Director	CAO

COUNCIL AGENDA
Date: July 17, 2017 Item: 7

DISTRICT OF WEST VANCOUVER
750 17TH STREET, WEST VANCOUVER BC V7V 3T3

7.

COUNCIL REPORT

Date:	June 30, 2017
From:	John Calimente, Transportation Planner
Subject:	Pedestrian Network Study Final Report
File:	1785-06

RECOMMENDATION

THAT

1. The Pedestrian Network Study, attached as **Appendix A** to the report dated June 30, 2017, regarding Pedestrian Network Study Final Report from the Transportation Planner be approved; and
2. Staff commence with the implementation of the recommendations for additions and improvements to the pedestrian network.

1.0 Purpose

The purpose of this report is to provide Council the Pedestrian Network Study, a policy document that sets a clear direction for improvements and additions to the pedestrian network in West Vancouver. The report also gives an overview of the recommendations of the Pedestrian Network Study.

2.0 Executive Summary

The Pedestrian Network Study has assessed the existing pedestrian network, identifying weaknesses and opportunities, as well as prioritizing pedestrian projects throughout the District. This includes not only the sidewalk network and urban connector trails, but other important features of the pedestrian environment including accessibility, safety at crossings, streetscape design, and pedestrian amenities.

The study also reviews existing policies in West Vancouver as they relate to the pedestrian network, opportunities for funding network improvements, and an implementation plan for proposed projects. This review of the District of West Vancouver`s pedestrian network is based on a combination of technical work, extensive input from the public and stakeholders, and collaboration with District of West Vancouver staff.

The recommended capital improvements in the Implementation Strategy are grouped into five categories: sidewalk improvements (arterial and collector roads), local street improvements, intersection improvements, trail improvements (including both on-street and off-street facilities), and crossing improvements. Cost estimates have been provided for sidewalk

projects in order to identify the relative costs between projects for planning purposes. The cost of pedestrian infrastructure on local streets, trail improvements, and crossings require individual examination after the consultation process has been completed and the exact infrastructure needs are determined.

3.0 Legislation/Bylaw/Policy

The Strategic Transportation Plan, created in 2010, is a vision for the future of transportation in West Vancouver to 2025 and beyond. Its goals are to reduce auto dependency, expand mode choice, and promote safety while supporting sustainability and reflecting community transportation priorities. The Plan introduces the concept of a "Transportation Hierarchy" and pedestrians are placed at the top of this hierarchy. Pedestrian strategies to achieve the vision are to:

- continue to develop and maintain pedestrian mapping;
- continue to install and maintain effective wayfinding;
- create minimum pedestrian design standards to be used for the design of redevelopment and new development facilities;
- provide sidewalks on at least one side of main roadways;
- maintain sidewalks and walking spaces to allow unobstructed access for pedestrians, including those with disabilities;
- complete the Spirit Trail Greenway;
- develop an Upper Spirit Trail above Highway 1;
- complete greenways and pedestrian routes noted in the Cycling Network and Greenway Plan;
- enhance pedestrian routes on Marine Drive west of 25th Street; and
- consider providing pedestrian connectivity between areas at different elevations and across Highway 1 to improve community connections and transportation options.

The current Official Community Plan (OCP) was adopted in 2004 and includes the following three sections that discuss policies that promote walking:

Policy Section 4 - Built Form and Neighbourhood Character.

- The purpose of Policy BF-C1 is to use streetscape improvements and building design to promote commercial areas as resident and visitor destinations. To accomplish this, any new development or major renovation project should contribute to sidewalk and accessibility improvements.

- Improving existing streets and sidewalks, promoting alternative transportation, facilitating pedestrian movement into and within the

area are part of the objective of Policy BF-C3 to enhance Ambleside Village Centre. Policy BF-C4.8 describes that this can be accomplished by enhancing the pedestrian environment with wider sidewalks, landscaping, and curb extensions at crosswalks to provide priority for pedestrians. It also states that attractive pedestrian and cycling links should be created between Ambleside, Park Royal, and the Civic Centre Area. Part of Policy BF-C4.7 is to provide a continuous public walkway for pedestrians and cyclists through the waterfront area.

Policy Section 8 - Parks and Open Space.

- The purpose of Policy P8 is to promote public access throughout the community. This is accomplished by planning, providing, and maintaining (protecting from encroachment) a coordinated system of links for pedestrians to public open spaces.

Policy Section 12 - Transportation and Mobility.

- The purpose of Policy T2 is to support sustainability principles that encourage the use of sustainable forms of transportation and provide increased transportation related non-motorized facilities throughout the community. Policy T3 is intended to coordinate transportation infrastructure with local area planning to ensure that it contributes to and sustains neighbourhood character. Part of this is to encourage separated pedestrian pathways and sidewalks on key pedestrian routes.

- Policy T4 is intended to improve transportation safety and accessibility. This is accomplished by maximizing public accessibility and community connections through design of streets, bus stops, sidewalks, and crosswalks. This policy states the District is to use the Pedestrian Access Guidelines to improve pedestrian accessibility.

- Policy T5 is intended to enhance and expand transportation options that reduce automobile dependency. A part of this policy is to develop a comprehensive and accessible walking and cycling network in the District.

4.0 Background

Walking is the most fundamental form of transportation. It is a part of every trip, whether that trip is made by car, transit, or bicycle. Walking can also be a convenient alternative to the automobile for almost all short trips.

There are a number of important benefits for residents that are associated with walking:

- Economic Benefits. These result from supportive pedestrian design that helps encourage residents to take short trips to local businesses on foot, instead of driving further away to adjacent communities. A pedestrian-friendly community can also attract more visitors to the District who will in turn be patrons of a District's services and amenities.
- Livable Community. A pedestrian-friendly community can encourage a more livable and enjoyable place to be, with a stronger sense of place and freedom of mobility. Communities that support walking can contribute to safer streets and improved social interactions.
- Health Benefits. Walking is also associated with promoting healthier communities by supporting and improving mental and physical health. The World Health Organization has identified physical inactivity as one of the main leading risk factors for global mortality, and as an underlying factor for many chronic diseases. Walking increases physical activity levels, which can reduce the risk of heart disease, diabetes, cancer as well as mental illness.

Improving the safety and accessibility of active transportation infrastructure can make walking more attractive for all segments of the population, particularly age groups that walk more, such as youth and seniors. Although the District of West Vancouver has a relatively high rate of transit use, current walking patterns indicate additional opportunities for encouraging more trips on foot.

4.1 Previous Decisions

There are no previous decisions that are directly relevant to this matter.

4.2 History

The Pedestrian Network Study was initiated to assess the existing pedestrian network, identify challenges and opportunities, and prioritize pedestrian projects throughout the District over the next 15 years. The Study is an outgrowth of recommendations made in the 2010 Strategic Transportation Plan, including an assessment of the pedestrian network, creation of a pedestrian map, improved pedestrian connections and more connectivity between different elevations.

5.0 Analysis

5.1 Discussion

The Pedestrian Network

The pedestrian network in the District includes sidewalks, which can be made of concrete or asphalt, gravel pathways, multi-use pathways, as well as urban connector trails, which are defined as trails used by pedestrians and cyclists that link urban neighbourhoods together. Other important

features of the pedestrian environment include accessibility, intersection safety, crossing improvements, and pedestrian amenities.

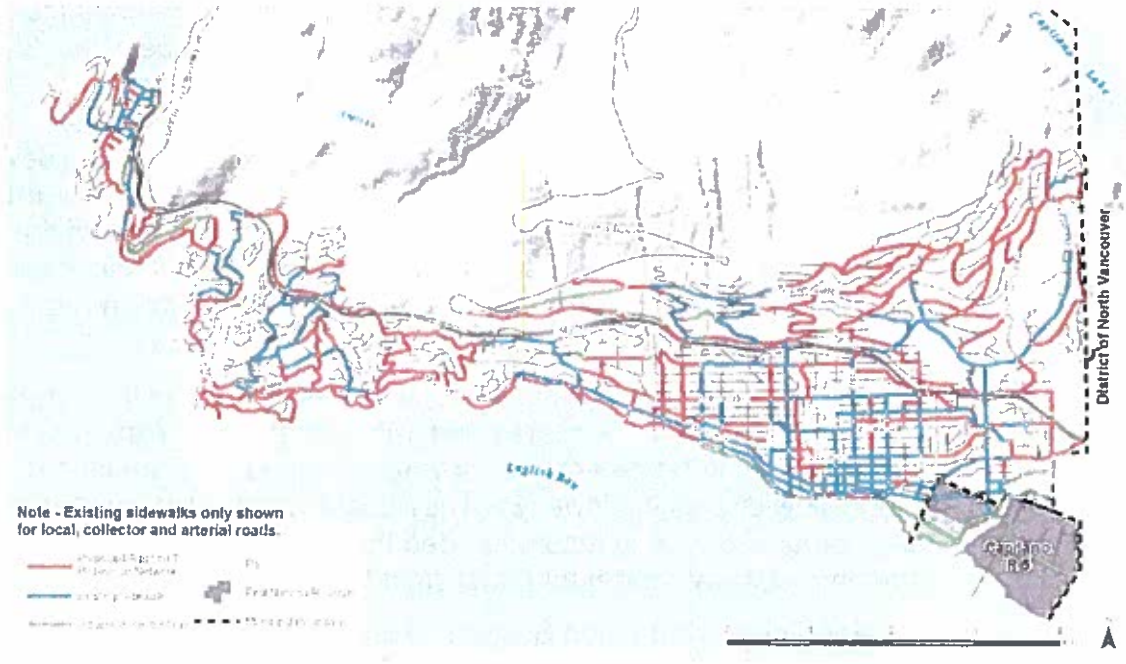


Figure 1 - Existing (blue) and proposed additions (red) to the Pedestrian Network, along with urban connector trails (green)

Survey and Demographics

According to the 2011 National Household Survey, 5% of daily trips to work in the District are made on foot, compared with 14% by transit and 2% by bicycle. A survey of West Vancouver residents found that 35% of residents walk at least once a day, while another 50% walk frequently (5-6 times per week) or often (3-4 times per week).

However, when asked what the biggest barriers are to walking in the District, a lack of sidewalks or shoulders to walk on was the most common answer. A majority were also unsatisfied with the safety level of pedestrian infrastructure in the District. As well, there are a significant number of gaps in the pedestrian network that prevent residents from walking where they would like to. More frequent trimming of overgrowth and cleaning of sidewalks was also cited.

One in five West Vancouver residents are 65 or older, one of the highest proportions in Metro Vancouver. Seniors are also less likely to drive to their destinations, so they require access to barrier-free, safe and well-connected transit and walking routes. Walking mode share in the District is highest for seniors (around 10%) and those aged 5 to 19 years old (13%), and these groups are also the most vulnerable to collisions with vehicles.

The Sidewalk Network

In terms of the arterial road network, 47% of roads in the District have no sidewalks, 29% have a sidewalk on one side, and 24% have a sidewalk on both sides. Fully 60% of collector roads have no sidewalks, 35% have one sidewalk, and 5% sidewalks on both sides. For local roads, 91% have no sidewalks, 6% have one sidewalk and 3% have sidewalks on both sides. While the District does not have a bylaw that sets out sidewalk requirements, many municipalities in Metro Vancouver require arterials and collector roads to have a sidewalk on at least one side of the street. Due to the speed and volume of traffic on these streets, the Pedestrian Network Study has prioritized pedestrian improvements on arterial and collector roads.

Most sidewalks in the District (79%) are between 1.5 and 1.7 metres wide, while 7% are below 1.5 metres and 14% are above 1.7 metres. Many municipalities in North America now recommend a minimum 1.8 metre sidewalk width, as it allows two wheelchairs or mobility scooters to pass each other safely. It is recommended that 1.8 metres become the standard sidewalk width for the District for new sidewalk construction.

A Geographic Information System (GIS) based analysis was used to systematically identify needs and prioritize new sidewalks based on a list of criteria. For this study the criteria were based on three categories which include: Pedestrian Safety, Pedestrian Demand, and Network Needs. It is recommended that arterial and collector roads, which typically have higher vehicle speeds and traffic volumes, have sidewalks installed. The priority levels for these roads are shown in Figure 2. The highest priority streets identified were Marine Drive, Queens Avenue, Mathers Avenue, Keith Road, and Burley Drive.

Figure 2 - Sidewalk Priorities (Arterial and Collector Streets)

For local streets, the highest priority locations were centred on the Ambleside and Dundarave areas (Figure 3). It is recommended that sidewalks be installed on high priority streets close to pedestrian generators such as schools, senior's facilities, commercial streets, and community facilities. In other cases, gravel pathways with curbs or dedicated road shoulders may be the solution that better reflects neighbourhood character. Each local street will likely have a slightly different treatment, and for this reason we have not estimated budgets for these streets.

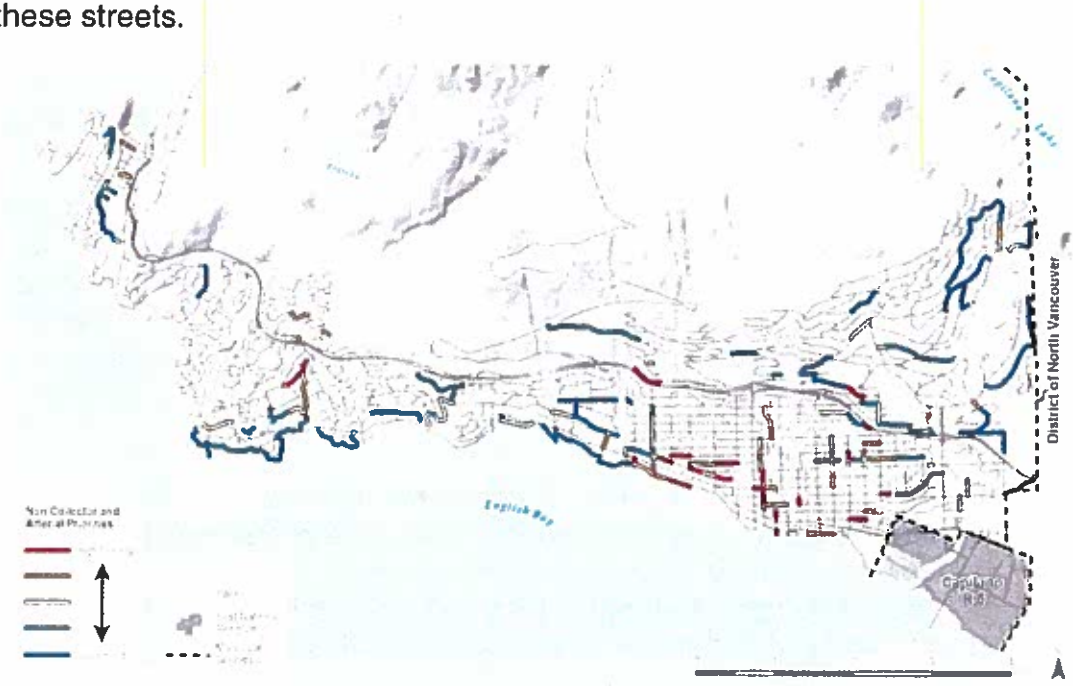


Figure 3 - Pedestrian Improvements (Local Streets)

Trails and Multi-Use Pathways

The pedestrian network also includes multi-use pathways and urban connector trails. The District has been building the Spirit Trail Greenway since 2012 in the Ambleside and Gleneagles neighbourhoods. As well, planning is underway to begin developing an Upper Levels Multi-Use Pathway, as recommended in the 2010 Strategic Transportation Plan. In addition, urban connector trails are included in the pedestrian network. These are pathways for use by pedestrians and cyclists that provide direct routes through neighbourhoods and parks, by utilizing rights of way and green corridors.

Pedestrian Clearance Interval

The pedestrian clearance interval is defined as the time required for the pedestrian to reach the designated refuge area at a comfortable walking speed. It is recommended that the District change the pedestrian signal timings at intersections to allow slower walking speeds of 1.0 m/s or lower. More than half of signals in the district are set at 1.2 m/s, which excludes approximately one-third of older pedestrians and about 90 percent of

pedestrians who use assistive devices such as walkers or canes for mobility. Other signal improvements should also be reviewed, such as leading pedestrian intervals that give pedestrians a head start over vehicles.

Pedestrian Safety at Intersections

A review of pedestrian collisions at intersections through a network screening study revealed that Marine Drive and Taylor Way corridors accounted for a large majority of these incidents. It is recommended that corridor studies be conducted on Fulton Avenue (13th St to 15th St), Taylor Way, Marine Drive (11th to 19th St and 20th to 25th St), and 15th Street (at Kings Ave, Lawson Ave, Mathers Ave, Queens Ave, and Highway 1) in order to determine issues and budget for improvements.

The priorities developed through this study will provide guidance for future capital projects in the District that focus on improvements to pedestrian infrastructure. By creating an extensive pedestrian network, the District can help reduce automobile dependence and greenhouse gas emissions, improve public health outcomes and help to create more liveable and vibrant communities.

Traffic Calming

The implementation of 30 kilometre per hour zones in neighbourhoods can also be considered as a method to improve pedestrian safety. Slower speeds on residential roads is necessary to make the road environment more safe and comfortable for those walking in the roadway. It is recommended that the District develop a Traffic Calming Policy for the municipality to highlight roads where traffic calming is appropriate and the type of traffic calming best suited based on traffic patterns, driving behaviour, and land use.

Wayfinding

Pedestrian wayfinding programs can help residents and visitors better navigate through high activity areas of the community. To improve access to the extensive network of trails and urban connector trails, it is recommended that the District of West Vancouver develop a wayfinding program to ensure that the location of trailheads and urban connectors is readily available and that information about where trails and connectors go and what they connect to is clear to users.

Subdivision Development Standards

The District currently does not have a bylaw that sets out the District's sidewalks requirements for existing or new developments regardless of road classification or land use. It is a recommendation of this report that the District develop guidelines for new developments that require developers to provide sidewalks based on road classification and land use. It is recommended that sidewalks be a minimum width of 1.8 metres unless the location is particularly constrained.

Parking setbacks

It is recommended that the District set back street parking 10 metres from all intersections to ensure intersection visibility for all road users including people walking. This requirement should be amended in the Traffic and Parking Bylaw to require vehicles not to park within 10 metres of the edge of a sidewalk crossing.

Implementation Plan

This Implementation Strategy details the priorities for capital improvements within the District's jurisdiction that are required for implementation of the recommendations from the Pedestrian Network Study. The Implementation Strategy identifies walking capital project priorities over the short term (0 to 5 years) and longer term (beyond 5 years).

The recommended capital improvements in the Implementation Strategy are grouped into five categories:

- Sidewalks (arterial and collector roads);
- Local street improvements;
- Intersection improvements;
- Trail improvements (including both on-street and off-street facilities); and
- Crossing improvements.

The estimated cost for sidewalk construction on arterials and collector roads in the short term (0 to 3 years) is $745,500, with longer term projects (beyond 3 years) estimated at $672,000. For local streets, the highest priority were in the Ambleside and Dundarave neighbourhoods, close to schools and community amenities. As noted, there will be a variety of pedestrian treatment for local streets, so costs will be estimated during the planning process in consultation with the community. Multi-use pathway and trail improvements will also be determined with input and feedback from the community.

Finally, in order to better connect West Vancouver's neighbourhoods together, pedestrian/bike bridges are proposed at Camelot Road (Camwell Drive to Westhill Wynd), Erwin Drive (Erwin Drive to Ross Crescent), and Mathers Avenue (28th Street to 29th Street).

5.2 Sustainability

Walking has many environmental benefits when a walking trip substitutes for a vehicle trip, reducing air pollution, greenhouse gas emissions, and road congestion. The Community Energy and Emissions (CEE) Plan found that greenhouse gases (GHGs) associated with transportation (40%) represent the second largest sector for West Vancouver. A well-connected pedestrian network that encourages residents to walk will help to reduce GHGs emissions from motor vehicles.

Walking can also be combined with transit or cycling trips. All transit trips begin or end with a walking trip, and as such it is important that pedestrian facilities are integrated with transit services and facilities.

5.3 Public Engagement and Outreach

The Pedestrian Network Study has included extensive consultation and engagement with West Vancouverites. In February 2015 the District engaged with the public through an on-line survey and a series of stakeholder workshops held at the Gleneagles Community Centre and West Vancouver Lawn Bowling Club. Altogether, nearly 60 residents attended the stakeholder workshops and 90 people answered the survey.

The draft pedestrian network was presented at a series of open houses in December 2016, followed by an online survey which was available to the public until the end of January 2017. There were 115 residents who responded to the survey.

5.4 Other Communication, Consultation, and Research

Consultation on the study and a walking tour of Dundarave was conducted with the North Shore Advisory Committee on Disability Issues (ACDI) so that members could highlight accessibility issues in the community.

6.0 Options

6.1 Recommended Option

Council proceed with any or all of the recommendations in this report.

6.2 Considered Options

Council may request further information.

7.0 Conclusion

The purpose of the Pedestrian Network Study is to better understand current walking conditions, gather community insight on areas for improvement, and explore opportunities for enhancing the current walking environment. The associated implementation strategy details the priorities for capital improvements within the District's jurisdiction that are required for implementation of the recommendations from the Pedestrian Network Study.

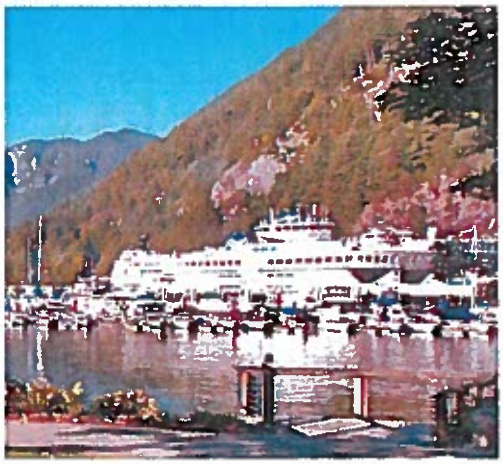
Author: John Calimente, Transportation Planner

Appendices:

Appendix A – Pedestrian Network Study

APPENDIX A

DISTRICT OF WEST VANCOUVER PEDESTRIAN NETWORK STUDY



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Contents

1.0 INTRODUCTION

The District of West Vancouver is a vibrant community of nearly 45,000 residents, located in the northwest corner of Metro Vancouver. The District's towering forests, stunning coastal views, low residential densities, vibrant commercial centres, and proximity to downtown Vancouver have made it one of the most desirable communities in the region. West Vancouver is bordered by the District of North Vancouver to the east, the waters of Burrard Inlet to the south and west, and the mountains of Electoral District A to the north, and is closely connected with a range of recreational amenities such as the Cypress Mountain Ski Area, Spirit Trail, beaches, hiking trails, and destination parks. Set at the foot of the North Shore Mountains, the rolling coastal landscape of West Vancouver has driven the settlement pattern and the character of the community, with properties that follow the contours of the sloping mountainside. The sheer beauty of the District and residential character establishes West Vancouver as a prime location for an enhanced pedestrian network that seamlessly connects residents with amenities within the District as well as to surrounding communities.

While the District of West Vancouver already has a high rate of transit use, current walking and cycling patterns indicate additional opportunities for encouraging more trips by these modes. According to the 2011 National Household Survey, approximately 14% of daily trips to work in the District are made by public transit, while 5% are made by walking and 2% by bicycle. Developing pedestrian infrastructure and improving its safety and accessibility can make walking more attractive for all segments of the population, particularly age groups that walk more, such as youth and seniors.

The purpose of the Pedestrian Network Study is to assess the existing pedestrian network, identify weaknesses and opportunities, and prioritize pedestrian projects throughout the District in the coming years. This includes not only the sidewalk network and urban connector trails, but other important features of the pedestrian environment including accessibility, safety at crossings, streetscape design, and pedestrian amenities. The study also reviews existing policies in West Vancouver as they relate to the pedestrian network, opportunities for funding network improvements, and an implementation plan for the proposed projects. This review of the District of West Vancouver's pedestrian network is based on a combination of technical work, input from the public and stakeholders, and collaboration with District of West Vancouver staff.

1.1 Study Process

The Pedestrian Network Study has been developed through a three phase process:

- **Phase 1: Project Launch** involved collecting and reviewing relevant background information;
- **Phase 2: Inventory and Assessment** involved developing a detailed understanding of the District's existing pedestrian facilities, and defining the opportunities and challenges facing the current and future transportation network;
- **Phase 3: Recommendations and Implementation** involved charting the future course for walking in West Vancouver by establishing recommendations based on the inventory and assessment and by developing a strategy for implementing the recommendations of the Pedestrian Network Plan, including short-term and longer-term priorities based on evaluation criteria.

1.2 Communications and Consultation

The Pedestrian Network Plan has been developed based on extensive input from the public and key stakeholders, using a range of communications and consultation approaches, as shown in **Figure 1** and described briefly below:

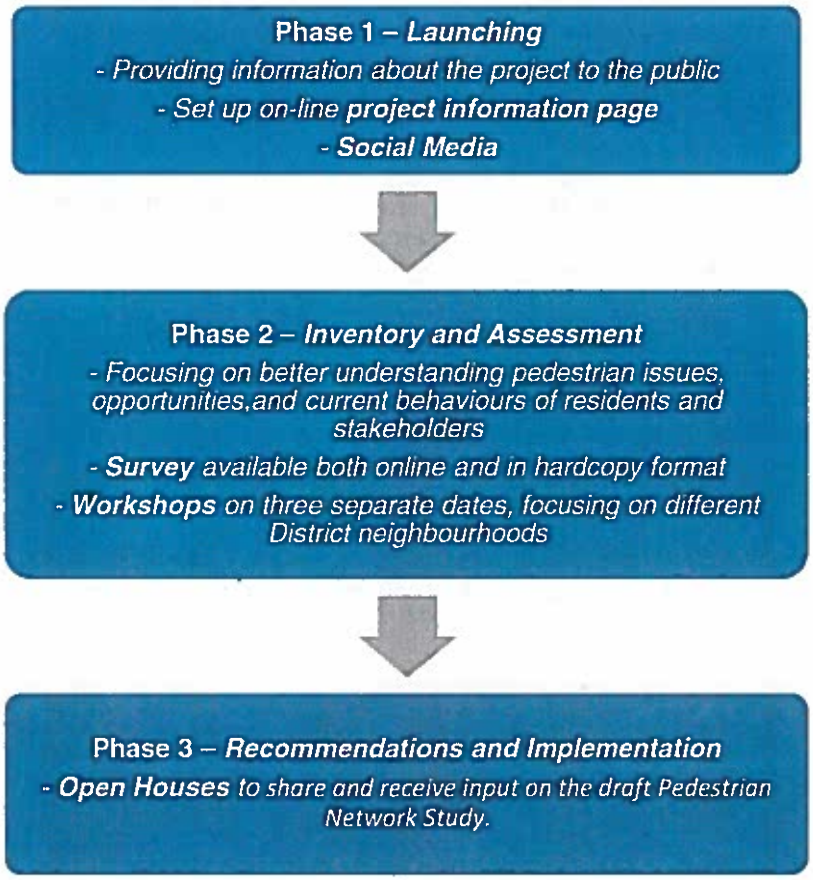
- **Site Visits** to observe existing walking facilities

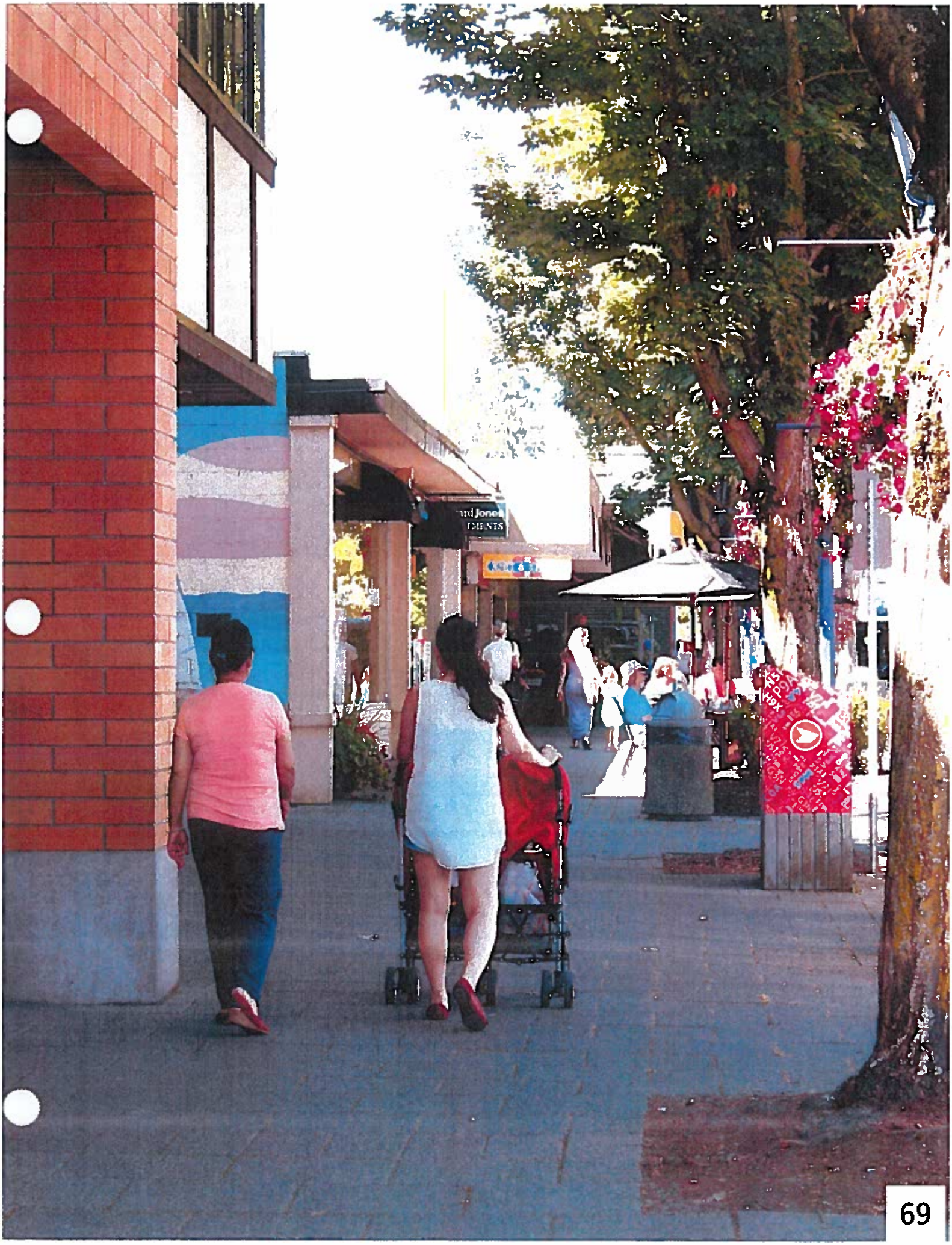
- **Website and Social Media** including establishing a dedicated project webpage for the Pedestrian Network Study

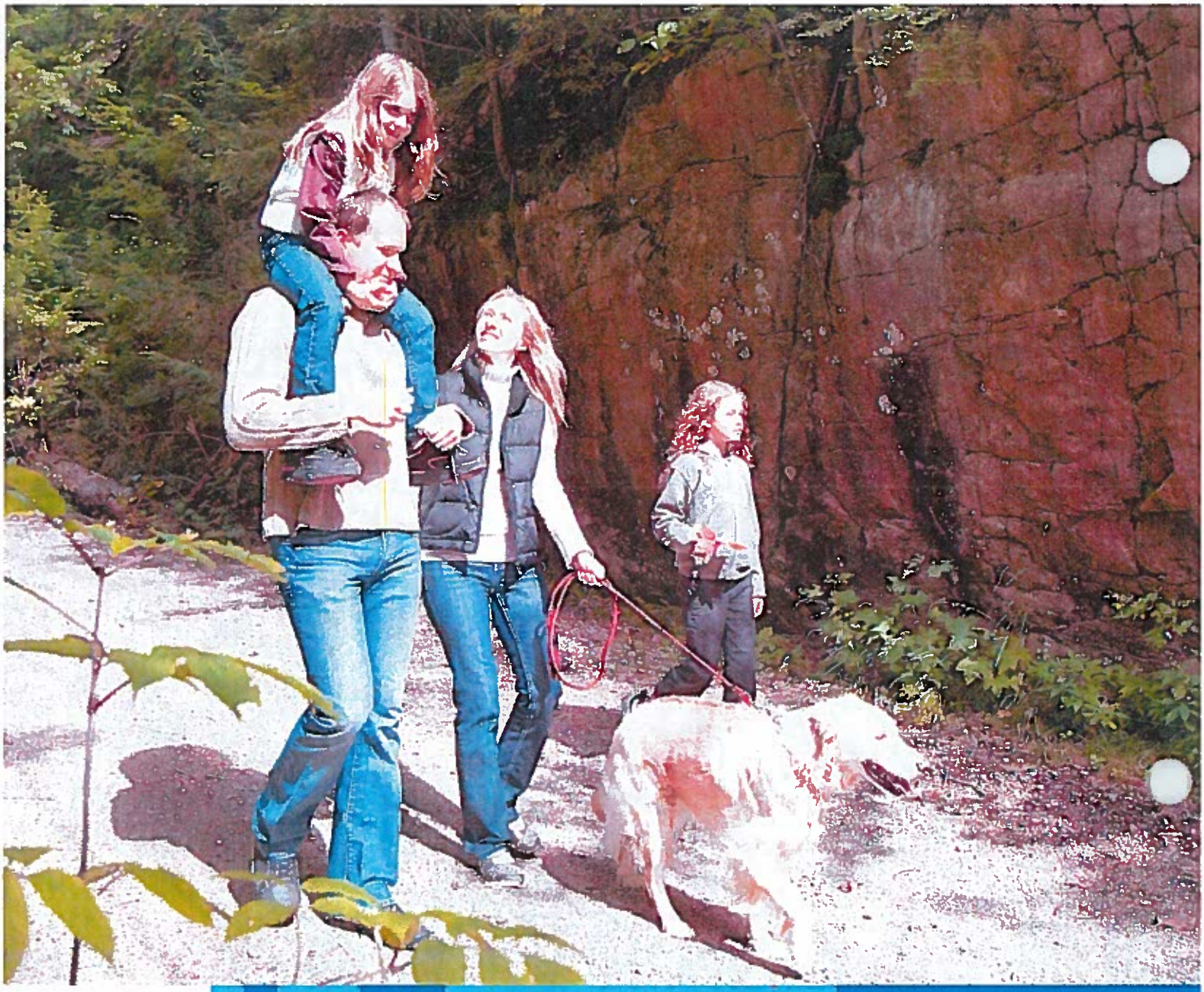
- **Two Surveys** to obtain input on existing conditions, issues and opportunities as well as preliminary directions. The first survey was put online in February 2015 in conjunction with the community workshops, and could also be completed in hard copy format. Approximately 90 survey responses were received. A summary of survey responses is provided in **Appendix A.** The second survey was made available online between December 2016 and January 2017 in coordination with a series of open houses to provide feedback on the draft study.

- **Community Workshops** were held on three separate dates in February 2015 (February 11, 17, and 18 2015). These evening workshops were designed to target residents from different neighbourhoods of the District to provide them with information about the study and to gain important insights into the issues and opportunities of the pedestrian network from the perspective of community members. A summary of the feedback from the Stakeholder workshop can be found in **Appendix B.**

Figure 1: Communications and Engagement by Project Phase







2.0 SETTING THE CONTEXT

This section describes the planning context for the Pedestrian Network Study, including an overview of the benefits of walking, as well as a summary of the key characteristics of the community as they relate to walking, including the local and external policy context for the Pedestrian Network Study.

2.1 Why Promote Walking

There are a number of benefits associated with walking and promoting a walkable community that is safe, comfortable, and well connected for all residents and visitors. These include significant quality of life and positive economic development benefits. A brief example of each is provided below:

- **Economic Benefits** are seen as a result of supportive pedestrian design that helps encourage residents to take short trips to local businesses on foot, instead of driving further away to adjacent communities. A pedestrian-friendly community can also attract more visitors to the District who will in turn be patrons of a District's services and amenities.
- **Livable Community.** A pedestrian-friendly community can encourage a more livable and enjoyable place to be, with a stronger sense of place and freedom of mobility. Communities that support walking can contribute to safer streets and improved social interactions.
- **Health Benefits.** Walking is also associated with promoting healthier communities by supporting and improving mental and physical health. The World Health Organization has identified physical inactivity as one of the main leading risk factors for global mortality, and as an underlying factor for many chronic diseases. Walking increases physical activity levels, which can reduce the risk of heart disease, diabetes, cancer as well as mental illness.
- **Environmental Benefits.** Walking has many environmental benefits when a walking trip substitutes for a vehicle trip, reducing air pollution, greenhouse gas emissions, and road congestion.

2.2 Community Context

The District of West Vancouver is a vibrant municipality of approximately 45,000 residents, located in the northwest corner of Metro Vancouver on the north shore of Burrard Inlet. The District's abundance of forests and park space, ocean views, low residential densities, vibrant commercial centres, and proximity to downtown Vancouver have made it one of the most desirable communities in the region. The District's access to a range of recreational amenities and beachfront village centres make much of the municipality a desirable place to walk. Establishing West Vancouver as a prime location for an enhanced pedestrian network that connects residents with amenities and destinations within the district and surrounding communities.

The existing transportation network is characterized by narrow residential streets that link Marine Drive and Highway 1, the two major east-west corridors in the District, as well as a number of important north-south connections between the two. Taylor Way in particular provides the main connection between Lions Gate Bridge and Highway 1, as seen in **Figure 2**. These roads connect the District of West Vancouver with the Horseshoe Bay Ferry Terminal, Lions Gate Bridge, and the Sea-to-Sky Highway.

The existing street network varies throughout the District – in general, north of Upper Levels highway and west of 27th Avenue the road network is curvilinear, with fewer sidewalks, limited commercial centres, and fewer direct routes than the north and west areas of the District. South of Highway 1 between Taylor Way and 27th St, the street network is laid out in a grid system, where you can find more sidewalk connections and direct routes to key destinations.

Although West Vancouver continues to be primarily automobile dependent, there are a number of vibrant, walkable areas, including the village at Horseshoe Bay, the Dundarave and Ambleside neighbourhoods, the commercial centres along Marine Drive, and the oceanside paths east of 25th Street. These areas are primed for enhancement to encourage more use by residents and visitors alike. Recent pedestrian infrastructure improvement projects led by the District such as the westward extensions of the Spirit Trail, the bicycle and pedestrian improvements along the Capilano River, and traffic calming measures along residential streets reflect the District's active dedication to enhancing its pedestrian environment. The District's existing pedestrian infrastructure will be discussed in more detail in **Section 3.0**.

Figure 2: Road Classification Map

2.2.1 Demographic and Land Use Patterns

Demographics play a significant role in influencing transportation choices and travel patterns. This section summarizes key demographic characteristics of West Vancouver residents.

A Growing Community and Region. The District of West Vancouver is expected to continue with modest population and employment growth over the coming years. The Metro Vancouver Regional Growth Strategy estimates the population of West Vancouver will grow by approximately 30% to 60,000 by 2041, resulting in an increase in dwelling units and total employment. While West Vancouver is expected to experience modest growth it will also be impacted by the growth in nearby communities, especially the District and City of North Vancouver as well as communities along the Sea to Sky corridor. Much of the District of West Vancouver has relatively low population and employment densities based on Statistics Canada National Household Survey Data. Most of the census tracts in the municipality have less than 15 people per hectare and fewer than 6 jobs per hectare. Population and employment densities are the highest within the census tracts located along Marine Drive in the southeast section of the District, as seen in **Figure 4** and **Figure 4**.

gure 3: Population Density

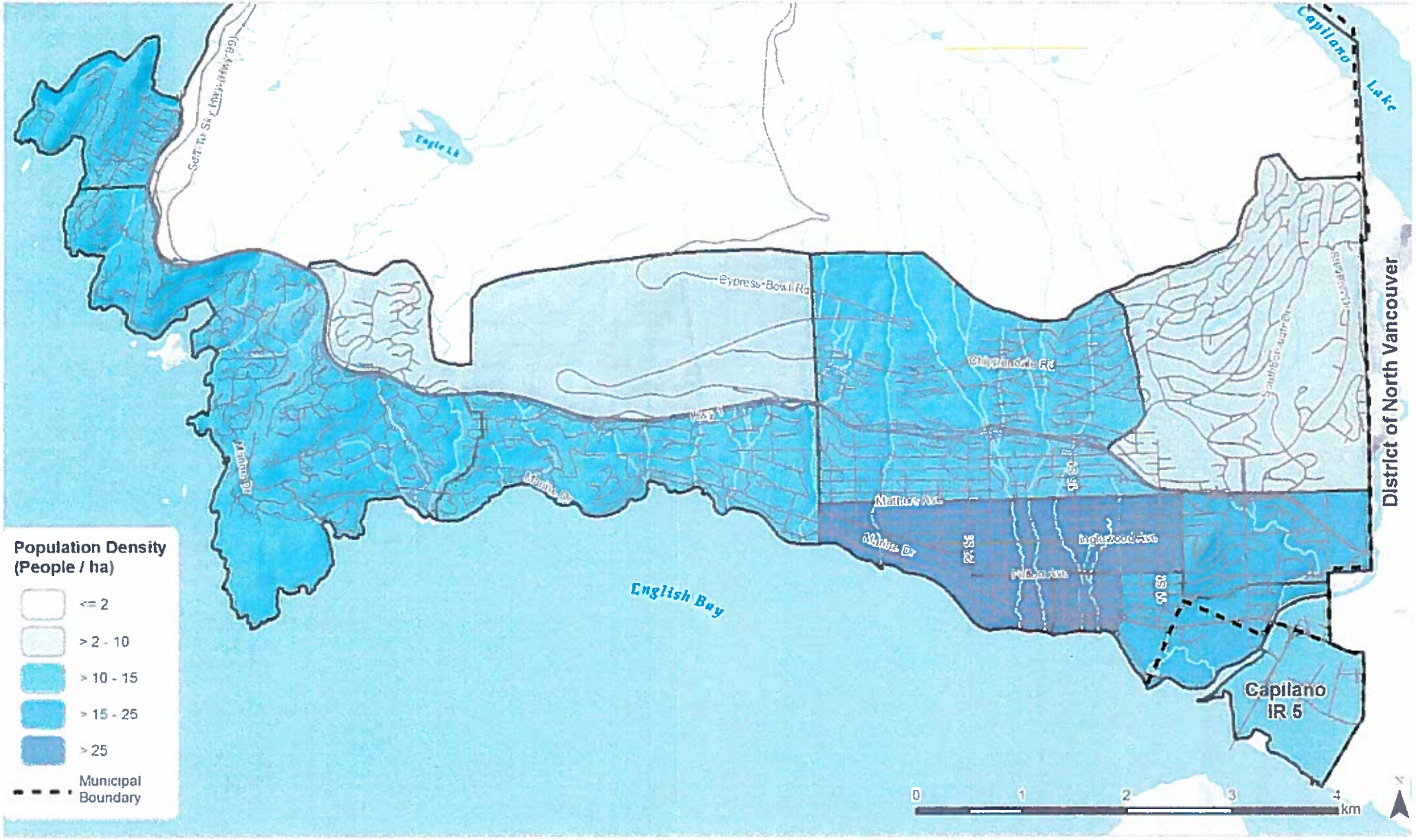
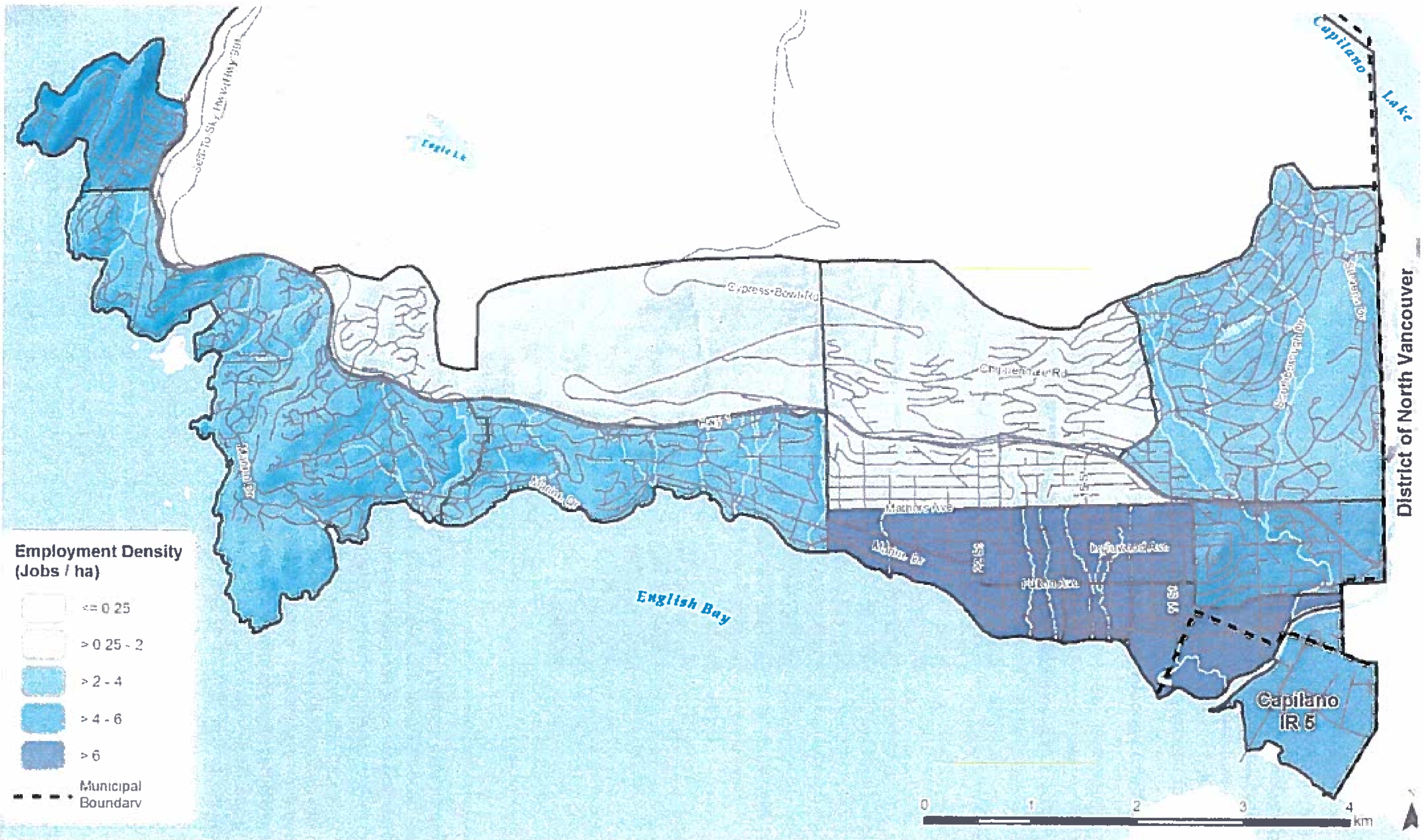


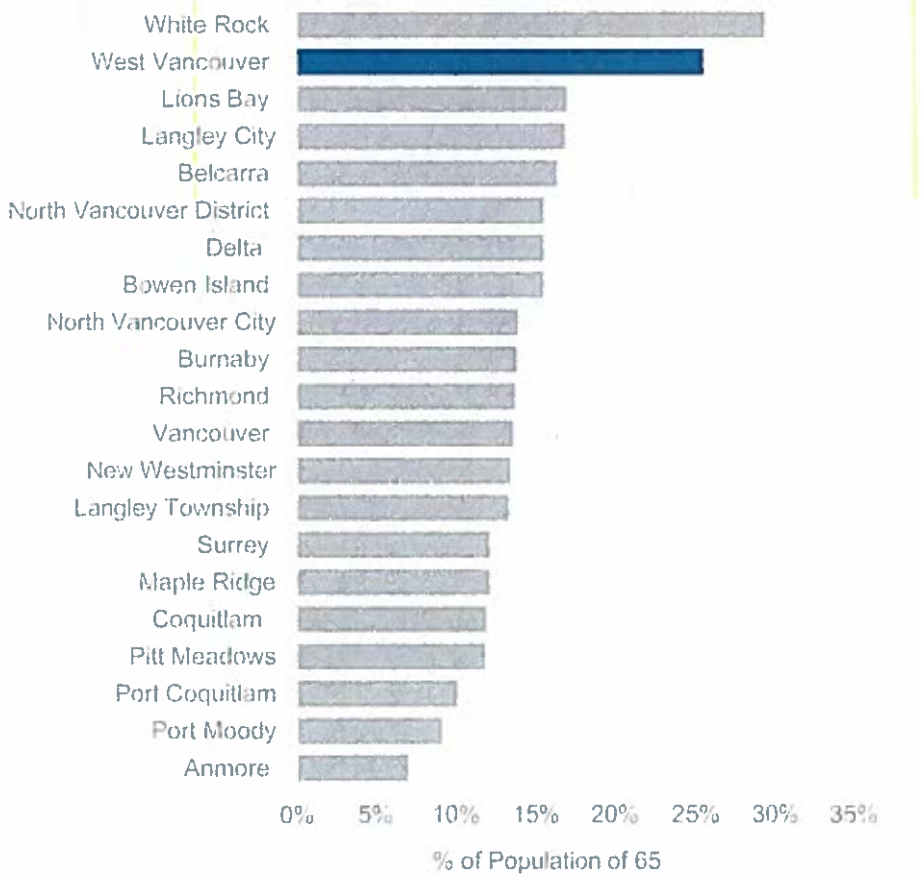
Figure 4: Employment Density



An Aging Community. As is the case in most communities in Metro Vancouver, the proportion of the population in West Vancouver over the age of 65 is increasing. West Vancouver is acutely aware of the effects of an aging population, as it has been experiencing this trend for many years. West Vancouver is an attractive retirement community, and has the second highest proportion of seniors aged 65 and over in Metro Vancouver, with nearly 26% of West Vancouver's residents over the age of 65 as seen in **Figure 5**.

Figure 5: Metro Vancouver Proportion of Population Aged 65 and Over

Source: 2011 TransLink Trip Diary



The impact of a growing seniors' population on the District's transportation network is significant, since the transportation needs of this population group are unique. As an example, senior residents have more flexible schedules and 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 use sustainable forms of transportation more often such as transit, walking, and to a lesser extent cycling. As a result, seniors' populations should have access to barrier-free, safe and well-connected transit and walking routes and infrastructure, as they are often travelling without a vehicle. As seen in **Figure 6**, transportation preferences among West Vancouver'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. For walking specifically it can be seen that walking trips are highest among individuals between the age of 5 to 19 and between the ages of 70 to 79, as seen in **Figure 7**.

Figure 6: Weekday Mode Share by Age Group in West Vancouver

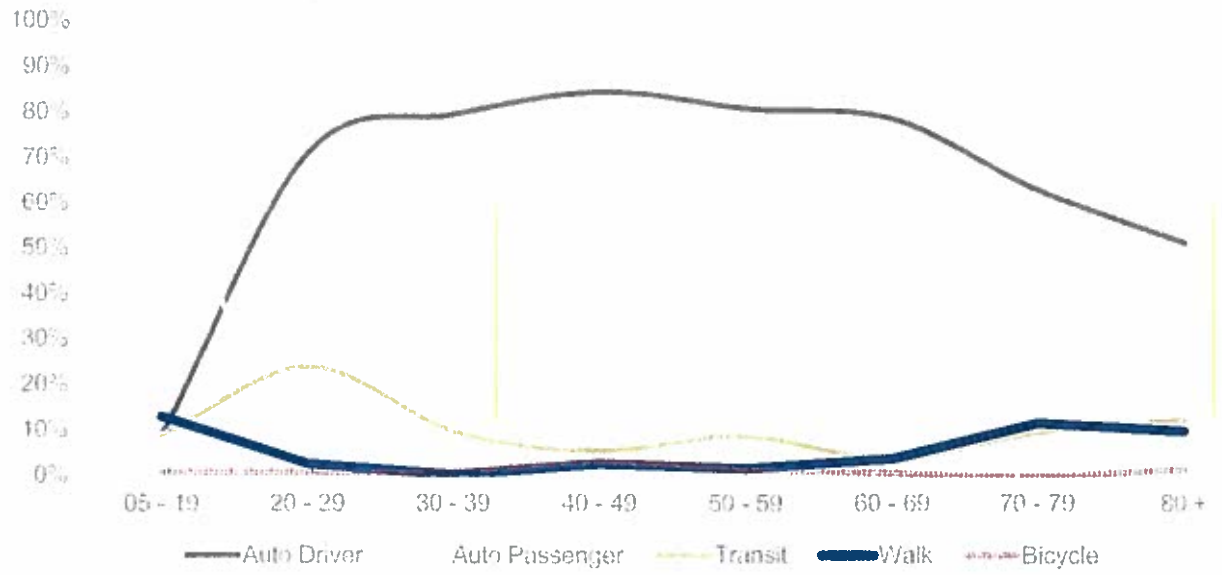
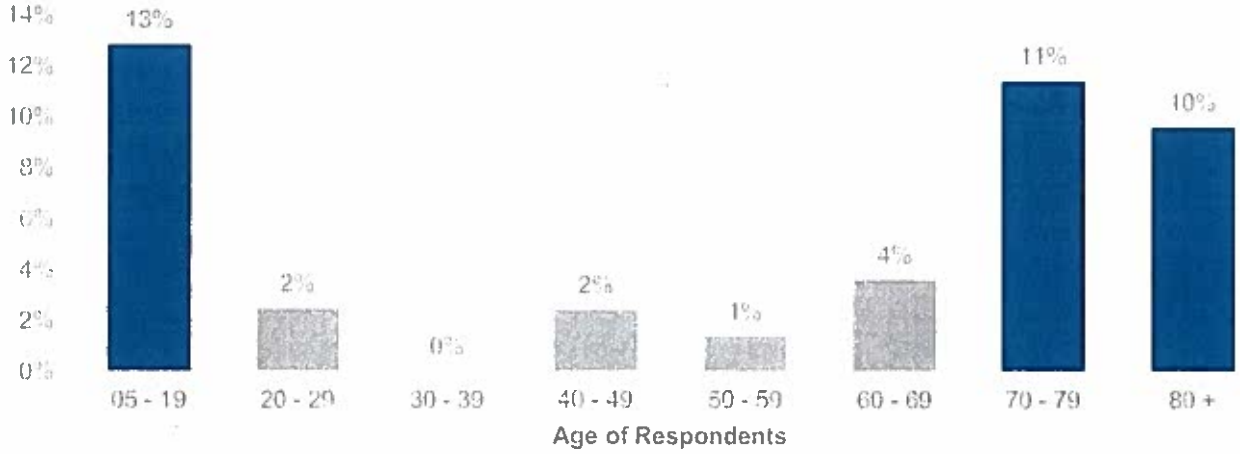


Figure 7: Weekday Walking Mode Share by Age



Hillside Community. The District of West Vancouver is characterized by its hillside topography, with residential neighbourhoods located along the steep slopes of the North Shore Mountains looking over Burrard Inlet. The steep topography that characterizes West Vancouver and other North Shore communities can make walking difficult. Individuals with physical disabilities, older residents, and potentially visitors are likely to find walking steep hills more challenging. Based on the demographics of West Vancouver and the growing number of individuals over the age of 65, it is important that facilities and amenities are provided that can help facilitate transportation in areas with steep topography. This type of geography influences transportation patterns and how the pedestrian network is designed, helping to connect destinations along the waterfront to residences located further up hills, as well as east-west across creeks and valleys. Pedestrian-scale street lighting is particularly important in low density neighbourhoods, where ambient light levels are lower and trees block light from homes.

An Attractive Destination. Stretching along the coastline of Burrard Inlet, the District of West Vancouver attracts visitors from across the region who are drawn to the numerous attractions West Vancouver offers. Such attractions include, the seaside villages and commercial activity at Ambleside, Dundarave, Horseshoe Bay and Park Royal Shopping Centre, Ambleside and Dundarave Beaches, the stunning Seawalk, countless parks including Whytecliff Park and Lighthouse Park, and the Spirit Trail to name a few. It is important that both residents and visitors are able to easily navigate their way to and around these destinations by foot with direct, accessible, and well-connected routes.

Home to a Number of Schools, Residences, Places of Worship, Parks, and Community Facilities. There are a number of important destinations that are often referred to as pedestrian generators. These destinations are expected to attract pedestrians due to the nature of the services offered and the proximity to residential locations. Some of the key pedestrian generators are identified below and seen in the map in **Figure 8**:

- **Schools.** There are 12 public elementary schools and 3 secondary schools in West Vancouver:
    - Ridgeview Elementary School
    - Hollyburn Elementary School
    - Chartwell Elementary School
    - Westcot Elementary School
    - Irwin Park Elementary School
    - Pauline Johnston Elementary School
    - West Bay Elementary School
    - Eagle Harbour Montessori School
    - Cedardale Elementary School
    - Caulfeild Elementary School
    - Cypress Park Primary School
    - Gleneagles Elementary School
    - Rockridge Secondary School
    - Sentinel Secondary School
    - West Vancouver Secondary School

  In addition, there are three private schools in the District:

    - Collingwood School – Elementary (Wentworth campus) and Secondary (Morven campus)
    - St. Anthony's School - Catholic Elementary School
    - Mulgrave School – Elementary and Secondary programs

- **Care Facilities and Retirement Homes.**

  - Amica at West Vancouver
  - Capilano Long Term Care Centre
  - Chartwell Churchill House Retirement Residence
  - Hollyburn House
  - Inglewood Care Centre
  - Kiwanis Manor Assisted Living
  - Lions Libby Lodge
  - Maison Senior Living West Vancouver
  - Westerleigh Retirement Residence
  - West Vancouver Care Centre

- **Places of Worship.**

  - Christ the Redeemer Catholic Church
  - Congregation Har El / North Shore Jewish Community Centre
  - First Church of Christ, Scientist
  - Hollyburn Christian Fellowship
  - North Shore Unitarian
  - Park Royal Congregation of Jehovah's Witnesses
  - Revolution Church
  - Saint Anthony's Catholic Parish
  - St. Christopher's Anglican
  - Saint David's United
  - St. Francis-in-the Wood Anglican
  - Saint Stephen's Anglican
  - West Vancouver Baptist
  - West Vancouver Presbyterian
  - West Vancouver United

- **Parks and Community Facilities.** West Vancouver is home to a significant number of parks and other recreational opportunities, including Caulfeild Park, Cypress Falls Park, Horseshoe Bay Park, John Lawson Park, Memorial Park, Whytecliff Park, and Lighthouse Park. Some of major recreational and community centres include the West Vancouver Aquatic Centre, Gleneagles Community Centre, West Vancouver Community Centre, and the Ice Arena. In addition, the District's Municipal Hall, Library, and Museum are all located along or within walking distance from Marine Drive.

  The vast majority of West Vancouver residents visit parks regularly and **the main draw for visiting parks is for walking.** According to the West Vancouver Parks User Survey from June 2011, 95% of West Vancouver households had visited a park in the District in the previous 12 months, and 74% visited once a month or more. And leisurely walks were enjoyed by 95% of respondents, with many also enjoying hiking or trail walking, running or jogging, or walking their dog.

Figure 8: Pedestrian Generators

2.2.2 Travel Patterns

The following section outlines current travel patterns of residents of the District of West Vancouver.

Mode Share of Commute Trips. According to the 2011 National Household Survey, in 2011 walking accounted for approximately 5.4% of all daily trips to work in the District, as shown in **Figure 6.** However, the majority of commuter trips in the District are made by car, as nearly 79% of West Vancouver residents use a car to get to work either as a driver or as a passenger. As shown in **Figure 7**, West Vancouver has a relatively high share of commute trips made by walking compared to many other municipalities in Metro Vancouver. **Figure 11** identifies the walking mode share by Census Tracts located within West Vancouver. Census Tracts located in the southeast section of the District have the highest walking mode shares; this also corresponds with the area of the District with the highest population and employment density as seen in **Figure 3**. Over the past 15 years walking mode share has remained consistent, though it is worth noting that the mode share for public transit has seen the greatest increase. As walking is part of many trips, especially by public transportation, an increase in public transit ridership increases usage of the pedestrian network.

Figure 9: Mode Share of Commute Trips (2011)

Source: 2011 National Household Survey

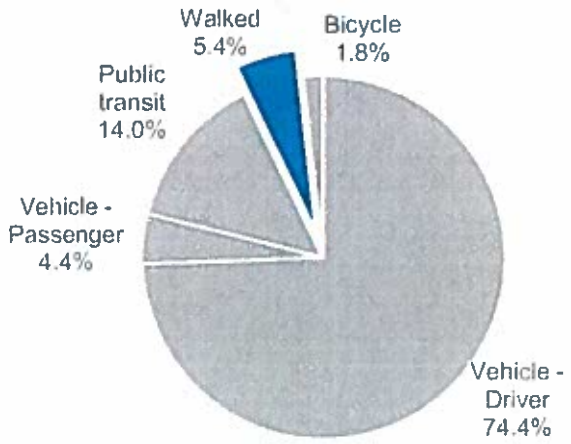


Figure 10: Mode Share of Walking for Commute Trips in Metro Vancouver (2011)

Source: 2011 National Household Survey

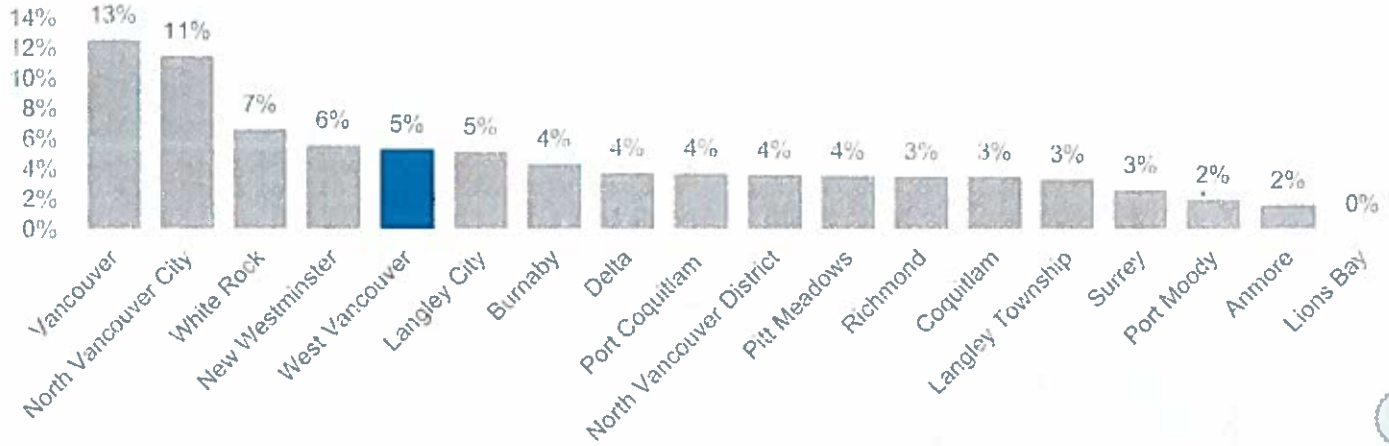
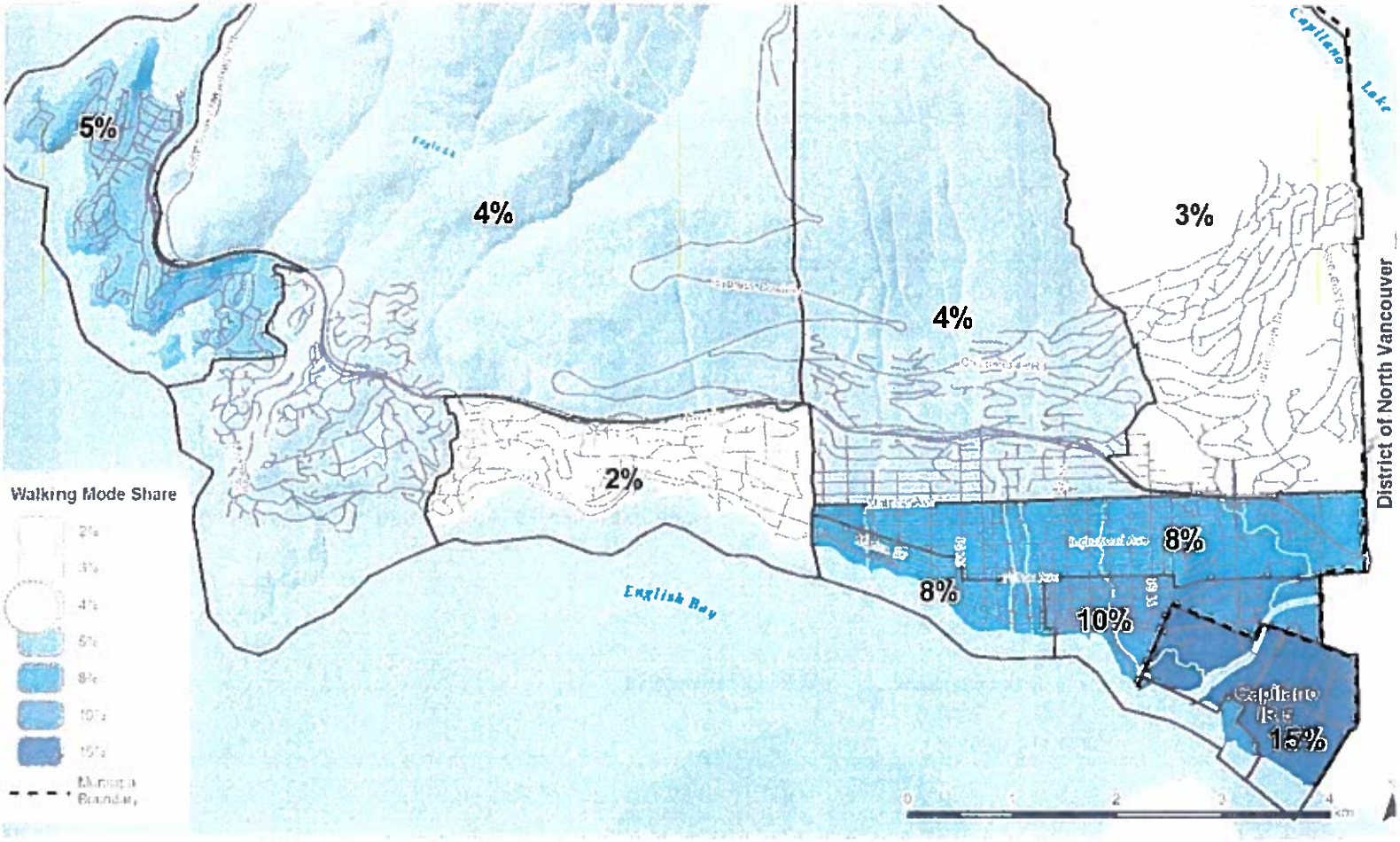


Figure 11: Walking Mode Share by Census Tract

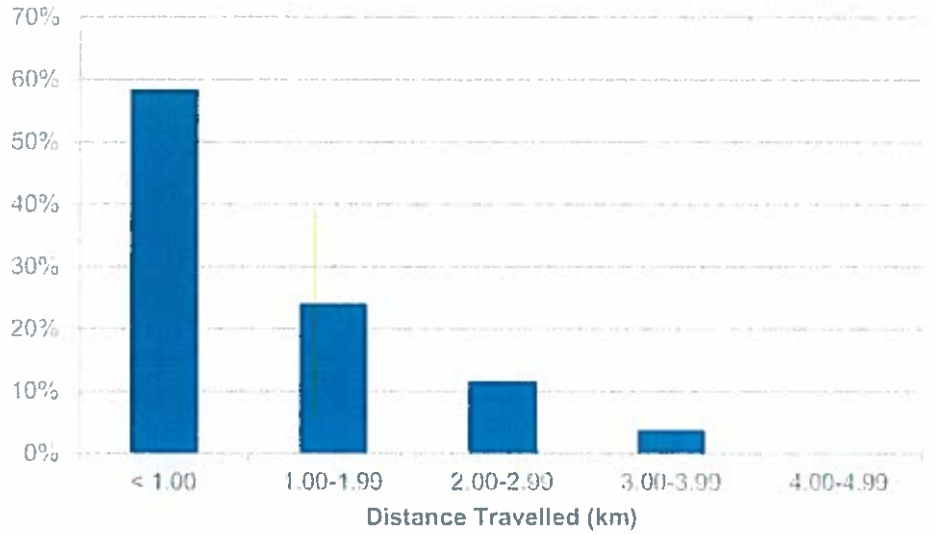


- **Mode Share of All Trips.** Similarly, the 2011 Metro Vancouver Regional Trip Diary, which records trips for all purposes – not just commute trips – found that 5.2% of all daily trips in West Vancouver are made by walking.

- **Trip Distance.** Most walking trips are short trips with 82.4% of all walking trips being 2 kilometres in length or less, as seen in **Figure 12**, which is equivalent to approximately a 20-30 minute walk. These results also show that nearly 60% of walking trips are less than 1 kilometre.

Figure 12: Walking Trip Distance in West Vancouver

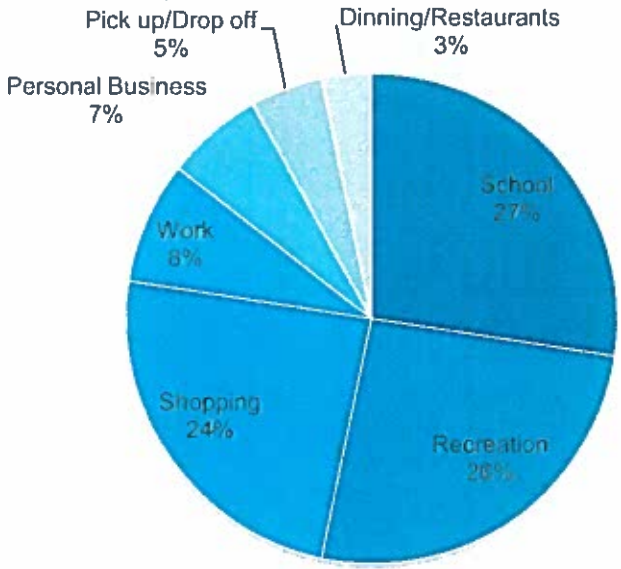
Source: Metro Vancouver Regional Trip Diary



- **Trip Purpose.** As noted previously, most daily walking trips in the community are made for the purposes of going to school, recreation, or shopping, as seen in **Figure 13**. Approximately 8% of residents walk to work.

Figure 13: Walking Trip Purpose

Source: Metro Vancouver Regional Trip Diary



- **Age Profile.** As identified in the previous section, the majority of walking trips in West Vancouver are made by individuals under the age of 20 or over the age of 70. This is consistent and a similar trend that is seen in many other municipalities in Metro Vancouver.

- **Transportation Energy and Emissions.** One of the key reasons to promote walking is because of the lack of greenhouse gas (GHG) emissions generated by the mode. This is important because, similar to most communities in British Columbia and elsewhere, the provincial Community Energy & Emissions Inventory (CEEI, 2010) estimates that 43% of Greenhouse Gas Emissions in the District of West Vancouver come from on-road transportation, with the remainder coming from buildings (53%) and solid waste (4%).

2.3 Policy Context

This section describes the planning context for the Pedestrian Network Study. This includes a summary of the key characteristics of the District as they relate to walking, as well as the local policy context that have shaped and guided the study. Several relevant plans and strategies have been developed that provide direction on walking throughout West Vancouver. The District's transportation policies and objectives, as well as its broader aspirations are contained within many local policy documents which strongly influence transportation movements within and beyond municipal boundaries. In addition, several senior government initiatives provide guidance on regional directions for planning and development of pedestrian facilities. This section provides a description of important policies, plans, and strategies that can help shape the direction of the District's Pedestrian Network Plan at the local, regional and provincial level.

The key documents included in the summary are:

- District of West Vancouver Official Community Plan (2004)
- Strategic Transportation Plan (2010)
- Access and Inclusion Policy (2009)
- Pedestrian Access Guidelines (2007)
- Transportation Infrastructure Asset Management Plan (2012)
- Ambleside Village Centre Streetscape Standards (2013)
- Cycling Network and Greenway Plan (2007)
- Parks Master Plan (2012)
- Traffic and Parking Bylaw No. 4370 (2004)
- Boulevard Bylaw No. 3191 (1984)
- A Plan for Trails on Public Land (2017)

2.3.1 Over-Reaching Policies

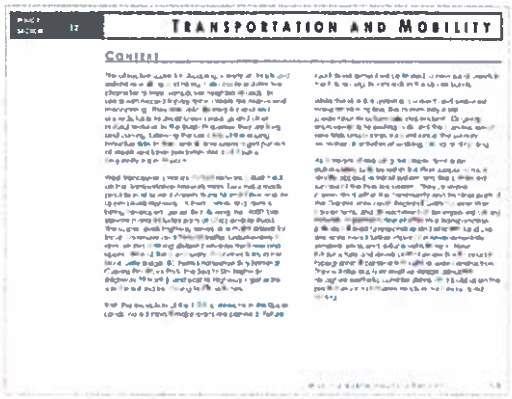
While some of the following documents do not have transportation as their focus, they contain sections with policies and actions with an impact on the pedestrian environment and walkability.

District of Vancouver Official Community Plan

The current *Official Community Plan* (OCP) was adopted in 2004 and is a culmination of a comprehensive community-based process. The following three sections discuss policies that promote walking:

- **Policy Section 4 – Built Form and Neighbourhood Character.** The purpose of Policy BF-C1 is to use streetscape improvements and building design to promote commercial areas as resident and visitor

destinations. To accomplish this, any new development or major renovation project should contribute to sidewalk and accessibility improvements.


TRANSPORTATION AND MOBILITY

Improving existing streets and sidewalks, promoting alternative transportation, facilitating pedestrian movement into and within the area are part of the objective of Policy BF-C3 to enhance Ambleside Village Centre. Policy BF-C4.8 describes that this can be accomplished by enhancing the pedestrian environment with wider sidewalks, landscaping, and curb extensions at crosswalks to provide priority for pedestrians. It also states that attractive pedestrian and cycling links should be created between Ambleside, Park Royal, and the Civic Centre Area. Part of Policy BF-C4.7 is to provide a continuous public walkway for pedestrians and cyclists through the waterfront area.

Many of the neighbourhood area policies and designations require that any redevelopment enhance pedestrian connections and promote pedestrian friendly streetscape design.

- **Policy Section 8 – Parks and Open Space.** The purpose of Policy P8 is to promote public access throughout the community. This is accomplished by planning, providing, and maintaining (protecting from encroachment) a coordinated system of links for pedestrians to public open spaces.

- **Policy Section 12 – Transportation and Mobility.** The purpose of Policy T2 is to support sustainability principles that encourage the use of sustainable forms of transportation and provide increased transportation related non-motorized facilities throughout the community. Policy T3 is intended to coordinate transportation infrastructure with local area planning to ensure that it contributes to and sustains neighbourhood character. Part of this is to encourage separated pedestrian pathways and sidewalks on key pedestrian routes.

  Policy T4 is intended to improve transportation safety and accessibility. This is accomplished by maximizing public accessibility and community connections through design of streets, bus stops, sidewalks, and crosswalks. This policy states the District is to use the *Pedestrian Access Guidelines* to improve pedestrian accessibility.

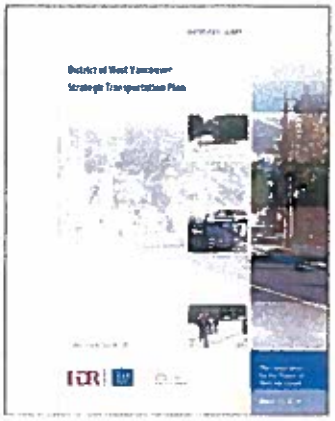
  Policy T5 is intended to enhance and expand transportation options that reduce automobile dependency. A part of this policy is to develop a comprehensive and accessible walking and cycling network in the District.

- **Guidelines.** Many of the landscape design guidelines recommend avoiding landscaping elements that inhibit pedestrian access along sidewalks or into buildings.

Strategic Transportation Plan

The *Strategic Transportation Plan* (STP) is a vision for the future of transportation in West Vancouver to 2025 and beyond. The Vision for the STP is to reduce auto dependency, expand mode choice, and promote safety while supporting sustainability and reflecting community transportation priorities. The STP introduces the concept of a "Transportation Hierarchy" and pedestrians are placed at the top of this hierarchy. Pedestrian strategies to achieve the STP Vision are to:

- Continue to develop and maintain pedestrian mapping;
- Continue to install and maintain effective wayfinding;
- Create minimum pedestrian design standards to be used for the design of redevelopment and new development facilities;
- Provide sidewalks on at least one side of main roadways;
- Maintain sidewalks and walking spaces to allow unobstructed access for pedestrians, including those with disabilities;
- Complete the Spirit Trail Greenway;
- Consider an Upper Spirit Trail above Highway 1;
- Complete greenways and pedestrian routes noted in the Cycling Network and Greenway Plan;



- Continue efforts already in place, such as the Gateway Project, in Ambleside and Park Royal and apply these concepts to other areas; create pedestrian friendly market streets with enhanced crossing locations, street furniture, pedestrian level lighting. Possible locations include:
  - Park Royal;
  - Ambleside;
  - Dundarave;
  - Caulfield shopping centre area; and,
  - Horseshoe Bay.
- Consider car free streets / pedestrian areas;
- Enhance pedestrian routes on Marine Drive west of 25th Street;
- Consider providing pedestrian connectivity between areas at different elevations and across Highway 1 to improve community connections and transportation options; and,
- Complete implementation of intermodal hubs.

The STP Vision recommends that along Marine Drive a preferred sidewalk width of at least two metres in commercial areas be provided along both sides of the roadway wherever feasible (minimum one side of the roadway).

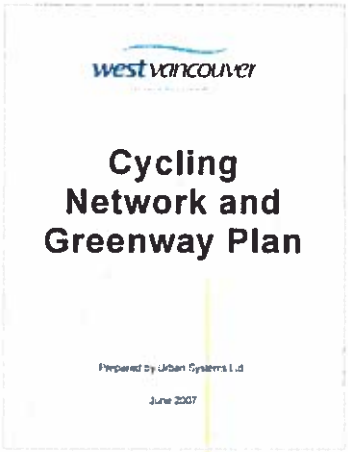
Transportation Infrastructure Asset Management Plan

The *Transportation Infrastructure Asset Management Plan* states that as of 2012, the District had approximately 30,000 m² of sidewalk. Each year West Vancouver constructs approximately 2 kilometres (or 3,000 m²) of new sidewalk to improve pedestrian accessibility. The financial forecast assumed that the inventory of sidewalks would continue to increase this rate each year until all arterial roads have sidewalks on both sides and all collector/local roads have sidewalk on one side. The Plan estimates the total replacement value of these existing sidewalks at approximately $2 million and provides an estimated service life for new sidewalk installation of 50 years.

Cycling Network and Greenway Plan

The primary goal of the *Cycling Network and Greenway Plan* is to increase bicycle use and walking. The key feature of the Plan is the Spirit Trail Greenway running east-west through the District between the District of North

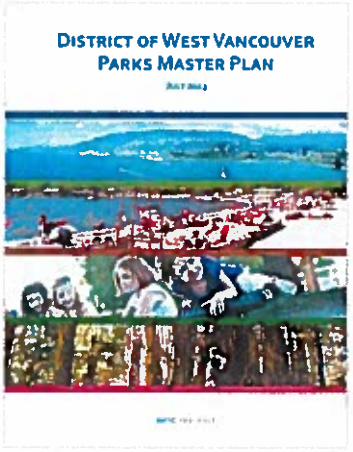
Vancouver and Horseshoe Bay. The Greenway and other pathways should be designed to accommodate all forms of non-motorized transportation. The Plan provides a prioritized implementation schedule for uncompleted sections and localized improvements for existing sections.



The design guidelines within the Plan address greenways and pathways and state the minimum desired width for a multi-use pathway is 4.0 m. However, widths of 6.0 m or more may be necessary on high-use pathways. A reduced width of 3.0 m is acceptable on low-use pathways with less than 200 persons per hour during peak periods. A constrained width of as little as 2.4 m is acceptable for short sections where there are physical constraints on the pathway width, such as trees, rocks and other objects.

The Plan also provides guidelines for the type of crossing treatment to install based on the width of the intersecting road, the volume of motor vehicle traffic, and the number of cyclists, pedestrians and others using the crossing. Crossing treatments discussed include: marked crosswalks, flashing lights, and signalized crossings.

Parks Master Plan

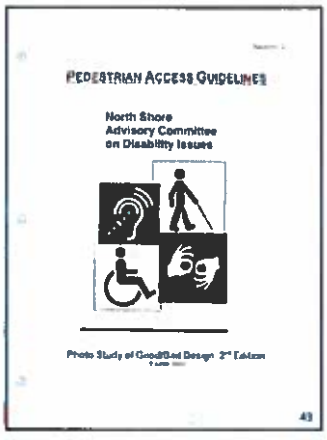


The *Parks Master Plan* was developed to set clear direction for the management, protection, and enhancement of the District's parks, trails, and open spaces. It states that it is the responsibility of the District Parks staff to inspect and maintain all sidewalks and paths within these areas. The Plan identifies a lack of trail connectivity as a challenge to accessing park amenities.

A Plan for Trails on Public Land

In 2016, the West Vancouver Parks Department began consultation on a plan for trails on public land in the District. It began with a GPS survey of trails on public land, the results of which are found in the draft map of Trails on Public Land found in this report. This was followed by public consultation on why District trails and trail opportunities are important to residents. The draft version of the report is expected to be completed in late 2017.

2.3.2 Supporting Policies



Access and Inclusion Policy. The *Access and Inclusion Policy* was formally adopted in 2009 to enhance accessibility and inclusion for the District. Part of the Policy is to ensure the *Pedestrian Access Guidelines* are used and updated.

The North Shore Advisory Committee on Disability Issues (ACDI):

1. Reviews development applications referred by staff
2. Provides input prior to and during the design and/or upgrading of public facilities and spaces;
3. Meets annually with senior staff from all municipal divisions and other community members with expertise in accessibility issues, and review current and future accessibility initiatives for the DWV.

4. Meets annually with appropriate senior West Vancouver Transit and related municipal staff to provide input into public transit services and municipal infrastructure that supports the continuous improvement of an available and accessible transit system.

Pedestrian Access Guidelines. The *Pedestrian Access Guidelines* were created by a tri-municipal committee (comprising District of West Vancouver, District of North Vancouver, and City of North Vancouver) to help municipalities create accessible communities for all pedestrians, recognizing the unique topography of the North Shore. The Pedestrian Access Guidelines include the following design components:

- Sidewalks should stay as close as possible to the standard 2% cross slope rather than sloping with driveways, and should be no steeper than a 9% cross slope, wherever possible. A minimum width of 1.2 metres should be maintained free of any obstacles for pedestrian travel.
- Maintenance of sidewalks is the responsibility of the District Public Works Department to identify and repair rough areas, cracks, and depressions. It is the responsibility of property owners to remove leaves and snow and cut back vegetation so it does not intrude onto walkways.
- Curb cuts should have a 5% cross slope (maximum 9%). All curb cuts at any intersection should have consistent style, placement, and width and should be textured on the apron to aid pedestrians with visual impairments. There should be continuity at all intersections and curb cuts should be located directly across from each other so pedestrians can easily find the other sidewalk after crossing.
- At pedestrian crossings, audible signals should be installed at priority intersections and where there are major upgrades or new signal installations at intersections. Pedestrian signals should be installed and have activation buttons.

Traffic and Parking Bylaw No. 4370. This bylaw states that pedestrians must use crosswalks when crossing Marine Drive between Taylor Way and 13th Street. The bylaw does not clearly specify if pedestrians are allowed to cross Marine Drive at locations without crosswalks when not between these streets.

In regards to snow, ice, and debris removal from sidewalks the bylaw states that the owner or occupier of real property must remove any accumulation of snow or ice from the sidewalks and footpaths bordering the real property within 24 hours after the cessation of any snowfall that caused any accumulation of snow or ice on any sidewalk, or prior to the depth of snow accumulation exceeding ten centimetres.


Boulevard

In regards to parking, the bylaw states that vehicles shall not be parked within six metres of the edge of a marked crosswalk, stop sign, yield sign, or traffic control signal, or within three metres of the edge of a sidewalk crossing.

Boulevard Bylaw No. 4886 This bylaw was created in 2016 states that the owner of land abutting a boulevard shall at their own expense keep the boulevard in good and safe condition. This includes tidying, pruning, trimming, and mowing. As well, the boulevard cannot be improved in a way that poses a hazard or obstruction to pedestrians.

2.3.3 Community and Neighbourhood Plans

Ambleside Village Centre Streetscape Standards. The *Ambleside Village Centre Streetscape Standards,* developed in 2013, provide typical Streetscape Standards that are to be applied to the various locations and conditions that occur within the Ambleside Village Centre. **Figure 14** illustrates the anticipated extent of renovated,

replacement, and widened sidewalks. The typical design details illustrate a renovation or replacement sidewalk zone width of 1.8 m on all streets, widened sidewalk zone width of 2.1 m on Marine Drive, and widened sidewalk zone width of 1.2 m on the north-south streets. The Standards propose to mark crosswalks with a custom designed patterning to emphasize pedestrian priority. **Figure 15** illustrates the location of current and future corner and bus bump-outs.

Traffic Safety in School Zones – Issues and Recommendations (2004). The District of West Vancouver and the West Vancouver School District appointed the Traffic Safety Advisory Sub-committee to review and make recommendations on a number of matters pertaining to traffic safety. Members of the Traffic Safety Advisory Sub-committee included representatives from the West Vancouver School District, the District of West Vancouver, the West Vancouver Police Department, West Vancouver Speed Watch and ICBC. Three fundamentals of road safety were identified which are absolutely necessary in order to create and support a safe pedestrian and vehicular environment around schools: education, engineering and enforcement.

The issues and recommendations were categorized into two groups: those that could be considered and applied consistently to every site and those that applied to specific schools.

The report included three public secondary schools, Rockridge Secondary, West Vancouver Secondary, and Sentinel Secondary. It also included 12 public elementary schools, Caulfeild, Chartwell, Gleneagles, Hollyburn, Irwin Park, Ecole Pauline Johnson, Ridgeview, West Bay, Westcot, Ecole Cedardale, Cypress Park Primary, and Eagle Harbour Primary.

Some of the infrastructure-related recommendations included:

- Consideration of additional traffic calming measures where appropriate such as curb extensions, raised centre medians, roadway narrowing etc.
- That rumble strips be installed on the roadway transverse and adjacent to every school zone sign
- That the words 'school zone' be painted on the roadway approach to each school zone
- That crosswalks adjacent to every school be painted as a zebra crosswalk
- That barrier curbs and sidewalks be used in streets adjacent to school zones to ensure that pedestrian flow is not interrupted by parked vehicles.
- Scheduling of an annual maintenance program to focus on pruning brushing and limbing vegetation, clearing/replacing signage, and clearing/repairing pathways and sidewalks.
- Requirement for an approved Traffic Impact Study as part of the development approval process for developments near school sites.

A detailed review of recommendations for each of the schools can be found in **Appendix C**

Figure 14 – Potential Sidewalk Improvements

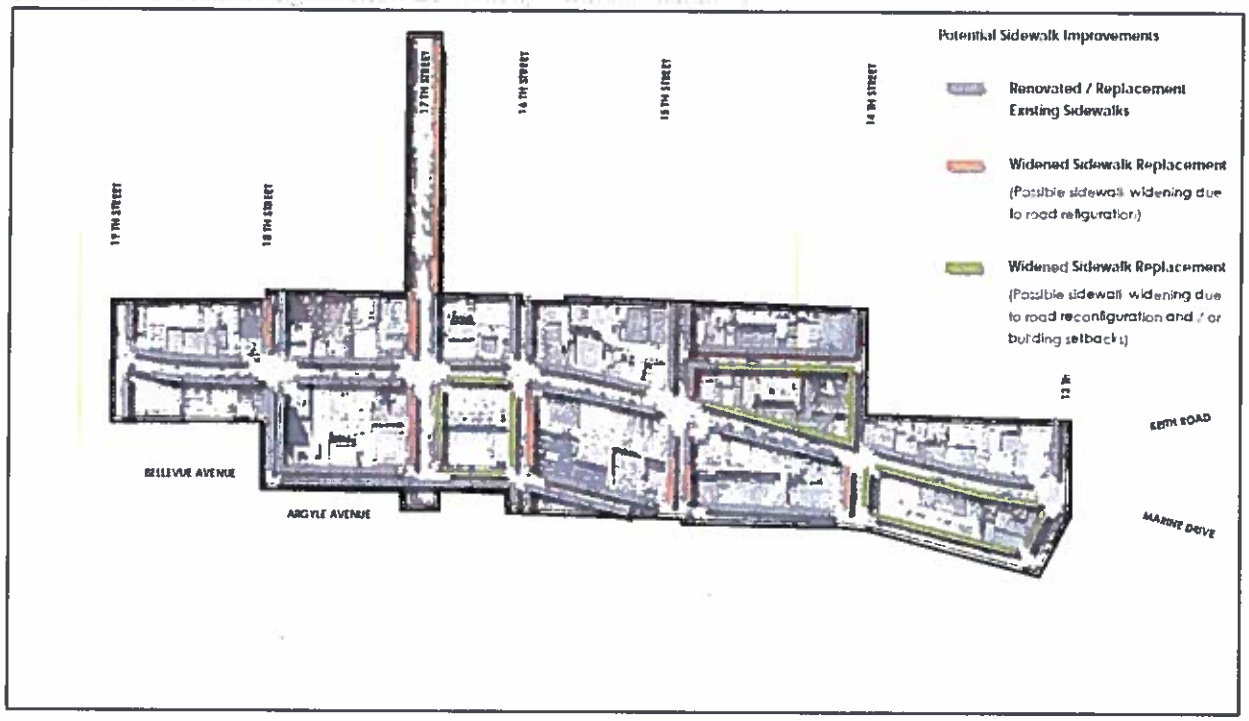
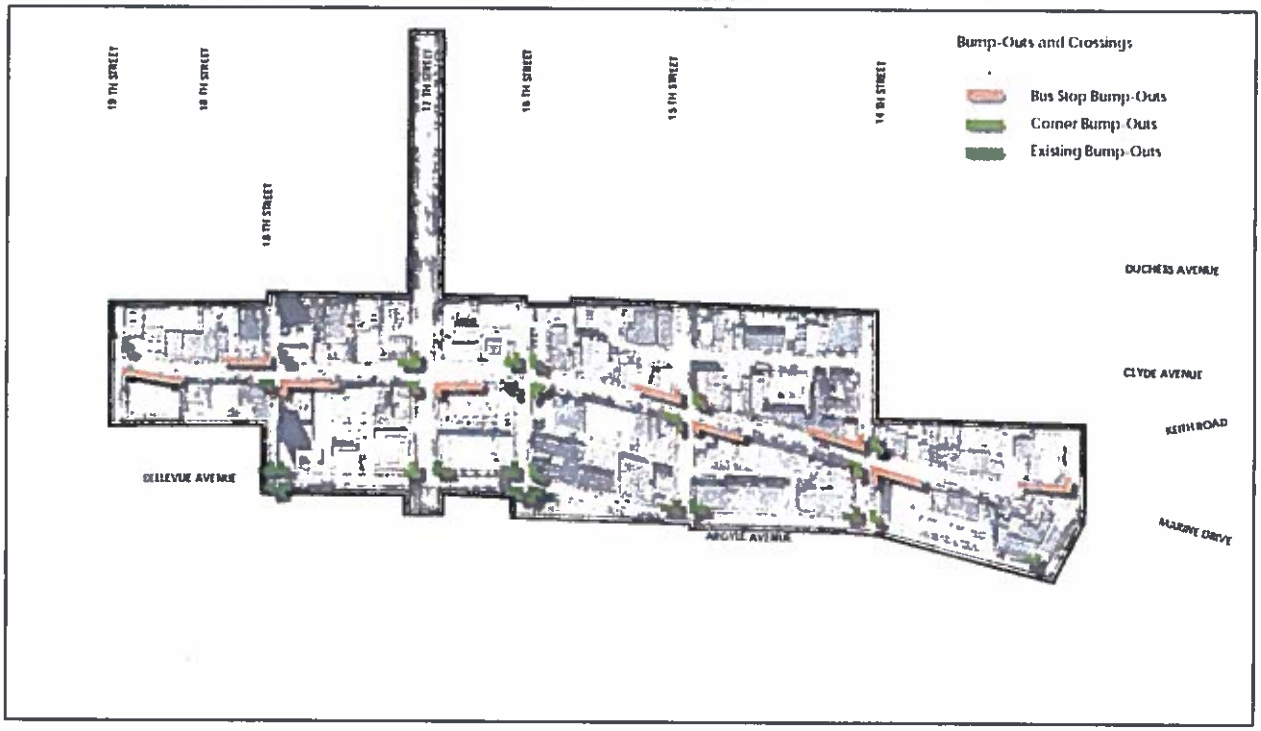


Figure 15 – Bump-Outs and Crossings



3.0 WALKING TODAY

The following sections describe the existing features of the walking environment in West Vancouver, including infrastructure, bylaw requirements, safety aspects, topography and land uses that shape walking in and around the District. Also included is feedback received from West Vancouver residents and stakeholders, including input on common walking and cycling issues and opportunities within the community, gathered through several public consultation activities that occurred in winter and spring of 2015. An assessment of the current walking and cycling environment in West Vancouver can provide a good picture of where the District is, and next steps for moving forward within the Pedestrian Network Plan.

Walking is the most fundamental form of transportation. It is a part of every trip, whether that trip is made by car, transit, or bicycle. If suitable conditions exist within a community – such as having a complete, connected sidewalk network and major destinations nearby – walking can also be a convenient alternative to the automobile for almost all short trips. Promoting walking can help reduce automobile dependence and greenhouse gas emissions, improve public health outcomes and help to create more liveable and vibrant communities.

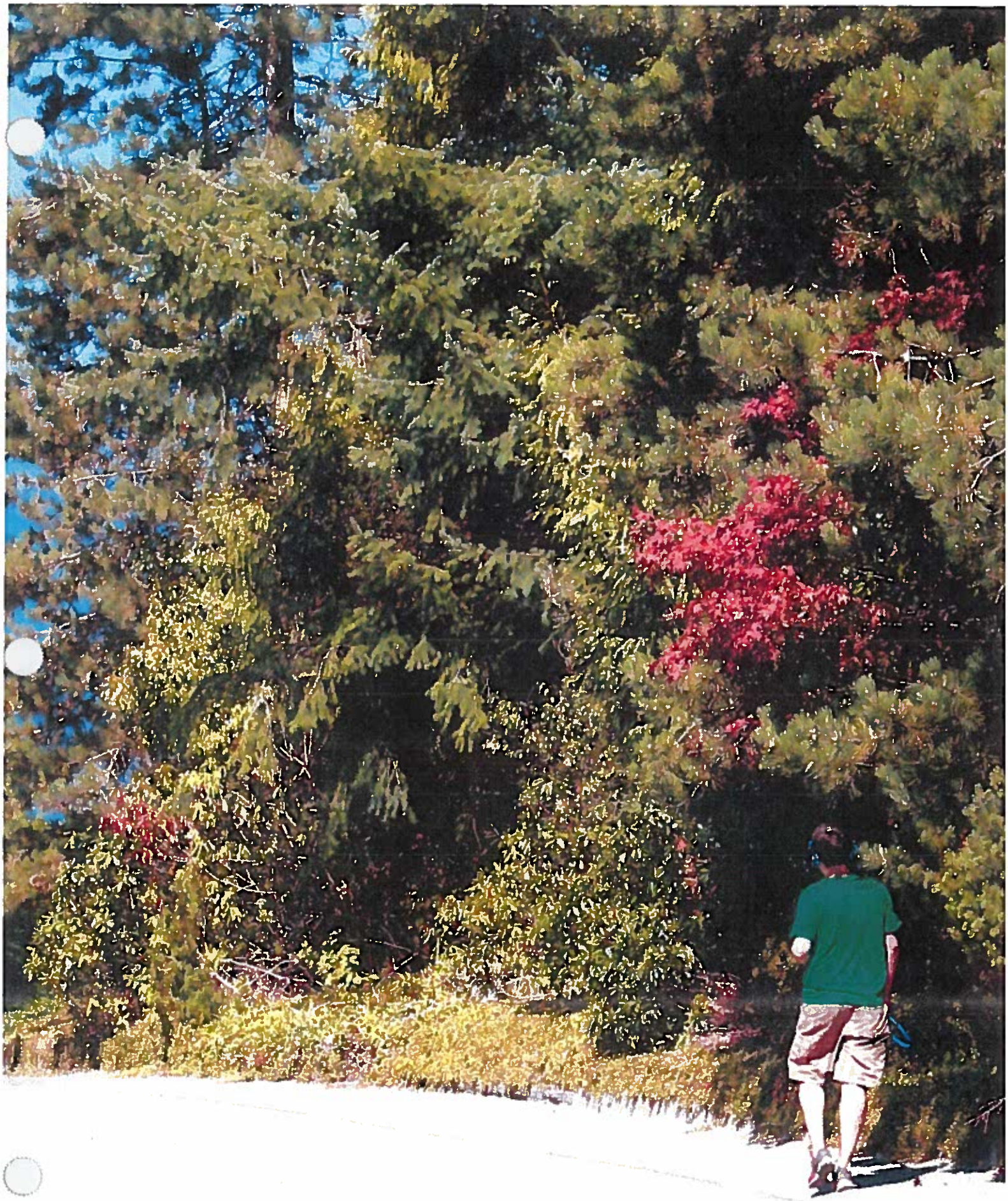
3.1 Key Issues and Opportunities

Key issues and opportunities were identified based on input received during the community workshops that took place on February 11, 17, and 18, 2015, and through a survey that was available for residents to complete throughout February 2015. Over 90 people responded to the survey. Once the draft network plan had been completed, open houses were conducted on November 29th and December 1st, 2016 to share the results and ask for feedback. In addition, an online survey was made available between December 2016 and January 2017, with 115 respondents provided additional input into the plan.

Residents stated that they enjoy walking in the District particularly along the Seawalk, on trails, and along some of the neighbourhood streets. Respondents were also asked to identify key walking issues, and key themes are summarized below (more detailed survey results are found in **Appendix A** and **Appendix B**):

- **A lack of sidewalks and shoulders** was identified as a barrier by the largest group of survey respondents. A lack of sidewalks was seen as a significant barrier, as was a lack of shoulder space as well as narrow sidewalks. The lack of sidewalks on sections of 15th Street, 21st Street, 22nd Street, Mathers Avenue, Queens Avenue, Eagleridge Drive and Greenleaf Road were some locations that were flagged as issues. Safety for those walking is improved by adding paved shoulders and sidewalks to roads. Paved shoulders have been shown to reduce pedestrian crashes by 70% (*Gan et al. study*) and sidewalks reduce crashes by 88% (*McMahon study*).
- **Vehicle speeds on neighbourhood streets** as well of the volume of vehicles on these streets were identified as barriers to walking, both via the survey as well as at the workshop events. The topography of West Vancouver facilitates vehicles travelling at faster speeds when heading downhill. Topography can also limit pedestrian visibility when travelling by vehicle. Vehicle speeds and volumes were noted as being an issue particularly along Marine Drive, 22nd Street, 21st Street, and 15th Street.
- **Insufficient lighting** was a concern on many of the neighbourhood streets due to the narrow nature of the streets and lack of sidewalks. Many residents felt unsafe walking along streets at night as they fear that they are not visible to moving vehicles. It was also noted through discussions with the public that insufficient lighting was also an issue at a number of crosswalks within the District.
- **Unsafe crossings or lack of crossings** was identified as a barrier to walking. Nearly all of the signalized intersections within the District of West Vancouver are located on Marine Drive or on Ministry of Transportation roads. The lack of signalized intersections at some locations can make crossing the street difficult. In addition, at some crossings people walking find that crosswalks don't provide an adequate level of safety due to low visibility caused by poor lighting, overgrown vegetation, and parked cars.

- **Vehicles parking on the shoulder of the road** limit the space for pedestrians to walk, forcing them onto the street where they have to share space with moving vehicles.



Based on feedback from the survey and public consultation activities, residents indicate that walking in West Vancouver could be improved by providing the following:

- **Adding more sidewalks**, pathways, and shoulder facilities on streets with heavy vehicle volumes and speeds as well as routes with high pedestrian volumes to allow for safer separation between cars and pedestrians;
- **Reducing vehicle speeds** on neighbourhood streets through different forms of traffic calming;
- **Installing controlled crossings** with pedestrian-actuated signals;
- **Improving lighting** on neighbourhood streets and at crosswalks;
- **Ensuring** vegetation is cut back along sidewalks and particularly at crosswalks will help to improve pedestrian visibility; and
- **Updating and enforcing the Boulevard Maintenance and Encroachment Bylaw** to ensure that space at the side of the road is available for pedestrians as opposed to using it for parked vehicles.

3.2 Existing Pedestrian Facilities

The following section summarizes key facts and trends for walking in West Vancouver and identifies areas where the District should concentrate its efforts to facilitate pedestrian activity.

- **Sidewalk Requirements.** The District currently does not have a bylaw that sets out the District's sidewalks requirements for existing or new developments regardless of road classification. This is rather unusual as many municipalities throughout the region often require arterial and collector streets to have sidewalks on at least side one of the street, with many requiring sidewalks on both sides.

- **Sidewalks.** As shown in **Figure 16**, West Vancouver has a network of sidewalks along Marine Drive between Dundarave and Ambleside that connect the two centres with surrounding residential and commercial areas, parks, community facilities. Other areas with a noticeable network of sidewalks include Horseshoe Bay and Caulfeild. Most of the local streets in West Vancouver do not have sidewalks on either side of the street. Currently, 53% of arterial streets have sidewalks on at least one side of the street, 40% of collector streets have sidewalks on at least one side of the street, and 9% of local streets have sidewalks on at least one side of the street, as seen in **Table 1**. These percentages are calculated based on the total distance of road by classification divided by the total distance of the street based on their sidewalk location.

Table 1: Sidewalk Inventory by Road Classification

Road Class	No Sidewalk	One Sidewalk	Two Sidewalks	Total
Arterial	47%	29%	24%	100%
Collector	60%	35%	5%	100%
Local	91%	6%	3%	100%

Figure 16: Existing Pedestrian Infrastructure

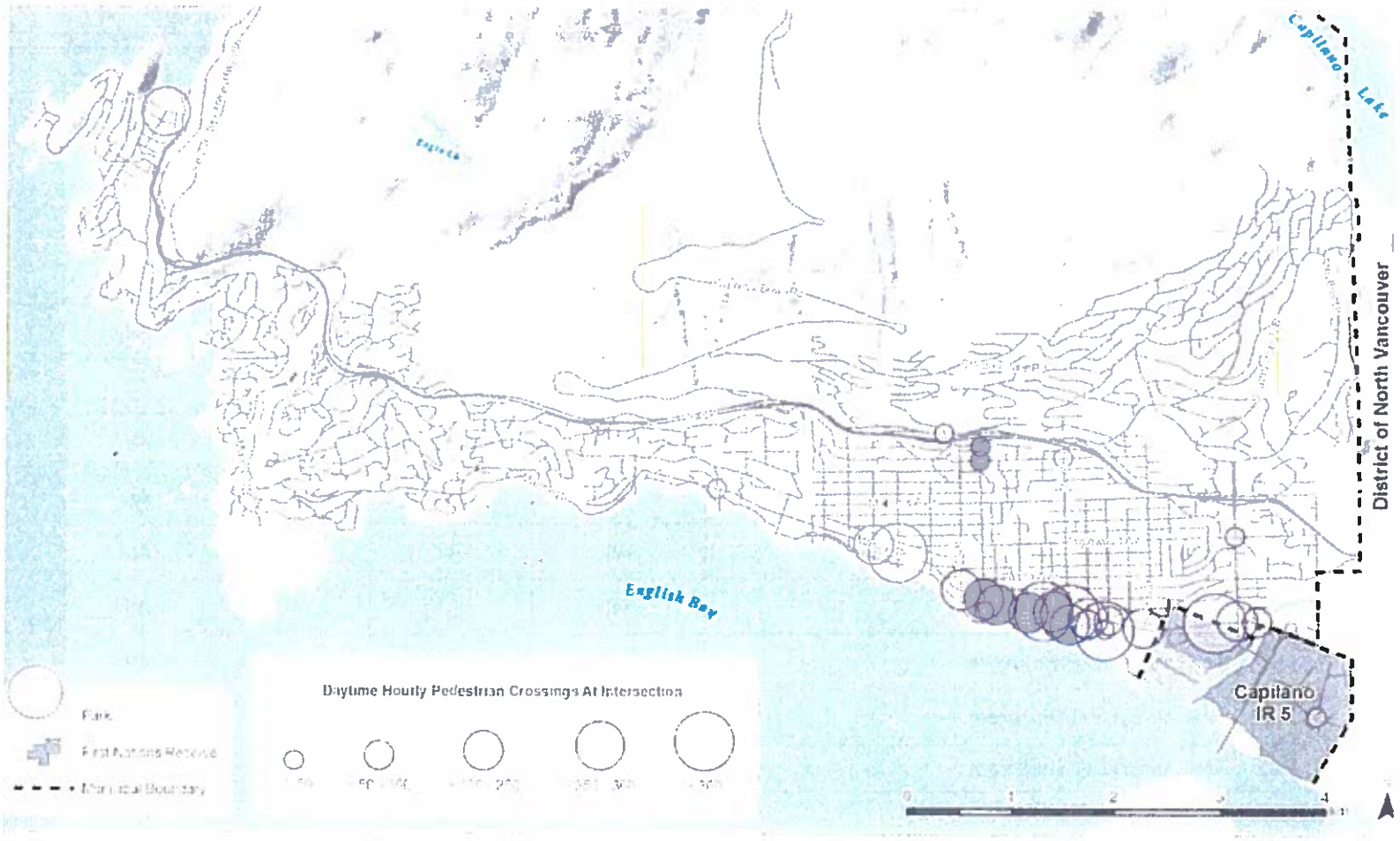
- **Sidewalk Materials.** As seen in **Figure 16**, 79% of pedestrian infrastructure within the District of West Vancouver consists of concrete sidewalks, 12% gravel paths, 3% sidewalks made of pavers, and 2% constructed with asphalt. This is an important consideration for the pedestrian network because different materials are of different quality, require different levels of maintenance and can have an impact on ease of use and accessibility. Concrete sidewalks are considered the standard within the District and are high quality.
- **Sidewalk Width.** The majority of sidewalks in West Vancouver are between 1.5 - 1.7 metres and meet standards for ideal design width based on District standards as seen in **Table 2**. It is important to note however, that many municipalities in Metro Vancouver and North America use a 1.8 metre minimum width as best practice, with even wider widths are often installed on streets with high levels of pedestrian activity. Approximately 14% of the Districts sidewalks are 1.8 metres or wider.

Table 2: Percentage of Sidewalks by Width

Sidewalk Width	Percentage
Below Standards (<1.5m)	7%
Meets Standards (1.5m-1.7m)	79%
Exceeds standards (>1.7m)	14%

- **Pedestrian Volumes.** The highest pedestrian volumes based on hourly counts were along Marine Drive as seen in **Figure 17**. The volumes presented in this map are based only on select intersections where the District has conducted counts. Based only on the count data that was provided, the locations with the highest volumes are at Marine Drive and Park Royal followed by Marine Drive and 15th Street and Marine Drive at 17th Street.

Figure 17: Pedestrian Volumes



- **Pedestrian Crossings.** As shown in **Table 3** below, the District of West Vancouver has 24 signalized intersections equipped with either full traffic signals or pedestrian activated signals. The majority of the signalized crossings are located on Marine Drive or Taylor Way. Nearly all of these intersections have pedestrian activated push buttons and curb let downs and approximately half have pedestrian countdown timers and audible signals. There are also three intersections at 15th Street at Fulton Avenue, 15th Street at Duchess Avenue, and Headland Drive at Timberfeild Road that are designated as special crosswalks or have a flashing beacon.
- **Rapid Flashing Beacons.** The District has also begun installing rectangular rapid flashing beacons (RRFBs) that are high intensity yellow warning lights designed to improve driver yield rates and pedestrian safety. These have been installed at Gordon Avenue & 21st St, Marine Dr & 23rd St, and Hadden Dr and Mathers Ave. It is important to note that signals located on Taylor Way, at Highway 1 off ramps, and in Park Royal Shopping centre are not under the jurisdiction of the District of West Vancouver.

Table 3: Signalized Intersections Pedestrian Crossing Features

	Intersection Location	Pedestrian Crossing Features			
		Pedestrian Push Button	Pedestrian Countdown Timers	Audible Pedestrian Signals	Curb Let Downs
1	Marine Drive/13th Street	All	None	None	All
2	Marine Drive/14th Street	All	None	All	All
3	Marine Drive/15th Street	All	All	All	All
4	Marine Drive/16th Street	All	None	All	All
5	Marine Drive/17th Street	All	None	All	All
6	Marine Drive/21st Street	All	All	All	All
7	Marine Drive/22nd Street	All	All	All	All
8	Marine Drive/24th Street	All	All	All	All
9	Marine Drive/25th Street	All	All	All	All
10	Marine Drive/Park Royal	All	All	All	All
11	Marine Drive/11th Street	NS Crossing	None	None	All
12	Marine Drive/18th Street	NS Crossing	None	None	All
13	Marine Drive/19th Street	NS	NS	Yes	All
14	Marine Drive/20th Street	NS	None	None	All
15	Marine Drive/31st Street	NS	None	None	All
16	15th Street/Inglewood Avenue	NW/NE and SW/SE – 2 crossings	NW/NE and SW/SE – 2 crossings	None	All
17	Queens Avenue and 21st Street	NW/NE and NW/SW – 2 crossings	NW/NE and NW/SW – 2 crossings	Yes	NW/NE and NW/SW – 2 crossings
18	Skilift Road and 21st Street	Yes	None	None	No
19	Upper Levels Hwy and 15 Street	None	None	None	None
20	Taylor Way and Upper Levels North	All	None	None	All
21	Taylor Way and Upper Levels South	All	None	None	None
22	Taylor Way and Inglewood Avenue	All	None	None	All
23	Taylor Way and Keith Road	All	None	None	All

	Intersection Location	Pedestrian Crossing Features			
		Pedestrian Push Button	Pedestrian Countdown Timers	Audible Pedestrian Signals	Curb Let Downs
23	Taylor Way and Marine Drive	All	None	All	All
24	Additional Crossing at Park Royal	All	All	All	All
25	15th Street at Fulton (Flashing Beacon)*	N/A	N/A	N/A	All
26	15th Street/Duchess Ave (Special crosswalk)*	All	N/A	N/A	All
27	Headland Drive/Timberfeild Road (Special crosswalk)*	South side crossing east/west	N/A	N/A	All
28	Taylor Way and Park Royal East	All	All	All	All
29	Park Royal West	All	All	All	All

*Grey intersections are special crosswalks or flashing beacons – not signalized

- **Pedestrian Clearance Interval.** The MUTCDC defines the pedestrian clearance interval as the "time required for the pedestrian, who entered the crosswalk at the end of the Walking Pedestrian indication, to reach the designated refuge area at a comfortable walking speed before a conflicting traffic movement commences". The MUTCDC is silent on the issue of what a *comfortable* walking speed is. Research conducted for TAC indicates that using a walking speed design value of 1.2 m/s excludes approximately one-third of older pedestrians and about 90 percent of pedestrians who use assistive devices such as walkers or canes for mobility[1]. The research will form part of an update to Section B.4 of the next edition of the MUTCDC and recommends the use of a range of values between 0.8 m/s and 1.0 m/s. It provides the following guidance for practitioners:

    - "Use 0.8 m/s walking speed in cases where at least 20 percent of pedestrians crossing the signalized intersection use assistive devices for mobility (possibly in the vicinity of hospitals or nursing homes). This walking speed applies to all types of crossings (whether the crossing is equipped with accessible pedestrian signals or not).
    - Use 0.9 m/s walking speed in cases where at least 20 percent of pedestrians crossing the signalized intersection are older pedestrians (65 years of age or older).
    - Use 1.0 m/s walking speed to accommodate the general population.
    - Practitioners need to use standard practice in their own jurisdictions, and engineering judgment to decide whether these walking speed values should be used to calculate only the clearance interval or the entire duration of the walk and clearance phases." (p. ES-2)

[1] Montufar, J., Rempel, G., Klassen, S. (2013). *Pedestrian Walking Speed for Traffic Operations in Canada*. Ottawa, ON: Transportation Association of Canada.

The pedestrian walking speed required to cross each intersection during the pedestrian clearance interval was calculated for each signalized location using the following formula:

$v_p = w_c / (t_{fdw} + y)$

where: v_p = pedestrian walking speed (m/sec)

w_c = length of crosswalk from curb to curb along centre line of the crosswalk (m)

t_{fdw} = Pedestrian flashing DON'T WALK (FDW) time (to the nearest 0.1 second)

y = length of yellow interval (to the nearest 0.1 second)

The District supplied signal timing plans for each intersection, which contained the time of FDW and yellow intervals. For most intersections, the length of the crosswalk from curb to curb along the centre line of the crosswalk was provided within the signal timing plan sheets; for some intersections the length was measured in Google Earth. **Table 4** indicates the required pedestrian walking speed to cross each crosswalk.

Table 4 – Required Pedestrian Walking Speed during Pedestrian Clearance Interval

Intersection	E/W required walking speed (m/s)*	N/S required walking speed (m/s)*
Pedestrian Signals		
Marine Drive & Keith Road	Stop controlled	1.2 m/s
Marine Drive & 31st Street	Stop controlled	1.2 m/s
Marine Drive & 20th Street	Stop controlled	1.0 m/s
Marine Drive & 19th Street	Stop controlled	1.2 m/s
Marine Drive & 18th Street	Stop controlled	1.2 m/s
Marine Drive & 11th Street	Stop controlled	1.2 m/s
Marine Drive & Park Royal Mall (east)	Stop controlled	1.0 m/s
Inglewood Avenue & 15th Street	Stop controlled	1.2 m/s
Full Traffic Signals		
Marine Drive & 25th Street	1.2 m/s	1.2 m/s
Marine Drive & 24th Street	1.2 m/s	1.2 m/s
Marine Drive & 22nd Street	1.0 m/s	1.0 m/s
Marine Drive & 21st Street	1.0 m/s	1.0 m/s
Marine Drive & 17th Street	1.2 m/s	1.2 m/s
Marine Drive & 16th Street	1.2 m/s	1.2 m/s
Marine Drive & 15th Street	1.2 m/s	1.2 m/s
Marine Drive & 14th Street	1.2 m/s	1.2 m/s
Marine Drive & 13th Street	1.2 m/s	1.2 m/s
Marine Drive & Park Royal (west)	1.0 m/s	1.0 m/s
Marine Drive & Taylor Way	1.4 m/s (N approach leg)	1.0 m/s
Keith Road & Taylor Way	1.1 m/s	1.2 m/s
Inglewood Drive & Taylor Way	1.0 m/s	0.9 m/s
Queens Avenue and 21st Street	1.0 m/s	1.0 m/s
Skilift Road & 21st Street/Westhill Drive	1.1 m/s	1.4 m/s (W approach leg)
HWY 1 off-ramp & Taylor Way (south intersection)	1.0 m/s	1.0 m/s
HWY 1 off-ramp & Taylor Way (north intersection)	1.6 m/s (E approach leg)	0.8 m/s

* Each crossing direction (i.e., E/W or N/S) may have either one or two approach legs with crosswalks depending on the intersection geometry. All values in the table represent the highest required walking speed for the crossing direction during the pedestrian clearance interval.

The analysis identifies that the District has generally uses a walking speed of 1.2 m/s for determining the time provided for the pedestrian clearance interval. The following intersections require a pedestrian walking speed in excess of 1.2 m/s and consideration should be given for revising the signal timing plan:

- Marine Drive & Taylor Way

- Skilift Road & 21st Street/Westhill Drive
- HWY 1 off-ramp & Taylor Way (north intersection)

The District should change the crossing times at intersections throughout the network to comply with potential changes in the MUTCDC update (i.e., requiring between 0.8 and 1.0 m/s for walking speed).

- **Traffic calming.** The District of West Vancouver has a number of locations with curb extensions including at some intersections along Marine Drive, Bellevue Avenue, 22nd Street in front of Ecole Pauline Johnson Elementary, in Horseshoe Bay and at a number of other locations throughout the District. There are also some intersections with traffic circles as well as 30 kilometre per hour zones in front of schools and parks and on some sections of road. Currently speed humps are only permitted along laneways or in parks.

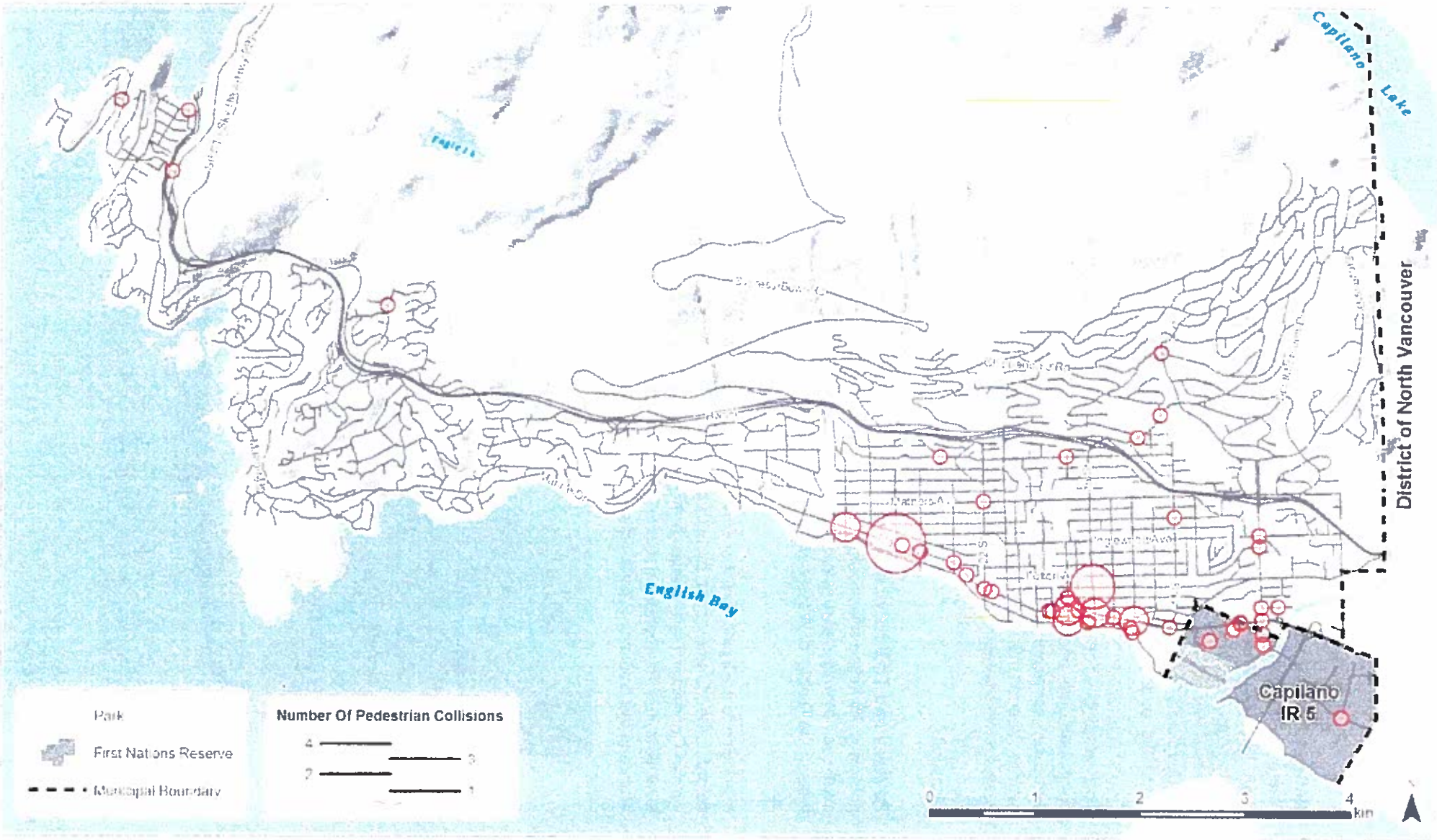
- **Pedestrian transit integration.** All transit trips begin or end with a walking trip, and as such it is important to consider how pedestrian facilities are integrated with transit services and facilities. West Vancouver has a main bus transfer point at Park Royal Shopping Centre, and has important bus service to the Horseshoe Bay ferry terminal. Both of these locations are locations of high levels of pedestrian activity and are important destinations within the District. It is important to ensure that routes with bus stops are accessible for those walking.

- **Pedestrian Safety.** In a review of collision data from the Insurance Corporation of BC (ICBC), there were 73 pedestrian collisions in the District of West Vancouver between 2009 and 2013, equalling an average of 14 collisions a year. There was one pedestrian fatality, with the remaining 72 collisions resulting in a personal injury. Many of these collisions occurred on streets with the highest vehicle and pedestrian volumes such as Marine Drive and Taylor Way as seen in **Figure 18** below. The intersection of Marine Drive and 25th Street was the top collision location, followed by 15th Street and Esquimalt. All collision locations that had more than one pedestrian collision between 2009 and 2013 are presented in **Table 5**. Many of the top collision locations also tend to correspond with the locations with the highest pedestrian volumes including many intersections along Marine Drive.

Table 5: Pedestrian Collision Locations

Collision Locations	Count
Marine Drive and 25th Street	4
Esquimalt Avenue and 15th Street	3
Marine Drive and 13th Street	2
Marine Drive and 27th Street	2
Marine Drive and 17th Street	2
Bellevue Avenue and 17th Street	2
Marine Drive and 15th Street	2
Marine Drive and 27th Street	2

Figure 18: Pedestrian Collisions



- **Network Screening Study.** In 2015, as part of the Pedestrian Network Study work, the District commissioned Parsons Engineering to analyze the most recent set of collision data for a five year period from 2008 to 2012 from the Insurance Corporation of British Columbia (ICBC) to identify intersections with high collision frequencies, rates, and severities, determine trends, and recommend critical intersections for further safety studies. A key statistic was the collision rate, determined by dividing the annual collision frequency by the annual traffic volume. Taylor Way was the most dangerous corridor, with four out of the top highest ranking intersections along this road. These intersections are reviewed in more detail in the implementation strategy in section 5.1.

- **Topography.** The District of West Vancouver is characterized by its hilly topography, with residential neighbourhoods perched along the side of the North Shore Mountains. North-south travel can be a challenge, particularly for people walking with physical disabilities and older residents. The hills can also facilitate driving over the speed limit, which can increase safety concerns and make for an uncomfortable waking environment. Based on the demographics of West Vancouver and the growing number of individuals over the age of 65, it is important that facilities and amenities are provided that can help facilitate pedestrian movement in areas with steep hills.

- **Pathway and Trail Network.** The trail network in the District of West Vancouver contains forested trails and pathways, including the popular Spirit Trail. The Spirit Trail, while not yet complete, is and will be a unique multi-use pathway that runs east-west through each of the North Shore municipalities. The draft map of public trails in the District of West Vancouver with completed portions of the Spirit Trail are outlined in Figures 19 and 20.

  In addition to the Spirit Trail, there are other walking routes in West Vancouver that provide direct routes through neighbourhoods and parks, by utilizing rights of way and green corridors. We have termed these pathways "Urban Connector Trails" because they facilitate walking for transportation, as opposed to trails that are used to walk mainly for recreation. Some of the major ones include Centennial Seawalk, Clovelly Walk, Seaview Walk and the Capilano Pacific Trail.

Figure 19: Trails on Public Lands (East Section)

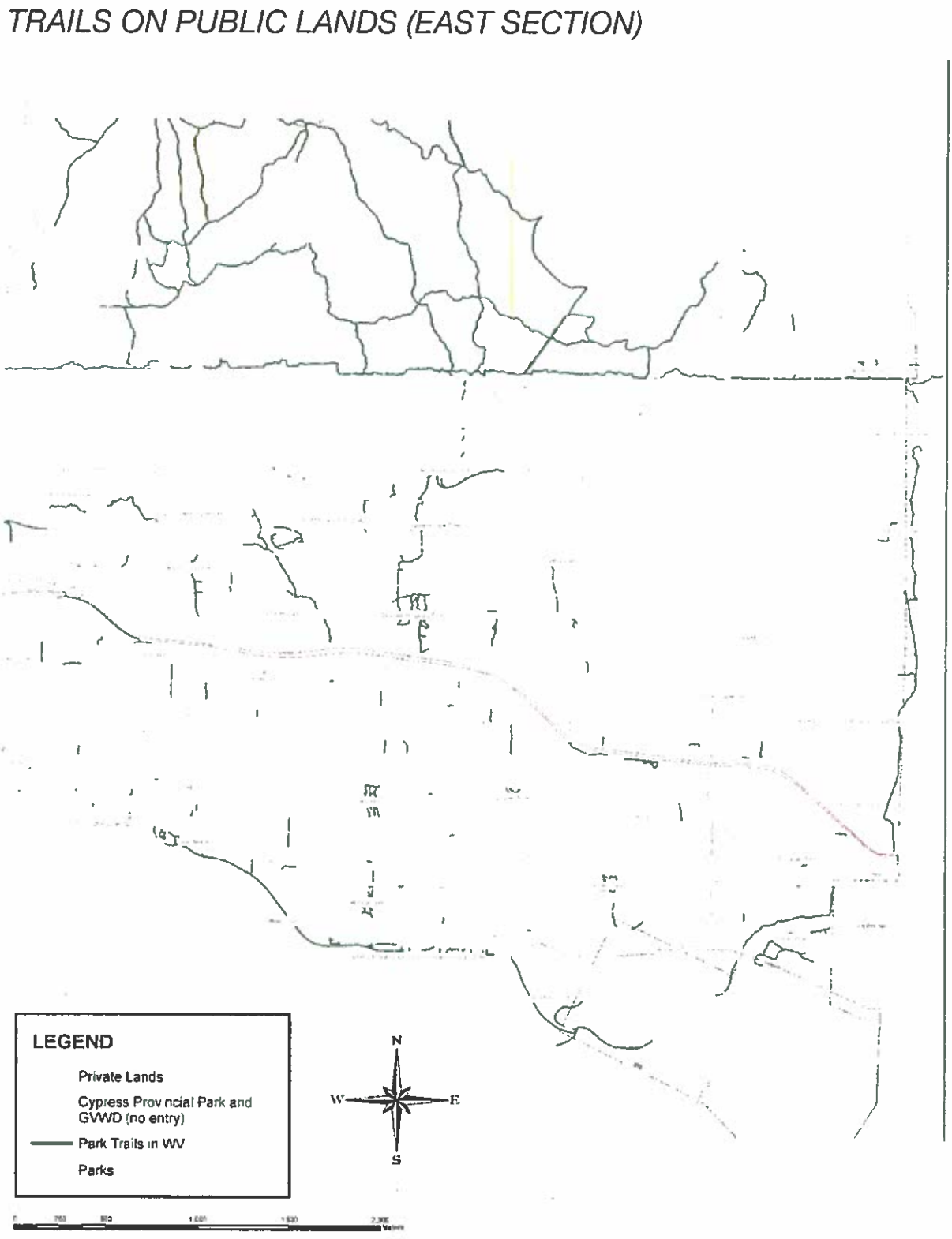
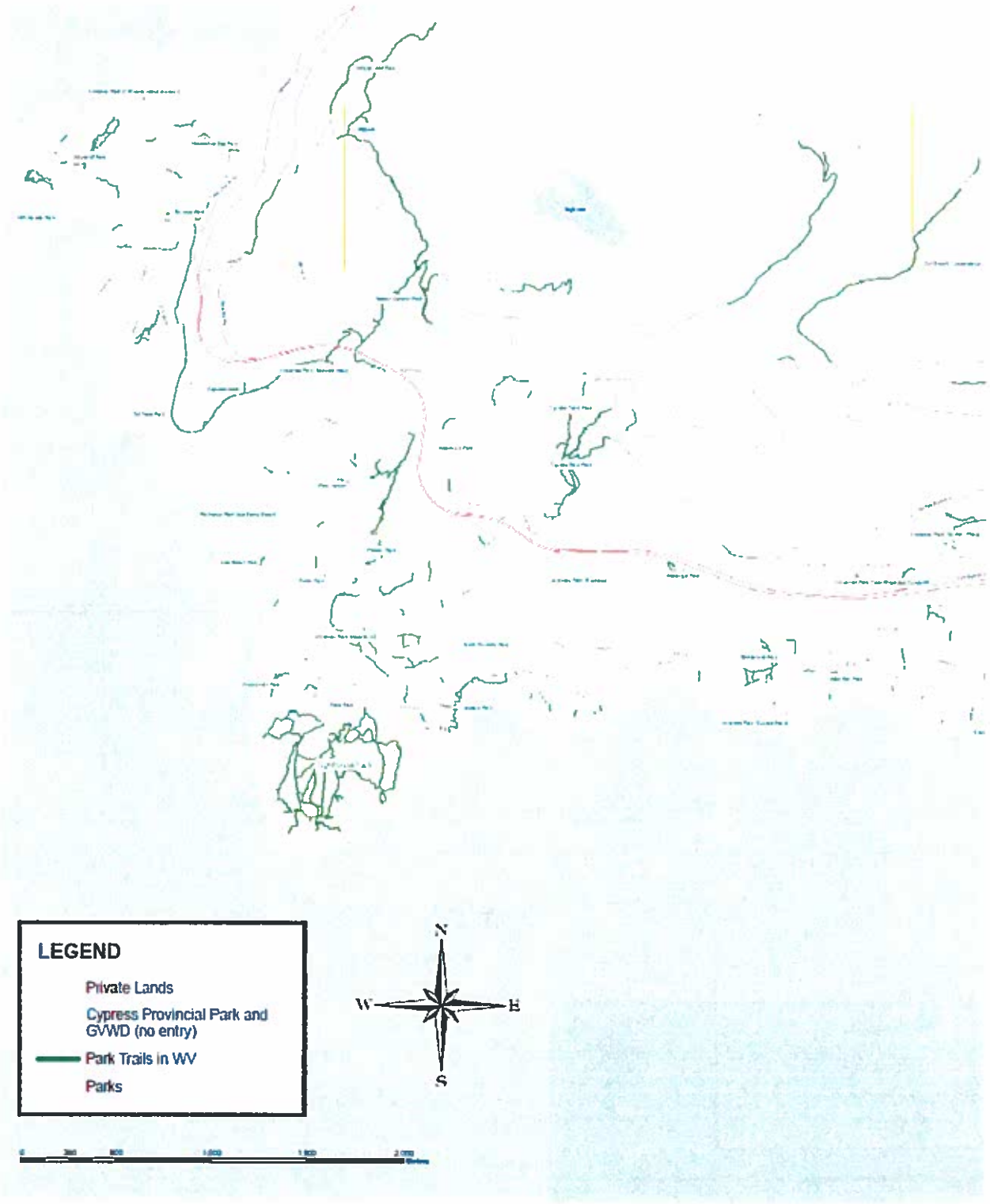


Figure 20: Trails on Public Lands (West Section)



- **Barriers.** Highway 1 in particular can act as a barrier to pedestrian movement, as there are a limited number of places for pedestrians to cross. As well, the speed and volume of traffic along Marine Drive, Taylor Way, 15th Street, 21st Street, and other arterials and collector roads can act as barriers to pedestrian movement. There are also a number of geographical barriers including creeks, ravines, and topography that can limit network connectivity and create barriers to walking.

3.4 Pedestrian Support Programs

The District of West Vancouver has undertaken several policy and program initiatives to support walking in the community.

Safe Routes to School. It was reported in the *Active Healthy Kids Canada Report Card (2012)* that only 25% to 35% of children aged 6 to 14 years old use active transportation to school. When children were asked what would make walking to school better, infrastructure changes such as continuous pathways, wider sidewalks and trails, less traffic, people to walk with, and safer places to cross the road were suggested. It should also be easy for children to walk safely to neighbourhood facilities, programs, parks and playgrounds.

The District of West Vancouver supports providing students and parents with safe routes to schools throughout the District. The District has promoted safe routes to school workshops that include staff from the three North Shore Municipalities and other related groups and agencies finding ways to ensure that the District is promoting safe and healthy school travel on the North Shore.

Trail Maps. The District of West Vancouver website provides information about a number of popular trails within the Districts. Route maps, information about the history of the trail, distance, and elevation are provided. The Parks department has been mapping the complete trail network in the District and will also complete a Trails Master Plan in 2017.

Pedestrian Safety Information. The District of West Vancouver has a dedicated page on their website that provides information about pedestrian safety, particularly for pedestrians with physical disabilities. It outlines some of the initiatives and projects that the District has been working on to making walking more accessible for pedestrians of all ages and abilities.

4.0 STRATEGIES & ACTIONS

The information received from resident stakeholder input and feedback as well as key community planning documents indicate the need for a comprehensive approach towards understanding and enhancing the pedestrian network within the District of West Vancouver. This section describes the strategies that provide the structure of the Pedestrian Network Plan, which are intended to support the Plan's stated vision and goals. The strategies are organized under the four key action areas of **Network Connectivity**, **Safety & Accessibility**, **Design**, and **Education, Encouragement & Legislation**.

The Strategies from which the actions are developed are organized as follows:

Network Connectivity	Safety & Accessibility	Design	Education, Encouragement & Legislation
•Sidewalk Network •Sidewalk Requirements •Pathway Network •Urban Connector Trails	•Existing Crossings •New Crossings •Maintenance •Accessibility •Traffic Calming and Slow Speed Zones	•Streetscaped and Pedestrian Amenities •Lighting •Land Use and Site Design •Parking and Visibility •Wayfinding and Signage •Transit Integration	•Neighbourhood Walking Maps •Safe Routes to School •Festivals and Events •Education and Promotion •Policy and Bylaws

Strategy 1: Network Connectivity

Expanding and enhancing the walking network is a fundamental part of making walking a convenient and attractive travel option in West Vancouver. The heart of the on-street pedestrian network includes sidewalks and shoulders while the off-street network is defined by urban connector trails and multi-use trails such as the Spirit Trail, as well as the Centennial Seawalk. These existing walking routes provide good coverage, and many West Vancouver residents enjoy walking in the District. Nonetheless, particularly west of 25th Street and north of Highway 1, there are still notable gaps in the walking network, with fragmented sidewalks and trails that don't connect to the rest of the network. This along with a lack of wayfinding signage can make walking less appealing.

A more integrated and connected network of on- and off-street pedestrian facilities can significantly improve the ease of moving around the community, and can thus make travel on foot a more attractive alternative to driving. Further, providing a more comprehensive network will also uphold the commitments in the OCP to encourage pedestrian activity and enhance safety. The following strategies and actions can support residents and visitors to West Vancouver to make better connections in and around their community.

Strategy 1.1: Sidewalk Network

To identify and prioritize filling in gaps and installing new sidewalks within the District of West Vancouver a Geographic Information Systems (GIS) based analysis was used to systematically identify needs and prioritize sidewalks based on a list of criteria. For this study the different criteria used was based on three categories which include: Pedestrian Safety, Pedestrian Demand and Network Needs. Each of these categories had a number of criteria that were used to determine an overall score as outlined below in **Figure 5**. A more detailed explanation of the evaluation criteria, the data used and how criteria was scored can be found in **Appendix D**.

Table 6: Sidewalk Priority Evaluation Criteria

Criterion	Max Score	Weight
Pedestrian Safety		
Pedestrian Volumes	5	5%
Truck Route	5	5%
Pedestrian Collisions	5	5%
Total Collisions	5	5%
Topography	5	5%
Road Classification	10	10%
Total Pedestrian Safety	***35***	***35%***
Pedestrian Demand		
Proximity to Schools	5	5%
Proximity to Seniors Facilities	5	5%
Proximity to Commercial Uses	5	5%
Access to Transit	5	5%
Access to Parks	5	5%
Proximity to Community and Recreational Buildings	5	5%
Residential and Employment Density	5	5%
Total Pedestrian Demand	***35***	***35%***
Network Need		
Network Contribution	5	15%
Pedestrian Gaps and Issues	5	15%
Total Network Need	***10***	***30%***
Total Safety + Demand + Network Need	***80***	***100%***

The streets included in the priority analysis were streets that are important active transportation routes as identified in the District's various plans and policies, they currently do not have sidewalks on either side of the street and if applicable they provide direct access to trails and pathways. Cul-de-sacs, dead end streets and laneways were not included in the analysis and prioritization process.

The two maps presented below illustrate the combined results of the GIS analysis based on road classification. **Figure 19** identifies the arterial and collector streets within the District of West Vancouver that do not have sidewalks on either side of the street, these streets were prioritized based to the criteria presented above. Arterial and collector streets typically have higher vehicle volumes and are through streets that move traffic through the District. The highest priority sidewalk improvements along arterial and collector streets are located along:

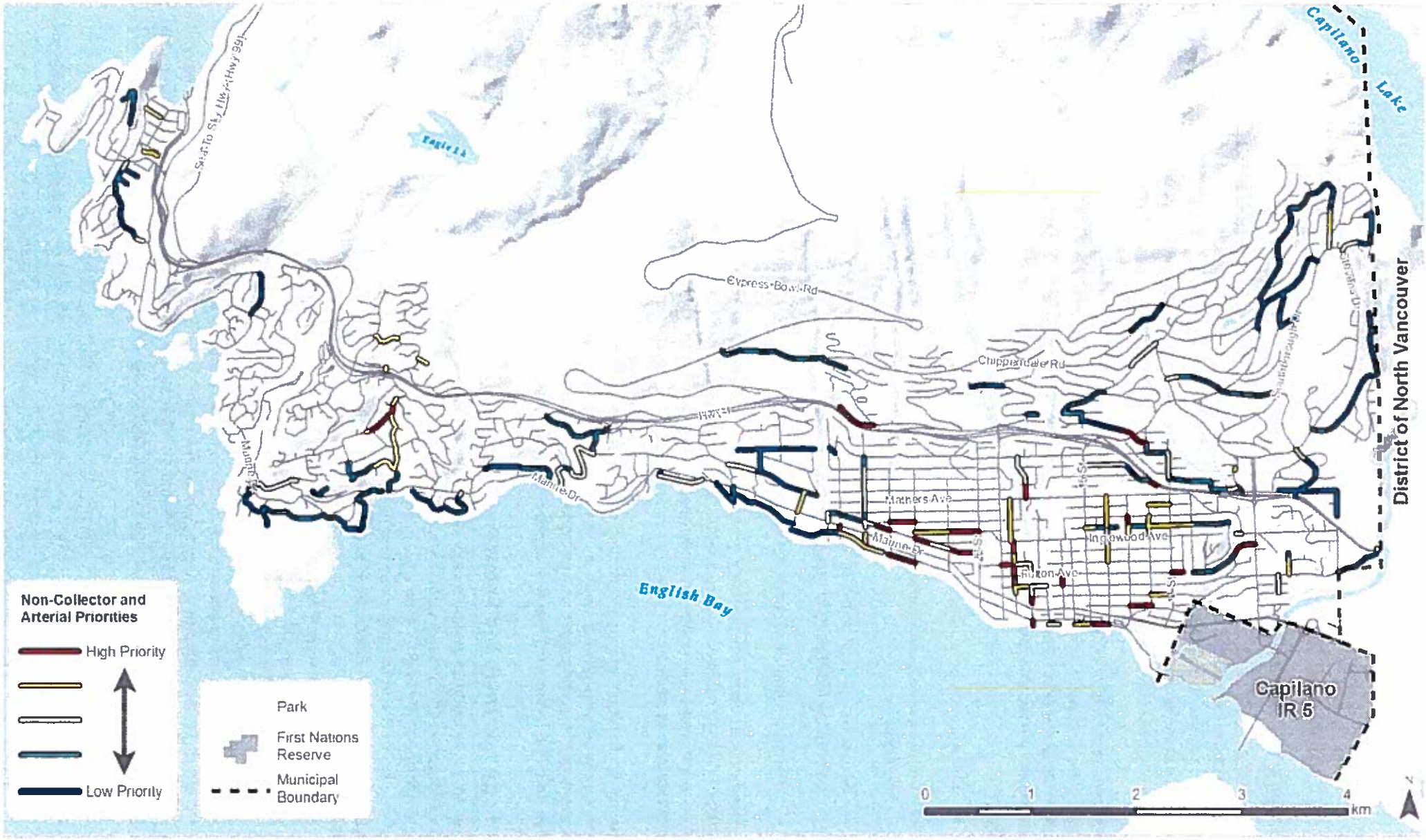
- Queens Avenue;
- Burley Drive;
- Keith Road;
- Marine Drive; and
- Mathers Avenue.

The second map, **Figure 20** prioritizes pedestrian facilities on all other streets within the District, these are local streets with lower vehicle volumes and serve local rather than through trips. Using the same criteria that are presented above, the following routes were ranked as the top priorities:

- Argyle Avenue;
- Bellevue Avenue;
- 20th Street;
- Piccadilly N; and
- Haywood Avenue.

Figure 19: Sidewalk Priorities (Arterial and Collector Streets)

Figure 20: Pedestrian Improvements (Local Streets)



Strategy 1.2 Sidewalk Requirements

The District of West Vancouver has a network of sidewalks along Marine Drive between Dundarave and Ambleside that connect the two centres with surrounding residential and commercial areas, parks, community facilities. Other areas with a noticeable network of sidewalks includes Horseshoe Bay and Caulfeild. Relatively few roads outside of the main commercial areas of the District have pedestrian facilities. The District currently does not have a bylaw that sets out the District's sidewalks requirements for existing or new developments regardless of road classification or land use. In many other municipalities in Metro Vancouver sidewalks are typically required on both sides of the street on arterial and collector roads, and often on local roads with higher density residential and commercial. On local streets sidewalks are often only required on one side of the street. Bylaws of this nature often identify the appropriate sidewalk material as well based on road classification and land use. In the District West Vancouver the following are the recommended sidewalk requirements for the pedestrian network based on road classification and land use:

- Sidewalks on both sides of collector and arterial roads within the grid network;
- Pedestrian pathway (sidewalk or gravel pathway) on at least one side of all local roads within the grid network;
- Sidewalks on both sides of local roads that are on main routes to schools, parks, commercial areas, community facilities, and bus stops; and
- Standard sidewalk width of 1.8 metres, with a minimum width of 1.5 metres in constrained locations.

As noted above, there are a variety of materials that are used for sidewalks and off street pathways within the District of West Vancouver. It is recommended that concrete sidewalks be installed on arterial and collector roads and on major pedestrian routes on local roads, whereas lower priority local streets can use other materials such as asphalt, gravel, or pavers.

Sidewalk width requirements should also be provided in various policies and bylaws. The District already provides some guidance on sidewalk width in commercial areas and where pedestrian demand is high. However, it is recommended that sidewalks in non-commercial and high pedestrian activity locations be 1.8 metres, with a minimum of 1.5 metres width only in constrained locations.

Strategy 1.3: Trails and Pathways

As noted, off-street trails and pathways make up an important part of the pedestrian network, they attract residents and visitors alike and are an important recreational activity. The District of West Vancouver will prioritize and ensure the completion of the West Vancouver section of the Spirit Trail. As noted, the Spirit Trail is a collaboration between the three North Shore Municipalities and has been funded through a variety of sources, including TransLink, Park Royal, as well as Provincial and Municipal funding. Currently the District is working on the following multi-use pathway sections:

- **Spirit Trail Western Portion** - This portion of the Spirit Trail will connect the Seaview Walk with Horseshoe Bay, for planning and design purposes this portion has been split into four zones. The District will complete construction of the portion between Cranley Drive and Royal Avenue/Chatham in 2017, with the final portion along Royal Avenue into Horseshoe Bay Village to be completed in 2017/18 in coordination with the reconstruction of the streetscape in the commercial area of Horseshoe Bay.
- **Spirit Trail Ambleside** – Argyle Avenue between 13th Street and 18th Street has been designated as Spirit Trail, and the portion between 13th and 14th Streets converted into a separated pedestrian/bike pathway. Further planning work will continue on the next portion between 18th and 22nd Streets in 2017/18.

- **Upper Levels Multi-Use Pathway** – Initial planning work will begin in 2017/18, focusing on the development of a multi-use pathway that would connect neighbourhoods north of Highway 1 along an east-west route.

In addition to working to complete and improve the Spirit Trail, the District will also focus on providing improved access to other trails within the District to ensure a network of well maintained, clearly marked recreational trails that are accessible to anyone who is interested in utilizing them. The District already does an excellent job of providing information about trails on their website; however, providing more wayfinding signage to aid users in accessing trails as well as information at trailheads about trail length, difficulty, and destinations is also very important and is discussed in more detail in **Strategy 3.5**.

Strategy 1.3: Urban Connector Trails

Trails and short-cuts can provide key off-street connections for pedestrians to important community destinations such as other neighbourhoods, commercial areas, community centres, parks, and schools. Pathways that provide direct routes through neighbourhoods and parks, by utilizing rights of way and green corridors we have termed "Urban Connector Trails" because they facilitate walking for transportation, as opposed to recreational trails that are used to walk for recreation.

For trips to these destinations, people are unlikely to walk if their route options are indirect, circuitous, and not time-competitive with driving. However, the presence of trails and short-cuts can significantly reduce travel time and make walking more attractive options than other modes. People can also appreciate trail and short-cut connections, as there is an increased sense of security and comfort, as routes are typically off-street and separated from car traffic, and often can be more scenic as well. The District should continue to inventory existing rights-of-way and short cuts while ensuring they are well maintained, safe, and can provide critical connections within the pedestrian network. There are also a number of physical barriers that can prevent pedestrian movement, including geographic barriers such as creeks, ravines, and topography, where feasible the District should consider pedestrian crossings such as bridges, overpasses, or underpasses to facilitate direct pedestrian routes.

Strategy 2: Safety and Accessibility

Safety, both real and perceived, is important in attracting more people to walk in the District of West Vancouver. As vulnerable road users, pedestrians are subject to a higher level of risk, and a lack of perceived safety can effectively discourage walking. The prevalence of automobiles and automobile-oriented street design can feel threatening to more vulnerable road users, and the perceived walkability of an area becomes inherently linked to safety. In fact, no matter the extent of the networks, if people do not feel safe using the community's sidewalks or trails to get to their destination, then they will likely opt for their car. This is why a safe walking environment is important, in addition to comfort and convenience. As such, safety was identified as one of the top issues facing pedestrians in West Vancouver. Many of those walking in West Vancouver feel uncomfortable and unsafe in environments with high traffic volumes, speeds and noise, where sidewalk and crossing infrastructure is inadequate or lacking, and in low-lit areas. To overcome these concerns, there are a number of engineering and education strategies that can improve pedestrian safety in West Vancouver.

This section also addresses the accessibility of the pedestrian network, there are many ways in which the District can promote accessibility and design that promote walking for people of all ages and abilities. This section describes some specific strategies to work towards creating a universally accessible community, particularly in the commercial areas of the District. By ensuring that the pedestrian environment is accessible for seniors, children, parents with strollers, people with disabilities, and transit users, the overall experience of walking in the community will be improved for all residents and visitors.

Strategy 2.1: Existing Crossings

The District of West Vancouver currently has nine signalized intersections, many of which are located along Marine Drive and Taylor Way (It is important to note that Taylor Way is under the jurisdiction of the Ministry of Transportation and Infrastructure and would need to be consulted about any possible changes along this corridor). The pedestrian crossing features at these intersections vary, but typically include a combination of pedestrian-activated pushbuttons, pedestrian countdown timers, audible pedestrian signals, and curb let-downs. To improve pedestrian safety and accessibility at each of these intersections, all signalized intersections should have consistent treatments and be retrofitted to include pedestrian pushbuttons, pedestrian countdown timers, audible pedestrian signals, and other features described in **Table 7**.

The District has several curb extensions throughout the main commercial and heavily used pedestrian areas as a way of improving crossing conditions for pedestrians and to enhance the pedestrian environment. Curb extensions shorten the crossing distance for pedestrians, make pedestrians more visible, and have a traffic calming effect in slowing down vehicles (beneficial also to cyclists using the route). It is recommended that the District continue to provide curb extensions on key corridors and at locations where it is feasible and appropriate, particularly on routes to school.

A pedestrian clearance interval analysis was conducted on each of the signalized crossings within the District of West Vancouver, and presented in **Section 3.2**. This analysis found that the District has generally uses a walking speed of 1.2 m/s for determining the time provided for the pedestrian clearance interval. The following intersections require a pedestrian walking speed in excess of 1.2 m/s and consideration should be given for revising the signal timing plan:

- Marine Drive & Taylor Way
- Skilift Road & 21st Street/Westhill Drive
- HWY 1 off-ramp & Taylor Way (north intersection)

The District should consider changing the crossing times at intersections throughout the network to comply with potential changes in the MUTCDC update (i.e., requiring between 0.8 and 1.0 m/s for walking speed). It is also important the District consider the slower walking speeds of some residents particularly seniors and people with mobility challenges. It is recommended that assessments of intersections based on surrounding land uses and proximity to senior homes, medical clinics, and community centres etc. be conducted to ensure crossing times are appropriate.

Table 7: Proposed Intersection Treatments

Intersection Location	Pedestrian Crossing Features		
	Pedestrian Push Button	Pedestrian Countdown Timers	Audible Pedestrian Signals
1. Marine Drive/13th Street	Existing	Recommended	Recommended
2. Marine Drive/14th Street	Existing	Recommended	Existing
3. Marine Drive/15th Street	Existing	Existing	Existing
4. Marine Drive/16th Street	Existing	Recommended	Existing
5. Marine Drive/17th Street	Existing	Recommended	Existing
6. Marine Drive/21st Street	Existing	Existing	Existing
7. Marine Drive/22nd Street	Existing	Existing	Existing
8. Marine Drive/24th Street	Existing	Existing	Existing
9. Marine Drive/25th Street	Existing	Existing	Existing
10. Marine Drive/Park Royal	Existing	Existing	Existing
11. Marine Drive/11th Street	Existing N-S Marine Drive Recommended 11th Street	Recommended	Recommended
12. Marine Drive/18th Street	Existing N-S Marine Drive Recommended 18th Street	Recommended	Recommended
13. Marine Drive/19th Street	Existing N-S Marine Drive Recommended 19th Street	Existing N-S Marine Drive Recommended 19th Street	Existing
14. Marine Drive/20th Street	NS	Recommended	Recommended
15. Marine Drive/31st Street	NS	Recommended	Recommended
16. 15th Street/Inglewood Avenue	Existing N-S Marine Drive Recommended Inglewood Avenue	Existing N-S Marine Drive Recommended Inglewood Avenue	Recommended
17. Taylor Way/Park Royal East	Existing	Existing	Existing
18. Queens Avenue/21st Street	Existing	Existing	Existing
19. Upper Levels Hwy/15th Street	Recommended	Recommended	Recommended
20. Taylor Way/Upper Levels North	Existing	Recommended	Recommended

Intersection Location	Pedestrian Crossing Features		
	Pedestrian Push Button	Intersection Location	Pedestrian Push Button
21 .Taylor Way/Upper Levels South	Existing	Recommended	Recommended
22. Taylor Way/Inglewood Avenue	Existing	Recommended	Recommended
23. Taylor Way/Keith Road	Existing	Recommended	Recommended
24. Taylor Way/Marine Drive	Existing	Recommended	Existing
25. Additional Crossing at Park Royal	Existing	Existing	Existing
26. 15th Street at Fulton (Flashing Beacon)	NA	NA	NA
27. 15th Street/Duchess Ave (Special crosswalk)	Existing	NA	NA
28. Headland Drive/Timberfeild Road (Special crosswalk)	Existing	NA	NA
29. Taylor Way/Park Royal East	Existing	Existing	Existing
30. Park Royal West	Existing	Existing	Existing

Strategy 2.2: New Crossings

In addition to signalized intersections, more pedestrian crossings at other locations around the District can be considered. This should include ensuring that all intersections between a collector and arterial roads have a marked pedestrian crosswalk at all legs of the intersection. Most intersections of this type in West Vancouver are already outfitted with either a fully signalized crossing or a marked pedestrian crosswalk, however there are still some arterial-collector intersections that would benefit from a marked pedestrian crosswalk such as Marine Drive and Burkehill Road.

In addition, several intersections only have marked crosswalks on some of the intersection legs. This is the case at some intersections along Marine Drive, including Marine Drive and 18th Street and Marine Drive and 20th Street. It is recommended that the District consider upgrading all existing crosswalk locations to ensure all legs of an intersection have a marked crosswalk and, where feasible, also add curb extensions to reduce pedestrian crossing times. The District is continuing its program of adding accessible curb let downs at all intersection approaches to ensure they are fully accessible. The District should also consider improvements to unsignalized pedestrian crossings with a pedestrian-activated signal.

Strategy 2.3: Maintenance

The maintenance of sidewalks is just as important as providing them, as quality and maintenance contribute significantly to accessibility. Maintenance efforts are important to keep sidewalks as near as possible to their original condition, so that infrastructure remains functional and usable over time. Sidewalk maintenance should address surface smoothness, cracks and upheaval can improve pedestrian accessibility.

Also included in Sidewalk maintenance is snow removal, while it is less of an issue in the District of West Vancouver then it is in other Canadian cities it is something that can still have a significant impact on pedestrian mobility. In the District's Traffic and Parking Bylaw states that the owner or occupier of a property must remove any accumulation of snow or ice from the sidewalks and footpaths bordering the property within 24 hours after the cessation of any snowfall that caused any accumulation of snow exceeding ten centimetres. The bylaw also states that the owner or occupier of any property must immediately remove all debris from any sidewalk bordering the property.

Pathway and trail maintenance is also very important, it is believed that neglected and poorly maintained facilities are seen to be an attraction of criminal activity. It is important to facilitate appropriate maintenance and servicing inspection and operations of pathway facilities and other pedestrian infrastructure to show that it is a District priority.

In addition, it was identified through discussions with the public that the maintenance of vegetation and overgrowth resulting in encroaching vegetation onto sidewalks and at intersections makes travelling along sidewalks difficult by restricting the sidewalk width available, overgrowth can also safety concerns by making pedestrians less visible, particularly at crosswalks. Overgrown vegetation can also create personal safety concerns and maintaining sightlines is an important component of Crime Prevention Through Environmental Design (CPTED) which is discussed in more detail in **Section 2.6**. The District to establish and enforce a bylaw that provides guidance on vegetation maintenance, and ensure that walking infrastructure should be maintained in good repair and operational in all seasons

Strategy 2.4: Accessibility

It is important that the walking environment in the District of West Vancouver is accessible and usable by a large cross section of people, including people with disabilities, seniors, and parents with children. It is important that the design of the walking environment includes accessibility features to accommodate the unique needs of these groups, and to provide better pedestrian circulation for everyone.

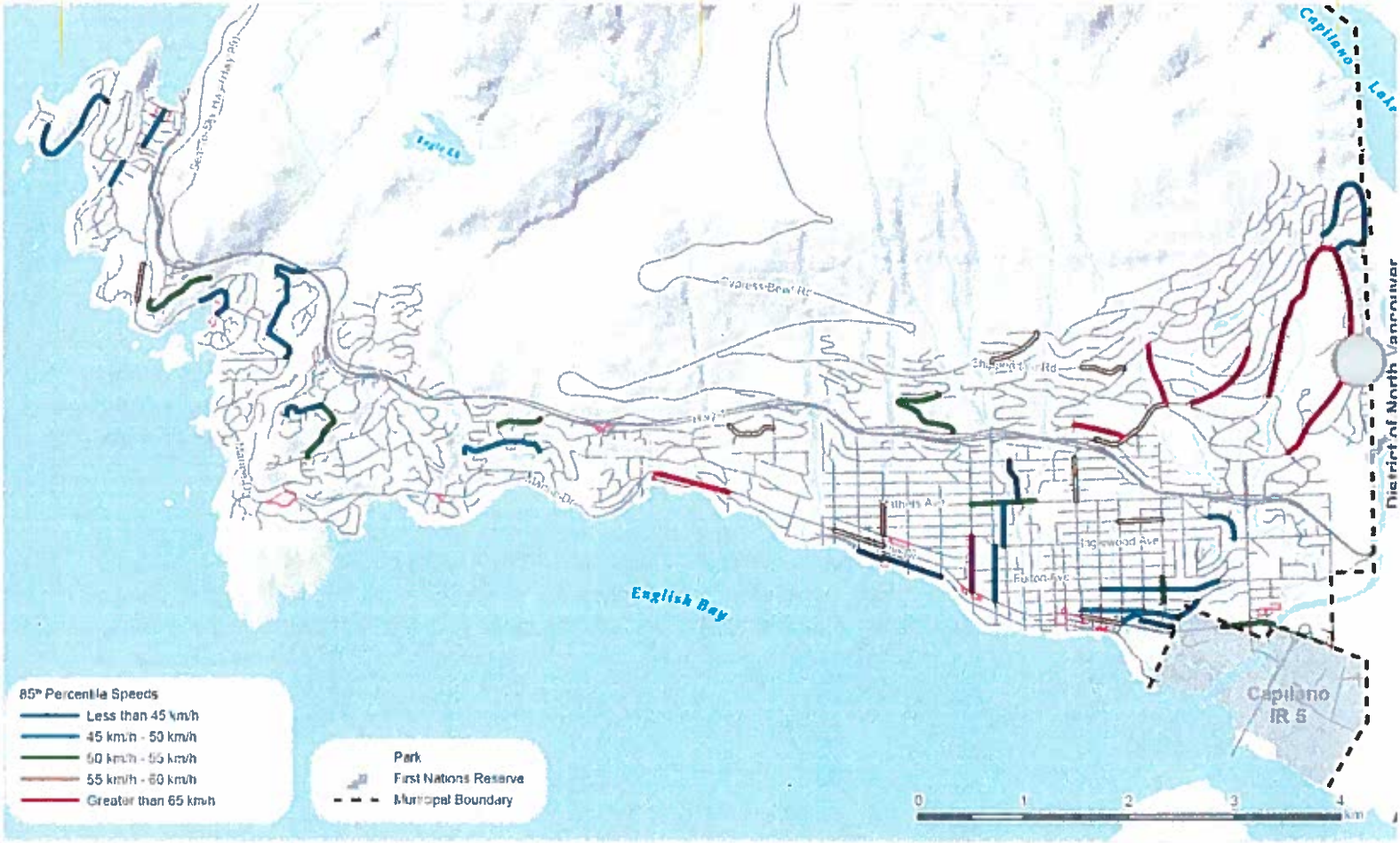
The District of West Vancouver has an Access and *Inclusion Policy* which was formally adopted in 2009, as a result of this policy the *Pedestrian Access Guidelines* were established. The Pedestrian Access Guidelines were established to help municipalities create accessible communities for all pedestrians, recognizing the unique characteristics of the District. As outlined in **Section 2.3.2** it is recommended that any considerations for existing, new, or modified infrastructure in West Vancouver continue to follow these guidelines. One of the clear areas of opportunity West Vancouver is to ensure that all the signalized intersections have accessible crossing features. The guidelines provide guidance on features such as accessible pedestrian signals, let downs, curb ramps, and tactile surfaces.

These guidelines also include ensuring that all sidewalks have a clear zone free of obstructions, such as benches, utility poles or newspapers boxes of a minimum 1.2 metres. Another clear area of opportunity in West Vancouver is to continue to make accessibility considerations for multi-use pathways, particularly during the design of the Spirit Trail. In general, multi-use pathway access should be designed to restrict access from unauthorized motor vehicles (i.e. motorcycles, all-terrain vehicles) but facilitate pedestrian access to pathways. Special considerations should be made when considering the design of access points to multi-use pathways to ensure they are safe and appropriate for all trail users.

Strategy 2.5: Traffic Speeds and Volumes

Vehicle volumes, speeds and safety have been identified as a concern by residents and stakeholders within the District of West Vancouver. The District has collected speed and volume data on a number of corridors within the municipality. The map below presents the 85th percentile speed data collected between 2010 and 2014 along some of the corridors in West Vancouver. Data is not available for the entire municipality but this map helps to illustrate trends in vehicle speeds and locations where there are concerns. For example, speeds tend to be consistently higher than posted along Marine Drive, along 22nd Street and north of the highway. The results also show that speeds through some of the school zones are quite a bit higher than the posted 30 kilometres per hour.

Figure 21: 85th Percentile Corridor Speeds
Source: City of West Vancouver Data Collection



Traffic Calming

To minimize speeding in residential areas, traffic calming measures can be applied where appropriate. For example, curb extensions will be considered for all marked crosswalks in West Vancouver, where feasible, as both a visual and physical measure to signal traffic to slow down. Curb extensions are traffic calming solutions that involve extending the sidewalk or curb line out into a parking or travel lane, effectively reducing both the width of the vehicles travel lanes. A curb extension improves the ability of pedestrians and motorists to see each other, and reduces the

pedestrian crossing distance, thus providing safer conditions. Curb extensions should also be applied to signalized crosswalks in West Vancouver where feasible. They can also be installed in midblock locations, where they are called pinch points or parallel chokers.

Photo - Michael Hintze

To slow traffic at intersections, a smaller curb radius can be used. Intersections are often design to accommodate the largest possible vehicle at the highest potential speed, which results in a less safe environment for pedestrians, with vehicles travelling faster and pedestrians needing longer crossing distances. Larger curb radii of greater than 3 metres allow faster turning movements that can increase the risk of pedestrians being hit by right-turning vehicles. In contrast, smaller radii (less than 3 metres) make drivers slow down when turning corners, which improve safety for pedestrians. Turning speeds should be limited to 25 km/h or less, since this is where drivers are most likely to meet pedestrians. Compound curbs can also be used, with smaller curb radii to slow vehicles on approach, but larger radii after the crosswalk to permit vehicles to turn properly.

Other traffic calming measures include the use of speed humps and cushions, raised crosswalks and intersections, and traffic circles.

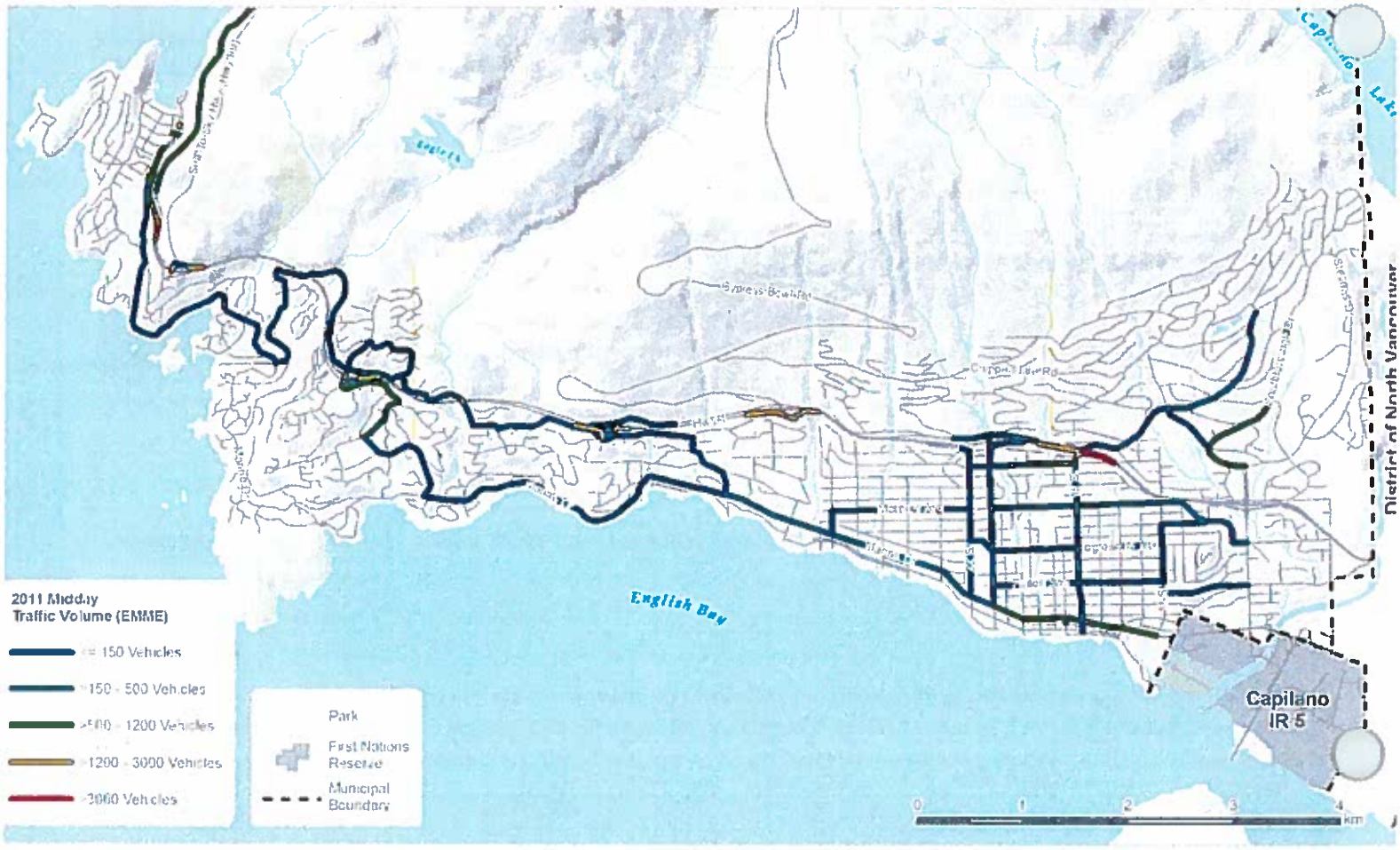
30 km/h Zones

The implementation of 30 kilometre per hour zones in neighbourhoods can also be considered as a method to improve pedestrian as well as cyclist safety. Recent initiatives in North America and also internationally including areas of the United Kingdom, as well as in New York City, have initiated campaigns to call for slower traffic speeds (less than 20 mph or 30 km/hr) on residential roads. The Town of Rossland, BC has dropped the town`s speed limit to 30 kilometres per hour and 20 kilometres per hour in school zones. It is believed that a slower speeds on residential roads is necessary to make the road environment more safe and comfortable for those walking in the roadway.

The City of Surrey is one jurisdiction that has developed guidelines for installing traffic calming on their streets. Surrey only uses traffic calming on local roads, the guidelines also provide the typical application of the different types of traffic calming listed above. It is recommended that the District of West Vancouver develop a Traffic Calming Policy for the municipality to highlight roads where traffic calming is appropriate and the type of traffic calming best suited based on traffic patterns, driving behaviour, and land use.

Vehicle volumes on major arterial and collector roads are presented in **Figure 22** based on the TransLink Regional Transportation Model (Midday Peak). The locations with the highest vehicle volumes include sections of Marine Drive and collector streets that are located near highway on-ramps and off-ramps.

Figure 22: Midday Traffic Volumes
Source: TransLink Regional Transportation Model Phase 2



Strategy 2.6: Crime Prevention Through Environmental Design (CPTED)

Pedestrian safety and security is inhibited by fear of crime and it is often believed that a greater risk can occur in areas that have low pedestrian traffic. Fear of crime is another aspect that has an impact on pedestrian safety and security.

Insufficient lighting and low visibility in areas of the District such as Highway 1 underpasses, overpasses, pathways, and sidewalks can cause many residents to feel unsafe walking or cycling. Crime Prevention through Environmental Design (CPTED) is an approach to urban design that supports the provision of good lighting and visibility for pedestrians and cyclists as one of the most effective crime deterrents. Properly placed lighting is thought to discourage criminal activity, enhance natural surveillance opportunities, and reduce fear of those walking after dark. Another positive aspect of well-lit and visible pedestrian facilities is that lighting can also influence user's feelings about the environment from an aesthetic as well as a safety standpoint. A bright, cheerful environment is much more pleasing than one that appears dark and lifeless. The ability to feel good about one's environment is important in developing a sense of pride and ownership, and to making places feel more safe and secure. Providing lighting and illumination throughout sidewalk, pathway, and crosswalk design is an important consideration, allowing safe and comfortable use of the network both day and night. This is especially important during the winter months as both the morning and evening commutes take place in the dark.

Incorporating principles of Crime Prevention through Environmental Design (CPTED) in facility design increases security in public areas and will in turn promote walking as a transportation mode choice. Special considerations for lighting, sightlines, fencing, and maintenance are important for ensuring the District of West Vancouver continues to ensure CPTED principles are followed in pedestrian facility design. Many of these considerations are discussed in more detail in the **Design Action Area** below.

Strategy 3: Design

The way that communities are designed can have a significant influence on the walkability of an area. In particular, there are many ways in which the District can promote walking for all residence through design and streetscape enhancements. The vibrancy of a place depends on the level of positive and acceptable human activity that takes place within it, this includes walking. In turn, the level and type of activity that happens in a place is greatly influenced by the physical and urban design of that place, and the activity that is planned to take place there and/or is able to be accommodated in it.

Urban design influences how walkable and accessible an area is and how efficiently and effectively that area can be served by transit. In order for our communities to be designed to be walkable and served efficiently by transit, the decision making tools used in land use planning and development processes need to each do their part to ensure that urban environments are capable of achieving vibrancy.

This section describes some specific strategies to work towards creating a walkable community, particularly in key pedestrian areas such as areas in and around Park Royal, Ambleside, Dundarave and Horseshoe Bay, and encouraging designs that will help make West Vancouver more walkable.

Strategy 3.1: The Streetscape and Pedestrian Amenities

In the design, construction, and maintenance of its streetscapes, the District shall emphasize design quality and amenities for pedestrians, guided by relevant principles of "Complete Streets" and "Green Streets". This can also include design measures in some instances that reduce vehicle speeds, enhance lighting, and improve the safety and comfort levels of vulnerable road users. Some of the ways in which the District can encourage walking and cycling through intentional urban design include:

- Mixed used developments with street-oriented retail uses;
- Street-oriented developments with minimal building setbacks and parking lots located at the rear of buildings to create a more interesting streetscape;
- Enhanced sidewalk width on commercial streets to improve pedestrian comfort;
- Landscaping, including a boulevard between the curb and the pathway;
- Pedestrian amenities, such as benches and water fountains, and garbage cans;
- Street trees and planters;
- Banners and neighbourhood entrance features;
- Street level lighting;
- Patios, plazas, and parklets;
- Public art and interpretive signage;
- Alternative stormwater management techniques, such as rain gardens.

Streetscape amenities placed within the public realm are intended to create more attractive and lively areas that encourage people to spend more time outdoors, and to provide more opportunities for people to rest and socialize. These design elements and amenities should be located in areas of the District with high or potentially high levels of pedestrian activity including the streets in and around Park Royal, Ambleside, Dundarave, Caulfeild, and Horseshoe Bay.

As identified in Section 2.3.3, the Ambleside Village Centre Streetscape Standards were developed in 2013 and currently similar streetscape standards are being developed for Horseshoe Bay. The *Ambleside Village Centre Streetscape Standards* provide typical Streetscape Standards that are to be applied to the various locations and conditions that occur within the Ambleside Village Centre. The design standards include the widening of sidewalks, lighting, curb extensions, streetscape elements, street trees, public art, festival streets, and a unique neighbourhood identify.

The District of West Vancouver should consider developing Streetscape Standards for the other key pedestrian areas within the District: Park Royal, Dundarave, and Caulfeild.

Strategy 3.2: Lighting

Adequate lighting that illuminates the sidewalk and provides visibility of the surrounding area can help prevent criminal activity and support a safer pedestrian environment. Lighting has been touched on in a number of different strategies, but it is important to note that community residents identified the lack of street lighting as a safety issue and a barrier to walking. Street lighting should be located on all collector and arterial streets within the District and on local streets that have high levels of pedestrian activity, along streets adjacent to schools, bus stops, and within areas of commercial land use. The District has begun installing LED lighting in the commercial areas of the municipality. LED lighting is more energy efficient yet brighter and is easier to direct the light, this results in a better lit street and sidewalk but less of an impact on surrounding residents.

Lighting and illumination, especially on off-street pathways, should generally be provided to support safety and functionality. Lighting should be pedestrian oriented, meaning that is should be closer to the ground, spaced closer together, and be visually attractive. The requirement for lighting will be influenced by the type and intensity of use and by the context of a particular path. Pedestrian oriented lighting should be considered a requirement in medium to heavily used multi-use pathways, pathways through parks / open space without ambient lighting from adjacent streets or which are obscured from public view, and locations with hazards, conflict points, and areas of safety concern.

Strategy 3.3: Land Use and Site Design

At the site design level, factors such as site organization, building placement and building entrance orientation, vehicle and bicycle parking supply, and layout all impact whether interior and exterior destinations on individual parcels of land are easily and conveniently accessed by pedestrians.

Like many other communities in North America, many neighbourhoods in West Vancouver are facing challenges of being an auto-dependent community. In recent history, the form of many North American cities evolved from being compact and mixed-use areas where people could live, work, and shop in close proximity, to more dispersed and segregated land use patterns that place residences further from services and amenities. The design of suburban areas has fostered a market for auto-oriented land uses, which, in turn has increased pressures to build more road space to support driving for our daily needs. This change in urban structure and the form of cities has made it more

difficult to walk to serve our daily needs, while also making the provision of attractive transit services more challenging. In addition, the shift of land use and travel behaviours has minimized the vibrancy of certain areas and created sizable barriers to providing attractive transportation choices.

The District of West Vancouver should support infrastructure and design features that support pedestrians and transit riders, through the provision of sidewalks, pathways, and access to transit. In order to ensure that walking is supported through site design, the District should actively work with the development industry to enhance pedestrian connectivity to, within, and through new development and redevelopments, This can include actions such as upgrading sidewalks at the time of redevelopment and encouraging site designs that promote a high level of access to transit for residents and employees of new developments, and pedestrian 'cut throughs' that provide direction connections and routes through neighbourhoods. The District should provide more detailed guidance on site design features for mixed use centres and corridors, in order to ensure that pedestrian connectivity is being maximized in both new developments and redevelopment.

Strategy 3.4: Parking and Visibility

Visibility and sight distances are important to ensure safety at intersections, driveways and other potential conflict zones. Aside from some general guidance to provide clear sight lines at intersections there are very few specific references to what are appropriate setbacks for parking and other possible visual obstructions at intersections particularly when considering the pedestrian environment and safety. The Transportation Association of Canada's Guide to Neighbourhood Traffic Calming notes that on street parking should be located a minimum of 5.0 metres from stop signs or crosswalks, and if curb extensions are being used, 7.0 metres is more appropriate. The District's Traffic and Parking Bylaw No. 4370 states that vehicles shall not be parked within six metres of the edge of a marked crosswalk or within three metres of the edge of a sidewalk crossing.

There is some more specific guidance for parking setbacks along streets with bicycle lanes and parking. This is particularly applicable along streets with parking protected bicycle lanes. To ensure that cyclists are visible at intersections it is recommended that parking is set back 10 metres (NACTO Urban Bikeway Design Guide).

It is recommended that the District of West Vancouver consider ensuring that no vehicles be parked within 10 metres from all from stop signs or crosswalks to ensure intersection visibility for all road users including people walking.

Strategy 3.5: Wayfinding and Signage

Pedestrian friendly design can be supported through providing better wayfinding information for people using the District's sidewalks, trails, and multi-use pathways. Pedestrian wayfinding programs can help residents and visitors better navigate through high activity areas of the community. This can include information kiosks for pedestrians identifying key information such as rapid transit, community facilities and businesses, as well as a map with "you are here" information and a five-minute walking distance. Wayfinding materials should be simple, easy to read, and easy to install and allow residents and visitors to locate key amenities and facilities within West Vancouver. This would work best if implemented consistently at the key pedestrian areas such as Park Royal, Dundarave, Ambleside, Caulfeild, and Horseshoe Bay. Transit stops will also be key opportunities for locating wayfinding facilities.

Pedestrian wayfinding programs exist in many cities throughout North America. For example, Philadelphia's Walk!Philadelphia wayfinding system organizes navigation in its five distinctive downtown districts using simple two-coloured branded logos. Portland's wayfinding system provides a system of free-standing, ground-mounted signage that combines location identifying text, directional signs and maps to help pedestrians navigate.

To improve access to the extensive network of trails and urban connectors it is recommended that the District of West Vancouver develop a wayfinding program to ensure that the location of trailheads and urban connectors is readily available and that information about where trails and connectors go and what they connect to is clear to users.

Strategy 3.6: Transit Integration

There are opportunities to improve the accessibility of bus stops throughout the District of West Vancouver. There are a range of criteria that TransLink uses to classify bus stops as accessible, and there are opportunities for the District to improve infrastructure leading to bus stops, such as ensuring that there is a sidewalk leading to the bus stop, crosswalk near the bus stop, and accessible curb let-downs. In addition, passenger amenities at bus stops can also have a significant impact on attracting new users, such as provide benches, shelters, lighting, and customer information. Since all transit users are pedestrians at the beginning and end of their journey, improving pedestrian accessibility to bus stops and passenger amenities at bus stops can help make it more attractive for people to walk at either end of their transit trips and encourage walking in the community.

Strategy 4: Education, Encouragement, and Legislation

It is not enough to just provide infrastructure and facilities, as programs must also be in place to encourage people to walk in West Vancouver. Education is a considered a 'soft' measure for promoting walking and cycling, as it involves no engineered features or design mechanisms, but involves promoting awareness and informational material about walking in West Vancouver. Education initiatives can include providing information promoting alternative modes of transportation, local walking networks (such as trail maps that show recommended routes and facilities), and programs that teach road safety and cycling skills. Through the spreading of information and awareness about walking and cycling in the community, the District can use cost-effective education initiatives to enable people to feel more safe and comfortable using active modes to get around, while encouraging increased use of pedestrian and cycling facilities. The District also has the ability to if deemed appropriate make amendments to existing bylaws and policy documents to ensure that considerations for pedestrian are made.

Strategy 4.1: Neighbourhood Walking Maps

The District can actively market and promote its walking and trail network, pedestrian facilities, policies and programs using various media. This can include developing a Bicycle User Map for West Vancouver residents and visitors which could display information such as popular walking routes and trails, key destinations, transit routes, and neighbourhood walks. The District could also develop a dedicated webpage exclusively for walking and other forms of active transportation to provide general information about the benefits of walking, a link to the pedestrian and bicycle network maps, and other resources, including the Sprit Trail.

Strategy 4.2: Safe Routes to School

Safe Routes to School is a term used to describe an international movement to improve children's safety as they walk and bicycle to school. The initiative is built on five program elements, called the "5 E's" of Safe Route to School, which are engineering, education, encouragement, enforcement, and evaluation. Promotion of the Safe Routes to School program is an important initiative to support the safety of students walking and cycling to school in West Vancouver, and it is also an important program as it educates both students and parents on road and traffic safety, and the benefits of walking and cycling. It is recommended that this initiative be led by West Vancouver schools and the School District No.45, with support from the District.

As noted in **Section 3.3**, The District of West Vancouver currently supports providing students and parents safe routes to schools throughout the District. The District has promoted safe routes to school workshops that includes staff from the three North Shore Municipalities and other related groups and agencies to find ways to ensure the District is promoting safe and healthy school travel on the North Shore. Continuing to support the development of Active and Safe Routes to School plans is an important initiative to support pedestrian and cyclist safety in West Vancouver.

Strategy 4.3: Festivals and Events

The District of West Vancouver promotes and encourages walking through their support and festivals and events that help to promote walking and physical activity. Below are some of the examples for these organized events and festivals.

- **Festival Streets.** While not a specific event, Festival Streets are identified in the Ambleside Streetscape Standards, two streets are identified in the Ambleside area, 14th and 17th Streets. Festival Streets are designed to provide much improved pedestrian focused streets that offer more space and a higher quality environment suitable to accommodate a wide range of uses including, seating areas, street vendors, performers, markets and festivals. These streets are a great example of the District's focus and goal to

create an environment that promotes walking and active transportation through design as well as events and festivals.

- **Harmony Arts Festival.** This annual event in August draws crowds from all over Metro Vancouver to Argyle Avenue for 10 days of arts, food and waterfront views.
- **Hiking Clubs.** There are hiking clubs run throughout the year for West Vancouver seniors through the Seniors' Activity Centre.
- **Walking and Hiking Trails.** The District of West Vancouver provides detailed information about local trails and hiking opportunities on their website including route maps, and details about elevation gain, difficulty level and estimated completion time.

Strategy 4.4: Education and Promotion

While it is important to focus on pedestrian infrastructure to make walking safer and more attractive, it is equally important to ensure the residents have the information, confidence and support they need to walk more. There are a number of education and awareness programs and initiatives that the District can develop and support with its partners, including supporting Safe Routes to Schools programs, and community walking groups. To do so, the District should continue to identify opportunities to collaborate with agencies and organizations such as TransLink's TravelSmart Program, along with ICBC and RCMP traffic safety programs to promote education and awareness around walking.

Strategy 4.5: Policy, Bylaws and Guidelines

Based on the review of existing District policies and bylaws outlined in Section 2.3, the following recommendations have been made to enhance these documents to make additional considerations for walking and the pedestrian environment.

Subdivision Development Standards

As noted, the District currently does not have a bylaw that sets out the District's sidewalks requirements for existing or new developments regardless of road classification or land use. It is a recommendation of this report that the District develop guidelines for new developments that require developers to provide sidewalks based on road classification and land use. The following recommendations include:

- Sidewalks on both sides of all collector and arterial roads within the grid network;
- Pedestrian facilities on at least one side of all local roads within the grid network; and
- Sidewalks on both sides of local roads that are on main routes to schools, parks, commercial areas, community facilities, and bus stops.
- Standard sidewalk width of 1.8 metres, with a minimum width of 1.5 metres in constrained locations.

The District should provide more detailed guidance on site design features for mixed use centres and corridors, in order to ensure that pedestrian connectivity is being maximized in both new developments and redevelopment. As well as providing requirements for minimum widths, preferred material and example road cross sections.

Traffic and Parking Bylaw No. 4370

It is recommended that the District of West Vancouver consider setting back street parking **10 metres** from all intersections to ensure intersection visibility for all road users including people walking. This requirement should

be amended in the Traffic and Parking Bylaw to require vehicles not to park within 10 metres of the edge of a sidewalk crossing.

Streetscape Standards

The District has developed Streetscape Standards for the Ambleside Village Centre and Horseshoe Bay Village. These documents provide innovative ideas and design guidance for important commercial centres in the District. It is recommended that the District consider developing Streetscape Standards for all commercial areas within the municipality including Caulfield and Dundarave.

Boulevard Bylaw No. 319

This bylaw states that the owner of land fronting or adjoining a boulevards shall at his own expense keep the boulevard in good and safe condition. The pubic engagement and conversations with District staff it is clear that there are locations throughout the District where this is not being enforced resulting in overgrowth into the pedestrian environment and sightlines at intersections and along major corridors is being obstructed. It is recommended that the District managed and enforced the requirements of this bylaw to ensure compliance

Pedestrian Access Guidelines

The topography of the District of West Vancouver can create a number of issues for individuals with accessibility challenges for both on street and off street pedestrian facilities the District provides guidance for accessibility considerations for sidewalks, but little guidance for multi-use pathways. The City of Toronto's Multi-Use Trail Design Guidelines state that Due to accessibility requirements, *running slopes* on trails should be limited to 5%, and *cross-slopes* should be limited to 2% (including crowned configurations) and provides suggestions for what should be done if this cannot be accommodated. The District of West Vancouver should consider reviewing their existing Pedestrian Access Guidelines to address multi-use pathway facilities.

Traffic Calming and Speed Reduction

The implementation of 30 kilometre per hour zones in neighbourhoods can also be considered as a method to improve pedestrian as well as cyclist safety. The Town of Rossland, BC has recently dropped the town's speed limit to 30 kilometres per hour and 20 kilometres per hour in school zones. It is believed that slower speeds on residential roads is necessary to make the road environment more safe and comfortable for those walking in the roadway. The District could consider assessing the feasibility of reducing posted speed limits on all local streets to 30 kilometres per hour.

It is recommended that the District of West Vancouver develop a Traffic Calming Policy for the municipality to highlight roads where traffic calming is appropriate and the type of traffic calming best suited based on traffic patterns, driving behaviour, and land use. The policy can also help to determine how to prioritize locations for traffic calming.

Wayfinding

To improve access to the extensive network of trails and urban connectors it is recommended that the District of West Vancouver develop a wayfinding program to ensure that the location of trailheads and urban connectors is readily available and that information about where trails and connectors go and what they connect to is clear to users. The District can also build off of the resources available online and provide more maps and suggested neighbourhood walking routes.

5.0 IMPLEMENTATION & MONITORING

This Implementation Strategy details the priorities for capital improvements within the District's jurisdiction that are required for implementation of the recommendations from the Pedestrian Network Study. The Implementation Strategy identifies walking capital project priorities over the short term (0 to 5 years) and longer term (beyond 5 years).

The recommended capital improvements in the Implementation Strategy are grouped into five categories:

- **Sidewalks** (arterial and collector roads);
- **Local street improvements**;
- **Intersection improvements**;
- **Trail improvements** (including both on-street and off-street facilities); and
- **Crossing improvements.**

Cost estimates have been provided only for sidewalk projects in order to identify the relative cost between projects for planning purposes, but should not be used for budgeting purposes. The cost of pedestrian infrastructure on local streets, trail improvements, and crossings will need to be looked at individually with construction costs budgeted after the consultation process has been completed and the exact infrastructure need is determined. Wherever possible, the District should work with other agencies and levels of governments to establish cost sharing agreements or to seek grant opportunities in order to off-set total project costs. Intersection improvements are taken from recommendations made by Parsons in the 2015 Network Screening Study.

Figure 25 shows the existing sidewalk network as well as proposed additions to the pedestrian network, including trails, multi-use pathways, and new crossings. Public input played a great role in the choice of streets for the network, along with the need for east-west and north-south connectivity, and providing a reasonable number of pedestrian connections across different West Vancouver neighbourhoods.

Figure 25: Proposed Pedestrian Network

5.1 Proposed Pedestrian Network

To identify and prioritize filling in gaps and installing new sidewalks within the District of West Vancouver a Geographic Information Systems (GIS) based analysis was used to systematically identify needs and prioritize sidewalks based on a list of criteria. For this study the different criteria used was based on three categories which include: Pedestrian Safety, Pedestrian Demand and Network Needs. Each of these categories had a number of criteria that were used to determine an overall score. A more detailed explanation of the evaluation criteria, the data used and how criteria was scored can be found in Appendix D.

The proposed pedestrian network works to address key gaps in the existing network and aims to make walking more attractive for commuting and recreational purposes. The proposed pedestrian network is based on a prioritization analysis that systematically identified needs and prioritized pedestrian improvements through a list of criteria. Several other concepts were also used, including:

- Addressing large gaps in the pedestrian network such as in the British Properties and in the Bayridge area where the pedestrian network is underdeveloped compared to the rest of the District;

- Completing sidewalk coverage along arterial and collector roads;

- Enhancing sidewalk coverage in areas with concentrations of high pedestrian needs such as schools, seniors' facilities, and core business areas;

- Providing context-sensitive solutions for the various neighbourhoods (i.e. alternatives to sidewalks on local streets such as gravel paths or pedestrian shoulders);

- Providing more direct connections between key areas with bridges (i.e. between the Camelot and Westhill neighbourhoods near Douglas Woodward Park, and Dundarave and West Bay via Mathers); and

5.2 Implementation Strategy

The Pedestrian Network Study has reviewed the District's street network, identifying and prioritizing capital projects to improve the pedestrian realm. With many possible projects to choose from, the consulting team needed to create a scoring methodology in order to develop a priority plan with short and longer-term recommendations. The weighted scoring system for road segments is detailed in Appendix D. As mentioned, priority was determined through a review in three areas: Pedestrian Safety, Pedestrian Demand, and Network Need.

Streets are generally divided into three types: Arterial, collector, and local. **Arterial roads** are high capacity urban roads that deliver a high volume of traffic between urban centres as well as to freeways. West Vancouver has two arterial roads: Taylor Way and Marine Drive. **Collector roads** are medium- to low-capacity roads designed to move traffic from local streets to arterial roads. Examples include Queens Avenue, Mathers Avenue, Stevens Drive, and Westport Road. Due to the speed and volume of traffic on arterial and collector roads, it is recommended that pedestrian improvements on these routes include a sidewalk with barrier curb to greatly improve safety for those walking. These capital costs have been given an estimate based on a $500 per linear metre cost for installing sidewalk with barrier curb, totalling approximately $1.7 million in new sidewalks for the highest priority streets.

A **local street** has a lower volume of traffic than arterial and collector roads, and generally services the residents who live on the street along with a certain volume of neighbourhood traffic. Local streets were separated out from the arterial and collector roads, as the approach taken in terms of adding pedestrian infrastructure may differ greatly. Capital costs were not included for local streets the type of pedestrian improvement could vary greatly depending on location and neighbourhood input. For example, local streets adjacent to schools, care homes, or community facilities would be more likely to require sidewalks or some form of separated pedestrian infrastructure. On other local streets, traffic calming and/or diversion to slow and reduce the volume of vehicle traffic on the street may be sufficient for neighbourhood residents. In some cases, lighting, benches, trees, and other pedestrian improvements may be needed.

Additionally, the prioritization of projects is by no means final, and should be reviewed and evaluated periodically as progress is made on the pedestrian network.

5.2.1 Sidewalks

Sidewalks on Arterial and Collector Roads – Short term (0 to 3 years)

The highest priority sidewalk locations on arterial and collector roads are located mainly in the Ambleside and Dundarave neighbourhoods. The cost for sidewalk construction on these highest priority sections of Mathers Avenue, Queens Avenue, and Inglewood Avenue is estimated at $745,500.

Street name	From	To	Length (m)	Est. Cost @ $500/metre	Type
Mathers Avenue	11th Street	Braeside Street	207	$103,500	Collector
Queens Avenue	15th Street	19th Street	615	$307,500	Collector

Mathers Avenue	21st Street	22nd Street	199	$99,500	Collector
Inglewood Avenue	Burley Drive	Cedardale Playing Field	180	$90,000	Collector
Mathers Avenue	22nd Street	23rd Street	290	$145,000	Collector

Sidewalks on Arterial and Collector Roads – Longer term (beyond 3 years)

The highest priority sidewalk locations beyond three years are located in a diverse range of neighbourhoods: Cedardale (Keith Road), Caulfeild (Woodgreen Drive), Dundarave (Mathers Ave, 22nd Street), and the British Properties (Southborough). The cost for sidewalk construction on these streets is estimated at $672,000.

Street name	From	To	Length (m)	Est. Cost @ $500/metre	Type
Keith Road	Margaree Place	Keith Place	305	$152,500	Collector
Woodgreen Drive	Port View Place	Northwood Drive	234	$117,000	Collector
Mathers Avenue	23rd Street	24th Street	314	$157,000	Collector
22nd Street	Mathers Ave	Ottawa Ave	199	$99,500	Collector
Southborough Drive	Highland Drive	Eyremount Drive	292	$146,000	Collector

5.2.2 Local Street Improvements

Local Street Improvements – Short term (0-3 years)

The highest priority local streets are located in the Ambleside and Dundarave neighbourhoods, close to schools and community amenities.

Street name	From	To	Length (m)	Type
Clyde Avenue	12th Street	13th Street	201	Local
Gordon Avenue	20th Street	21st Street	118	Local
Sinclair Street	Sinclair Court	Inglewood Avenue	199	Local
Kings Avenue	24th Street	25th Street	236	Local

Local Street Improvements – Longer term (0-3 years)

The highest priority local streets are again located in the Ambleside and Dundarave neighbourhoods, close to schools and community amenities.

Street name	From	To	Length (m)	Type
Kings Avenue	24th Street	25th Street	236	Local
Bruce Street	Royal Avenue	Nelson Avenue	164	Local
20th Street	Fulton Avenue	Gordon Avenue	106	Local
Jefferson Avenue	22nd Street	24th Street	600	Local
19th Street	Duchess Street	Esquimalt Ave	100	Local
Haywood Avenue	23rd Street	24th Street	320	Local
20th Street	Fulton Avenue	Esquimalt Avenue (mid-block w Marine Dr)	160	Local

5.2.3 Intersection Improvements

The Network Screening Study from November 2015 that was created by Parsons for the District of West Vancouver reviewed collision frequency, rates, severities, and types for the period between 2008 and 2012. Through this, a list of recommended corridors was provided to be studied further. Since many intersections with high collision frequency, rate, and over-represented collision types are in close proximity, they were grouped into selected corridors rather than individual intersections. A general idea of cost and priority were also estimated for each corridor, along with the basis for each study.

Corridor	Intersections	Priority	Study Cost	Study Basis
Fulton Avenue	13th St, 14th St & 15th St	High	Low	• High collision rate • Over-represented vulnerable user collision type • Over-represented collision severity

Taylor Way	Keith Rd, Inglewood Ave, Highway 1 ramps, Stevens/Southborough	Medium	Medium	• High collision frequency and rate • Over-represented collision severity
Marine Drive	11th St to 19th St	Medium	High	• High collision frequency and rate • Over-represented collision severity • Over-represented vulnerable user collision type
15th Street	Queens Ave, Highway 1 EB and WB ramps	Medium	Medium	• High collision frequency • High collision rate
Marine Drive	20th Street to 25th Street	Low	High	• High collision rate • Over-represented collision severity • Over-represented vulnerable user collision type
15th Street	Kings Avenue, Lawson Avenue, and Mathers Avenue	Low	Low	• High collision rate • Over-represented collision severity

5.2.4 On-street and Off-street Trail Improvements

On-street and off-street trail improvements were identified through the consultation process and the prioritization work conducted by Urban Systems. An Upper Levels Trail is proposed to connect neighbourhoods north of Highway 1. Pedestrian improvements on Marine Drive could take the form of either a multi-use pathway or sidewalk with barrier curb. The Jefferson Avenue and 25th Street connectors are important trail links that are in need of upgrades, to be determined in consultation with the community.

Street name	From	To	Length (m)	Infrastructure recommendation
Argyle Avenue	14th Street	16th Street	300	Separated multi-use pathway (Spirit Trail)
Caulfeild pedestrian tunnel			40	Convert stairway to accessible ramp; improve lighting
Mathers Avenue	Eastcot Road	Taylor Way	220	Multi-use pathway (Upper Levels Trail)
Jefferson Avenue connector	Inglewood Avenue	Jefferson Avenue	110	Improve existing urban connector trail

Wildwood Lane	Westcot Road	901 Wildwood Lane	340	Multi-use pathway (Upper Levels Trail)
Marine Drive	Keith Road	Piccadilly South	490	Multi-use pathway or sidewalk
25th Street connector	Palmerston Avenue	Queens Avenue	100	Improve existing urban connector trail
Marine Drive	McKenzie Drive	The Dale	407	Multi-use pathway or sidewalk

5.2.5 Crossing Improvements

West Vancouver is bisected by numerous creeks, running north-south and breaking up the street grid. The following pedestrian/bike bridge crossings are proposed to provide better connectivity between neighbourhoods and provide alternate walking routes. The pedestrian/bike bridges can also serve as crossings for emergency vehicles in the event of a natural disaster that renders other routes impassable.

Street name	From	To	Length (m)	Infrastructure recommendation
Caulfeild pedestrian tunnel			40	Convert stairway to accessible ramp; improve lighting
Camelot Road	Camwell Drive	Westhill Wynd	235	Pedestrian/bike bridge and pathway
Erwin Drive	Erwin Drive	Ross Crescent	40	Pedestrian/bike bridge
Mathers Avenue	28th Street	29th Street	150	Pedestrian/bike bridge

5.3 Funding Strategies

The costs of implementing the improvements identified in the Pedestrian Network Study 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 District of West Vancouver may consider to help leverage its investments and to maximize its ability to implement pedestrian network improvements.

The District should regularly check with all levels of government to keep up to date on current funding opportunities. District should pursue all available sources of funding for transportation facilities and programs, including the programs identified below (Note: as funding opportunities change regularly, the information in this section is subject to change):

- **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.
- **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.
- **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 Credit Union provides funding through its Environmental Fund and TD provides funding through its Friends of the Environment Foundation.

Additional Active Transportation Funding – Not Specific to Walking

- **Provincial Programs and Initiatives** i.e. Provincial Cycling Investment Program (PCIP) and Cycling Infrastructure Partnerships Program (CIPP).
- **Regional Programs and Initiatives.** TransLink funding and cost sharing programs i.e. Walking Infrastructure to Transit (WITT), the Transit-Related Road Infrastructure Program (TRRIP), Bicycle Infrastructure Capital Cost Sharing (BICCS), Major Road Network Minor Capital Program, and the Major Road Network Operation, Maintenance and Rehabilitation Program.

5.4 Monitoring Strategies

A monitoring strategy is essential to ensure that the recommendations from the Pedestrian Network Study are implemented as intended, and to determine whether the study is achieving its goals. A monitoring program will also enable District staff to justify continued expenditures and allocation of resources to implement prioritized initiatives of the Pedestrian Network Study. Monitoring also provides a means of identifying changing conditions which would require changes to the Study

The monitoring program needs to be:

- **Meaningful.** The monitoring strategy should yield meaningful results and point to the success in achieving

the actions outlined in the Study.

- **Measurable.** The monitoring program needs to establish criteria that are readily measurable and for which data or information can be readily obtained.
- **Manageable.** The monitoring program needs to take into account the resource limitations of the District and will identify measures where information is accessible or data is simple to collect.

The monitoring program will focus on two components: first, the degree of progress in implementing the actions in the Pedestrian Network Study, and secondly, the outcomes of the study, as summarized below. It is recommended that the District of West Vancouver monitor progress in each of these areas every 1-2 years, based on data availability.

Number of completed projects identified in the Pedestrian Network Study

- Sidewalks (# projects)

Annual investment levels

- Walking ($ and % of District's total transportation capital investments)

Network development

- Sidewalk network (km of existing facilities)

Mode Share of Work Trips

- Walking (%)

GHG Emissions

- Transportation-related GHG emissions (tonnes)

Proximity

- Walking (% of road network with sidewalk)

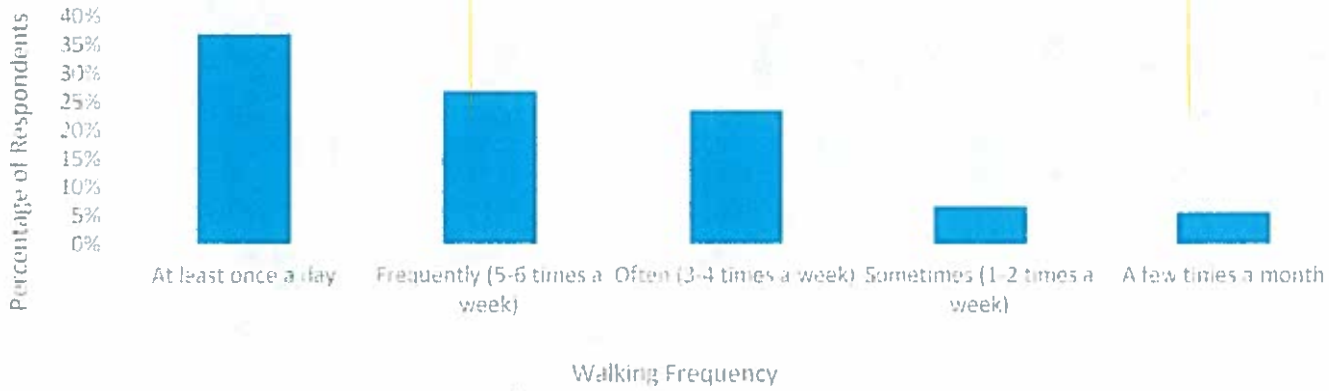
APPENDIX A

SURVEY RESULTS

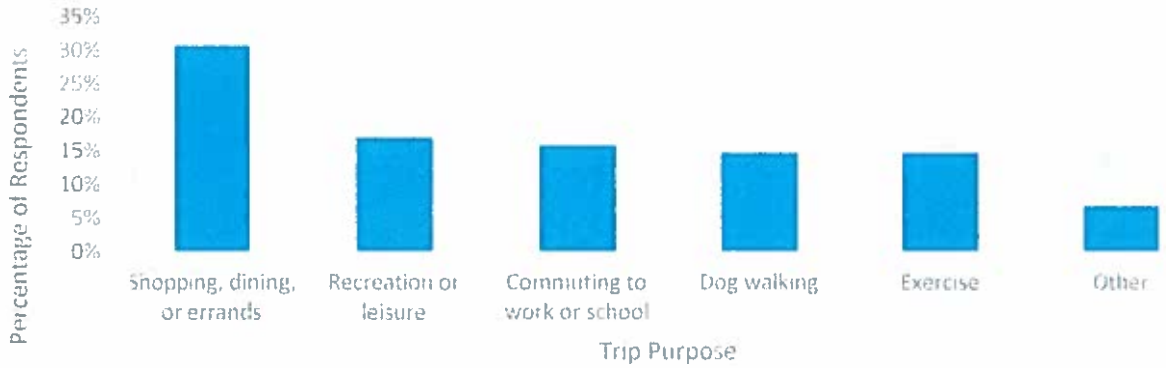
A survey was used to obtain input on existing conditions, issues and opportunities as well as preliminary directions for walking in the District of West Vancouver. The survey was available in February 2015 in conjunction with the community workshops. The survey was available on-line and hard copies were also available. Approximately 90 responses were received to the survey, with the results summarized below.

Walking Frequency and Habits

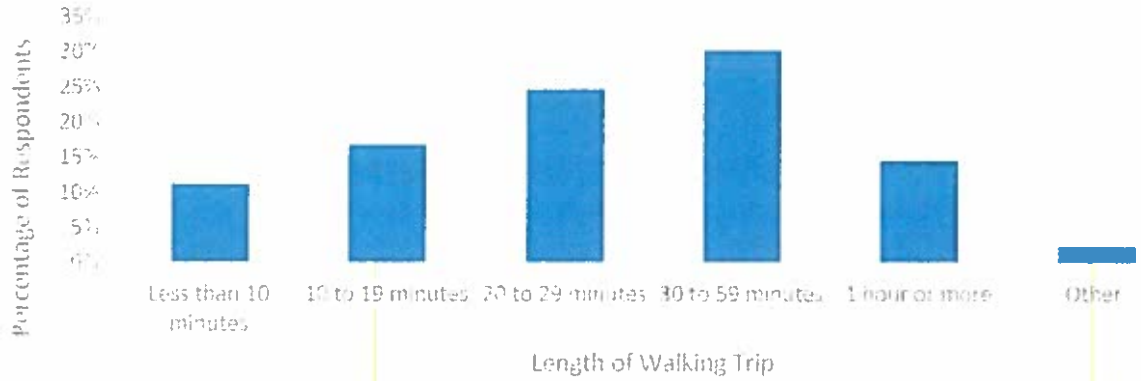
Respondents were asked how many times in a week they walk for a minimum of 5 minutes within West Vancouver. Walking at least once a day was the most common response and as seen below, the vast majority of respondents walk at least once a week.



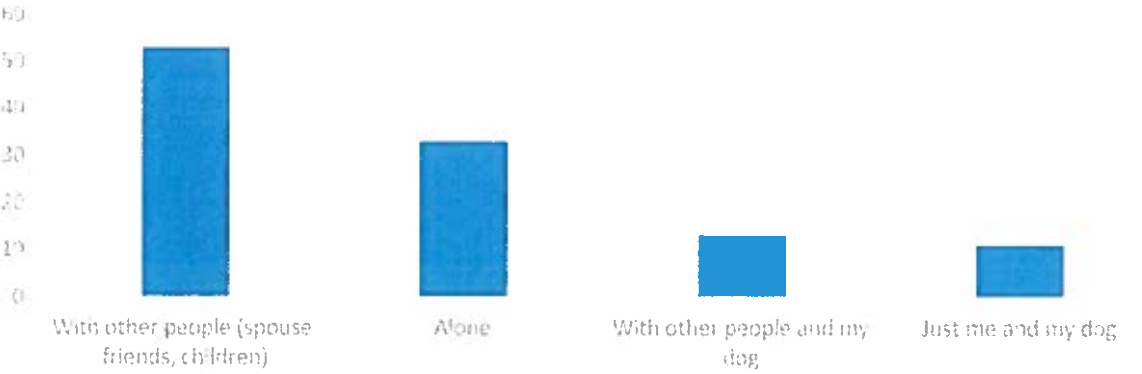
The survey asked respondents to indicate the main purpose of their walking trips. Shopping dining or errands was found to be the top reason for walking and cycling in Squamish, followed by exercise and shopping/errands as shown on the graph below.



Respondents were asked how long their typical walk was, the most common response was 30 to 59 minutes, followed by 20 to 29 minutes as seen below.



A question was asked to understand who respondents typically walk with, other people (spouse, friends, children) was the most common response.



Barriers and Challenges to Walking in West Vancouver

Respondents were asked to identify what were the five biggest barriers and challenges to walking in their neighbourhood. These results were not ranked so based on count totals the most common barriers were the perception that it is 'unsafe/unpleasant to walk because there are no sidewalks or shoulders' and 'it is unsafe/unpleasant to walk because vehicles travel to fast on the road'. Other results are outlined in the table below.

Response	Count
It is unsafe/unpleasant to walk because there are no sidewalks or shoulders to walk on	50
It is unsafe/unpleasant to walk because vehicles travel too fast on the road	46
It is too dark or there is a lack of lighting	34
Existing crosswalks feel unsafe or dangerous	29
It is unsafe/unpleasant to walk because there are too many vehicles on the road	24
Other	24
The shoulder (the gravel/grassy area on the side of the road) is occupied by cars	23
Vegetation is overgrown where I want to walk (hedges, tree branches, ivy, etc)	17
Roads and trails are too steep	13
Trails and sidewalks are not adequately maintained	11
It's too far to walk to where I want to go	10
There is no crosswalk where I need to cross the street to where I want to go	10
Barriers such as highways, creeks, ravines don't allow me to directly to my destination	7
There aren't enough places to sit such as benches and shelters at transit stops	7

Respondents were provided four factors and were asked to identify the order of importance, these factors included walkability, safety, accessibility and connectivity. The results showed that Safety (I need to feel safe walking or when crossing the street) was identified as the most important factor, this was followed by Connectivity (I need to have connected and adequate walking paths going to where I want), Accessibility (I need to have fully accessible, maintained and comfortable paths). The least important with the lowest score was Walkability (I need protection from harsh weather, places to sit, things to see and do).

Respondents were asked to prioritize the following list of pedestrian improvements in order of importance, with 1 being the most important 9 being the least important. The follow table presents the weighted results showing that the most important pedestrian improvement was: 'improving pedestrian safety at major intersections and along major roadways' followed by 'improving pedestrian infrastructure whenever roadwork is done'.

Pedestrian Improvement	Weighted Score
Improving pedestrian safety at major intersections and along major roadways	522
Improving pedestrian infrastructure whenever roadwork is done	507
Increasing maintenance of existing pedestrian routes	496
Improving sidewalks/paths/trails/connections to schools	486
Improving pedestrian safety in my immediate neighbourhood	462
Lowering speed limits on residential streets	460
Making existing pedestrian routes more inviting by adding street trees, benches and pedestrian-scale lighting	455
Building NEW pedestrian routes to destinations like transit stops, parks, and trails	340

Building NEW pedestrian routes and connections at major intersections and along major roadways 274

Respondents were asked to identify any crossings they believe should have pedestrian signals installed. A number of locations were identified including a number of intersections along Marine Drive. Gordon Avenue and 21st Street was the most commonly identified location. Other intersections identified include:

- Marine Drive and 27th Street, 26th Street, 23rd Street, 13th Street
- Fulton and 17th Street16th Street, 11th Street
- Inglewood and 13th Street
- Duchess and 13th Street
- Mathers and 22nd Street
- Westport Road and Eagle Harbour Road

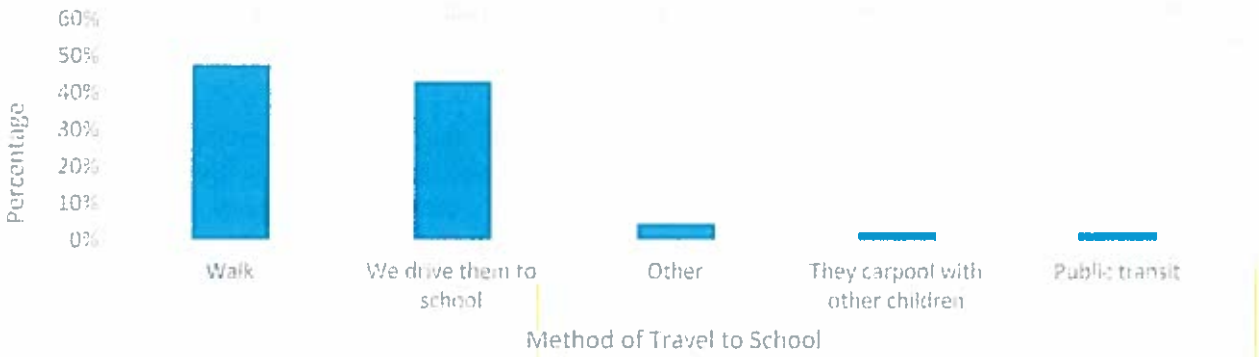
School Aged Children

Survey respondents were asked if they had any school-age children. The majority for respondents at 56% do not have school age children and 44% do have school aged children.

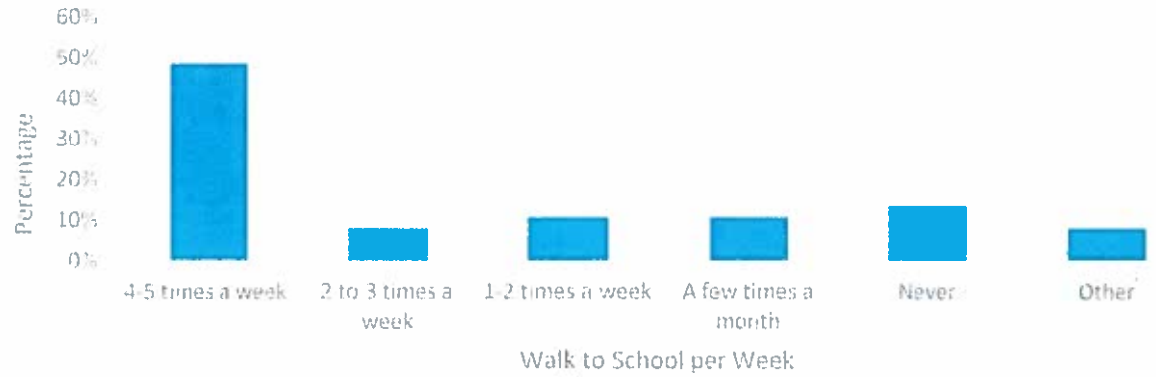
Respondents that had children in school were asked to identify which school they attend. The largest group of respondents stated West Vancouver Secondary School, followed by Ridgeview Elementary and Pauline Johnson School as seen in the table below.

School	Percentage
West Vancouver Secondary School	21%
Ridgeview Elementary School	19%
Pauline Johnson French Immersion School	13%
West Bay Elementary School	11%
Sentinel Secondary School	9%
Irwin Park Elementary School	6%
Rockridge Secondary School	6%
Eagle Harbour Montessori	6%
Cedardale French Immersion School	2%
Hollyburn Elementary School	2%
Caulfeild Elementary School	2%
Gleneagles Ch'axay Elementary School	2%

When asked 'how does their child (or children) most frequently travel to school?' the largest group of respondents stated they walk to school, however this was closely follow be respondents that noted they drive their children to school, as seen below.

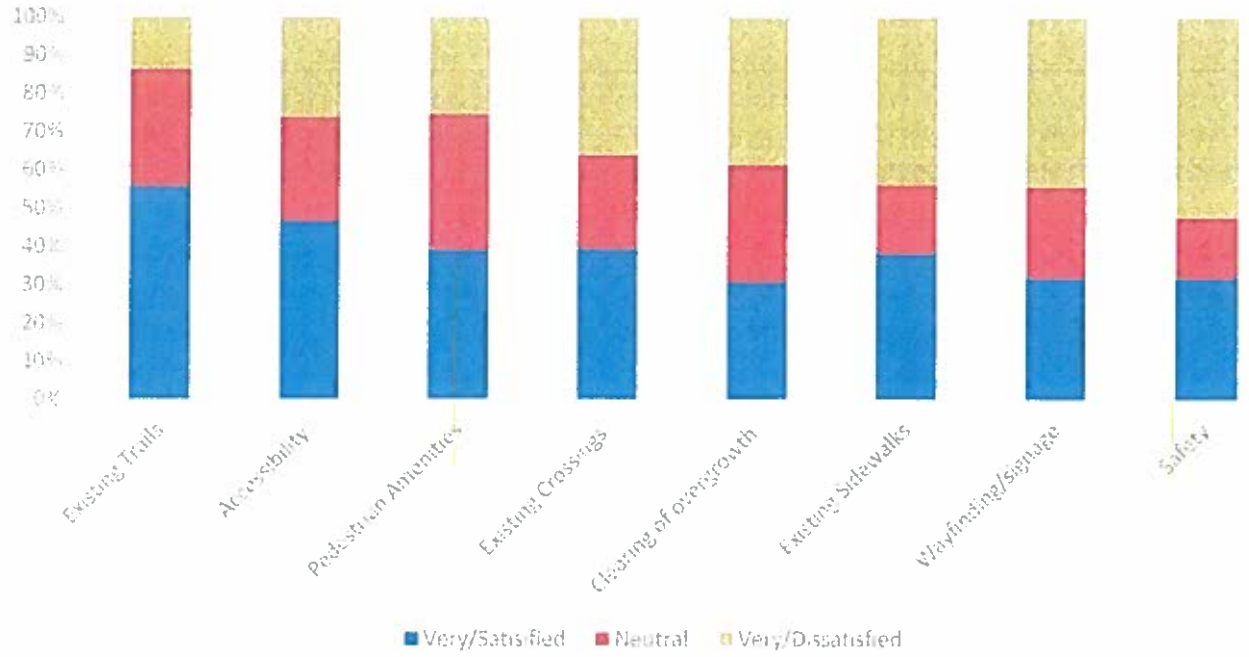


The largest group of respondents who have children that walk to school noted that they walk between 4 to 5 times in a week. The most common reason that was preventing respondent's children from walking more was the feeling that 'it is unsafe//unpleasant to walk because there are too many vehicles on the road' followed by 'it is unsafe/unpleasant to walk because vehicles travel too fast on the road'.

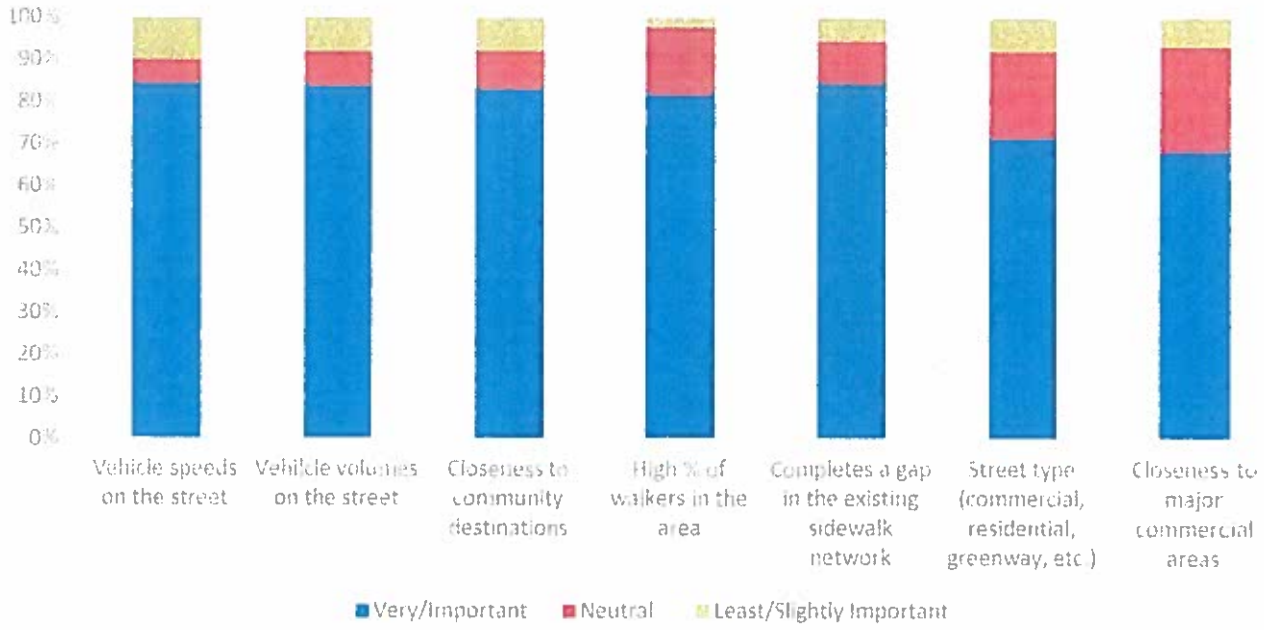


Levels of Satisfaction

Survey respondents were asked 'how satisfied they are with a variety of different types of infrastructure and consideration that can influence the walking environment. The results, as seen below, show that respondents were most satisfied with existing trails, accessibility and pedestrian amenities. They were least satisfied with safety, wayfinding and signage and existing sidewalks.

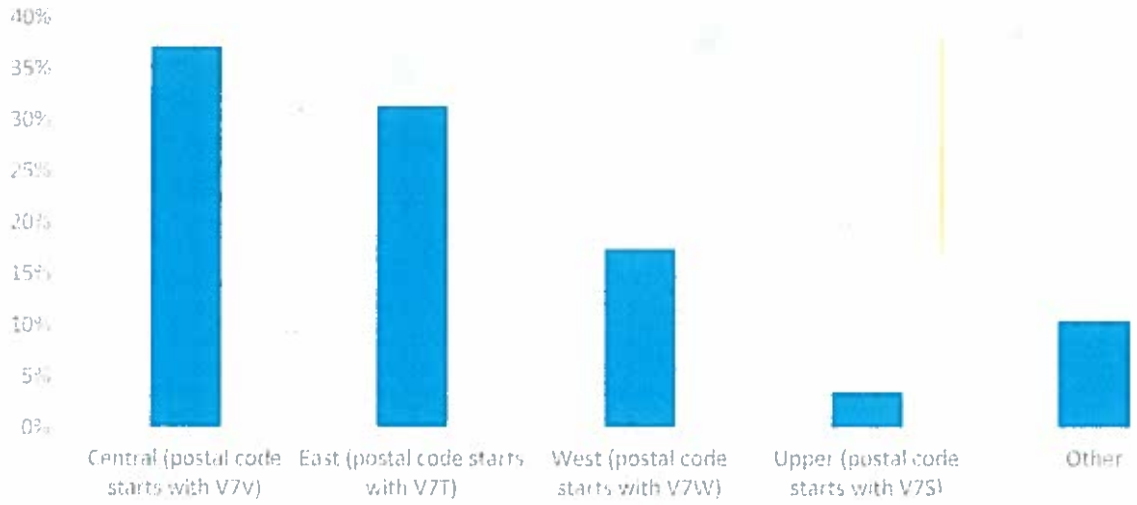


Respondents were asked when prioritizing new sidewalks, how important the listed criteria. Each criteria was ranked by level of importance, while most of the criteria were identified as being important, the most important were vehicle speed and volumes on the street. The least important were proximity to major commercial areas and street type.

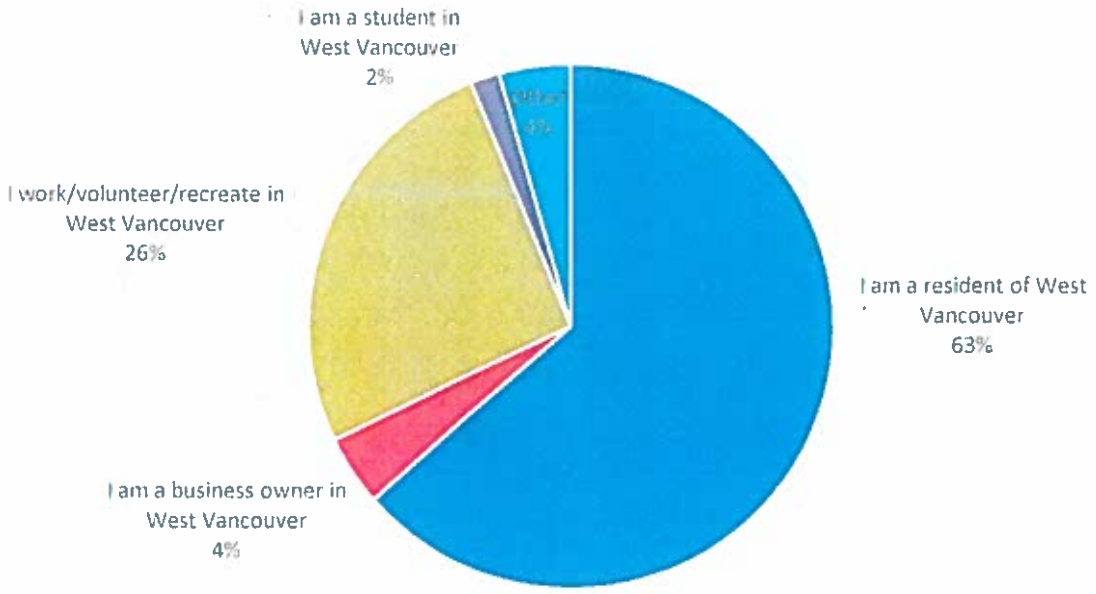


Demographics

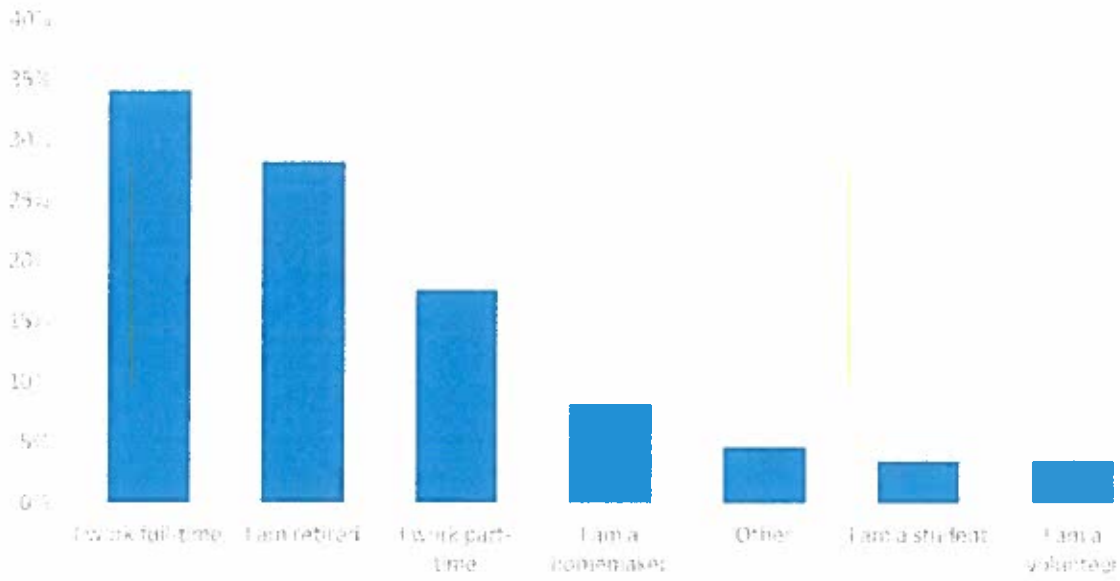
Respondents were asked to identify where in West Vancouver they live. The largest group of respondents resides in central West Vancouver with the postal code starting with V7V, followed by respondents in eastern portion West Vancouver with a postal code starting with V7T. The fewest number of respondents reside in upper West Vancouver with the postal code starting with V7S, these respondents live above the highway.



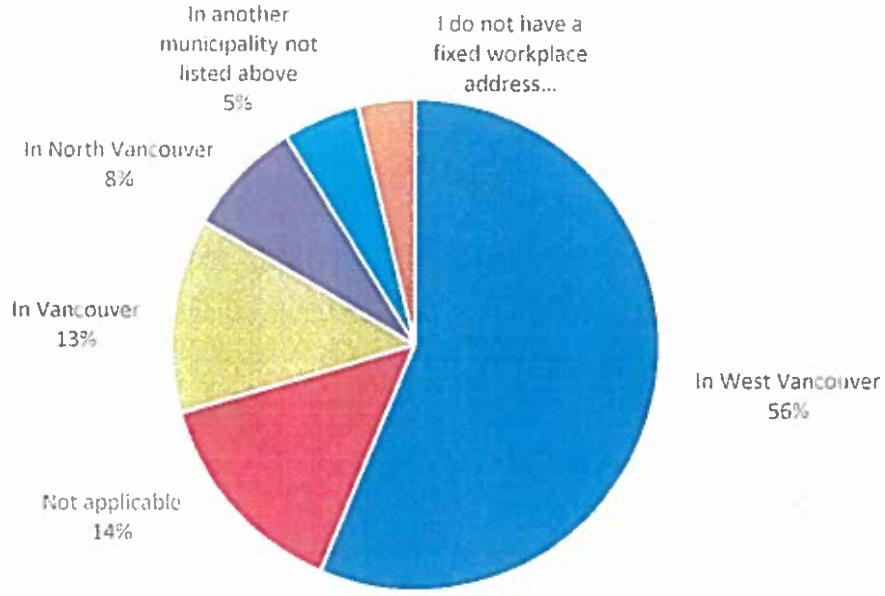
The majority of survey respondents identified themselves as residents of West Vancouver as seen below.



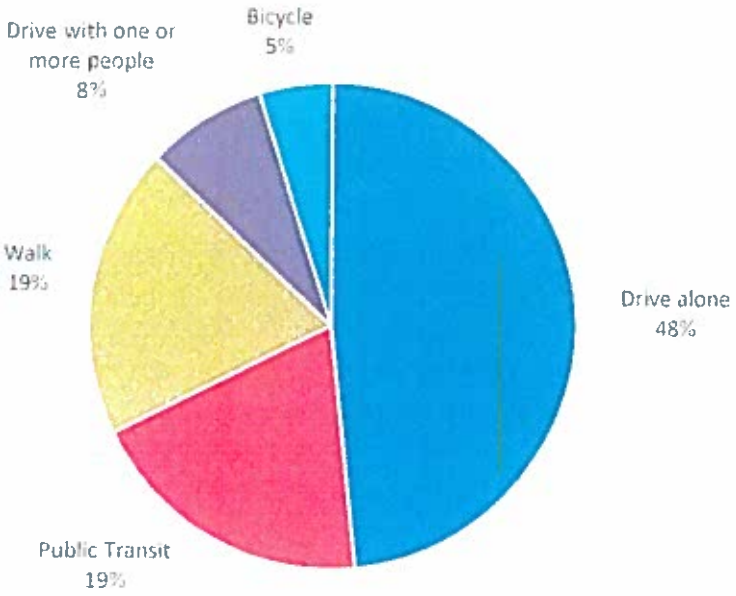
The largest group of respondents work full-time, followed by respondents that are retired as seen in the graph below.



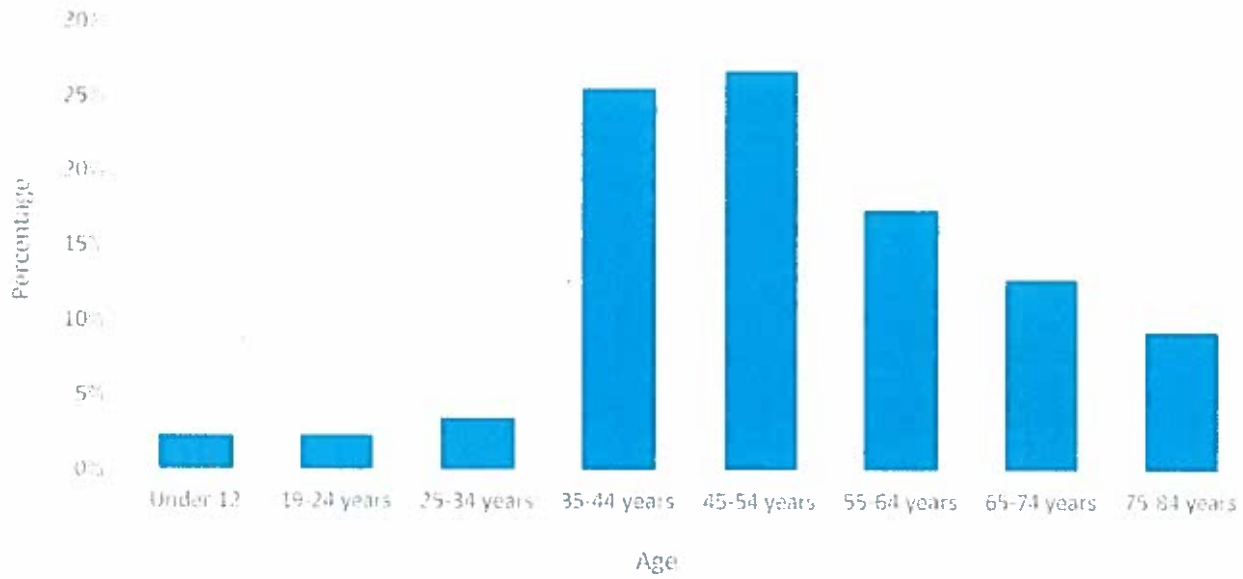
The majority of respondents work or volunteer in West Vancouver as seen in the chart below.



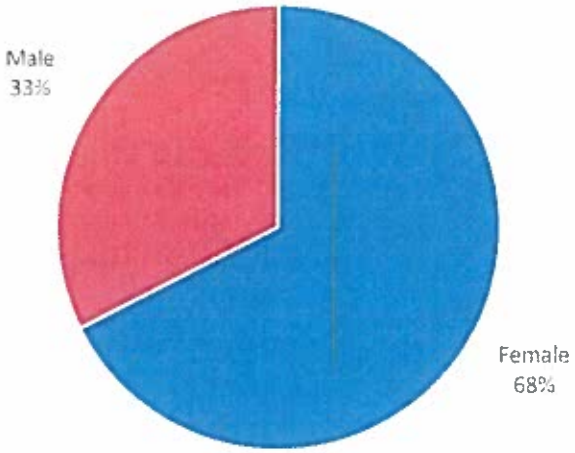
When asked how they commute to work or volunteer, the largest group of respondents noted they drive alone. Nearly 20% of respondents did note that they walk to work or where they volunteer.



The largest group of respondents was 45 to 54 years of age, but the vast majority of respondents are 35 years of age and older as seen in the graph below.



The majority of survey respondents were female as seen in the chart below.



When asked if they use a mobility aid only 1% of respondents stated that they did. A total of 4% of respondents stated that they had a personal mobility issues or other challenges that make it difficult to walk.

APPENDIX B

COMMUNITY WORKSHOP FEEDBACK SUMMARY

The District of West Vancouver is developing a Pedestrian Network Study to better understand current walking conditions, gather community insight on areas for improvement, and explore opportunities for enhancing the current walking environment. The Pedestrian Network Study includes extensive consultation and engagement with West Vancouverites. In February, 2015 the District engaged with the public through an on-line survey and a series of stakeholder workshops.

The purpose of this document is to summarize the feedback and comments that were provided by residents and stakeholders during the stakeholder workshops. The feedback presented in this document was collected over the course of three separate stakeholder workshops that occurred during the month of February 2015. In addition to the feedback received during these events residents and stakeholders also provided the project team with their feedback through email.

Altogether, nearly 60 residents and stakeholders attended the three stakeholder workshops, as described below:

- Wednesday February 11, 2015 – Gleneagles Community Centre (approximately 17 people in attendance)
- Tuesday February 17, 2015 – West Vancouver Lawn Bowling Club (approximately 30 people in attendance)
- Wednesday February 18, 2015 – West Vancouver Lawn Bowling Club (approximately 10 people in attendance)

Feedback has been colour coded based on the source of the input. Feedback in **black** came from the stakeholder workshops, while feedback in green came from emails and letters sent in from stakeholders and residents. For the most part, comments noted in this report are verbatim comments provided by residents and stakeholders.

1.0 General Pedestrian Network Comments – 2015 stakeholder workshops

- Changes may be more associated with behaviour, infrastructure is not being respected
- Suggest "See Click Fix" approach online reporting service request tool (app or online map)
- Almost all problems related to pedestrian safety are the faults of humans either pedestrians or drivers and not the crosswalks and sidewalks and other crossings. Pedestrian are often dressed in black or dark clothing and do not make eye contact with drivers and are sometimes distracted by texting
- More considerations for pedestrians during times of construction
- 50km/h speed limit is too fast cars are really doing 60
- Jaywalking at night and in dark clothing is not safe
- Make school zone signs consistent (ensure school zone begins and ends signs are clear)
- Install permanent speed boards at high collision locations
- Providing safe pedestrian passage should take priority over everything else, including appearance, beautification, landscaping, etc.
- Encouraging sidewalks be built with new developments.
- Network is crucial. Localized disruptions can make swaths of otherwise good routes less- or un-useable.

- City to provide reflective materials like arm bands or clip on reflectors to share with friends/family and neighbours
- New model cards are designed to be quiet seniors can't hear them
- Seniors driving their electric carts and passing pedestrians without using horn or voice to warn that they are coming from behind – feel these carts should be licensed and drivers tested for competence
- More road test for aging seniors
- As populations in the District have increased so have the volumes of vehicles on the street and the speeds they travel at
- Consider making more pedestrian oriented streets like 15 Street in the City of North Vancouver
- Drainage - not just puddles in pedestrian paths but also spray from vehicle
- Concerns about the increase in the number of scooters being used by seniors in Ambleside and nearby areas
- Opportunities to walk in neighbourhoods are fast disappearing due to property owner's disregard of current bylaws and municipalities refusal to enforce them

Right of Ways and Connector Trails

- Are all existing DOWV right-of-ways known and mapped? Those suitable as a trail/shortcut should be turned into one for walkers and, when possible, mobility users for easier East-West & North-South traversing. Publish a map of all existing/new trails.
- I have long been meaning to ask the district about a certain shortcut I used growing up on Sentinel Hill. Inglewood runs up Sentinel Hill, then hits a dead-end and then starts again just before Burley Drive and runs to Taylor Way and beyond.
- What happened to these pathways? Particularly the route from the Inglewood dead-end down to Taylor Way. The Younette property now has a fence that runs right up to the Inglewood property, thus blocking any pedestrian use. Is there no right-of-way anymore or was it never a right-of-way?
- Often these hidden trails are only known to the nearby residents and some, like these I mention, have been lost over the decades. Perhaps the forum can help locate them and bring them back into good use and/or make new ones using existing right-of-ways.
- Circled pathways are designated as "trails" and under the jurisdiction of parks. Perhaps these should be reclassified as "sidewalks" and give them regular maintenance and upgrade with lighting

Education, Support and Enforcement

- Have a pedestrian awareness mail out in October – send every household a blinking light or a reflector with a catchy slogan
- Teach pedestrian safety early – stop look and listen
- Roundabouts – no instruction regarding right of way. More education is needed, consider ads in the North Shore News
- Traffic circles – instructions need to be more clear with better education
- Village walk where are the routes – not sure anymore – request that volunteers lead walking tours in the evening (May and June)
- Absence of West Vancouver Police Department monitoring traffic ie. Speeding and distracting driving and failure of drivers to respect right of way while pedestrians are in crosswalks or failing to stop when pedestrians are wishing to cross
- Pedestrians need to be taught to walk defensively instead of focusing on their technical toys

Priorities Areas

- Complete the Spirit Trail
- Priority areas should be within 400 metres of commercial centres, along bus routes, near schools and areas where there are currently no sidewalks
- Any route with a bus stop should have a sidewalk
- Where there is a bus route consider putting in a sidewalk

Sidewalks

- Routes that provide access to neighbourhoods and destinations need sidewalks
- Sidewalks are narrow
- Sidewalks with a buffer from the road
- There are inconsistent sidewalks along Marine Drive
- The chief purpose of sidewalks is to facilitate pedestrian activity in its many forms. While walking is the most common use of a sidewalk, it is important to remember that it is also used by those who are pushing walkers, pushing baby carriages and strollers, or riding mobility scooters and wheelchairs. There are also those with sight impairment at various levels of severity. Seniors and other often experience difficulty in walking as well as levels of sight impairment.
- Sidewalk obstructions - poles, utility boxes, private driveway crossings, bike racks, advertisements, jutting patios or store displays - many belong in community but placement sometimes infringes on or disregards pedestrian movement

Crossings

- No right turn on Red Restrictions should be put in place
- Pedestrian scrambles at key intersections Marine Drive or at the community centre
- Separate signal phase for pedestrians
- Pedestrian controlled intersections take forever and lead to jaywalking
- Pedestrian crossings should be automatic rather than requiring activation
- Pedestrian countdown timers are great

- Flashing light crosswalks
    - Motion activated would be amazing
- Crosswalk flags posted on sign poles in sleeves on either side of the crosswalk – bright flags are used to alert drivers that there are pedestrians in the crosswalk
- At the crosswalks that are not controlled by lights They have a pail / container of brightly coloured flags to hold out while crossing the street to further draw attention to the pedestrian Pick one out of the pail on one side of the street.
- Common occurrence: Driver asses vehicle movement and is ready to proceed and maybe moving when they glance for pedestrians and then correct suddenly, often unpredictably and confusing or dangerous, or proceed anyways because it is 'too late' and/or pedestrian is already 'deferring' by not stepping out in front of oncoming traffic.
- Drivers are not looking for possible pedestrians when turning right
- Some intersection crossings in Ambleside and maybe Dundarave programmed for pedestrian's turn without having to 'request' with a button. Aside from direct benefits, also a cultural shift message that pedestrian rights of way are not secondary or tertiary afterthought to be granted only after vehicular needs are met. Trains drivers to wait and look more, not only to defer when specifically instructed.
- Drivers don't pay attention to walkers
- People not stopping at stop signs – particularly bad for right turning vehicles that do not notice pedestrians in the crosswalk
- Have crossing buttons installed to activate a BRIGHT YELLOW FLASHING LIGHT when proceeding to cross.
- Many areas have bright green painted bicycle paths, maybe the asphalt at the crossing area could be painted the same bright green colour.
- I have visited quite a few cities where the traffic light turns red in ALL DIRECTIONS and the pedestrians are allowed to 'criss cross' at these intersections, how simple and safe would this be. – Seattle as an example
- Signal timing favors the motorists as there is not enough time for people to get across the crosswalk – Particularly along Marine Drive and Taylor Way

Curb Let Downs

- Curb cuts are the means to enter or exit a sidewalk. These are of particular importance to those using a wheeled apparatus (mobility scooters, wheelchairs, etc. as mentioned above) as it is their only means of getting on or off the sidewalk. Their design deserves careful consideration by those engineering/designing and those actually making the sidewalk.
- Presently, along Marine Drive in the Ambleside area, there are several styles of curb cuts:
    - Some provide a wide fan-shaped curb cut that spans the whole corner. These have a gradually sloping ramp that easily facilitates entry or exit and appear to be the most ideal corners for all pedestrians, including those with wheeled apparatus e.g. South/west and south/east corners at Marine and 16th Street
    - Some corners provide a single, fairly narrow ramp leading to an equally narrow curb cut in the centre of the corner. There is little room to maneuver a wheeled apparatus, especially if it is making a turn rather than going straight on. Moreover, for those going straight on, when they follow the path of the slope to the curb they are forced into the direction of the street with its car traffic. This is a very uncomfortable, even alarming, situation for them. E.g. The north/west and north/east

corners at Marine and 21st Street. This is adjacent to the Seniors Centre where many people are accessing it with walkers and scooters!

- Some corners have two curb cuts but have a very steep bulge of sidewalk between them. This steep bulge is a hazard to anyone on foot especially if they have any degree of sight impairment. But this is especially hazardous to wheeled apparatus. This is made clear by marks on the surface caused by a wheeled apparatus grinding upon it at the example of the south/east corner of Marine and 18th Street. I have been told that this is very frightening for someone on a mobility scooter.

Visibility (Lighting, Vegetation, Parked Cars etc.)

- Map of Village Walk and trails that connect neighbourhoods
- Signs at trailheads to identify shortcut routes and make it more clear where you will end up if you take the route
- More sidewalks to schools
- Make all pedestrian signals on Marine Drive automatic to reduce pedestrian wait times
- Street lights and brighter crosswalks throughout the District
- LED lighting on streets with no existing lighting
- Overgrown vegetation is a problem, should send a reminder when tax notices go out to remind people to trim their hedges, reminders should be proactive and not response driven
- Overgrown hedges
- Planted boulevards also need to be well maintained
- Improve lighting at crosswalks
- Parked cars too close to intersections when parking on a hill
- Bylaw to protect encroachment onto sidewalks
- Overgrown vegetation
- Some vegetation, like hedges make it difficult for cars to see and at the same time pedestrians are difficult to see.
- Many street light on side streets are regularly out making pedestrian visibility difficult
- Better street lighting, especially at crosswalks
- Crosswalks, particularly at night should be brightly lit.
- In many locations sidewalks are overgrown so that two people cannot meet without having to step off the curb
- Property owners and the District of West Vancouver refuse to take responsibility for their properties
- There needs to be a bylaw that requires sidewalks be kept free of encroachments, and existing encroachments be cut back to at least 6 inches from the edge of the sidewalk or 2 metres from the roadside to a height of at least 7 feet or 2.2 metres
- There needs to be an email address and phone number where encroachment can be reported
- Boulevard Maintenance and Encroachment Policy was adopted in 2003, this policy has not been obeyed or enforced. A new Sidewalk and Boulevard Encroachment By-Law is required. There should be a section in the new bylaw requiring any vegetation that encroaches on a paved portion of the road to be cut back so it does not encroach at a height of less than 4 metres
- Parking setback from curb - rules, enforcement, design (pro: traffic slows for turns when cars parked close to intersection, con: visibility between drivers and pedestrians blocked especially by taller vehicles, con: cars parked northbound on SE corner especially problematic for crossing SE to SW corners - possible placement of low vertical infrastructure e.g. bike racks, benches, to constructively and effectively enforce setback

- Parking lot designs and vehicular access points obstruct pedestrian flow and access

Motor Vehicle Speeds

- Slow speeds around community centre, at least dawn to dusk if not at all times
- West Vancouver needs more traffic calming measures
- Hills allow for drivers to gather speed and are clearly disinterested in looking for pedestrians at crosswalks that want them to slow down
- Raised pedestrian walkways. Lasting and effective measure to slow the speed of traffic throughout the day and night. Effective and relatively cost efficient option.

Awnings

- Awnings - What bylaws exists? Are they enforced?
- Awnings useful where people stop, but for people moving no awning is often better even if they work because the people trying to use them, or not (e.g. have an umbrella and try to leave cover for others) mess up foot traffic flow
- Awnings often drip into middle of sidewalk either along front edge or at corners; in light rain where you might only use a hat or nothing you can get dumped on by an awning
- Wider passages needed for passing with umbrellas, and signs or other obstructions can snag or crowd; umbrella etiquette education?

Smoking

- Ban smoking on sidewalks; if you pass a stationary smoker you have to be closer than the doorway distance rules account for, if you are walking in the same direction as a smoker you are trapped in their zone for longer; even travelling in opposite direction from a smoker you often can't help but get a lungful.
- Zero tolerance for cigarette butts not being properly disposed of

Construction and Sidewalk Closures

- Construction and commercial blockages of sidewalks - existing bylaws? Enforcement? - one or both currently inadequate

2.0 Location Specific Feedback

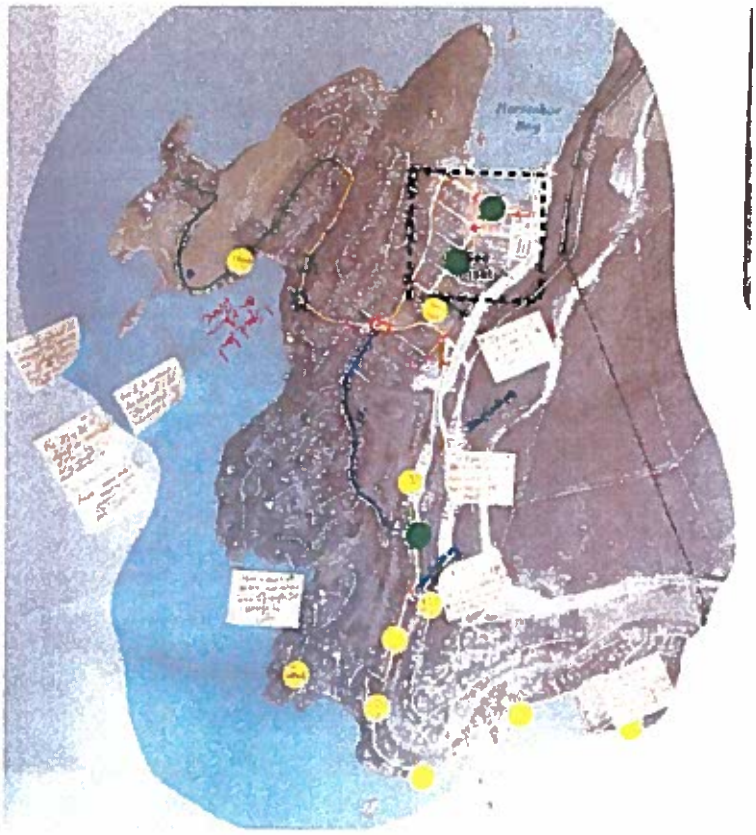
The following section presents the comments that were specific to neighbourhoods and locations throughout the District of West Vancouver. The feedback heard for each neighbourhood is presented as general comments specific to that neighbourhood followed by a list of locations that were identified with a yellow sticker (bad locations), and a green sticker (good locations).

2.1 Horseshoe Bay

General Comments

- Tennis court and beach are destinations but Gleneagles Drive is unsafe to walk
- Build a nice walk along Marine Drive
- Make Eagle Harbour a walking destination, the Harbour itself should be open to visitors
- Trail behind the Community Centre is too isolated – what can be done to increase traffic?

- Improve the trail in the woods to Horseshoe Bay, but keep it rustic
- Regarding 25 km/h or 30 km/h speed limit on much/all of Marine Drive west of West Westhill, since so much of Marine Drive is already reduced speed make it all to Horseshoe Bay. Reasons include the high number of bikes, the road is narrow and windy, people (including children) are often walking along it, and there are a lot of pets and wild animals along the road
- While trimming buses etc. let's start with ivy and invaders
- Extend the sidewalk on each side of the street that there is a bus stop, it is not safe to reach the bus stop
- Steep rough hazardous path connecting Sea View Walk to Cranley Drive Bigger switchbacks and no stairs so that people with disabilities can use this section
- I would however like to bring to your attention the daily issues of walking to Gleneagles Elementary School.
    - I would really like to be able to send my kids to school unsupervised for the relatively short 10 min walk, but unfortunately the pedestrian crossing discipline in Horseshoe Bay is awful. I cannot tell you how many times I have nearly stepped out onto a crossing only to be nearly run over by speeding cars or oblivious drivers, who for some reason cannot see the crossing signs and the markings on the road. I am alert, my kids however are not consistently aware of their surroundings unfortunately; they are kids after all.
- There is a problem in Horseshoe Bay with speeding drivers, especially in the mornings and the evenings. Most cars seem to travel well over the 30 limit. I have spoken to the principle Scott Wallace after one incident where a driver nearly hit us as we were crossing the road, and after speaking to some teachers about it, they too observed some very poor driving while they were striking in front of the school last summer.



Yellow Sticker Location:

- Marine Drive around the Yacht Club
    - Currently a 30km/h zone
    - Vehicles are not slowing down and there are no sidewalks
- Marine Drive Corridor
    - Needs a sidewalk
    - Reduce speeds
- Marine Drive to Whytecliff Park
    - Needs a sidewalk
- Gleneagles Community Centre

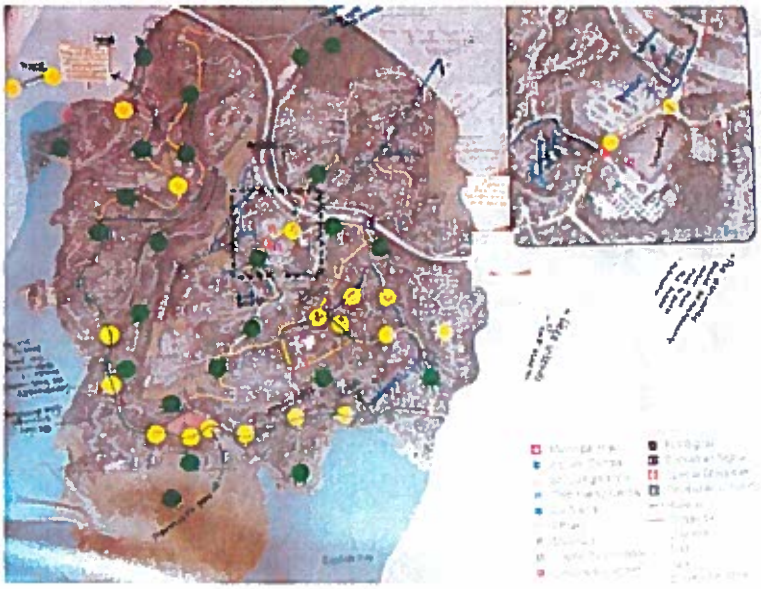
    - Dark and poor lighting
- Gleneagles Drive and Marine Drive
    - Needs a crosswalk
    - Provides access to pathway
    - Located on a hill
- Gleneagles Drive west of Marine Drive
    - Needs a sidewalk

2.2 Caulfeild

General Comments

- Curb heights are too low on Marine Drive in Eagle Harbour
- Thousands of cyclists on Marine Drive during the spring and summer
- Marine Drive is a Residential Street. Why is there no traffic calming
- Complete the Spirit Trail
- Better signage at crosswalks
- Overall concerns with overgrown vegetation

Yellow Sticker Location:



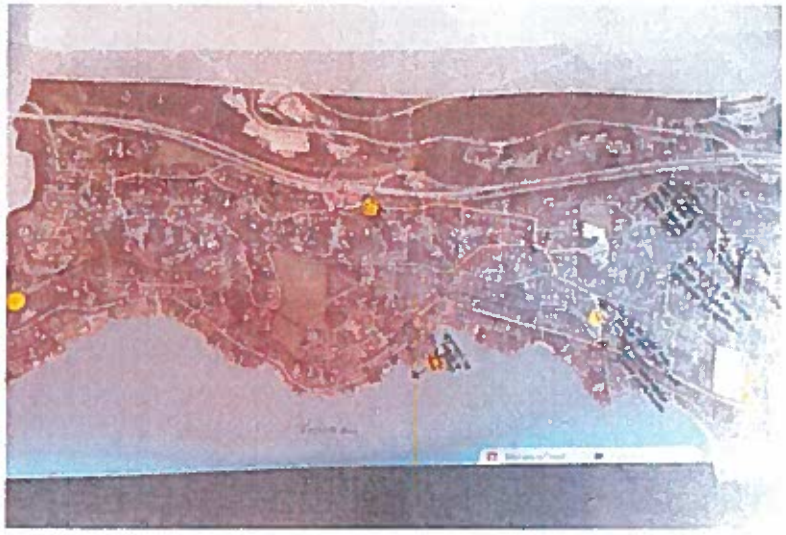
- Marine Drive at Gallagher
    - School zone
    - Park zone
    - Population growing
    - No traffic calming
- Marine Drive at Cranley Drive
- Most of Marine Drive
    - No sidewalk
    - Limited crossing opportunities
    - No signals
- Willow Creek Road
    - No existing sidewalk
- Cherbourg Drive
    - No sidewalk
    - Overgrown vegetation
- Caulfeild Drive
    - Between Meadfeild Road and Willow Creek Road
    - Needs a sidewalk on at least one side
    - Intersection of Caulfeild Drive and Rutland Road
- Caulfeild Drive and Headland Drive
    - Needs a crosswalk
    - Motor vehicles coming off the highway at high speeds
    - Busy commercial area
    - Also within close proximity to a school
    - Poor lighting

2.3 Westmount

- I live on the corner of 30th and Marine Drive. My children attend WestBay, as do many neighborhood children. I have called the district about the possibility of putting a crosswalk on 30th. There are two bus stops at 30th and every day, children and adults are taking their chances to cross the street rather than walk to the crosswalks on 31st and 29th (a distance away). The speed on Marine also seems to be accelerating every year as more and more cars are on the road. I think lights and speed bumps should be considered to slow the traffic as it's often quite dangerous. My children are old enough to walk to and from school as they are getting older, but Marine Drive is a huge concern for me. I walk almost every day as I have a dog and while I'm less concerned about my safety to cross Marine to get to the sidewalk, I am acutely aware of the speed at which cars are traveling.
- Cherbourg is one block long. The wide is the same block as Caulfeild School. There are rocks on the boulevard, fences again the pavement, overhanging vegetation, and blind corners due to hedges
- WVPD's Speed watch Program reported that they have received quite a few complaints about lack of sidewalk on Marine Dr in the Oxley St area, headed west from there.

Yellow Sticker Locations:

- Intersection at Burkehill Road and Morgan Crescent
- Westmount Road east of Southridge Place
- Marine Drive
    - Along Marine Drive almost to Horseshoe Bay there are no sidewalks
- 31st Street between Marine Drive and Mathers Avenue
    - Overgrown sidewalks
    - 31st Street provides access for people from the bus stop to the school needs sidewalks on both sides
- Gisby Street and around Altamont Park
    - Conflict with kids in the park four cars coming down Gisby Street
    - Planting to paved edge walkable boulevard is needed
    - Vegetation overgrowth results in not enough room for pedestrians
    - 29th Street between Marine Drive and Mathers Avenue
        - Curb but no sidewalk
        - 29th not wide enough for parking on both sides and no sidewalk for pedestrians
    - 29th Street – corner at 29th and Mathers Avenue
        - Major road access to neighbourhood needs sidewalk



2.4 Dundarave

General Comments

- Like the mid-block crossing along Marine Drive
- Streets and neighbourhoods that have slow down signs help raise awareness of speeding
- Vehicles are using Nelson to avoid Mathers and the speed humps
- There are big hedges obstructing visibility at Mathers and 23rd
- Make pedestrians more visible
- Slow vehicles down especially travelling down the hill
- 22nd Street between Mathers Avenue and Queens Avenue does not have a sidewalk on either side. Sidewalk should be extended because of the location of the park, high vehicle speeds, topography, speed limits should also be reduced.
- Dundarave in general is very good
- Better access from streets to Seawall
- Make it more clear that 20 Street and Marine Drive south is an exit point from the library for vehicles – consider a decorative crosswalk or something to make it more clear that this is a crossing for both pedestrians and vehicles
- Awkward sidewalks along Haywood Avenue between 21 Street and 22nd Street
- I would like to bring your attention once again to the bus stop on the south side of marine drive at 22nd street. You may recall we talked about it last fall - it is plunked right in the middle of the sidewalk and exceedingly difficult to maneuver around as a pedestrian. You referred me to the head of the department and he felt at that time that a bus bump would fix the problem, but the 2014 budget did not allow funds for such a project. I had to step off the sidewalk and onto Marine Drive the other day, in order to get past the people waiting for the bus.
- Sidewalk on south side of Marine near 19th is narrow and crowded with no room to maneuver except into a traffic lane

- Viable but awkward connection 19th between Marine (library, Memorial Park) and the sea walk
- Crossing 19th on south side of Marine not very secure
- The south/east and south/west corners of Marine and 19th Street severe problems which have not properly addressed. They are hazardous corners for pedestrians.

along

have been very

Yellow Sticker Locations:

- 25th Street between Haywood Avenue and Marine Drive
  - Vehicles are travelling at high speeds trying to make the light
  - Vehicles trying to pass and get around stopped or turning vehicles
  - There are a lot of vehicles making left turns at this locations
- 22nd Street and Jefferson Avenue
  - Heavy Traffic
  - School
- 22nd Street between Marine Drive and Gordon Avenue including both intersections
  - Dark
  - Lots of kids crossing
- 21st Street and Mathers Avenue
- 21st Street and Kings Avenue
- 20th Street and Inglewood Avenue
  - Crosswalk required
- 21St Street and Fulton Avenue
  - Roundabout redirecting traffic onto 22nd Street seen as a negative
  - However, there were also comments that the roundabout has been success in managing the flow of traffic
- 21st Street and Gordon
  - Too dark
  - Heavy volumes
  - Vegetation
  - Reduced visibility
  - Pick up/drop off location
- Bellevue and 20th Street
  - Add a crosswalk
  - Cars never stop
- Bellevue and 21st Street
  - Needs a 4 way stop
- Marine Drive and 23rd Street
- Fulton Avenue and 19 Street

    - Crosswalk needed to provide access to the pathway
    - Lots of pedestrians
- East side of 21st between Fulton and Gordon
    - No sidewalk
- Bellevue is dangerous for pedestrians on the south side of the street with the diagonal parking
- Marine Drive and 21st Street
    - Signal timing and pedestrian crossing is not long enough
- Marine Drive and 19 Street
- Marine Drive and 20th Street
    - Sidewalk is narrow in front of Library
    - South crosswalk at Marine and 19th is dangerous
    - Cars allowed to park to the corner of the intersection making it difficult to see pedestrians
- 25th and Marine Drive
    - Should have a right turn arrow for northbound vehicles

Green Sticker Locations:

- Seawalk
- 21st Street between Marine Drive and Fulton
- Intersection of 21St Street and Marine Drive
- Irwin Park
- Intersection of 22nd and Marine Drive
- Intersection of 20th and Marine Drive

2.5 Ambleside and Park Royal

General Comments

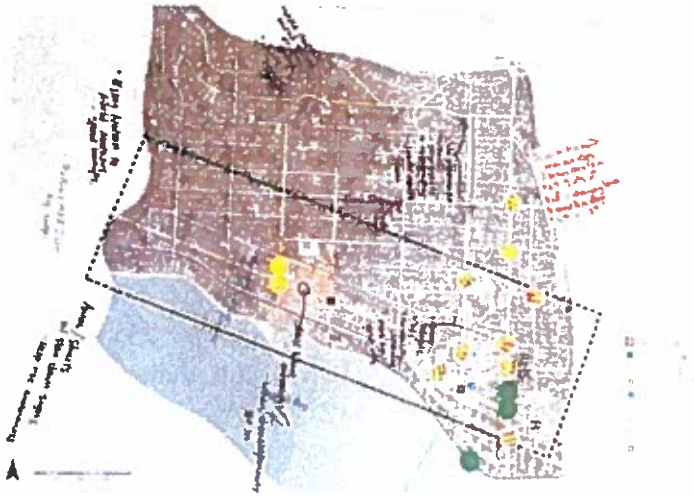
- Argyle and Bellevue angled parking leaves no spaces for pedestrians
- Fulton and 15th needs a proper light
- Lawson and 11th – cars are travelling fast on Lawson makes it difficult to cross even at the crosswalks
- 13th Street and Marine Drive
    - Needs a crosswalk
    - Needs Stairs for access into the park
- 13th Street between Inglewood and Kings needs a sidewalk
- Marine Drive and 14th Street and 15th Street on the north side is bad for pedestrian, on-street parking makes pedestrians hard to see
- Marine Drive Sandwich board signs obstructing sidewalks
- Marine Drive awnings that drip water on pedestrians
- 14th Street between Esquimalt and Mathers Ave needs a sidewalk on at least one side
- The sidewalk on the south side of Marine Dr between 19th and 20th is in urgent need of updating. This is a busy section of sidewalk leading to/from the library. It is heavily used by seniors, many who use walkers, canes, wheelchairs etc. as well as by moms pushing baby strollers. The sidewalk in this section is narrow and not large enough for a walker and stroller to pass each other. I have seen people have to step into the roadway to pass. It is also very unsafe for small children as there is no buffer at all from the

fast driving vehicles. A sidewalk by such a well-used community facility should be safe and accessible for all - wide and buffered.

- Sidewalk on Jefferson between Irwin Park and Pauline Johnson school so that school children can feel safe walking to school on their own.
- There is a hedge on 21st at the second cross walk (going towards Pauline Johnson) that comes out quite far onto the sidewalk pushing the walker closer to the edge of the sidewalk and closer to traffic. That traffic is moving very quickly and if someone were to accidently come off the sidewalk it may be fatal.
- Sidewalks on busy streets like 22nd and 20th.
- Access to the Rutledge sports fields at Ambleside Park
    - no crossing for Marine at 13th on the east side of the intersection
    - no sidewalk or safe path along east side of 13th south of Marine
    - no safe crossing of 13th at Bellevue
    - no safe crossing of the parking lot
    - access from Marine sidewalk near 13th either blocked or too steep (and often slippery)
    - safe route requires staying on Marine Dr south sidewalk to 11th or Spirit trail to rail crossing then back tracking to the target field
    - even for people arriving by car, all but a few have to cross the parking lot
- Construction project on NW corner of Marine&13th: Prior to providing a pedestrian channel, they closed the sidewalk mid-block with no signage at 14th where there is a crossing, and eliminating access on the NW corner affected 2 of the 3 intersection crossings, with the next crossing to the east at 11th.
- Construction planned for SW corner of Marine&13th: May include plans for improved pedestrian flow but changes, even if temporary, needed before a problem spot is worsened by disruptions.
- Minimal traffic because these sections of road don't go through to other areas, but otherwise not very friendly or secure for pedestrians
- Curved road at west end of 18th street bridge is problematic for visibility, speed, safe interaction
- Gravel shoulder, even if not blocked by parked cars, is difficult without sure footing, especially where it's not flat
- . Esquimalt & 15th
    - Heavy traffic on15th, and cars transitioning from highway sometimes don't reintegrate well
    - Emergency vehicles frequently cross 15th at Esquimalt, so any infrastructure or redesign for improved pedestrian and cyclist mobility should take that into consideration. E.g., if a good candidate for a pedestrian controlled crossing light or full stoplight intersection, include emergency priority on signal? Currently fire trucks, but police department moving to same location so likely to increase.
    - Slight jag along 15th not enough to slow traffic but is enough to hamper line of sight
    - Detouring to cross at Duchess of variable benefit and depends on driver awareness and temperament - often driver in one direction will stop only when notice drive in opposite direction has stopped. At times when least secure to cross at Esquimalt, Duchess crossing also less secure, so detouring to Marine sometimes - e.g., if walking with kids.
    - Possibilities for making Esquimalt a more hospitable thoroughfare for walkers and cyclist (esp. access to Hollyburn Elementary and community centre) and less appealing thoroughfare for vehicles (i.e. use only the needed block of Esquimalt), without impeding emergency vehicles? Maybe some barriers that can be driven over near center - cars can right-turn on or off but deterred from going across unless emergency services?
- Negotiate with Park Royal development for reallocating some parking space for transit to provide a designated off street bus loop

- Move eastbound bus stops further west, need space and better mode interactions, improve pedestrian movement and crossings, grocery stores on south and soon north sides of Marine are good anchors for transit hubs
- Crossing Marine near London Drugs / Shoppers Drug Mart feels designed to discourage walkers; making it pedestrian-friendly, even enticing, not only helps walkers but enhances appeal of parking spaces further from destinations - and less competition for parking close to destinations improves pedestrian movement and air quality.
- Jurisdiction for different portions of Park Royal area?
- Very concerned about the intersection at Gordon and 21st following the recent pedestrian fatality – this location has poor lighting and very few sidewalks, forcing people to walk in the street
- Speed limits should be reduced to 30 km/h between 21st and 22nd Avenues and between Inglewood and Marine Drive on Gordon
- Visibility is blocked by overgrown hedges some of which are located at:
    - NW corner of Haywood and 23rd
    - NW corner Inglewood and 11th
    - NW corner of Fulton and 11th
    - Picket fence at the NE corner of Fulton and 21st Street – it is hard to see if pedestrians are in the crosswalk because the crosswalk is so close to the intersection
- Many people are speeding when travelling south on 21st Street
- When trying to cross Gordon at 21st Street it is difficult to see cars travelling south when a large SUV is parking in the NW side on 21 Street
- The left turn pavement marking is worn off on 17th Street travelling North from Argyle, drivers are turning left on Bellevue from Right lane to travel west on Bellevue
- If an intersection has no stop lights, for example at a bottom of the hills on Bellevue Avenue at 19th Street I will stand well back and look away from the crosswalk until the road clears in all directions, if possible but almost invariably someone will whiz down 19th Street behind me so I am at their mercy
- Pedestrians avoid the pedestrian activated crosswalk on 15th Street because motorists coming down the hill see the flashing amber lights and speed up thinking that they are going to change to red
- Uneven pavement
- My biggest concern are the two intersections in the Park Royal area, particularly the lights at Marine Drive crossing from the north side to the south side near the Macdonald's Restaurant.
- I find it very unnerving to cross at a RED light when the crossing sign comes on, but in no time does this crossing sign change to an orange/red colour to count down the seconds. Many drivers will not observe that this means pedestrians are still allowed to cross. Several times have I been shown the fist as if I was not observing the rules. A VERY DANGEROUS INTERSECTION TO CROSS. As well..... To make pedestrians cross this intersection THREE times in order to go shopping in the Main Street area. What a poor design!!!!
- Taylor Way and Marine Drive - Crossing from the north side to the south side, at times the pedestrian is unable to see the crossing light when a bus or a big truck is parked in front of this light.
- We have the worst drivers here in West Vancouver, have you noticed how many cars really stop at STOP signs these days? I had several misses at Marine & 15th, cars flying right through the Intersection even on a red light. Have you seen many of the strange parents when picking up their kids in a school zone, double parking in the middle of the road an letting the wee ones in and out of the cars.

Yellow Sticker Locations



- Marine Drive and 13th Street
  - 5 way intersection
  - No audible pedestrian signals
- Walking through Park Royal
- Esplanade and 11th Street
- Kings Avenue and 11th Street
- 13th Street between Inglewood and Kings
  - Needs a sidewalk (x2)
- 13th and Clyde
  - Lots of right turning vehicles
  - High speeds
  - Vehicles wanting to avoid having to stop for the light
  - Poor visibility
- 13th and Marine Drive
- 13th and Bellevue
  - Unsafe to cross over to the new field
  - No defined crossing or obvious pedestrian access
- Clyde Avenue between 12th and 13th Street
- 14th Street and Esquimalt
  - Vegetation
- 14th Street and Haywood
- 14th Street and Inglewood
- 15th Street at Marine Drive (x2)
- 15th Street at Esquimalt
- 15th Street at Fulton (x2)
- 15th Street at Inglewood
- 15th Street at Kings
- 16th Street and Fulton - The area around Municipal Hall (x2)
- 19th Street North of Marine Drive does not have a sidewalk
- Marine Drive and Taylor Way (x2)
- Taylor Way and Clyde Avenue
  - No crosswalk
- Taylor Way and Inglewood
  - Short pedestrian light
  - Limited visibility
- Taylor Way and Highway 1
  - Difficult crossing
  - Fast moving vehicles
  - High volumes
- 17th Street and Bellevue (x2)
- 18th Street and Bellevue

- 15th Street and Bellevue
- 18th Street and Marine Drive
    - Should be a full signal
- 18th Street and Esquimalt
- Bridge Road
    - Narrow sidewalk on only one side of the bridge
- Capilano Bridge and Woodcroft
    - South Sidewalk on Highway 1 Capilano Bridge should have jersey barriers
    - Improve path beside Woodcroft by removing stairs and adding a bigger switchback for people with disabilities
- 14th Street and Duchess
    - Currently a three way stop, should be a 4 way
- Mathers Avenue in front of West Vancouver Secondary School
    - Should have sidewalks on both sides
    - Shoulder is often used for parking on the north side
- Vegetation along Mathers and 15th Street is overgrown
    - 15th and Mathers
    - West of 15th Street
- Keith Road east of 11th Street
    - Sidewalk blocked by poles etc. Should be on the north side of the street. Can't walk with an elder on arm
- 17th Street between Marine Drive and Duchess
    - There should be a mid-block crossing connecting the alley
- 17th Street between Esquimalt and Inglewood Avenue
    - No sidewalk on the east side of the street
- Argyle / Spirit Trail
- Argyle Avenue is a shared route so it needs to be identified as such with pavement markings

Green Sticker Locations

- Along the Seawall

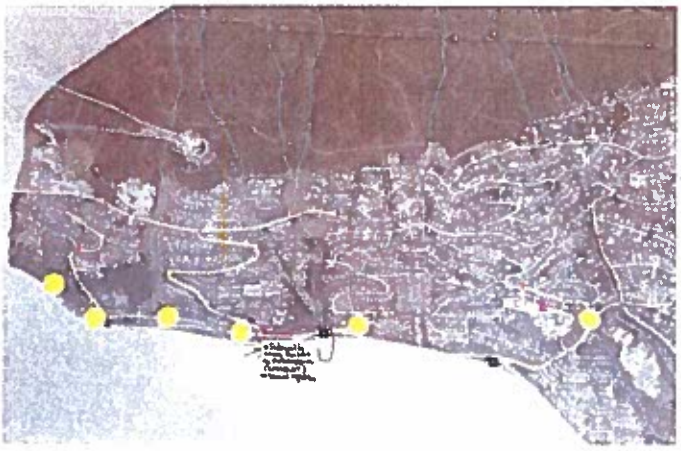
Priorities – Provided by one of the Workshop Groups

- 13th at Inglewood and Kings Street – add a sidewalk
- 15th and Marine – more tickets against drivers who are turning against the walk sign
- Cars park to close to the curb impacting visibility and movement especially when vegetation is overgrown
- Provide an online map and more updates
- Allow a platform for on-going feedback
- No buses through Park Royal – bring back the overpass
- Provide a proper crossing sign without countdown – or countdown should be white
- Better sidewalks – concrete and wider and with buffers
- Awnings that work, or none at all
- Signage around schools and Hollyburn to impede speeders
- Turning radius for shorting crossing distances and to slow down vehicle speeds
- Safer curb cuts – smoother, wider, and easier
- Remove hydro box at the corner of Inglewood and 13tj

- Bus shelters at Park Royal are too close to the road– Bus stops are too far a way
- Better distinction between pedestrians and walkers
- Southwest corners when going uphill – greater visibility on the southeast corner – re: parking setback
- Main Street at Park Royal (Shoppers) make it safe
- Park Royal towers needs a better crosswalk – there is a high number of pedestrians

2.6 North of Hwy 1

General Comments



- Parents drive Skilift like it is a highway, it is hard to cross in car, very unsafe as a pedestrian
- Poor lighting along Cross Creek Road especially since pedestrian volumes are higher it would be nice to have better lighting
- Poor lighting along the pathway/road (Sutton Place) between Cross Creek Road and Sentinel Secondary

Yellow Sticker Locations:

- Skilift Road – number of locations
- Sidewalk and street lighting needed along Skilift road between Folkestone and 21st Street
- Intersection of Cross Creek Road and Chartwell Drive

3.0 Potential Policies

The following section identifies feedback received during the Stakeholder Workshops and through email correspondence about potential polices and recommendations that would help to improve the pedestrian network:

- More frequent maintenance of sidewalks and pathways
- Reduce maximum speeds on residential streets
- Greater enforcement of traffic violations
- A pedestrian travel policy: Design guidelines that would be need to be followed anytime construction on a street occurs that ensure when construction happens pedestrian elements are included and done in such a way to be accessible to all pedestrians
- Crosswalk installation policy – additional note to ensure that lighting is included

4.0 Polling Questions

During the Stakeholder Workshop presentation there were interactive questions built in that allowed the Workshop participants to vote in real time and provide input. Below is a summary of the results.

Question 1 – How often do you typically make walking trips (minimum 5 minute walk)?

a. At least once a day
b. Frequently (5-6 times a week)

c. Often (3-4 times a week)
d. Sometimes (1-2 times a week)
e. A few times a month
f. Never
g. Unable to make walking trips due to physical impairments

The most common responses were at 'least once a day' and 'frequently (5-6 times a week)'.

Question 2 – What is the length of your average walk?

a. Less than 10 minutes
b. 10 to 19 minutes
c. 20 to 29 minutes
d. 30 to 59 minutes
e. 1 hour or more

The most common responses were '10 to 19 minutes' and '20 to 29 minutes'.

Question 3: I typically walk…

a. Alone
b. With other people (spouse, friends, children)
c. Just me and my dog
d. With other people and my dog

The most common responses were 'alone' and 'with other people (spouse, friends, and children)

Question 4 – What are you least satisfied with in West Vancouver?

a. Sidewalks
b. Trails
c. Crossings
d. Accessibility
e. Safety
f. Wayfinding/signage
g. Overgrown Vegetation
h. Pedestrian amenities (e.g. benches, water fountains etc.)

The most common responses were 'trails' and 'pedestrian amenities'.

Question 5 – What are you most satisfied with in West Vancouver?

a. Sidewalks
b. Trails
c. Crossings
d. Accessibility
e. Safety
f. Wayfinding/signage
g. Pedestrian amenities (e.g. benches, water fountains etc.)

The most common responses were quite evenly split with 'accessibility' having the highest percentage of respondents, through only slightly.

Question 6 – Do you prefer having a pushbutton to cross at intersections?

a. I prefer only an audible countdown timer – no button
b. I prefer to have an audible countdown timer and a 'walk' button
c. I don't like either

The most common responses was 'I prefer to have an audible countdown timer and a 'walk' button'.

5.0 Resident Comments on Proposed Pedestrian Network – 2016 Open Houses

Comments from Open House #1 – November 29, 2016

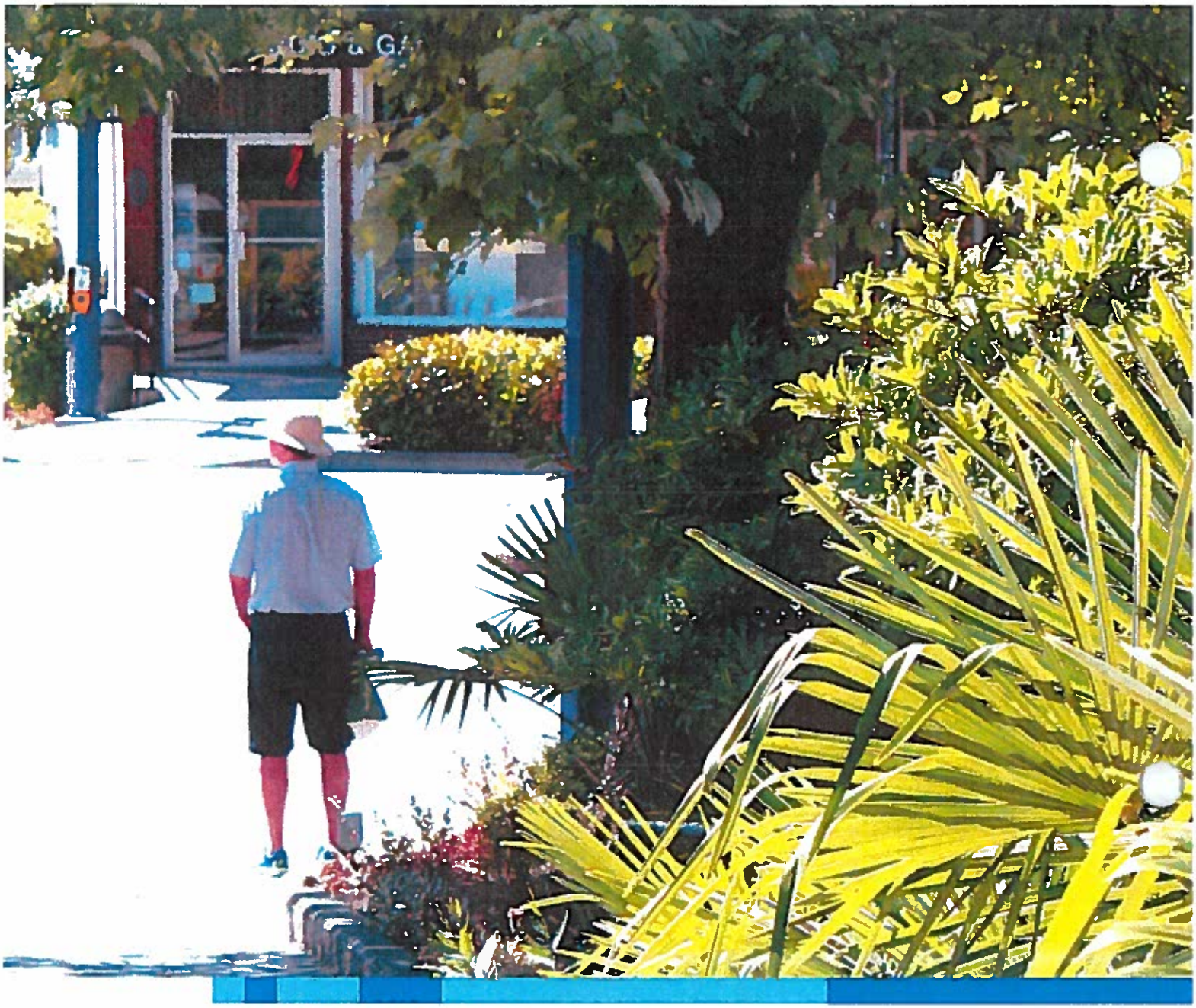
- Marine Drive between 31st and Radcliffe Ave – add WB speed board – before train bridge
- Safe pedestrian access to all bus stops, particularly along Marine Drive in Caulfeild
- Add non-invasive design improvements such as gravel paths. Full on sidewalks are too much and too invasive for West Vancouver low traffic streets
- Lengthen crossing signal time so that seniors and moms have sufficient time to cross. Sometimes lights change while people are still in the crosswalk, especially Ambleside and Dundarave
- Use changes in sidewalk texture to warn pedestrians of change in elevation
- Use changes in street surfacing such as little bumps. Small, 4" round rubber bumps that warn drivers that they should pay attention to oncoming event (e.g. crosswalk)
- In design of trails, paths and sidewalks – try to maintain natural look with design features. Long straight sidewalk stretches look like services planned for new subdivisions like in Surrey, not old, well-established residential areas in West Vancouver
- Don't over design with sidewalks. Sometimes other design features can achieve the same or similar result
- Blue dot at top of 24th means – please just trim blackberry bushes so path is clear; no other changes needed
- Westhaven Road – no lighting and cars go far too fast. Sidewalk not cleared and some people in wheelchairs end up in the road. This is a road where children go to and from school and is VERY dangerous.
- At the parking lot to Whyte Lake on Westhaven Road – proper signage IN ADVANCE as cars stop suddenly! This is a very dangerous area for everyone!
- Roundabouts:
    - Signage prior to roundabouts explaining how to approach. Not all people that drive here at Horseshoe Bay and Gleneagles are from the area so will not look at
- Add street lighting on Ottawa Place
- 17th Street sidewalk on west side – Fulton to Esquimalt is dangerous – traffic calming needed
- Would prefer to see Mathers Ave have a paved sidewalk from 25th to 31st; this is a popular street for children etc. walking to West Van High School and they often need to walk on the road.
- Mathers from 21st to 22nd is poorly lit and I feel that this is a safety issue for walkers
- Add streetlights on 29th – no streetlights between Marine and Mathers
- Bridge across Rodgers Creek at Mathers connecting to Dundarave is a good idea
- No bikes or blacktop on Seaview Trail
- Years ago the Village Trail at Whistler was a delight walking from Creekside to the village was much loved by people, dogs and children. Now it is a scary place with bikes whizzing by and the riders shout abuse when asked to slow down.
- No pedestrian buttons on lights! Just have the pedestrian countdown timers.
- Very inconvenient for pedestrians to push buttons – if you miss pushing the button then you have to wait a full cycle. People often go against the light because they don't want to wait.
- Include north/south linkages between Marine Drive and Centennial Seawalk – 19th, 21st, 22nd, and 25th
- Include south of 3rd Street to the Capilano River
- Hay Park/19th route is very good for walking
- Stairs at 23rd and Bellevue – no treads
- Lighting at Boathouse – 25th and Bellevue – keep on at night as well
- Esquimalt between 8th and Leyland Park
    - The cars and pedestrian traffic don't mix well from my experience

- I walk this street 2-3x per day with my dog. A sidewalk will help but it will narrow the road significantly especially with the parked cars on the side
- Removing parking from this street will significantly hurt residents as street parking is necessary when there are winter conditions (freezing, snow) as driveways are steep and usually no room for visitors who must park on the street (all year round).
- If sidewalks are to be added this traffic from new residents must be slowed or even reduced. Through traffic should be encouraged to use Keith Rd instead of Esquimalt
- You should also note that this route has the steepest grade of any road on Sentinel Hill. You climb to a crest from 11th and then go down the hill to Taylor Way
- There is a community pathway that goes from Keith to Duchess through the trees, up 9th to Esquimalt and then onto Leyland Park. This route could be improved, signed and used as a pleasant walking route which could be tied into Inglewood at the back of the hill.

Comments from Open House #2 – December 1, 2016

- Traffic and speeds along Skilift Road are a big problem and seem to be getting worse!
- Looking forward to the upcoming projects on Skilift Road – have seen the signage advising us in that neighbourhood – Thank-you!
- Sunset Lane – pinch point taken away; speed limit sign missing
- New sign for Sewell's development in front of site makes the sidewalk impassable
- 19th and Esquimalt - improve
- 11th and Keith – a four way stop but drivers barely slow down – add larger stop signs?
- Include accessibility as one of the main points of feedback from the community – should be the baseline for all new work
- People with vertigo have trouble with gravel paths that are not flat
- Sidewalks should be 3m in commercial district – free of signage, etc. Poles and road signs are always in the way
- Folkestone needs lighting
- Pedestrian traffic signal control improvement (remove?) – many existing signal buttons do not respond/pedestrian halt sign when green light for traffic
- Pedestrian signals should correspond with traffic light changes – no pedestrian buttons, as in Vancouver
- Crack down on cyclists on sidewalks
- New pedestrian controls at Park Royal are a nightmare – extended waits for pedestrians
- Possible to construct a sidewalk connection on the south side of Marine Drive that connects the sidewalk on the west side of Lions Gate Ramps to the east side? The north side pedestrian paths are convoluted.
- Give serious consideration to utilizing some of the newer forms of speed bumps utilized in many other jurisdictions, as well as pedestrian-activated bright LED lights embedded in the road. Crosswalks alone don't cut it anymore.
- More sidewalks on Woodgreen leading to park
- Traffic island/calming measures near Woodgrove Place
- Continue sidewalks on Northwood Drive and Woodcrest Road
- Low volume streets - Cut back overgrowth
- Two things are required and they don't cost much:
    - Have and enforce a bylaw on encroachments over the sidewalks by bushes, hedges, etc.
    - Make sure that the boulevards are not encroached on by flower gardens, shrubs, etc.
- Low volume streets – improved lighting – suggest solar powered
- Residents should thin hedges to allow pedestrians to walk easily
- People are speeding up the 900 block of Esquimalt to reach 11th street. They no longer go along Keith as it doesn't go through.
- Some sort of dedicated walking space on 19th Street between Esquimalt and Marine Drive – plenty of parked cars on the east side and a couple of places for parking on the west side. A bit tight on dark evenings between 5-6pm.
- Low volume roads – improve lighting first
- Safety needs to be the primary focus
    - Ambleside/Dundarave traffic lights – the pedestrian push buttons do not work.
        - Inconsistent/no standards
        - Many crossing if you arrive after car light is "green". Nothing happens. People wait then cross when it says 'don't walk'. If you want to wait until more people are injured or die it is too late.
    - Action
        - Eliminate pedestrian buttons – have walk/don't walk function automatically ALL the time

    - Countdown timers under the walk sign – make consistent with downtown Vancouver – when it hits 0 the light turns red. Easy for drivers to predict light change; pedestrians know the time left to 'zero.
- 24th Street south of Marine Drive to medical facility and to Bellevue is a dangerous sidewalk, especially for wheelchairs (west side) – people have to use the road
- Add zebra crosswalk on Fulton at 19th trail – fast traffic and cars cannot see people – very dangerous crossing
- The path behind St Stephens Church which joins 22nd Street to Gordon Ave is very dark. There is a light standard but it is never lit. Even if it were, trees and shrubs would make it a dark path. It is used at night. A light on the side of the church would make a big difference. This is a path that connects a residential area to the community centres.
- As well, the path behind the Westerleigh, connecting Fulton St to 22nd is badly lit. There is low level pedestrian lighting but it is quite often not turned on.



APPENDIX C

TRAFFIC SCHOOL ZONE STUDY SUMMARY

Traffic Safety in School Zones – Issues and Recommendations (2004)

The District of West Vancouver and the West Vancouver School District appointed the Traffic Safety Advisory Sub-committee to review and make recommendations on a number of matters pertaining to traffic safety. Members of the Traffic Safety Advisory Sub-committee included representatives from the West Vancouver School District, the District of West Vancouver, the West Vancouver Police Department, West Vancouver Speed Watch and ICBC. Three fundamentals of road safety were identified which are absolutely necessary in order to create and support a safe pedestrian and vehicular environment around schools, there fundamentals are, education, engineering and enforcement.

The issues and recommendations were categorized into two groups: those that could be considered and applied consistently to every site and those that applied to specific schools.

The report included three secondary schools, Rockridge Secondary, West Vancouver Secondary, and Sentinel Secondary. It also included 12 elementary schools, Caulfeild, Chartwell, Gleneagles, Hollyburn, Irwin Park, Ecole Pauline Johnson, Ridgeview, West Bay, Westcot, Ecole Cedardale, Cypress Park Primary, and Eagle Harbour Primary.

Some of the identified recommendations for Education include:

- Continuing to include and support traffic safety programs in the primary, elementary, and secondary school curriculum.
- Supporting the use of alternate modes of transportation to school by celebrating and promoting programs such as Safe Routes to School, Walking School Bus, School Traffic Safety Patrol Programs, car pools, use of school buses, use of public transit, Earth Day, and Walk/Ride to School Day
- DWV and WVSD initiate a multi-media campaign blitz four times within the school year whereby the community is informed of local traffic safety issues, traffic signs, pavement markings, traffic regulations and traffic fines.
- On going subcommittee meetings

Some of the identified recommendations for engineering include:

- The first roadway adjacent to each side of the school should be signed as a school zone
- School zone signs should be standardized
- School zone ahead warning signs should be installed in advance of each school zone where appropriate
- All crosswalks adjacent to every school zone be signed with the school children crossing sign and warning signs be installed in advance where appropriate
- DWV and WVSD work with individual schools to establish protocols for safe drop off/pick up practices and investigate opportunities for alternate pick-up/drop off sites
- DWV consider additional traffic calming measures where appropriate such as curb extensions, raised centre medians, roadway narrowing etc.
- That rumble strips be installed on the roadway transverse and adjacent to every school zone sign
- That the words 'school zone' be painted on the roadway approach to each school zone
- That crosswalks adjacent to every school be painted as a zebra crosswalk

- That barrier curbs and sidewalks be used in streets adjacent to school zones to ensure that pedestrian flow is not interrupted by parked vehicles.
- DWV and WVSD schedule an annual maintenance program to focus on pruning brushing and limbing vegetation, clearing/replacing signage, and clearing/repairing pathways and sidewalks.
- DWV require an approved Traffic Impact Study as part of the development approval process for developments near school sites.

Some of the identified recommendations for enforcement include:

- WVPD provide ongoing enforcement of the Motor Vehicle Act and District Traffic and Parking Bylaws in and around school zones.
- DWV Bylaw & Licensing Services Department provide ongoing enforcement of the Traffic and Parking Bylaw in and around school zones with specific emphasis on drop-off and pick up times.

School Specific Recommendations:

- Rockridge Senior Secondary
  - Crosswalk at intersection of Headland Drive and school driveway is not safe. Poor sight lines, relocated to north side of the intersection.
  - Rock in centre median obscures sight lines
  - Sidewalk required on Caulfield Drive between Northwood and Headland
  - General brushing and limbing required adjacent to school
- Chartwell Elementary
  - Crosswalk at intersection of Chartwell Drive and school driveway is not safe
- Sentinel Secondary
  - Create a three way stop at intersection of Chartwell and school driveway
  - Restrict exit to Cross Creek to right turn only
- Caulfeild Elementary
  - New crosswalk lines required on Caulfield Drive
  - Stop sign required southbound on Caulfield at Birch field
- Cypress Park Primary
  - Require sidewalk on south of Marine Drive east of Morgan Crescent and north of Marine Drive west of Morgan Crescent
  - Signage obscured by bushes
- Eagle Harbour Primary
  - No sidewalk adjacent to school along Westport and Marine Drive
- Gleneagles Elementary
  - Sight lines obscured by brush and trees
  - Require sidewalk on east side of Marine Drive at Keith Road
  - Determine whether school zone or playground designation is more appropriate
  - Require general brushing and limbing adjacent to school
- Irwin Park Elementary
  - Expand present school zone to include 25th Street
  - Install stop sign on 25th Street at Kings Avenue
- Pauline Johnson Elementary

- No sidewalks on Jefferson Avenue west of 22nd Street
- Develop landing areas and repaint crosswalk on 22nd Street

- Ridgeview Elementary
  - Ensure adjacent streets are signed for school zones
- West Bay Elementary
  - Crosswalk at intersection of Thompson Place and Thompson Crescent is not safe. Needs to be repainted
  - Vehicles parking and driving on sidewalks
  - No sidewalks along Rosebery
  - Continue sidewalk on south side of Thompson Place
  - General brushing and limbing required adjacent to school
- Westcot Elementary
  - Improve crosswalk on east side of Westcot.
  - Traffic issues at intersection of Westcot and Southborough

APPENDIX D

DETAILED PRIORITY SIDEWALK EVALUATION CRITERIA

Parent Data field and subcategory		Scoring	Data source	Comments
Pedestrian Safety				
Pedestrian Volumes	>1500 pedestrians per day	5	Daily pedestrian crossings at intersections	Includes intersections at both ends of the segment
	1000-1500 pedestrians per day	4		
	500-1000 pedestrians per day	3		
	250-500 pedestrians per day	2		
	1-250 pedestrians	1		
	0 (or no data)	0		
Road Classification	Arterial	10	GIS Road Network File	
	Collector	5		
	Local and all other	0		
Truck Route	>100 Trucks	5	EMME model	Subcategory ranges to be confirmed based on results of the EMME model
	>60-100 Trucks	4		
	>30 – 60 Trucks	3		
	>10 – 30 Trucks	2		
	< = 10 Trucks	1		
	0 (or no data)	0		

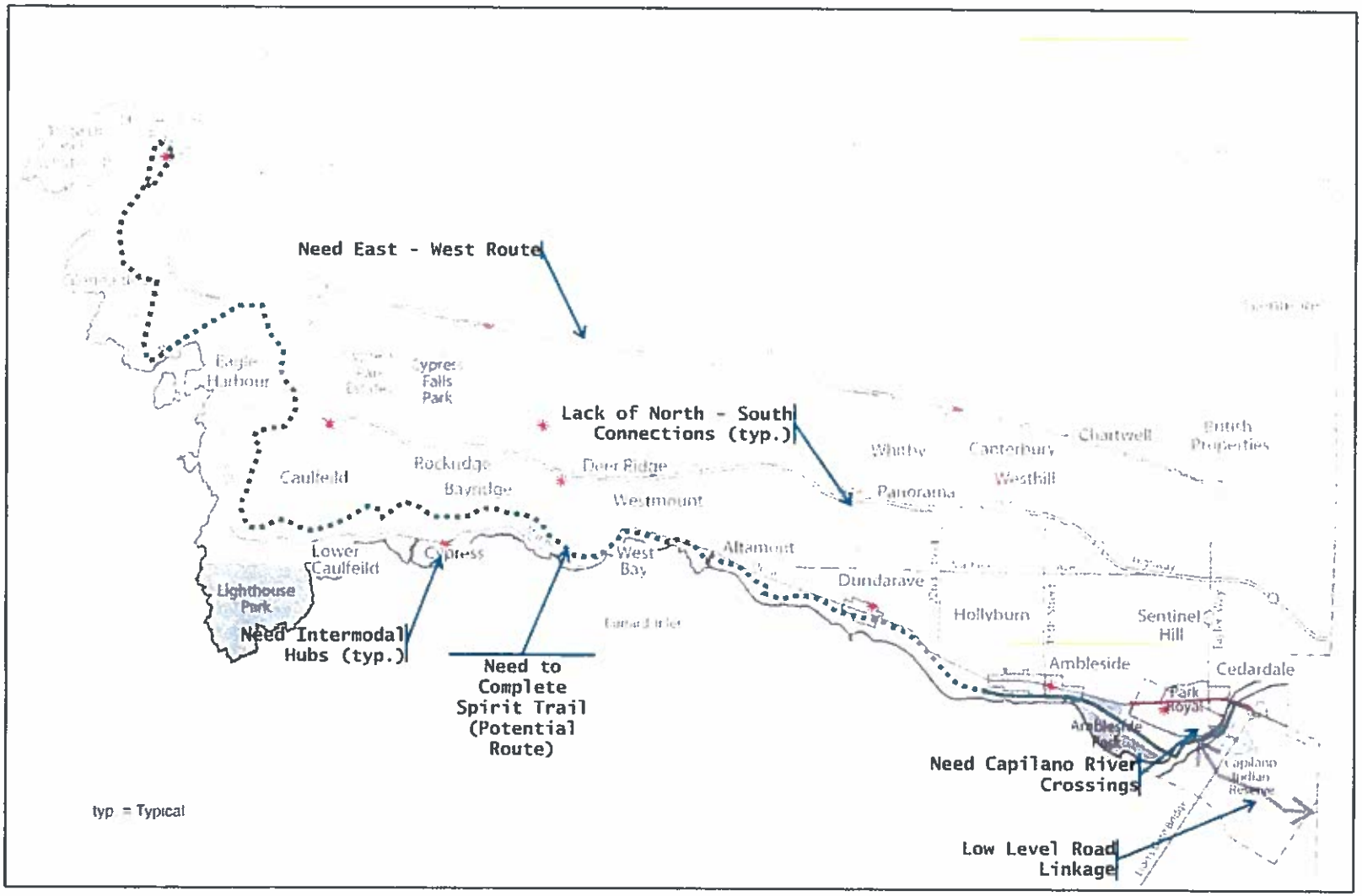
Parent Data field and subcategory		Scoring	Data source	Comments
Pedestrian Safety				
Pedestrian collisions	>=5 collisions	5	ICBC Collision Data (2009-2013)	Includes intersections at both ends of the segment
	4 collisions	4		
	3 collisions	3		
	2 collisions	2		
	1 collision	1		
Total Collisions	13 or more collisions	5	ICBC Collision Data (2009-2013)	Need to request the GIS shapefile from ICBC Includes intersections at both ends of the segment
	10 – 13 collisions	4		
	7 – 10 collisions	3		
	4 – 6 collisions	2		
	1 – 3 collisions	1		
Topography	>10%	5	Road slope data	Using average slope across the road segment
	>6-8%	4		
	>4-6%	3		
	>2-4%	2		
	<2%	1		

Parent Data field and subcategory		Scoring	Data source	Comments
Pedestrian Demand				
Proximity to Schools	Adjacent to property	5	School Data	Based on buffers from property lines
	Not adjacent, but <250 m	4		
	250 – 500 m	3		
	500 – 750 m	2		
	750 – 1000 m	1		
Proximity to Senior facilities	Adjacent to property	5	Seniors Facility Data	Based on buffers from property lines
	Not adjacent, but <250 m	4		
	250 – 500 m	3		
	500 – 750 m	2		
	750 – 1000 m	1		
Proximity to Commercial Uses	Adjacent to property	5	Commercial Zoning	All commercial zones properties Based on buffers from property lines
	Not adjacent, but <250 m	4		
	250 – 500 m	3		
	500 – 750 m	2		
	750 – 1000 m	1		

Parent Data field and subcategory		Scoring	Data source	Comments
Access to Transit	On transit route with bus stop	5	Bus Stop Data	Based on buffers from bus stops
	On transit route without bus stop	4		
	Not on transit route, but <250m of bus stop	3		
	250 – 750 m of bus stop	2		
	750 – 1000 m of bus stop	1		
Access to Parks	Adjacent to property	5	Parks data	Based on buffers from property lines Parks include: • Destination Park • Community Park • Neighbourhood Park • Natural Area Park • Shoreline Access
	Not adjacent, but <250 m	4		
	250 – 500 m	3		
	500 – 750 m	2		
	750 – 1000 m	1		
Proximity to Community and Recreational Buildings	Adjacent to property	5	GISOFFLINE_CRITICAL_INFRASTRUCTURE	See pedestrian generators map in addition to senior centres for community and recreational buildings – Please advise if there are additional locations to include
	Not adjacent, but <250 m	4		
	250 – 500 m	3		
	500 – 750 m	2		
	750 – 1000 m	1		
Parent Data field and subcategory		Scoring	Data source	Comments

Pedestrian Demand				
Residential and Employment Density	>90 ppl/jobs per ha	5	EMME data	We will be using the MGS model data for 2011 pop /emp done in Feb 2013. Will use combined pop+emp density values for this metric. Will use our midpoint method for segments crossing boundaries
	>35 – 90 ppl/jobs per ha	4		
	>15 – 35 ppl/jobs per ha	3		
	>5 – 15 ppl/jobs per ha	2		
	<= 5 ppl/jobs per ha	1		
Parent Data field and subcategory		**Scoring**	**Data source**	**Comments**
Network Need				
Network Contribution	No sidewalk on either side, connects to at least 2 sidewalks	5	GISOFFLINE_ROADS_SIDEWALKS use the shapefile and assign all roads as either 2, 1, or no sidewalk	
	No sidewalk on either side, connects to 1 sidewalk	4		
	No sidewalk on one side, connects to at least 2 sidewalks	3		
	No sidewalk on one side, connects to 1 sidewalk	2		
	Does not connect to any existing sidewalks	1		
Parent Data field and subcategory		**Scoring**	**Data source**	**Comments**

Network Need				
Pedestrian Gaps and Issues	Yes	5	Exhibit 24 of Strategic Transportation Plan (see below)	Linkages to North Vancouver, waterfront, north/south across Highway 1, east/west connections north of Highway 1. Suggest taking conceptual arrows and adding a big buffer and if any connections are in that direction within the buffer then we include.
	No	1		


Need East - West Route
Lack of North - South Connections (typ.)
Need Intermodal Hubs (typ.)
Need to Complete Spirit Trail (Potential Route)
Need Capilano River Crossings
Low Level Road Linkage
typ = Typical
Eagle Harbour
Cypress Falls Park
Caulfeild
Rockridge
Bayridge
Deer Ridge
Westmount
Whitby
Canterbury
Chartwell
British Properties
Panorama
Westhill
Lower Caulfeild
Cypress
West Bay
Altamont
Dundarave
Hollyburn
Sentinel Hill
Ambleside
Cedardale
Park Royal
Lighthouse Park

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