

# White Rock Strategic [Transportation] Plan



# White Rock Strategic [Transportation] Plan

FINAL REPORT | December 2014





*Community*  
**SHUTTLE** 

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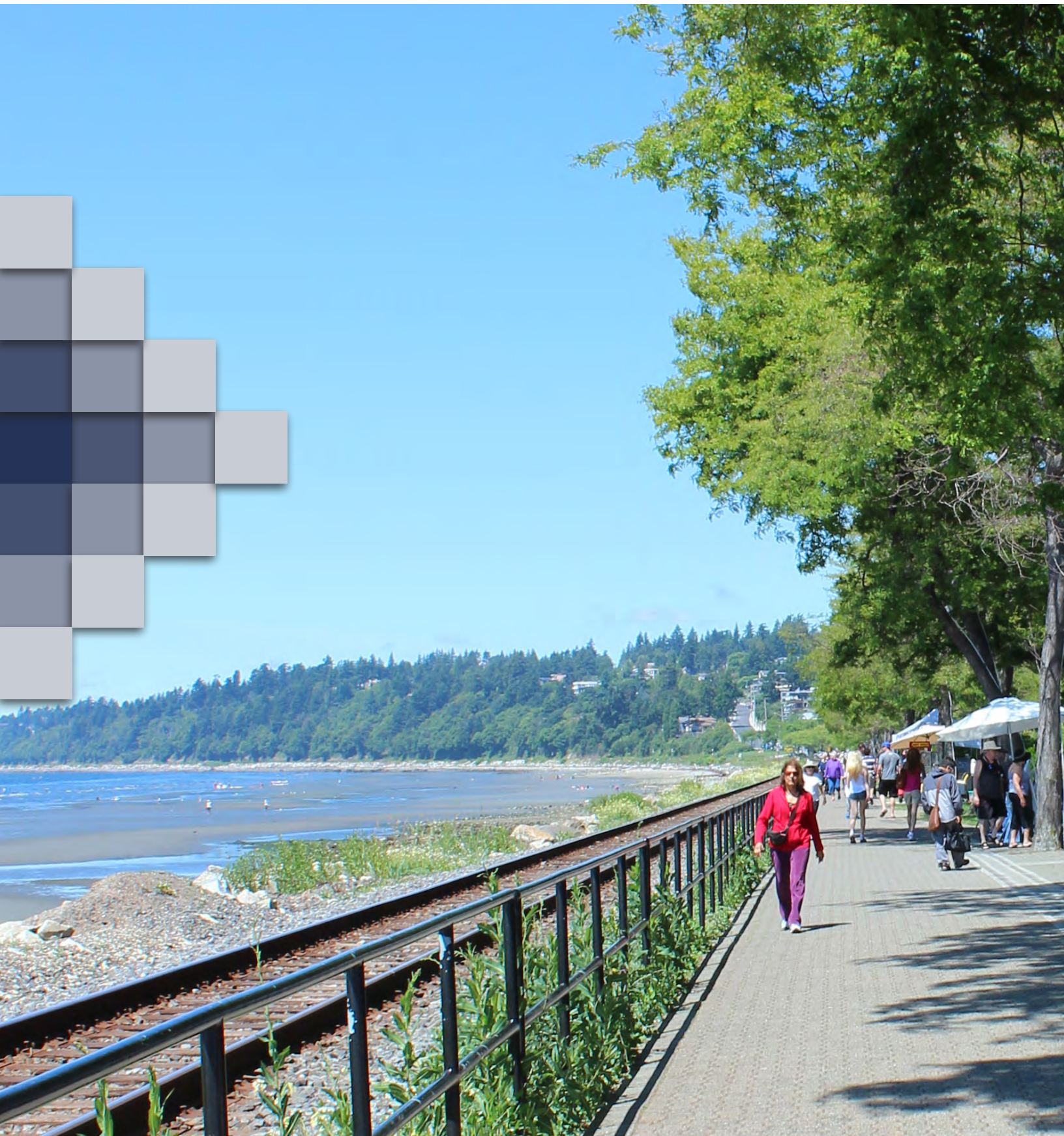
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# Table of [Contents]

	Introduction	1
	Setting the Stage	11
	Shaping the Future	39
	Directions	49
	Land Use	50
	Walking	58
	Cycling	76
	Transit	90
	Streets	110
	Parking	150
	Moving Forward	160







# [1.0 INTRODUCTION]

**1.1** Purpose and Content of the Plan

**1.2** Study Process

**1.3** Communications and  
Engagement

Introduction



Setting the Stage



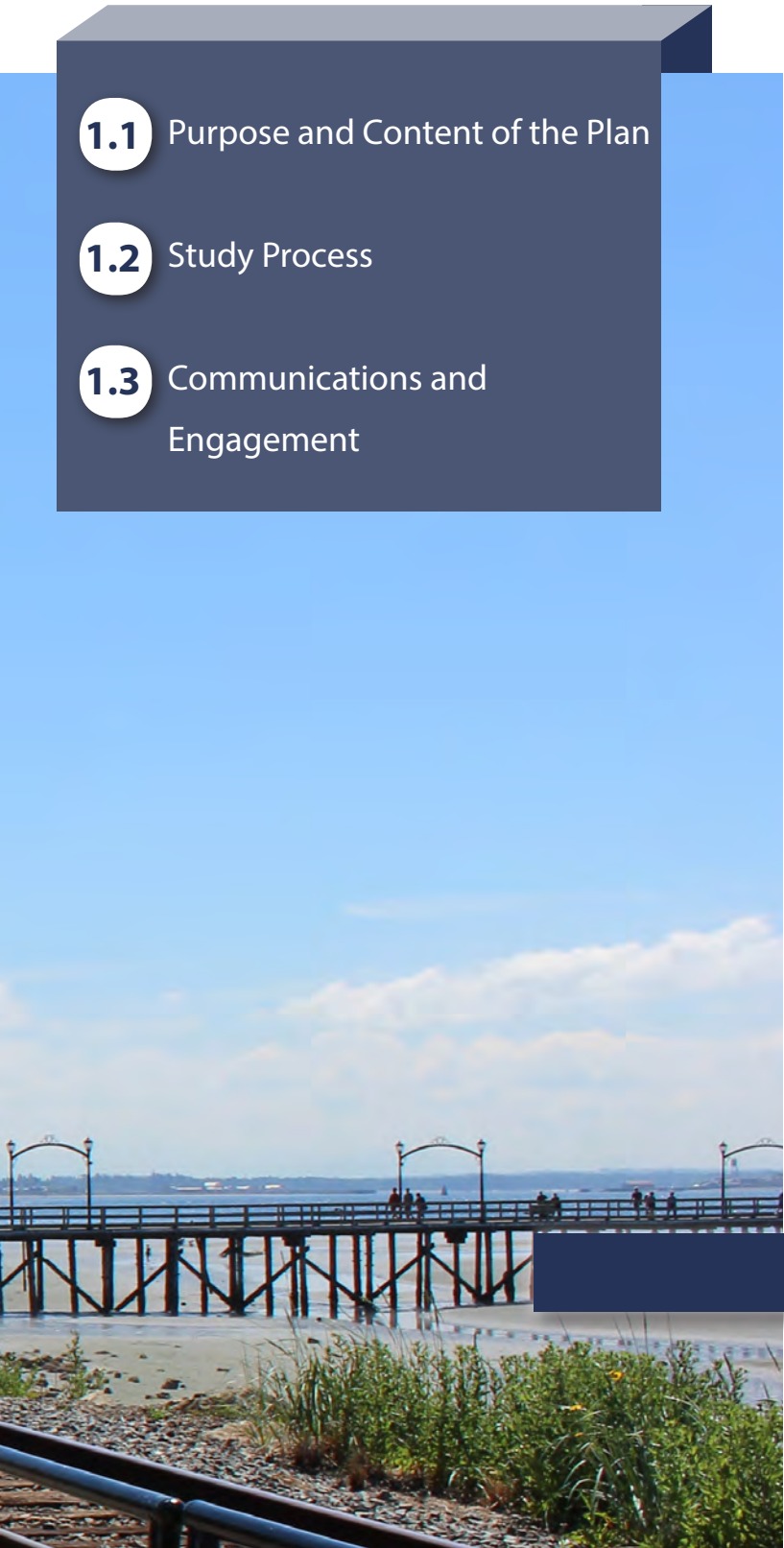
Shaping the Future




Directions



Moving Forward







The **City of White Rock** is a unique and vibrant seaside community on Semiahmoo Bay in the southern part of the Metro Vancouver region. White Rock is a compact, dense community of over 19,000 residents and is a highly sought after place to live and work within Metro Vancouver due to its popular waterfront promenade, scenic ocean views, unique Town Centre area, and livable residential neighbourhoods which have helped to define a strong sense of community identity for both residents and visitors alike.

As a compact community with a small geographic area, growth and development within the city is concentrated in key areas such as the Town Centre and Marine Drive Waterfront areas. By concentrating growth and development in these key areas, the city will maintain its low density and small community feel throughout its residential neighbourhoods. Despite geographic limitations on growth and development, recent

and projected population growth in both White Rock and in neighbouring communities such as Surrey and Langley will place increasing pressures on White Rock's transportation system. This will continue to have a significant impact on the character and transportation infrastructure within the City of White Rock.

White Rock has a well-developed transportation network that consists of a dense grid network of streets, sidewalks on most major streets, several east-west bicycle routes, and transit services throughout the community based out of the White Rock Exchange. The city also has popular Town Centre and Waterfront areas that attract residents and visitors; however, with this comes increased transportation pressure within and between these areas. As a result, a major focus of The Strategic Transportation Plan (STP) is on transportation improvements in the Town Centre and Waterfront areas, and improving connections





between these two key areas, while preserving the residential character of the neighbourhoods in the city.

As outlined in its 2008 Official Community Plan (OCP), the City is dedicated to ensuring that it remains a desirable place for people to live and work. The city's previous Strategic Transportation Plan was developed in 2006, and outlined a clear vision and framework for enhancing the transportation system over the next 20 years and beyond. Since 2006, the City has implemented many of the recommendations laid out in the 2006 STP to enhance the share of multi-modal transportation in the city. This 2014 STP will ensure that the city's transportation vision continues to reflect the changing travel patterns and needs of the community as it continues to grow and evolve.







The City of White Rock's 2014 STP builds upon the vision set out in the 2006 STP to *"provide a safe, efficient multi-modal transportation network that meets the present and future needs of residents and visitors"*. Since the 2006 STP was developed, there have been several significant changes in the city and surrounding region that influence the city's transportation system. The 2014 STP includes a review of the transportation conditions present in White Rock today, and outlines the updated transportation goals and strategies to guide the long-term vision for the enhancement of the City's multi-modal transportation system. New developments and their associated impact on transportation; anticipated population and employment growth locally and regionally; and the importance of providing a well-connected local and regional transportation network have all been factors influencing the development of the 2014 STP. The 2014 STP includes six overarching themes which will direct the Plan in achieving

its goals and respond to transportation issues identified for each theme: Land Use, Walking, Cycling, Transit, Streets, and Parking. Each of these themes will be guided by a series of policies and plans. More information about the themes themselves and the goals and objectives are described in Chapter 3.

The Plan has been separated into **five parts**:



**Part 1**

**Introduction** outlines the purpose and process of the Plan, including community and stakeholder engagement.

**Part 2**

**Setting the Stage** provides context for the Plan, including a community profile that provides information about key characteristics of the community that impact the city's transportation system; other relevant plans, policies and initiatives that were taken into consideration when developing the Plan; and a summary of transportation issues facing White Rock for each of the themes of the Plan today and into the future.

**Part 3**

**Shaping the Future** describes the overarching vision, goals and objectives for the city's transportation system and describes White Rock's commitment toward increasing the diversity of travel options to improve mobility for all residents and visitors.

**Part 4**

**Directions** describes the long-term plans for each mode and area of transportation that will support community vitality and sustainable, convenient, comfortable and safe transportation options.

**Part 5**

**Moving Forward** summarizes the high priority plans, policies, and projects that the city should implement over the short-, medium-, and long-term.



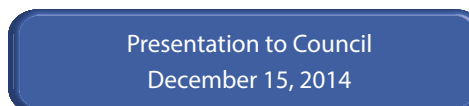
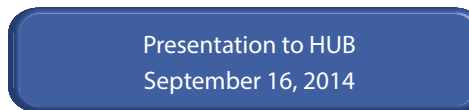
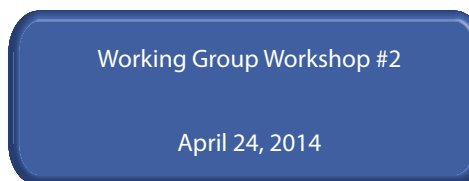
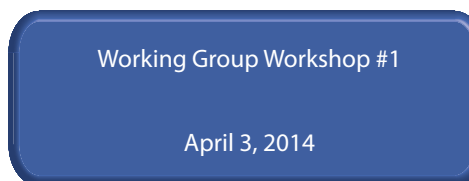
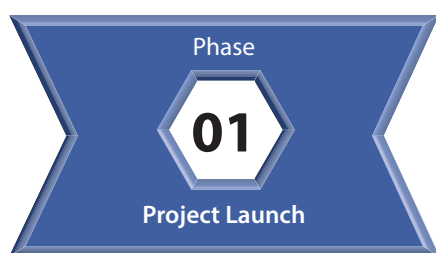


# 1.2 THE PROCESS

Over the past several months, the city has been working to develop a comprehensive plan that will serve as the overall guide for planning and implementing transportation projects and improvements within White Rock over the next 20 years and beyond. The development of the STP evolved over four phases, which included key touch points with White Rock Council, staff, stakeholders, and the broader community, as shown on the following page.

This multi-phase process moved from understanding what has changed since the 2006 STP, to understanding and updating the current transportation issues and opportunities to more in-depth conversations about the vision for transportation and the improvement strategies and projects that will make this vision possible. This Plan reflects the input, feedback and directions received during the entire process, and provides the City with a clear and renewed picture of the city's transportation vision.









# 13 COMMUNICATIONS AND ENGAGEMENT

The 2014 STP emerged out of the City's 2008 OCP, which identified the need to review and update the STP every five years. This update process has been based upon active participation and input from the public, City staff, and key stakeholders. Dynamic community engagement is essential to ensure that the issues reflected in the Plan continue to address the city's needs.

In March 2014, community members were invited to share their insights on the original STP priorities and current transportation conditions and challenges by filling out a hard copy or online survey. 84 responses were received, identifying the transit system, pedestrian network, and major streets as the highest priorities for the 2014 STP. The public was also invited to attend an open house held at the White Rock Community Centre on June 24<sup>th</sup> 2014.

Targeted stakeholder input was gathered through three workshops, which brought together city

staff and members from key external agencies to discuss transportation priorities and challenges. The first workshop was held on April 3<sup>rd</sup> 2014 to discuss the background and context for the Plan, as well as walking and cycling issues and opportunities. The second workshop was held on April 24<sup>th</sup> 2014 to discuss the issues and opportunities regarding the street network and transit, and to discuss specific transportation needs in the Town Centre and Waterfront areas. The third workshop was held on November 19<sup>th</sup>, 2014 to present the draft plan. Stakeholders invited to participate in these workshops are shown in **Table 1.1**.

City Council has been informed of the Plan at key milestones, including two meetings throughout the process on May 12, 2014 to review key issues and opportunities and the preliminary directions and December 15, 2014 to adopt the final plan.





**Table 1.1** Stakeholders

Internal

Staff from various City of White Rock Departments:

- Planning
- Parks
- Leisure Services
- Engineering and Operations
- Emergency Services

Local External

- Community Resources Centres
  - Tourism White Rock
- South Surrey and White Rock Chamber of Commerce
  - Hub
- White Rock Business Improvement Association (BIA)

Regional External

- TransLink
- Fraser Health
- Surrey School Board
- City of Surrey
- Semiahmoo First Nation

Provincial & Federal

- Ministry of Transportation and Infrastructure
  - RCMP
  - ICBC







# [2.0 SETTING THE STAGE]

Introduction



Setting the Stage



Shaping the Future



Directions



Moving Forward




- 2.1 Community Profile
- 2.2 Integrating With Other Plans
- 2.3 Transportation Issues Facing White Rock











The overall objective of the 2014 STP is to provide a safe, efficient, multi-modal transportation network that meets the present and future needs of residents and visitors. The unique demographic and geographic character of White Rock will continue to have a strong influence over the city's travel patterns and infrastructure needs into the future. This chapter provides a brief overview of the character of White Rock, including a community profile that provides information about key characteristics of the community that impact the City's transportation system; other relevant plans, policies and initiatives that were taken into consideration when developing the Plan; and a summary of transportation issues facing White Rock for each of the themes of the Plan today and into the future.





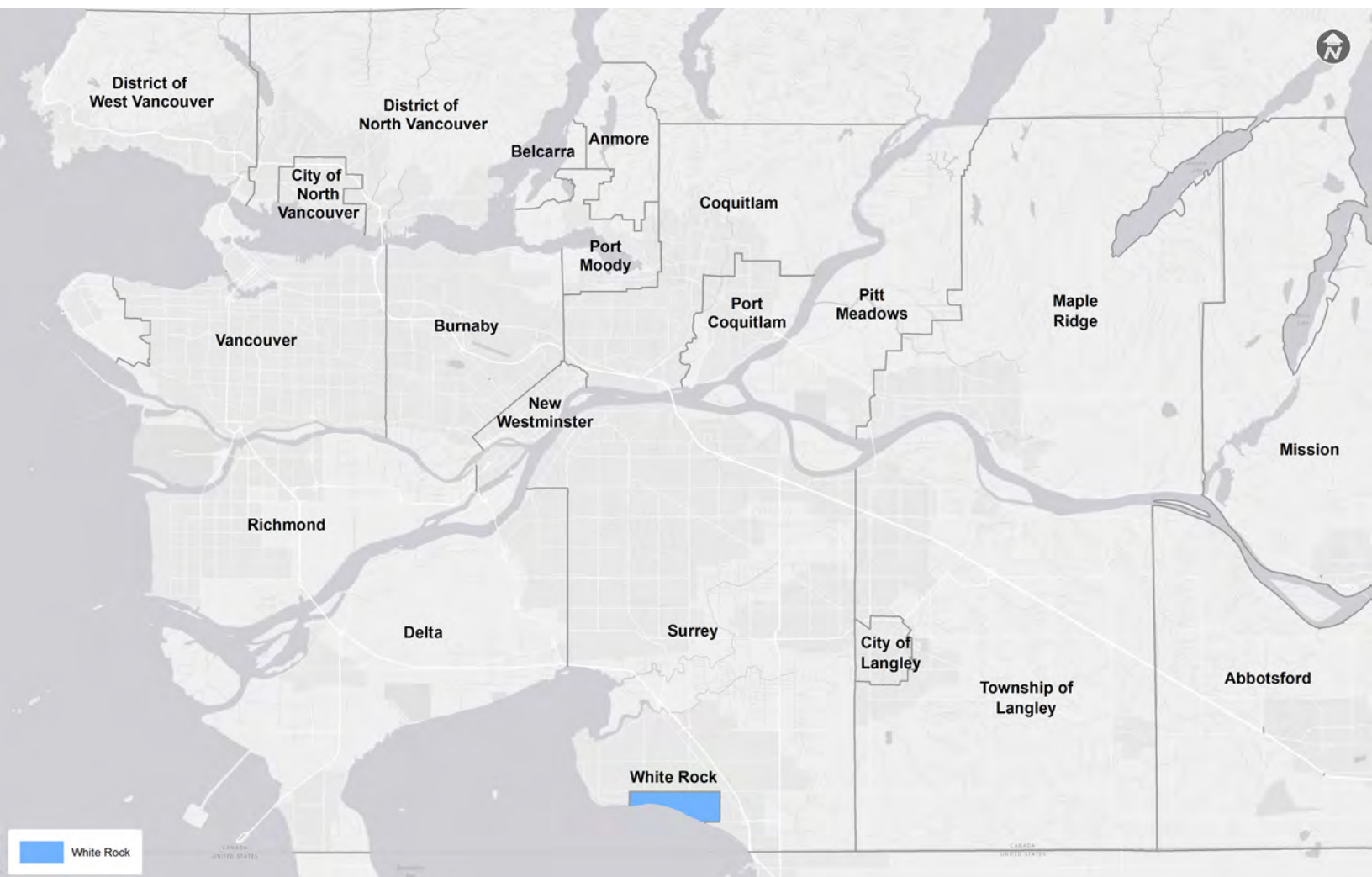


The City of White Rock is located on the Semiahmoo Peninsula at the southern limits of the Metro Vancouver region. The City is surrounded on three sides by the City of Surrey, and the shores of Semiahmoo Bay and the United States border to the south, as shown in **Figure 1.1**.

The city is influenced by major regional transportation corridors, including Highway 99 and King George Boulevard, both of which are located immediately to the east of the city providing regional connections to Surrey and other Metro Vancouver municipalities. Johnston Road, also known as 152 Street in Surrey, also provides a critical north-south connection across the Semiahmoo Peninsula and beyond to much of Surrey. North Bluff Road, also known as 16 Avenue in Surrey, is a primary east-west arterial that constitutes the northern boundary of White Rock.



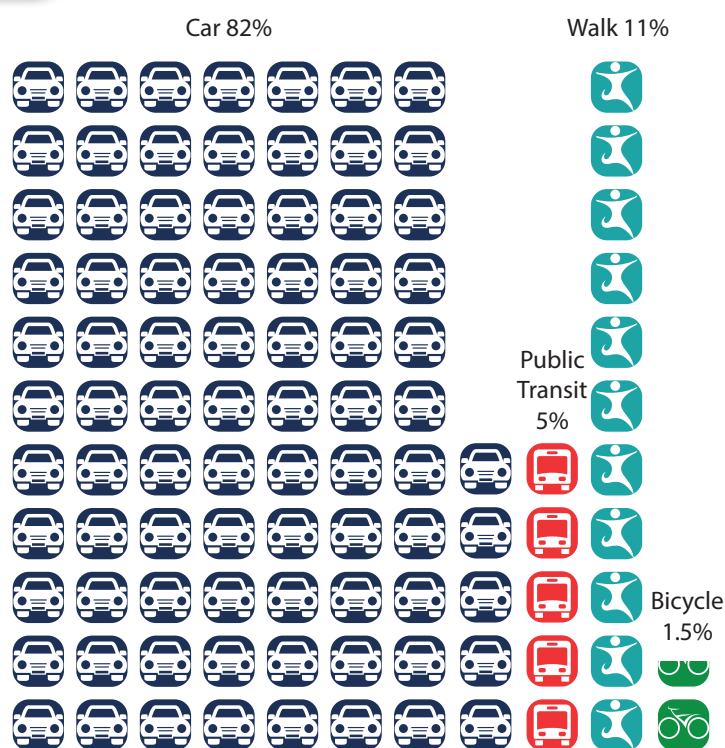
**Figure 2.1** White Rock in Context



While travel by automobile is the most common mode of transportation for most White Rock residents, walking, cycling and transit account for a significant portion of trips made by White Rock residents, particularly for local trips made to destinations within White Rock. As shown in **Figure 2.2**, 82% of White Rock residents report automobile travel as their primary mode of transportation for all daily trips. The second highest proportion of daily trips in White Rock is walking. 11% of all trips in White Rock are made on foot, with 61% of these walking trips being made to destinations within the City of White Rock boundaries. The evident importance of walking for travel within White Rock is a testament to White Rock's walkable and dense built form, and indicates the opportunity that enhancing pedestrian infrastructure may have on increasing the walking mode share within the City. Public transit is also an important mode of transportation, accounting for 5% of all trips in the city.

The following section describes some of the key characteristics of the community that shape travel patterns within White Rock.

**Figure 2.2** City of White Rock Mode Share (2011)



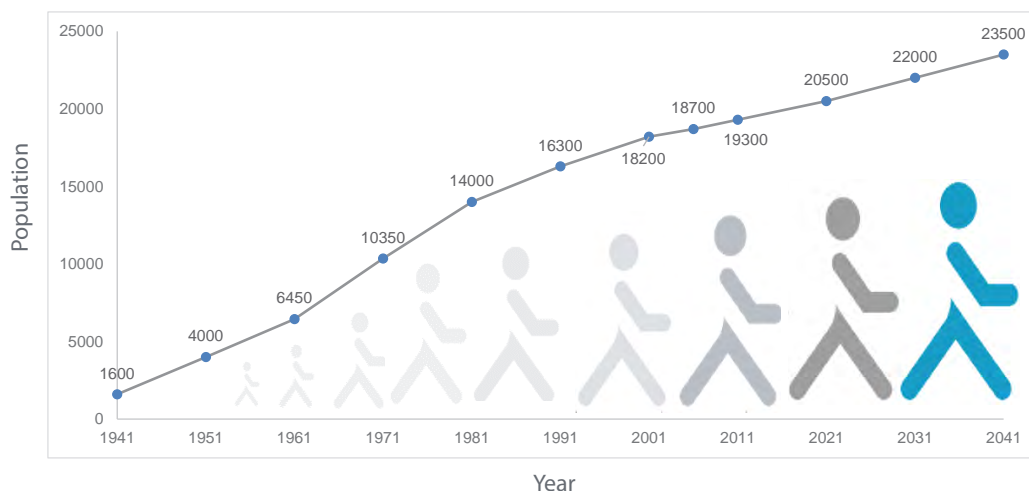


## A Growing Community and Region

Despite being one of the smallest communities in Metro Vancouver, the City of White Rock has grown significantly over the past several decades, as it has nearly doubled in population over the past 40 years. This growth is expected to continue to in the coming years, with the city's population expected to reach nearly 25,000 residents by 2041, with the majority of this growth occurring in the Town Centre, as seen in **Figure 2.3**.

Although White Rock will experience modest growth in the coming years, the city will be more significantly impacted by much more significant growth in surrounding communities. In fact, population growth within the surrounding area -- which includes Surrey, Delta and White Rock -- is anticipated to see a 56% increase in population and a 69% increase in employment by 2041, with over 268,000 new residents in Surrey alone, including 50,000 new residents in South Surrey. This is expected to increase traffic volumes along key commuter and commercial corridors such as North Bluff Road and with the Town Centre and Waterfront areas. Furthermore, new residential developments being proposed for the Town Centre area are expected to generate additional traffic in this area, which may be distributed over other parallel corridors. Though White Rock does not have a large employment base given its geographic location and size, regional travel and commuting between White

**Figure 2.3** White Rock Population Growth (1941-2041)



Source: Statistics Canada, Metro Vancouver Regional Growth Model



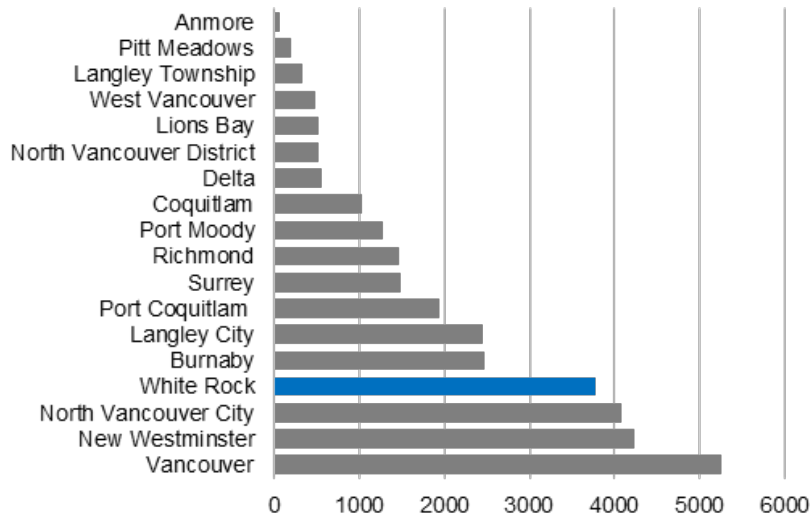


Rock and other Metro Vancouver communities will continue to remain important for those of working age, increasing congestion along these key corridors.

### A Dense Community

White Rock has a total land area of 5.2 km<sup>2</sup> which makes it one of the smallest municipalities within Metro Vancouver. However, with over 19,000 residents, it has one of the highest population densities in Metro Vancouver, with approximately 3,800 residents per km<sup>2</sup>. This population density is significantly higher than most other municipalities in the region, and is behind only Vancouver, New Westminster, and the City of North Vancouver, as shown in **Figure 2.4**. This density makes the city ideally suited to move towards more sustainable forms of transportation including walking and cycling due to the short distance between destinations.

**Figure 2.4** Metro Vancouver Population Densities

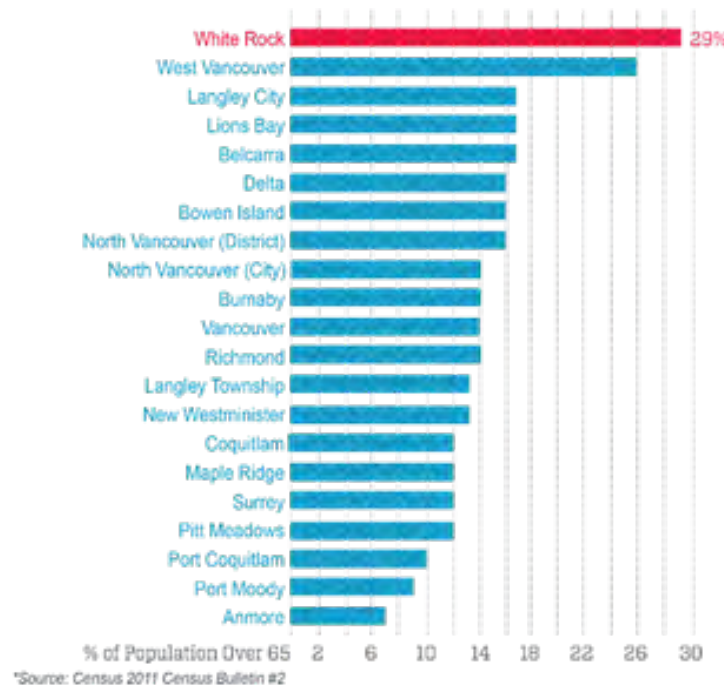




## An Aging Community

As with most communities in Metro Vancouver, White Rock is experiencing an aging population. However, White Rock is acutely aware of and experiencing the effects of an aging population, as it has been experiencing this trend for quite some time. White Rock is an attractive retirement community, and has the highest proportion of seniors aged 65 and over in Metro Vancouver, with nearly 30% of White Rock residents over the age of 65. Seniors are the fastest growing age group in White Rock, and by 2041 over 40% of White Rock Residents will be over 65 as seen in **Figure 2.5**.

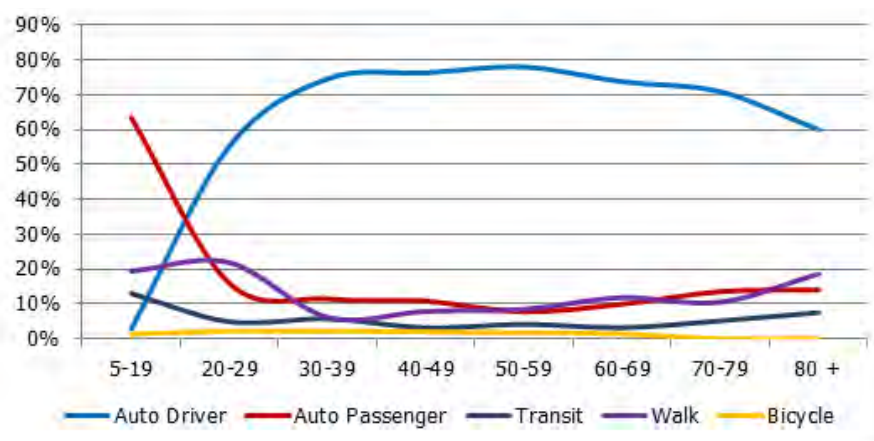
**Figure 2.5** Metro Vancouver Proportion of Population Aged 65 and Over





The impact of a significant growing seniors' population on the city's transportation network is significant, as the transportation needs of this population group are unique. As the population ages, travel behaviours change considerably as older groups create different transportation needs for the city. Some examples of this are the changes in travel time, as senior residents are more likely to travel mid-day, instead of during peak hours. They are also less likely to be driving to all of their destinations and are more reliant on sustainable forms of transportation such as transit, walking, and to a lesser extent cycling. As a result, seniors' populations require accessible, safe and well-connected transit and walking routes and infrastructure, as they are often commuting without a vehicle. As seen in **Figure 2.6**, transportation preferences among White Rock's population shows that, as residents age, they are progressively less likely to drive and more likely to take public transit, walk and carpool than younger residents.

**Figure 2.6** Mode Share by Age Group in White Rock



Source: Mode Share All Trips. Source 2011 TransLink Trip Diary

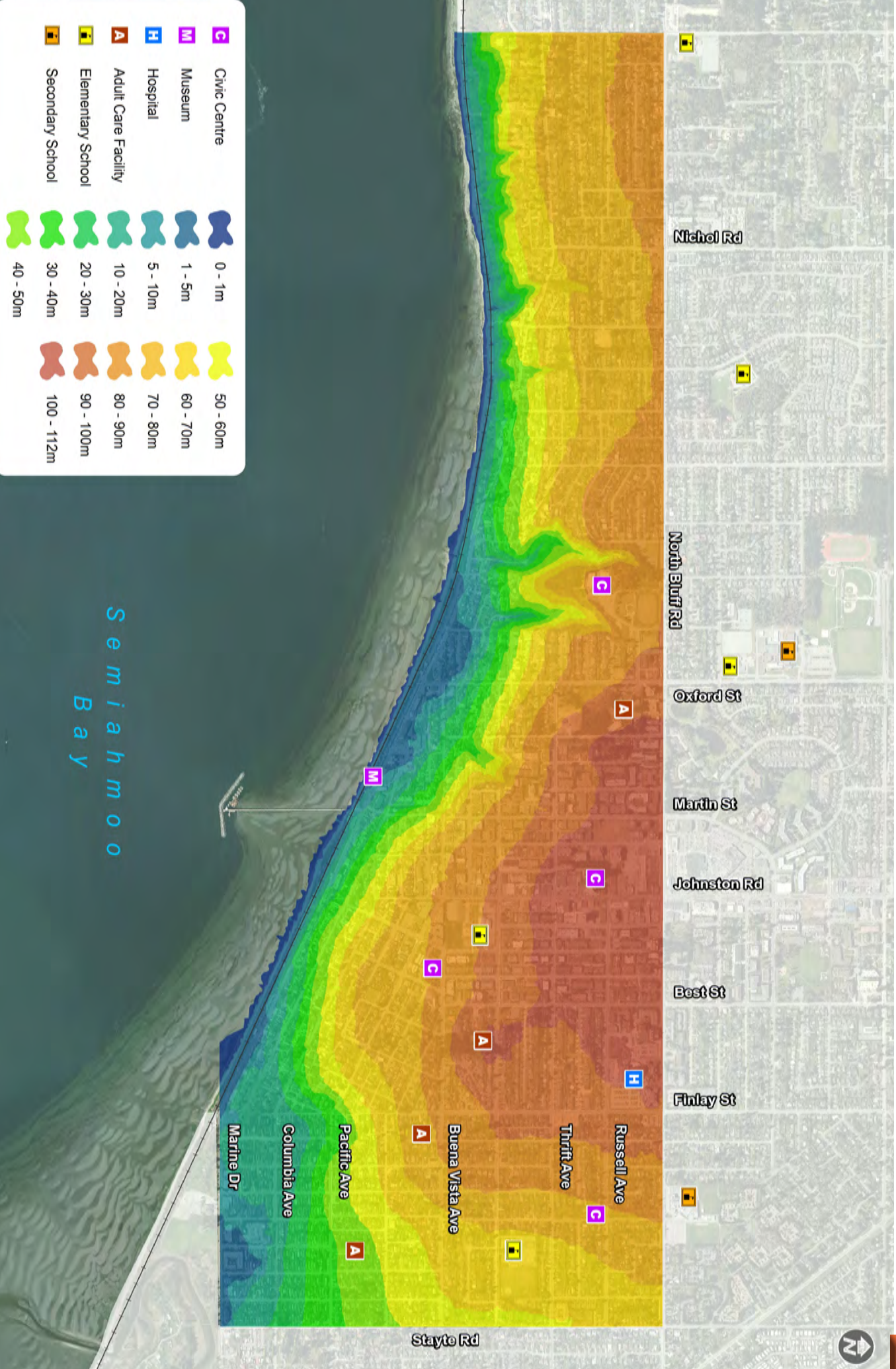
### A Hillside Community

The City of White Rock is characterized by its unique hillside topography, with residential neighbourhoods perched along the steep ridge that lines the City's waterfront, as shown in **Figure 2.7**. The grade from the waterfront to the Town Centre is measured at well over 15% along some of the city's streets. This percentage can make both walking and cycling difficult, and it can also present a challenge for some vehicles. Individuals with physical disabilities, older residents, and potentially visitors are likely to find walking steep hills more challenging. Based on the demographics of White Rock and the growing number of individuals over the age of



Figure 2.7

White Rock Topography





65, it is important that facilities and amenities are provided that can help facilitate transportation in areas with steep topography. This type of geography poses important conditions that influence transportation patterns and network design, particularly providing connections between the Waterfront and the Town Centre.

### An Attractive Destination

Stretching along the sandy coastline of Semiahmoo Bay, the City of White Rock attracts visitors from across the region who are drawn to the waterfront promenade and stunning beaches in the city's Waterfront area. Paired with local population growth, tourism is expected to add to traffic volumes along Marine Drive and add pressure on parking facilities, particularly within the Waterfront area.

Unique transportation challenges along the Marine Drive corridor present an important part of the improvement strategies identified in the STP, as congestion threatens to undermine the attractiveness of the waterfront as a place to recreate, shop, and dine for both residents and visitors. Attracting and keeping visitors on the waterfront is important to ensure a thriving local economy and providing alternate transportation options within Marine Drive, as well as cohesive connections to the Town Centre and nearby residential areas to uphold this area as the soul of White Rock.





# 22 INTEGRATING WITH OTHER PLANS

The 2014 STP is guided by, and supports, the aspirations of other City policies and plans as well as taking into consideration regional and provincial plans, as described below.

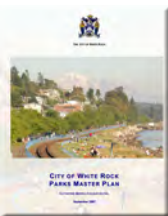
## White Rock Plans



The 2006 **Strategic Transportation Plan** laid the vision and framework upon which the 2014 STP builds to encourage a multi-modal transportation system.

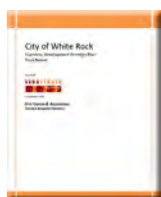


The City's 2008 **Official Community Plan (OCP)** outlines detailed goals and policies that support both local and regional transportation objectives outlined in the 2006 STP. The OCP requires an STP update every five years and provides a framework to incorporate land use and development plans into the city's transportation decision-making. The OCP will be updated in 2015.



The 2007 **Parks Master Plan** outlines the City's priorities and strategies for creating comfortable, safe and convenient recreational options. Many of the recreational components in the plan support the objectives outlined in the 2014 STP, including:

- ▶ Improvement of the City's sidewalk, trail, walkway and bicycle route network;
- ▶ Developing a wayfinding / signage system; and
- ▶ Enhancing Waterfront and Town Centre Connectivity.



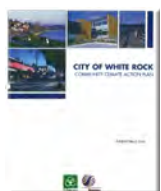
The 2009 **Economic Development Strategic Plan** delineates how funding should be allocated to enhancing transportation infrastructure, amenities and services into the future.



The 2011 **Town Centre Design Guidelines** emphasize the importance of transportation infrastructure that supports mixed-use dense developments to promote walkability and pedestrian comfort and safety. The 2011 **Town Centre Urban Design Plans** provides an illustrated vision of what the Town Centre could become in 25 years if the guidelines are followed.



The ongoing **Johnston Road Study** gathers public input and feedback on proposed design components to guide the reconstruction work of Johnston Road from North Bluff Road to Thrift Avenue.



The White Rock **Community Climate Action Plan** encourages sustainable transportation options by outlining Greenhouse Gas (GHG) reduction targets of 10% below 2007 levels by 2020 and a 50% reduction by 2050.

## Regional and Provincial Plans

The 2014 STP also builds upon and adds detailed strategies to regional priorities outlined in key policy documents such as the Metro Vancouver Regional Growth Strategy (2011), and TransLink's Regional Cycling Strategy (2011), Regional Transportation Strategy Strategic Framework (2013), South of Fraser Transit Plan (2007), and Metro Vancouver Mayors' Council on Regional Transportation Vision (2014).





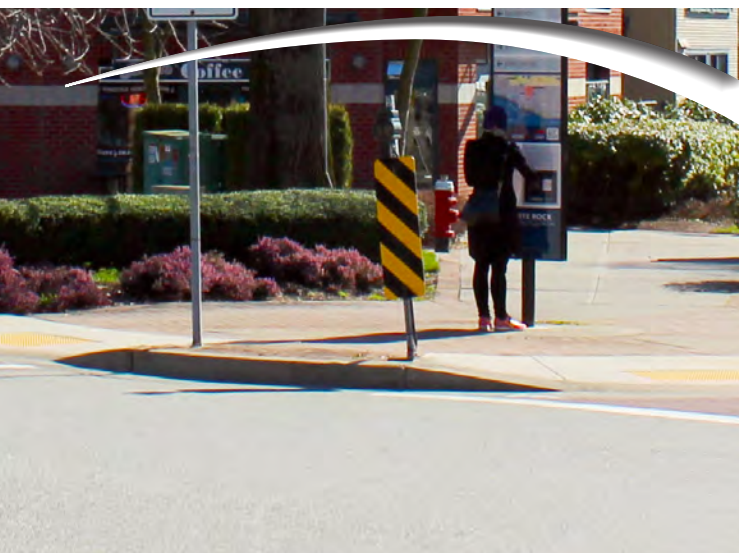


This section of the Plan provides a brief overview of the transportation system in White Rock and the issues that have been identified for roads and parking as well as transit users, pedestrians, and cyclists. The issues presented here identify potential barriers to achieving the city's transportation goals and objectives and which have shaped the solutions incorporated into the 2014 STP. This section builds to a discussion of existing conditions, including an understanding of resident and stakeholder input.

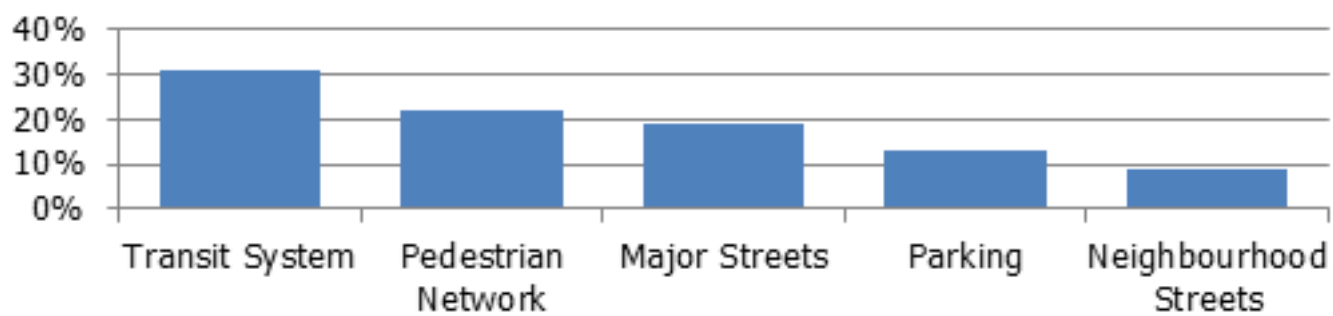
Based on a review of feedback gathered from a community survey which was distributed in April 2014, improvements to the transit system were identified as the highest transportation priority in the City, followed by pedestrian network improvements, major streets, parking and finally neighbourhood streets, as shown in **Figure 2.8**.

When survey respondents were asked to identify their top five transportation issues, the transit system was identified as their top concern followed by parking, the sidewalk network (obstacles, maintenance, completeness, and lighting), traffic flow and congestion, and pedestrian safety.

A review of the existing conditions of the pedestrian, cycling, transit, and street network is provided below, as well as a discussion of the current parking conditions within the City of White Rock.



**Figure 2.8** Transportation Priorities Identified by Survey Respondents





## Walking

Walking is a very important form of transportation in White Rock, and is a vital component of creating a vibrant community. Walking in White Rock was identified by residents as one of the top transportation priorities, second only behind the transit network. In fact, the community survey found that nearly all survey respondents reported walking either two-to-three times a week (53%) or daily (47%). The survey found that residents are predominantly walking along the Marine Drive Waterfront area, and within residential neighbourhoods. Most respondents are walking for exercise or for shopping purposes. The results indicate that residents would like to see better connections to different areas of the city, direct routes, and better pedestrian access to key destinations. To help encourage walking in White Rock the following issues should be addressed:

### Walking Issues

#### 1) Limited sidewalk facilities at certain locations in the City

White Rock's existing pedestrian network is made up of approximately 43% of streets with no existing sidewalk on either side of the street (29.8 km), while 24% of streets have sidewalks on one side (16.9 km), and 33% have sidewalks on both sides of the street (23.1 km) as seen in **Table 2.1**. The city's sidewalk requirements state that arterial streets and both primary and neighbourhood collector streets should have sidewalks on both sides of the street, unless topographic restrictions make this impossible. There are still a number of primary and neighbourhood collector streets that have sidewalks on only one side and a few that do not have any sidewalks at all. There are also a number of streets that provide important pedestrian connections to key destinations that have limited or gaps in sidewalk connectivity, which creates an issue for encouraging walking and providing comfortable facilities that will help encourage more walking within the City.

**Table 2.1** White Rock Sidewalk Coverage

ROAD CLASS	NO SIDEWALK	ONE SIDEWALK	TWO SIDEWALKS	TOTAL
Major Road Network	0%	0%	100%	100%
Arterial	0%	0%	100%	100%
Primary Collector	2%	43%	55%	100%
Neighbourhood Collector	10%	45%	45%	100%
Local	80%	13%	7%	100%
<b>TOTAL</b>	<b>43%</b>	<b>24%</b>	<b>33%</b>	



## 2) Pedestrian safety and accessibility concerns

Several locations throughout White Rock, particularly intersections, present potential accessibility and safety issues, predominantly for persons with disabilities and seniors. Wide crossing distances, intersections without curb let downs, and desirable crossing locations without crosswalks can create challenges to navigating the city as a pedestrian. There are also locations where it may be warranted to install a pedestrian activated signal to help ease crossings. To overcome some of the safety and accessibility concerns at intersections in the city, and to make walking an attractive transportation option, enhanced crossing treatments are needed at some locations in the city.

## 3) Limited pedestrian amenities and places to stop and stay

Currently, there are limited pedestrian amenities located in key pedestrian areas that would provide places for pedestrians to want to stay for extended periods of time. Part of creating a city that has high levels of pedestrian activity involves creating areas that are attractive, interesting and provide a place where people would like to stop and linger for a while. Currently, the Town Centre and Waterfront areas are attracting a number of pedestrians, but they are not necessarily 'great places' where pedestrians feel comfortable and invited to stay.

## 4) Limited desirable connections between the Town Centre and Waterfront

The steep topography in White Rock can act as a barrier to walking, as there are a number of streets in the city that do not provide direct access to the Waterfront from the Town Centre. There is, however, a network of trails and staircases that provide very important connections where roads do not. However, many of these stairways are not well marked, are not accessible, and are not necessarily inviting due to overgrown trees and bushes, and substandard infrastructure.





#### 5) Lack of support or events that promote and encourage walking

While the city and Tourism White Rock have done a great job of providing pedestrian wayfinding and maps for residents and visitors to successfully navigate through the city, there is a limited number of online resources outlining pedestrian routes, as well as minimal support and educational materials to encourage safe walking, particularly for children as well as events and initiatives that support walking.

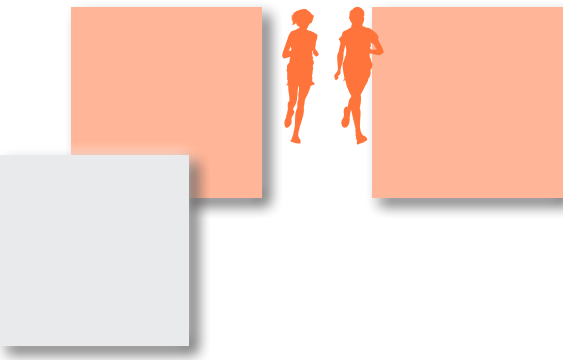
### Cycling

Cycling has the potential to become a very important form of transportation for White Rock residents and visitors. The compact and dense nature of the community as well as the proximity to important regional destinations in South Surrey make cycling a desirable sustainable transportation option. Currently, approximately 1% of all trips to work are made by bicycle, and this increases to 1.5% when taking into consideration all trip purposes. It has been found that providing safe and comfortable facilities is extremely important to promoting cycling within the city, as is providing connections to key destinations, as well as places to park. Intersection treatments and transitions between different facility types were also identified as challenges of the existing network. To help encourage cycling in White Rock the following issues should be addressed.

#### Cycling Issues

##### 1) Gaps and lack of continuous cycling facilities

Since the 2006 STP, the city has implemented a significant amount of the proposed network identified in that plan. However, there are still issues of connectivity and gaps in the existing network. For example there are limited complete north-south connections, and no convenient connections between the Town Centre and the Waterfront. North-south routes along Stayte Road and Bergstrom Road do not provide complete connections and are clear gaps in the network. There are also a number of potential east-west routes, particularly along Columbia Avenue and Buena Vista Avenue, that would not only provide routes that better connect the city, but also provide routes that allow for north-south travel that are not as steep, though less direct. As mentioned above in the discussion about walking, due to the steep topography



of the city, there are a number of stairways that provide direct access between streets where the road does not continue. In many cases, these staircases can be difficult for cyclists to use, having to carry their bicycles upstairs in order to utilize the short cut. Providing ramps for cyclists would help to improve route connectivity and provide short-cutting alternatives.

## 2) Lack of comfortable and high quality bicycle facilities for people of all ages and abilities

The majority of White Rock's existing bicycle facilities are made up of shared use lanes, where bicycles share the road with automobiles. These facilities are not necessarily comfortable for cyclists of all ages and abilities, particularly on streets with higher motor vehicle volumes and speeds. White Rock does have a neighbourhood bikeway along Blackburn Avenue and nearby streets, as well as an off-street pathway on Stayte Road. Residents indicated that they like these types of facilities and noted that they would like them to be better maintained, as existing pavement markings, signage and comfort of the facility could be improved to make the route better marked for cyclists and drivers. In addition, there is the potential to provide higher quality facilities including bicycle lanes and a cycle track along North Bluff Road which would provide a direct east-west route, compared to the meandering nature of the existing neighbourhood bikeway on Blackburn Avenue.

## 3) Limited bicycle parking

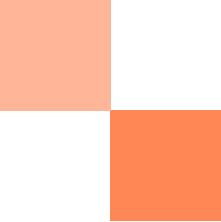
There is currently limited short- and long-term bicycle parking within White Rock. Visitors that come to White Rock by bicycle have limited locations to park their bicycle for the day or for extended periods of time. Providing secure parking is a very important component of developing a convenient bicycle network and promoting cycling as a viable transportation option. If people do not have a place to leave their bicycle at the end of their trip, they are more likely to choose another way to get to their destinations.

## 4) Lack of support or events that promote and encourage cycling

Similarly to walking, there are limited city-wide events or initiatives that promote, encourage or educate individuals on cycling. This includes additional support facilities such as end-of-trip facilities such as







showers and lockers. In addition, providing maps of bicycle routes and parking locations online or readily available pocket sized maps would help to encourage cyclists and help them identify routes based on their ability and comfort. Encouraging cycling through programs similar to those mentioned above in the walking section are important for promoting safe cycling for those of all ages. In addition, supporting regular maintenance of existing bicycle facilities is important.

## Transit

Providing convenient and attractive public transit is critical to creating a vibrant and sustainable community. Public transit can offer competitive travel times to the automobile and reduce the environmental and community impacts of transportation. Transit service in White Rock, and throughout the Metro Vancouver region, is planned and funded by TransLink and operated by various subsidiary companies. However, City staff can work with TransLink on matters influencing current and future services as they affect the community. White Rock has fairly limited transit ridership and it accounts for about 8% of all trips to work. The majority of transit trips are made for work (39%), school (16%), and recreational / social purposes (12%). Transit trips are generally of a commute nature, with 60% of transit trips having a trip length greater than 20 km. To help encourage transit use in White Rock the following issues should be addressed:

### Transit Issues

#### 1) Infrequent bus service

Local bus service is often infrequent and does not operate into the late evening. For example, many of the local Community Shuttle routes run every 30 to 60 minutes during peak and off peak periods, respectively. It is generally accepted that transit should be offered at least every 15 minutes during peak periods and every 30 minutes during off peak periods to ensure that it is an attractive alternative to driving. In addition to route frequency, extended periods of operation are fundamental to maintaining an attractive transit network. Many local routes



end their runs as early as 7 pm, making transit use often inconvenient and not viable for many trip types.

## 2) Limited local service connections

As noted above, as a result of the infrequent service there are significant gaps in transit access between the Town Centre and the Waterfront. These are two of the city's most important destinations, however, accessing them by transit is very difficult, particularly in the evenings and outside the summer months.

## 3) Lack of accessible transit stops

Providing transit stops that are accessible for all users is an important component of providing an equitable transit service. Curb ramps and wheelchair loading pads are necessary to make transit accessible to persons with disabilities and the elderly. The majority (52%) of the bus stops in White Rock are not fully accessible. As already touched on, White Rock has a high number of seniors, when compared to other municipalities in the region, and as a result the number of people with age-related mobility and cognitive impairments is likely higher and will continue to increase.

## 4) Existing regional transit exchange is poorly designed

Currently, the White Rock Centre Exchange is an on-street facility with bays located on Johnston Road/152 Street and North Bluff Road. This exchange is the terminus and layover location for many local and regional routes and is a location of high transit activity. It is also important to note that this is one of the busiest intersections in the City. It is currently the intersection with the greatest levels of congestion and the highest number of collisions. As transit frequencies increase and more regional routes are provided, this exchange is likely to see an increase in activity which will have an impact on the on-street activity on Johnston Road, which is an important gateway to the city and provides access to the Town Centre.



## 5) Limited passenger amenities at bus stops

Amenities at bus stops, such as shelters, benches, good lighting, transit maps and route information, can make waiting for the bus a more pleasant experience and may attract additional ridership. Currently, only 13 of the city's bus stops have shelters and, as noted, less than half are accessible.

### Streets

Streets within urban areas should be more than just places for moving people to and from destinations. They should also be important public spaces and destinations in and of themselves. While White Rock's street network has already been established, there are a number of strategies that can be adopted to manage the existing street network and to identify minor road improvements that can improve the efficiency, operations, and safety of the streets in White Rock. A description of the issues that are currently facing the streets in White Rock are listed below:

#### Streets Issues

##### 1) Johnston Road / North Bluff Road intersection

The Johnston Road / North Bluff Road intersection is the most problematic intersection from a safety and performance perspective. Although the intersection operates at acceptable peak period levels of service today (LOS D), by 2041 the intersection is anticipated to fail. This is also the top collision location in the city. Between 2008 and 2012, the Johnston Road / North Bluff Road intersection saw an average of 40 collisions per year; by comparison, the second highest collision location in White Rock is the Martin Street / North Bluff Road intersection, which averaged 11.4 collisions per year over this period.

Treatment options at Johnston Road / North Bluff Road intersection are further complicated by the fact that the intersection serves as the primary gateway to the Town Centre. Bus loading and layovers related to White Rock Centre Exchange, the Semiahmoo Peninsula's primary transit centre, are an additional challenge that must be considered when generating and assessing improvement options.



## 2) Some intersections have operational and/or safety issues

Although most of the intersections with the highest number of collisions also have the highest vehicle volumes, some intersections within the city are affected by localized or seasonal traffic issues, including congestion and perceived safety issues for road users, particularly along Marine Drive, North Bluff Road and Johnston Road.

## 3) Limited directional guidance is provided to visitors unfamiliar with the City

Due to the steep topography in the city, navigating the streets of White Rock can be difficult for those who are unfamiliar with the city. There are many streets that do not continue south to connect with Marine Drive. It is also often difficult to find key destinations in White Rock or to find the fastest route to access White Rock from within the Metro Vancouver Region. Wayfinding options for White Rock can include signage along highways, at destinations and city gateways, and signage identifying preferred routes.

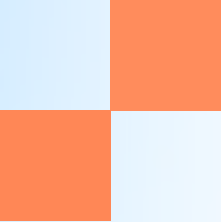
## 4) Limited vehicle options besides owning your own vehicle

In many other cities in Metro Vancouver, car sharing options are available that provide residents that need to occasionally drive with a choice to rent a car over a short term period. Modo, Zipcar, and car2go provide car sharing services to many areas in Metro Vancouver and offer different service alternative types from short-term point-to-point rentals with billing per minute to longer-term periods (up to 2-weeks) with billing per hour or per day. Car sharing services increase mobility options for residents, providing travelers the flexibility of car use without the associated maintenance, ownership and fuel costs. The travel freedom afforded to members by car sharing services may help residents defer or avoid purchasing a first (or second) vehicle, altogether decreasing the number of vehicles on the road.

## 5) Neighbourhood livability is affected by traffic volumes and speeds

Vehicle speeds and volumes on residential streets can have a negative effect on the overall livability and comfort of a neighbourhood. These issues can often be dealt with through traffic calming. The City of White Rock has a Traffic Calming Policy that was developed in conjunction with the 2006 STP. Creating





streets that are comfortable and safe for all road users is not limited to local or residential streets as there are a number of major streets in the city that have the potential to be complete streets that accommodate all road users and are destinations in and of themselves. Currently, some destinations in the city are located on streets that are not necessarily comfortable or desirable places for pedestrians, cyclists and transit users.



### Parking

As White Rock is an important tourist destination for visitors throughout the region, parking is a key component of the overall transportation system for the City. There is a significant amount of on-street and off-street parking available throughout the city, including pay parking in the Waterfront area and around the Peace Arch Hospital. The number of stalls at each location include:

- ▶ 625 stalls at West Beach;
- ▶ 235 stalls at East Beach;
- ▶ 79 stalls around Peace Arch Hospital; and
- ▶ 265 stalls at Centennial Park.

These facilities are an important source of revenue for the city, particularly in the summer months, and providing access to parking is important for the economy of the city and local businesses. In order to support the Waterfront's role as a regional tourist destination, the City needs to address the following challenges in the area of parking facilities and management:



## Parking Issues

- 1) **Accessing the waterfront through existing parking lots is difficult** for pedestrians who have just parked their vehicle and want to access the beach. As many of the access points to the waterfront are through parking lots, it is often difficult to navigate through and determine the most direct route to the beach. There are no pavement markings or signage to make it easier to access the Waterfront through the parking lots. In many cases, pedestrians have to climb stairways or take an indirect route to accessible access points.
- 2) **Inefficient use of city-wide facilities** at peak periods, particularly sunny weekends in the summer. However, while the demand for parking is high, there is sometimes unused parking in certain parts of the city as it is not clear to visitors where parking is located and where the access points for the beaches are. For example, demand for parking at West Beach is often over-subscribed, while there may be many empty stalls at East Beach. Often, when one area is full, traffic congestion results in the parking lots and along Marine Drive as motorists search and wait for parking spots in that area. Many motorists circulate through the Waterfront area while searching for a convenient parking space.
- 3) **Parking patterns are seasonal.** While there may be a need for additional parking stalls in the summer months during peak times, much of the rest of the year the parking is underutilized. While weather and seasonal patterns are difficult to plan for, it is important that the Plan takes into consideration these patterns when identify strategies to managing parking.
- 4) **Low parking turnover** at periods of high demand. It is important that the turnover of parking stalls occurs frequently and throughout the day. As some studies have estimated that a parking stall could generate as much as \$50,000 in revenue for a merchant, it is important that these spots are not being occupied for long periods of time, particularly by employees. This is a significant concern for merchants located in the Town Centre and along the Waterfront.
- 5) **Parking in Residential neighbourhoods** in specific areas particularly around Peach Arch hospital and at locations where residents have secondary suites. Peach Arch Hospital is also planning on increasing in size which will put more pressures on surrounding residential streets if stiffer parking restrictions are not put in place.







# [3.0 **SHAPING THE FUTURE**]

**3.1** Vision

**3.2** Goals and Objectives

**3.3** Transportation Hierarchy

**3.4** Themes of the Plan

Introduction



Setting the Stage



Shaping the Future



Directions




Moving Forward











The overall direction of the 2014 STP is to provide more and better transportation choices within and through the City of White Rock. This Plan has been developed to ensure that transportation investments work towards achieving the City's goals. These include transportation goals as well as goals set forth in other City plans including the OCP. To provide directions and priorities, the 2014 STP sets out clear themes and goals of the multi-modal transportation system that will serve the residents and businesses of White Rock as described in this chapter.





# 3.1 GOALS AND OBJECTIVES

The 2014 STP has four overarching goals that will guide the development of the Plan. The policies and actions associated with each of the themes of the Plan have been developed with the focus of achieving these four goals. The goals identify the future direction of transportation in White Rock and are incorporated to the strategies presented for each of the modes and themes of the Plan. The goals of the 2014 STP include:



**Goal #1:** Promote a vibrant, accessible, and active **Waterfront** area that remains an attractive destination for visitors and tourists. This includes enhancing the integration of different modes along the Waterfront, as well as maintaining and enhancing accessibility while understanding existing constraints of existing geographic and existing infrastructure.



**Goal #2:** Focus future growth in the **Town Centre** to support development of a dynamic, pedestrian-oriented, and complete community. This recognizes the need to support new developments while managing traffic impacts and creating a comfortable environment for all travel modes.



**Goal #3:** Preserve lower-density **residential areas** as liveable, accessible, and attractive communities that are well-connected to the Waterfront and Town Centre. Provide a transportation network that supports sustainable transportation modes and increases safety.



**Goal #4:** Enhance **connections** between the Town Centre and Waterfront areas, making travel between the two areas comfortable, convenient, and accessible to all.







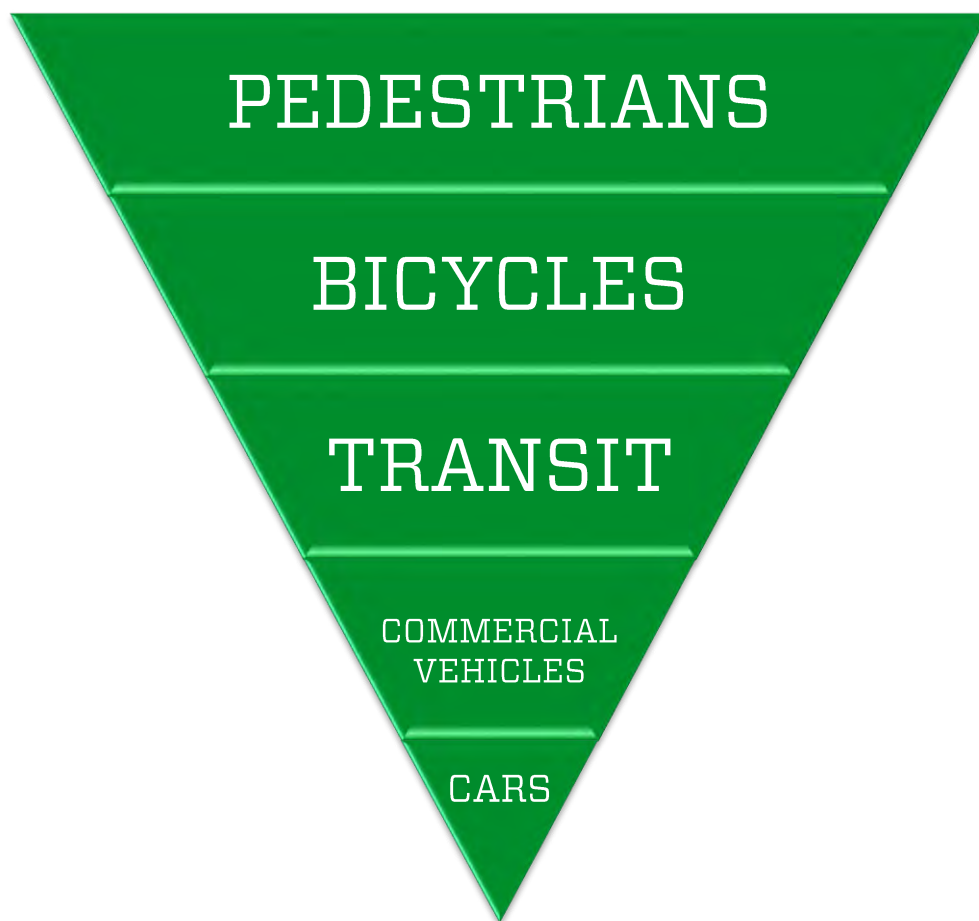
As with many other communities in North America, White Rock is facing challenges associated with being a largely car dependent city. However, as mentioned previously, White Rock is in a great position due to its small size and the fact that it has two clearly defined areas of commercial activity that can attract the use of sustainable transportation modes where people are within close proximity of their daily needs. This Plan focuses on the goal of making these destinations easier to access, more inviting and creating a better place for all road users.

The focus on creating a more vibrant community for future generations of residents and visitors can be supported through the transportation system. Transportation policies that support investments that encourage people to walk, cycle and use transit can help support land use goals and help to create the White Rock envisioned. In order

to manage these investments, a transportation hierarchy has been developed (**Figure 3.1**). The hierarchy of modes shown here proposes that the City consider the needs of pedestrians, cyclists, and public transit before that of private automobiles. By considering the needs of these priority modes, future transportation plans, programs, and projects will provide better, safer and more convenient solutions and encourage over time more people to walk, cycle, and ride the bus. By identifying walking, cycling, and transit as the top layers of the transportation hierarchy White Rock has identified its commitment to sustainable transportation and travel.



**Figure 3.1** Transportation Hierarchy







As noted in the previous chapter, the 2014 STP has been broken down into six themes, and each of these themes will be guided by a series of policies and plans. The six themes of the STP are briefly described below:



**Land Use:** The Plan focuses on transportation improvements in the Town Centre and Waterfront areas, as well as improved connections to these areas.



**Walking:** Walking is the most fundamental form of transportation. It is part of every trip, whether that trip is made by car, transit, or bicycle. Promoting walking and expanding sidewalk coverage is a major component of the STP.



**Cycling:** The STP seeks to make cycling an attractive, convenient, and comfortable transportation choice for people of all ages and abilities by enhancing the existing bicycle network and creating more north-south connections.



**Transit:** Transit in White Rock, and throughout Metro Vancouver is planned and funded by TransLink. The STP provides the City with the opportunity to examine the role of transit within White Rock and identify opportunities for improvement.



**Streets:** Travel by private vehicle is the primary mode of transportation in White Rock today, with 83% of all trips to work made by car. To accommodate a growing population and employment levels as well as safety concerns, improvements to the street network need to be considered.



**Parking:** The City manages the supply of on-street and off-street parking to support the economic vitality of the City, while managing impacts of parking on neighbourhoods, recognizing that parking policies and availability can influence people's transportation choices.







# [4.0 DIRECTIONS]

**4.1** Land Use

**4.2** Walking

**4.3** Cycling

**4.4** Transit

**4.5** Streets

**4.6** Parking



Introduction



Setting the Stage



Shaping the Future



Directions



Moving Forward







One of the primary themes of the 2014 STP for White Rock is to improve transportation options to get to, from, and between the Town Centre and Waterfront areas (**Figure 4.1**). Both of these areas are key economic areas that offer a range of amenities for residents and visitors, and are also the key hubs of activity in the city. They are the location of many of the social and community services in the city. They are the areas that support numerous activities including, living, working, shopping, socializing and recreational activities. As a result, they are also the locations of high transportation activity, comprised of pedestrians, cyclists and transit users as well as high volumes of automobiles. Vehicle traffic can result in significant amounts of congestion as well as periods of time where finding parking can be a challenge due to high demand. The Town Centre and Waterfront are vibrant areas of the city and attract visitors from all over the region. Therefore, ensuring that these areas are well connected, livable, comfortable and meet the needs of all users through transportation decisions is a key

component of this Plan, and is an underlying theme of many of the strategies identified for all modes.

As outlined in the previous chapter, the STP includes four goals, all of which touch on the importance of the Town Centre and Waterfront and aim to make transportation improvements that enhance accessibility, livability, mode choice and the overall feel and design of these two areas. Ensuring that residential neighbourhoods are well connected to the Waterfront and Town Centre is also identified as a goal. Finally, the Plan recognizes the need to enhance connections between the Town Centre and Waterfront making it as effortless as possible to travel between these two destinations. This includes finding innovative ways to promote movement between these two hubs despite some well-established transportation challenges including the steep topography and streets that do not all connect to Marine Drive.



**Figure 4.1** Town Centre Waterfront Concept Map









The importance of considering land use in the context of transportation planning is well established, and while this Plan does not make any specific recommendations regarding land use, understanding the role the Town Centre and Waterfront play within the community and region as well as the importance of these two activity areas in the City is key to understanding transportation in White Rock.

Land use decisions in White Rock are determined by other city plans including the 2008 OCP, 2011 Town Centre Design Guidelines, and 2011 Town Centre Urban Design Plan.

The City of White Rock's OCP clearly recognizes the importance of the city's Town Centre and Waterfront and the important role that transportation plays in accommodating economic growth and prosperity in these two neighbourhoods. The OCP identifies the goal of reducing automobile travel by locating residents close to where they work in order to limit commute distance and allow for more transportation options aside from the personal automobile. The OCP, like the STP, prioritizes pedestrians and cyclists and identifies a focus on increasing transportation connectivity for these modes, particularly between key destinations by actively improving the network of sidewalks and paths in an interconnected open space network, expanding the network of bicycle routes within White Rock, and enhancing transit passenger amenities. An example of the open space network concept from the Town Centre Urban Design Plan can be seen on the following page in **Figure 4.2**. It identifies additional routes and shortcuts for non-motorized vehicles through the Town Centre. The network is made up of interconnected sidewalks, pedestrian pathways, green streets, open spaces, plazas, and public squares. One of the main transportation challenges facing the Waterfront is parking during peak times when demand is high. The OCP addresses parking issues and again identifies pedestrians as a priority, stating that access to developments (commercial or residential) shall be provided from lanes or flanking streets



to avoid conflict with pedestrians on Marine Drive. These are just two of many examples in White Rock's Plans and policies that address transportation issues that relate specifically to land use. The rest of this section provides a description of the character and aspirations of the Town Centre and Waterfront and provides some context as to the important transportation considerations that are influenced by land use decisions. The strategies presented in this section are for:

- A Town Centre
- B Waterfront



**Town Centre** – The Town Centre is one of the two main hubs of commercial activity in White Rock. As a municipal Town Centre, employment, higher density housing, and cultural and recreational opportunities are intended to be concentrated in this area. The Town Centre is intended to accommodate high density, mixed use developments, including both residential and commercial uses. The OCP supports the development of a dense Town Centre through encouraging mixed use development within the Town Centre itself. Commercial land use in the Town Centre plays an important role in the city's economy and based on the OCP has the greatest concentration of employment and residential units. The STP supports the OCP in its plans for higher density residential and commercial developments in the Town Centre. The Town Centre is and will continue to be a vibrant focal point for the community and a destination for City residents and visitors.

The Town Centre as identified by the 2008 OCP is bounded by North Bluff Road to the north, George Street to the East, Thrift Avenue to the south and Martin Street to the west. However, there is commercial activity that extends south beyond Thrift Avenue including a number of restaurants and other commercial establishments in the Five Corners area. Despite White Rock's steep topography, the Town Centre is relatively flat. There is currently street fronting retail/commercial activity and parking along both sides of Johnston Road, however, there are plans

to enhance the form and character making the Town Centre a vibrant and a great place where people will want to visit and stay a while. The STP supports the OCP and the Town Centre Design Guidelines goals of implementing more street oriented design formats that create vibrant and accessible streetscapes. Johnston Road runs north south through the centre of White Rock and in many ways is the spine of the city's transportation network, and is a major gateway into the City. Currently, designs are being developed to enhance Johnston Road, to make it more comfortable and safe for all road users.

**Figure 4.2** Open Space Network Concept

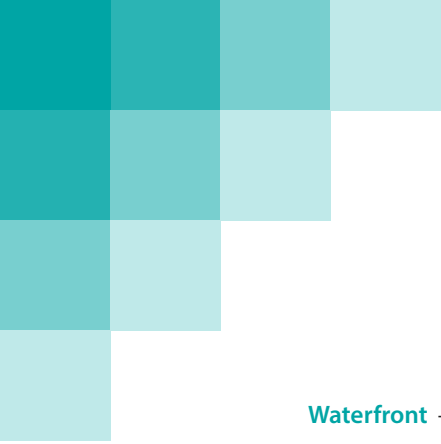




Many of the strategies developed for each of the themes in the STP are designed to help enhance the livability and comfort of the Town Centre for all road users. Providing complete sidewalk coverage, additional street crossings, narrowing and improving existing crossings, and providing additional bicycle parking are some of the strategies included in this Plan that will be discussed in greater detail in the following sections. They are intended to make accessing and travelling to, from and within the Town Centre easy and comfortable for all who use the streets in White Rock.







**Waterfront** – The Waterfront area refers to the West and East Beach areas, including the commercial and residential land uses along Marine Drive and the 2.2 kilometre promenade. The Waterfront area is an important environmental, economic, social, cultural and heritage area. It serves not only residents of White Rock but it is a regional destination as well. As eluded to, it is the location of many of the city’s cultural events and festivities, it promotes outdoor recreation and physical activity, and plays an important role in the city’s economy by being an important tourist destination and a hub of commercial activity. The sensitive natural environment of the Waterfront also plays a very important role in land use decisions in the area. It is important to note that the land the Waterfront promenade and parking facilities are located on are leased from Burlington Northern-Santa Fe (BNSF) Rail Line. Therefore, currently any proposed changes or modifications are subject to their approval and limit what the City is able to do.

The 2008 OCP recognizes the importance of maintaining the natural scenic beauty and oceanside village character of the waterfront. This includes the recommendation to develop a set of waterfront public realm design guidelines, including guidelines for street lighting, furniture, landscaping, sidewalks, rights-of-way, signage, open spaces and transit passenger amenities to enhance the image of Marine Drive. While this document has not been developed yet, the following chapters of the STP help to address many of these factors and identifies strategies to help encourage the installation and enhancement of many of these design elements. The land use in the Waterfront area is also influenced by the topography of the city, because of the valuable and beautiful views in the city new developments must ensure that views are protected. In addition, the OCP also identified the importance of providing efficient access, circulation and parking into and around the Waterfront as well as other areas of the city. This includes working to improve access to the waterfront, managing parking supply and demand, and making considerations for all transportation modes, which again is another important component of this Plan.

The Waterfront area is intersected by the Burlington Northern-Santa Fe (BNSF) railway. This rail corridor is relatively heavily used, and waiting for trains to pass can be a potential barrier to accessing the beach and pier, however, it is also an attraction in itself. During the summer of 2014, Transport Canada ordered the City of White Rock to install gates and fences at some of the beach access points due to safety concerns, resulting in a more permanent barrier to access. The fences have been subsequently removed, however, concerns over safety and the potential relocation of the railway remain. While this Plan does not address these concerns directly it does recognize that the Waterfront is an important feature of the pedestrian network, particularly for recreational walking, and it is a very important tourist attraction. Therefore focusing on strategies that provide increased



access to the beach and waterfront are crucial. In addition, six new level crossings will be built within proximity of West Beach. The City of White Rock has also expressed the desire to relocate the railway away from the City's waterfront and out of White Rock within the next several years.

The City is currently planning to extend the promenade from its end point at Bayview Park west to Coldicutt Ravine. Within Coldicutt Park there are stairs that provide access to Terry Road. If the rail line is relocated, this will provide great opportunities for the City to expand the width of the existing pedestrian promenade and make it into a multi use pathway that can be used by both pedestrians and cyclists.

Like the Town Centre, there are strategies identified throughout this Plan that aim to make transportation in and around the Waterfront accessible for all travelling within White Rock. Some of the key strategies presented in the following sections specific to the Waterfront include, providing better and more places for pedestrians to cross Marine Drive, providing better access to the beach and promenade through the parking lots that are located at the Waterfront, promoting better circulation of vehicles travelling in the Waterfront area, and managing the supply of parking. In addition, providing better access between the Town Centre and Waterfront is an important theme addressed largely through enhancements to the stairways and trails between these two areas of the city.









Walking is the most fundamental form of transportation as it is a part of every trip, whether that trip is made by bicycle, transit or car. Residents have indicated that the pedestrian network was one of their top transportation priorities.

Walking currently accounts for over 7% of commute trips to work, and 11% of all trips made by White Rock residents. The majority of these walking trips are made for recreation, school, personal business, or shopping. Most walking trips are short trips, as over two-thirds (68%) of walking trips are less than 2 kilometres in distance, meaning that the majority of walking trips remain within White Rock or South Surrey. As indicated by these numbers, walking can be an attractive alternative to driving for short trips, especially where destinations are close and they can be accessed through direct and convenient routes. As a relatively compact community with pedestrian-oriented areas such as the Town Centre and Waterfront, White Rock is ideally suited to walking for local travel, despite topographical challenges in some areas.

Over half (51%) of streets in White Rock do not currently have a sidewalk on either side of the street, whereas 21% of streets have a sidewalk on one side of the street, and 28% of streets have sidewalks on both sides of the street. White Rock is also home to extensive pathway network, including the waterfront pathway, trails in many of the parks, and staircases in areas with challenging topography. In addition there are 15 intersections with traffic signals and approximately 100 intersections in the city with marked crosswalks. There are also a number of streets and intersections in the city where there are traffic calming features, such as curb extensions and traffic circles.



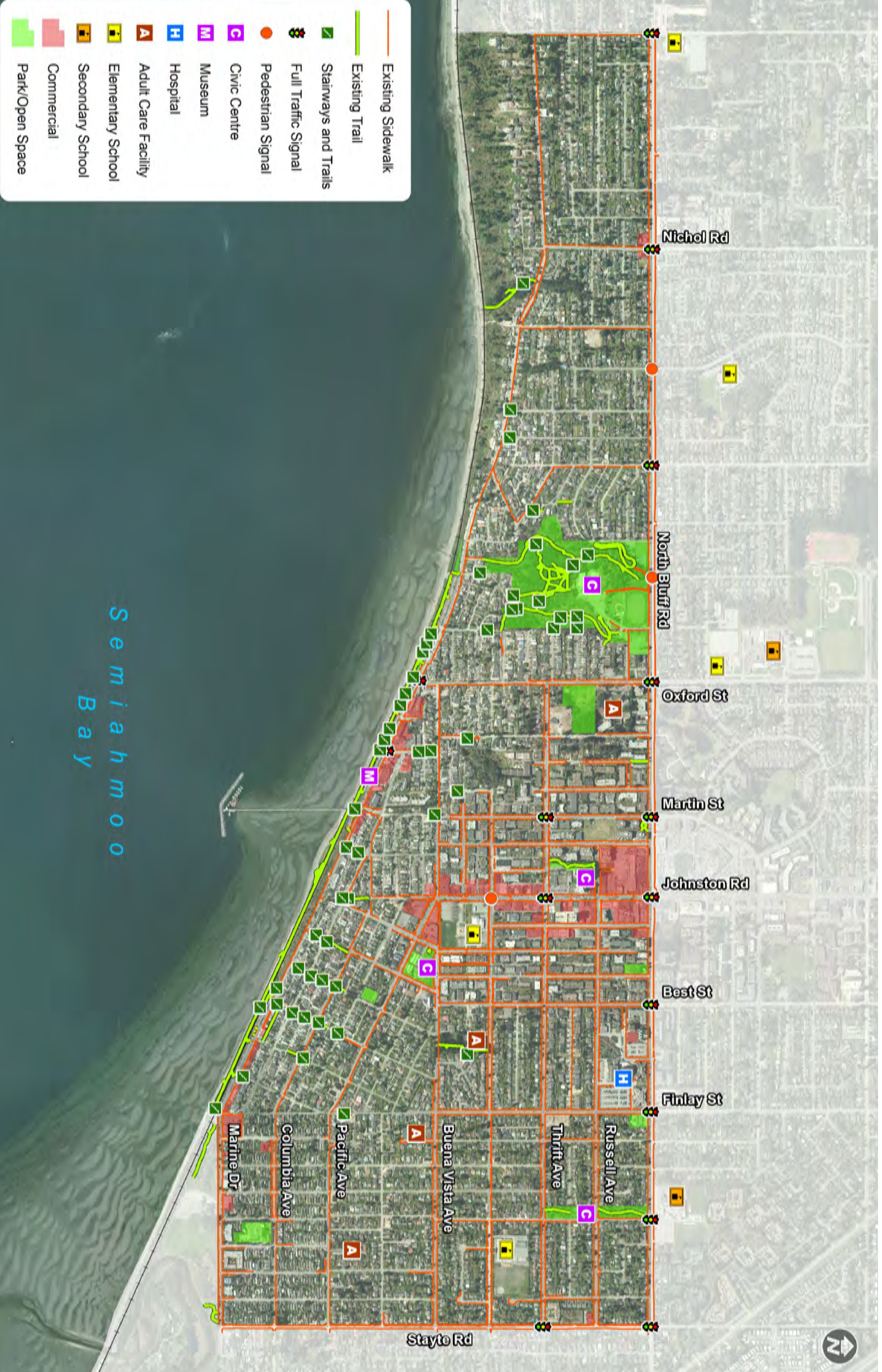
Directions





Figure 4.3

Existing Pedestrian Network





As mentioned previously in Chapter 2, there are several challenges with the pedestrian network in White Rock. There are several noticeable gaps in the existing pedestrian network, including streets that do not meet current sidewalk standards. There are also accessibility and pedestrian crossing concerns, which are particularly important in White Rock as the proportion of seniors in the city is very high compared to other cities in Metro Vancouver. There is also the potential barrier of topography, which not only can present a physical challenge for pedestrians but it can also make filling in the gaps in the network difficult. As a result, the strategies developed for this Plan focus on enhancing the existing sidewalk network, filling in gaps, increasing comfort and accessibility, and improving connectivity between the Waterfront and Town Centre through improvements to the existing trails and stairways. In addition, the Plan also identifies the importance of encouraging and supporting walking through educational and information programs. A key focus with the pedestrian strategies, as with the other transportation strategies identified in this Plan, is the prioritization of the improvements that are in or help to facilitate connections to and between the Town Centre and the Waterfront. White Rock's existing pedestrian network can be seen in **Figure 4.3**.

The 2006 STP outlined four strategies specific to the pedestrian network for White Rock. The four strategies along with their associated priorities are outlined in **Table 4.1** below. A generalized statement on their implementation status is also included.

Building on the strategic directions outlined in the 2006 STP, the 2014 STP has identified five strategies focused on making walking more accessible, attractive and convenient, particularly in areas of the city that have been identified as important pedestrian destinations – namely the Town Centre, Waterfront, and connections between the two – as well as locations where vulnerable pedestrians are likely to be travelling. Vulnerable road users are often identified as seniors, children, and residents with physical and cognitive disabilities. These locations include the Town Centre, the Waterfront, and areas within close proximity to schools, Peace Arch Hospital and seniors centres.

The strategies identified to support walking in White Rock include:

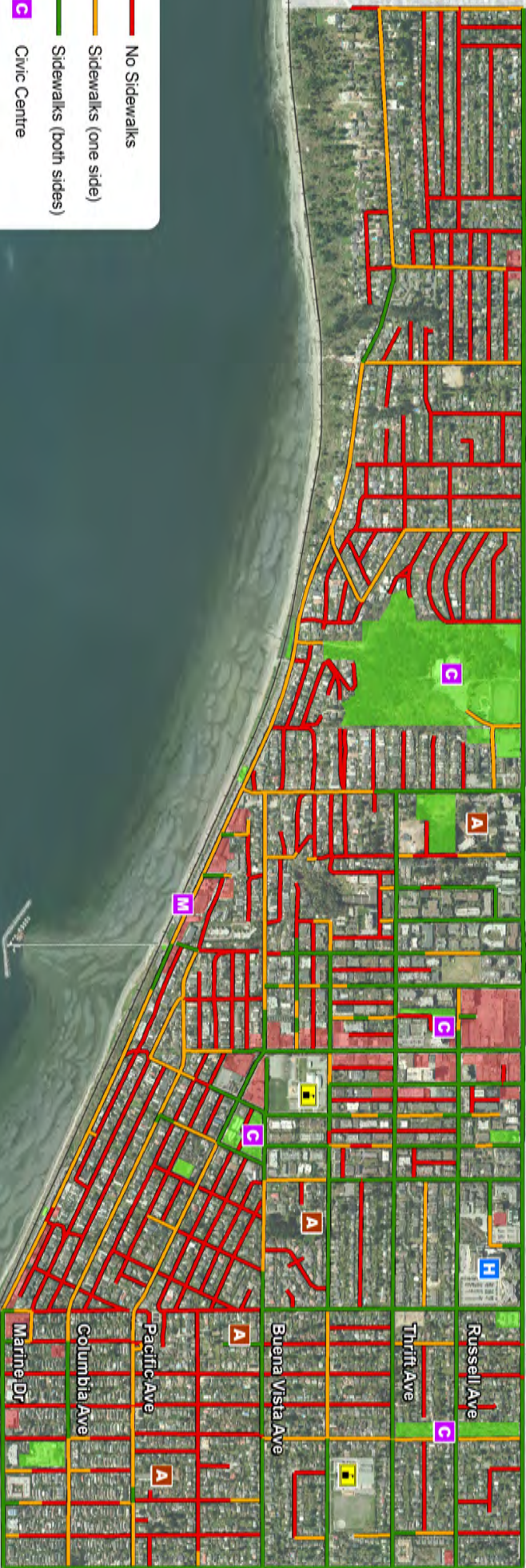
- A Expand sidewalk coverage
- B Improve pedestrian safety and accessibility
- C Create great places
- D Enhance trails and stairways
- E Support initiatives



Figure 4.4

Existing Sidewalk Deficiencies

- No Sidewalks
- Sidewalks (one side)
- Sidewalks (both sides)
- Civic Centre
- Museum
- Hospital
- Adult Care Facility
- Elementary School
- Secondary School
- Commercial
- Park/Open Space



Nichel Rd

North Bluff Rd

Oxford St

Martin St

Johnston Rd

Best St

Finlay St

Stayte Rd

Russell Ave

Thrift Ave

Buena Vista Ave

Pacific Ave

Columbia Ave

Marine Dr

S e m i a h m o o  
B a y

**Table 4.1** Walking Strategies Identified in the 2006 STP (Priority and Status)

STRATEGY	PRIORITY	STATUS
Expand sidewalk standards	High priority	Completed – the sidewalk requirements for White Rock have been adopted.
Expand sidewalk coverage	Proposed sidewalk installation projects prioritized as high, medium or low.	Partially complete – The City has completed approximately 60% of high priority sidewalk coverage recommendations.
Improve pedestrian crossings	Proposed pedestrian crossing improvement projects were prioritized as high, medium or low.	Partially complete - The City has completed 100% of high priority crossing improvements. In 'pedestrian areas', the majority of intersections have curb ramps, audible signals and tactile surfaces. There are still some outstanding medium and low priority improvement projects.
Enhance sidewalks in key areas	High priority	Partially complete – the City has made some sidewalk improvements in the key areas.

Each of these strategies are described in further detail below.

**A** **Expand sidewalk coverage** – The City's sidewalk requirements state that all arterials and collectors have sidewalks on both sides of the street (unless there are significant topographic constraints), and that local streets have sidewalks on at least one side of the street. However, there were a number of streets that were in place before these standards were developed. This results in a large percentage of streets in the City that do not have sidewalks and some major streets with only sidewalks on one side, as seen in **Figure 4.4**.

The 2014 STP recommends the expansion of the pedestrian network as seen in **Figure 4.5**. The prioritization and identification of the sidewalk expansion was based on the following criteria.

- ▶ **Fill in gaps in the network.** Where possible the City should focus on filling in gaps in the pedestrian network to increase connectivity where sidewalks are missing.
- ▶ **Prioritizing sidewalk improvements at high pedestrian activity areas.** This includes prioritizing improvements that are located in the Town Centre, Waterfront, connections between the two key areas, and locations where vulnerable road users are anticipated. Wherever possible sidewalks in these areas should have sidewalks on both sides of the street as the potential for pedestrian activity is high.



Directions





- ▶ **Ensuring there are sidewalks on both sides of arterial and collector streets** where possible, based on topography and road right-of-way. As these streets often see traffic travelling at higher volumes and speeds, providing safe and comfortable places for pedestrians is important as many of these streets provide direct connections to key destinations.

Expansions to the sidewalk network were prioritized as **high**, **medium** and **low** depending on the sidewalk. This priority also indicates the timeline of each project as short-term, medium-term and long-term, respectively. As noted above, there were a number of criteria taken into consideration when assigning priority for the expansion of the sidewalk network. Sidewalk priorities were defined as follows:

- ▶ The **highest priority** was assigned to streets with no sidewalks currently within the Town Centre and Waterfront, or if the routes provide a connection between these two destinations. High priority was also assigned to sidewalks located within direct access to any adult care facilities, schools or the hospital.
- ▶ **Moderate priority** was assigned to routes identified as arterials or collectors that were not meeting the City's existing sidewalk standards
- ▶ **Low priority** was assigned to key local streets that currently do not have any sidewalks

A summary of the cost estimates based on each priority level for the proposed sidewalk network can be seen below in **Table 4.2**. All cost estimates assume standard concrete sidewalks.

**Table 4.2** Summary of Sidewalk Network Plan

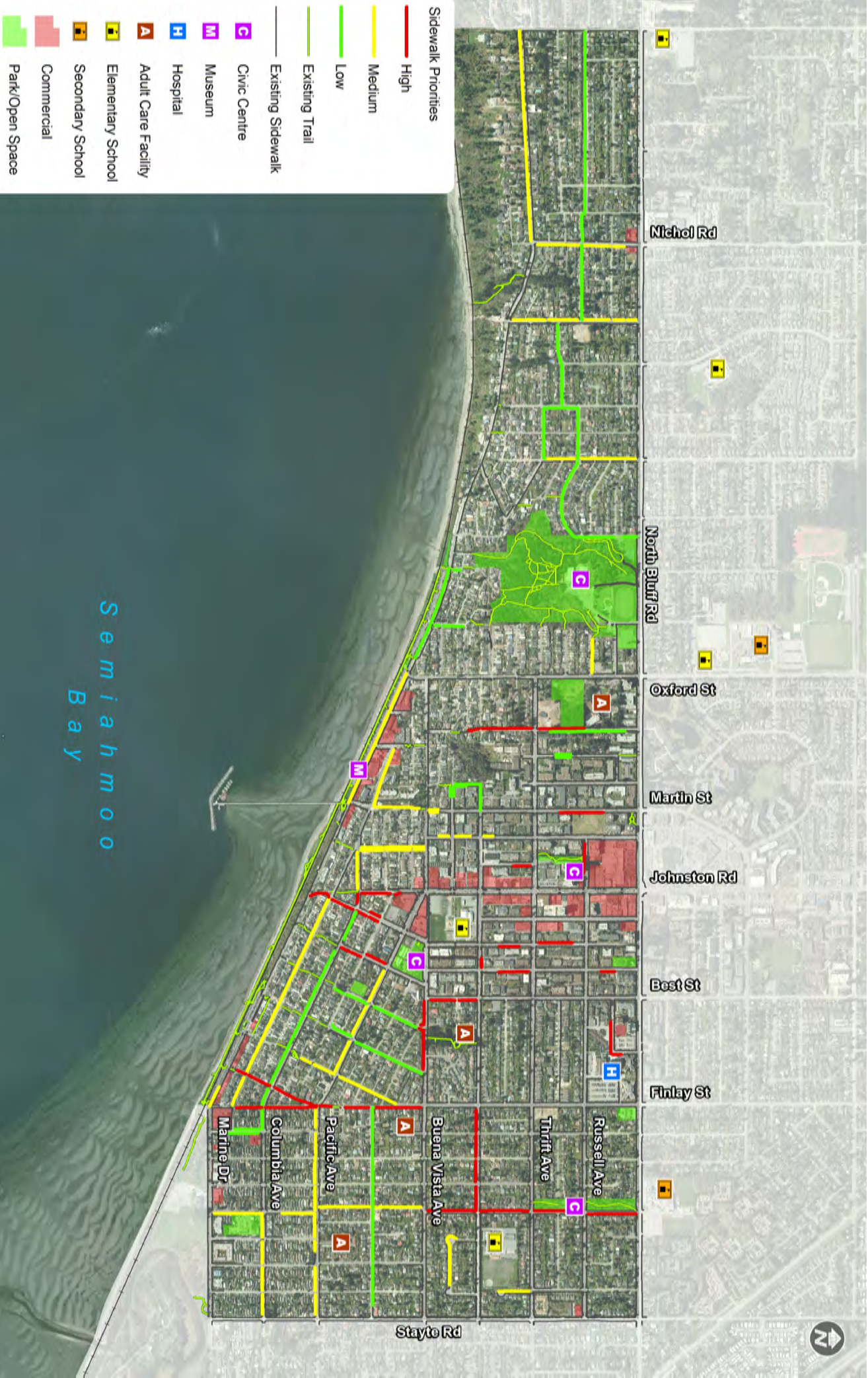
PRIORITY	LENGTH (m)	ESTIMATED CAPITAL COST (\$300 per metre)
High	4,184	\$1,255,200
Medium	7,003	\$2,100,900
Low	6,049	\$1,814,700
<b>Total</b>	<b>17,236</b>	<b>\$5,170,800</b>







**Figure 4.5** Sidewalk Priorities



## B

**Improve pedestrian safety and accessibility** – There are several locations within the City that present challenges for pedestrians to travel safely and comfortably. These areas include intersections with challenging crossings, areas with steep topography, and areas with limited accessibility features. Crossings are the primary locations where most collisions between pedestrians and motor vehicles occur, making improvements at these locations a safety priority. Difficult crossings can act as significant barriers to walking, make trips feel longer, or create safety issues. This is particularly the case for vulnerable road users, as mentioned above. The existing pedestrian crossing facilities – including fully signalized intersections, intersections with pedestrian traffic lights and intersections with crosswalks – can be seen in **Figure 4.6**. It is important to note that the proposed crossing improvements on North Bluff Road should be installed based on signal warrant processes and through discussions and collaboration with the City of Surrey. The priorities identified in this report are based on White Rocks needs and may not align with those of the City of Surrey.

There are a range of treatments that the City can use to improve the quality and accessibility of pedestrian crossings. Recommended pedestrian crossing improvements include:

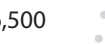
- ▶ **Accessible curb letdowns** are a very important component of intersection and sidewalk design that provide access between the sidewalk and the street at intersections. Where possible, curb letdowns should be aligned with the crosswalk with directional guidance provided for those with visual impairments. Tactile surfaces can also be installed at curb letdowns to provide indicators to pedestrians who are visually impaired that they are approaching the intersection. The City already has a number of intersections that have curb letdowns. Therefore, the City should focus on installing curb letdowns at all intersections where possible.
- ▶ **Marked crossings** can enhance the visibility and safety of crossing pedestrians where warranted. Crosswalks can be marked with decorative designs to create a visually appealing facility and make them stand out visually to motorists. Additional crosswalks have been proposed at 13 locations in the City, as shown in **Figure 4.8**.
- ▶ **Narrower crossings** such as curb extensions, bus bulges, and median islands can be used to help reduce pedestrian crossing distances and can provide additional spaces for pedestrian amenities such as landscaping and benches. Curb extensions extend the sidewalk across the curbside parking lane. This Plan recommends additional curb extensions at 21 locations throughout the City as seen in **Figure 4.7**, most of which are concentrated in the Town Centre.



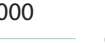


**Figure 4.6** Existing Pedestrian Facilities (including all crosswalks)





Directions



- ▶ **Enhanced crossings**, when warranted, go beyond a painted crosswalk to include pedestrian activated half signals. The Plan identifies one additional pedestrian activated crossing in White Rock located at Johnston Road and Roper Avenue and seen on **Figure 4.8**.
- ▶ **Accessible Pedestrian Signals** can be used at signalized intersections to assist pedestrians with disabilities and communicate when to walk or not to walk in visual formats, such as pedestrian countdown timers, or in non-visual formats. This includes audible tones, speech messages, or vibrating surfaces. Braille can also be found on pedestrian signals. The Plan identifies improvements at each of the signalized intersections in White Rock, as shown in **Figure 4.8**.
- ▶ **Pedestrian Scrambles** can be located at key intersections with high volumes of pedestrians can help to improve pedestrian movements and allow for crossing in all directions to occur during one pedestrian phase. Vehicles in all directions stop at the same time to allow pedestrians to cross the intersection in whichever direction the need to travel. Pedestrian scrambles have been located in other communities such as Steveston in Richmond, which also has high numbers of pedestrians, including tourists and visitors. A potential location for a pedestrian scramble would be the intersection of Marine Drive and Vidal Street.

Improving pedestrian safety and accessibility is identified as a **high priority**.

The table below outlines the cost and priority of the proposed intersections, detailed costing by location is provided in Appendix A.

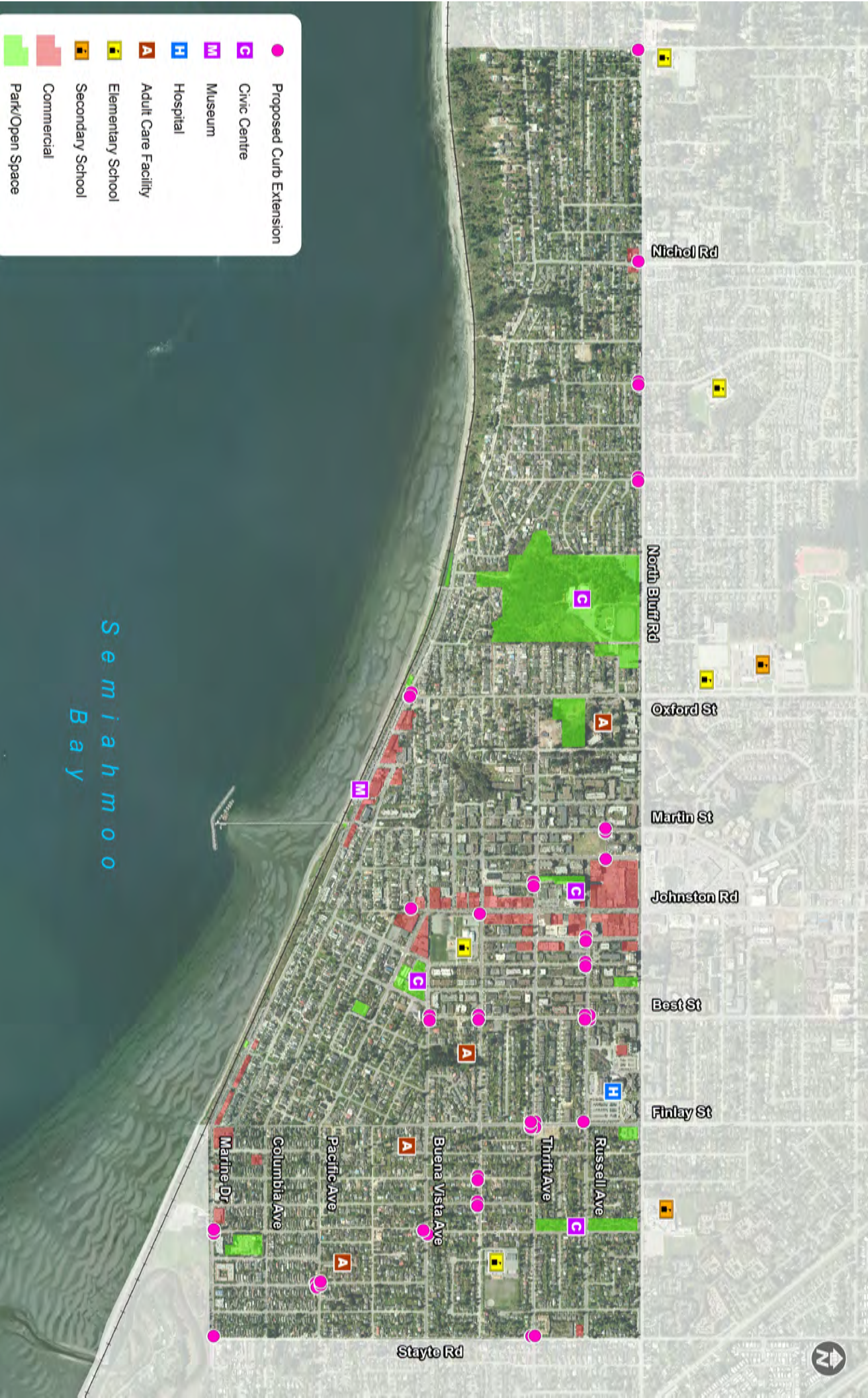
**Table 4.3** Intersection Cost Estimates

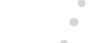
PRIORITY	PEDESTRIAN ACTIVATED SIGNAL	PEDESTRIAN COUNTDOWN TIMERS	AUDIBLE SIGNALS	BICYCLE PUSH BUTTONS	CROSSWALK	CURB EXTENSIONS	TACTILE SURFACES	TOTAL
High	\$ 250,000	\$48,000	\$75,000	\$15,000		\$40,000	\$20,000	\$ 448,000
Medium	\$ 1, 750,000	\$16,000	\$22,500	\$10,000		\$50,000	\$8,000	\$ 1,856,500
Low		\$8,000	\$15,000	\$ 5,000	\$10,000	\$140,000	\$2,000	\$ 180,000
Total	\$ 2,000,000	\$72,000	\$112,500	\$30,000	\$10,000	\$230,000	\$30,000	\$ 2,484,500



Figure 4.7

Proposed Curb Extensions





## C

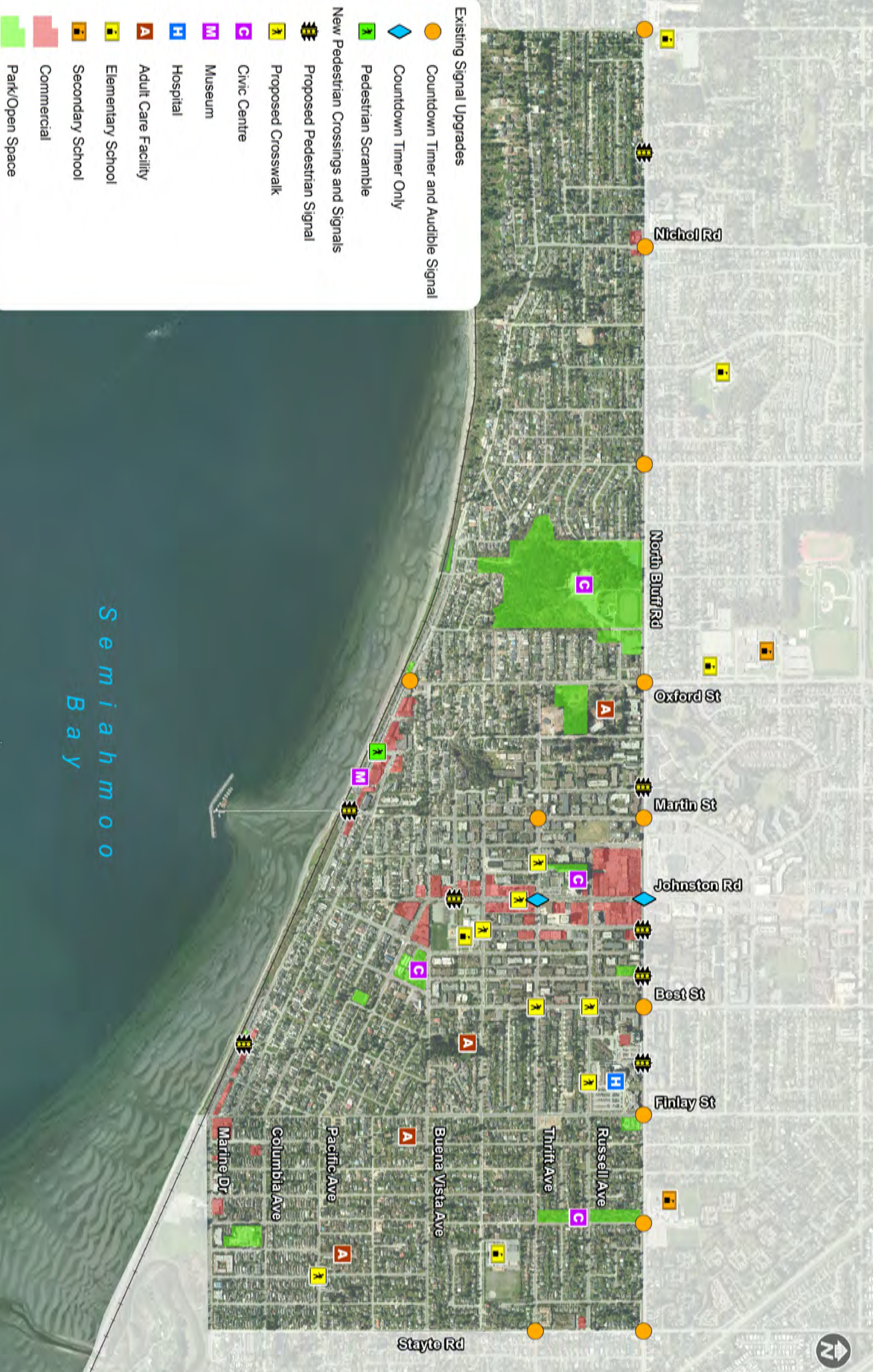
**Create great places**, by implementing a number of urban design features that can make areas more attractive and interesting for pedestrians. As mentioned the Town Centre and the Waterfront already are key pedestrian activity areas in the city. By incorporating additional pedestrian design treatments, this can help create destinations in and of themselves and create lively, vibrant, pedestrian-oriented streetscapes. In addition to providing sidewalks and crossings as touched on above, the overall design of the city's streets can help promote walking. Some of the urban design features and treatments that should be used to improve the attractiveness and vibrancy of the city's streets and other pedestrian facilities, to improve walking in White Rock are discussed below.

- ▶ **Due to the presence of steep hills walking can be a challenge.** A number of pedestrian treatments can help to mitigate some of the impact that hills have on pedestrians. This includes providing places to rest, providing additional stair treatments, or railings along the side of buildings, as well as keeping routes clear of snow, ice and wet leaves in the winter and fall. Providing a circulator shuttle that can help move pedestrians from the Town Centre to down the hill to the Waterfront and back, which is already in place during the summer months, can help lessen the impact of the steep topography.
- ▶ **Ensure a sufficient sidewalk width** to provide a comfortable space for all pedestrians, including ensuring a minimum clear walking width of 1.5 metres (1.8 metres on major roads and desirably at least 3 metres in commercial areas). Wider sidewalks can allow for a more comfortable walking experience and can help provide individuals with mobility aids, buggies or carts more space to travel as well as more room for additional pedestrian amenities discussed below.
- ▶ **Parklets, plazas and other gathering spaces** located in areas with high levels of pedestrian activity can provide space for people to gather and create places people want to visit. Pedestrians can stop and take a break at these locations, each lunch and socialize with neighbours at these unique and desirable areas. These spaces also add to the overall vibrancy of the street and can infuse the street with a sense of place and liveliness.
- ▶ **Maintaining and providing high quality sidewalk surfaces** is important to provide comfortable and accessible facilities. Sidewalks should be clear, smooth, and even to avoid potential tripping hazards and obstructions that may make walking difficult or unpleasant.



Figure 4.8

Proposed Crossing Enhancements





- ▶ Additional pedestrian amenities such as garbage cans, planters, public art, street lighting, banners and benches can be used to improve the attractiveness and comfort of the pedestrian environment. These facilities should not be located where they would create an obstruction or reduce the width of the sidewalk but should instead be located outside of the travelling portion and should be located in areas with high pedestrian activity such as the Town Centre and Waterfront.

Creating great places is a **high priority**.





## D

**Enhance walkways and stairways** to provide more visible, comfortable and inviting connections for pedestrians and cyclists. The stairways can help to improve and enhance connectivity between the Waterfront, which is an important goal of this Plan. Some of the important walkways that provide direct links between the Waterfront and Town Centre are located on Johnston Road, Centre Street (which had a conceptual design developed this year and construction set for 2015), Cypress Street, and Foster Street. The existing stairways in the city create a great opportunity for creating high activity pedestrian spaces that could incorporate some of the design elements noted above including public art, benches, lighting, community gardens, landscaping and flower beds. Designs can be inspired by community art projects or design projects. As noted in the Parks Master Plan, where existing walkways and stairways are substandard, they should be rebuilt or upgraded. Where right of way is available and there currently are no trails or stairways, they should be developed. Walkways, stairways and shortcuts should also be clearly identified through pedestrian wayfinding to allow residents and visitors easily navigate them to access destinations. These spaces can also provide places for additional viewpoints, thanks in part to the steep topography and the proximity to Semiahmoo Bay. It is also important to make these connections accessible for use by all members of the community, signing and mapping out accessible options for people who many not be able to climb stair but can walk up a sloped pathway is important.

Enhancing walkways and stairways is a **moderate priority**.



## E

**Support initiatives** should be developed and incorporated in conjunction to enhancing pedestrian facilities. Support initiatives can help encourage walking as a sustainable option of travel by providing information that will make walking appear a more desirable option. Many of the programs mentioned in this section are also discussed in the cycling chapter as both involve vulnerable road users and are great options for short trips particularly within White Rock. Support for these programs can come from working with non-profit organizations, community groups and other agencies. Some of the support programs to help support walking include:

- ▶ **Provide information about walking in White Rock.** This includes a description of current pedestrian routes, including routes used for transportation and/or recreation. These resources should be linked with the bicycle network maps which are recommended in the cycling section. This includes providing maps, other educational material and hints and tips on the City's website.
- ▶ **Wayfinding** systems should be maintained and expanded as they are important tools to help guide pedestrians to key activity areas. Enhanced wayfinding signage can benefit residents and visitors helping to orient pedestrians to key destinations, and to where they are within the city.
- ▶ **Safety, education, and awareness** initiatives, as promoted through the city and potentially through partnerships with ICBC, the RCMP, and School District 36.
- ▶ **Walk or bike to school programs** in cooperation with School District 36 should be developed and expanded to promote walking and cycling with school aged children to help to encourage safe walking and cycling at a young age.
- ▶ **Street activity programs**, which promotes and manages active uses within streets such as conversion of on-street parking into public spaces, events where one of the Waterfront parking lots is taken over, or car free days.

Developing support initiatives for walking is identified as a **high priority**.



### Directions









Cycling is an important commuting and recreation option in White Rock. Cycling currently accounts for approximately 1% of trips to work, and 1.5% of all trips in White Rock. The majority of cycling trips are short and less than 5 kilometres in length, with an average distance of approximately 2.5 kilometres, indicating that the majority of cycling trips that originate in White Rock stay in the City of White Rock or are made to surrounding areas in South Surrey. Encouraging more people to take short, local trips by bicycle will require developing a safe and comprehensive bicycle network in White Rock, with infrastructure and programs that help cycling become more convenient than other modes, particularly for the short-to-moderate distances. By making cycling a more attractive transportation choice, it can encourage healthier lifestyles, reduced air pollution and greenhouse gases, and provide more cost-effective infrastructure investments.

White Rock's existing bicycle network is shown in **Figure 4.9** and is largely made up of on-street bicycle facilities, the majority of which are shared use lanes, neighbourhood bikeways and bicycle lanes that provide mainly east-west connections. There are also four north-south shared use lanes providing links from Thrift Avenue north to North Bluff Road along Martin Street, Best Street and Finlay Street. There is also an off street pathway through Centennial Park which has a small portion on the road. There are several noticeable gaps in the existing network, such as missing links to key destination areas and limited north-south routes with access to Marine Drive. In addition, the existing shared use facilities may not be comfortable for individuals of all ages and abilities, and areas with steep topography present a challenge to cyclists in terms of network connectivity as well as an increased physical challenge.

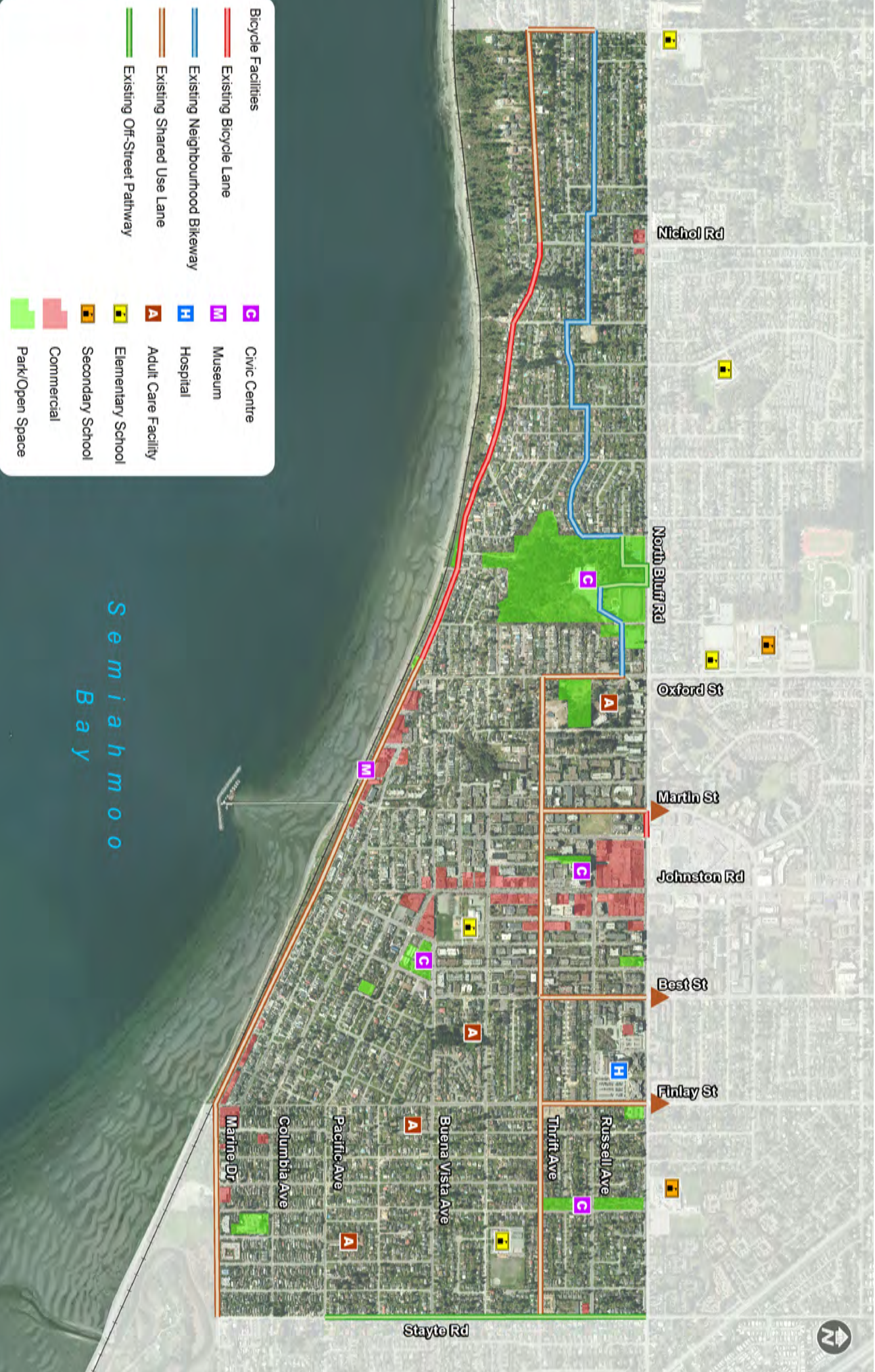


Directions





**Figure 4.9** Existing Bicycle Network





Residents have indicated that they would consider cycling more and to more of the city's key destinations if the quality of bicycle facilities was improved. This includes providing better connections to key destinations, continuous routes that feel safe and comfortable for riders of all abilities, and better access to end-of-trip facilities including bicycle parking. There is a great opportunity to encourage cycling within the city due in particular to the compact and dense nature of the city as well as the natural beauty, including the views and Waterfont.

The 2006 STP outlined three strategies specific to the cycling network for White Rock. The three strategies along with their associated priorities are outlined in **Table 4.4**. A generalized statement on their implementation status is also included.

Building on the strategic directions outlined in the 2006 STP, this 2014 Plan has identified four strategies focused on making cycling more attractive and convenient, as follows:

**Table 4.4**

**Cycling Strategies Identified in the 2006 STP (Priority and Status)**

STRATEGY	PRIORITY	STATUS
Expand bicycle network	High	Partially Completed – Much of what was proposed in the 2006 STP was completed with the exception of an east west connection
Enhance bicycle parking and other support strategies	High	Partially completed – Some bicycle parking was added in the City but there continues to be opportunities to increase the number of facilities.
Develop a multi-use greenway	Moderate-low	Incomplete



- A** Enhance the bicycle network
- B** Develop comfortable bicycle facilities and infrastructure
- C** Provide more bicycle parking
- D** Support initiatives and maintenance

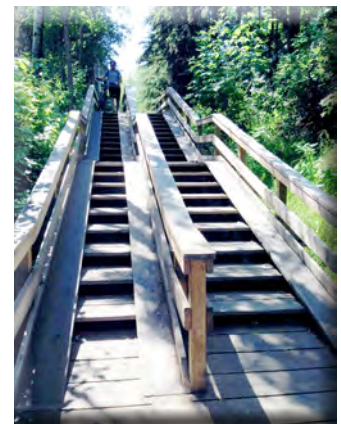
**A**

**Enhance the bicycle network** – The proposed bicycle network is shown in **Figure 4.10** and focuses on providing enhancements and a greater level of connectivity to the existing network. This includes providing connections to key destinations within the city including the Town Centre and the Waterfront. The proposed bicycle network enhancements include:



- ▶ **Provide more north-south bicycle routes.** Providing and improving on existing north-south bicycle connections is important to not only connect the two major destinations within the city – the Town Centre and Waterfront – but also to provide cycling options throughout the city. Extending shared use bicycle facilities south along Martin Street and installing facilities on Kent Street and Columbia will help to improve east-west and north-south on-street bicycle network connectivity.

- ▶ **Provide ramps for bicycles at key stairways** to provide increased cycling connectivity in areas with steep topography and where there are no through streets. At locations where there are stairways, ramps can be installed to allow cyclists to easily push their bicycles up the stairways as opposed to having to carry their bicycles or find another route. These ramps will help to link the two major centres within the city – the Town Centre and the Waterfront – for cyclists. Proposed locations for enhanced stairways with ramps for bicycles include Johnston Road, Centre Street, Dolphin Street, Cypress Street, and Bay Street.



- ▶ **Provide high quality bicycle facilities along North Bluff Road** to make North Bluff Road a complete street that provides facilities for all users. This Plan identifies the importance of North Bluff Road as both a local and regional connection for nearby residents by providing high quality bicycle facilities including a proposed cycle track and bicycle lane along North Bluff Road. This will create a new major bicycle route for the City that will help to promote cycling for riders of all ages and abilities.



Directions



- ▶ **Connect existing gaps in the network**, including extending the existing off-street facilities on Stayte Road south to Marine Drive and extending the existing shared use lane on Bergstrom Road.
- ▶ **Consider implementing bicycle route improvements** as part of all major street capital projects (including improvements to existing streets). The City should install and upgrade routes as opportunities arise.

Enhancing the bicycle network is considered a **medium priority**.

B

**Develop comfortable bicycle facilities** - The long-term bicycle plan focuses on providing bicycle facilities that are comfortable for people of all ages and abilities. There are a number of different corridor treatments that the City can consider for different contexts often depending on the speed and volume of motorized vehicles. The facilities discussed include both on- and off-street bicycle routes as well as intersection and crossing treatments. These include:



- ▶ **Off Street Pathways**, such as those found on Stayte Road and through Centennial Park, are physically separated from the street, and are wide enough to support a variety of non-motorized users including cyclists and pedestrians. In addition, if the rail line is relocated this will create opportunities to allow cyclists on the Waterfront promenade.
- ▶ **Cycle Tracks** are bicycle only facilities physically separated from vehicle travel lanes but still located within the street. Cycle tracks can be one or two-way and combine the experience of an off-street pathway with on-street infrastructure of a conventional bicycle lane. A cycle track is proposed along North Bluff Road between Bergstrom Road and Oxford Street
- ▶ **Bicycle Lanes** are lanes designated by painted markings and signage for exclusive use of bicycles. Currently there are bicycle lanes along Marine Drive and proposed bicycle lanes along North Bluff Road between Oxford Street and Stayte Road.
- ▶ **Neighbourhood Bikeways** are local streets with low vehicle speeds and volumes in which cyclists share the same space with vehicles. They often include traffic calming measures to keep speeds low and improvements at major road crossings to help cyclists travel through intersections safely. Currently, a neighbourhood bikeway provides an east-west connection between Bergstrom Road and Oxford Street.



**Figure 4.10** Proposed Bicycle Network







Enhancing the bicycle network is a **high priority**.

- ▶ **Shared Use Lanes** provide additional lanes where cyclists and vehicles share the road. Most of White Rock's bicycle network is made up of shared use lanes.

As noted above, and seen in **Figure 4.11**, these facilities have varying levels of appeal for different users. Bicycle facilities that are physically separated from motor vehicle traffic such as off-street pathways and cycle tracks, are generally the most comfortable but expensive, while the least comfortable facilities are those on busier roads with limited separation from high volume and high speed traffic.

**Figure 4.11** Bicycle Facility by Comfort



As noted in the previous section, high quality and comfortable facilities have been proposed along North Bluff Road (cycle track and bicycle lane), but it is also important to note that the City should work to improve the quality and ridability of the existing bicycle facilities, particularly the Neighbourhood Bikeways, to create a more comfortable and enjoyable experience. This includes ensuring that the road is smooth, clear of debris, is well marked, and has been traffic calmed to ensure low vehicle volumes. **Table 4.5** outlines the cost and priority of the proposed bicycle network. The high priority improvements total less than \$77,000 and are mainly shared use facilities and bicycle lanes.



**Table 4.5** Bicycle Costs

FACILITY TYPE	DISTANCE (KM)	HIGH PRIORITY	MEDIUM PRIORITY	LOW PRIORITY	DISTANCE (KM)
Bicycle Lane	2.91	\$15,000	\$75,000	\$ -	\$90,000
Shared Use Lane	8.00	\$66,000	\$5,000	\$49,000	\$120,000
Cycle Track	2.15	\$ -	\$ -	\$535,000	\$535,000
Off-Street Pathways (Note: Also for pedestrian use)	3.60	\$ -	\$ -	\$2,050,000	\$2,050,004
<b>Total</b>	<b>16.67</b>	<b>\$81,000</b>	<b>\$80,000</b>	<b>\$2,634,000</b>	<b>\$2,795,000</b>

While the corridor treatments described above are extremely important, equally, and potentially more important is how cyclists are travelling through intersections, as this is the location where most collisions and safety concerns arise. Intersection and crossing treatments can be incorporated into the existing and proposed network to assist cyclists passing through major intersections and crossing roads. Providing intersection treatments that minimize conflicts with motorists and increase cyclist convenience can help to improve the overall comfort and safety of a city's bicycle network. A brief description of some intersection treatments is provided below:

- ▶ **Coloured Conflict Zone Markings** can be used at conflict zones, including intersections and driveways, areas where vehicles are merging across a bicycle lane. Often denoted by the colour green, these markings increase the visibility of cyclists and highlight areas where potential conflict can occur.
- ▶ **Dashed Bicycle Lane Markings** through intersections provide direction for where cyclists should be positioned as they travel through an intersection. They also alert vehicle drivers that cyclists may be travelling in these lanes.
- ▶ **Enhanced Bicycle Signal Crossings** can include full signals or pedestrian and bicycle activated signals which can be activated by a cyclist through a range of technologies, such as bicycle loop detectors, bicycle pushbuttons, or video detection at traffic signals. Dedicated bicycle signal heads can also be considered at locations throughout the city where bicycle facilities intersect with signalized intersections.



- ▶ **Crossbikes**, are pavement markings that indicate a crossing zone in which a cyclist does not need to dismount. These pavement markings may be combined with a pedestrian crosswalk or may be used to indicate a separate bicycle crossing.

Developing comfortable bicycle facilities along corridors and at intersections is a **medium priority**.

## C

**Provide more bicycle parking.** The City of White Rock is looking to increase the amount of bicycle parking within the city. Similar to vehicle parking, it is important to provide safe and secure bicycle parking on-street and at private off-street locations. On-street bicycle parking is recommended in key areas of White Rock, including along Johnston Road and Marine Drive as well as other areas that residents are likely to access by bicycle, such as, shopping areas, community centres, parks, and schools. The city is looking to implement bicycle racks throughout the City as shown in **Figure 4.12**. Detailed location maps can be found in Appendix B.

In addition to the installation of on-street bicycle facilities by the City, on-site parking should be required as part of new developments in the City. This would include a range of facilities with the ultimate type depending on the type of facility they will be serving. Some examples of the types of parking facilities and where they are best suited include:

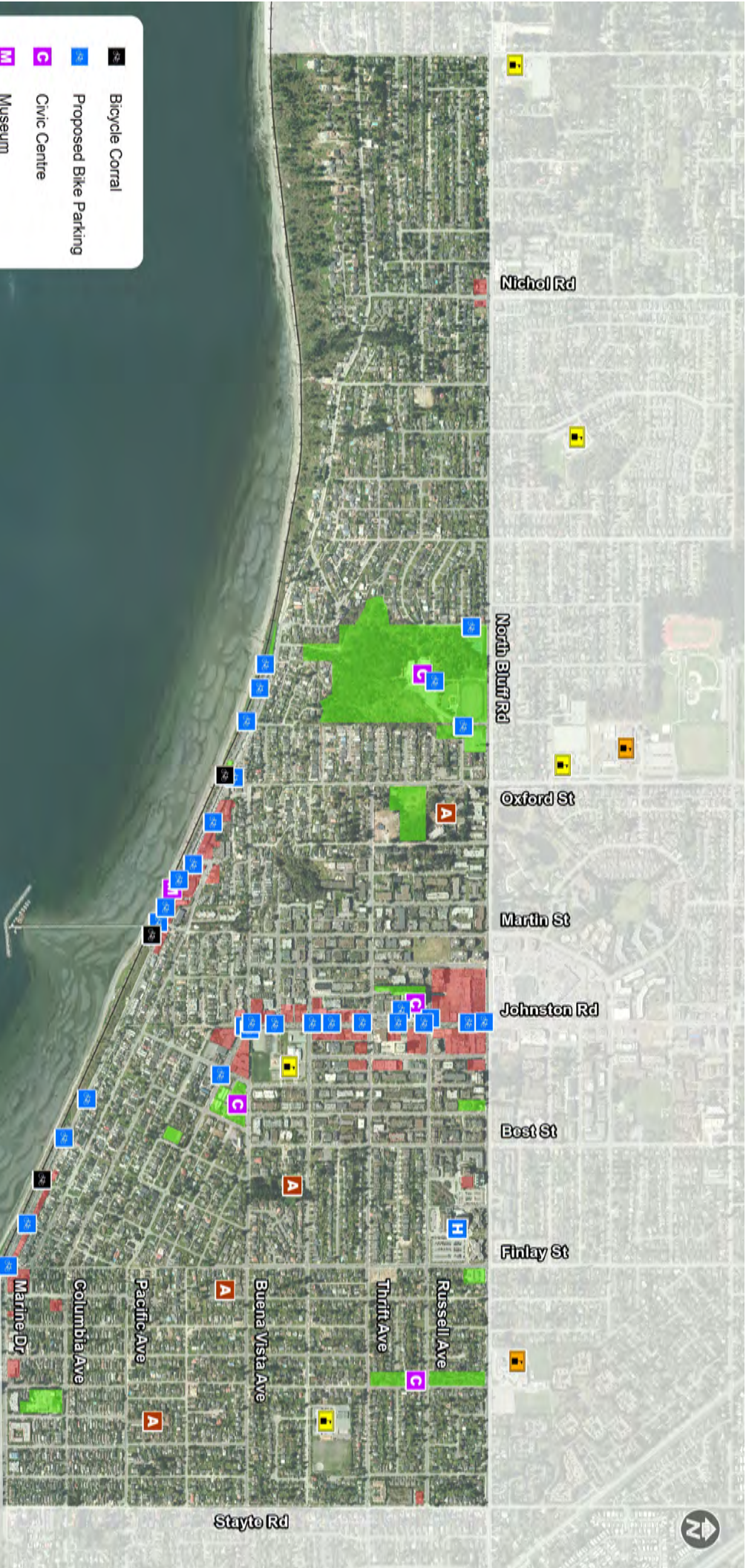
- ▶ Bicycle racks and on-street corrals are best suited for **short-term** bicycle parking and should be installed at locations such as commercial areas, the community centre and civic centre, and beaches and parks.
- ▶ Bicycle shelters, cages, or lockers are more suitable for **longer-term** parking and should be installed at key employment and visitor destinations, schools, Peace Arch Hospital, and bus stops with regional connections where space is available. This will be particularly important if 96 B-Line service is extended into White Rock.
- ▶ The City should consider working with other municipalities in the region and potentially other contractors and agencies such as TransLink to develop a secure bicycle storage program similar to BikeLink, which has storage locations in Washington, Oregon and California State. The program allows individuals that have signed up with Bike Link to access bicycle parking at designated locations throughout the region. This program would require partnership and a regional commitment.





Figure 4.12

Proposed Bicycle Parking Locations



- Bicycle Corral
- Proposed Bike Parking
- Civic Centre
- Museum
- Hospital
- Adult Care Facility
- Elementary School
- Secondary School
- Commercial
- Park/Open Space



Directions



- ▶ As noted, bicycle parking should also be addressed as part of development site parking studies and the City's bylaw should require bicycle parking and development design guidelines to regulate the overall quality and design of bicycle parking facilities. The City could also require that large employers provide secure long term bicycle parking facilities.

Providing more bicycle parking throughout White Rock is a **high priority**.

**D Support initiatives and ongoing facility maintenance.** There are a variety of non-infrastructure related opportunities to help support and encourage cycling in White Rock. While it is understood that the installation of cycling facilities that are comfortable for all ages and abilities, that are well connected, and complete the gaps in the network is likely to help promote cycling within the city, it has also been found that infrastructure alone is often not enough to see higher levels of ridership. In conjunction to the strategies that are focused on infrastructure, a number of support initiatives are recommended for White Rock, as described below. The City should partner with other organizations, agencies, non-profits, and the City of Surrey to gain support for these programs and to help make them more effective.

- ▶ **Promote cycling education programs.** White Rock should develop and support education programs in conjunction with partner agencies to develop skills, information and confidence of cyclists. These programs can support residents to cycle more through cycling skills programs, the Safer School Travel Programs, Ride to Work/Bike to School Week and Bike Month. In 2013, the City of Surrey in partnership with HUB committed to host a series of free cycling courses for students in grades 4 and 5. The City of White Rock should consider a similar partnership for elementary aged students attending their schools.
- ▶ **Improve cyclist wayfinding and signage.** While White Rock already has some wayfinding to help residents and visitors navigate the City, this is mostly focused on pedestrians and motorists. Providing cycling specific wayfinding can assist cyclists find the best routes through the city, as many of the best routes by car are not necessarily suitable or comfortable for cyclists. Signage can also help riders find the best routes to match their cycling abilities and comfort levels and to find new routes as they become more confident. The City should follow TransLink's Regional Bicycle Wayfinding Guidelines, and should work with the City of Surrey to ensure that wayfinding efforts are coordinated and that wayfinding in both cities provides information about regionally important destinations.





- ▶ **Provide mapping and online information.** This includes providing residents and visitors with maps of local and regional bicycle facilities. The City of Surrey recently released an updated pocket map of their existing bicycle network. Encouraging the City of White Rock to work with Surrey to release a map that includes both Surrey and White Rocks facilities would help to encourage cycling throughout the region and make White Rock's network map, which includes locations for parking, more readily available. In addition, the city should ensure that information about the existing bicycle routes in the city is made available online or through related social media tool for all residents and visitors, other information that should be shared on these sites include any bicycle related events, initiatives and programs.
- ▶ **Require end-of-trip facilities.** Providing end-of-trip facilities such as showers and clothing lockers at workplaces is a critical component to making cycling convenient for employees, particularly for bicycle commuters who have a long commute or who require professional clothing attire. The city can explore amending its Zoning Bylaw to require end-of-trip facilities such as showers and clothing lockers and work to identify ways to provide these or similar amenities.
- ▶ **Promotion events** tied into other cycling or active transportation related events such as the Tour de White Rock and associated with Move for Health Day to help promote walking and cycling as healthy sustainable transportation options.
- ▶ **Conduct regular maintenance of bicycle facilities.** Once bicycle facilities are installed, it is important to ensure that bicycle infrastructure is well maintained and kept smooth, free of debris and pavement markings and signage are visible for all road users. This includes prioritizing road maintenance on bicycle routes and ensuring that durable pavement markings are used to identify bicycle routes. Therefore, the city should develop and implement maintenance and cleaning guidelines for bicycle routes, prioritizing routes with high ridership.

Developing support initiatives and providing ongoing bicycle facility maintenance is a **high priority**, but will be an ongoing program.







Convenient and attractive public transit is critical to creating a vibrant and sustainable community. Public Transit, in combination with walking and cycling, can provide an attractive alternative to automobile travel for both local and regional connections. Public transit can offer competitive travel times to the automobile and reduce the environmental and community impacts of transportation.

Transit service in White Rock, and throughout the Metro Vancouver region, is planned and funded by TransLink and operated by various subsidiary companies. Decisions about fares, routes, and service levels are all made through TransLink and based on TransLink's guidelines and service plans. The City works with TransLink on matters influencing current and future services as they affect the community. In this regard, the 2014 STP provides the city with an opportunity

to examine the role of transit within a multi-modal framework and to develop a transit service that complements land use patterns and other community aspirations. Preferred directions and priorities can be used as input to guide the Area Transit Planning process and other TransLink initiatives.



White Rock is served by adequate regional transit connections and a network of local transit routes. Frequent Transit Network (FTN) Corridors, which have service levels of at least every 15 minutes, for 15 hours a day, 7 days a week, connect the White Rock Centre Exchange at the corner of Johnston Road and North Bluff Road to the Canada Line in Richmond as well as to Surrey City Centre. Route 351 provides limited stop services along Highway 99 to the Bridgeport Canada Line station in Richmond, while Route 321 provides service along King George Boulevard to Newton Town Centre and Surrey City Centre with connections to the Expo Line. Regular fixed services connect White Rock Centre with Crescent Beach along North Bluff Road and 128 Street; Guildford via 152 Street; and Langley / Willowbrook via 24 Avenue. Additionally, express commuter services to Bridgeport Station and Surrey City Centre are provided in the AM and PM peak periods. Regional routes generally experience high ridership, with PM peak buses between 80 and 115% full, which often represents standing room only.

Community shuttle routes provide internal circulator service to White Rock at relatively limited frequencies, connecting White Rock Centre with the waterfront, Peach Arch Hospital, Ocean Park Shopping Centre, and other local destinations. Local community shuttles experience low to moderate ridership levels with PM peak buses operating at 20 to 40% capacity. Community shuttle services in Surrey/White Rock were identified by TransLink as lower performing services, and the frequency was reduced in September 2014 on the C50, C51, C52, and C53 routes to one trip per hour from two trips per hour during off-peak periods. This provides a basic level of transit service for transit-dependent people and enables them access to the larger transit network. The impact of this change on ridership and access will be monitored.

As shown in **Figure 4.13**, local connections generally operate at 1 hour service frequencies. Regional routes result in 15 minute or better frequencies along North Bluff and Johnston Roads. Frequencies of 15 minutes or better along Pacific Avenue, Columbia Avenue, eastern Marine Drive and Stayte Street occur in peak periods only and largely represent express commuter services.



Directions





Figure 4.13 PM Peak Period Transit Frequency



S e m i a h m o o  
B a y



White Rock is well covered by transit. Every location in White Rock is within 400 metres, or a five-minute walk, of a bus stop. Walkability to transit is aided by a grid street network, yet hindered by steep slopes.

In addition to TransLink services, Tourism White Rock provides a free hop-on hop-off bus service, known as the White Rock Trolley. The Trolley provides weekend and holiday services in July and August only, and operates between 11 AM and 9 PM. The trolley route is designed to serve White Rock's four commercial districts: central White Rock, Five Corners, West Beach and East Beach.

Transit accounts for approximately 7% of all trips to work made by White Rock residents, as compared to 20% region-wide. The majority of transit trips are made for work (39%), school (16%), and recreational / social purposes (12%). Transit trips are generally of a commute nature with 60% of transit trips having a trip length greater than 20 km.

Higher quality and more convenient transit connections can effectively shift people from the automobile on to transit, and can result in a more balanced and sustainable transportation system. The benefits of more transit use in White Rock include economic efficiency and safety, reducing pollution, and traffic congestion.

The 2006 STP detailed seven transit strategies for White Rock. The seven strategies, along with their associated priorities are outlined in **Table 4.6** on the following page. A generalized statement on their implementation status is also included. It is important to note that funding for the White Rock Trolley is not guaranteed, and therefore the service that it provides is determined on a yearly basis.





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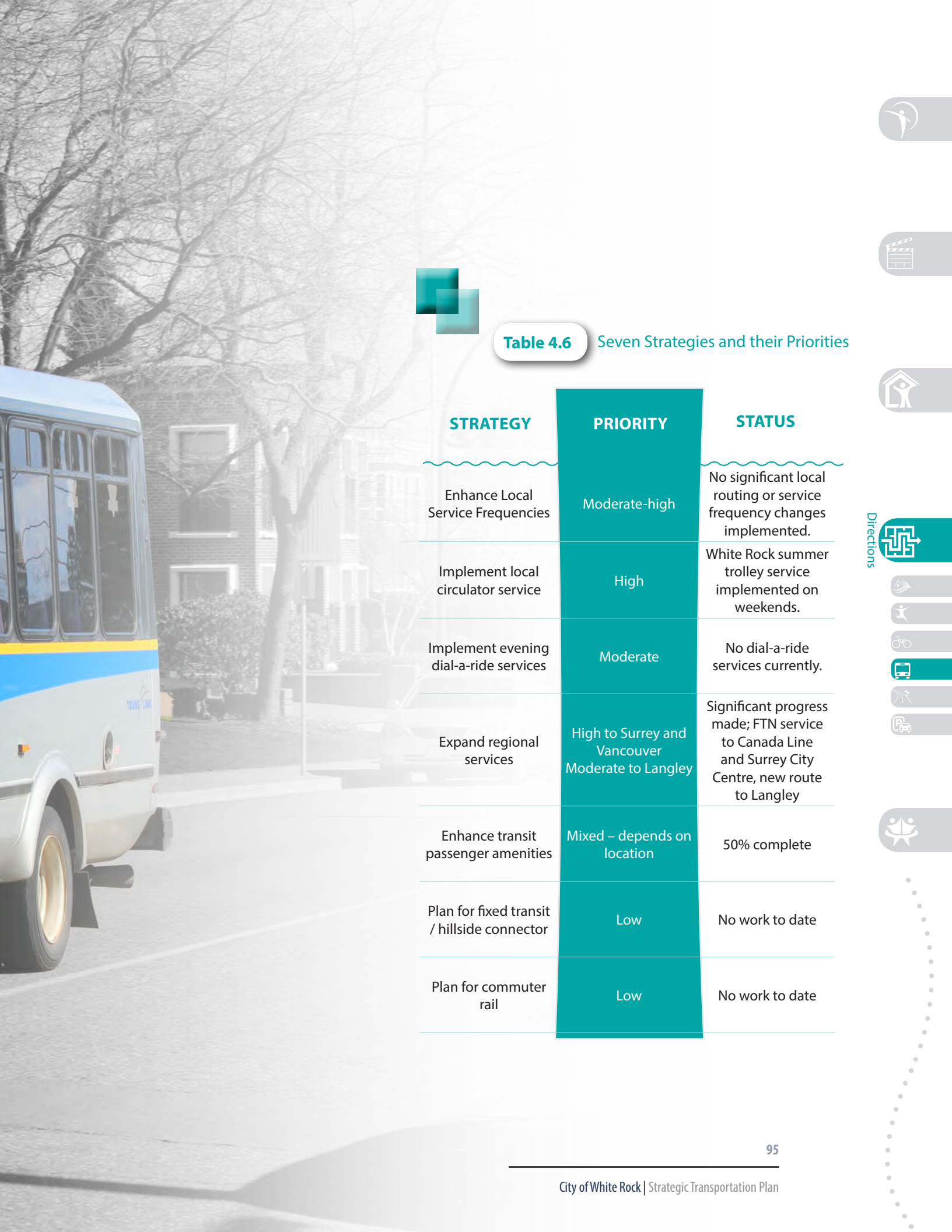
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Community  
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Directions



**Table 4.6** Seven Strategies and their Priorities

STRATEGY	PRIORITY	STATUS
Enhance Local Service Frequencies	Moderate-high	No significant local routing or service frequency changes implemented.
Implement local circulator service	High	White Rock summer trolley service implemented on weekends.
Implement evening dial-a-ride services	Moderate	No dial-a-ride services currently.
Expand regional services	High to Surrey and Vancouver Moderate to Langley	Significant progress made; FTN service to Canada Line and Surrey City Centre, new route to Langley
Enhance transit passenger amenities	Mixed – depends on location	50% complete
Plan for fixed transit / hillside connector	Low	No work to date
Plan for commuter rail	Low	No work to date





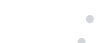
Transit policy priorities developed for the 2014 STP build from past work and expand priorities for transit in White Rock moving forward. Since 2006, a considerable amount of resources have been invested into improving regional connections. With new Frequent Transit Network (FTN) routes to Bridgeport Station and Surrey City Centre realized, updated STP priorities moving forward focus more on improving local transit connectivity. The FTN is a network of corridors where transit service runs at least 15 minutes in both directions throughout the day and into the evening, every day of the week. While it is recognized that the policies identified in this chapter are aspirational they are based on White Rock local needs and priorities, a map of the proposed long-term strategy can be seen in **Figure 4.14** and is discussed throughout this chapter.

The STP includes the following eight policies focused on making transit more attractive and convenient:

- a** Enhance local service frequencies
- b** Enhance local circulator service
- c** Improve local service periods of operation
- d** Ensure a universally accessible transit system
- e** Improve White Rock centre exchange
- f** Enhance the transit customer experience
- g** Support regional transit improvements
- h** Plan for a hillside connector

**a Enhance Local Service Frequencies**

To make transit a more attractive alternative than driving to, from, and within White Rock, the 2014 STP recommends that service frequencies on local Community Shuttle routes be increased to at least **15 minutes during peak periods and 30 minutes during off-peak periods**.



Accordingly, it is recommended that the City work with TransLink to increase local transit frequencies to achieve desired levels. These improvements may be accomplished gradually by first increasing service on those routes that are currently better used, and then by improving the remaining services.

Improvements to local transit services are considered a **moderate priority**.

## **b** Enhance Local Circulator Service

To achieve its transportation objectives for the Waterfront and Town Centre, the City wishes to enhance the connectivity of these two primary business areas through various means – defined road connections, attractive pedestrian facilities, and frequent and direct transit services. These initiatives will support and strengthen the development of both areas as key destinations for White Rock residents and visitors.

Route C52 provides a daily service connecting the Waterfront and Town Centre at 1 hour service frequencies. The route operates between 9 AM and 11:30 PM. This route is supplemented in the summer months with Tourism White Rock's Trolley service. The trolley currently operates every hour on weekends and holidays throughout July and August between 11 AM and 9 PM. The trolley connects White Rock's four main commercial districts. The trolley is operated entirely separately from TransLink's service, is free to the public, and employs distinct vehicles. Ultimately, it is envisioned that service connecting the Waterfront with the Town Centre would be provided at a frequency of 5-10 minutes during the peak, with lower frequencies offered in the evenings.

Enhancing daily trolley service during the summer and to weekend service at other times of year is a **high priority**, and should be considered an economic development initiative as well as transportation improvement. Expanding the Frequent Transit Network to include Route C52 (effectively doubling service on this route) is a **high priority** and directly addresses key transit connectivity issues. Boosting ridership between the Waterfront and the Town Centre will decrease parking pressures near the Waterfront while building demand for a potential fixed transit connector.



**Figure 4.14** Long-Term Transit Strategy





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Bay 3

351 Crescent Beach







## **C** Improve Local Service Periods of Operation

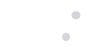
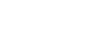
Many community shuttle routes in White Rock do not currently operate in the evenings. To enhance the attractiveness of transit in White Rock, local community shuttle service should continue into the late evening, albeit at reduced service frequencies. Additional service is required to accommodate early and later evening activities and to serve regional connections from Surrey and Vancouver. Ending regular service as early as 7 PM (as is currently the case on many Community Shuttle routes) may result in households having to own two vehicles for basic transport requirements.

Alternately, dial-a-ride services could be considered for evening service delivery. Dial-a-ride services represent an alternative service delivery model where scheduled, fixed-route services may not be practical or cost-effective. They are currently in use in several cities across Canada, though they are not used in Metro Vancouver.

Dial-a-ride services generally provide a direct connection from designated stops throughout the community to a centralized transit terminal using conventional transit vehicles or taxivans. Passengers must call a dispatcher about an hour in advance to request service at their nearest stop. They can then travel to another stop within a designated “zone” or to the central terminal where they can transfer to other routes.

Dial-a-ride services, while flexible, may not be best suited to White Rock. In general, dial-a-ride services are used in sparsely populated rural areas or in suburban communities with very low densities. Evening dial-a-ride services may be considered confusing, inexact scheduling may lead to missed connections at White Rock Centre, and calling a dispatch to order a ride one hour before a planned departure time may not provide the type of liberty of travel passengers expect in Metro Vancouver.

The City should pursue the implementation of enhanced evening services within White Rock, either by extending the period of operation for established fixed services or by introducing a limited evening dial-a-ride system. This is considered a **moderate priority** for the City.



## d Ensure a Universally Accessible Transit System

Many individuals experience barriers to using transit for various reasons, ranging from the physical challenges of system elements (such as accessing bus stops and transit exchanges) through to those that experience cognitive difficulties getting around on transit. With a large and growing seniors population in White Rock, the number of people with age-related mobility and cognitive impairments in White Rock will likely increase in the future. Having a universally accessible transit system is important to allow all transit users access to the entire transit system. Additionally, increased conventional transit accessibility should offset demands on the HandyDART system – a far costlier service to operate. Recommendations to improve transit accessibility include:

- ▶ Improve access to transit facilities. Currently, approximately 48% of White Rock's 110 bus stops are fully accessible (compared with 69% throughout Metro Vancouver). It is recommended that the City strive to make 100% of all transit stops accessible in the long-term. In the meantime, it is recommended that the City upgrade bus stops in key areas to be fully accessible, as shown in **Figure 4.15**. High-priority bus stop accessibility improvements are located in the Town Centre and Waterfront areas or along Frequent Transit Corridors, where overall transit usage is expected to be higher. Moderate-priority bus stop accessibility improvements are generally located on the periphery of the Town Centre and Waterfront areas as well as around Peace Arch Hospital.
- ▶ In addition to the stops themselves, there are opportunities for the City to improve infrastructure leading up to bus stops, such as ensuring that there is a sidewalk leading to the bus stop (see section 3.2), crosswalks near bus stops, and accessible curb letdowns.

Cost estimates for accessibility improvements at bus stops are summarized in **Table 4.7**. Costs are preliminary based on recent construction costs for concrete sidewalk and basic amenities. These costs do not consider property requirements, landscaping, or utility impacts, and do not account for potential cost-sharing opportunities or agreements with other agencies. A more detailed summary of what improvements and costs are included at each location is included in Appendix A.

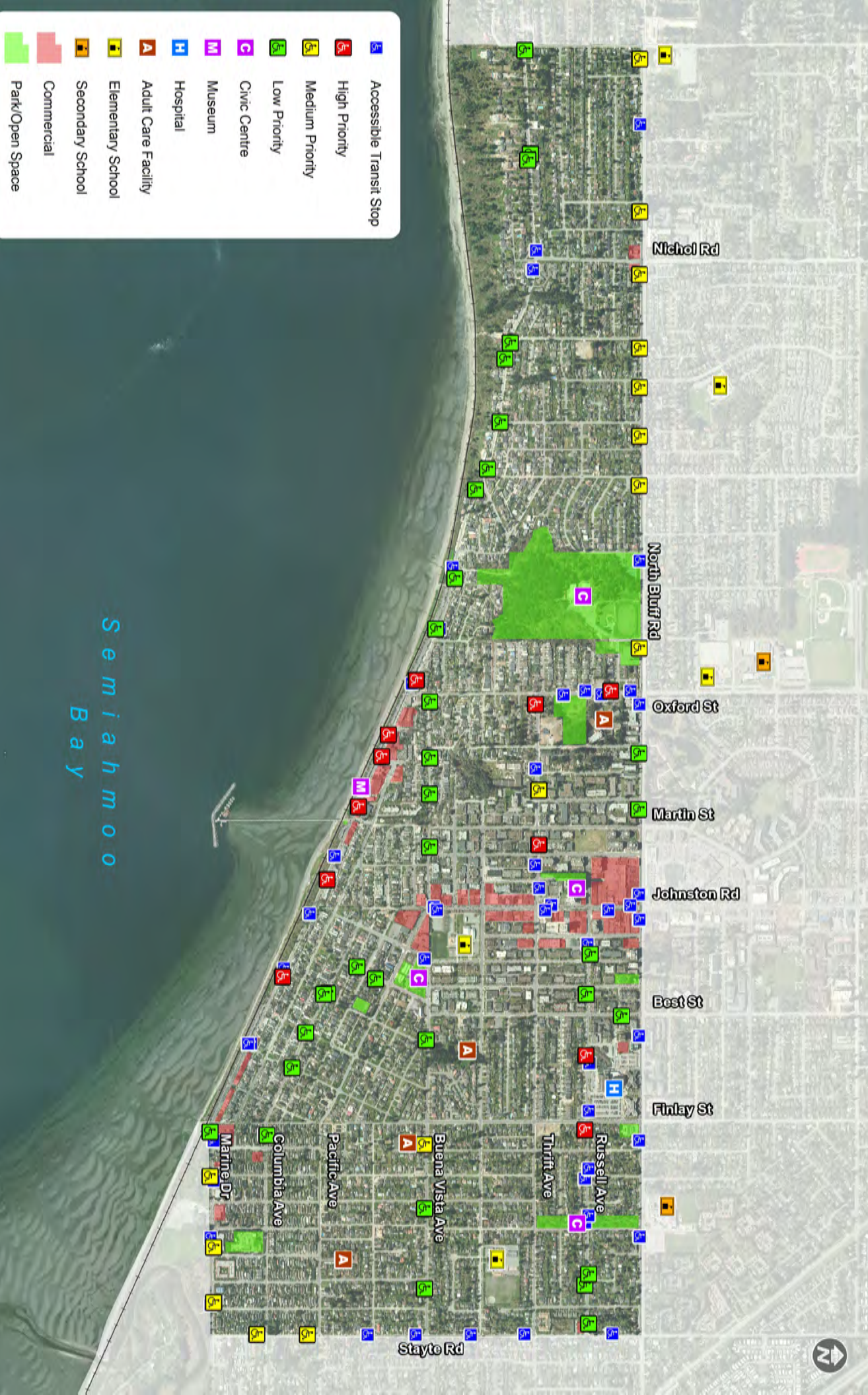


Figure 4.15 Transit Accessibility Priorities



- Accessible Transit Stop
- High Priority
- Medium Priority
- Low Priority
- Civic Centre
- Museum
- Hospital
- Adult Care Facility
- Elementary School
- Secondary School
- Commercial
- Park/Open Space

S e m i a h m o o  
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#### e Improve the White Rock Centre Exchange

The White Rock Centre Exchange is the primary regional transit waypoint on the Semiahmoo peninsula and is located in the Town Centre near the Johnston Road and North Bluff Road intersection. The exchange is the primary transit gateway to White Rock and serves all regional and community shuttle routes. The exchange itself is an on-street facility with bays located on Johnston Rd/152 Street and North Bluff Road. As

the southern-most exchange in the Metro Vancouver regional transit system, the exchange additionally serves a role as a terminus and layover location for many routes. As regional and local transit services increase in White Rock and South Surrey, so too will the space required for bus layover space at the White Rock Centre terminus.

A transit centrepiece to the City of Surrey's 2009 Semiahmoo Town Centre Plan included a new White Rock Centre transit exchange with on-street loading and unloading and an underground layover facility on the redeveloped Semiahmoo Mall site. Although this concept was included in this plan, the concept is not currently being pursued by the property owner. Due to the limited land available on Johnston Road and in the Town Centre upgrades to the existing exchange can not be done without additional land allocation.

As transit frequency increases in White Rock and South Surrey, it is recommended that the City of White Rock take an active role in collaboration with TransLink and the City of Surrey in determining appropriate locations for additional service bays or bus layover zones in the Town Centre. A broader understanding of impacts to local businesses, parking stalls, laning, and other roadway elements is required in determining a short- to medium-term strategy to accommodate additional transit vehicles. In addition, in light of the fact that the Semiahmoo Mall is no longer being redeveloped with the envisioned transit exchange noted above, the City of White Rock should collaborate with the City of Surrey and TransLink to investigate longer-term options for the development of a new transit exchange in the area.

On-going collaboration with TransLink and the City of Surrey regarding the White Rock Transit Exchange is considered a **high priority**.

**Table 4.7** Bus Accessibility Improvements Summary

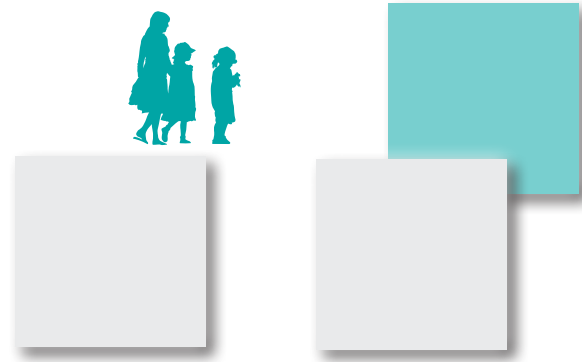
PRIORITY	NUMBER OF LOCATIONS	PRELIMINARY CAPITAL COST
High	11	\$55,000
Moderate	15	\$75,000
Low	33	\$165,000



Directions







## f Enhance the Transit Customer Experience

The attractiveness of transit is not only dependent on transit services, but also on passenger facilities provided at transit exchanges and bus stops. Passenger amenities and facilities at bus stops and transit exchanges can also have a significant impact on passenger safety and comfort, in addition to attracting new customers.

Currently, only 13 of 110 bus stops in White Rock (12%) have shelters. Shelters are mainly located within the Town Centre along North Bluff Road, Thrift or Johnston Roads. In the long-term, the City should strive to provide seating, lighting, and customer information at all bus stops along high frequency corridors, such as Johnston, Pacific, Columbia, eastern Marine Drive, Stayte and North Bluff Roads. Many of these existing shelters are aging and the City is in the process of negotiating an agreement to replace them and provide four additional shelters. However, because of the limited high visibility locations in the City ensuring these replacements may prove to be difficult and will leave the City with the full cost. Priority bus shelter locations are identified in **Figure 4.16**. Locations have been prioritized in the East and West Beach business districts along Marine Drive and along routes with the highest frequency of service.

The table below outlines the cost and priority of the proposed transit improvements. Detailed cost estimates can be found in Appendix A. It is important to note that this is not the full cost for the city, as the cost will be significantly lower when considering the existing contract with Pattison to provide shelters and funding from TransLinks TRIPP program. These cost estimates are not taking these resources into consideration.

**Table 4.8** Transit Facility Costs

PRIORITY	ACCESSIBLE	SHELTER	BENCH	TOTAL
High	\$ 55,000	\$ 150,000	\$ 13,000	\$ 218,000
Medium	\$ 75,000	\$ 240,000	\$ 5,000	\$ 320,000
Low	\$ 165,000	\$ 150,000	\$ 25,000	\$ 340,000
<b>Total</b>	<b>\$ 295,000</b>	<b>\$ 540,000</b>	<b>\$ 43,000</b>	<b>\$ 878,000</b>

## g Support Regional Transit Improvements

Significant progress has been made since the 2006 STP on implementing recommended regional transit improvements. The 2006 STP recommended implementing the regional transit improvements as shown in

**Table 4.9:**

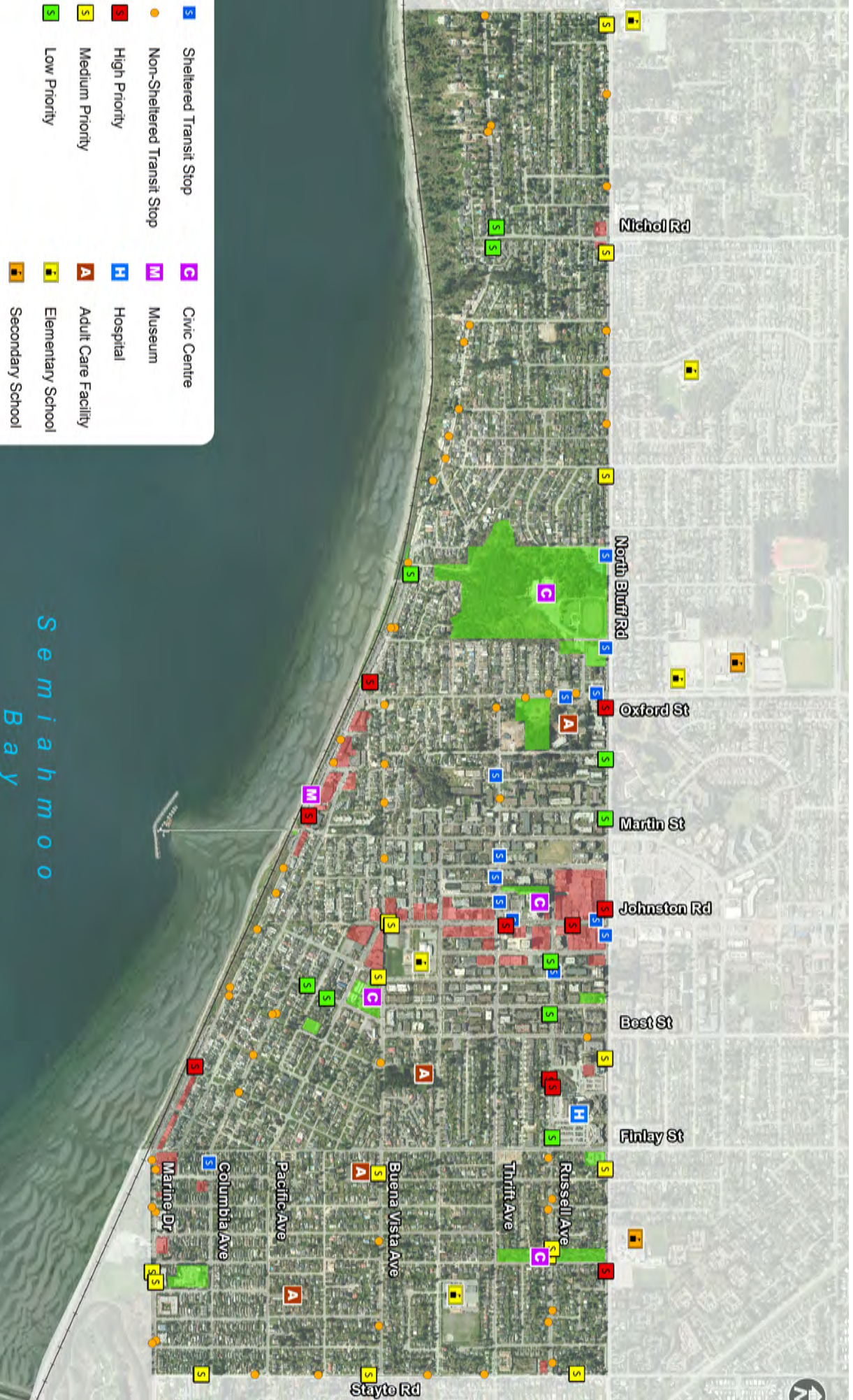
**Table 4.9** Regional Transit Improvements

ITEM	STATUS
<b>Vancouver (high priority)</b> Maintain high quality, express coach services to Bridgeport Station	Recommendation exceeded. FTN service provided connecting White Rock Centre and Bridgeport Station (Route 351)
<b>Surrey (high priority)</b> 15 minute peak service (30 minute off-peak to Expo Line)	Recommendation exceeded. FTN service provided connecting White Rock Centre and Surrey Central Expo Line Station (Route 321)
<b>Surrey (high priority)</b> Extend existing services to Guildford Town Centre	Complete. Route 375 connects White Rock Centre to Guildford Town Centre via 152 Street.
<b>Surrey (long term)</b> BRT service along King George Blvd over long term	Not complete
<b>Langley Centre (moderate priority)</b> New Town Centre connector to Langley	Complete. Route 531 connects White Rock Centre to Langley

In addition to the above, TransLink's 2007 South of Fraser Area Transit Plan recommends a new FTN link along 152 Street between White Rock and Guildford by 2031. The 2008 Provincial Transit Plan also calls for the implementation Rapid Bus Transit services along King George Highway / 152 Street by 2020, connecting White Rock with Surrey City Centre, likely involving advanced transit priority measures and a dedicated busway. Subsequent transit plans including TransLink's 2013 Surrey Rapid Transit Strategy and the 2014 Mayors' Council Vision call for a new light rail line along King George Boulevard connecting Newton and Surrey City Centre. If the Light Rail Transit (LRT) vision, which will likely take the form of a Streetcar or Tram, is realized, Bus Rapid Transit (BRT) services, the existing B Line, to White Rock would terminate at Newton Exchange, with passengers transferring to LRT to continue further north.



Figure 4.16 Shelter Priorities



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Regional service to White Rock has substantially improved since 2006, although there are still opportunities for enhanced service. South of the Nicomekl River, both FTN routes connecting White Rock to Surrey (Route 321) and Bridgeport Station (Route 351) use 152 Street and King George Boulevard. To improve transit reliability along the corridor, spot transit priority treatments (such as queue jumper lanes) are recommended as a **moderate priority** until the construction of the King George BRT busway is realized.

Treatments that offer transit vehicles priority over other vehicles and minimize delays can effectively make transit service a more attractive travel option. Establishing transit priority measures along the corridor requires working with the City of Surrey and TransLink to review areas of delay where transit priority would be most beneficial.

#### **h** Plan for Hillside Connector

To truly integrate the Waterfront and Town Centre, the 2014 STP identifies the potential for a “fixed” transit link between these two areas. “Fixed” transit refers to any type of connection that does not involve conventional buses traveling in mixed traffic. Ultimately, an enhanced hillside connection will serve as an economic development opportunity and tourist attraction. The conceptual corridor for this service is illustrated below in **Figure 4.17**.

**Figure 4.17** Conceptual Corridor for Fixed Transit Connection





There are various transit of “people-moving” technologies that may be considered for this type of connection, such as:

- ▶ Covered/enhanced escalators
- ▶ Funicular railway
- ▶ Aerial tramway/gondola
- ▶ Automated transit in dedicated guideway

Experience in other communities indicates that a fixed hillside connection using one of these technologies would require a capital investment of approximately \$25-50 million. Preliminary estimates indicate that ridership would have to be in the order of 5,000-10,000 passengers per day on average throughout the year for some of these technologies to cover financing, maintenance, and operating costs. As a point of comparison, the estimated weekday ridership on all four of the Community Shuttle routes serving the entire White Rock/South Surrey area is currently less than 1,300 per day combined.

Although a fixed transit connection is not a recommended investment at this time, the Plan recommends that the City preserve the long-term potential of this opportunity by:

- a) Building demand for transit and carefully gauging the long-term opportunity by pursuing other initiatives included in the 2014 STP, such as:
  - ▶ Local circulator bus services;
  - ▶ Remote parking facilities with circulator connection; and
  - ▶ Integrated transit and parking strategies.

These elements, all of which are included in the 2014 STP, represent fundamental “building blocks” for the development of a solid demand for local transit in the community overall and a viable opportunity for the more advanced forms of transit described above.



- b) Preserving the undeveloped right-of-way that currently exists in the Johnston Street corridor between Columbia Avenue and Marine Drive to protect for the eventual development of some form of “fixed” transit between the Town Centre and the Waterfront.
- c) Reviewing and assessing technologies and experience in other communities. There are a range of options available offering different advantages, disadvantages, costs, and impacts on the community. These various technologies should be considered in depth to determine the most appropriate approach for White Rock.

This opportunity represents a very costly initiative requiring a considerable increase in the demand for transit within the community before significant investment by the City and/or external agencies can be justified. To that end, it is included in the updated STP as a **low priority** for which the City may begin planning over the coming years.







Travel by private vehicle is the dominant mode of transportation in White Rock today, as vehicles account for 82% of trips made by White Rock residents. For many residents and businesses, travel by private vehicle is currently their only viable travel option. The City's street network is made up of different components, each serving specific functions within the overall network. While streets provide an important function of ensuring mobility and access to a community, they are not just corridors for moving vehicles and goods. They are also public spaces that can largely shape and define the character of a community. As roadways, the street network represents the primary component of the City's transportation system, as it supports not only automobile traffic, but all other modes of travel as well. The City's street network also makes up a significant portion of the City's public space.

As noted in Section 3, White Rock's street network is largely built out and significant changes to the street network are not anticipated. The strategy for streets in the 2014 STP is to manage the existing street network and to identify various minor improvements that could be implemented to improve overall efficiency, operations, and safety for all road users with priority for improvements following the transportation hierarchy. In that regard, the street network improvements seek to improve conditions for walking, cycling, and transit before the private vehicles. The street network improvements are multi-modal improvements that integrate the recommendations of the preceding chapters. The strategies for the street network also identify the opportunity for the creation of "Complete Streets" that function equally as destinations in and of themselves. This section identifies a range of strategies to accomplish this, along with implementation priorities for each proposed project.



Ultimately, the 2014 STP seeks to reduce future demand for travel made by personal vehicle by making sustainable transportation options such as walking, cycling, and transit more attractive for more trips. The automobile will still be part of our transportation mix in the future and this chapter provides recommendations on how to manage future traffic growth by planning for an effective but sustainable street network, by working to make roads safer, and by reducing the negative community impacts of travel by car.

The strategies identified to enhance the street network in White Rock include:

- a** Update the street network classification
- b** Develop complete streets
- c** Improve intersection safety and operations
- d** Encourage car sharing and other emerging technologies
- e** Promote traffic calming
- f** Enhance signage and wayfinding
- g** Manage Goods Movement

Each of these strategies are described in further detail below.



Directions






#### a) Update the Street Network Classification

The City's existing street network is divided into a street network classification hierarchy that reflects the mix of traffic and function of each street. The street network classification represents the typical form and function for each type of street, although there may be some variations in the actual characteristics of various roadways.

**Provincial highways**, which are under the jurisdiction of the Ministry of Transportation & Infrastructure (MOTI) are at the highest level of the street classification. Although there are no Provincial Highways within the City of White Rock, the City's transportation patterns are influenced by Highway 99, which runs to the east of the City and connects the United States with Surrey, Delta, Richmond and Vancouver. MOTI recently completed the construction of a new interchange at 16 Avenue and Highway 99 which is likely to increase travel demands in White Rock and South Surrey.

At the next level, the regional **Major Road Network (MRN)** is a network of approximately 600 kilometres of roads that facilitate the safe and efficient movement of people and goods across Metro Vancouver. As per Section 21 of the **South Coast British Columbia Transportation Authority Act**, the City requires TransLink approval in order to "take, authorize or permit any action that would reduce the capacity of all or any part of the major road network to move people". As a result, the City must therefore officially inform TransLink and obtain approval prior to installing pedestrian crossings, bicycle lanes and/or other devices impacting MRN capacity. The MRN connects the Provincial Highway system with the local road network. The MRN is operated, maintained, and rehabilitated jointly by local municipalities and TransLink. Currently, the only MRN corridor within White Rock is on North Bluff Road between Johnston Road and Stayte Road. Other MRN corridors adjacent to White Rock include 16 Avenue east of Stayte Road, King George Boulevard, and 152 Street.

Finally, the City's **local street network** includes arterial, primary collector, neighbourhood collector, and local streets as well as lanes. The 2006 STP included an expanded road classification system, which summarized the general characteristics of the City's street network classification, focusing primarily on the function and physical characteristics of each street classification as it relates to vehicles, transit, parking,



and traffic calming. However, this classification did not include general characteristics for MRN corridors, and did not discuss pedestrian and cycling accommodation. **Table 4.10** provides an updated summary of the general characteristics of the City's street network classification system for all street classifications, and for all users.

The 2006 STP provided an updated street classification map which has been adopted by the City. Since the 2006 STP, the City has submitted an application to TransLink to extend the MRN classification on North Bluff Road to Oxford Street. In addition, over the long-term, the MRN classification on North Bluff Road should extend west to Bergstrom Road and beyond. The proposed updated street network classification including this change is shown in **Figure 4.17**. An extension of the MRN designation west to Oxford is identified as a **high priority**.

Updating the street network classification is a **moderate priority**.





**Table 4.10** Multi-Modal Street Classification Guidelines

CLASS	PRIMARY FUNCTION	PHYSICAL CHARACTERISTICS	WALKING
Major Road Network (MRN)	Regional traffic; connect to highways; no property access	4 lanes with turn lanes at most intersections; signal control at most major intersections	Sidewalks or multi-use pathway on both sides of the street, preferably separated by buffer
Arterial	Regional traffic; connect to highways and MRN; limited property access	2-4 lanes with turn lanes at most intersections; signal control at most major intersections	Sidewalks or multi-use pathway on both sides of the street, preferably separated by buffer
Primary Collector	Cross-town traffic; connect to arterials; limited property access	2 lanes with some turn lanes; signal control at some intersections	Sidewalks on both sides of the street, preferably separated by buffer
Neighbourhood Collector	Connect to major roads; access to property	2 lanes; unsignalized control	Sidewalks on both sides of the street
Local	Access to property	2 lanes; unsignalized control	Sidewalk on at least one side of the street
Lane	Access to property; local circulation	1 lane; no controls	Shared space

**Table 4.10** ...continued

CYCLING	TRANSIT	ON-STREET PARKING	TRAFFIC CALMING
Physically separated facilities	Rapid or Frequent	Not recommended	Not used
Physically separated facilities or painted bicycle lanes	Frequent	Restricted or not permitted	Not used
Painted bicycle lanes or shared use lanes	Conventional	Permitted or some restriction	Limited
Painted bicycle lanes or shared use lanes	Local	Permitted	Yes
Neighbourhood Bikeways	No	Permitted	Yes
Shared space	No	Not permitted	Yes



Directions



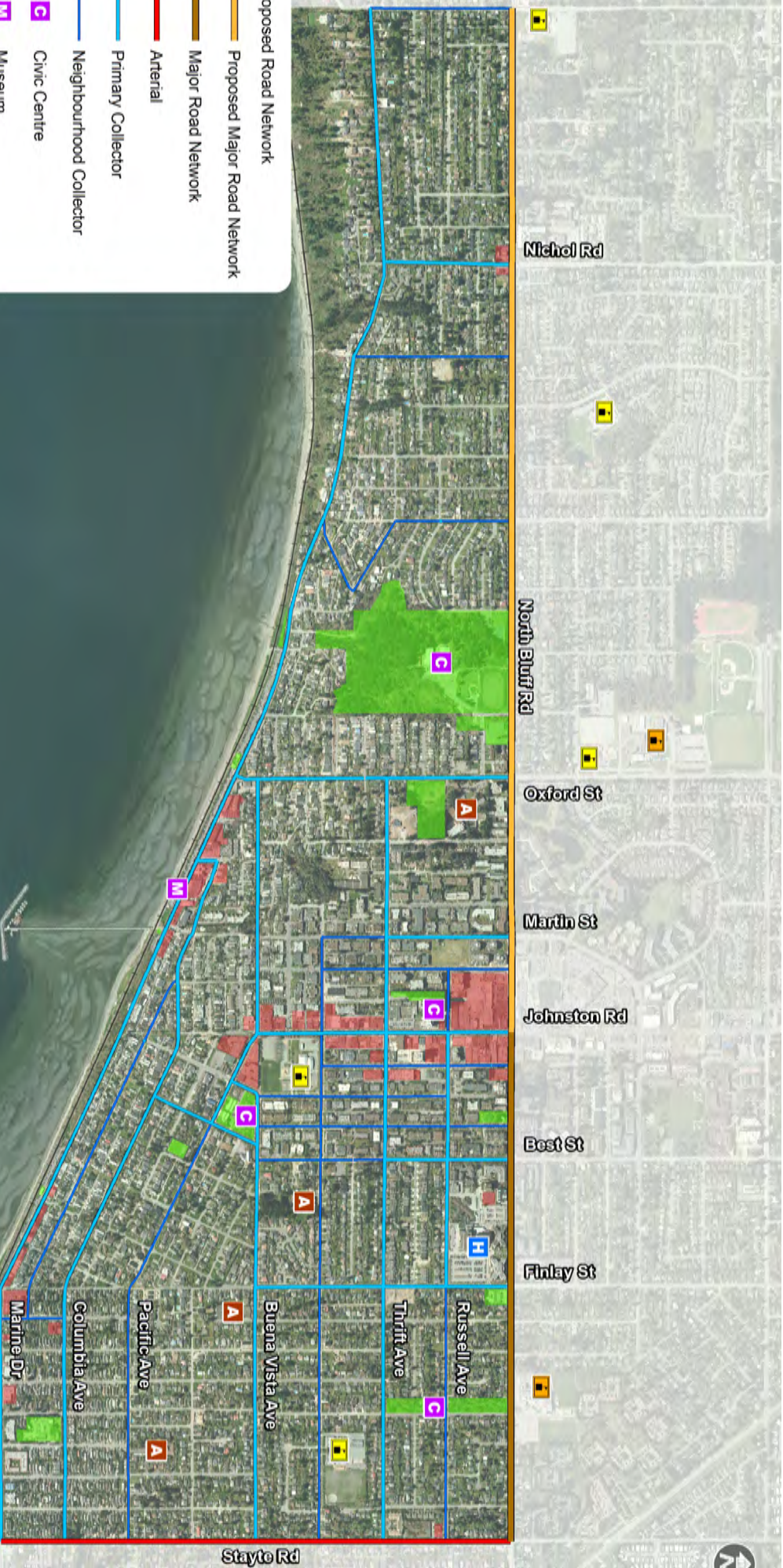


**Figure 4.18** Recommended Street Network Classification



- Proposed Road Network
- Proposed Major Road Network
- Major Road Network
- Arterial
- Primary Collector
- Neighbourhood Collector
- C Civic Centre
- M Museum
- H Hospital
- A Adult Care Facility
- S Elementary School
- S Secondary School
- C Commercial
- P Park/Open Space

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## b) Develop Complete Streets

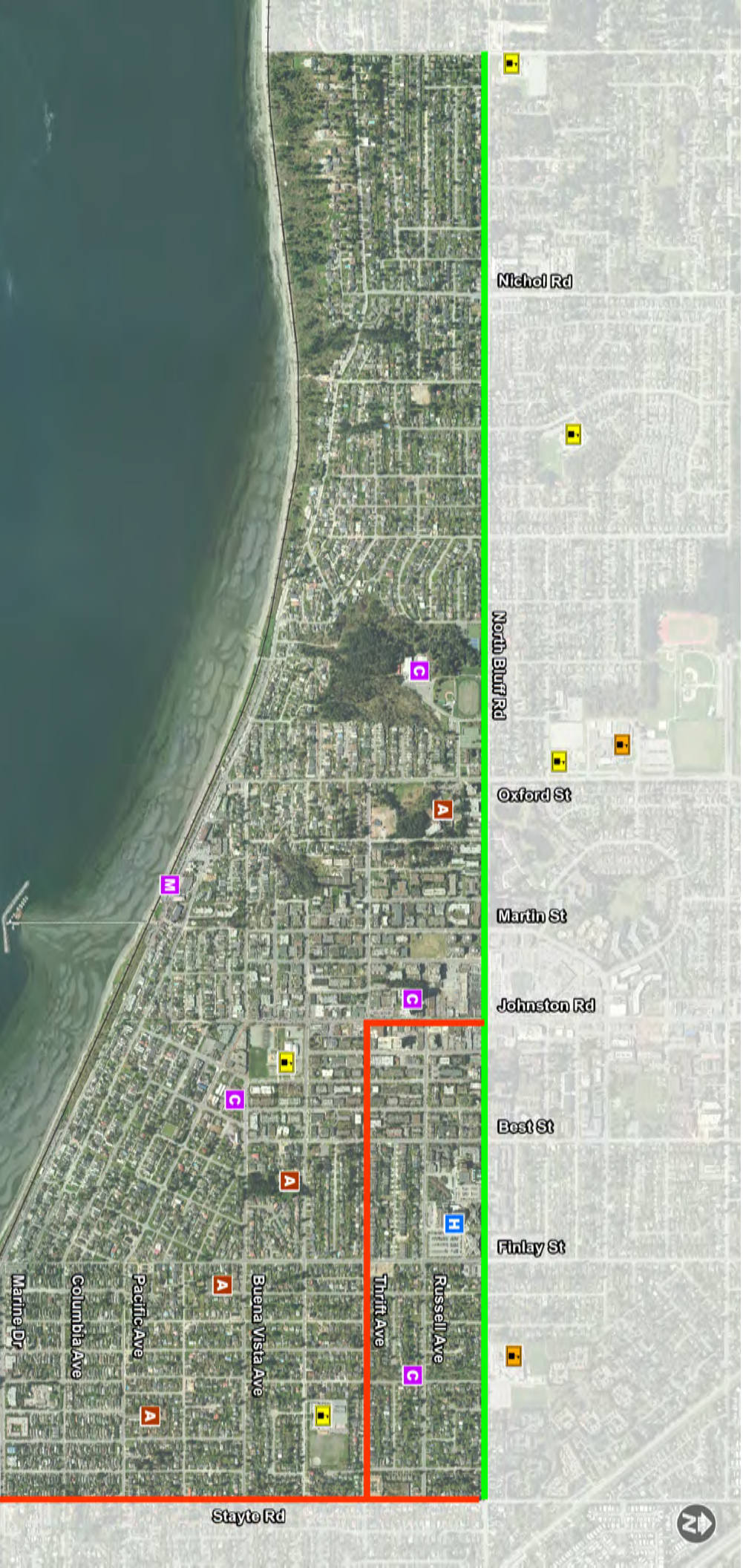
Complete Streets is an approach to street design that considers the surrounding context, land use and all street users within the street design process. In a complete street, the design and operation of the entire street right-of-way is considered to support all street users, including pedestrians, bicyclists, motorists, commercial vehicles and transit riders. This balanced approach, results in streets that function better for more street users in comparison to historic designs that emphasized motor vehicles. Complete Streets can reduce collision rates (particularly for vulnerable road users such as pedestrians and cyclists), better support adjacent land uses (both businesses and residents), support shifts to sustainable transportation travel modes (walking, cycling and transit), and improve the quality of streets as positive public spaces within communities.

Complete Streets require planning and design that goes beyond the typical street function of supporting through traffic. Planning and designing Complete Streets means providing characteristics that make streets destinations – places for people to be, instead of places to move through. There are a number of qualities that can work together to create a Complete Street. While not all streets would necessarily have all these characteristics, some qualities often associated with Complete Streets may include:

- ▶ **Street definition**, where there are boundaries, walls or other features that communicate where the edges of the streets are. These edges can focus attention within the street.
- ▶ **Physical comfort**, which can include features such as wide sidewalks, boulevards providing separation from traffic, canopies or awnings providing weather protection
- ▶ **Places for people to walk with leisure**, where people can see each other and street activities, and have an opportunity to meet others and socialize.
- ▶ **Qualities that engage the eyes**, including physical characteristics such as colour, architecture, trees, and sunlight that encourage people to look around at the environment.



**Figure 4.19** Network of Complete Streets



- C Civic Centre
- M Museum
- H Hospital
- A Adult Care Facility
- S Elementary School
- S Secondary School

- Potential Complete Street  
(White Rock / Surrey Partnership)
- Proposed Complete Street  
(White Rock)

S e m i a h m o o  
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- **Transparency**, primarily in the form of street-level windows, making the street more visible and safe, and engaging the pedestrian in various activities along the street.

Street Definition



Comfortable



Transparency



Qualities that Engage the Eyes



The 2014 STP identifies a network of Complete Streets in White Rock, including Marine Drive, Johnston Road, Thrift Avenue, Stayte Road, and North Bluff Road. Complete streets are more versatile corridors where residents and visitors to White Rock can play, celebrate, socialize, exercise, and also travel through.

The approach to Complete Streets within the 2014 STP is to focus policies and actions on enhancing the corridors noted above. These policies and actions are intended to put people first, and to guide planning and development decisions to make the corridors more vibrant and amenable to supporting local trips by sustainable modes.

Both Marine Drive and Johnston Road are already focal points of the city, with a concentration of services and amenities that support surrounding neighbourhoods and residents. The policies and actions intend to build upon and enhance the existing characteristics within the right of way, in order to incorporate more Complete Street qualities, and to make these more attractive and comfortable places to visit, shop, socialize, and recreate. While many of the infrastructure improvements suggested below may be more appropriate for Marine Drive and Johnston Road, several are applicable to other corridors as well. North Bluff Road has also been identified as a potential complete street but is identified in green in **Figure 4.19** because working towards this goal would require a partnership with the City of Surrey as it is the border of the two municipalities.







Key features that can contribute to Complete Streets include:

- ▶ **Wider sidewalks.** Providing width to allow people to comfortably walk at their own pace, stop, and socialize in these public spaces is important to creating more vibrant streets.
- ▶ **Nodes of Activity** attract and keep people within an area, making it more active day and night. This can include commercial and retail areas, restaurant districts, public open space, or playgrounds.
- ▶ **Places to rest**, such as benches, allow people to rest, wait, socialize and observe street life directly on the street and contribute to street activity.
- ▶ **Lighting** can enhance the appeal of walking on a street after dark, as good lighting increases visibility and perceived safety.
- ▶ **Curb extensions** can increase the attraction and comfort of walking in an area, providing reduced crossing distances and increased pedestrian visibility. Plants and greenery within curb extensions can also have aesthetic benefits.
- ▶ **Boulevards** can improve the pedestrian appeal of an area, providing better street definition and separation between the sidewalk and vehicles, as well providing a calmer traffic environment.
- ▶ **Bicycle parking** at key locations along streets can encourage more cyclists to visit an area, enhancing street activity. Custom bicycle parking can also provide a public art element to the streetscape.
- ▶ **Bus stop amenities**, such as shelters and benches can attract more people to use transit and can result in more patrons for shops, and generally more activity.
- ▶ **Public art** provides items of visual interest for passerbys, with the ability to also engage street users in their surroundings.
- ▶ **Wayfinding** can help people to navigate through a Complete Street by pointing out key destinations, improving the convenience of traveling on a Complete Street by all modes.

- ▶ **Street Trees** can provide aesthetic appeal and features of interest to a Complete Street, as well as better street definition.
- ▶ **Weather protection** such as awnings, trees, can provide increased comfort for pedestrians on the street in conditions such as rain, snow, or sun.

This section continues with a description of improvements proposed for each of the complete streets.

### Marine Drive (High Street to Stayte Road)

Marine Drive is the spine of White Rock's vibrant beachfront. In the summer months, Marine Drive teems with activity as beach goers and people watchers stroll the sidewalks, savour meals on streetfront patios, and generally enjoy the California-like feel of the East and West Beach districts.

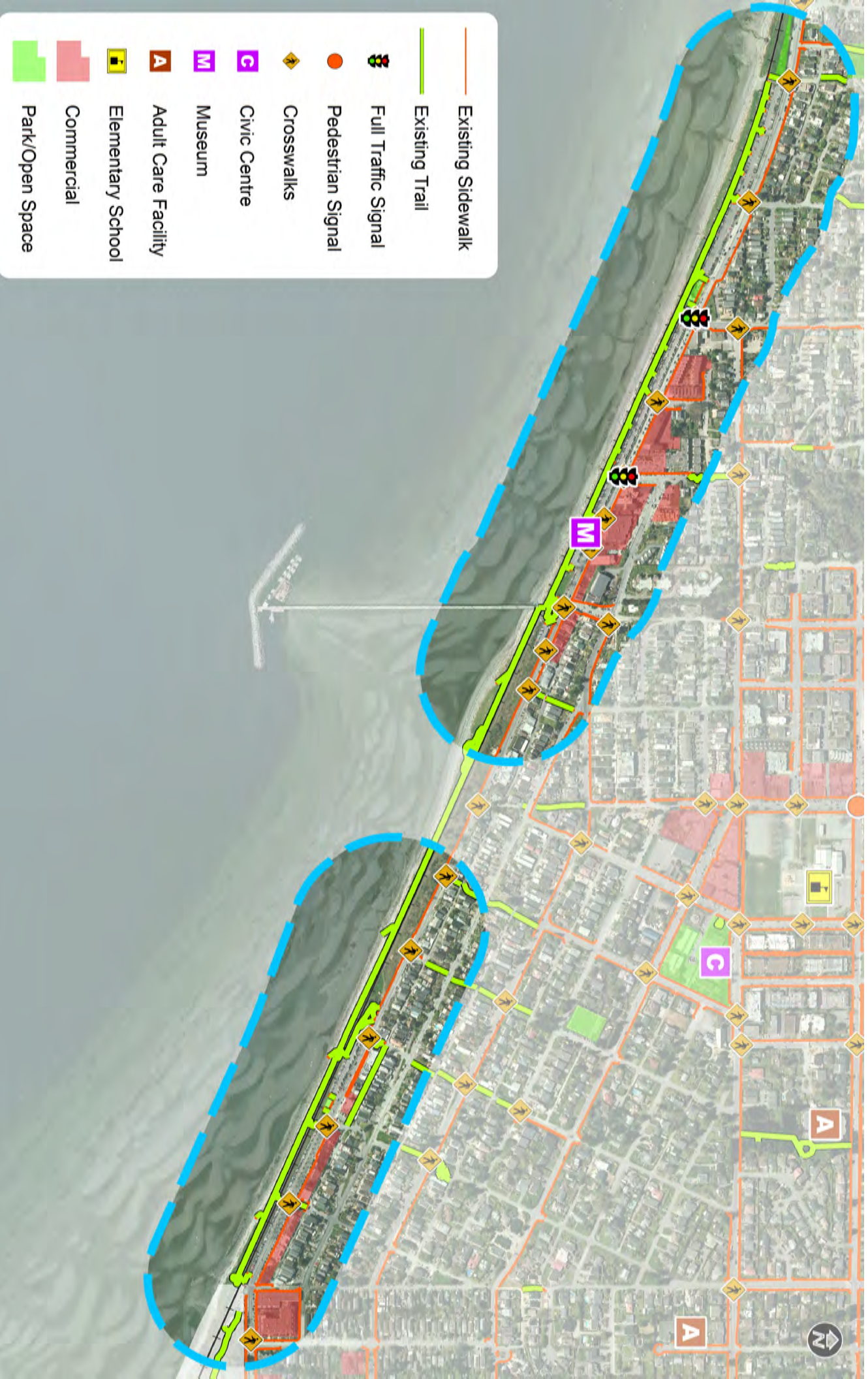
By most definitions, Marine Drive is already a complete street. Classified as a primary collector, Marine Drive is a tight, low speed, 2-lane facility with intermittent on-street parking. Road curb-to-curb widths vary from 16 metres west of Oxford Street to as narrow as 6.7 metres, although a 9 metre curb-to-curb (2 drive lanes + 1 side parallel parking lane) is most common through the segment. Beyond East Beach towards Stayte Road, Marine Drive has a curb-to-curb width of 12 metres (2 drive lanes + parallel parking on both sides). Cycling is accommodated in shared lanes and indicated with sharrow pavement markings.

As a heavy pedestrian zone with street front retail on the north side and parking lots, the beachfront promenade, and the beach itself on the south side, sidewalks and crossing facilities are of paramount importance. As shown in **Figure 4.19** below, predominantly retail oriented sidewalks extend along the north side of most of the corridor with intermittent sidewalks on the south side. Hydro poles are located in the middle of the north side sidewalk and may pose accessibility challenges for persons in wheelchairs, especially west of Oxford Street where the sidewalk width narrows. Moving the existing hydro infrastructure underground is part of the City's long term plan. However, in the meantime, where there is a large gap in the north sidewalk between East and West Beach, a new, wide, southside sidewalk provides pedestrian connectivity and is efficiently connected to northside sidewalks at designated, clearly marked crosswalks.





**Figure 4.20** Existing Sidewalks and Crosswalks in East and West Beach





Directions



As shown in **Figure 4.20**, there are a total of 19 designated crosswalks along the 2.4 km stretch of Marine Drive between High and Maple Streets. Crosswalks are well signed and most are treated with enhanced textures and pavement markings. Curb extensions at Bay, Anderson, Foster, Johnston, Centre, Dolphin, Cypress, Ash and Maple Streets help reduce crossing distance for pedestrians, slow traffic, and delineate on-street parking. Two full access signals at Oxford and Vidal Streets further enable pedestrian crossing opportunities.

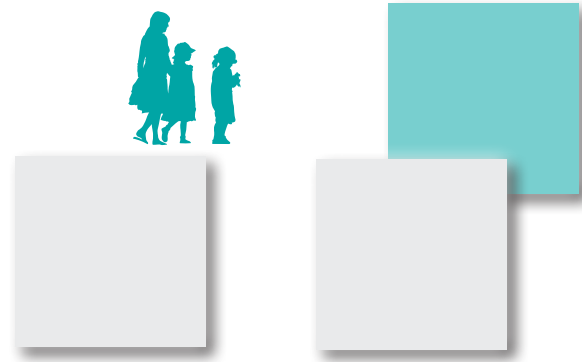
Local transit is provided along Marine Drive, mainly connecting the beachfront area to White Rock Centre Exchange in the Town Centre. Buses currently operate every hour throughout the day. Bus stops along Marine Drive are all unsheltered with many requiring accessibility improvements.

A conceptual improvement package has been developed for the East Beach, West Beach, and Maple Street to Stayte Road sections of Marine Drive as illustrated in **Figures 4.21, 4.22, and 4.23**.

#### West Beach improvements include the following:

- ▶ Bus stop accessibility upgrades at three transit stops (EB and WB at Vidal St, and WB at Martin Street)
- ▶ A new southside sidewalk extending between High Street and the washroom facility west of Oxford Street. The sidewalk can largely be accommodated by converting existing roadway space and shifting the road's centre line. With the exception of 11 southside parallel parking spaces immediately west of the washroom facilities, no loss of parking is anticipated.
- ▶ Upgrading crosswalks and approaches at High, Bay and Anderson Streets to match the high visibility red brick crosswalks with textured approaches installed elsewhere along Marine Drive in West Beach.
- ▶ New on-street bike corrals near Martin Street / White Rock Pier, and Oxford Street
- ▶ A new pedestrian-activated crossing signal at Martin Street
- ▶ New pedestrian scramble at Marine Drive and Vidal Street
- ▶ Destination-oriented signage at key entranceways





- EB Marine Drive at Bay Street
  - WB Marine Drive at Johnston Road
  - SB Oxford Street just north of the Marine Drive signal
  - WB Columbia Avenue west of Foster Street
- ▶ Electric Vehicle charge stations
  - ▶ Reserved car share vehicle parking spaces
  - ▶ Potential for sidewalk patios or parklets on Oxford, Elm, Vidal, and Martin Streets near Marine Drive

**East Beach improvements include the following:**

- ▶ Accessibility bus stop upgrades at WB Marine Drive / Dolphin Street
- ▶ A new 70 metre southside sidewalk west of Finlay, or distinct red brick pavement markings used elsewhere as crosswalk treatments to separate pedestrians from the roadway, helping to mitigate situations as displayed in **Figure 4.21**. Constructing a south side sidewalk along the length of Marine Drive in East Beach is not feasible due to ROW constraints between Balsam and Finlay Streets.
- ▶ Upgrading the crosswalk at Maple Street to match the high visibility red brick crosswalks with textured approaches installed elsewhere along Marine Drive in East Beach.
- ▶ New on-street bike corrals near Balsam Street
- ▶ A new pedestrian-activated crossing signal at Balsam Street
- ▶ Destination-oriented signage at key entranceways



- WB Marine Drive at Maple Street
- EB Marine Drive at Dolphin Street
- ▶ Electric Vehicle charge stations
- ▶ Reserved car share vehicle parking spaces
- ▶ Potential for sidewalk patios or parklets on Balsam Street between Marine Drive and the laneway

**Figure 4.21** Pedestrians walking along the roadway west of Finlay Street



Maple Street to Stayte Road improvements include the following:

- ▶ North and south side curb extensions at Kent Street
- ▶ North side curb extensions at Stayte Road featuring a new gateway art piece welcoming travelers to White Rock
- ▶ Upgrading the crosswalks at Kent Street and Stayte Road to match the high visibility red brick crosswalks with textured approaches installed along Marine Drive in East and West Beach areas.





**Figure 4.22** East and West Beach Improvement Concept





### Johnston Road (North Bluff to Thrift Avenue)

Johnston Road is the City of White Rock's main commercial high street through the Town Centre. It is the primary north-south gateway to the community via the City of Surrey, functions as part of the area's largest transit exchange, and is heart of the Uptown business community.

Classified as a primary collector street, Johnston Road is a 2-lane facility with a characteristic treed median and on-street parallel parking. With minor exceptions, Johnston Road's right of way is generally 23 metres with curb-to-curb widths of approximately 15 metres. Johnston Road has wide commercial sidewalks on both sides of the street and features multiple curb extensions which reduce pedestrian crossing distance and demarcate parking.

Johnston Road serves as part of White Rock Centre Exchange, with a transit bay on the west side of the road sharing sidewalk space with pedestrians. Heavy bus loading/unloading is common on Johnston Road as White Rock Centre Exchange serves as the terminus for many local and regional routes. Transit routes serve Johnston every 15 minutes or less during the peak and buses serve the corridor well into the late evening period.


The City of White Rock recently developed a revised street concept for Johnston Road between North Bluff Road and Thrift Street. Consultation for this concept is ongoing and will be completed in 2015.

The proposed redesign could see the removal of curb extensions, an extended median, the relocation of the midblock crosswalk and the bus stop, between North Bluff Road and Russell further south, and potentially a new south-bound traffic lane to Russell Avenue (in place of the current parking lane). These proposed changes are aimed at improving traffic operations along the corridor and should result in improved performance at the North Bluff Road signal. Removing all curb extensions gives the City the flexibility to use the outside lanes as either driving or parking facilities. However, as noted, this design is still undergoing consultation.

South of Russell Avenue, the design contemplates the future removal of the midblock crosswalk and general widening of the northbound lanes.

In the fall of 2014 a Safety Review of Proposed Improvements for Johnston Road was conducted. This report reviewed the proposed street concept noted above. The report provided a number of recommendations for the Johnston Road concept. The majority of recommendations are associated with making improvements to pedestrian facilities, including levelling sidewalks while saving trees wherever possible and replanting with new species when trees can not be saved. The report also notes additional pedestrian facility improvements





such as, widening sidewalks, creating a larger buffer between sidewalks and parking lots, ensuring landscaping does not restrict sightlines and relocating the existing midblock crossing. The report also identifies relocating the southbound bus stop, provide curb extensions where possible at crosswalk locations and promote speed reductions, retain the parked cars along the road and provide shrubbery in the median to minimize jaywalking. The recommendations in this report are designed to enhance pedestrian safety along Johnston road helping to enhance it as a great street. As noted, this report supplements the proposed design that is still undergoing review and public consultation.

### Stayte Road

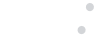
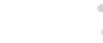
Classified as an arterial street, Stayte Road is located on the municipal border of Surrey and White Rock. Stayte Road is a 2-lane facility with no auxiliary left turn lanes, except at the North Bluff Road and Thrift signals. A recently constructed multi-use trail on the west side of the roadway provides excellent pedestrian and cycling connectivity along most of Stayte Road between the City's northern boundary at North Bluff Road to Pacific Avenue. The multi-use pathway is entirely separated from the roadway by a treed boulevard. A standard sidewalk is located on the road's east side. As a result of the new pathway, the roadway itself is fairly tight, with a curb-to-curb width of approximately 7.5 metres (wider near Thrift and North Bluff Road intersections). On-street parking along the corridor is limited to infrequent parking inlets on the west side of the road.

Stayte Road is served by a local community shuttle route and a peak period commuter, which results in a bus every 15 minutes in the peak periods and every hour the rest of the day until early evening. Bus stops do not support shelters, although some have benches.

The Cycling component of this STP proposes an off-street pathway along the entire length of Stayte Road. The vast majority of this pathway has been completed, with only two blocks at the southern end of the corridor remaining. It is recommended that the City complete the Stayte Road west side multi-use trail using the same standards as previous from Pacific Avenue south to Marine Drive.

### Thrift Avenue

In addition to recommending expansion of the sidewalk network, enhancement of existing sidewalks, and

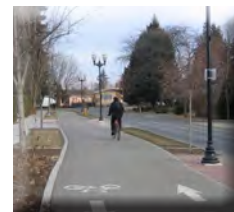


development of bicycle routes throughout White Rock, the STP proposes the development of a greenway corridor along Thrift Avenue envisioned to accommodate joggers, persons using mobility aids, rollerbladers, and families on bicycles, among others. The corridor could include enhanced landscaping, interpretive displays, and public art to provide identity and character and establish a unifying element within the community

The proposed corridor would connect the eastern and central sections of White Rock and would run along the entire length of Thrift Avenue from Oxford Street to Stayte Road. The alignment is illustrated conceptually in **Figure 4.23** and it would be designed to fit within existing rights-of-way to the greatest extent possible to minimize community impacts and implementation costs. This route would connect directly with a similar style of treatment developed along the Stayte Road corridor and could be connected to the Waterfront area via upgraded ravine trails in Centennial Park.

It is envisioned that the greenway corridor would incorporate the following components at a minimum:

- ▶ **Two travel lanes.** Two through travel lanes would be maintained throughout the corridor, but may be narrower than the current lanes.
- ▶ **Parking lane or pockets.** On-street parking would be maintained on at least one side of the entire corridor, with parking on two sides provided wherever possible.
- ▶ **Pathway.** A wide multi-use pathway (anticipated to be at least 3.0 m wide and preferably 4.0 m wide where possible) would be developed on one side of the corridor to accommodate a range of potential users. The pathway would have to incorporate appropriate crossing treatments at all road and driveway intersections.
- ▶ **Boulevards.** Landscaped boulevards would be provided wherever possible to provide a buffer between the roadway and adjacent walking/riding surfaces, and to provide a location for street trees, interpretive displays, and other furniture.

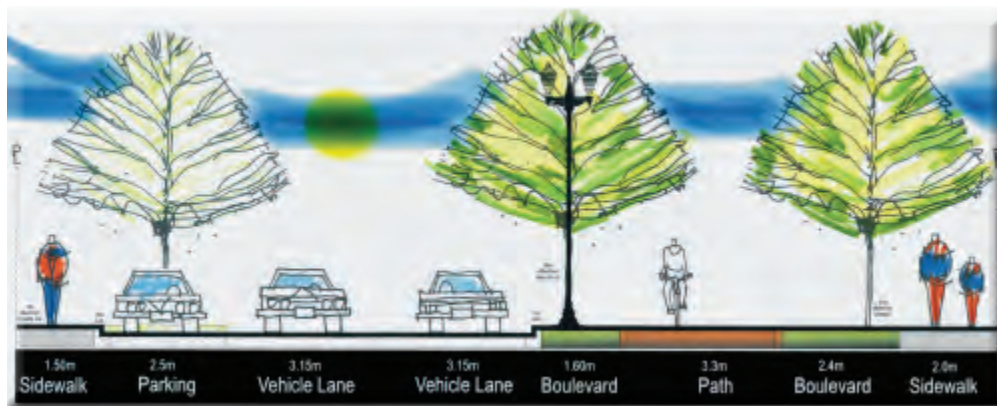




- **Sidewalk.** A standard sidewalk would be maintained on the side of the road opposite the pathway to provide additional space for walking.

Although there would be some variations along the corridor to fit the greenway within the right-of-way, **Figure 4.23** illustrates a general concept for the corridor based on a similar project constructed five years ago in Kelowna, BC. The corridor is configured for a 20.0-m right-of-way, which is consistent with much of the proposed right-of-way.

**Figure 4.23** Potential Corridor Cross-Section (20.0-m right-of-way)



Source: Pre-Design Plan – Abbott Street Recreational Corridor, Phase 3, Urban Systems Ltd., 2005

Based on similar projects in White Rock and other BC communities, a very preliminary cost estimate for the entire project is \$6-10 million, but the actual cost would depend significantly on the scope of the design (amount of roadwork), impacts on utilities and private property, intersection configurations, and the like. This concept would require significant planning and design work and consultation to ensure that it fits within the established community and meets the needs of potential users, and to develop a detailed cost estimate. The proposal is considered to be a **moderate-low priority** for the City.



It is anticipated that a project of this scope would be implemented in phases and could be coordinated with redevelopment and rehabilitation projects. Implementation would likely begin with the Town Centre area, then proceed eastwards to connect to Stayte Road. To accomplish the required advance work, the City may wish to undertake preliminary design tasks in the near term. Completion of the corridor would likely occur in the long term.

### North Bluff Road

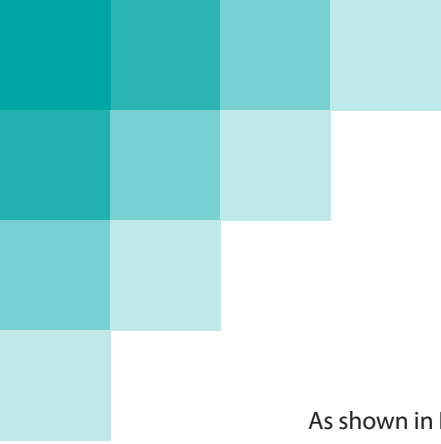
Classified as an arterial street, North Bluff Road is located on the municipal border of Surrey and White Rock. North Bluff Road is a 4-lane facility with auxiliary left turn lanes at major intersections. Road rights-of-way vary between 23 and 26 metres with curb-to-curb widths varying from 16 to 19 metres. North Bluff Road has sidewalks on both sides of the street and on-street parallel parking on the south side along most of the corridor.

**Figure 4.24** Location of South Side Parking and Cycling Facilities on North Bluff Road



Regional transit connections are provided along the length of North Bluff Road with services to King George Boulevard and Crescent Beach operating along the corridor east and west of White Rock Centre Exchange (Johnston Road), respectively. Peak period bus frequency on North Bluff Road is 15 minutes or better with unsheltered stops predominating.





As shown in **Figure 4.24**, although there is not a westbound bicycle lane on the north (Surrey) side of the street, most southside blocks include either a designated eastbound bicycle lane or an informal shared parking/bicycle lane. Gaps in the eastbound bicycle lane are located between 146 Street and Anderson Street, Foster Street and George Street, and between west of Best to east of Finlay Streets. The Cycling chapter of this STP recommends cycle tracks along North Bluff Road from White Rock's western boundary to Anderson Street and a formalized bicycle lane from Anderson Street to the City's eastern boundary at Stayte Road.

The development of a south side two-lane cycle track along the entire length of North Bluff Road is limited by south side hydro wires – which pose a considerable obstacle – and ROW space required for additional left turning lanes at a number of major north-south roadways. Hydro poles currently intrude onto the pavement in the south side parking lane.

Buffering the hydro poles on the south side of the street with concrete or planted curb extensions is recommended as an interim improvement strategy. This approach more effectively delineates parking in the corridor and will likely result in minor safety improvements.

Over the short term, gaps in the eastbound cycle facility should be addressed to ensure a contiguous south side cycling facility through White Rock. While the segment between Foster Street and Johnston Road likely requires paint only, curb works (including potential hydro wire burial / relocation) would be required near Anderson Street and between Fir and Finlay Streets. Redevelopment of the Royal Bank site at the corner of North Bluff Road / Johnston Road is likely required to complete a short one-block segment of the bike lane as the right of way is likely insufficient through this block. One high priority and two medium priority bus stop accessibility improvements, already identified in this STP along North Bluff Road, should be implemented as part of short term cycle facility improvements.

Over the longer term, the potential for separated cycle tracks could be examined along the corridor west of Anderson Street in collaboration with the City of Surrey. A southside bi-directional cycle track (3-4 m including buffer) would require the elimination of parking on the south side, the burial or replacement of existing hydro poles, and limited travel lane width reductions. Additionally, a southside bi-directional cycle track would result in the elimination of bus pullouts resulting in transit vehicles stopping in traffic lanes (as they do near Johnston Road).



### c) Improve Intersection Safety and Operations

Intersection improvements are often driven by mobility performance and/or safety deficiencies, although they can also be implemented to improve neighbourhood livability, or improve accessibility for cyclists and pedestrians. As shown in **Figure 4.25**, currently, all assessed signalized intersections in White Rock operate at levels of service (LOS) C or better except the Johnston Road / North Bluff Road intersection, which operates at LOS D. By 2041, most signalized intersections continue to operate at LOS C or better with the exception of the Johnston Road / North Bluff Road signal that is expected to fail (see **Figure 4.26**). Conditions at the Johnston Road / North Bluff Road signal are anticipated to worsen beyond modelled projections on account of a new Highway 99 interchange at 16th Avenue (North Bluff Road).



**Figure 4.25**

2013 LOS at Primary Signalized Intersection





Figure 4.26

2041 LOS at Primary Signalized Intersection

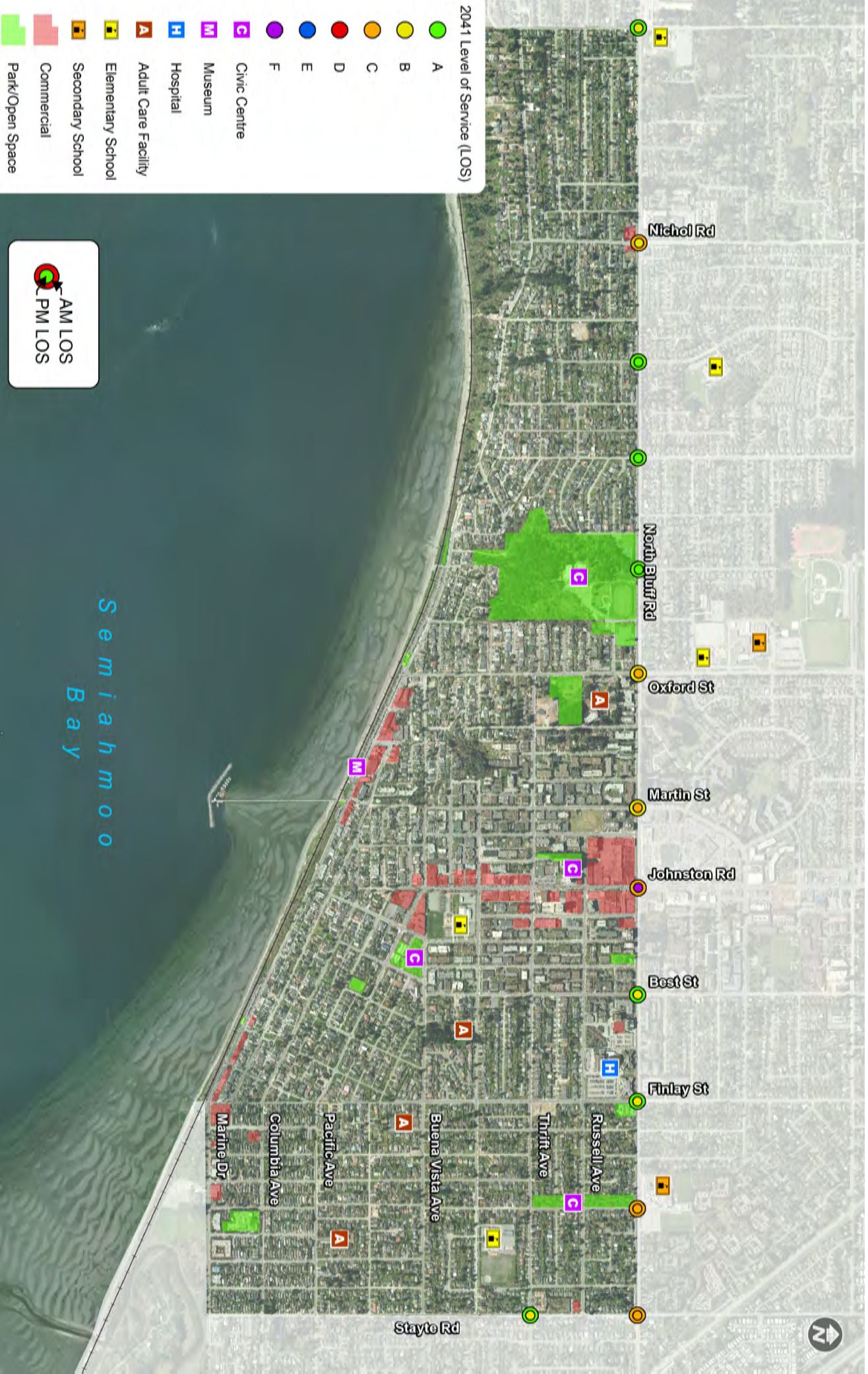
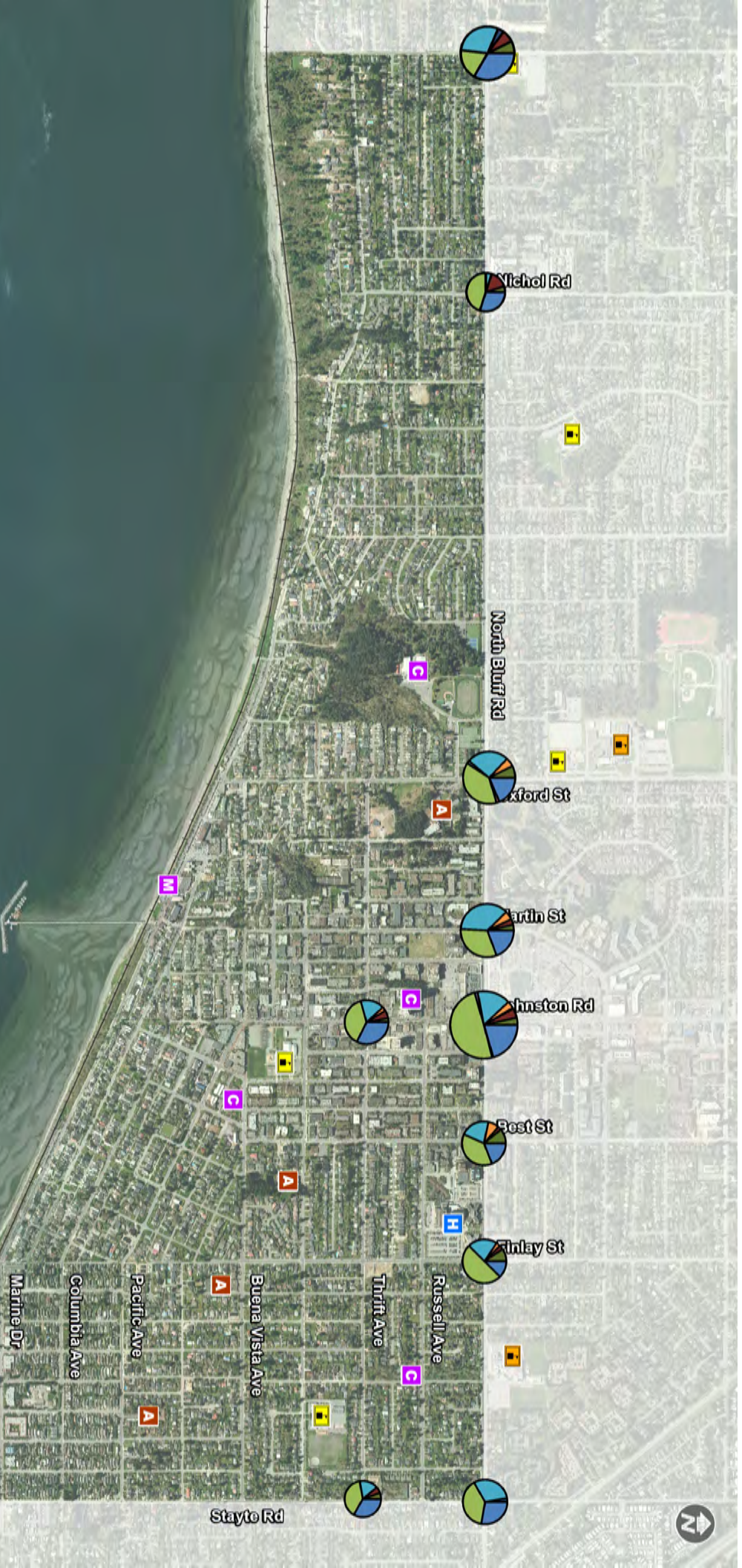




Figure 4.27

Collisions by Type by Top Collision Locations



S e m i a h m o o  
B a y



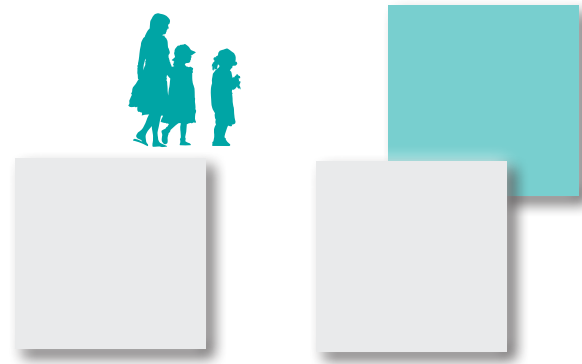
As shown in **Figure 4.27**, the North Bluff Road / Johnston Street intersection also weighs heavily for safety-related deficiencies. This particular intersection averages the most number of collisions per year of all city intersection (approximately 40 collisions per year). North Bluff Road / Martin Street and North Bluff Road / Oxford Street, the second and third most problematic intersections from a safety perspective, fare significantly better with 11.4 and 10.8 collisions per year, respectively. As shown above, the top five collision locations in White Rock are all on North Bluff Road.

Improvement options at Johnston Street / North Bluff Road are limited by narrow road right-of-way and existing buildings. Medium term improvement options have been developed at Johnston Road / North Bluff Road to address the highlighted long-term mobility issues discussed above. This would see Johnston Road reconfigured to allow for 2 northbound and southbound through lanes through the intersection. This modification would improve 2041 intersection operations at the intersection to a LOS D from LOS F.

Upgrading the North Bluff Road / Johnston Road intersection is considered a **moderate priority** and will be based on the ongoing road design consultation, noted earlier.

Although North Bluff Road / Johnston Road is the only intersection where improvements directly stem from existing or projected future safety and performance issues, intersection improvements are additionally recommended elsewhere in the network to improve pedestrian crossing opportunities and accessibility for all users.





## Marine Drive

As shown in **Figure 4.28**, while two full access traffic signals were recently installed along Marine Drive in West Beach to facilitate safe pedestrian crossing, gaps in opportunities for safe crossing still exist on Marine Drive, particularly in East Beach.

Pedestrian activated signals are recommended at the Marine Drive / Martin Street and Marine Drive / Balsam Street intersections to improve pedestrian crossing opportunities in the busy East and West Beach districts.

Martin Street is recommended for pedestrian activated signalization as it aligns with the busy White Rock pier – the focal point of White Rock beach – and is located at the centre of the West Beach business area. Also, Martin Street provides direct north-south pedestrian connections to Uptown and Semiahmoo Mall, with a stairwell and sidewalks on one or both sides of the street all the way to North Bluff Road. Additionally, pedestrian and cycling improvements are recommended by this Plan along the length of the Martin corridor. The Martin Street pedestrian activated signal is considered a moderate priority.

Balsam Street is recommended for pedestrian activated signalization as it is located in the centre of the East Beach business area, aligns with a pedestrian railway crossing and parking lot entrance, and is located near the public washroom facilities. The Balsam Street pedestrian activated signal is considered a **high priority** as no other crossing signals yet exist in East Beach.

In addition to the above, accessibility improvements at existing signals are recommended to assist pedestrians with disabilities. This improvement suite, which includes treatments such as pedestrian countdown timers, audible signals, and tactile surfaces at signalized intersection, is addressed in Section 4.2 – Walking.

**Table 4.11** Example of Intersection Improvement Projects

LOCATION	DESCRIPTION	ISSUE(S) ADDRESSED	PRELIMINARY CAPITAL COST	PRIORITY
Johnston Rd/North Bluff Rd	Opt. 1 (2 through lanes in each direction) OR Opt. 2 (ban northbound and southbound left turns)	Intersection operations, potentially intersection safety, and pedestrian crossing distance	TBD	Moderate
Thrift Ave/ Oxford St	Southbound stop control and lane delineation	Intersection safety and operations	\$5,000	High
Marine Drive / Balsam Street	Pedestrian Activated Signal	Safe pedestrian crossing	\$250,000	High
Marine Drive / Martin Street	Pedestrian Activated Signal	Safe pedestrian crossing	\$250,000	Moderate



#### d) Encourage Car Sharing and Other Emerging Technologies

##### Car Sharing

As North American cities evolve and mature, car sharing has become an emerging transportation alternative that has begun to play a much larger role in the overall transportation network in many cities, including Metro Vancouver. Car sharing can satisfy a variety of different micro and macro goals, from deferring the purchase of a first or second vehicle to reducing the need for parking. Car sharing provides a more efficient use of vehicles and the street itself. Unlike private automobiles that remain parked for the vast majority of the time, car sharing pairs vehicles with trip makers, allowing vehicles to be used (and parking space unoccupied) for a greater share of the time.

In Metro Vancouver, formal car sharing services are currently provided by Modo, ZipCar, and car2go. Each car sharing service offers a different membership-based business model, as laid out in **Table 4.12**.

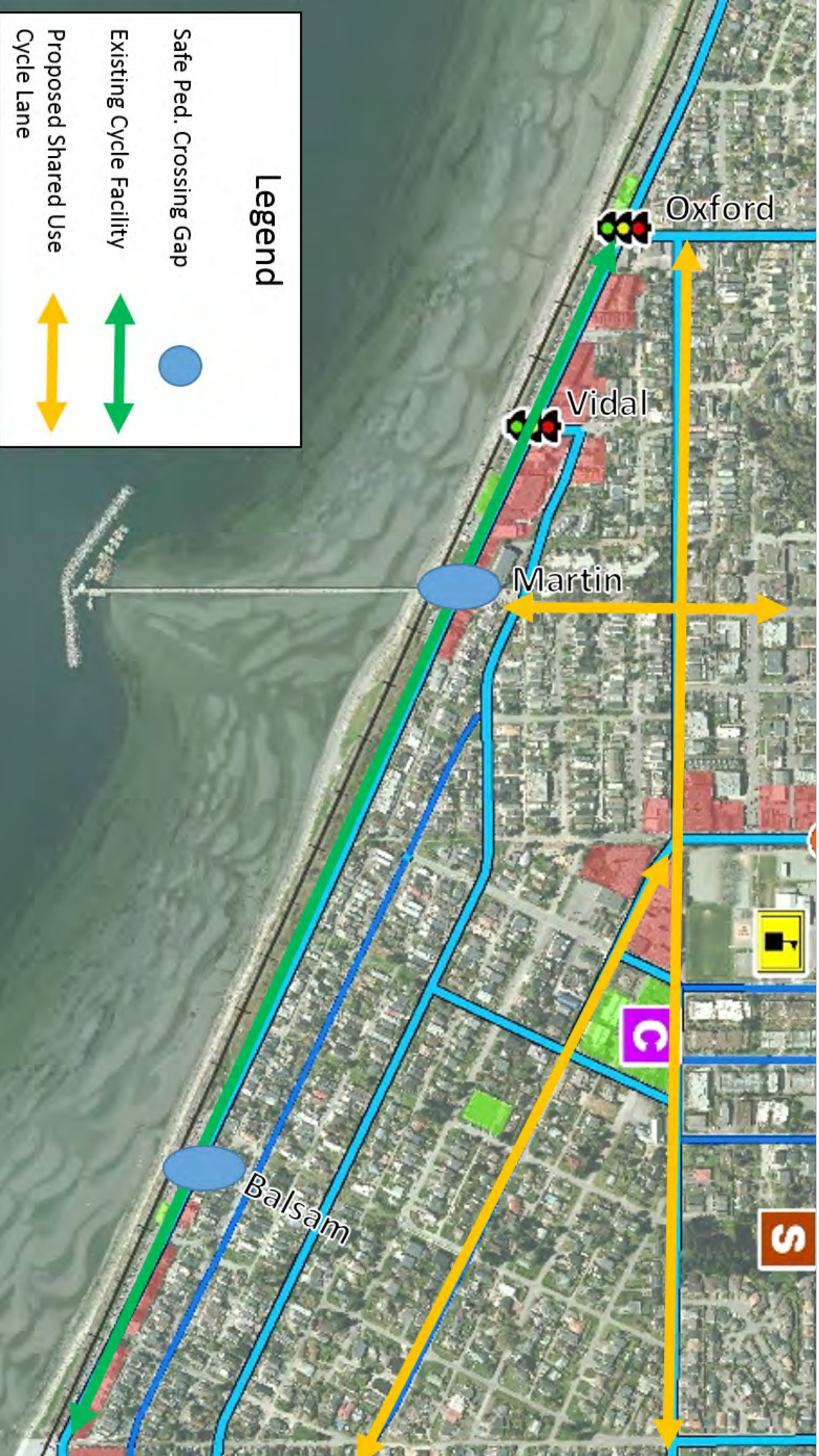
**Table 4.12** Car Sharing Service Providers in Metro Vancouver

	ZIPCAR	MODO	CAR2GO
Vehicle Type	Multiple makes and models	Multiple makes and models	2-seat Smart car
Minimum Rental Period	1 hour	1 hour	No minimum
Trip Type	Return. Longer-duration. Must be returned to designated "home" parking space.	Return. Longer-duration. Must be returned to designated "home" parking space.	Point-to-Point. Park in any unmetered public space (incl. permit-only and resident-only).
Cost	Varies. Monthly membership fee + \$7-\$8 / hr.	Varies. Monthly membership fee + \$7.50 / hr	\$0.41 / minute
Included in Cost	Fuel, insurance	Fuel, insurance	Fuel, insurance
Reservations	Web, smart phone, telephone	Web, smart phone, telephone	Web, smart phone
Reservation cancellation	Cancel or shorten up to 3 hours before start time	Cancel or shorten for free up to 12 hours before start time	Anytime. No cancellation penalty.
Service Area	Vancouver, UBC, North Vancouver, Richmond, Burnaby, SFU	Vancouver, UBC, North Vancouver, Richmond, Burnaby, New Westminster, Surrey, Coquitlam, Port Moody, SFU	Vancouver, UBC, North Vancouver, Kwantlen University Cloverdale and Langley campuses



Figure 4.28

Signalized Pedestrian Crossing Opportunities along Marine Drive





The pricing and rental structure of ZipCar and Modo are geared towards customers who desire to have an easily available short-term rental car with them for a set period of time. ZipCar and Modo services are not geared towards commuting and are more likely to be suitable for leisure or special interest trips. By comparison, car2go offers point-to-point travel with billing by the minute, which provides travellers with the freedom of movement associated with private automobile travel without the associated burden of paying for parking. It conceptually allows trip segments to be unbundled, giving the traveller the flexibility of using a car when it is most needed, and discarding it in favour of public transit or walking where it is less efficient. Modo and car2go currently provide limited car share availability in communities south of the Fraser River, with Modo vehicles available in Surrey City Centre and car2go vehicles available at Kwantlen Polytechnic University's Langley, Cloverdale, Surrey and Richmond campuses. Car sharing services are currently unavailable in South Surrey and White Rock.

Both point-to-point and return-trip style car sharing systems would be of great benefit to White Rock residents and regional visitors. Point to point car sharing services would provide options for individuals travelling up and down the hill between Uptown and the waterfront, supplementing existing local transit services. Also, White Rock's relatively higher residential densities may allow for point-to-point car sharing to become a means of travel to connect city neighbourhoods to each other and to the Town Centre, allowing for intermodal connectivity to regional transit services. Moreover, with car sharing stations now located at Kwantlen Polytechnic University campuses, car sharing could become an option for student-based one-way travel between White Rock and Kwantlen Polytechnic University campuses.

It is recommended that the City of White Rock engage car share providers in discussions to determine what is required to encourage these service providers in White Rock. Engaging Metro Vancouver car share service providers is considered a **high priority** for the City. White Rock should consider the following policies to encourage car sharing within the municipality:

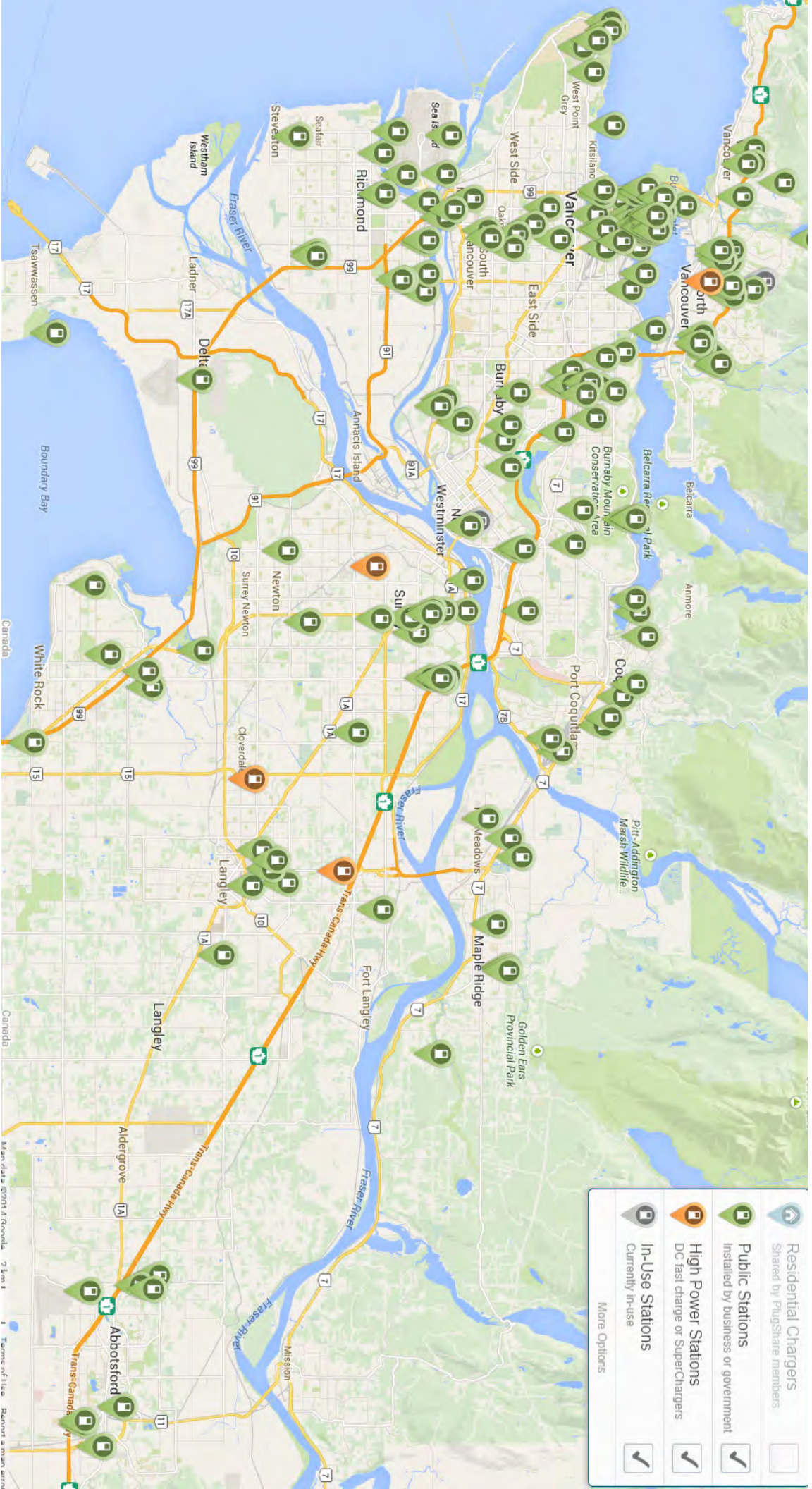
- ▶ Allow car share members the freedom to park car share vehicles anywhere in unmetered public parking spaces within the City of White Rock (including time restricted and resident restricted zones). This policy is in place in the City of Vancouver and allows for car sharing vehicles to serve a larger geographic space.





**Figure 4.29**

Location of Public and High Power Charging Stations in Metro Vancouver



- ▶ Allocate priority parking spaces for point-to-point car share services such as car2go near White Rock Centre Exchange to facilitate multimodal connectivity to transit.
- ▶ Reserve a number of priority parking spaces in the East Beach and West Beach parking lots for car share vehicles and allow these vehicles to park for free. If well publicized, this could help encourage car share members from elsewhere in Metro Vancouver to come visit White Rock (free parking at the beach without the need to continuously circle the block to find a parking space). Depending on the provider, it could also encourage point-to-point car share travel to the beach, with the ultimate goal of stemming demand for longer-term parking in this high volume area.

## Electric Vehicles

Electric vehicles use an electric motor for power instead of a traditional combustion engine. Although the technology is steadily increasing, allowing vehicles to now travel further on a single charge, wide scale proliferation of electric cars is limited by ease and convenience of accessing and charging vehicles at charge stations.

As shown in **Figure 4.29**, while there are a number of public and high power charging stations already in Metro Vancouver, most of these stations are concentrated on the Burrard Peninsula and North Shore. While there are charging stations in Peace Arch Provincial Park, South Surrey Athletic Park, and near the Ocean Park Library in South Surrey, there are no charging stations within the City of White Rock itself.

The City of White Rock should explore opportunities to install public charging stations in the Town Centre and along the Waterfront. Charging stations combined with designated stalls for electric vehicles will help promote sustainable transportation in the City. This is considered a **high priority**.

### e) Promote Traffic Calming

The City of White Rock's 2005 Traffic Calming Policy and Procedures identifies goals, objectives and guiding principles for traffic calming in White Rock and outlines when traffic calming should be considered. The Policy notes that the two primary goals of traffic calming are to enhance safety by reducing the potential for and lessening the consequences of conflicts between road uses, and to preserve neighbourhood livability by reducing the negative impacts of short-cutting or speeding traffic. Although the traffic issues in each neighbourhood are unique, the general objectives of traffic calming are to:



Directions





- 1) Reduce vehicle speeds.
- 2) Discourage short-cutting through residential streets and lanes by non-local traffic.
- 3) Reduce traffic volumes where they exceed what would typically be expected.

The Policy outlines what techniques can be considered on city streets based on the street network classification, as shown in **Table 4.13** below. Traffic calming is not recommended along arterial streets and has only limited use along primary collector streets. Conversely, a variety of traffic calming techniques are recommended along neighbourhood collector streets, local streets, and lanes.

**Table 4.13** Traffic Calming Measures to be Considered in White Rock

	ROAD CLASSIFICATION			OTHER CONSIDERATIONS	
	LANES	LOCAL ROADS	NEIGHBOURHOOD COLLECTOR ROADS	EMERGENCY RESPONSE ROUTES	TRANSIT ROUTES
<b>Vertical Deflection</b>					
• Speed Hump	✓	✓	✓	⊘	⊘
• Raised Crosswalk	⊘	✓	✓	⊘	⊘
• Sidewalk Extension	⊘	✓	⊘	⊘	✓
• Textured Crosswalk	⊘	✓	✓	✓	✓
<b>Horizontal Deflection</b>					
• Curb Extension	⊘	✓	✓	✓	✓
• Curb Radius Reduction	⊘	✓		⊘	⊘
• On-Street Parking	⊘	✓	✓	✓	✓
• Raised Median Island	⊘	✓	✓	✓	✓
• Traffic Circle	⊘	✓	✓	⊘	⊘
• Road Diets	⊘	✓	✓	✓	✓
<b>Obstruction</b>					
• Directional Closure	⊘	✓	⊘	⊘	⊘
• Diverter	⊘	✓	⊘	⊘	⊘
• Raised Median Through Intersection	✓	✓	✓	✓	✓
• Right-In/Right-Out Island	✓	✓	⊘	⊘	⊘
<b>Signage</b>					
• Traffic Calmed Neighbourhood	⊘	✓	✓	✓	✓
<b>Key</b>					
✓ - applicable					



The STP echoes the Traffic Calming Policy in noting that traffic calming measures should generally be used only if necessary, particularly when the volumes, speeds, or non-local traffic exceeds what would normally be expected for a specific roadway classification. Traffic calming treatments are to be considered and assessed on a case by case basis following the process described in the Traffic Calming Policy.

#### f) Enhance Signage and Wayfinding

To make White Rock a more welcoming community to visitors and to provide those visitors with further directional guidance to key destinations in the City, the revised STP builds upon a strategy to enhance wayfinding signage developed in the 2006 STP. Wayfinding signage provides clear direction along preferred routes to specific destinations within the community. These key destinations may be identified with distinct symbols and colours to make them easily recognizable and simple to follow.

Enhanced signage benefits not only visitors – who will be provided with clear direction on how to get to and from these destinations – but also White Rock residents – because the signage plan can ensure that visitors are directed to use appropriate roads. This will mitigate some impacts of visitor traffic, such as traffic congestion, noise, emissions, and so forth.

The recommended components of the signage strategy originally developed in the 2006 STP are displayed in **Figure 4.30** and briefly described below. It is important to recognize that more detailed work must be done to implement the plan. These details would include, but not necessarily be limited to, graphic design, type of signage and design, and placement.

- **Destinations.** The signage strategy is designed around the City's two key business areas – the Town Centre and the Waterfront. Each destination would be distinguished with a unique symbol and colour for use in all wayfinding signage. Specific locations or uses within each destination area would not be highlighted. Since 2006, the City of White Rock, Tourism White Rock, and White Rock BIA have actively collaborated towards creating effective destination-based way-finding signage. Signage developed for East Beach, West Beach, Uptown, and Five Corners areas incorporates branding, maps, a business directory, directional arrows to community attractions, and editorial content. Signage includes a bar code that allows smart phone users to connect directly with the most up-to-date information. An example of the City's new way-finding signage is displayed in **Figure 4.31**.



Figure 4.30

White Rock Wayfinding Signage Strategy



- ▶ **Preferred routes.** The strategy directs visitors to use arterial and collector (primary collectors where possible) roadways to access the key destinations. Visitors should not be directed along local streets.
- ▶ **City gateways.** Six City gateways are identified as the primary routes used to access White Rock from locations outside of the City. These gateways would provide enhanced signage welcoming visitors to the City and providing initial directions to the two key destinations.
- ▶ **Directional signage.** Small directional signs would be posted at key intersections throughout White Rock to direct visitors to the destinations along the preferred routes. The signs would incorporate the unique symbols and colours for the two destinations. Since 2006, small directional signs as shown in **Figure 4.32** below, have been posted at several key intersections.

- ▶ **Destination gateways** would be developed on key roadways leading into each of the two destination areas. These gateways would welcome visitors to the destination and provide direction to parking and other highlights within the area. Ten destination gateways have been identified.
- ▶ **Enhancing Highway signage exposure** along Highway 99 is essential to increase awareness of White Rock services, attractions, the waterfront, accommodation, restaurants and other tourism amenities. In 2012,

**Figure 4.31** White Rock's New Destination Based Way-Finding Signage



**Figure 4.32** Directional Signage







Tourism White Rock in collaboration with White Rock BIA produced the White Rock Community Signage Assessment and Development Program – a report that identified wayfinding challenges with a specific focus on identifying issues with current signage along Highway 99. The report noted a general lack of adequate signage related to White Rock along the freeway and suggested ways of improving current signage and locations for additional signage along the Highway. The City of White Rock should work with the Ministry of Transportation to ensure all primary access points along Highway 99 (and its associated ramps) are adequately signed and that all services represented on blue confirmatory signage along the highway are up to date.

**Table 4.14** summarizes the estimated number of each type of sign and preliminary cost estimates for each category based on a range of unit costs from similar projects in other BC communities. The actual capital cost to undertake this program will depend significantly on the preferred scope (such as materials, landscaping, and so forth) for each type of sign.

Implementation of the wayfinding signage strategy is identified as a **high priority**.

**Table 4.14** Wayfinding Signage Summary

TYPE	ESTIMATED NUMBER OF SIGNS / LOCATIONS	PRELIMINARY CAPITAL COST
City Gateway	6	\$120,000 – \$150,000
Directional Sign	35	\$10,500 – \$24,500
Destination Gateway	10	\$50,000 – \$100,000



## g) Managing Goods Movement

While not specifically servicing the City of White Rock, one of the most significant goods movement routes in the City is the BNSF rail line which connects Seattle with Vancouver and runs directly through the heart of White Rock, B.C. It has been identified that within the past decade there has been an increase in freight rail traffic and the shipment of more dangerous goods. The City of White Rock has expressed safety concerns relating to the spike in rail traffic and passed a unanimous resolution directing staff to initiate the location of the BNSF rail line away from the city's waterfront. The recommendations made throughout this Plan specific to the railway line and particularly the widening of the waterfront promenade, are based on the railway being relocated in the future.

Aside from rail, the most common type of goods movement in White Rock are delivery trucks that are accessing restaurants and businesses along Marine Drive and Johnston Road. Through consultation and discussions with the City it has been identified that the narrow right of ways and lack of back lanes on Marine Drive can make deliveries difficult and often result in traffic backups along Marine Drive. Unfortunately, there are limitations on how this issue can be rectified, one recommendation is to establish delivery times along Marine Drive within the City's Bylaw, requiring deliveries to occur in the morning (prior to 10 am) when activity along the Waterfront is still minimal.

The City of White Rock has streets dedicated to Truck Routes (Bylaw No. 1529). Trucks are permitted along North Bluff Road, Johnston Road, parts of Nichol Road, Finlay Street, Buena Vista Avenue, Thrift Avenue, Oxford Street, Martin Street and Best Street. The Truck Routes will not be amended and remains the same.





The ability of residents and visitors to find a place to park when they are visiting destinations in White Rock is critical to the economic success of the Waterfront and Town Centre. It is also a significant contributor to the City's annual revenues. The City manages the supply of on-street and off-street parking to support the economic vitality of the City, while managing impacts of parking on neighbourhoods, recognizing that parking policies and availability can influence people's transportation choices. It is important that vehicle parking options throughout the city be well maintained, easy to use, and available for users when needed. As seen in **Figure 4.28** on the following page, metered parking in the city is concentrated mainly along the Waterfront including West and East Beaches, as well as at Centennial Park and the Peace Arch Hospital. Parking is not metered in the Town Centre. As the city grows in residents and employees, parking management and supply issues will likely become increasingly important. It is important to note that much of the City's existing parking is not located on City property and the City is currently renting the land. Ensuring that new parking structures are located on White Rock property will ensure the City receives all revenues.



The 2006 STP detailed four strategies specific to parking in the City. The four strategies along with their associated priorities are outlined in **Table 4.15** below. A generalized statement on their implementation status is also included.

**Table 4.15** Parking Strategies

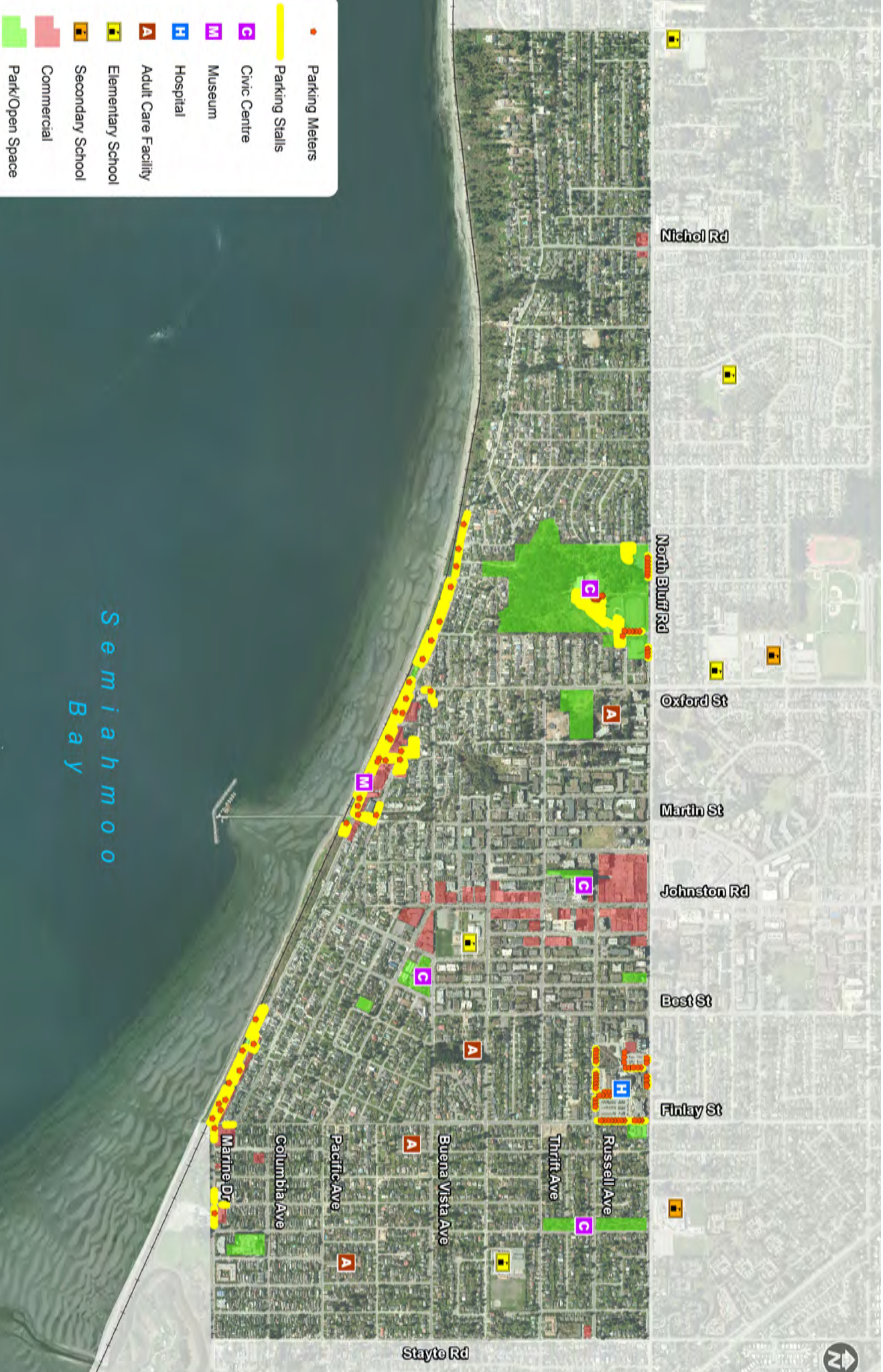
STRATEGY	PRIORITY	STATUS
Manage parking supply	High	Partial completion – the City has added additional signage that indicates where parking is available
Manage parking demand	Moderate	Partial completion - Provided basic signage for parking but have not installed dynamic signage
Plan for parking facilities	High	Not complete
Develop integrated parking and transit strategies	Low	Not completed

Directions





Figure 4.29 Existing Metered Parking Stalls





Building off of the strategies identified in the 2006 STP, the following six strategies are identified in the STP to make parking convenient and accessible for residents and visitors:

- a** Enhance Waterfront parking areas
- b** Manage parking supply
- c** Manage parking demand
- d** Develop integrated parking and transit strategy
- e** Plan for new parking facilities
- f** Develop flexible parking requirements
- g** Parking in residential neighbourhoods

Each of these strategies are described in greater detail below.

- a) Enhance Waterfront Parking Areas.** The existing Waterfront parking in White Rock in many ways is one of the barriers of pedestrian access to the Waterfront. In many cases pedestrians, once exiting their car, have to walk through parking lots to access the Beach and promenade or businesses along Marine Drive. Providing pavement markings and painted crosswalks that direct pedestrians through the parking lot can help with connectivity and provide pedestrians a safer place to walk. In addition, providing wayfinding and making stairways and beach access points more visible can make accessing the beach easier as shown in **Figure 4.30**.

Each stairway and access point to the beach should be signed, and pavement markings should be added through the parking lot directing pedestrians to main access points, particularly those that are accessible and have ramps. Painted crosswalks are estimated to cost approximately \$2,000 each.

Enhancing existing Waterfront parking areas is identified as a **high priority**.



**Figure 4.30** Pedestrian Enhancements to Existing Parking Lots



- b) **Manage Parking Supply.** To ensure that all of the parking available in the city is being used efficiently and that the congestion that is managed, a signage strategy should be adopted in both the Waterfront and Town Centre to inform drivers where parking is available in the city. The City has already done a great job of providing basic signage that identifies the entrance and exit points of parking lots as well as the location of different parking locations throughout the city and the destinations that they provide access to. There is however, an opportunity to implement dynamic parking guidance system that monitors the usage of off-street parking lots and displays parking availability. This includes the number of empty stalls for groups of parking lots or individual lots. With this type of signage when there is no available spaces in a parking lot the signage is marked clearly as “FULL”. That way motorists are aware that they should proceed to a different lot that has spots available. There are a number of benefits associated with this type of system such as, a reduction in the amount of circulating traffic and associated congestion, reduction in the amount of noise and emissions from circulating traffic, it encourages a quicker turnaround of available stalls and it allows for increased visitor satisfaction. The implementation of this program will be phased, as the City has already installed many of the basic signage recommendations from the 2006 Plan, the STP focuses on recommendations for dynamic signage as the next phase of the Plan.

As noted, dynamic signage provides motorists with real time updates on parking availability on both an area-wide and lot by lot basis. Dynamic signage should be placed at key locations around the City including gateway locations not only to the Waterfront area but at gateways into White Rock as well as in the Town Centre, such as Johnston Road. That way, if parking is not available at the Waterfront



visitors could potentially park in and around the Town Centre and find alternative transportation to their end destination. These signs should also provide static information about direction and the location of parking lots. Dynamic signage should also be provided at the entrance to parking lots to identify how many spots are available.

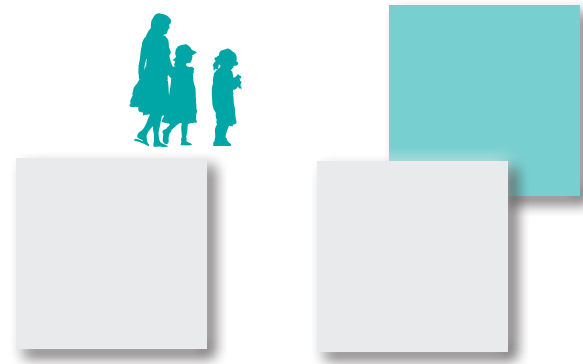
Dynamic signage does require the installation of a dynamic system at the entry/exist of all lots, as well as a central computer to process data and control the signs. Additional planning will be required to establish the location and technology that should be used specific to White Rock before costs can be provided. A dynamic system is a more significant investment than the existing basic signage and is likely to cost between \$1-2 million dollars to retrofit the existing lots. Managing parking supply through dynamic signage is identified as a **moderate priority**.

While dynamic signage is a moderate priority, additional and updated parking signage is also recommended particularly within the Town Centre and along Johnston Road to identify parking lots. General parking signage is identified as a moderate priority.

- c) **Manage Parking Demand**, particularly in the Waterfront and Town Centre of White Rock, in addition to managing the parking supply through the signage program identified above. Managing parking during peak periods can be done through a number of strategies to ensure that parking is being properly utilized and is providing the best economic value for the city. There are a number of strategies that can be adopted to help manage parking demand at key locations in the city.

Parking demand in White Rock is high during certain times of the year, and ensuring that parking is available for visitors and residents who are visiting the businesses in the city is extremely important for the economic well-being of the city. Therefore employees of White Rock businesses should be encouraged not to park at key locations or in front of businesses occupying spaces for the duration of their shift and restricting parking access for visitors and potential customers. As a result an employee parking program for the Waterfront and Town Centre should be developed to manage employee parking. There are a number of strategies that can be adopted to do this, including educating business owners and employees about the economic value of parking supply within the Town Centre and Waterfront; identifying alternative parking areas that are less used by visitors and more appropriate for long term parking; encouraging transit usage; and developing enforcement initiatives to better manage employee parking.





The City could also consider looking into the potential of using adjusted parking rates to manage turnover rates and the length of time vehicles are parked at certain locations. By having higher prices at locations where high turnover is encouraged, such as on-street parking and desirable spots, will encourage a high turnover. Higher prices can also be charged at peak periods where spots are in high demand, and in contrast lower prices can be in place at locations where parking is further away from destinations, overflow lots, and where spots are often underused.

The management of employee parking in the Waterfront and Town Centre and the implementation of a variable pricing scheme have been identified as a **moderate priority** and will likely be tied into other transportation, parking and development projects occurring over the long term.

- d) **Developing an Integrated Parking and Transit Strategy** will be particularly important as local transit service and better access between the Town Centre and the Waterfront occurs. It will also be important if employees and residents are encouraged to park distant from their places of employment or encouraged to leave their car at remote parking lots (as additional parking lots are established). As noted in the Transit Chapter, it will be critical that the City work with TransLink and other local stakeholders to develop a long-term strategy for integrating parking and transit. A well-integrated plan will not be possible with the support of these groups.

In order to properly integrate parking and transit, certain services need to be in place, the first of which includes additional access to parking that would be located at a far enough distance that individuals would need to take transit to complete the final leg of their trip. Secondly, high frequency local transit service, such as the proposed circulator route (or the existing circulator that runs during the summer months by Tourism White Rock) would need to run at a frequency that would attract users and not add too much additional time to the trip. This would need to be 5 to 10 minute service that would pick users up close to where they park.


Developing an integrated parking and transit strategy is a **low priority** and longer term option that will require participation from a number of different stakeholders and will develop as other strategies identified in this plan are put in place.



e) **Plan for New Parking Facilities** to provide additional parking at key locations and at additional locations throughout the city. These new parking facilities should be developed while adhering to the policies and goals outlined by White Rock's plans and strategies such as those found in the Official Community Plan and the Town Centre Development Guidelines and should ensure they maintain the city's livability and natural environments. The City of White Rock has already identified the desire for an additional parking facility located along the waterfront. A range of options for additional parking facilities include:

- ▶ **New city-owned facilities** which the City could undertake the design and construction of. These facilities could be either surface or structured lots that the city would own and manage. While this would require the city to pay the upfront capital costs they would recover those costs through parking revenues.
- ▶ **New facilities built as new developments occur**, provides an alternative option. The City can work cooperatively with private developers when as they are looking to construct new developments within the City. By sharing the cost of building the facilities in new developments the City can ensure that a portion of the parking provided is available for public use, and the remainder is reserved for private use.
- ▶ **Remote parking in existing or upgraded lots** particularly at peak times and when there are special events. The City would have to work cooperatively with the agencies that own these facilities and would need to be considered at locations where there has been consideration about how these visitors who are parking in these remote spots will ultimately get to their final destinations. Some potential remote parking options include White Rock Elementary School, Earl Marriott Secondary and Centennial Park. However, there are advantages and disadvantages to each of these options the most significant of the issues is the potential conflict with other parking users, providing additional transportation options, and need to enter into an agreement with other agencies. The advantages of these options include the low cost of utilizing these facilities and the schools in particular will have spaces available during the peak periods in the summer.



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- ▶ **Upgrade existing lots and technologies.** It is important that the City can provide parking facilities that have current technologies and are in good operational condition. The Plan recommends the City rehabilitates parking lots in need particularly along the waterfront. In addition, the City will update existing metres and metre readers in 2014.
  - ▶ **Electric Vehicle Charging Startions.** The City currently has one charging station located at the City's operations yard. The City will explore opportunities to provide more charging locations within the City. Some proposed locations include Marine Drive and at City Hall.

Planning for new parking facilities is considered a **high priority** for the City. It is understood however that establishing remote parking locations will be a short term high priority whereas establishing new facilities, either city owned or through development will likely occur over the longer term.

- f) **Develop flexible parking requirements,** to better utilize space reserved for parking at non-peak periods. By having flexible parking requirements the City can better control how and when parking spaces are available, if there are time restrictions on certain parking locations (that are adjusted for certain times of the day or year), and if there are opportunities to use underutilized parking at non-park times for other uses. Where parking spaces can be better utilized by permanently or temporarily changing their use, parking spaces can be used to create more interesting streetscapes and support surrounding businesses. City or community-led initiatives throughout North America have been able to transform on-street parking spaces into temporary parks, café/restaurant seating areas, gardens, and other active uses. The City of Vancouver, as an example, has the VIVA, which is an ongoing program that initiated parklets within Downtown Vancouver. The City of Surrey's PARKit program created a pop-up park in Surrey City Centre. There are also examples from other cities including Nanaimo, which converted on-street parking spaces into a widened sidewalk for café seating. The City should develop processes to assess, manage, and support active street uses on sidewalks and within the street. The City of White Rock should consider implementing flexible parking requirements at on-street parking locations within the Town Centre and in one of the parking lots at the Waterfront.

This strategy which encourages the City to develop flexible parking requirements that can help transform underutilized parking facilities into vibrant neighbourhood spaces is identified as a **high priority**. Focusing at first with finding opportunities to tie in these types of initiatives with other community events.



The table below outlines the cost and priority of the proposed parking improvements.

**Table 4.16**

**Parking Costs**

PRIORITY	ESTIMATED COST
High	\$ 300,000
Medium	\$ 420,000
Low	\$ 4,120,000
Total	\$4,840,000

- g) **Parking in Residential Neighbourhoods.** It has been identified that in some neighbourhoods residential parking is limited and even further constrained by the provision of secondary suites and the hospital. Amending parking restrictions to residents only (permit parking) and amending the zoning bylaw to require property owners to provide adequate parking on the property for secondary suite tenants are strategies that can help alleviate parking pressures on residential neighbourhoods.









# [5.0 MOVING FORWARD]

**5.1** Summary of Costs

**5.2** Funding Strategy

**5.3** Monitoring



Introduction



Setting the Stage



Shaping the Future



Directions



Moving Forward







# 5.1 SUMMARY OF COSTS

The Strategic Transportation Plan provides long-term transportation goals for the City of White Rock, along with a series of directions to achieve these goals. This section presents some recommendations and directions for moving forward and potential funding sources, and other opportunities to make the directions and priorities outlined in this report possible. Throughout the report projects have been identified as being high (0 to 5 years), medium (5 to 10 years), and low priority (10 years and beyond) priorities for the City. This section summarizes these projects and provides guidance on implementation.

The following sections summarize the priorities and costs for capital improvements that are identified within the Strategic Transportation Plan and which are within the City's jurisdiction. The recommended capital improvements are grouped into the following categories:

- ▶ Sidewalk Improvements ;
- ▶ Bicycle network Improvements;
- ▶ Transit improvements;
- ▶ Intersection and crossing improvements; and
- ▶ Parking projects.

In addition to these capital investments that are within the City's jurisdiction, there are other costs that are not included, such as transit service improvements (TransLink). The implementation strategy includes planning-level cost estimates for intersection improvements (road network),



transit, walking and cycling improvements. Where possible, the implementation strategy has used road network costs identified from previous studies, including costs identified in the City's 2009 Development Cost Charge (DCC) Review, which have been factored up 10% to accommodate for inflation.

Cost estimates have not included any design work, are provided for discussion purposes only, and should be confirmed through future phases of planning and design. Costs for identified projects could vary significantly for each initiative as costs change over time and are typically not used for project budgeting purposes. In addition, possible contributions from other agencies and the private sector are not possible to estimate. The costs presented in the implementation strategy are largely for comparative purposes and should be refined further to establish project budgets. A summary of the level of investment by priority for all the capital projects can be seen in **Table 5.5**.

**Table 5.1** Intersection and Street Improvements

PROJECT	HIGH	MEDIUM	LOW	TOTAL
Pedestrian Activated Signal	\$ 250,000	\$1,750,000	\$ -	\$ 2,000,000
Pedestrian Countdown Timers	\$ 48,000	\$ 16,000	\$ 8,000	\$ 72,000
Audible Signals	\$ 75,000	\$ 22,500	\$ 15,000	\$ 112,500
Bicycle Push Buttons	\$ 15,000	\$ 10,000	\$ 5,000	\$ 30,000
Crosswalk	\$ -	\$ -	\$ 10,000	\$ 10,000
Curb Extensions	\$ 40,000	\$ 50,000	\$ 140,000	\$ 230,000
Tactile Surfaces	\$ 20,000	\$ 8,000	\$ 2,000	\$ 30,000
Total	\$ 448,000	\$1,856,500	\$180,000	\$ 2,484,500





**Table 5.2** Transit Improvements

PRIORITY	ACCESSIBLE	SHELTER	BENCH	TOTAL
High	\$55,000	\$150,000	\$13,000	\$218,000
Medium	\$75,000	\$240,000	\$5,000	\$320,000
Low	\$165,000	\$150,000	\$25,000	\$340,000
Total	\$295,000	\$540,000	\$43,000	\$878,000

**Table 5.3** Sidewalk Improvements

PRIORITY	LENGTH (M)	ESTIMATED COST
High	4,184	\$1,255,200
Medium	7,003	\$2,100,900
Low	6,049	\$1,814,700
Total	17,236	\$5,170,800

**Table 5.4** Bicycle Network Improvements

FACILITY TYPE	DISTANCE (KM)	HIGH PRIORITY	MEDIUM PRIORITY	LOW PRIORITY	TOTAL COST
Bicycle Lane	2.91	\$15,000	\$75,000	\$ -	\$90,000
Shared Use Lane	8.00	\$66,000	\$5,000	\$49,000	\$120,000
Cycle Track	2.15	\$ -	\$ -	\$535,000	\$535,000
Off-Street Pathways (Note: Also for pedestrian use)	3.60	\$ -	\$ -	\$2,050,000	\$2,050,004
Total	16.67	\$81,000	\$80,000	\$2,634,000	\$2,795,000

**Table 5.5** Estimated Summary Level of Investments for Capital Improvements

PRIORITY	SIDEWALK NETWORK	BICYCLE NETWORK	TRANSIT	STREETS & INTERSECTIONS	PARKING	TOTAL
High	\$ 1,255,200	\$ 81,000	\$ 218,000	\$ 448,000	\$ 300,000	\$ 2,302,200
Medium	\$ 2,100,900	\$ 80,000	\$ 320,000	\$ 1,856,500	\$ 420,000	\$ 4,777,400
Low	\$ 1,814,700	\$ 2,050,000	\$ 340,000	\$ 180,000	\$ 4,120,000	\$ 8,504,700
Total	\$5,170,800	\$2,211,000	\$878,000	\$2,484,500	\$ 4,840,000	\$15,584,300

The totals based on priority seen in the table above have been broken down further, by timeline in **Table 5.6** below. This table outlines the level of investment that could be required on a yearly bases to complete the projects within a given timeline. For example, the completion of all high priority projects would require the allocation of \$460,000 per year if the City chose to implement them over a five-year timeline. However, if the completion occurred over a 20 year timeline this would require an \$115,000 yearly investment. This does not necessarily indicate how much the City would pay but an estimated cost of the projects. The following section outlines some potential funding opportunities that are available to White Rock and other municipalities in the Region.

**Table 5.6** Summary of Anticipated Costs by Priority and Timeline

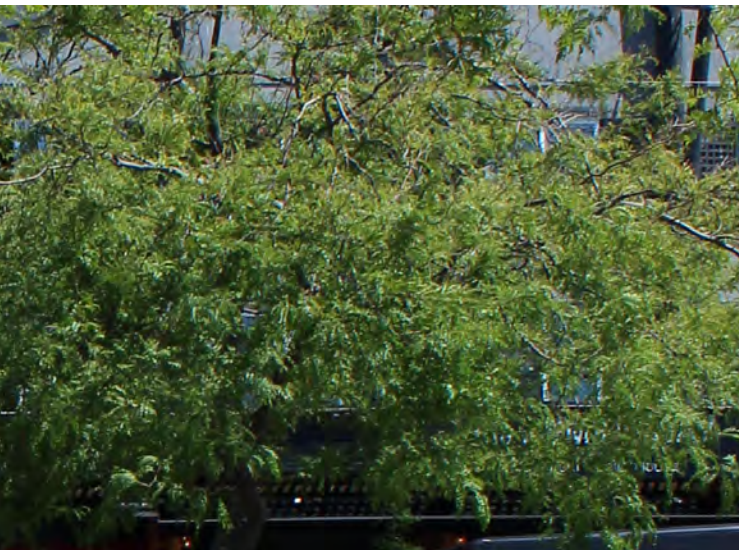
	PRIORITY		
	HIGH	MEDIUM	LOW
Total Cost (\$ million)	\$2.3	\$4.8	\$8.5
Annual Expenditure Estimate (average annual cost for various timelines)			
5 year timeline	\$460,000	\$ -	\$ -
10 year timeline	\$230,000	\$478,000	\$850,500
20 year timeline	\$115,000	\$239,000	\$425,250





Wherever possible, the City of White Rock should work with other agencies and levels of governments, and developers to establish cost sharing agreements or to seek grant opportunities in order to off-set total project costs. As the cost of the high priority projects is estimated to be approximately \$2.3 million, this can be significantly reduced by pursuing external funding sources and partnership opportunities for many of the identified projects. This section describes several funding strategies and potential funding sources that the City may consider to help leverage its investments and to maximize its ability to implement transportation improvements.

The City should pursue all available sources of funding for transportation facilities and programs, including the programs identified below. This can include leveraging other funding sources within the City, such as using development cost



charges. While local governments are often required to front-end the cost of growth-related infrastructure, much of these costs can be recovered through DCC's as growth occurs. The City of White Rock is currently in the process of completing a DCC Review, and through DCC's there is the potential that some of the City's major road projects can be recoverable through DCCs over time.

In addition, the City should pursue other external sources of funding such as developers, TransLink, the Federal and Provincial Governments and other benefitting agencies and organizations. As funding opportunities change regularly, the City should regularly check with all levels of government to keep up to date on current funding opportunities. Some options for the City to pursue include:

- ▶ Major Road Network (MRN) Minor Capital Program is an annual allocation of TransLink capital funds dedicated to managing and improving the efficiency of the existing MRN network. Eligible projects include minor capital works such as improvements to MRN intersections, geometrics, safety, and network continuity.
- ▶ Major Road Network (MRN) Operation, Maintenance and Rehabilitation Program is allocated on an annual basis to fund the operation, maintenance and rehabilitation of the Major Road Network on a pro rata basis, depending on the number of MRN lane kilometres within each municipality.
- ▶ Transit-Related Road Infrastructure Program (TRRIP) is allocated for








transit improvements, such as transit priority signals, queue-jumping lanes for buses, and bus lanes. TransLink contributes up to half of the costs of municipal capital projects, up to the maximum funding allocated to each municipality.

- ▶ Bicycle Infrastructure Capital Cost Sharing Program (BICCS) is intended to encourage municipalities to construct more bicycle routes and remove physical barriers to cycling. Funding is available in both “block allocations” on a per capita basis, and “regional needs” funding based on a set of criteria including safety, network contribution, demand and adherence to guidelines. Funding through TransLink’s BICCS program is typically up to 50 percent of the project cost.
- ▶ Infrastructure Canada manages several programs that provide funding for environmental and local transportation infrastructure projects in municipalities across Canada. Typically, the federal government contributes one-third of the cost of municipal infrastructure projects. Provincial and municipal governments contribute the remaining funds, and in some instances, there may be private sector investment as well.
- ▶ Provincial programs and initiatives such as Provincial Cycling Investment Program (PCIP) and Cycling Infrastructure Partnerships Program (CIPP) offer funds to municipalities undertaking projects to support and encourage cycling at the local-level.
- ▶ Green Municipal Funds. The Federation of Canadian Municipalities manages the Green Municipal Fund, with a total allocation of \$550 million. This fund is intended to support municipal government efforts to reduce pollution, reduce greenhouse gas emissions and improve quality of life. The expectation is that knowledge and experience gained in best practices and innovative environmental projects will be applied to national infrastructure projects.

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- ▶ ICBC provides funding for road improvements, including pedestrian and bicycle facilities, particularly where these have the potential to reduce crashes, improve safety, and reduce claims costs to ICBC. Funding is available through ICBC's Road Improvement Program, for studies and implementing safety improvements. Other ICBC programs include the Speed Watch Program (through the Community Policing Centres), Speed and Intersection Safety Program, Counter Attack, Operation Red Nose, and Road Sense Speaker Program for Schools.
  - ▶ Private sector. At the time of development many corporations wish to be good corporate neighbours — to be active in the community and to promote environmentally-beneficial causes. Bicycle and pedestrian facilities are well-suited to corporate sponsorship, and have attracted significant sponsorship both at the local level and throughout North America. Examples in B.C. include Construction Aggregates in Sechelt, which constructed an overpass over a gravel conveyor to provide a link for pedestrians and cyclists, and 7-Eleven and Molson Breweries which have sponsored multi-use pathways in Vancouver, Burnaby and New Westminster. In addition, VanCity provides funding through its Environmental Fund and TD provides funding through its Friends of the Environment Foundation.







A monitoring program is essential to ensure that the STP is implemented as intended, and to determine whether the plan is achieving its goals. A monitoring program can enable City staff to justify continued expenditures and allocation of resources to implement prioritized initiatives of the STP. Monitoring also provides a means of identifying changing conditions which would require changes to the STP. The monitoring program needs to be:

- ▶ **Meaningful.** The monitoring program will need to outline a monitoring strategy that yields meaningful results and can point to the success in achieving the City's broad goals and objectives, such as the OCP, greenhouse gas reduction, promotion of sustainable modes of transportation, etc.



- ▶ Measurable. The monitoring program needs to establish criteria that are readily measurable and for which data or information can be readily obtained.
- ▶ The monitoring program will focus on two components: first, the degree of progress in implementing the STP, and secondly, the outcomes of the plan, as summarized below. It is recommended that the City monitor progress in each of these areas every 1-2 years, based on data availability.

#### Implementation Progress

- ▶ Number of completed projects identified in the STP
  - Sidewalks (# projects)

- Bicycle Route (# projects)
- Transit (# and % bus stops with shelters, # and % of bus stops with benches, # and % of accessible bus stops,)
- Road Network (# projects)
- ▶ Annual investment levels
  - Walking (\$ and % of City's total transportation capital investments)
  - Cycling (\$ and % of City's total transportation capital investments)
  - Transit (\$ and % of City's total transportation capital investments)





- Street Network (\$ and % of City's total transportation capital investments)
- ▶ Network development
  - Sidewalk network (km of existing facilities)
  - Bicycle Network (km of existing facilities)
  - Transit Network (km of transit corridors)
- ▶ Mode Share of Work Trips
  - Driving (%)
  - Transit (%)
  - Walking (%)
  - Cycling (%)
- ▶ Vehicle Activity
  - Traffic Volume Counts (AM/PM vph/vpd)
  - Intersection Counts
  - Collision data (collision rate / frequency)
- ▶ GHG Emissions
  - Transportation-related GHG emissions (tonnes)

► Proximity

- Walking (% of road network with sidewalk)
- Cycling (% of City within 400 metres of existing bicycle route)
- Transit (% of City within 400 metres of transit route)







# Appendix [A]

## Detailed Cost Estimates







Table 1: Bicycle Facility Cost Estimate

Street	From	To	Length (km)	Bicycle Facility	Cost	Priority
Bergstrom Road	North Bluff Road	Marine Drive	0.20	Shared Use Lane	\$ 3,000	High
North Bluff Road	Bergstrom Road	Shared Use Path at Centennial Park	2.01	Cycle Track	\$ 500,000	Low
North Bluff Road	Shared Use Path at Centennial Park	Oxford Street	0.14	Cycle Track	\$ 35,000	Low
North Bluff Road	Oxford Street	Martin Street	0.71	Bicycle Lane	\$ 20,000	Med
North Bluff Road	Foster Street	Stayte Road	1.80	Bicycle Lane	\$ 55,000	Med
Stayte Road	Pacific Avenue	Marine Drive	0.40	Off-Street Pathway	\$ 50,000	Low
Kent Street	North Bluff Road	Marine Drive	1.64	Shared Use Lane	\$ 25,000	High
Buena Vista Avenue	Oxford Street	Stayte Road	2.48	Shared Use Lane	\$ 38,000	High
Columbia Avenue	Fir Street	Stayte Road	1.60	Shared Use Lane	\$ 25,000	Low
Fir Street	Pacific Avenue	Marine Drive	0.39	Shared Use Lane	\$ 6,000	Low
Pacific Avenue	Johnston Road	Fir Street	0.17	Shared Use Lane	\$ 3,000	Low
Martin Street	Thrift Avenue	Marine Drive	0.72	Shared Use Lane	\$ 10,000	Low
Best Street	Thrift Avenue	Buena Vista Avenue	0.40	Shared Use Lane	\$ 5,000	Med
Finley Street	Thrift Avenue	Buena Vista Avenue	0.40	Shared Use Lane	\$ 5,000	Low
Nichol Road	North Bluff Road	Marine Drive	0.39	Bicycle Lane	\$ 15,000	High
Marine Drive	Finlay Street	Coldicutt Ravine	3.20	Off-Street Pathway	\$ 2,000,000	Low
			16.67	Total	\$ 2,785,000	

Table 2: Summary of Bicycle Facility by Priority

Facility Type	Distance (km)	High Priority	Medium Priority	Low Priority	Total Cost
Bicycle Lane	2.91	\$ 15,000	\$ 75,000	\$ -	\$ 90,000
Shared Use Lane	8.00	\$ 66,000	\$ 5,000	\$ 49,000	\$ 120,000
Cycle Track	2.15	\$ -	\$ -	\$ 535,000	\$ 535,000
Off-Street Pathways (Note: Also for pedestrian use)	3.60	\$ -	\$ -	\$ 2,050,000	\$ 2,050,004
Total	16.67	\$ 81,000	\$ 80,000	\$ 2,634,000	\$ 2,795,000



Table 3: Sidewalk Cost Estimates

Roadway	From	To	Side Req'd	Distance (metres)	Estimated Total Cost	Priority
Anderson St	Marine Dr	Gordon Ave	East	18	\$ 5,458	Low
Anderson St	Gordon Ave	McDonald Ave	East	74	\$ 22,310	Low
Archibald Rd	Magdalen Ave	Blackburn Ave	West	121	\$ 36,205	Medium
Archibald Rd	Blackburn Ave	16 Ave	West	203	\$ 60,837	Medium
Ash St	Pacific Ave	Alley	West	130	\$ 38,928	High
Ash St	Alley	Columbia Ave	West	35	\$ 10,373	High
Ash St	Columbia Ave	Victoria Ave	West	88	\$ 26,469	High
Ash St	Victoria Ave	Alley	West	34	\$ 10,319	High
Balsam St	Alley	Royal Ave	East	38	\$ 11,311	Medium
Balsam St	Royal Ave	Pacific Ave	East	83	\$ 24,767	Medium
Balsam St	Pacific Ave	Semiahmoo Ave	East	81	\$ 24,242	Medium
Balsam St	Semiahmoo Ave	Cliff Ave	East	91	\$ 27,161	Medium
Balsam St	Cliff Ave	Finlay St	East	42	\$ 12,603	Medium
Bay St	Marine Dr	Gordon Ave	East	29	\$ 8,809	Low
Best St	Roper Ave	Kyle Ct	East	62	\$ 18,712	High
Best St	Kyle Ct	Buena Vista Ave	East	91	\$ 27,331	High
Bishop Rd	16 Ave	Alley	West	34	\$ 10,349	Medium
Bishop Rd	Alley	Coldicutt Ave	West	39	\$ 11,841	Medium
Bishop Rd	Coldicutt Ave	Alley	West	43	\$ 12,876	Medium
Bishop Rd	Alley	Blackburn Ave	West	45	\$ 13,573	Medium
Bishop Rd	Blackburn Ave	Magdalen Ave	West	108	\$ 32,419	Medium
Bishop Rd	Magdalen Ave	Alley	West	71	\$ 21,271	Medium
Bishop Rd	Alley	Marine Dr	West	36	\$ 10,691	Medium
Blackburn Ave	Bergstrom Rd	Lancaster St	South	569	\$ 170,621	Low
Blackburn Ave	Lancaster St	Cory Rd	South	90	\$ 27,146	Low
Blackburn Ave	Cory Rd	Nichol Rd	North	97	\$ 29,163	Low
Blackburn Ave	Nichol Rd	Bishop Rd	North	280	\$ 84,147	Low
Blackburn Ave	Kerfoot Rd	Brearley Rd	South	90	\$ 26,947	Low
Blackburn Ave	Brearley Rd	Archibald Rd	South	93	\$ 27,960	Low
Blackburn Cres	Archibald Rd	Saturna Dr	South	457	\$ 137,240	Low
Blackburn Cres	Saturna Dr	North Bluff Rd	South	53	\$ 15,843	Low
Blackwood St	Prospect Ave	Existing Sidewalk	East	46	\$ 13,825	Low
Blackwood St	Prospect Ave	Martin Street	West	193	\$ 57,900	Low
Buena Vista Ave	Best St	Dolphin St	South	88	\$ 26,253	High
Buena Vista Ave	Dolphin St	Cypress St	South	147	\$ 44,175	High
Centre St	Pacific Ave	Royal Ave	West	76	\$ 22,650	High
Centre St	Royal Ave	Alley	East	37	\$ 11,182	High

Table 3: Sidewalk Cost Estimates Continued

Roadway	From	To	Side Req'd	Distance (metres)	Estimated Total Cost	Priority
Centre St	Columbia Ave	Alley	East	34	\$ 10,198	High
Cliff Ave	Existing Sidewalk	Stevens St	North	44	\$ 13,239	Low
Cliff Ave	Stevens St	Habgood St	North	98	\$ 29,369	Low
Cliff Ave	Habgood St	Keil Cres	North	93	\$ 27,781	Low
Cliff Ave	Keil Cres	Kent St	North	86	\$ 25,837	Low
Cliff Ave	Kent St	Parker St	North	82	\$ 24,711	Low
Cliff Ave	Parker St	Lee St	North	85	\$ 25,575	Low
Cliff Ave	Lee St	Finlay St	North	189	\$ 56,597	Low
Columbia Ave	Stayte Rd	Stevens St	South	72	\$ 21,725	Medium
Columbia Ave	Stevens St	Habgood St	South	84	\$ 25,313	Medium
Columbia Ave	Habgood St	Keil St	South	80	\$ 24,053	Medium
Columbia Ave	Keil St	Kent St	South	87	\$ 26,090	Medium
Columbia Ave	Maple St	Finlay St	South	77	\$ 23,218	Low
Columbia Ave	Finlay St	Ash St	South	65	\$ 19,391	Low
Columbia Ave	Ash St	Centre St	South	560	\$ 168,133	Low
Columbia Ave	Fir St	Centre St	North	111	\$ 33,419	Low
Columbia Ave	Johnston Rd	Foster St	South	139	\$ 41,566	Medium
Columbia Ave	Johnston Rd	Fir St	South	34	\$ 10,265	High
Cory Rd	Blackburn Ave	Blackburn Ave	East	13	\$ 3,950	Low
Cypress St	Pacific Ave	Royal Ave	West	82	\$ 24,702	Low
Cypress St	Pacific Ave	Alley	East	29	\$ 8,660	Low
Cypress St	Alley	Semiahmoo Ave	East	41	\$ 12,183	Low
Cypress St	Semiahmoo Ave	Alley	East	39	\$ 11,691	Low
Cypress St	Alley	Cliff Ave	East	43	\$ 12,779	Low
Cypress St	Cliff Ave	Buena Vista Ave	East	85	\$ 25,569	Low
Dolphin St	Pacific Ave	Semiahmoo Ave	East	75	\$ 22,593	Low
Dolphin St	Semiahmoo Ave	Cliff Ave	East	85	\$ 25,478	Low
Dolphin St	Cliff Ave	Buena Vista Ave	East	13	\$ 3,800	High
Dolphin St	Buena Vista Ave	Cliff Ave	West	8	\$ 2,308	High
Dolphin St	Pacific Ave	Royal Ave	East	82	\$ 24,581	Low
Dolphin St	Royal Ave	Alley	East	37	\$ 11,062	Low
Everall St	Thrift Ave	Existing Sidewalk	West	168	\$ 50,482	High
Everall St	Existing Sidewalk	Existing Sidewalk	East	280	\$ 83,861	Low
Everall St	Roper Ave	Roper Ave	West	39	\$ 11,693	High
Everall St	Roper Ave	Thrift Ave	West	185	\$ 55,520	High
Finlay St	Buena Vista Ave	Cliff Ave	East	177	\$ 52,950	High
Finlay St	Cliff Ave	Semiahmoo Ave	East	89	\$ 26,595	High
Finlay St	Pacific Ave	Columbia Ave	East	189	\$ 56,846	High



Table 3: Sidewalk Cost Estimates Continued

Roadway	From	To	Side Req'd	Distance (metres)	Estimated Total Cost	Priority
Finlay St	Columbia Ave	Victoria Ave	East	95	\$ 28,604	High
Fir St	Existing Sidewalk	Existing Sidewalk	East	74	\$ 22,151	High
Fir St	Thrift Ave	Existing Sidewalk	West	126	\$ 37,709	High
Fir St	Royal Ave	Alley	West	41	\$ 12,166	High
Fir St	Columbia Ave	Alley	East	41	\$ 12,168	High
Fir St	Royal Ave	Alley	East	35	\$ 10,620	High
Fir St	Columbia Ave	Alley	East	33	\$ 10,004	High
Fir St	Victoria Ave	Alley	East	40	\$ 11,947	High
Foster St	Prospect Ave	Existing Sidewalk	West	36	\$ 10,871	Medium
Foster St	Prospect Ave	Existing Sidewalk	West	54	\$ 16,161	Medium
Foster St	Roper Ave	Existing Sidewalk	West	33	\$ 9,992	Medium
Foster St			East	36	\$ 10,763	Medium
Foster St			West	40	\$ 12,097	Medium
Foster St	Royal Ave	Beachview Ave	West	94	\$ 28,196	Medium
Foster St	Royal Ave	Beachview Ave	East	90	\$ 27,051	Medium
Foster St	Alley	Royal Ave	West	33	\$ 9,970	Medium
Foster St	Alley	Royal Ave	East	35	\$ 10,383	Medium
Foster St	Columbia Ave	Alley	West	37	\$ 11,081	Medium
Foster St	Columbia Ave	Alley	East	41	\$ 12,244	Medium
Hospital St	Vine Ave	Existing Sidewalk	East	34	\$ 10,325	High
Johnston Rd	Columbia Ave	Royal Ave	East	107	\$ 31,954	High
Johnston Rd	Royal Ave	Existing Sidewalk	East	20	\$ 5,944	High
Johnston Rd	Victoria Ave	Marine Dr	East	80	\$ 23,919	High
Kent St	North Bluff Rd	Russell Ave	East	181	\$ 54,161	High
Kent St	Russell Ave	Thrift Ave	West	175	\$ 52,487	High
Kent St	Thrift Ave	Roper Ave	West	180	\$ 53,922	High
Kent St	Roper Ave	Buena Vista Ave	West	182	\$ 54,473	High
Kent St	Buena Vista Ave	Cliff Ave	West	179	\$ 53,811	Medium
Kent St	Cliff Ave	Pacific Ave	West	190	\$ 56,962	Medium
Kent St	Pacific Ave	Columbia Ave	East	123	\$ 36,877	Medium
Kent St	Columbia Ave	Marine Dr	East	180	\$ 54,065	Medium
Kerfoot Rd	Blackburn Ave	Magdalen Ave	East	126	\$ 37,672	Low
Magdalen Ave	Kerfoot Rd	Brearley Rd	North	91	\$ 27,338	Low
Magdalen Ave	Brearley Rd	Archibald Rd	North	94	\$ 28,294	Low
Malabar Ave	Bishop Rd	Kerfoot Rd	South	299	\$ 89,726	Low
Maple St	Columbia Ave	Existing Sidewalk	East	129	\$ 38,627	Low
Maple St	Columbia Ave	Victoria Ave	West	100	\$ 30,120	Low
Marine Dr	Bergstrom Rd	Nichol Rd	South	789	\$ 236,760	Medium

Table 3: Sidewalk Cost Estimates Continued

Roadway	From	To	Side Req'd	Distance (metres)	Estimated Total Cost	Priority
Martin St	Existing Sidewalk	Existing Sidewalk	East	162	\$ 48,687	High
Martin St	Buena Vista Ave	Existing Sidewalk	East	30	\$ 8,913	Medium
Martin St	Buena Vista Ave	Existing Sidewalk	West	34	\$ 10,193	Medium
Martin St	Victoria Ave	Existing Trail	West	170	\$ 51,038	Medium
Marine Drive	High St	West of Oxford St	South	555	\$ 166,500	Low
Marine Drive	West of Finley St	Finley St	South	82	\$ 24,600	Medium
Marine Drive	Oxford St	Martin St	South	400	\$ 166,500	Medium
Merklin St	Thrift Ave	Existing Sidewalk	East	111	\$ 33,311	High
Merklin St	Existing Sidewalk	Existing Sidewalk	East	51	\$ 15,185	High
Moffat St	Pacific Ave	Moffat St	West	40	\$ 11,940	High
Nichol Rd	Marine Dr	Alley	East	106	\$ 31,949	Medium
Nichol Rd	Alley	Blackburn Ave	East	37	\$ 11,202	Medium
Nichol Rd	Blackburn Ave	Alley	East	47	\$ 14,060	Medium
Nichol Rd	Laurel Ave	Coldicutt Ave	East	46	\$ 13,949	Medium
Nichol Rd	Coldicutt Ave	Alley	East	40	\$ 11,912	Medium
Pacific Ave	Stayte Rd	Stevens St	South	74	\$ 22,332	Medium
Pacific Ave	Stevens St	Habgood St	South	86	\$ 25,761	Medium
Pacific Ave	Habgood St	Keil St	South	38	\$ 11,264	Medium
Pacific Ave	Keil St	Kent St	South	86	\$ 25,662	Medium
Pacific Ave	Kent St	Parker St	South	87	\$ 26,054	Medium
Pacific Ave	Parker St	Lee St	South	78	\$ 23,409	Medium
Pacific Ave	Lee St	Lee St	South	12	\$ 3,722	Medium
Pacific Ave	Lee St	Maple St	South	76	\$ 22,724	Medium
Pacific Ave	Maple St	Balsam St	South	84	\$ 25,070	Medium
Pacific Ave	Balsam St	Cypress St	South	124	\$ 37,104	Medium
Pacific Ave	Cypress St	Dolphin St	South	132	\$ 39,467	Medium
Pacific Ave	Dolphin St	Centre St	South	124	\$ 37,144	Medium
Prospect Ave	Blackwood St	Existing Sidewalk	North	38	\$ 11,378	Low
Prospect Ave	Blackwood St	Existing Sidewalk	South	34	\$ 10,315	Low
Prospect Cres	Prospect Cres	Prospect Cres	South	217	\$ 64,967	Medium
Roper Ave	Merklin St	Alley	North	33	\$ 9,982	High
Roper Ave	Kent St	Parker St	South	89	\$ 26,740	High
Roper Ave	Parker St	Lee St	South	79	\$ 23,607	High
Roper Ave	Lee St	Maple St	South	80	\$ 24,096	High
Roper Ave	Maple St	Finlay St	South	81	\$ 24,293	High
Russell Ave	Foster St	Existing Sidewalk	South	111	\$ 33,425	High
Russell Ave	Oxford St	Existing Trail	North	123	\$ 37,033	Medium
Stevens St	Thrift Ave	Existing Sidewalk	West	115	\$ 34,561	Medium



Table 3: Sidewalk Cost Estimates Continued

Victoria Ave	Finlay St	Ash St	South	113	\$ 33,776	Medium
Victoria Ave	Ash St	Fir St	South	731	\$ 219,258	Medium
Victoria Ave	Martin St	Vidal St	North	225	\$ 67,564	Medium
Vidal St	Existing Sidewalk	Existing Sidewalk	East	53	\$ 16,023	Low
Vidal St	Existing Sidewalk	Existing Sidewalk	West	57	\$ 16,959	Low
Vine Ave	Hospital St	Existing Sidewalk	South	119	\$ 35,614	High
Winter St	Thrift Ave	Existing Sidewalk	East	63	\$ 18,808	High
Total				17236	\$ 5,170,800	

Table 4: Summary of Sidewalk Cost by Priority

Priority	Length (m)	Estimated Cost
High	4184	\$ 1,255,200
Medium	7003	\$ 2,100,900
Low	6049	\$ 1,814,700
Total	17236	\$ 5,170,800

Table 5: Intersection and Street Cost Estimates

Location	Improvement	Cost	Total	Priority
North Bluff Road & Johnston Road	Pedestrian Countdown Timers (all)	\$4,000.00	\$6,000.00	High
	Tactile Surfaces	\$2,000.00		
North Bluff Rd & Bergstrom Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$18,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
	Curb Extensions (1)	\$5,000.00		
North Bluff Road & Nichol Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$18,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
	Curb Extensions (1)	\$5,000.00		
North Bluff Rd & Phoenix St	Pedestrian Countdown Timers (all)	\$4,000.00	\$23,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
	Curb Extensions (2)	\$10,000.00		
North Bluff Rd & Archibald Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$23,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
	Curb Extensions (2)	\$10,000.00		
North Bluff Rd & 146 St	Pedestrian Countdown Timers (all)	\$4,000.00	\$13,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
North Bluff Rd & Oxford St	Pedestrian Countdown Timers (all)	\$4,000.00	\$13,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
North Bluff Rd Martin St	Pedestrian Countdown Timers (all)	\$4,000.00	\$18,500.00	Medium
	Bicycle Pushbutton	\$5,000.00		
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
North Bluff Rd & Best St	Pedestrian Countdown Timers (all)	\$4,000.00	\$18,500.00	Medium
	Bicycle Pushbutton	\$5,000.00		
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
Finlay St & North Bluff Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$18,500.00	High
	Audible Signal (all)	\$7,500.00		
	Bicycle Pushbutton	\$5,000.00		
	Tactile Surfaces	\$2,000.00		
North Bluff Rd & Kent St	Pedestrian Countdown Timers (all)	\$4,000.00	\$13,500.00	High
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
North Bluff Rd & Stayte Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$13,500.00	Medium
	Audible Signal (all)	\$7,500.00		
	Tactile Surfaces	\$2,000.00		
Thrift Ave & Stayte Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$23,500.00	Low
	Audible Signal (all)	\$7,500.00		
	Curb Extensions (2)	\$10,000.00		
	Tactile Surfaces	\$2,000.00		
Thrift Ave & Johnston Rd	Pedestrian Countdown Timers (all)	\$4,000.00	\$6,000.00	High
	Tactile Surfaces	\$2,000.00		
Thrift Ave & Martin St	Pedestrian Countdown Timers (all)	\$4,000.00	\$16,500.00	Low
	Bicycle Pushbutton	\$5,000.00		
	Audible Signal (all)	\$7,500.00		

Table 5: Intersection and Street Cost Estimates Continued

Roper Ave & Johnston Rd	Pedestrian Countdown Timers (all) Tactile Surfaces Curb Extensions (1)	\$4,000.00 \$2,000.00 \$5,000.00	\$11,000.00	Medium
Marine Dr & Vidal St	Pedestrian Countdown Timers (all) Bicycle Pushbutton Audible Signal (all)	\$4,000.00 \$5,000.00 \$7,500.00	\$16,500.00	High
Marine Dr & Oxford Street	Pedestrian Countdown Timers (all) Audible Signal (all) Bicycle Pushbutton Curb Extensions (2)	\$4,000.00 \$7,500.00 \$5,000.00 \$10,000.00	\$26,500.00	High
Martin Street (between North Bluff Road and Thrift Ave - north of the park)	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Foster Street (between North Bluff Road and Thrift Ave - north of the park)	Curb Extensions (1)	\$5,000.00	\$5,000.00	Low
Thrift Avenue and Winter Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Russell Avenue and George Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Russell Avenue and Best Street	Curb Extensions (4)	\$20,000.00	\$20,000.00	Low
Russell Avenue and Finlay Street	Curb Extensions (1)	\$5,000.00	\$5,000.00	Low
Thrift Avenue and Finlay Street	Curb Extensions (4)	\$20,000.00	\$20,000.00	Low
Roper Avenue and Parker Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Roper Avenue and Lee Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Roper Avenue and Best Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Buena Vista Ave and Kent Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Buena Vista Ave and Best Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Low
Marine Drive and Kent Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Medium
Johnston Road and Beachview	Curb Extensions (1)	\$5,000.00	\$5,000.00	Medium
Russell Avenue and Fir Street	Curb Extensions (2)	\$10,000.00	\$10,000.00	Medium
Pacific Avenue and Beachview Avenue	Curb Extensions (4)	\$20,000.00	\$20,000.00	Medium
North Bluff Road and 138a Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
North Bluff Road and Blackwood Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
North Bluff Road and George Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
North Bluff Road and Merkin Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
North Bluff Road and Hospital	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
Marine Drive and Martin Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
Marine Drive and Balsam Street	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	Medium
Prospect Avenue and Johnston Road – White Rock Elementary School	Pedestrian Activated Signal	\$250,000.00	\$250,000.00	High
Russell Avenue and Best Street	Crosswalk (2)	\$2,000.00	\$2,000.00	Low
Russell Avenue and Weatherby Street	Crosswalk (2)	\$2,000.00	\$2,000.00	Low
Thrift Avenue and Winter Street	Crosswalk (1)	\$1,000.00	\$1,000.00	Low
Thrift Avenue and Best Street	Crosswalk (2)	\$2,000.00	\$2,000.00	Low
Pacific Avenue and Habgood Street	Crosswalk (1)	\$1,000.00	\$1,000.00	Low
Roper Avenue and George Street	Crosswalk (2)	\$2,000.00	\$2,000.00	Low
	<b>Total</b>	<b>\$2,484,500</b>		



Table 6: Summary of Intersection and Street Cost Estimates by Priority and Type

Priority	Pedestrian Activated Signal	Pedestrian Countdown Timers	Audible Signals	Bicycle Push Buttons	Crosswalk	Curb Extensions	Tactile Surfaces	Total
High	\$ 250,000	\$48,000	\$75,000	\$15,000	\$ -	\$40,000	\$20,000	\$ 448,000
Medium	\$ 1,750,000	\$16,000	\$22,500	\$10,000	\$ -	\$50,000	\$8,000	\$ 1,856,500
Low	\$ -	\$8,000	\$15,000	\$5,000	\$ 10,000	\$140,000	\$2,000	\$ 180,000
Total	\$ 2,000,000	\$72,000	\$112,500	\$30,000	\$10,000	\$230,000	\$30,000	\$ 2,484,500

Table 7: Transit Stop Improvement Cost Estimates

Location	At	Direction	Accessible	Cost	Shelter	Cost	Bench	Cost	Total Cost	Priority
Johnston Rd	Buena Vista Ave	SB	✓	\$ -	✗	\$15,000.00	✗	\$ 1,000	\$15,000.00	Medium Priority
Marine Dr	14970 *	EB	✓	\$ -	✗	\$ -	✗	\$ 1,000	\$ 1,000.00	Low Priority
North Bluff Rd	152 St	EB	✓	\$ -	✗	\$15,000.00	✓	\$ -	\$15,000.00	High Priority
Johnston Rd	Bluff Rd	SB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
North Bluff Rd	Johnston St	EB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
Johnston Rd	Thrift Ave	SB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
Thrift Ave	Johnston St	WB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
Thrift Ave	Foster St	WB	✗	\$ 5,000	✓	\$ -	✗	\$ 1,000	\$ 6,000.00	High Priority
Thrift Ave	Blackwood St	WB	✗	\$ 5,000	✗	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
Oxford St	Russell Ave	NB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
Marine Dr	Kerfoot Rd*	WB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 5,000.00	Low Priority
Oxford St	Goggs Ave	NB	✓	\$ -	✗	\$ -	✓	\$ -	\$ -	Low Priority
Buena Vista Ave	Dolphin St	EB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 5,000.00	Low Priority
Marine Dr	Kent St	EB	✓	\$ -	✗	\$15,000.00	✗	\$ 1,000	\$15,000.00	Medium Priority
Oxford St	16 Ave	SB	✓	\$ -	✓	\$ -	✗	\$ 1,000	\$ 1,000.00	High Priority
North Bluff Rd	Kent St	EB	✓	\$ -	✗	\$15,000.00	✓	\$ -	\$15,000.00	High Priority
Russell Ave	George St	EB	✓	\$ -	✗	\$15,000.00	✗	\$ 1,000	\$15,000.00	Low Priority
Russell Ave	Merklin St	EB	✗	\$ 5,000	✗	\$15,000.00	✓	\$ -	\$20,000.00	Low Priority
Russell Ave	Hospital St	EB	✗	\$ 5,000	✗	\$15,000.00	✗	\$ 1,000	\$20,000.00	High Priority
Russell Av	Finlay St	EB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 6,000.00	High Priority
Russell Av	Lee St	EB	✓	\$ -	✗	\$ -	✗	\$ 1,000	\$ 1,000.00	Low Priority
Russell Ave	Kent St	EB	✓	\$ -	✗	\$15,000.00	✗	\$ 1,000	\$15,000.00	Medium Priority
Russell Ave	Habgood St	EB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 6,000.00	Low Priority
160 St	Thrift Ave	SB	✓	\$ -	✗	\$ -	✓	\$ -	\$ -	Medium Priority
160 St	Buena Vista Ave	SB	✓	\$ -	✗	\$15,000.00	✗	\$ 1,000	\$15,000.00	Medium Priority
160 St	Cliff Ave	SB	✓	\$ -	✗	\$ -	✗	\$ 1,000	\$ 1,000.00	Medium Priority
160 St	Pacific Ave	SB	✗	\$ 5,000	✗	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
160 St	Columbia Ave	SB	✗	\$ 5,000	✗	\$15,000.00	✗	\$ 1,000	\$20,000.00	Medium Priority
Marine Dr	Stevens St	WB	✗	\$ 5,000	✗	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
Marine Dr	Keil St	WB	✗	\$ 5,000	✗	\$15,000.00	✓	\$ -	\$20,000.00	Medium Priority
Marine Dr	Lee St	WB	✓	\$ -	✗	\$ -	✓	\$ -	\$ -	Medium Priority
Marine Dr	Maple St	WB	✓	\$ -	✗	\$ -	✓	\$ -	\$ -	Low Priority
Marine Dr	Balsam St	WB	✓	\$ -	✗	\$15,000.00	✓	\$ -	\$15,000.00	High Priority
Marine Dr	Dolphin St	WB	✗	\$ 5,000	✗	\$ -	✓	\$ -	\$ 5,000.00	High Priority
Marine Dr	Fir St*	WB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 6,000.00	High Priority
Marine Dr	Martin St*	WB	✗	\$ 5,000	✗	\$15,000.00	✗	\$ 1,000	\$20,000.00	High Priority
Marine Dr	Vidal St	WB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 6,000.00	High Priority
Marine Dr	Oxford St	WB	✗	\$ 5,000	✗	\$15,000.00	✓	\$ -	\$20,000.00	High Priority
Marine Dr	Anderson St	WB	✓	\$ -	✗	\$ -	✓	\$ -	\$ -	Low Priority
Marine Dr	Bay St	WB	✗	\$ 5,000	✗	\$15,000.00	✗	\$ 1,000	\$20,000.00	Low Priority
Marine Dr	Magdalen Cres	WB	✗	\$ 5,000	✗	\$ -	✗	\$ 1,000	\$ 6,000.00	Low Priority

Table 7: Transit Stop Improvement Cost Estimates

Location	At	Direction	Accessible	Cost	Shelter	Cost	Bench	Cost	Total Cost	Priority
Marine Dr	Bishop Rd	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Marine Dr	Nichol Rd	WB	✓	\$ -	✖	\$15,000.00	✖	\$ 1,000	\$15,000.00	Low Priority
Marine Dr	13805	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Marine Dr	136 St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Best St	Vine Ave	NB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 5,000.00	Low Priority
Fir St	Buena Vista Ave	NB	✓	\$ -	✖	\$15,000.00	✓	\$ -	\$15,000.00	Medium Priority
Oxford St	Vine Ave	SB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 5,000.00	High Priority
Russell Ave	Stayte St	WB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Low Priority
North Bluff Rd	136 St	EB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ -	\$20,000.00	Medium Priority
North Bluff Rd	13742	EB	✓	\$ -	✖	\$ -	✖	\$ 1,000	\$ 1,000.00	Medium Priority
North Bluff Rd	Lancaster St	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
North Bluff Rd	Nichol Rd	EB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ -	\$20,000.00	Medium Priority
North Bluff Rd	Bishop Rd	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
North Bluff Rd	Phoenix Rd	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
North Bluff Rd	Kerfoot Rd	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
North Bluff Rd	Archibald Rd	EB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ -	\$20,000.00	Medium Priority
North Bluff Rd	High St	EB	✓	\$ -	✓	\$ -	✓	\$ -	\$ 5,000.00	Medium Priority
North Bluff Rd	Anderson St	EB	✖	\$ 5,000	✓	\$ -	✓	\$ 1,000	\$ 1,000.00	High Priority
Oxford St	Russell Ave	SB	✓	\$ -	✖	\$ -	✖	\$ -	\$ 5,000.00	High Priority
Thrift Ave	Oxford St	EB	✖	\$ 5,000	✖	\$ -	✓	\$ 1,000	\$ 1,000.00	High Priority
Thrift Ave	Vidal St	EB	✓	\$ -	✓	\$ -	✖	\$ 1,000	\$ 1,000.00	High Priority
Thrift Ave	Foster St	EB	✓	\$ -	✓	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Marine Dr	13800 Blk	EB	✖	\$ 5,000	✖	\$15,000.00	✖	\$ 1,000	\$15,000.00	Low Priority
Marine Dr	Nichol Rd	EB	✓	\$ -	✖	\$ -	✓	\$ 1,000	\$ 6,000.00	Low Priority
Marine Dr	Bishop Rd	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Marine Dr	Magdalen Cres	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 1,000.00	Low Priority
Marine Dr	Duprez St	EB	✓	\$ -	✖	\$ -	✖	\$ 1,000	\$ 5,000.00	Low Priority
Marine Dr	Anderson St	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 1,000.00	Low Priority
Marine Dr	Oxford St	EB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	Low Priority
Marine Dr	Elm St	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	High Priority
Marine Dr	Martin St*	EB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	High Priority
Marine Dr	Fir St	EB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	High Priority
Marine Dr	Dolphin St	EB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	High Priority
Marine Dr	Balsam St	EB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	High Priority
Marine Dr	Maple St	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Russell Ave	Habgood St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Russell Ave	Kent St	WB	✓	\$ -	✖	\$15,000.00	✖	\$ 1,000	\$16,000.00	Medium Priority
Russell Ave	Lee St	WB	✓	\$ -	✖	\$ -	✖	\$ 1,000	\$ 1,000.00	Low Priority
Russell Av	Finlay St	WB	✓	\$ -	✖	\$15,000.00	✓	\$ -	\$15,000.00	Low Priority
Russell Ave	Hospital St	WB	✓	\$ -	✖	\$15,000.00	✓	\$ -	\$15,000.00	High Priority
Russell Ave	Fir St	WB	✖	\$ 5,000	✓	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority



Table 7: Transit Stop Improvement Cost Estimates

Location	At	Direction	Accessible	Cost	Shelter	Cost	Bench	Cost	Total Cost	Priority
Marine Dr	Stevens St	EB	✓	\$ -	✖	\$ -	✖	\$ 1,000	\$ -	Medium Priority
Stayte Rd	16 Ave	SB	✓	\$ -	✖	\$15,000.00	✖	\$ 1,000	\$16,000.00	Medium Priority
Buena Vista Ave	Maple St	EB	✖	\$ 5,000	✖	\$15,000.00	✖	\$ 1,000	\$20,000.00	Medium Priority
Buena Vista Ave	Parker St	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Buena Vista Ave	Habgood St	EB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Low Priority
Columbia Av	Maple St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
160 St	Roper Ave	SB	✓	\$ -	✖	\$ -	✓	\$ -	\$ -	Medium Priority
Columbia Av	Balsam St	WB	✖	\$ 5,000	✖	\$ -	✓	\$ -	\$ 5,000.00	Low Priority
Columbia Av	Dolphin St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Centre St	Royal Ave	NB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ 1,000	\$20,000.00	Low Priority
Johnston Rd	Pacific Ave	NB	✓	\$ -	✖	\$15,000.00	✓	\$ 1,000	\$15,000.00	Medium Priority
Johnston Rd	Thrift Ave	NB	✓	\$ -	✖	\$15,000.00	✖	\$ 1,000	\$15,000.00	High Priority
Johnston Rd	Russell Ave	NB	✓	\$ -	✖	\$15,000.00	✖	\$ 1,000	\$15,000.00	High Priority
North Bluff Rd	Oxford St	EB	✓	\$ -	✖	\$15,000.00	✓	\$ 1,000	\$15,000.00	High Priority
North Bluff Rd	Everall St	EB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ 1,000	\$20,000.00	Low Priority
Bluff Rd	Blackwood St	EB	✖	\$ 5,000	✖	\$15,000.00	✓	\$ 1,000	\$20,000.00	Low Priority
Centre St	Royal Ave	SB	✖	\$ 5,000	✖	\$15,000.00	✖	\$ 1,000	\$20,000.00	Low Priority
Columbia Av	Dolphin St	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Columbia Av	Cypress St	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Columbia Ave	Maple St	EB	✓	\$ -	✓	\$ -	✖	\$ 1,000	\$ 1,000.00	Low Priority
Marine Dr	Lee St	EB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Medium Priority
Buena Vista Ave	Foster St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Buena Vista Ave	Blackwood St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Buena Vista Ave	Beach View Ave	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
Buena Vista Ave	Oxford St	WB	✖	\$ 5,000	✖	\$ -	✖	\$ 1,000	\$ 6,000.00	Low Priority
North Bluff Rd	Best St	EB	✓	\$ -	✖	\$15,000.00	✓	\$ -	\$15,000.00	Medium Priority
North Bluff Rd	Finlay St	EB	✓	\$ -	✖	\$15,000.00	✓	\$ -	\$15,000.00	Medium Priority
Total			59	\$295,000	96	\$ 540,000	62	\$43,000	\$ 878,000	

Table 8: Summary of Transit Improvements by Priority and Type

Priority	Accessible	Shelter	Bench	Total
High	\$ 55,000	\$ 150,000	\$ 13,000	\$ 218,000
Medium	\$ 75,000	\$ 240,000	\$ 5,000	\$ 320,000
Low	\$ 165,000	\$ 150,000	\$ 25,000	\$ 340,000
Total	\$ 295,000	\$ 540,000	\$ 43,000	\$ 878,000

Table 9: Parking Improvements by Priority and Type

Project Description	Priority	Unites (when applicable)	Approximate Cost
Updating meters and meter readers	High		\$ 300,000
New parking facility - Waterfront	Low		\$ 4,000,000
General Parking Signage (Lot Identifiers and Directional Signage)	Medium	20	\$ 120,000
Pedestrian enchantments to existing parking lots (wayfinding and crosswalks)	Medium	Locations to be determined	\$ 20,000
Rehabilitation of West Beach Waterfront Parking Lots	Medium		\$ 400,000
Total			\$ 4,840,000

Table 10: Summary of Parking Improvements by Priority and Type

Priority	Estimated Cost
High	\$ 300,000
Medium	\$ 420,000
Low	\$ 4,120,000
Total	\$ 4,840,000

Table 11: Summary of Combined Total by Priority

Priority	Bicycle Network	Sidewalk Network	Intersections	Transit	Parking	Total
High	\$81,000	\$1,255,200	\$448,000	\$218,000	\$300,000	\$2,302,200
Medium	\$80,000	\$2,100,900	\$1,856,500	\$320,000	\$420,000	\$4,777,400
Low	\$2,050,000	\$1,814,700	\$180,000	\$340,000	\$4,120,000	\$8,504,700
Total	\$2,211,000	\$5,170,800	\$2,484,500	\$878,000	\$4,840,000	\$15,584,300





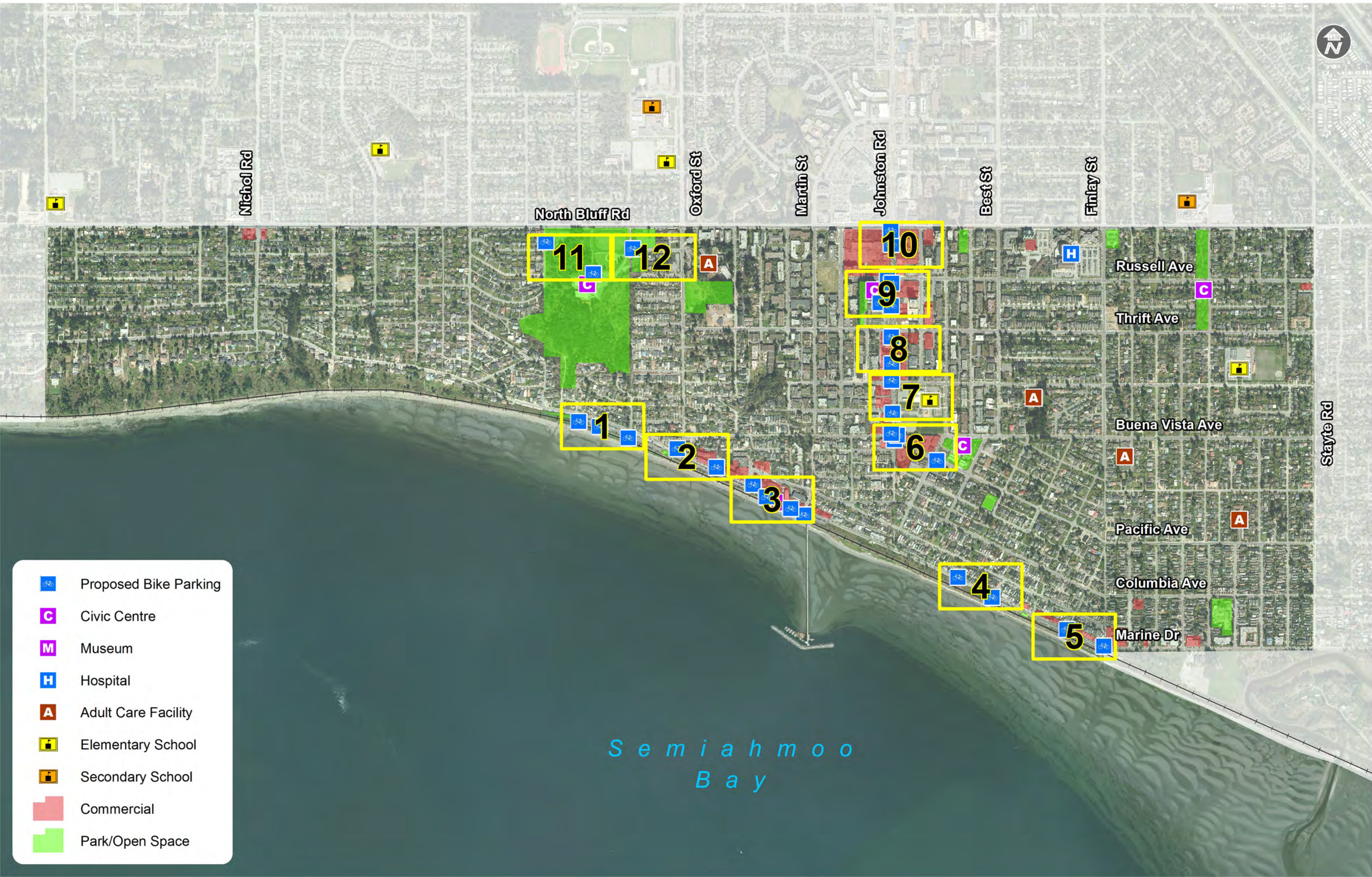
# Appendix [B]










## Detailed Bicycle Parking Locations









-  Proposed Bike Parking
-  Civic Centre
-  Museum
-  Hospital
-  Adult Care Facility
-  Elementary School
-  Secondary School
-  Commercial
-  Park/Open Space





Proposed Bike Parking





Buena Vista Ave

Marine Ln

Oxford St

Beachview Ave

Elm St

Marine Dr



Proposed Bike Parking



Commercial



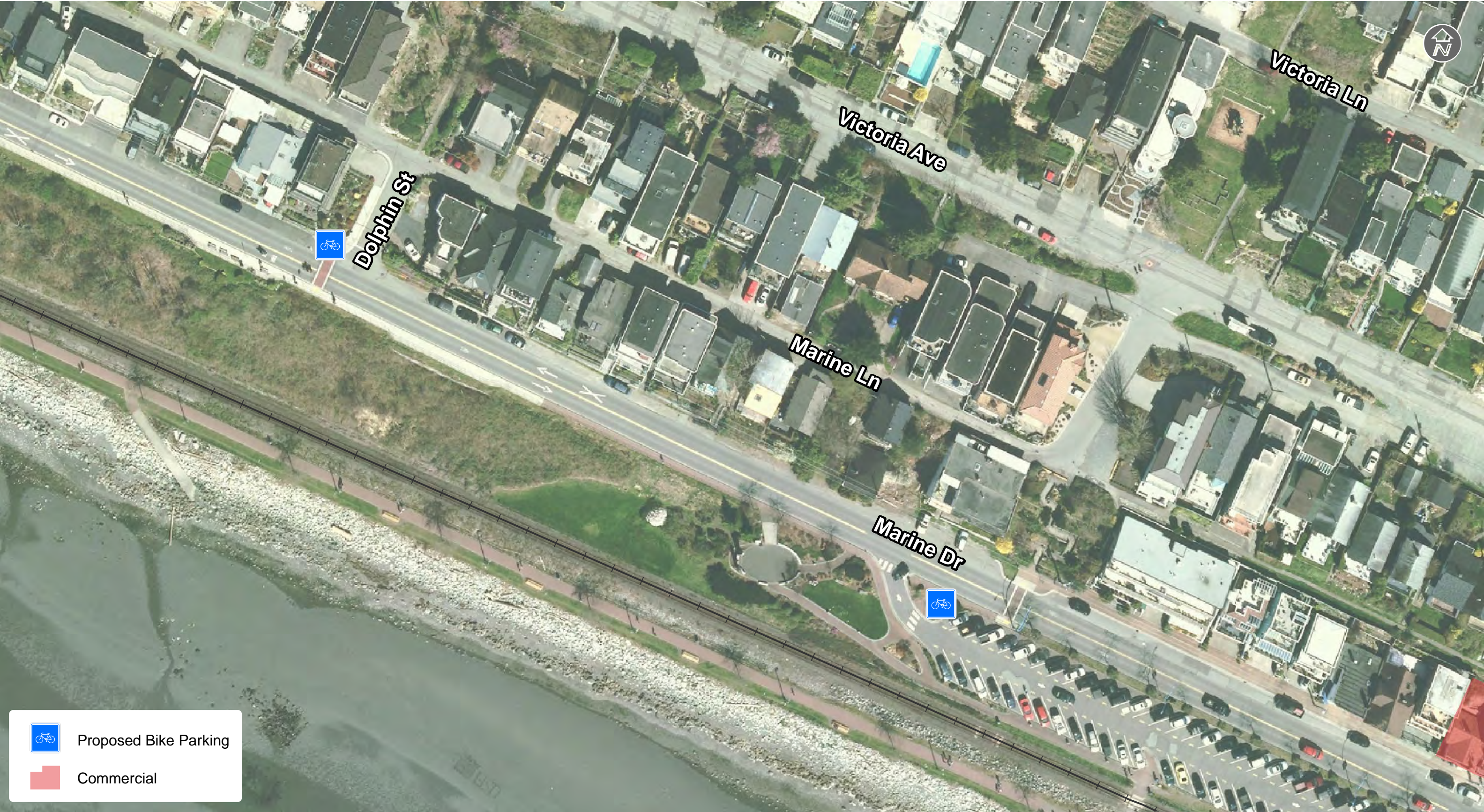


Proposed Bike Parking



Commercial



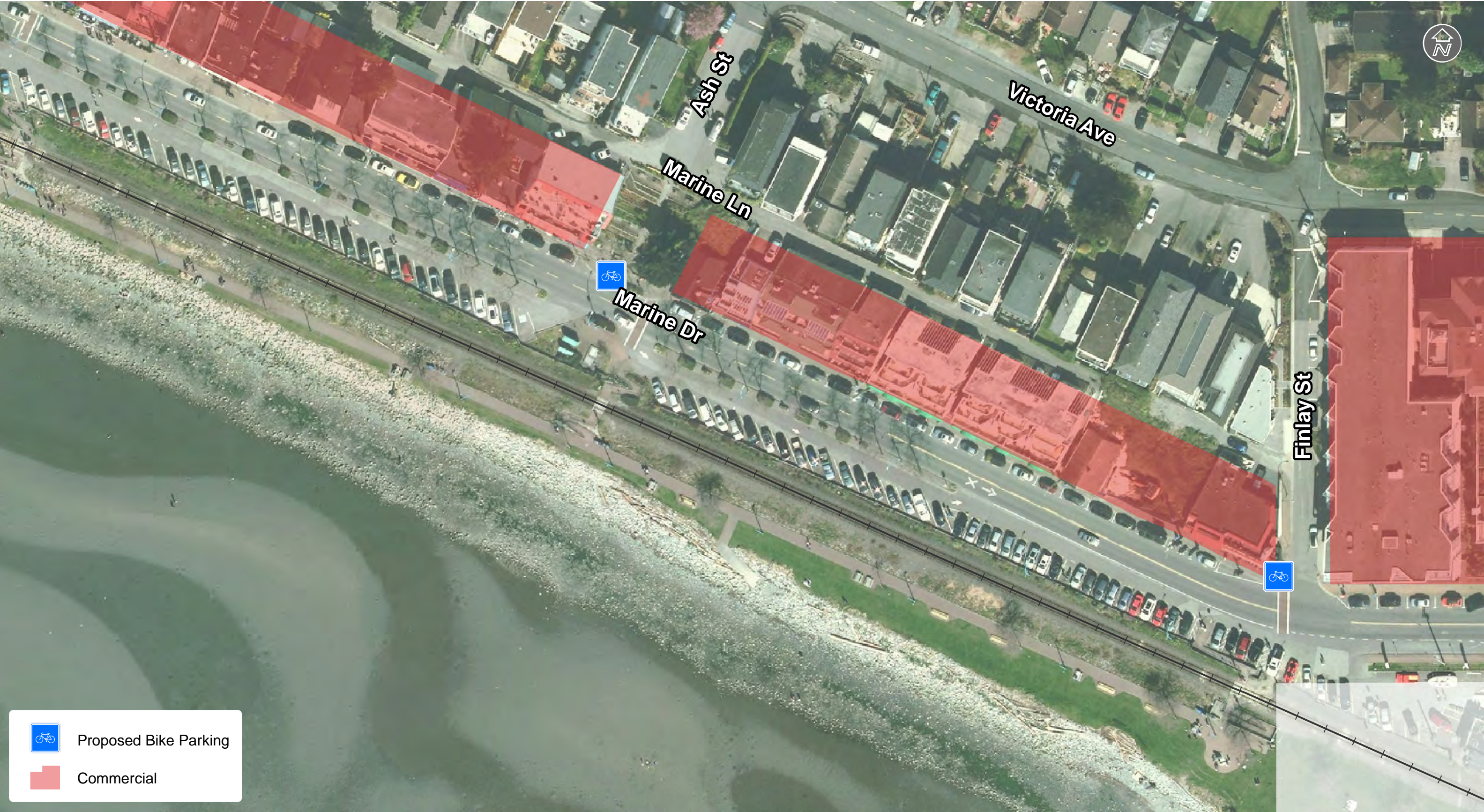


Proposed Bike Parking



Commercial



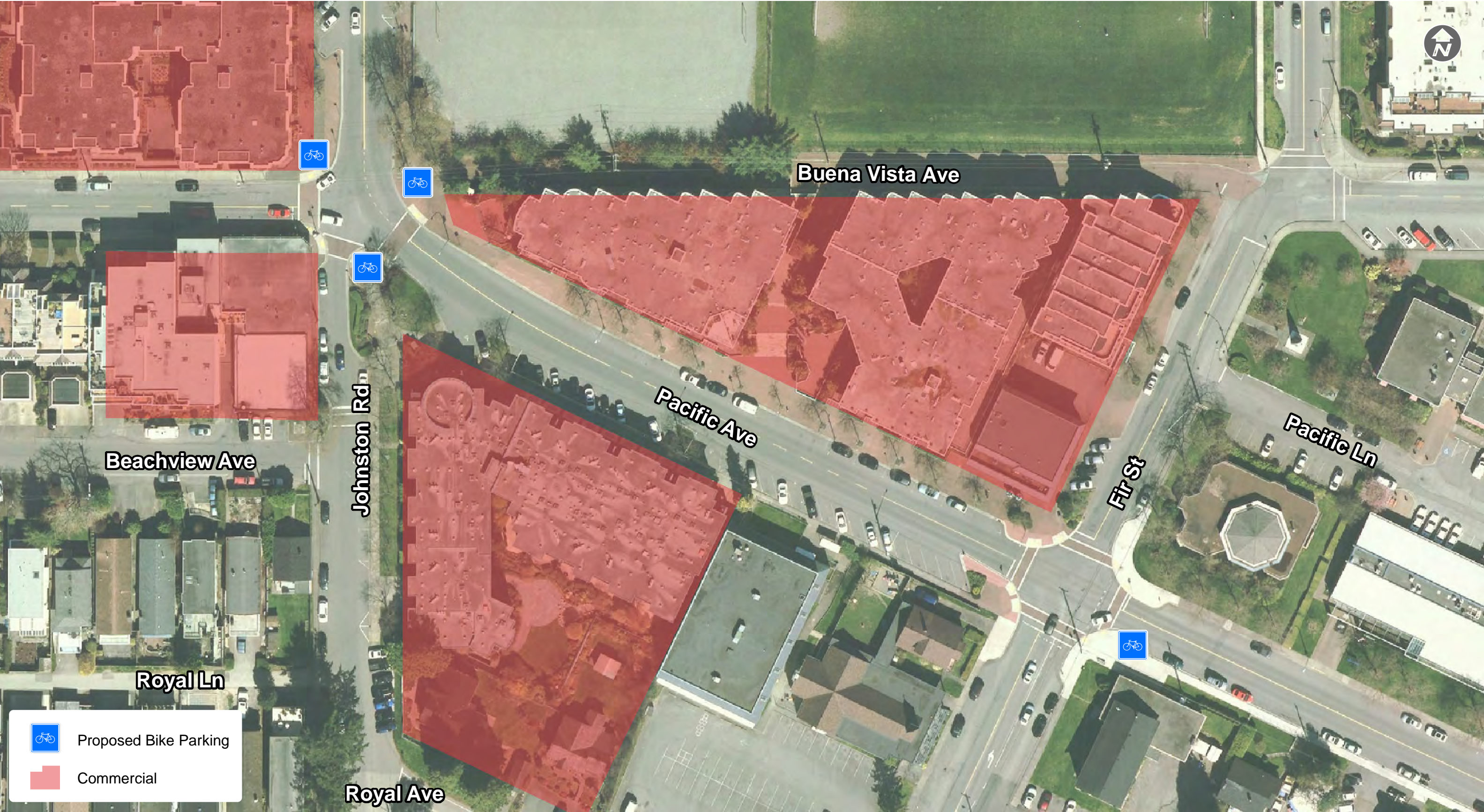


Proposed Bike Parking



Commercial



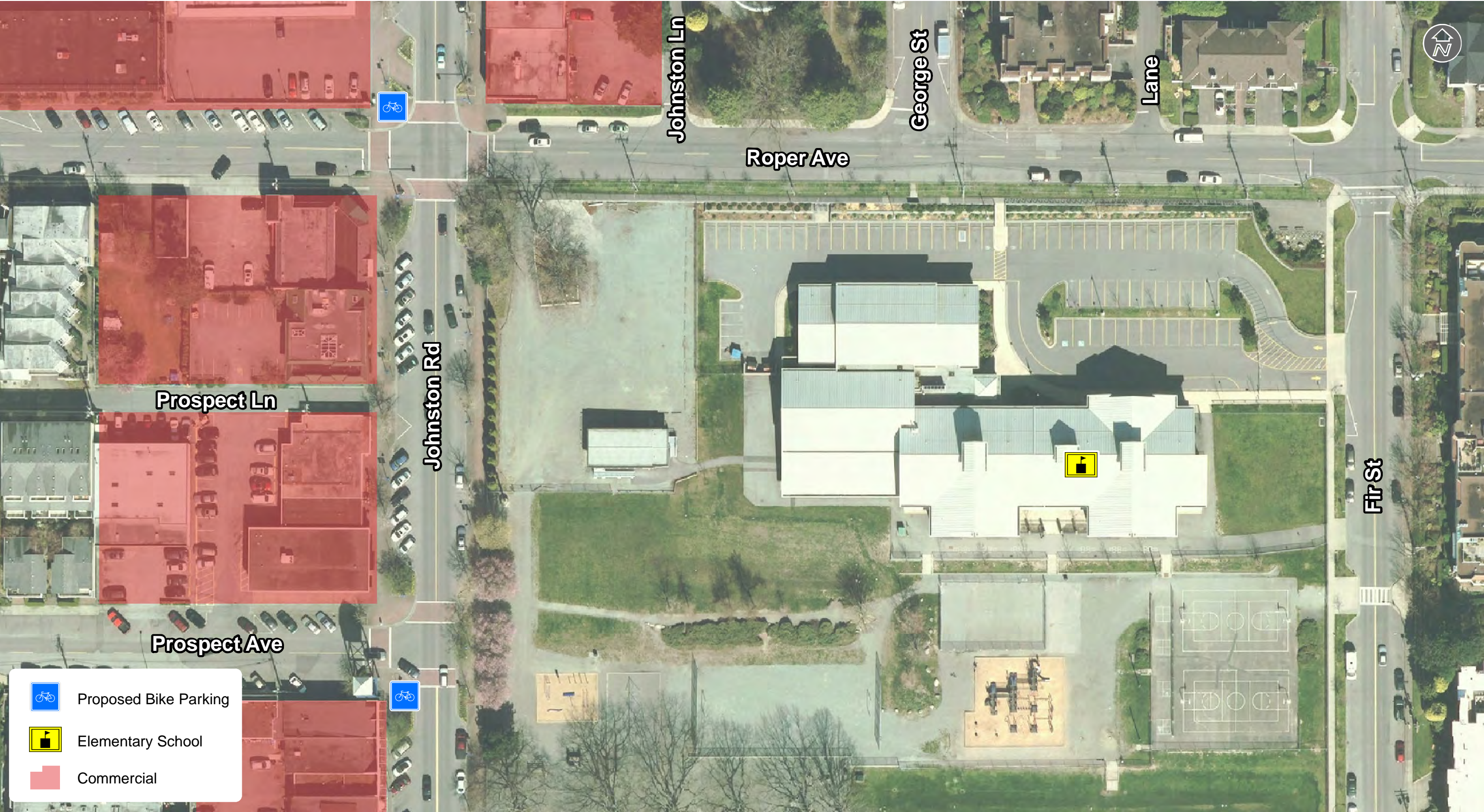


Proposed Bike Parking



Commercial





Proposed Bike Parking

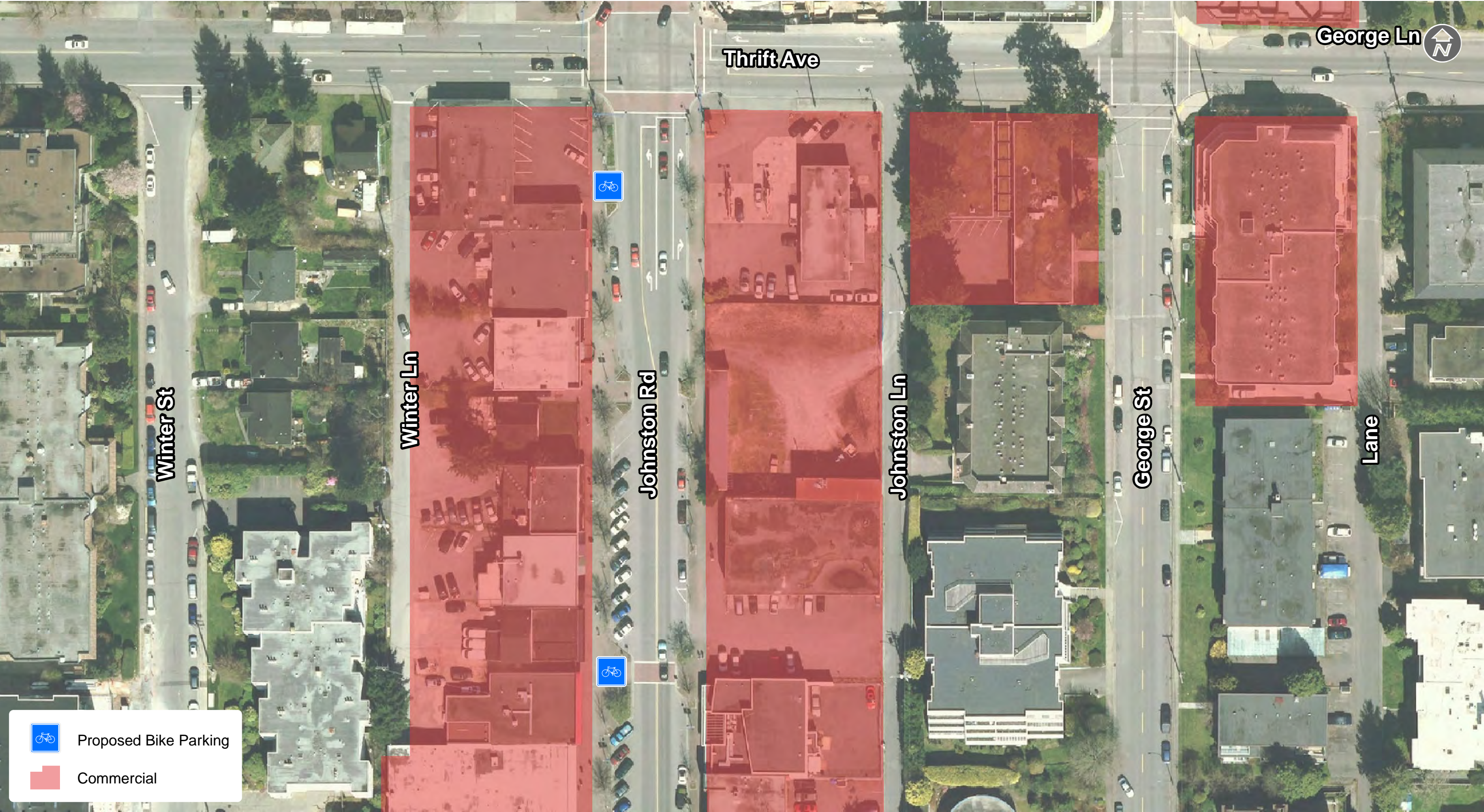



Elementary School




Commercial





 Proposed Bike Parking

 Commercial

Winter St

Johnstone Ln

Johnstone Rd

Thrift Ave

Johnstone Ln

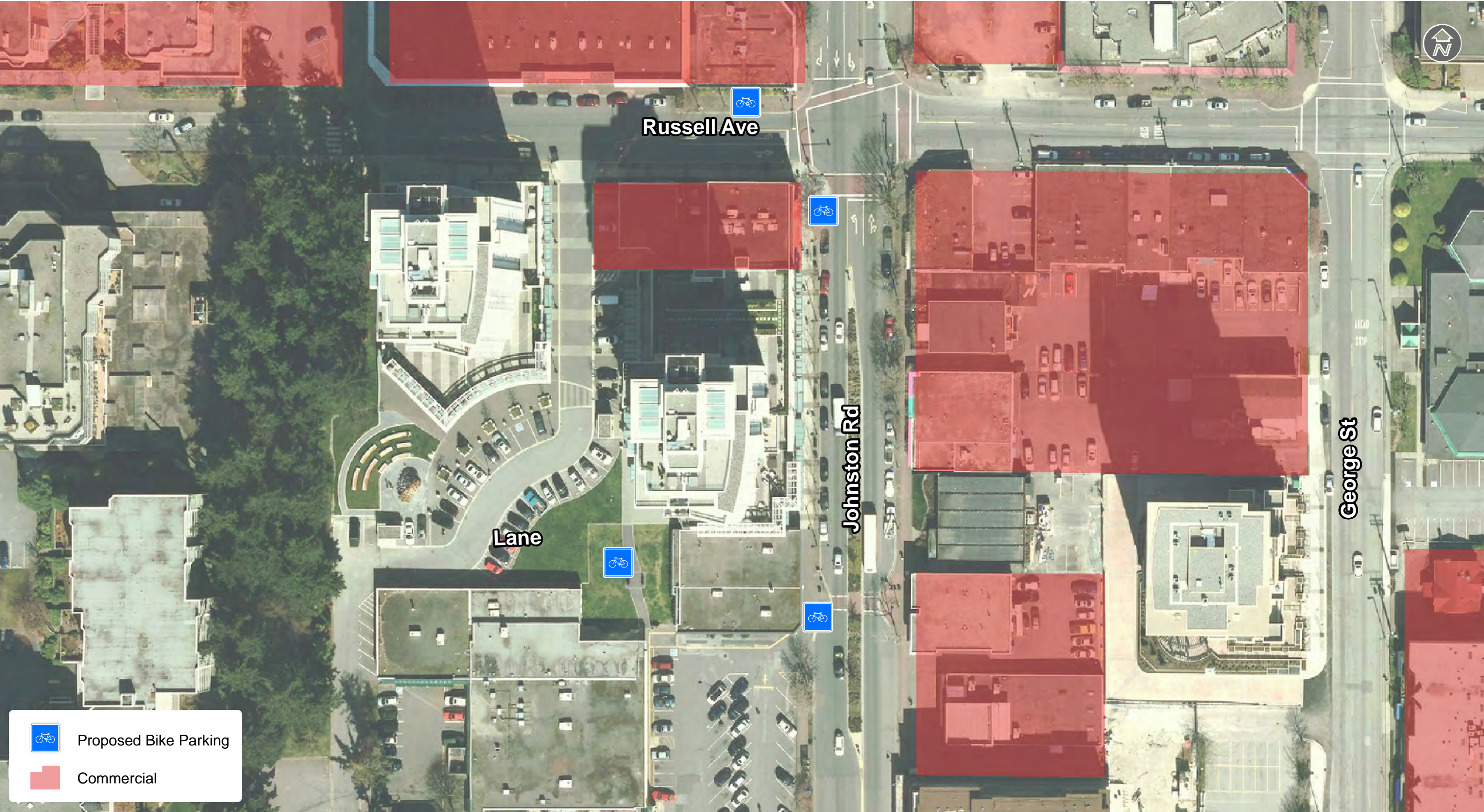
George St


George Ln


Lane







 Proposed Bike Parking

 Commercial

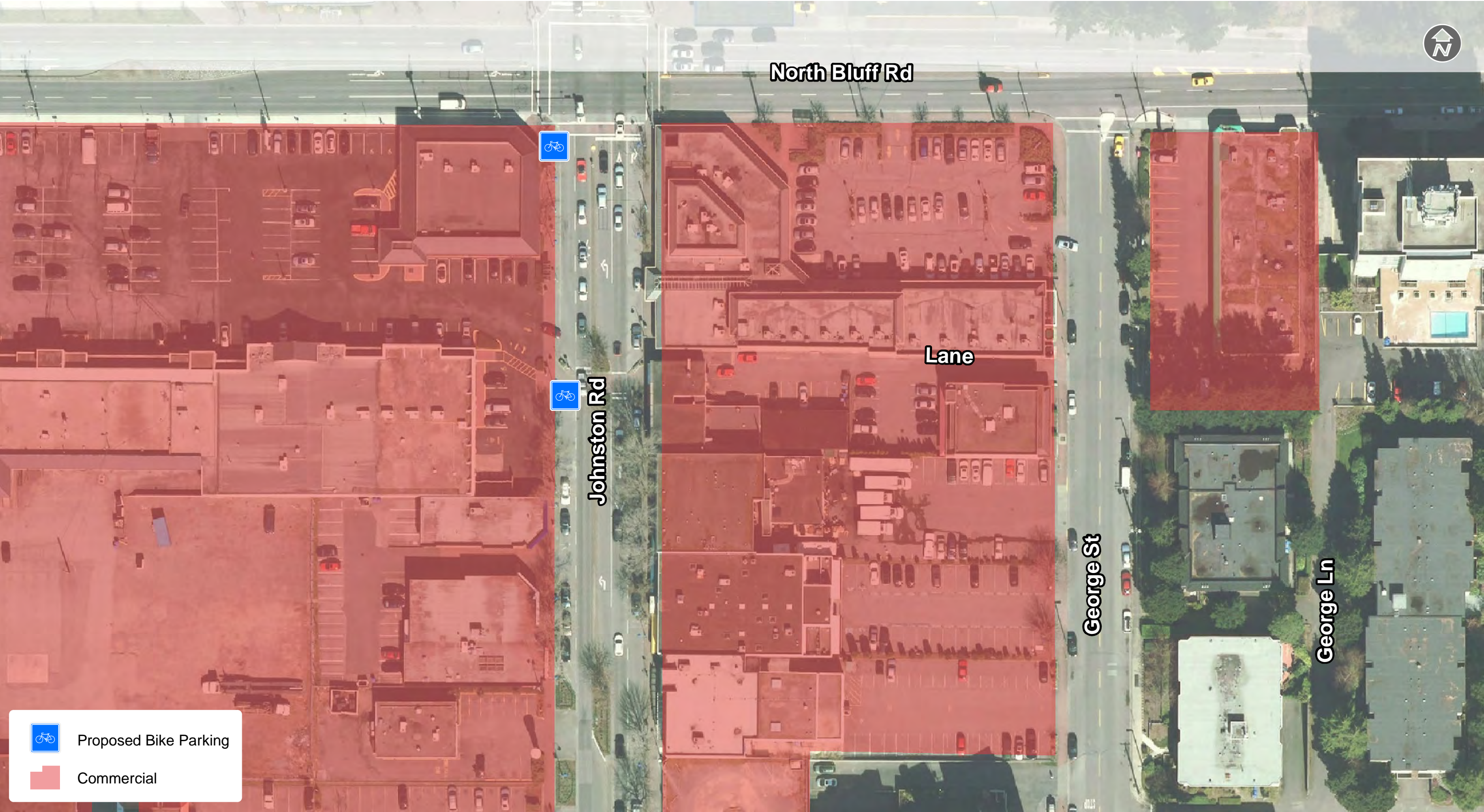
Russell Ave

Johnston Rd

George St

Lane





North Bluff Rd

Lane

Johnston Rd

George St

George Ln



Proposed Bike Parking



Commercial







Saturna Dr

High St

Mann Park Cres



Proposed Bike Parking







Proposed Bike Parking









