land uses are those that:

are oriented more towards travel by automobile rather than walking, cycling or taking transit

1. generate high levels of vehicular traffic
2. require significant parking
3. provide low-density building forms
4. create an unpleasant environment for pedestrians
5. have limited hours of operation

Principle 2: Provide a complete community

1. Provide a land use mix throughout the Corridor that offers a variety of opportunities to work, live, shop, play and learn. In doing so, consider the context and character of different neighbourhoods throughout the Corridor. The idea of a complete community should apply around each station as well as throughout the entire corridor.

The land use mix may be vertically integrated (within a building) or horizontally integrated (within several buildings in close proximity) and located to maximize the synergy between different forms of development in contributing to a complete community.

Where a mix of land uses is not achieved on an individual site, land uses should demonstrate how the development contributes to a complete community and facilitates walking, biking and strong transit ridership.

2. Prioritize retail and other commercial uses at grade within identified neighbourhood centres, existing commercial areas, or areas adjacent to a station. Design such uses to significantly improve walking experiences.
3. Provide amenities and services that support and contribute to a complete community as well as a strong corridor of mobility. In doing so, review, monitor and consider the impacts of an increasing residential and employment population.
4. Support rich social interactions and the inclusion of all residents in community life.

Principle 3: Create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit

1. Ensure that routes and infrastructure for pedestrians, cyclists and persons with disabilities are safe, attractive, convenient, navigable, barrier-free and accessible to transit.
2. Provide convenient and attractive cycling infrastructure including ample bicycle parking for all ages throughout the Corridor.
3. Require active, engaging, people-oriented building scales and uses at grade along the street edges that will enhance the walking experience by framing / defining the pedestrian space, providing visual and architectural interest, and foster security by providing “eyes on the street”.
4. Implement strategies that encourage walking, cycling and transit trips over automobile trips.
5. Implement strategic parking reductions within developments, providing relatively higher reductions as proximity to the station increases.
6. Provide a variety of attractive, convenient and connected routes for pedestrians and cyclists.
7. Provide a quality public realm to enhance the travel experience by all modes to the stations.
8. Provide weather protection and pedestrian scaled amenities to facilitate walking.

Principle 4: Focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity

9. Locate a higher density and mix of uses as close to the station as possible. In doing so, not only consider the location of future stations in the corridor, but strategic locations that can achieve renewable energy gains and provide significant public amenities.
10. Consider creative and sensitive transitions in scale between developments around each transit station and the adjacent neighbourhoods.
11. Achieve a coordinated, quality public realm to help define the station area’s sense of place and to ensure safety by providing “eyes on the street”. Where practical, incorporate place-making elements into public spaces.
12. Ensure new developments contribute to enhancing each station area as a unique place by respecting the context of the neighbourhood and encouraging buildings and spaces to be memorable and locally authentic.
13. Ensure the station is easy to locate by providing way-finding measures and orienting buildings and development toward the station.
14. Create a focus for the broader community –the station area should provide a destination for both transit users and local residents.

Principle 5: Provide a range of housing choices and affordability

1. Provide a variety of housing forms, tenures, unit types and sizes (i.e. 2, 3 and 4 bedroom units) throughout the Corridor that can evolve to support different uses and configurations and will provide for diversity and resiliency.
2. Recognize and consider the value of existing affordable housing stock and low income housing to meet the needs of low and modest income households, including the strategic retention and enhancement of purpose-built rental options.
3. Provide options and mechanisms to ensure that a broad range of incomes can live within the Corridor. Examples include

co-operatives, rental housing, flex suites and social housing options.

4. Ensure that objectives for affordable housing, to meet the needs of households on low incomes, seniors and those with mental illnesses or addictions are met

Principle 6: Balance city-wide and regional goals with the community and its context

1. Take advantage of the opportunity the Corridor provides in implementing the EcoDensity Charter and contributing to Vancouver's goal of becoming the greenest city in the world by 2020.
2. Maximize opportunities to reduce greenhouse gas emissions. Beyond strategies to optimize walking, cycling and transit trips, implement other greenhouse gas reducing strategies including passive design approaches for new and existing development, district energy / heating, urban agriculture.
3. Design and locate densities and forms to meet city and regional needs (i.e. locating city and regional serving uses adjacent to better transit connected areas) with design approaches that respect neighbourhood context and character.
4. Recognize that higher density forms and mixing of uses can and should be achieved through a variety of building types, emphasizing mid-rise building forms along much of the corridor.
5. Recognize the uniqueness of the neighbourhoods along the Corridor and be open to innovative ideas, alternatives and opportunities that support these principles.
6. Work with residents, citizens of all ages, property owners, workers, volunteers, and business owners to achieve a plan for the Corridor that reflects local aspirations as well as city-wide and regional goals

Principle 7: Ensure job space and diversity

1. Recognize the special opportunity that the Corridor represents in providing job space. Encourage high levels of employment density within the Corridor. In doing so, consider the value of existing affordable commercial spaces.
 2. Ensure appropriate levels of office, entertainment and retail space within mixed use developments. Developments in close proximity to stations should provide higher proportions of office and other higher ridership uses.
 3. Avoid the displacement or destabilization of existing city serving land uses including industrial and employment areas
-

These principles and guidelines will form the foundation of this report on which the land use planning recommendations on the area surrounding the proposed future station at Cambie and 57th Avenue will be evaluated. It is important to note that even though the planning process is inclusive of the entire Cambie Corridor from 16th Avenue to the Fraser River, this project's study area will concentrate on the area immediately surrounding the future proposed station of 57th Avenue. The Cambie Corridor Planning Principles planning principles and guidelines apply to the

entire corridor, and might not apply in their entirety to the development specific to the area surrounding the proposed 57th Avenue station. The development of the Cambie Corridor will be strategically planned to reflect these principles and guidelines, but it is the whole corridor in its entirety that will satisfy these principles and guidelines. One section of the corridor, as an isolated entity, may not be able to satisfy all principles and guidelines outlined in the council approved report from Phase 1.

CityPlan

In 1995, the City of Vancouver approved the CityPlan vision to guide the City of Vancouver forward for the next 20 years. Since the study area is within the City of Vancouver, any land use decisions made in the Cambie Corridor are expected to comply with the CityPlan as well. The CityPlan covers a wide range of topics including and not exclusive to transportation, housing, the arts and community services. The following highlights are part of the overall City of Vancouver's CityPlan²⁴:

- *Strengthen neighbourhood centres*
- *Improve safety and better target community services*
- *Reduce reliance on the car*
- *Improve the environment*
- *Increase the variety and affordability of housing*
- *Define neighbourhood character*
- *Diversify parks and public places*
- *Involve people and redirect resources*

EcoDensity Principles

On June 10, 2008, the City of Vancouver adopted the EcoDensity Charter. The EcoDensity Charter mandates the City to ensure that environmental sustainability is the primary goal in all City planning decisions. Aside from environmental sustainability, the EcoDensity Charter also contributes to housing affordability and liveability through environmental sustainability. The EcoDensity Charter will affect all City planning decisions and therefore will also be expected to

²⁴ City of Vancouver, "CityPlan: Directions for Vancouver," City of Vancouver, <http://vancouver.ca/commsvcs/planning/cityplan/dfvf.htm>

influence the development of the Cambie Corridor. The commitments of the EcoDensity Charter include²⁵:

- *a greener, denser city pattern*
- *more housing affordability, types, and choices*
- *greener and liveable design with a “sense of place”*
- *greener and liveable support systems*
- *neighbourhood voice, neighbourhood responsibility*

The EcoDensity Charter was referenced in the first guideline of the sixth Principle in the Cambie Corridor Planning Principle Report; *‘Take advantage of the opportunity the Corridor provides in implementing the EcoDensity Charter and contributing to Vancouver’s goal of becoming the greenest city in the world by 2020’*²⁶. The evaluation of the two land use alternatives that form the basis of this project, in the later sections of this project, will make reference to the EcoDensity Charter, both as it relates to Principle 6 as well as whenever relevant as it pertains to other principles even though it might be suggested explicitly within the Cambie Corridor Planning Principles report.

Other Guiding Principles

In addition to the City documents outlined above, there are other planning documents which could potentially influence the planning of the Cambie Corridor. These additional documents include the Riley Park South Cambie Vision document, the Oakridge Centre Policy Statement and the Marpole Community Plan.

4. Transit Oriented Development Information

The previous sections detailed the local context for the project which includes the geographical context and the local planning policies that will guide the project. The next two sections will

²⁵ City of Vancouver, “EcoDensity Charter,” City of Vancouver, <http://www.vancouver-ecodensity.ca/webupload/File/ecodensity-charter-low.pdf>

²⁶ City of Vancouver, “EcoDensity Charter,” City of Vancouver, <http://www.vancouver-ecodensity.ca/webupload/File/ecodensity-charter-low.pdf>

detail the research conducted on Transit Oriented Development (TOD) and how TOD principles can potentially influence the outcome of the project. Since the City of Vancouver is looking to develop the area for increased transit usage, the principles of TOD should be applied to complement the proposed service. Since there are a number of public amenities on the current site, as described in the previous sections, it is important to consult case studies that currently have a large public amenity as part of a TOD, or large public amenities that have been redeveloped into a TOD. The project will evaluate the existing built environment at the Cambie and 57th Avenue location and determine how that environment conforms to established TOD practices. It is important to assess the existing literature as it relates to density levels and other factors in respect to rapid transit stations, as this literature will help to establish the criteria for any proposed changes to the Cambie and 57th Avenue location. Additionally, it will be important to review the literature surrounding the existence of low density, large amenities, in particular golf courses, as the Cambie and 57th Avenue location is bordered by a golf course on its east side.

Literature Review

It can be said that, at the very least, good transit service is not the only factor that is required to ensure high transit ridership. The land use around transit stops and stations also influences whether people drive or use other transportation modes to get to where they need to go. Renne²⁷ explained the difference between Transit Oriented and Transit Adjacent development based on how development is built surrounding transit stations, and whether it actually contributes to higher ridership.

Transit Oriented Development comes in all shapes and sizes based on the context of the development. Studies suggest that people are willing to walk 400 metres to a bus stop and 800 metres to rapid transit stations²⁸. Although a city block is not a standard measurement unit, a general average for a North American city is 80 metres per city block. Therefore, research suggests that transit users are willing to walk approximately 5 blocks to a bus stop²⁹. Transit

²⁷ John Renne, "From Transit-Adjacent to Transit-Oriented Development," *Local Environment*, Vol. 14, No. 1, pp. 1-15

²⁸ B. W. Alshalalfah and A. Shalaby, "Case study: Relationship of walk access distance to transit with service, travel, and personal characteristics" *Journal of Urban Planning and Development*, 2007. 133(2): p. 114-118.

²⁹ B. W. Alshalalfah and A. Shalaby, "Case study: Relationship of walk access distance to

Oriented Development (TOD) is often characterized by high density, mixed land uses, a highly connective street network, as well as pedestrian oriented urban design. Transit Oriented Development tends to provide fewer parking spaces, include traffic calming measures, and utilize more cycling infrastructure such as bicycle parking. Some TOD projects are complemented by Transportation Demand Management (TDM) initiatives as well, these TDM strategies include but are not exclusive to, subsidized transit fares, road and parking pricing, and individualized marketing programs. No one TOD project is the same as another because of geographical location, regional context, neighbourhood history, and municipal planning objectives. Some TOD projects focus on residential development with office and retail spaces, while others focus on commercial development with less housing. The type of transit available also influences the type of development built; rail rapid transit draws the highest amount of development; whereas a transit hub with buses tends to draw lower density developments.

Whereas TOD accomplishes travel behavioural changes, **Transit Adjacent Development (TAD)** does not accomplish changes in travel behaviour because the elements necessary for changes in travel behaviour is not present in TAD. The missing elements are high density, mixed land uses, and pedestrian and cyclist oriented urban design. These land use and design factors are the crucial differences between TOD and TAD. It is important to note that simply because there is development existent around transit stations that does not necessarily mean that it is a TOD and that does not mean that it will accomplish travel behavioural changes.

There are a number of benefits associated with Transit Oriented Development. These benefits potentially include topical environmental benefits due to the reduction of vehicle use, and protection of natural spaces. Hass-Klau, Crampton and Benjari³⁰ suggested a positive correlation between proximity to rail stations and property values. Other benefits include safety, community cohesion, lower transportation costs, and improving physical fitness by including

transit with service, travel, and personal characteristics” Journal of Urban Planning and Development, 2007. 133(2): p. 114-118.

³⁰ Carmen Hass-Klau, Graham Crampton and Rabia Benjari, “Economic Impact of Light Rail: The Results Of 15 Urban Areas In France, Germany, UK and North America,” Environmental & Transport Planning, <http://etphassklau.co.uk>

walking as part of the commute trip³¹. The benefits are also equitable, as all people regardless of income level can benefit from either living or working in a TOD³².

Aspects of TOD

In order to evaluate the scenarios in later sections regarding the development of the Cambie Street and 57th Avenue area, criteria needs to be established. This section will investigate TOD literature that conforms to Cervero's 3 Ds: density, diversity and design³³. Literature about Transit Oriented Development generally concerns itself with how TOD affects travel behaviour. However, travel behaviour should not be the only reason for adopting transit TOD. There are other benefits, such as reduced energy use, to having dense, mixed use, well designed neighbourhoods. Most common characteristics of TOD projects include the following:

Density

Density is one of the most important components of Transit Oriented Development. Studies have shown that density has a direct impact on household fuel consumption rates and modal split³⁴. In the United States (US), a 10 percent increase in population in a given area with adequate transit service usually translates into a 5 percent increase in transit ridership³⁵. However, it is important to acknowledge that density may be an outcome of other factors, such as household income, and not simply improved transit. While current trends may seem to suggest that young urban professionals are adopting a philosophy of living near transit in higher density developments and forsaking the personal car, there is a somewhat older trend where low income households tend to have a higher transit mode share and live in high density (albeit perhaps less affluent) neighbourhoods. This historical trend leads to the question of whether low income households tend to locate in high density areas because of affordability and therefore have higher transit mode share or density as an effect, or, does higher transit mode

³¹ Asha Weinstein and Paul Schimek, "How Much Do Americans Walk? An Analysis of the 2001 NHTS," (paper presented at the Transportation Research Board Annual Meeting, Washington D.C., January 9-15, 2005).

³² CTOD, "Preserving and Promoting Diverse Transit-Oriented Neighborhoods," CTOD, www.reconnectingamerica.org/pdfs/DiverseTOD_12-29-06_REVISIED_AGAIN.pdf

³³ Robert Cervero and Kara Kockelman. 1997. "Travel Demand and the 3 Ds: density, diversity and design," Transportation Res Part D 1997, 3, 199-219.

³⁴ Robert Cervero and Kara Kockelman. 1997. "Travel Demand and the 3 Ds: density, diversity and design," Transportation Res Part D 1997, 3, 199-219.

³⁵ Jeffrey Tumlin and Adam Millard Ball. 2003. "How to Make Transit-Oriented Development Work," Planning, May 2003: 14-19

share truly reflect the cause of their location; as may be the case with what may be seen as the current emerging trend. The biggest effect on travel behaviour due to density seems to be directly related to the change from a low to medium density built environment. An increase in density that results in anything more than medium density has less of an effect on travel behaviour³⁶.

Typical Transit Oriented Development projects will generally have the highest density closest to the station and then density tapers off as one moves further away from the station. Utilizing an example in terms of residential use, it would mean situating high-rise apartments adjacent to the transit station and then moving to low-rise apartments and townhouses in the mid-range locations, with detached housing situated at the outskirts of the development.

Different studies have different philosophies as to the density threshold for TOD projects. Density requirements for station area planning are based on regional context, the type and frequency of public transit, and the location of the station. There is also a difference between residential and commercial density for TOD projects, where the density which transit can support seems to be higher for commercial development. This factor may be because there is less space needed for commercial establishment, especially office spaces, and there tends to be a lesser need for amenities for commercial developments. According to Dittmar and Poticha³⁷, an area with a transit frequency of service of 10 -15 minutes has a density threshold of 124 units per hectare, whereas a transit frequency of service of 10 minutes or less can support a residential density of 148 units per hectare. However, not many studies have dealt with density thresholds for TOD projects where the transit frequency of service is 5 minutes or less. This may be because the density threshold may plateau at 10 minutes transit frequency of service. For the purpose of this project, the residential density threshold for rapid transit station area planning will be 100 units per acre. This density threshold is a conservative estimate based on recommendations from the Dittmar and Poticha study³⁸. Based on a 65 m² average unit size, the

³⁶ Jeffrey Tumlin and Adam Millard Ball. 2003. "How to Make Transit-Oriented Development Work," Planning, May 2003: 14-19

³⁷ H. Dittmar and S. Poticha. 2004. "Defining transit-oriented development: the new regional building block" in Dittmar and Ohland, G. (eds.) The New Transit Town: best practices in transit-oriented development, 20-40 Island Press, Washington

³⁸ H. Dittmar and S. Poticha. 2004. "Defining transit-oriented development: the new regional building block" in Dittmar and Ohland, G. (eds.) The New Transit Town: best practices in transit-oriented development, 20-40 Island Press, Washington

density threshold in floor area ratio will be approximately 2.0. For the purposes of this paper, FAR (floor area ratio), will be calculated based on three levels; low density: less than 1.2 FAR, medium density: 1.2-3.0 FAR, and high density: greater than 3.0 FAR. These numbers are in part an aspect of geographical context, and may not be transferable to other locales.

However, there is something inherently sustainable about neighbourhood density. High density neighbourhoods consume less energy per capita, facilitate more social interactions, make it easier to locate public services, and provide opportunities for sustainable technology such as district energy systems³⁹.

Mixed Land Use

The rationale for mixed land use is to locate different but compatible land uses together to reduce length of trips and to facilitate trip chaining. For a residential neighbourhood, having retail shops close by should encourage people to walk or cycle to shops instead of driving. Alternatively, office buildings can also benefit from having retail and residential establishments adjacent to each other to facilitate trip chaining; lunch or midday trips could be achieved by walking or by walking to work. Mixed land use also encourages commuting to work using transit due to the location of commercial establishments around transit stations. Those who do commute to work on transit should find it convenient to include a discretionary trip as part of his or her commute. Mixed land use results in high transit ridership gains for some jurisdictions. Some would even suggest that the concept of mixed land use may have a higher impact on travel behaviour than density⁴⁰.

Urban Design

Design of the neighbourhood around transit stations could potentially influence travel behaviour. Fine-grained grid pattern street networks, landscaped streets, and high quality pedestrian environments such as proper lighting and paths encourage people to walk and cycle as opposed to driving⁴¹. If the design of the street network, such as wider sidewalks and implemented traffic calming measures, favours pedestrians and cyclists over motorists, then

³⁹ Jeffrey Tumlin and Adam Millard Ball. 2003. "How to Make Transit-Oriented Development Work," Planning, May 2003: 14-19

⁴⁰ Jeffrey Tumlin and Adam Millard Ball. 2003. "How to Make Transit-Oriented Development Work," Planning, May 2003: 14-19

⁴¹ Jeffrey Tumlin and Adam Millard Ball. 2003. "How to Make Transit-Oriented Development Work," Planning, May 2003: 14-19

people are more inclined to walk and cycle through the neighbourhood rather than habitually getting into their cars. Site design such as commercial retail and service parcel design, as well as the design of off street parking to encourage walking and cycling to retail and service outlets, will help better influence travel behaviour making Transit Oriented Development (TOD) projects more successful.

Housing Variety

Even though residents would like to live near transit, it does not mean that they all would like to live in the same type of housing. Housing variety can be described in terms of the physical type of housing that is available in the TOD. These may include apartments, townhouses and detached housing. Housing variety can also be described as housing built for low income families, and seniors. In order for a TOD project to be successful, the development must consider who would potentially live there and subsequently build the development based on those criteria. Those who live around transit stations tend to be in the lower income bracket⁴². Even though that income bracket assumption may not always be the case, developers and planners must be aware that building low income housing as part of a TOD project will be useful in providing housing variation as well as generating better modal split. The more housing variety the development can provide, the more successful the project will become.

General Observations

Factors described above differentiate between Transit Adjacent Development and Transit Oriented Development. All the benefits associated with Transit Oriented Development do not naturally happen as soon as a City develops around transit nodes. There are other factors that distinguish TOD from other development projects. These factors are more policy based as opposed to resulting from physical planning. These factors include, but not limited to, parking provisions, transportation demand management strategies, and level of transit service. These factors, even though important, will not be part of the two land use alternatives which are the focus of this project and therefore will not be evaluated.

Based on these criteria, it is evident that most of the Transit Oriented Development principles are covered under the Cambie Corridor Planning Principles. For ease of assessment, the

⁴² Robert Cervero and Kara Kockelman. 1997. "Travel Demand and the 3 Ds: density, diversity and design," *Transportation Res Part D* 1997, 3, 199-219.

evaluation for the two Cambie and 54th street station area land use plan alternatives will be evaluated using only the Cambie Corridor Planning principles and guidelines. Those principles that are the same as Transit Oriented Development principles will be indicated as such during the evaluation.

5. Incorporation of Public Open Spaces into TOD (Case Studies)

Even though city-owned golf courses are considered to be public amenities, the majority of those golf courses are not as accessible to the general community as a park or a public square might be. People certainly are allowed to walk within the golf course, but people rarely venture into the golf course unless they are actually playing a round of golf. Transit Oriented Development literature calls for public space in close proximity to transit stations; however, these public spaces are generally required to be easily accessible, multi-purposed, and to provide a more pedestrian-friendly environment for transit users. The following case studies are chosen to fundamentally address instances where large public amenities, specifically golf courses, border or are adjacent to, rapid transit stations. As these golf courses are potentially problematic in some respects, it is essential to understand the literature that already exists. Some of these case studies will investigate the potential public backlash where development impacts large existing amenities.

Due to the unique nature of the Cambie and 57th street station proposal having a city-owned golf course next to a rapid transit station, research of examples of Transit Oriented Development with a large semi-private public space will be undertaken. Examples of Transit Oriented Development with a large semi-private public space are few and far between; even when there are such examples, they are not well documented. Most of the current research examples deal with golf course redevelopment into medium to high density development for Transit Oriented Development. Each case study is different in context and in Phases of development. Examples are for the most part drawn from North American cases, but there are international examples as well. These case studies will help determine whether it will be beneficial to redevelop some of the existing public amenities in the area. Some case studies point to transit mode share benefits, but other studies point to public opposition to

redevelopment of public spaces for private development. These case studies will help shed some light to the argument.

Bellevue Station – Denver Metro Region

The Bellevue light rail transit station in Denver, Colorado currently has a 9-hole golf course adjacent to the station. The site is privately owned and the golf course was not one of the more popular courses in the Denver Metro Region. The site is ideal for Transit Oriented Development as it is situated within a 5 minute walking radius from the transit station. The zoning for the property was rezoned for high density, mixed use Transit Oriented Development projects in 2003. The purpose of the rezoning was to encourage redeveloping the golf course as though it was a greenfield development. Continuum Partners, a real estate developer in the area, was under contract to develop approximately a third of the property⁴³. Part of the contract asks for a 2.3 million square feet development including 1900 residential units, 160,000 square feet of retail and 200,000 square feet of office space⁴⁴. However, even though there are plans to develop the piece of land, the golf course is currently still in operation. There is opposition to the development which might have contributed to the delay or postponement of the development.

Orengo Station, Portland, Oregon

Orengo Station, a Transit Oriented Development well-known internationally, has a golf course within 1 km of the light rail station. Orengo, an acronym for ‘Oregon Nursery Company,’ was built on prime farmland. The golf course has a mixture of housing types surrounding the property, including single family housing as well as multi-family dwellings. Even though Orengo is a well-known example of Transit Oriented Development, the mode share for driving is still relatively high compared to other jurisdictions. With the exception to the property immediately next to the transit station, most of the real estate surrounding the station is single family housing. There are a number of employers in the area, including the campus for Intel, which has a significant number of employees. Despite the mixed land use and the transit service, the

⁴³ City of Denver. “Bellevue Station Transit Oriented Development General Development Plan,” City of Denver. <http://www.denvergov.org/Portals/646/documents/Bellevue%20Station%20GDP.pdf>

⁴⁴ Robert Cervero, Murphy Ferrell, Christopher Steven, et al. 2002. “*Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*,” TCRP Report 102, Transportation Research Board, National Research Council, Washington D.C.

transit mode share continues to be low. There is no hard evidence that definitively establishes a cause for this phenomenon, but the low density built environment may be one of the factors which contributed to the low transit mode share in the area. It has been pointed out that a potential adverse contributing factor in the low transit mode share may be in part due to the shuttle service provided by local employers⁴⁵.



FIGURE 6: ORENCO STATION AERIAL

One of the success stories for TOD projects, the Orenco Station area remains a fairly low density site and residents are against further development to prevent traffic congestion.

Residents of the area are now actively against further density increases to Orenco because the congestion in Orenco is already high. The residents believe that further density will bring more traffic into an already congested area, even though there is good transit service. This is evidence that residents of TOD projects aren't necessarily for increased density or further implementation of TOD in the area. Anything that can potentially affect the current living environment will be contested.

⁴⁵ Anthony Flint. 2005. "The Density Dilemma: Appeal and Obstacles for Compact and Transit-Oriented Development," Lincoln Institute of Land Policy. Working Paper:WP05AF1.

Clackamas County, Oregon

Clackamas County in Oregon State rezoned the Top o' Scott Golf Course in 1999 from open space to 1,100 homes and 200,000 square feet of office space⁴⁶. Because of aggressive regional population targets, Clackamas County is rezoning public open space such as parks, golf courses, and farmland in favour of development to increase density and population. The City of Portland has actually sold city park lands to developers on the condition that the developers develop those lands as high-density residential areas. Some Portlanders claim that these smart growth principles are taking away green spaces for residents, both in the form of private green spaces like front and backyards and public green spaces like parks and golf courses. Critics of Portland's regional planning strategy similarly believe that the strategy also drives up property prices and contributes to making housing unaffordable. The public believes that increased density means increased congestion, even though there is transit readily available. The increase in transit usage does not appear to cancel out the increase in population, consequently driving up traffic congestion. Oregon is an example of a jurisdiction with an aggressive regional development strategy that is constantly being challenged. Critics of TOD and Smart Growth use Portland as an example of plans which result in the destruction of public space, increase congestion and housing affordability. Selling park land and rezoning farm land are examples of regional planning strategies that destroy public amenities.

Maroochydore, Queensland, Australia

Another jurisdiction which proposes to redevelop golf courses for Transit Oriented Development is the Sunshine Coast Regional Council in Australia. Maroochydore at Queensland's Sunshine Coast is identified as the region's main commercial centre. Based on that regional strategy, the region calls for a redevelopment of the central business district which at present surrounds a commuter rail station⁴⁷. It is important to note that the Horton Park Golf Course has been located next to the commuter rail station for years. The rationale for the golf course redevelopment is because of the new Maroochydore central business district plan which looks

⁴⁶ Anthony Flint. 2005. "The Density Dilemma: Appeal and Obstacles for Compact and Transit-Oriented Development," Lincoln Institute of Land Policy. Working Paper:WP05AF1.

⁴⁷ Mark Bachels, Les Chandra and Wally Wight. "Maroochydore's (QLD) Major TOD – Aligning Rail and Town Centre Plans" CORE2008. <http://www.core2008.org/assets/papers/monday/1330/Mark-Bachels/Mark-Bachels.pdf>

to better integrate development with transit. The development proposes to move the golf course from the town centre to another location further from the centre of town. This relocation would free up the land that the golf course operates on for future Transit Oriented Development. The plan is contemplating realigning the rail corridor to a better location on the land that is currently occupied by the golf course. Opposite to the existing Horton Park Golf Course is a newly developed mixed use development, consisting of primarily medium to low density residential use, which was developed in conjunction with the town centre redevelopment to integrate the town centre with the rail station. Even though the council is proposing to relocate the golf course to another location further away from the town centre, the council is also proposing replacing the golf course with more suitable public amenities. These public amenities include cultural, education and health facilities, as well as community centres and meeting spaces. The planners and councillors in the region acknowledge the importance of having community facilities close to the town centre and transit, but also understand that the golf course, even though it is a community amenity, does not necessarily need to be located next to a transit station. Replacing an existing public amenity with another public amenity, with a potentially larger user base, may in fact help to reduce what might otherwise be seen as public pushback.

Shawnee-Evergreen, Calgary, Alberta

The neighbourhood of Shawnee-Evergreen in Calgary, Alberta is currently slated for a large-scale Transit Oriented Development project. Developer Geo Energy is proposing a mixed-use development on a site currently occupied by the Shaw-Nee Slopes Golf Course. The application requires an approval for rezoning by the Calgary City Council. The 131 acres site is in proximity to the Fish Creek light rail transit station, with the highest density portion of the proposed development within 600 metres of the station. The neighbourhood currently has a predominance of detached single family housing, with a small medium density residential TOD area which has 235 units, within the vicinity of the LRT station. The proposed development calls for a low to medium density development which includes a mixture of singly family and multi-family residences as well as some retail and office space. The development is projected to take between 15 to 20 years to complete. Upon completion, the site will have 1925 residential units and 2.2 million square feet of commercial (retail and office) space. The City of Calgary has been working with the developer on the rezoning application and has developed a conceptual plan.

The application is currently in the consultation stage and is currently hosting a number of open houses to engage residents in conversations regarding the proposed land use plan⁴⁸.

This development is facing a strong public pushback, especially from the affected community. The neighbourhood residents are against this development citing environmental degradation, increased traffic congestion, and the loss of public and green space. The neighbourhood has developed an official response to the development proposal and is strongly against the development. The official response from the community group, which included a detailed environmental impact assessment, voiced the community's concerns over the impact that the development will have on the community⁴⁹. The community is concerned about the loss of recreational space to large-scale development; this is seen as very devastating for a community with a strong recreational focus. The residents of the neighbourhood claim that the proposed density far exceeds the density requirements by the City for TOD projects. The City has since sent the application back to the developer to come up with another application for approval⁵⁰.

Shaganappi Point Station, Calgary, Alberta

While the City of Calgary is contemplating redeveloping the area surrounding the Fish Creek LRT station in the Shawnee-Evergreen neighbourhood, the City has decided to reconfigure another golf course within the City to accommodate a new LRT line and station. Construction is currently underway for the West LRT in Calgary, and part of the development of the LRT includes a station next to the Shaganappi Point Golf Course. Due to the at-grade nature of the LRT system, the project requires the widening of the road next to the golf course. Significant changes to the front nine holes are required in order to facilitate the widening of Bow Trail SW.

The area currently consists of low to medium density residential establishments and the 27-hole golf course. Despite the low density residential development pattern of the area, the LRT was planned down this corridor adjacent this golf course. The golf course is privately owned and

⁴⁸ Shawnee-Evergreen Community Association. "Shawnee-Evergreen Community Association News Blog "Shawnee-Evergreen Community Association. <http://www.shawnee-evergreen.net/>

⁴⁹ Shawnee-Evergreen Community Association. "SECA board's official response to the Golf Course Rezoning" Shawnee-Evergreen Community Association. <http://www.shawnee-evergreen.net/file.axd?file=2010%2f5%2fSECA+response+to+file+LOC2010-0005.pdf>

⁵⁰ Shawnee-Evergreen Community Association. "Shawnee-Evergreen Community Association News Blog" Shawnee-Evergreen Community Association. <http://www.shawnee-evergreen.net/>

because the construction of the LRT line and station will affect the golf course, resulting in the realignment of some of the holes, the City is paying for the reconstruction of the golf course.

Once built, the station will be next to the golf course. The golf course will cover approximately 40% of the transit station's catchment area for pedestrian access. Since the City covered the costs for the reconfiguration of the golf course, because of the LRT project and the widening of the Bow Trail SW, the City has no intentions of redeveloping the golf course into a TOD. Even though the City of Calgary has established a very ambitious TOD strategy, the area surrounding the future Shaganappi Point Station is currently not targeted for TOD. It is important to note that because the golf course is privately owned, it would be difficult for the City to claim the land for redevelopment. Unless the owner of the property chooses to sell the piece of land and the purchaser would consider rezoning the piece of land for development like the previous example with Shawnee-Evergreen, it would be difficult for the City to implement TOD strategies on this property⁵¹.

The Bridges, Calgary, Alberta

Yet another development in Calgary, the Bridges and its nearby developments, were part of a TOD project close to the Bridgeland LRT station. The Bridges, with over 1,500 multi-family residential units, is currently in its final stages of development. The current site of the Bridges was at one point a hospital which the province of Alberta demolished and subsequently handed over the land to the City of Calgary. There was a huge public outcry on the part of the city's residents when they believed the demolition of the hospital was the decision of the municipality, but the community was at that time unaware that it was the province's decision to demolish the hospital. The City executed a series of public consultation and awareness campaigns to educate the public, and eventually the project did gain public support⁵². This case study once again demonstrates that there can potentially be public pushback when a government takes away any type of public amenity in favour of development, whether it is a recreational amenity or a healthcare amenity. Governments should recognize that while they have their own agenda for development projects, the public too has its agenda. The public

⁵¹ City of Calgary. "WestLRT – Shaganappi Point Station" City of Calgary.
<http://www.westlrt.ca/stationareas/26thstreetstation.cfm>

⁵² CMHC, "Transit-Oriented Development Case Study: The Bridges, Calgary," CMHC,
http://www.schl.ca/en/inpr/su/sucopl/upload/66652_Nov5-w.pdf

agenda may be less defined, it may be a case of recognizing what it doesn't want rather than what it does want, but it is no less valuable and often open to strenuous opposition when planning or development decisions affect public amenities.

Public Open Space Evaluation

According to some jurisdictions, golf courses are actually prohibited in Transit Oriented Development districts. Smart Growth developed a model/template bylaw for municipalities which would like to utilize a pre-packaged TOD strategy. Part of this model bylaw lists a number of establishments that are prohibited in Transit Oriented Developments. These prohibitions included drive-in theatres, cemeteries and golf courses. As mentioned before, there are very few examples of golf courses close to transit stations, which suggests that perhaps golf courses are not necessarily transit friendly, and therefore do not have to be located close to transit, or are perhaps demolished once rapid transit is identified in the area. The reasoning behind this relocation, revamping, rezoning is to encourage density around the station as most of these golf establishments do not promote density. These golf course establishments also tend to be single-purposed, have limited time of use and take up a huge amount of land without accommodating a large portion of the people affected. Contrastingly, other public amenities such as civic, cultural and community facilities are allowed and encouraged. Another potential reason why most of the research examples of redevelopment of golf courses for TOD involve replacement rather than accommodation is that it is easier than many other land uses to redevelop golf courses as they occupy a large `blank` area. There is a great deal less work involved in the demolition of the golf course site as compared to existing bricks and mortar, which makes it easier for large scale development because the land can be developed fully. Governments and developers alike actually view golf courses as an opportunity for development because of these reasons.

It is extremely important to note that there is a discrepancy between types of public amenities. There are public amenities that are open to the public such as a park or a public square, and then there are public amenities that require a membership or a fee and are only open to the public during certain times of day, as in the example of a community centre. However, it is also important to differentiate between amenities that involve higher density such as community centres and those that contribute to low density such as a golf course. One cannot simply

include all public amenities into one vast category, and it cannot be interpreted that since one type of public amenity is allowed then another type should also be allowed. When developing public amenities within Transit Oriented Development projects, planners have to be aware of which type of public amenity is actually appropriate for the development. However, for an area that is already accustomed to a low density, semi-private public amenity prior to the implementation of a transit facility, it is potentially difficult to redevelop that land use that is deemed unsuitable for TOD because of public pushback. The public can be seen as very sensitive to change when government seems to be favouring private development over public service.

Whenever a public amenity is removed, there is always the potential that there will be opposition. Based on Smart Growth Transit Oriented Development principles, low density public amenities are prohibited while high density public amenities are allowed. Based on this principle, a low density public amenity can be replaced by another community facility with better integration with transit as part of a Transit Oriented Development. This can potentially help the government make the case for removing one public amenity but replacing it with one that might serve more people in the neighbourhood. This might be the case for replacing or redeveloping a golf course. The golf course is inflexible and has a limited user base and can be replaced by an amenity that has greater use and a larger user base.

6. Methodology

The purpose of this project is to make land use planning recommendations, based on the principles of Transit Oriented Development and the Cambie Corridor Planning Process, for the area surrounding a proposed future Canada Line station at Cambie and 57th Avenue in Vancouver. In order to provide thoughtful and insightful recommendations, two land use Alternatives will be developed to reflect the land use mix, the density, and the urban design of the neighbourhood. The Cambie and 57th Avenue land use Alternatives derived from this exercise will be influenced by the principles of Transit Oriented Development, specifically the density threshold statistics from studies outlined in the previous sections. These Alternatives will then be evaluated based on the principles developed for the Cambie Corridor Planning Process. The Cambie and 57th Avenue land use Alternatives will be evaluated on a sliding scale by how well each option satisfies the planning principles and guidelines. Even though these Alternatives

will only be evaluated based on the principles and guidelines developed through the Cambie Corridor Planning Process, the planning direction given through the City of Vancouver's other planning documents will guide and influence each of the two Alternative land use plans. The other planning documents, such as CityPlan and EcoDensity, helped influenced the Cambie Corridor Planning Process, so the ideas of all planning directions are well represented in the evaluation process. Based on the scores of the Cambie and 57th Avenue land use Alternatives for each of the Cambie Corridor Planning Principles, the evaluation will determine which of the two Alternatives better satisfies the goals that the City of Vancouver is trying to achieve. It is important to note that these Cambie and 57th Avenue land use Alternatives are non-binding recommendations but are based on careful consideration of TOD principles, project feasibility, and public interest. Finally, based on the outcome of the evaluation, recommendations will be represented for consideration.

7. Two Cambie and 57th Avenue Land Use Alternatives

The draft emerging plan for the Cambie Corridor calls for a large scale development on the west side of Cambie Street between 54th Avenue and 59th Avenue, the current site for the Pearson Hospital and Langara Gardens. The emerging plan was developed after the Cambie Corridor Planning Process Phase 1 based on public feedback and was taken to the public during Phase 2 for feedback. The plan is to increase the density of that target area in excess of the current density and the current zoning. The City will review this area in more detail for future large scale rezoning with potential district energy synergies. Based on the direction that the City would like to take to develop the west side of Cambie Street only, this section will propose two land use zoning strategies for this area in order to further the City's goal of developing a neighbourhood that is sustainable, liveable and affordable. Since the catchment area of the rapid transit station is based on a radius of approximately a 400m from the center of the proposed station, there is roughly 50% of the proposed catchment area for potential increase in transit riders on the east side of the corridor that is not captured since there are no plans for redevelopment on the east side of Cambie Street. The Langara golf course on the east side of Cambie Street does not represent a viable addition to the overall catchment numbers. One of the two Cambie and 57th Avenue land use Alternatives will look at whether or not it is possible to develop a portion of the east side of Cambie Street in this neighbourhood and what it might look like. These

strategies will be different based on their individual density and land use mix components. However, the assumption for the development of the two Cambie and 57th Avenue land use Alternatives will be that the resulting density will be higher than that of the existing development. These options will primarily address the land use density and mix for the area, but will also touch on other factors such as layout, building height and design.

The first of two Cambie and 57th Avenue land use Alternatives for the area will be based on the conceptual plan that the City of Vancouver developed as part of the Phase 2 public consultation activity with consideration for a district energy system and the second Cambie and 57th Avenue land use Alternative will satisfy density threshold for rapid transit station area development based on research done in previous sections.



FIGURE 7: DRAFT EMERGING PLAN FOR THE CAMBIE CORRIDOR⁵³

As part of Phase 2 of the Cambie Corridor Planning Process, the City developed this emerging plan to engage residents in a dialogue regarding the future of the corridor. This emerging plan is the basis of Alternative 1.

⁵³ City of Vancouver, “Cambie Corridor - Draft Emerging Plan for the Corridor (June 2010),” City of Vancouver, <http://vancouver.ca/commsvcs/planning/cambiecorridor/pdf/studyarea.pdf>

Low Density Approach (Alternative 1)

The first of the two Cambie and 57th Avenue land use Alternatives for the project will be based on the draft emerging plan for the Cambie Corridor developed for Phase 2 of the Cambie Corridor Planning Process. The draft emerging plan allocated the area west of Cambie Street, which includes Langara Gardens and the Pearson Precinct, for future large-scale development which will have higher density than the current density level for the area. The City is also considering a district energy system for this area. District energy is the concepts of distributing thermal energy in a specific area through a piping system. The area east of Cambie Street, which includes the Langara Golf Course, is not slated for redevelopment based on the draft emerging plan. Specific density application for the area is not specified in the draft emerging plan and will be tested during the Phase 2 consultation. Based on the current density of the area, it will be difficult to assume the level of density of the future development. This Cambie and 57th Avenue land use Alternative (Alternative 1) will be based on the assumption that the development will be sufficient on its own as a district energy neighbourhood and that the Pearson Precinct will retain its current function as a hospital and assisted care housing facility with increased capacity. The area could potentially be an ideal location for a district energy system as the whole area will be redeveloped and that building a development with a district energy system will be more cost efficient than to retrofit existing buildings for district energy.

In order for district energy systems to be viable, the neighbourhood considered for district energy system needs to be dense across a small area for the district energy system to be efficient and cost-effective. Even though there are a number of types of district energy systems, all systems require a certain density in order for the project to be financially viable. A brief overview of district energy systems in British Columbia shows that most developments utilizing district energy systems have a floor area ratio (FAR) greater than 1.5⁵⁴. The draft emerging plan, that this Alternative is based on, is projecting to increase the density of the Langara Garden site to a floor area ration greater than the current density level. The existing density for Langara Gardens is only 0.78 FAR. The minimum density requirement for the site to be considered a district energy system is 1.5 FAR. Alternative 1 must involve a land use density of at least 1.5 FAR in order for the City's goal of developing at a higher density than the current density to be

⁵⁴ Compass Resource Management Ltd. "District Energy Consultation Paper," District of Squamish. <http://squamish.ca/files/DistrictEnergyStreamlinedF.pdf>

achieved. It is therefore assumed in this Cambie and 57th Avenue land use Alternative that the Pearson Precinct will be rebuilt at 1.5 FAR and that the site that Langara Gardens currently occupies will also be redeveloped at a density of at least 1.5 FAR. Since the current density of the Pearson Precinct is fairly low compared to the 1.5FAR, Alternative 1 will see quite an increase in density for the site. The 1.5 FAR for this option will only be restricted within the area designated for redevelopment and does not include the entire 400 m radius area around the future proposed Canada Line Station. It is important to note that, however, this density requirement does not satisfy the earlier study regarding the density threshold for rapid transit station area planning.

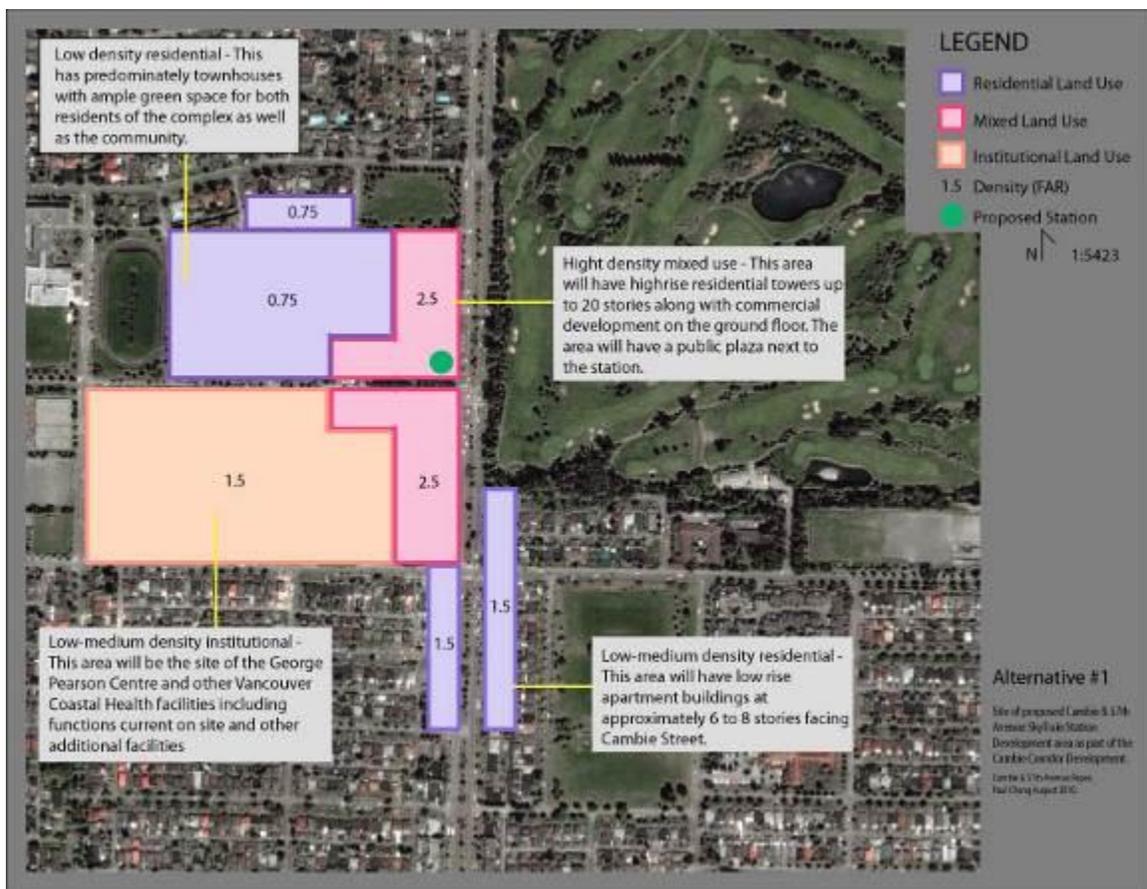


FIGURE 8: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 1

The low density approach (Alternative 1) will have enough density to implement a district energy system but does not meet the density threshold for rapid transit station area development. This Alternative will have a higher density than prior to redevelopment and will have a larger percentage of commercial and institutional land uses, but remains lower density and exhibits low percentage of other uses, other than residential uses, compared to other TOD projects.

For this approach, the only area sectioned for development is the Langara Gardens parcel and the Pearson Precinct parcel. The station will be located on the north side of 57th Avenue on the west side of Cambie Street at the site currently occupied by Langara Gardens. The station will be integrated into the new development, and will be surrounded by small to medium sized retail stores. There will be a public space of a considerable size surrounding the station to serve as meeting and gathering space. Restaurants and cafés will have the ability to use a portion of the public space as patios and outdoor seating. Most of the retail establishments will be located close to the station as well as situated on Cambie Street and located on 57th Avenue. The stores will be located on the street with minimum setback to enhance the pedestrian environment and help with economic viability of the stores. The remaining portions of the site will be predominately residential, primarily low density structures such as townhouses. The Pearson Precinct will triple in capacity while using less land space. The George Pearson Centre and Dogwood Lodge will be expanded and moved to concentrate proximate to Heather Street as opposed to Cambie Street. The parcel of land will be subdivided to accommodate more mixed use development on Cambie Street to maximize space for development on major arterials. Further south, along Cambie Street, will see low to medium density residential development consisting of building heights between 6 and 8 stories high as per the draft concept plan.

High Density Approach (Alternative 2)

The high density approach for the Cambie and 57th Avenue land use Alternative study area will meet the target density threshold for rapid transit station area planning outlined in section 4 of this document. Based on the research done for this project, the residential floor area ratio (FAR) density for an area such as Cambie and 57th will target 2.0. However, the 2.0 FAR is the minimum density requirement for a rapid transit station area. The greater the density that is applied at this site, the higher the potential for increased transit ridership. Since a 2.0 FAR value is generally considered low to medium density, the potential for increased transit mode share is still high for the area if the density of the area is to increase from 2.0 FAR. The 2.0 FAR will be applied throughout the entire spectrum of the station, within a 400m radius of station. This means that any space dedicated to public space will have to be compensated for in terms of density by other structures within the area.

In addition to the area designated for redevelopment on the west side of the corridor, a portion of the golf course on the east side of Cambie Street will also be slated for development opportunities in this Cambie and 57th Avenue land use Alternative approach (Alternative 2). The reason for this intrusion on the golf course approach is that in order to satisfy the density threshold for rapid transit station area planning, if the east side of the corridor remains a golf course, the area slated for development on the west side of Cambie Street will have to return a density of approximately 5.0 FAR which is non-complementary to the current neighbourhood atmosphere. The current zoning for the Cambie and 57th Avenue land use Alternative area has a FAR of less than 0.8. Redeveloping a section of the Langara Golf Course will increase the density in the area without being overly drastic at any single point of the specific site.



FIGURE 9: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 2

The high density approach (Alternative 2) is comparability higher in density and in commercial and institutional land use percentage against residential land use compared to Alternative 1. This alternative acknowledges a push for development on the east side of Cambie Street.

Similar to the previous alternative, the concentration of development will take place on the west side of Cambie Street. However, the west side will not be the only site slated for development, a low to medium density development will be considered for the east side of the corridor. The site currently occupied by Langara Gardens will be redeveloped into a mixed use development with the Canada Line station fully integrated with the design of the development. The development will incorporate the Cambie and 57th Avenue station within the structure similar to the Columbia and New Westminster SkyTrain stations. The development will boast similar building typology as the Plaza 88 developing in New Westminster, with high-rise mixed use building(s) with commercial space at the lower floors and residential at the higher floors.

Compared to the first Cambie and 57th Avenue land use Alternative, this approach will have a higher density and a greater percentage of commercial floor space. The higher density and larger commercial floor space means that there is room to accommodate a larger retail outlet such as a large scale grocery store or supermarket. The increase in commercial space also ensures that there will be space allocated for office space, such as doctors' offices, on the second or third floor for commercial establishments. These commercial land uses within the development will be within the station parameter to catch pedestrians walking to and from the station, other retail stores will be located on Cambie Street. There will be low density residential further away from the station with larger units. As with the low density Cambie and 57th Avenue land use Alternative approach, the Pearson Precinct will be expanded and moved to the west end of the parcel that the hospital and centre currently occupies, allowing for the expansion of the mixed use development into the space. Other sections of the land use plan will have slightly higher density than the low density option; this density will materialize in the form of building height, smaller units, and more compact building typology. It is not expected to affect the amount of public space available.



FIGURE 10: PLAZA 88

This high density, mixed used development located adjacent to the New Westminster SkyTrain station could be a model for future TOD projects in Metro Vancouver.

A section of land currently occupied in part by the Langara golf course on the east side of the corridor, will be zoned for low to medium density residential development. This development will be comparable to the Langara Estates development at the corner of Cambie Street and 49th Avenue. The development will have low rise apartment buildings, as well as townhouses. Langara Estates has an approximate density of 0.75 FAR and the development envisioned for this Cambie and 57th Avenue land use Alternative on the east side of the corridor will be about 1.0 FAR. This means that there will be a higher percentage of low rise apartment buildings compared to townhouses than expected for Langara Estates. The space required for this development will be in part the 16th, 17th, and perhaps 18th hole(s) portion of the Langara Golf Course as well as some surrounding land parcels including Amherst Hospital which will be relocated to the Pearson Precinct. The golf course will need to be reconfigured but the development will not affect the number of holes on the course. The perimeter trail surrounding

the golf course will also need to be rerouted but after the development is complete, residents will be able to enjoy the new perimeter trail.

TABLE 2: CAMBIE AND 57TH ALTERNATIVES COMPARISON

The table above summarizes the proposed values for Alternative 1 and Alternative 2 based on the overall design features.

Design Features	Alternative 1 (Low Density)	Alternative 2 (High Density)
Average Density Within Planned Development Area	1.5 FAR	3.0 FAR
Average Density Within 800m radius around station	0.85 FAR	2.0 FAR
Land Use Ratio Within Mixed Use Area	Residential: 80% Commercial: 20%	Residential: 65% Commercial: 35%
Increase in population within the Planned Development Area	100%	300%
Percentage of Developed Space within 800m Radius	0.35	0.55
Intervention to Golf Course	NO	YES
Incorporation of Office Space	NO	YES
Large Retail Anchor	NO	YES

8. Evaluation of the Two Land Use Alternatives

Low Density Approach

The first Cambie and 57th Avenue land use Alternative scored moderately in the evaluation, most importantly because of the relatively low density which affected a number of the principles. For example, the lack of density in this option affected the first criteria of *‘provide land use that optimizes the investment in transit’*. The lack of commercial land uses also contributed to the low score, whereas commercial land uses would help to encourage off peak trips and reverse flow travels. Additionally, the Langara golf course is a non-supportive land use as it is automobile oriented, requires significant parking, and has limited hours of operation.

TABLE 3: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 1 SLIDING SCALE

The results for Alternative 1 is best described as average. The Alternative 1 option scores well in principles 3 and 5, but scores low in principles 1 and 7.

Principle	SCORE				
	5	4	3	2	1
Principle 1: Provide land use that optimizes the investment in transit					
Principle 2: Provide a complete community					
Principle 3: Create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit					
Principle 4: Focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity					
Principle 5: Provide a range of housing choices and affordability					
Principle 6: Balance city-wide and regional goals with the community and its context					
Principle 7: Ensure job space and diversity					

Even though there are amenities in this Cambie and 57th Avenue land use Alternative, the comparatively low commercial spaces resulted in only a moderate score in the “*provide a complete community*” criteria. Through design, the low density approach can create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit. As this project is primarily a land use project, the matter of design and infrastructure such as the amount of bike parking etc. is not accounted for in this study, and therefore the score will be based on the assumption that the plan will provide adequate walking and cycling facilities. The low density of this approach also affected the score in the fourth criteria “*focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity.*” Even though the neighbourhood would be able to accommodate a

district energy system, the relatively low density immediately surrounding the station is preventing this option from being successful in this category. The entire east side of the corridor is not developed in this scenario, and therefore provided a void in the neighbourhood. The low density Cambie and 57th Avenue land use Alternative approach provides different types of housing such as high-rise apartments and townhouses, and the single family housing is available outside of the development zone. The tenure of this housing is not specified in this alternative, and again it is assumed that the tenure of the housing is also mixed. It is important to note that the neighbourhood already has a variety of housing types from supportive housing to rental housing and from duplexes to single-family houses. This Cambie and 57th Avenue land use Alternative 1 approach scored a three out of five (3/5) in the sixth principle mainly because again the density is not high enough to fully support the goals of the City and the Region. The City and the Region is growing rapidly and in order to accommodate this growth the City must increase density especially near public transit. This alternative scored low in the “*ensure job space and diversity*” category because this option is ultimately developing a bedroom community at this station and does not encourage any employment aside from a few retail opportunities.

High Density Approach

TABLE 4: CAMBIE AND 57TH AVENUE LAND USE ALTERNATIVE 2 SLIDING SCALE

Alternative 2 scores better compared to Alternative 1 in almost all categories. It is mostly the result of the increase in density, higher land use mix and the expansion of the development area.

Principle	SCORE				
	5	4	3	2	1
Principle 1: Provide land use that optimizes the investment in transit					
Principle 2: Provide a complete community					
Principle 3: Create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit					
Principle 4: Focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity					
Principle 5: Provide a range of housing choices and affordability					
Principle 6: Balance city-wide and regional goals with the community and its context					
Principle 7: Ensure job space and diversity					

Similar to the low density alternative, the third principle from the Cambie Corridor Planning Process, ‘*Create a walkable and cycleable corridor of neighbourhoods seamlessly linked to public transit*’, essentially deals with design and infrastructure planning and implementation, therefore assumptions are made regarding the results of the project. Something specific to this Cambie and 57th Avenue land use Alternative option is the indoor retail component that is integrated with the proposed transit station, which protects pedestrians from the elements. The higher

density values, specifically immediately around the station, contributed to the high score for the fourth criteria, *'Focus intensity and community activity at stations and other areas with strategic opportunities for sustainability, renewable energy and public amenity'*. The development has its highest density components immediately adjacent to the station and then decreases as one moves away from the proposed station, similar to other successful TOD projects. Additionally, the increase in density for residential units means that there is a higher potential for more housing variety. The neighbourhood already provides a variety of housing types, but with the help of the City and potentially Vancouver Coastal Health, the area will be able to provide more housing types with more housing tenure options. This high density approach better personifies the City's EcoDensity and Greenest City goals. The increase in commercial and hospital space helps the sustainability of the neighbourhood, as well as the City and the region. The Cambie and 57th Avenue land use Alternative 2 has a high potential to reduce greenhouse gas emissions and create a community that is healthy and environmentally conscious. Lastly, the increase in commercial and institutional space will help ensure job space and diversity. Accommodating larger and more retail stores, as well as office space in the neighbourhood, will increase the number of jobs in a predominately residential neighbourhood. The increase in functionality of the Pearson Precinct will also help generate jobs, and therefore off peak trips and reverse travel is expected to increase transit ridership where there is capacity.

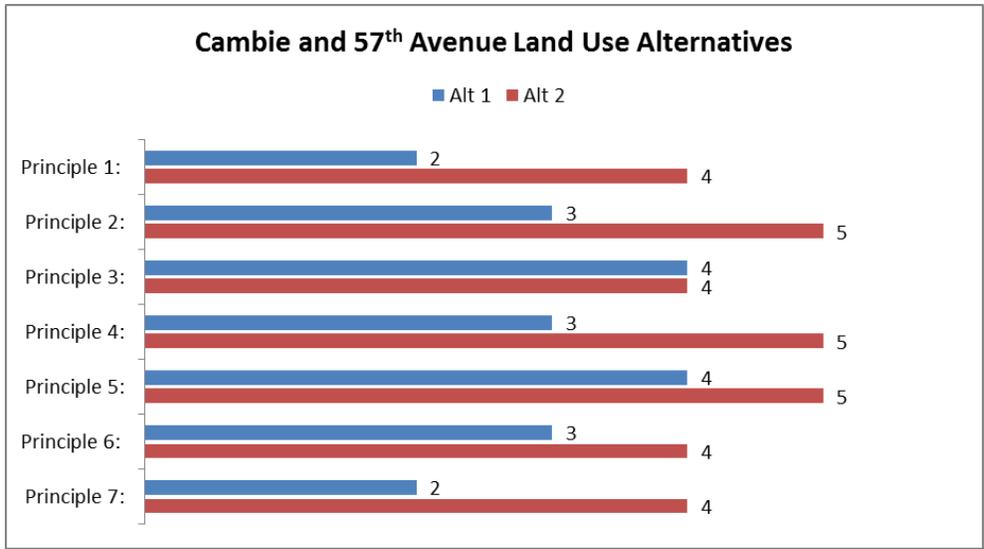


FIGURE 11: LAND USE ALTERNATIVE EVALUATION COMPARISON

This chart compares the score of the two Alternatives. Alternative 2 does better at all principle with the exception of principle 3 where both Alternatives score 4 as it was based on an assumption that is the same across the two Alternatives.

Based on the evaluation of the principles, the Cambie and 57th Avenue land use Alternative 2 high density approach for the neighbourhood is the better approach. The high density option scored higher in virtually all categories with the exception of criteria three as the results are based on assumptions of the project and have little to do with the alternatives themselves. However, there is the intangible of the public perception to these changes. The community might not agree to the dramatic change in density of the Cambie and 57th Avenue land use Alternative 2, even though they may be comfortable with the increased building height as Langara Gardens has high-rise buildings. The community might also have reservations about the reconfiguration of the Langara golf course and the changes to the perimeter trail. This needs to be taken into consideration when evaluating potential land use plans and development proposals.

9. Recommendation

Through research and the evaluation of the two land use alternatives, there are a number of recommendations that can potentially contribute to the sustainability of the Cambie Corridor through land use planning of the Cambie and 57th area. It is important to note that these recommendations are specific to the Cambie and 57th area and does not mean that these

recommendations can be applied across the Cambie Corridor or that it addresses the issues of the entire study area.

Based on the evaluation of the two land use alternatives, the Cambie and 57th Avenue land use Alternative 2 high density approach would be a better land use option if the proposed Canada Line station is to be built. Alternative two not only meet the minimum density threshold but the approach better personifies the idea of Transit Oriented Development and the Cambie Corridor Planning Principles. Even though the first land use option meets the minimum requirement for a district energy system, the higher the density of an area, the more effective and efficient the district energy system becomes; making the second land use alternative the more attractive option. Acknowledging that, when comparing the two alternatives described in this exercise, the second alternative is the better option, there are a number of different options that can be explored. One factor, however, that will definitely influence the land use planning outcome of the area will be whether a station will be developed in the area, and when will the station be developed.

The area is ideal for redevelopment with or without the proposed rapid transit station. Without the station, the redevelopment can approximate density values comparable to the first land use alternative. This will increase the density in the neighbourhood without compromising the character of the neighbourhood as a low density community. However, with the implementation of the Canada Line, the potential to increase residential and commercial density is important for the City of Vancouver to investigate in order to cope with the increase in housing demands. It is true that without the proposed station at Cambie and 57th Avenue as an alternative, the area is not so excessively far from the two existing Canada Line stations as to discourage too many people from taking transit.

On the contrary, if a station is to be built in the area, then the density should be at least at the minimum density threshold suggested by this study as anything lower than the threshold would mean that the station and the rapid transit line will not meet the capacity that it was designed for. The City must take advantage of the rapid transit service that is available when planning for growth to maximize the resources that are available. Based on the case studies outlined in a previous section, some jurisdictions decided to rezone golf courses in favour of Transit Oriented Development. Since the Langara Golf Course is a City of Vancouver golf course, the ability for the City to rezone the land and develop it would be less difficult than if the golf course was a

privately owned course. However, the City must consider what the community would feel about the redevelopment of the golf course into a mixed use development. The Maroochydore example substantiates that an area can be used to develop TOD projects at any time. The potential for the redevelopment will be there as long as a rapid transit station is there. The City always has the option to redevelop the golf course in the future.

The second Cambie and 57th Avenue land use Alternative was a suggestion as to how the east side of the corridor can be developed in this neighbourhood without interfering too much with the golf course. However, if the City would like to increase the density of the neighbourhood, the golf course is a great area to rezone into development as there are few existing structures to demolish, with the exception of the clubhouse. Some examples in this study have demonstrated that some jurisdictions rezone pieces of land where a golf course currently sits for large scale developments. Aside from the minimum interference shown in the Cambie and 57th Avenue land use Alternative 2 option, the City can reduce the course to a 9-hole golf course or demolish the golf course in its entirety.

When a jurisdiction decides to redevelop a golf course into Transit Oriented Development, there is always the possibility for public pushback. The Cambie and 57th Avenue land use Alternative 2 suggests a reconfiguration of the existing golf course to accommodate residential development. Following the example from Shaganappi Point Station in Calgary, there are ways in which golf courses can be redeveloped without compromising the integrity of the course. However, if the city decides not to interfere with the golf course, and only develop the west side of the corridor through this stretch of the Cambie Corridor, then the density of the existing development on the east side of Cambie Street should be high enough to meet the density threshold suggested in this study. However, as mentioned in Section 7, the reason the Cambie and 57th Avenue land use Alternative 2 recommends implementing housing on the east side of Cambie is because the density on the west side of the street would be too high and would not match the current neighbourhood feel. In order to meet the density threshold for rapid transit stations, the west side of the area will need to approach 4.0 FAR in order to offset the area occupied by the golf course. King Edward Village, which is a high density development at the corner of Kingsway and Knight Street has a FAR of 3.86 and the City experienced neighbourhood opposition because of the high density of the development. One must decide whether it is more important to section off a portion of the golf course land for development, or increase the

density on the parcel on the west side of the community. One of the benefits of having residential development adjacent to the golf course is the potential increase in property value for those looking for housing next to a golf course, like the development at Orenco Station in Portland.

The City should work with Vancouver Coastal Health (VCH) to expand the George Pearson Centre and its surrounding buildings. The facility is at an extremely advantageous location due to its proximity to transit and other hospitals. Both Vancouver General Hospital and Women and Children's hospitals are located on the Canada Line and will be easily accessible by transit. VCH should consider the Pearson Precinct for expansion at a time when other hospitals are running out of spaces. Moving some functions from existing hospitals to this proposed site would free up room at the existing hospitals and generate more traffic, preferably transit, cycling and walking traffic, to the Cambie and 57th area.

The land use plan for the community needs to consider creating an anchor for the neighbourhood. Currently the neighbourhood around Cambie and 57th Avenue has no anchor and therefore the neighbourhood feels very isolated and quiet. The draft conceptual plan for the Cambie Corridor Planning Process is anticipating making the area a neighbourhood node. This is important for the neighbourhood if it is to increase in population. An anchor can be a large retailer or a large institutional establishment. Even though the Pearson Hospital can be the institutional anchor that the area needs, the hospital currently is too small and because of the function of the hospital, does not have enough traffic to constitute an anchor. The Vancouver Coastal Health can potentially increase the size and function of the Pearson Precinct, thereby making the hospital the large institutional establishment the area needs to make it a neighbourhood node. Expanding the George Pearson Centre will allow for more patients with different types of illnesses and injuries, making it a destination during the day as the neighbourhood currently is predominately a residential neighbourhood. Additionally, the Marpole Oakridge Community Centre could potentially be relocated to this area when the area undergoes redevelopment. With major retail clustering around the Oakridge Centre, educational activities around Langara Station and industrial activities near Marine Drive, having this area dedicated to institutional uses such as a hospital and community centre would provide the solid anchor the neighbourhood needs to make it a vibrant and important community.

Conclusion

In order to meet the EcoDensity and the Greenest City initiatives, the City of Vancouver must be aggressive with its land use density, especially in areas with adequate transit service. The area near Cambie Street and 57th Avenue is an ideal location for high density development as it has adequate transit service and if a rapid transit station is to be built in the area, the transit ridership will increase dramatically if the land use surrounding the station is planned strategically.

The City should take into consideration as part of any plan, the benefits of at least modifying the Langara golf course to accommodate more development opportunities, whether it be something similar to Cambie and 57th Avenue land use Alternative 2 of this document, or other options such as reducing the number of golf course holes from eighteen to nine, where there is already the precedent for a number of nine hole courses in the region.

The most important aspect, however, remains how the public would react to changes. The goals of the City are clear as they are described in the EcoDensity Charter and the Greenest City Initiative. However, the public might have a different idea as to how to make the City the Greenest City by 2020, and the City should consider the public's opinion, while not losing focus of their own strategies.

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