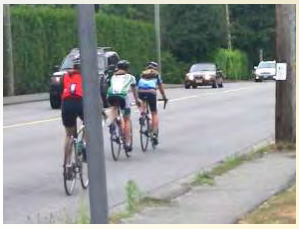
District of West Vancouver

Strategic Transportation Plan



West Vancouver, BC

The Corporation
for the District of
West Vancouver

March 15, 2010

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West Vancouver

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HDR Corporation
400 - 601 West Cordova St.
Vancouver, BC V6B 1G1
Tel: (604) 682-8119
Fax: (604) 682-8170
www.hdrinc.com

Project # 5263

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Strategic Transportation Plan Working Group

Working Group Co-Chairs	Stefen Elmitt Peter Scholefield
Working Group Members	Yeji An Bart Copeland Heather Drugge James Stewart Rosamund Van Leeuwen Kay Vinall Peg Wilson
District of West Vancouver Council Liaison	Councillor Bill Soprovich

Client Project Team

Project Manager	Brent Dozzi, P.Eng.
Project Director	Raymond Fung, P.Eng.

HDR | iTRANS Project Team

Principal	Donna Howes, P.Eng.
Project Manager	Sasha Naylor, P.Eng.
Technical Team	Allison Clavelle, E.I.T. Steve Clark – HB Lanarc
Advisors	Mark Holland, MCIP, LEED – HB Lanarc
Quality Control	Donna Howes, P.Eng. Raymond Bacquie, P.Eng., AVS

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EXECUTIVE SUMMARY

The District of West Vancouver Strategic Transportation Plan (STP) presents a vision for the future of transportation in West Vancouver in 2025 and beyond. The plan has been prepared by a dedicated team including the project consultants HDR Corporation (HDR | iTRANS with the assistance of HB Lanarc) under the guidance of District of West Vancouver (District) staff and a Working Group composed of West Vancouver residents. Rather than focusing on historical trends or extensive data analysis, the plan envisions a shift in user behaviour spurred by creative, "out of the box" strategies and a desire for the District to be a leader in sustainable community development. The plan has been informed by trends in peak oil and fuel costs, demographics, and technology as well as concerns about the environment, health and safety.

The West Vancouver STP has been developed in close collaboration with the residents of West Vancouver through the direct involvement of the Working Group, as well as a public open house in December 2009.

Goals

1. To provide equitable, safe and accessible transportation options for all of West Vancouver's residents, including the disabled and aging populations by investing in a complete, connected transportation network for all modes.
2. To reduce overall greenhouse gas (GHG) emissions from transportation and enable West Vancouver to meet it's climate action targets.
3. To shift travel away from carbon emitting, single occupancy vehicles towards sustainable modes and to improve the infrastructure for transportation alternatives according to the principles of West Vancouver's transportation hierarchy.
4. To inform and educate the citizens of West Vancouver on alternative modes of transportation and engender a move towards adopting more sustainable options.
5. To refine the design of transportation infrastructure to increase the quality of the experience of travelling, and to improve environmental performance.
6. To engage the youth of the community and to give them the tools to travel in safe, socially responsible, and environmentally sound ways.

Vision

The Vision for the STP was developed with the Working Group and reads:

To reduce auto dependency, expand mode choice, and promote safety while supporting sustainability and reflecting community transportation priorities.

The Vision places emphasis on sustainable modes such as walking, cycling, and public transit, with a reduced dependence on personal automobiles, and improved sustainability of the automobiles that are still required.
It is inspired by international examples – real, world-class facilities that work in cities across the world – and tailored to the specific needs of West Vancouver. The City of Vancouver, West Vancouver's neighbour, is a North American leader in sustainable transportation, and offers many examples of how the principles of the hierarchy can be applied with success in the Lower Mainland.

The plan envisions a transportation network that provides convenient, efficient, and sustainable transportation options for all West Vancouver residents and visitors, regardless of their age, physical ability, or socio-economic status. In this Vision, seamless connectivity is provided for trips within West Vancouver, as well as for journeys to and from neighbouring communities such as North Vancouver or Downtown. The Vision provides for easy connections between various modes so that transportation users can choose the combination of modes that is best for them, for the community, and the environment.

A key part of the Vision is full integration of the West Vancouver Transportation Hierarchy into all community and transportation planning decisions. The hierarchy was developed by the Working Group in collaboration with the Consultants and District staff. It sets out the priorities for transportation that most closely fit with the goals of safety, efficiency, convenience, accessibility, and sustainability. The hierarchy provides a framework to guide policy and planning decisions, especially where limited resources (including funding and road space) must be allocated between modes. As shown in **Exhibit E-1**, the hierarchy considers a range of modes for the movement of people and goods.

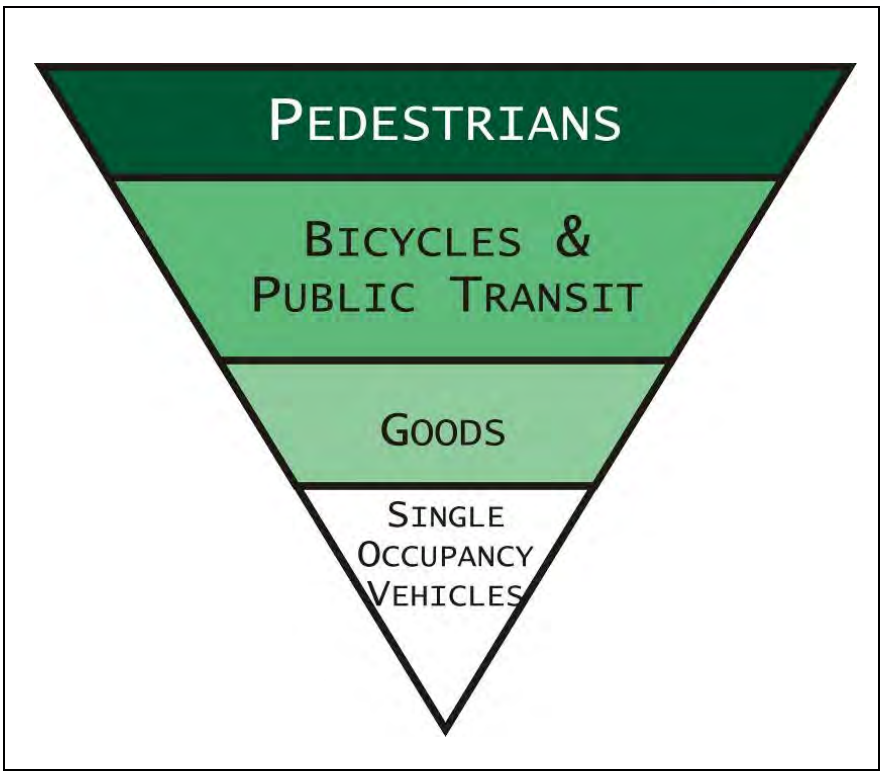

Exhibit E-1: West Vancouver's Transportation Hierarchy

The seven main themes that emerged from the work undertaken are:

1. There is strong support at the community, Council, and staff level to make a shift towards a more sustainable transportation system.
2. There is a need to show some quick wins to demonstrate action within a longer term Vision.
3. The need to change will be guided by emerging challenges and opportunities instead of by historical trends – changes will need to take place at a number of levels – with policy, clear planning, supply of the right infrastructure, and social marketing.
4. The long-term Vision will set the scene for an integrated plan with a staged implementation schedule.
5. Change will be planned with foundational strategies which will set the basis from which change occurs together with larger projects that will need to be staged over a number of years.
6. The continuous improvement of transportation safety is a corner stone in the Vision and strategies.
7. To succeed there is a need to forge stronger partnerships with School Districts, West Vancouver Transit, TransLink, BC MoT, the Squamish Nation and West Vancouver Police and Emergency Services.

Current Initiatives

The Strategic Transportation Plan builds on a number of projects and initiatives already being implemented by the District of West Vancouver (District). These include infrastructure improvements such as the westward extension of the Spirit Trail, the bicycle and pedestrian bridge over the Capilano River, plans to upgrade Welch Road with the Spirit Trail to connect to North Vancouver, plans for Low Level Road, and the implementation of traffic calming measures. There are also recent policy initiatives such as the establishment of a Climate Action Working Group (CAWG) and revision of existing bylaws, including anti-idling measures and provisions for neighbourhood zero emissions vehicles.

List of Strategies

In order to realise the Vision for 2025 and beyond, the project team developed a comprehensive set of strategies that respond to challenges identified in West Vancouver's transportation system as it is today. **Table E-1** summarises the challenges faced for each mode of transportation and the recommended strategies to address these challenges. Strategies are grouped per mode and in time periods of one year, two to five years, and beyond five years (the Vision).

Implementation

In order to achieve the Vision outlined in the STP, the District will need to implement the strategies in **Table E-1** in a planned and coordinated way that includes consultation with the public and stakeholders. The Plan outlines a high-level approach for implementation of the Vision for the one year and two to five years periods. For each period, the Plan sets out a series of recommended steps towards implementation. Possible projects for 5 years and beyond have also been listed.

The District should review and update the STP every five years; the plan is a living document that must be realigned as progress against the goals and strategies is assessed. An implementation plan for the long term strategies (beyond five years) should be developed after the implementation of the year one and years two to five strategies. The possible projects need to be reviewed and refined. Two of the most important strategies for years two to five are the development of a pedestrian plan to identify priority improvements to the pedestrian network and to revisit the Cycling Network and Greenway Plan to identify streets with opportunities for bicycle routes and lanes.

Immediate Recommendations and Priorities for First Year

Three groups of strategies were developed which are:

1. *Foundational* (building blocks, steps to shift behaviour), including those that are *Easy to implement* (lower cost, using existing resources), [easy to implement strategies are shown in **bold** in the table below];
2. *Staged* - First step of a larger project; and
3. Those that require support and/or funding from other *Agencies*.

It is important to West Vancouver to show leadership early with implementing some visible change in the first year of the programme while developing the building blocks for a shift in thinking and behaviour. The Working Group, District Staff, and the consultant team identified the strategies that are essential first steps – the highest priority strategies – for completion in the first year. Implementation of other year one strategies, as well as year two to five strategies, is discussed further in the body of the report. The highest priority strategies are listed in the table below.

Foundational and Easy to Implement
▪ **Publicise the Strategic Transportation Plan.**
▪ Dedicate a transportation planner position.
▪ **Establish Transportation Working Committee.**
▪ **District to lead by example by shifting to alternative modes.**
▪ **Create minimum standards for pedestrian and cycle facilities.**
▪ **Sign and mark existing and proposed cycling and pedestrian routes.**
▪ **Create formalized map for pedestrians, cyclists, and park-and-ride users.**
▪ **Update policies, bylaws to support sustainable development and TDM.**
▪ **Adopt transportation hierarchy.**
▪ Assemble existing data and establish a data collection programme.
▪ Encourage off-peak and / or night delivery of goods in commercial areas.
▪ **Continue existing programmes on a year by year basis (e.g. traffic calming, sidewalk infill).**
▪ **Outsource provision of bus shelters and use revenue for transit upgrades.**
▪ **Implement a trial of low speed vehicles on selected roadways.**
Staged
▪ Commence Marine Drive Corridor study from Ambleside to Horseshoe Bay.
▪ Update the North Shore Area Transit Plan.
▪ Develop improved north / south pedestrian and cyclist routes including connections to the trailheads in the Upper Lands.
▪ Continue implementation of the Spirit Trail.
Collaboration with other Agencies
▪ Implement public outreach and community-based marketing initiatives, including at schools.
▪ Consider free transit for children under 13 accompanied by an adult.
▪ Provide more frequent transit services to school.
▪ Initiate discussion with CN regarding proposed future commuter use of the rail corridor.
▪ Support current ferry crossing trial.

Table E-1: Strategy Matrix

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
All Modes			
◦ Need more comprehensive data for measuring changes ◦ Need a social marketing program ◦ Need transportation planning capability for all modes ◦ Need explicit consideration of all modes in development ◦ Need better integrated land use planning ◦ Need more comfortable intermodal transfer points	◦ Publish the STP ◦ Establish database including assemble of existing data and update of GIS ◦ Create asset management system ◦ Develop data collection program ◦ Launch social marketing	◦ Enhance policy and development ◦ Continue working towards east-west connectivity for all modes ◦ Make continuous improvements to real-time data availability and trip planning tools ◦ Provide amenities at intermodal hubs	◦ Design a comprehensive set of metrics to measure changes ◦ Develop broad public outreach programme ◦ Improve linkages north and south of Highway 1 ◦ Consider the accommodation of skateboards ◦ Share low speed roads ◦ Complete implementation of intermodal hubs
TDM / Policy			
◦ Most people in West Vancouver drive ◦ Need to plan for all types of travel ◦ Need for consideration of all modes in development ◦ Need expanded integrated land-use planning ◦ Public needs more education about non-auto modes ◦ Need formal traffic calming policy ◦ Need data collection strategy and resources	◦ Adopt sustainable transportation hierarchy ◦ Dedicate a resource as a full-time sustainable transportation planner ◦ Establish transportation working committee ◦ Create new programs (Commuter Challenge, Walk to School, Bike to Work Week) ◦ Update Zoning Bylaw and policies for bicycle storage ◦ Change bylaw parking requirements ◦ Safe routes to school program ◦ Consider free transit for children under 13 accompanied by an adult ◦ Sustainable mode incentives for municipal employees ◦ Car free days ◦ Encourage car sharing, carpooling, and ridesharing ◦ Development of travel information materials ◦ Explore tax structure changes ◦ Continue traffic calming ◦ Priority for buses and slow traffic on main routes	◦ Expanded role for sustainable transportation planner ◦ Update OCP with new transportation priorities ◦ Regular review / update of bylaws & policies to enhance sustainable modes ◦ Review of parking policy and pay parking ◦ Tax rebate for families with one or no cars ◦ Consider U-Pass for secondary students ◦ Parking incentives ◦ Create new School education programs for parents ◦ Continue to implement traffic calming ◦ Distribute travel information materials ◦ Explore freeze on new road capacity for Single Occupant Vehicles	◦ Evaluate all projects with the sustainable hierarchy in mind ◦ New development approval process has strong sustainable transportation component, follows hierarchy ◦ Policies to discourage SOV use during peak periods ◦ Continue school-based programs for elementary students ◦ Urban area car licence surcharge ◦ Enhanced parking management strategies ◦ Consider tax structure supporting sustainable mode use ◦ Consider slow vehicle lanes on Marine Drive from 25th Street to Horseshoe Bay ◦ Encourage non-commuting alternatives ◦ Consider local community business centres

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Pedestrian			
◦ Need for mapping of existing facilities ◦ Lack of sidewalks on access points, especially transit ◦ Need minimum pedestrian standards ◦ Need better accessibility for blind / disabled travellers ◦ Need to improve signal timing for pedestrians ◦ Need more linkages to North Vancouver and access along waterfront ◦ Need better connections north / south across Highway 1 ◦ Need better intermodal connectivity ◦ Lack of lighting on streets ◦ Vegetation intrudes on sidewalks impacting mobility and visibility	◦ Create formalized pedestrian map ◦ Create minimum pedestrian standards ◦ Enforce speed limits ◦ Maintenance of sidewalks ◦ Improved lighting ◦ Provide informational maps in Ambleside and Dundarave ◦ Install pedestrian signage	◦ Continue to implement Spirit Trail ◦ Complete an assessment of the pedestrian network ◦ Improve pedestrian connections by installing sidewalks at key locations ◦ Make Marine Drive corridor more pedestrian and cycle friendly from Dundarave to Horseshoe Bay ◦ Explore car free streets (temporary or permanent) ◦ Improve north / south connections across Highway 1 ◦ Update Cycling and Greenways Plan ◦ Install trial intermodal hub	◦ Complete Spirit Trail ◦ Continue to develop and maintain pedestrian mapping ◦ Continue to install and maintain effective wayfinding ◦ Provide sidewalks on at least one side of main roadways ◦ Maintain sidewalks and walking spaces ◦ Complete greenway system as per Cycling and Greenways Plan ◦ Continue efforts already in place in Ambleside and Park Royal and apply to other areas ◦ Consider car-free streets / pedestrian areas ◦ Enhance pedestrian facilities on Marine Drive west of 25th Street ◦ Consider pedestrian connectivity between areas with different elevations and across Highway 1 ◦ Consider Upper Spirit Trail above Highway 1 ◦ Complete implementation of intermodal hubs

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Cycle			
◦ Need community policies for cycling ◦ Need road markings and signage ◦ Need for minimum bicycle standards ◦ Need to improve safety for commuter cyclists ◦ Need formalized map of existing routes, proposed routes, and route types ◦ Need bike routes and lanes on Marine Drive Corridor ◦ Need better linkages to North Vancouver and access along the waterfront ◦ Need better connections north / south across Highway 1 ◦ Need better intermodal connectivity ◦ Need more bike parking at key locations ◦ Need requirements for bike facilities in developments and intermodal locations ◦ Need improved connections to Lions Gate Bridge ◦ Need improved facilities at schools and community centres ◦ Need more bicycle education ◦ Need designated cycling routes and lanes on major commuting routes ◦ Need more respectful interaction between drivers and cyclists	◦ Establish a cycling committee within the transportation committee ◦ Create a formalized cycling map ◦ Install on-street route and signage ◦ Undertake preliminary work for bike lanes and / or bikeways on Marine Drive ◦ Bicycle education ◦ Develop minimum bicycle standards ◦ Update Zoning Bylaw to require bicycle parking	◦ Identify safe cycle routes to school ◦ Continue to implement the Spirit Trail ◦ Reallocation of road space for cycling ◦ Install public bicycle parking at busy locations ◦ Provide short-term public bike rental ◦ Implement bicycle education programs at schools and in community ◦ Implement key commuter routes as per Cycle and Greenways Plan ◦ Develop minimum cycling requirements for each roadway type ◦ Better identification of key cycling routes ◦ Update Cycling and Greenways Plan ◦ Upgrade north-south connections across highway ◦ Install trial intermodal hub	◦ Install and maintain effective wayfinding ◦ Complete Spirit Trail ◦ Further improve connections across Highway 1 ◦ Complete greenway system as per Cycling Network and Greenway Plan ◦ Create higher visibility and priority for cyclists ◦ Consider Upper Spirit Trail above Highway 1 ◦ Bike boxes / signal detection at key intersections ◦ Develop integrated West Vancouver Cycling Network east-west and north-south for commuter / recreational riders ◦ Establish Marine Drive Corridor as a cycle route from Taylor Way to Horseshoe Bay ◦ Complete implementation of intermodal hubs

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Transit			
◦ Need more frequent service on main arterials ◦ Need better access for all residents ◦ Need transit priority and better access to Lions Gate Bridge ◦ Need better connectivity between communities ◦ Need direct service to important destinations ◦ Two-way service needed in many areas ◦ Need regular east / west service north of Highway 1 ◦ Need for improved traveller information ◦ Need better service to meet school needs ◦ Need better availability of higher-order transit ◦ Need balance of frequency vs. coverage ◦ Need to use smaller buses on some routes ◦ Need better education and awareness among public ◦ Need funding to provide enhanced service	◦ Education and social marketing ◦ Establish a transit users group ◦ Provide more frequent buses to serve secondary schools ◦ Outsource provision of bus shelters ◦ Improve transit information availability ◦ Develop an Upper Levels transit plan ◦ Update the North Shore Transit Plan (TransLink) ◦ Improve service on infrequent and one-way routes ◦ Encourage policy changes	◦ Review of transit routing / frequency on key routes ◦ Limited stop commuter service to Vancouver ◦ Provide demand responsive transit ◦ Expand development near frequent transit network ◦ Consider U-Pass for secondary students ◦ Initiate transit service improvements (e.g. more routes north of Highway 1, east-west service, frequency on main arterials) ◦ Increase north-south service on 21st, 15th, and Taylor Way ◦ Transit infrastructure improvements (e.g. improved bus stops, transit priority, park & ride, pedestrian connectivity) ◦ Expand tax deductions for transit use ◦ Create comfortable transit hubs ◦ Support technology to reduce emissions ◦ Work with TransLink to secure funding, improve service, and expand FTN ◦ Work with TransLink to improve ease of payment for all users ◦ Support purchase of cleaner transit vehicles	◦ Provide incentives for transit use, such as a Community Transit Pass ◦ Increase north / south transit service on important corridors ◦ Increase east / west transit service north of Highway 1 ◦ Improve connectivity between communities ◦ Enhance transit stops with information, comfortable waiting areas ◦ Expand bus priority measures ◦ Consider some form or regular rapid transit service ◦ Expand demand-responsive transit (e.g., dial-a-bus) ◦ Improve connectivity to surrounding communities ◦ Smaller buses to serve north / south routes ◦ Improve transit information via automatic stop announcement

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Alternative Technologies			
◦ Need proper infrastructure (e.g. charging stations) ◦ Need for innovative policy (e.g. permitting Low-Speed Vehicles)	◦ Implement education and awareness programs ◦ Consider staff involvement in alternative technology organizations ◦ Policy changes to accommodate electric and hybrid vehicles ◦ Allow preferred parking on public streets for sustainably-fuelled vehicles ◦ Provide trial charging stations ◦ Policy changes to retrofit older developments with the appropriate infrastructure ◦ Implement a trial of low-speed vehicles for neighbourhood zero emissions vehicles to share the roadway	◦ Require preferred parking for electric vehicles ◦ Promote creation of alternative fuelling stations ◦ Continue to move towards zero-emissions technology for municipal fleet ◦ Consider slow vehicle lanes on Marine Drive ◦ Explore toll option for Lions Gate Bridge	◦ Implement alternative fuelling stations given technology as technology becomes available ◦ Continue to explore alternatives to high-emissions vehicles
Traditional Auto			
◦ Need priority for Electric and Hybrid vehicles ◦ Need formal traffic calming policy ◦ Need more support for car-sharing ◦ Lack of parking pricing strategy ◦ Need to improve key linkages ◦ Need capacity improvements at key locations ◦ Too many autos at schools during drop-off ◦ Emissions from traditional autos contravene climate change commitments ◦ Need to mitigate cost for road construction / maintenance ◦ Single-occupancy vehicles add to congestion	◦ Enhance appeal and functionality of carpooling ◦ Incentives for carpooling ◦ Promote teleworking and flexible hours ◦ Target SOV users when promoting use of alternative modes ◦ Enforce the no-idling policy	◦ Promote HOV use with new infrastructure (e.g. park & ride, rideshare / carpool lots, HOV lanes) ◦ Encourage support for ride matching ◦ Encourage planning for live / work developments ◦ Increase availability of car-sharing (co-op, Zipcar, etc.) ◦ Tax incentives for driving less and using low-emission vehicles ◦ Continue to install traffic calming ◦ Improve intersections at Marine Drive / Taylor Way and 15th Street / Mathers Avenue	◦ Implement Low Level Road as an inter-municipal connection between North Vancouver and West Vancouver ◦ Support pay-per-use insurance ◦ More direct routes ◦ Complete implementation of intermodal hubs ◦ Continue development of park-and-ride, carshare, and car-pooling

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Goods			
◦ Need parking priority for freight vehicles ◦ Lack of north / south connectivity in the west ◦ Need for capacity improvements at key locations ◦ Need for capacity improvements at Marine Drive approach to Lions Gate Bridge ◦ Steep grades on Taylor Way ◦ Under-height bridge on Marine Drive at Lions Gate	◦ Encourage off peak and/or night deliveries in commercial areas ◦ Increase truck safety checks ◦ Enforce existing goods movement bylaws ◦ Continue to require and enforce existing truck routes and downhill restrictions ◦ Discourage truck traffic along Marine Drive through village cores ◦ Consult with the Province and North Vancouver concerning large truck access	◦ Use Highway 1 as much as possible ◦ Improve standards for delivery access to new developments ◦ Time of day controls ◦ Additional restrictions for goods movement not impacting access or capacity	◦ Loading zone design in new development to minimize time required per stop ◦ Distribution - designate routes and provide break-bulk sites
Marine / Rail			
◦ Need to increase use of water for public transportation ◦ Need infrastructure to accommodate goods / passenger demand	◦ Solicit proposals and ideas regarding marine transportation linkages ◦ Formalize marine service	◦ Continue to establish new marine links (e.g. Jericho Beach, Granville Island, North Vancouver) ◦ Explore partnership with CN Rail for rail service ◦ Consider investment in dock infrastructure when and where necessary and/or applicable	◦ Reassess marine and rail opportunities ◦ Continue to invest in dock infrastructure when and where necessary ◦ Work with other governments and organizations to consider expanding ferry service ◦ Reevaluate feasibility of higher order transit in the long term

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TABLE OF CONTENTS

Appendices

Tables

Exhibits

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1 Introduction

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1. INTRODUCTION

The District of West Vancouver Strategic Transportation Plan (STP) is a vision for the future of transportation in West Vancouver to 2025 and beyond. The report was developed by HDR Corporation (HDR | iTRANS) with assistance from HB Lanarc (Consultants) under the guidance of District of West Vancouver staff (District) and a dedicated group of West Vancouver residents, the Strategic Transportation Plan Working Group (Working Group), with a passion for transportation. This plan is the result of months of research, review, and visioning on the status and direction of transportation in West Vancouver. Through the study, the Consultants, District, and Working Group answered the following questions together:

- What is the status of the existing transportation network and policies?
- What are the gaps and issues in the existing system?
- What does a great transportation system look like for West Vancouver?
- How does the District build that great transportation system?

Central to the work undertaken was the key theme of West Vancouver as a sustainable municipality with a leading edge transportation system. The overall Vision for the plan is as follows:

To reduce auto dependency, expand mode choice, and promote safety while supporting sustainability and reflecting community transportation priorities.

The report expands this statement into an overall vision for the transportation system in West Vancouver in 2025, provides an overview of the existing transportation challenges, and presents strategies and an implementation plan to move from the existing system towards the vision.

The approach to this study is a change from the traditional transportation planning methods where a conscious decision was made by the District to focus on a shift in user behaviour as opposed to a review of historical trends. As such, there was no new data collection and no traditional modelling and forecasting. The Consultants and the Working Group were encouraged to “think outside the box” and look at ways in which West Vancouver can be a global leader by developing a sustainable community.

A **mode** of transportation is how you get from one location to another. Walking, driving, cycling or taking transit are all common modes of transportation.

1.1 A View to the Future

The following section describes the impetus for the Vision, presenting the trends and global changes that will impact transportation options and solutions over the next 15 years and beyond.

1.1.1 West Vancouver Strategic Transportation Plan – A View to the Future

The 21st century will bring many changes to West Vancouver, including:

- Changes in the climate and significant changes in legislation and policy around emissions;
- Changes in emissions policies and practices by private companies that may change commuting patterns;
- Significant shifts in the cost of conventional fuels and changes in energy supply to clean (low carbon) fuels, biofuels, electricity and others;
- Demographic shifts affecting transportation destinations and preferences or abilities to use certain modes of transport;
- Changes in the housing needs associated with population growth and demographic changes;
- Increased concerns about health;
- Increased concerns over environmental impacts and policy and legislation in response;
- Increased awareness of the costs of transportation infrastructure;
- Changes in technology that will affect telecommuting, vehicles, fuels, navigation, road materials, and other aspects of the transportation system;
- Changes in what the marketplace provides as options for vehicles (e.g., new smaller electric mobility options);
- Changes in shopping and delivery options that may change shopping patterns;
- Changes transportation and land use patterns and policies in neighbouring communities; and
- Many other changes which will redefine core assumptions about mobility in West Vancouver over the next several decades.

While the above trends and predictable changes will affect West Vancouver variously, several of them may have a significant impact. The global commitment to reduce greenhouse gas (GHG) emissions will have some of the most significant effects (carbon dioxide, methane, and several other gases largely caused by burning carbon based fuels – including the gasoline and diesel used in traditional autos). There is now a widespread global commitment to reduce emissions by 80% from current levels by 2050.

British Columbia (BC) has responded with a legislated emissions reduction target of 33% below 2007 levels by 2020, and 80% below 2007 levels by 2050. This target is an "absolute reduction target" that ignores the impacts of population growth. When adjusted for a probably rate of growth of 1-2% per year the result is a need to reduce emissions by approximately 50% per capita. Each type of emissions source (such as buildings, transportation, industry, and others) in BC will need to be reduced by that amount on average, and this is especially true of transportation as it accounts for a large portion of West Vancouver's total community GHG emissions. Because reductions of this range may be very difficult to achieve in some areas (such as existing buildings), the transportation sector may be required to reduce an even greater amount of emissions.

Meeting this emissions reduction target will be in small part achieved through increased efficiency in vehicles. New vehicles tend to be more efficient; however many existing vehicles in West Vancouver will still be on the road in 2020[1] and as such, changes in modal choice are required.

1.1.2 Peak Oil and the Cost of Fuels

In 2009, the International Energy Agency completed the most comprehensive study of current and known reserves of conventional oil in the world. In doing so, they came to the conclusion that all currently producing and known conventional oil fields that can be affordably accessed will have peaked and be in decline before 2020.

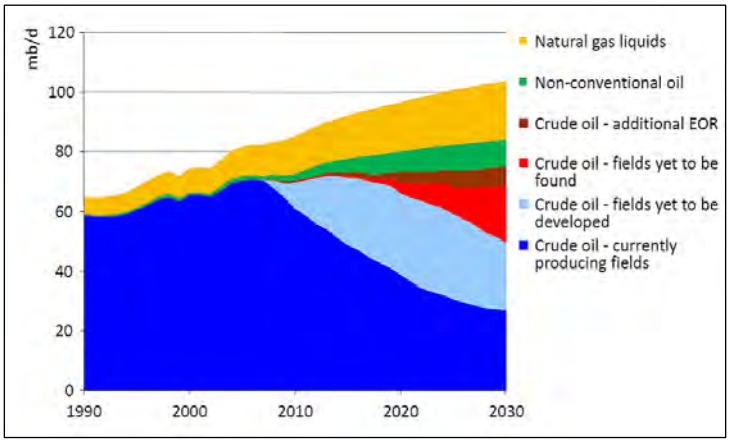

Exhibit 1 *shows the International Energy Agency (IEA) liquids production model over time. This steady reduction in affordable supplies stands in contrast to the growing global demand for inexpensive fuels, particularly to support the growing economies of India, China and others.*

Exhibit 1: Peak Oil[2]

Source - www.iea.org 2009

[1] According to the 2005 Canadian Vehicle Survey Summary Report, the average age of Canadian light vehicles is 7.6 years; 32% of Canadian light vehicles are 10 or more years old and 58% of Canadian light vehicles are 6 or more years old.
[2] Enhanced Oil Recovery (EOR), millions of barrels per day (mb/d).

This graph shows a long-term prediction of oil and gas prices based on extrapolating past performance patterns. The middle line of each shows the probably average with the upper and the lower lines showing the probably range of fluctuations in price. The result, as depicted in **Exhibit 2**, *will be a significant long-term increase in the cost of fuels and a shift to alternative fuelled vehicles, in particular electric. Many West Vancouverites have sufficient resources to cover the increased costs of fuel as part of their cost of living, however the increasing cost of fuels will drive many other changes in transportation, including the cost of transit, asphalt, and all petroleum based goods.*

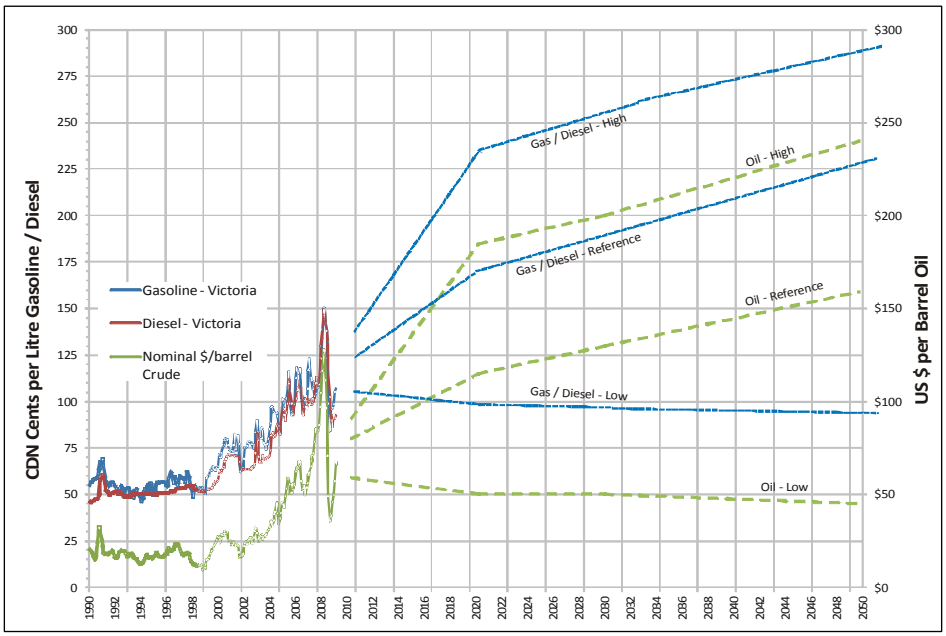

Exhibit 2: Fuel Price Trends

Source: HB Lanarc based on data from Statistics Canada; US Department of Energy, Energy Information Administration; EIA's Energy Outlook 2009. Forecasts for both oil and gas/diesel beyond 2030 are simple extrapolations (HBL) of the trend from the previous 10 year period.

1.1.3 Demography

The aging demographic and increasing population in West Vancouver, shown in **Exhibit 3**, will create demand for more multi-family residential units, change the commuting and shopping transportation patterns in the District, as well as change the appetite for various modes of transportation (e.g. cycling). As can be seen in **Exhibit 3**, West Vancouver has an older population than the BC average. Over time, the "double peaks" in the graph – that is, those residents who are currently in their teens or are middle-aged – can be expected to shift to the right, signifying an older population with a significant number of retired persons and a smaller workforce. These patterns will support more transit-supportive housing types, where infill and redevelopment are permitted. They will also shift the transportation priorities toward shopping and amenities, and, over time, away from commuting.

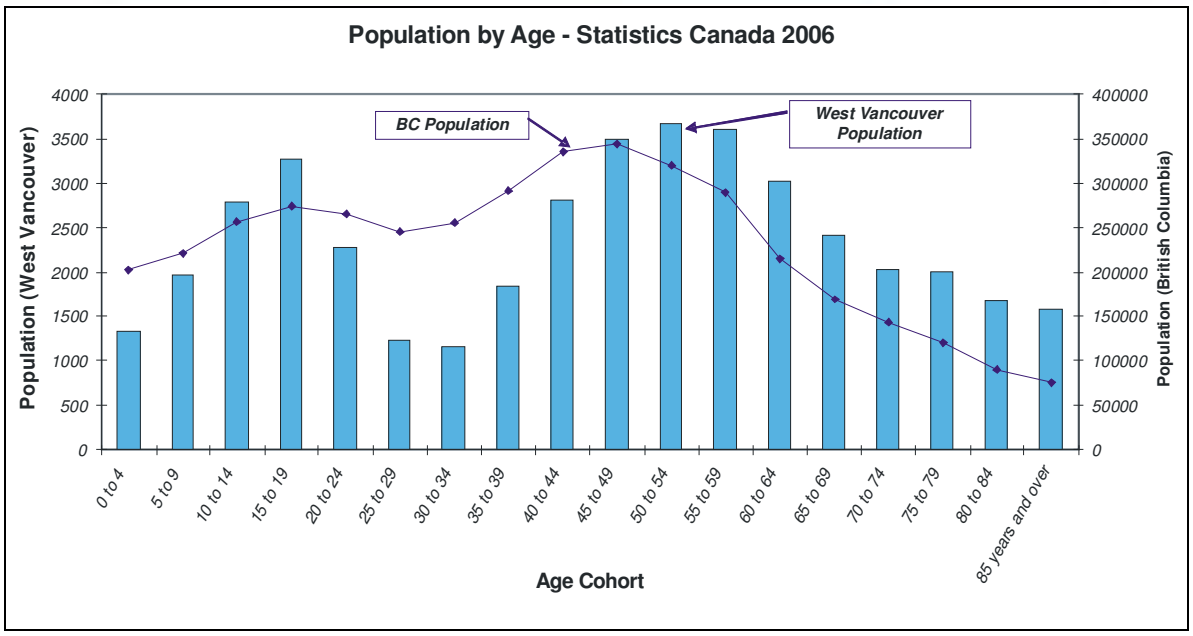

Exhibit 3: Changing Demographics

As noted, West Vancouver has a 'double peak' age demographic, with many young people under the age of 20. These people are the future of transportation, and the travel patterns and knowledge they develop now will impact their transportation decisions throughout their lives. A network with more sustainable transportation options offers young people more freedom, promotes active lifestyles through walking and cycling, and increases their comfort with modes of transportation other than driving. This age group will determine the travel patterns and development policies of the future.

1.1.4 Health and Safety

Concurrent with an aging population, the concerns over health continue to rise. The Canadian Medical Association estimates that the health costs in Canada associated with air pollution (mostly caused by transportation) were over $8 billion in 2008 and will rise to over $250 billion by 2031 under current practices as displayed in **Table 1**. These costs are based on loss of quality of life, health care visits, illnesses, and the resulting loss of economic productivity.

The resulting change in policies, regulations, and healthcare linked transportation spending is expected to increase the pressure on reducing pollution, shifting modes, and investing in infrastructure for low-emission modes of travel.

In Canada: The economic costs of air pollution in 2008 will top $8 billion. By 2031, they will have accumulated to over $250 billion.

Health Impacts	2008	2015	2031
Acute Premature Deaths	306	375	585
Hospital Admissions	1,158	1,369	1,985
Emergency Dept. Visits	8,763	10,366	14,975
Minor Illnesses	2,526,900	2,721,800	3,160,000
Doctor's Office Visits	62,112	71,968	98,578

B.C. Economic Damage	2008	2015	2031
Lost Productivity	$78,000	$82,900	$90,600
Health-Care Costs	$51,100	$57,800	$76,000
Quality of Life	$41,200	$45,200	$55,200
Loss of Life	$744,900	$916,100	$1,404,700
Total Cost	$915,200	$1,102,000	$1,626,500

Table 1: Economic Cost of Air Pollution

Source: Canadian medical association

Collisions, which generally increase per vehicle kilometre travelled, also negatively impact both society and the economy, causing injuries, time off work, and increasing health care costs. Long commuting times can be stressful and reduce time available for other pursuits. Finally, active transportation (human-powered transportation, such as cycling or walking), has health benefits from time spent exercising.

1.1.5 Transportation Technology

The forces and trends mentioned above are beginning to drive significant change in the transportation industry. Vehicles are becoming more efficient, cleaner fuels are becoming more prevalent, the electric car industry is growing rapidly, and a host of new smaller micro-transportation modes are becoming available. The infrastructure in West Vancouver will need to respond to these new changes, including designing roads, streets, sidewalks, and public places to support these changes. One of the most challenging will be the growth in micro-transportation modes (e.g. electric wheelchair to golf cart sized vehicles and neighbourhood zero emissions vehicles). Currently, few of these types of transportation have an official role in transportation planning or in infrastructure design. While a growing number of these modes are visible in West Vancouver, sidewalk and street standards have not been designed to support an influx of small electric scooters on the sidewalks or in the travel lanes of streets. ICBC does not recognize most of these technologies as legal vehicles, and as such, they are not technically allowed on the streets.

Sidewalks are not wide enough in most areas to even allow one electric scooter to pass another, or to pass a stroller or wheelchair.

The growth in electric bicycles, some with fairings and windscreens that are nearly the size of small motorcycles is now highly visible and while these can share bicycle lanes, they are wider than most bicycles and are experienced by drivers on the road in a different manner.

Changes in fleet vehicle technology in Canada are also beginning to appear, spurred by a desire for governments and agencies to provide leadership in the adoption of sustainable technologies. Many jurisdictions have experimented with technologies such as bio-fuels, electric or hybrid-electric cars, and even electric service vehicles such as delivery vans, forklifts, and construction equipment. Some jurisdictions have also experimented with existing technologies such as sub-compact vehicles, motor scooters, and even bicycles for appropriate tasks.

The topography of West Vancouver is a significant factor in modal choice, as its steep hills impact bus routes, bicycle routes and the predisposition of many to walk. With an aging demographic, the topography will become an increasingly important factor in transportation planning and design. Electric bicycles are particularly well suited to the hilly terrain of West Vancouver.

1.1.6 Transportation Infrastructure Design

The cost of transportation infrastructure and maintenance is a significant element in the District's budget. Road surfaces are only replaced approximately once every 20 years and sidewalks and curbs are placed only every 50 years or less. As such, the design of this infrastructure, in light of its cost, needs to be in alignment with the long-term transportation strategy for the District.

The design of the District's streets, trails, sidewalks and other corridors will need to anticipate to the greatest extent possible the changes in modes and the infrastructure needs associated with them to minimize the need for expensive retrofits. In general, the District will need to consider wider sidewalks, street design that will support safe cycling, small electric micro-vehicles and electric bicycles / motorcycles, as well as other social and environmental performance factors.

Infrastructure in public places and private developments will need to be modified to support electric charging stations, parking for a wide array of vehicle sizes and other technology needs. In addition to new standards, a retrofit strategy will be necessary over time to refit sidewalks, streets and other places to support the new technology as it becomes more prevalent.

1.1.7 A Strategic Approach

In the face of the many anticipated changes of the 21st century, STP is an opportunity to establish a vision and commitment to changing the existing transportation network and functional patterns over time while maintaining a high quality of life and health. The District has made leadership commitments to sustainability and climate emission reductions, and its approach to transportation will be central to achieving its goals in these and other areas.

1.2 Purpose, Goals and Objective

The purpose of the District's STP is to provide short-term and long-term guidance on the development of the transportation system. The plan is intended to emphasize the use of sustainable modes and active transportation to facilitate a shift away from the private, single occupancy automobile. The STP is a document that:

- Supports sustainability principles;
- Reflects the priorities and objectives of the community;
- Expands mode options and reduces auto dependency;
- Provides targets and tangible measuring process; and,
- Provides a practical, realistic, and implementable plan to 2025.

The STP was completed under the guidance of the Strategic Transportation Plan Working Group; a group of citizens who provided insight into challenges and conditions, and guided policy direction based on their vision for transportation in their community. The Working Group viewed the STP as a visioning document – not a 'laundry list' of projects and requirements, but an overall concept of how transportation will look and feel in the District in 2025 and beyond. This vision is clearly stated here, and is supported by small steps – quick wins and future studies and strategies that will allow the District to move towards this ambitious vision of an equitable, environmentally friendly, and economically sustainable community.

1.3 Relationship to TransLink's Transport 2040 Regional Strategy

TransLink's Transport 2040 strategy outlines the major regional transportation provider's six goals and four strategies for enhancing the transportation network over the next 30 years. The six goals identified by TransLink are:

1. Greenhouse gas emissions from transportation are aggressively reduced in support of federal, provincial, and regional targets.
2. Most trips are by transit, walking and cycling.
3. The majority of jobs and housing in the region are located along the Frequent Transit Network.
4. Travelling in the region is safe, secure, and accessible for everyone.
5. Economic growth and efficient goods movement are facilitated through effective management of the transportation network.

6. Funding for TransLink is stable, sufficient, appropriate, and influences transportation choices.[3]

Included in TransLink's strategies is the concept of potential Frequent Transit Network (FTN). The FTN is defined as a transit route that is frequent and reliable with service at least every 15 minutes, at least 15 hours per day. The 2040 plan identifies two potential FTN routes in the District: a rapid transit line (bus / rail) along Marine Drive and an Inter-Regional Connections along Highway 1. The conceptual frequent transit network for the West Vancouver Area proposed in Transport 2040 is shown in **Exhibit 4**.

Exhibit 4: Concept of Potential Frequent Transit Network

Source: TransLink, Transport 2040 (2008)

[3] From TransLink, Transport 2040, 2008.

The District's vision for the future is in line with TransLink's goals. The District's Vision 2025, as recorded here, surpasses TransLink's service objectives for the area. To accomplish the District's goals and attain the vision, District staff and residents will have to work with TransLink to improve service to the area and expand the FTN; this may include requirements to show value for investment (in terms of new riders, revenue/cost ratios, or some other method), or to find local sources of funding for improved service. West Vancouver Transit and the District will have to work with TransLink over the long-term to accomplish these goals.

West Vancouver can make a significant contribution to the overall goals of the region. Many of the vision statements, steps, and initiatives outlined in this report are positive movements towards meeting and surpassing the goals for West Vancouver outlined in Transport 2040.

1.4 Report Structure

The report comprises the following sections:

- Introduction
- Study Process
- Vision 2025
- Existing Transportation System
- Current Initiatives
- Transportation Challenges
- Data Collection and Monitoring
- Transportation Strategy to Realize the Vision
- Implementation Plan to Realize the Vision
- Conclusions and Recommendations
- Glossary

2 Study Process

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2. STUDY PROCESS

Three groups worked together to produce this report with input from the public. The three parties were the Strategic Transportation Plan Working Group (Working Group), made up of residents; the Consultants (HDR | iTRANS assisted by HB Lanarc); and District of West Vancouver staff.

2.1 Technical Assessment and Reporting

The STP is a high level, strategic document. Based on the study design and scope, no travel or asset data collection, physical survey, or detailed technical analyses were completed. These activities should be undertaken as part of later studies to support specific projects and initiatives.

The consultant team preformed the following tasks:

- Reviewed existing reports and recent work;
- Assessed existing transportation network based on literature review of reports, desktop survey, and site visits;
- Identified gaps and issues based on desktop review of current gaps, feedback from the working group;
- Participated in Vision development;
- Developed Marine Drive Corridor concepts;
- Recommended strategies to attain the vision and address gaps and issues;
- Developed an implementation strategy;
- Developed a data collection and measurement plan; and,
- Prepared this final report.

2.2 Public Consultation

Creation of the STP was driven by the public, with residents providing information on the local context and input into the development of the Vision. Public consultation was included via the Working Group and a Public Open House, as described below.

2.2.1 Working Group

The plan was created with the direction of the Working Group composed of West Vancouver citizens from different demographics and with different transportation needs. Together with the consultant team, other experts, and District staff, the Working Group identified needs and gaps and set the tone for the development of the Vision. The Working Group met weekly from July 2009 to February 2010.

Throughout this time period, the Working Group heard and commented on presentations by the consultant team, researched different modes of transportation, and developed input for the Vision.

The Working Group reviewed all strategies, determined the District's transportation hierarchy, and reviewed and commented on the final report. The ideas presented in this plan reflect the vision of the Working Group as supported by the Consultants and District staff.

2.2.2 Public Open House

Following the assessment of the existing network, development of the Vision 2025 and the one and five year strategies, the plan was presented to the general public at an Open House on December 2, 2009.

Feedback from the Open House was collected via three mechanisms:

1. Interactively at the event: the Working Group and consultant team attended the Open House and discussed the information presented with the attendees. Attendees were also invited to interact with the presentations directly in three ways:
   - Writing their thoughts on a post-it note and sticking it directly to a board;
   - Placing up to six pins into the feedback board to indicate their support for one or more of 20 statements about the future of transportation in the District; and,
   - Placing pins into a board to show where they live and work.
2. Through comment sheets distributed at the event; and,
3. Via email following the event.

The District compiled the post-it comments and counted the pins. All of the information gathered at the Open House was reviewed by the consultant and summarized in a memo, which is attached in **Appendix A**. Public feedback from the Open House was generally supportive of the vision and strategies presented; specific comments were discussed with the Working Group and incorporated as appropriate.

2.2.3 Other Public Feedback

The Climate Action Working Group (CAWG) conducted a Climate Action Survey as part of the public consultation for that study. The Climate Action Survey found that 70% of 163 residents surveyed "would … be willing to reduce how often [they] drove – and instead try walking, biking, taking public transit, ride-sharing or staying at home 33% more often[.]"[4]

[4] Climate Action Survey, January 2010.

3

Vision 2025

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3. VISION 2025

The Vision for the STP was developed with the Working Group and reads:

To reduce auto dependency, expand mode choice, and promote safety while supporting sustainability and reflecting community transportation priorities.

3.1 Previous Vision Statements

There are a number of existing vision statements concerning the future of transportation in the District. These include visions from the 2004 Official Community Plan (OCP) and CAWG. These statements are overarching, high level concepts and guided the preparation of the more detailed Vision 2025. The vision statements that existed at the onset of the project included the following:

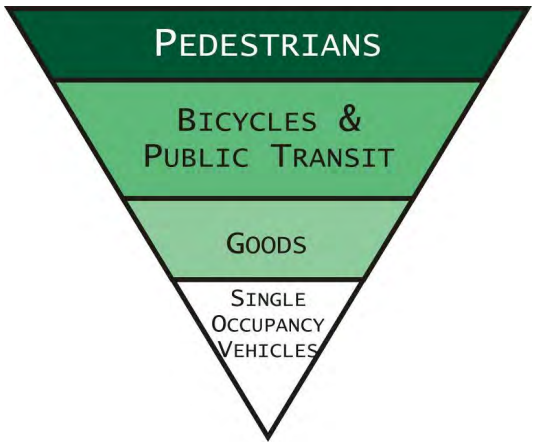
- Transportation Vision from OCP:
  - "Reduce residents' dependency on private automobiles thereby reducing traffic congestion."
  - "Promote alternatives to private vehicles including the enhancement of both public transportation and walking and cycling networks."
- Climate Action Working Group Vision:
  - Goal: to facilitate DWV's "rapid move toward fossil fuel freedom".

This Vision builds on these previous statements, using the input of the Working Group, to create a feasible, sustainable transportation vision for West Vancouver.

3.2 West Vancouver in 2025 and Beyond (15 years +)

The central premise of the Vision, and the entire STP, is West Vancouver's Transportation hierarchy. The hierarchy was developed by the Working Group in collaboration with the consultants and District staff to be the guiding principle for planning and decision making for transportation in West Vancouver. It dictates West Vancouver's transportation priorities and is ubiquitous in the goals, Vision, strategies, and implementation in the STP. It is represented by the green triangle shown below.

West Vancouver's Transportation Hierarchy



West Vancouver's Transportation Goals

1. To provide equitable, safe and accessible transportation options for all of West Vancouver's residents, including the disabled and aging populations by investing in a complete, connected transportation network for all modes.
2. To reduce overall greenhouse gas (GHG) emissions from transportation and enable West Vancouver to meet it's climate action targets.
3. To shift travel away from carbon emitting, single occupancy vehicles towards sustainable modes and to improve the infrastructure for transportation alternatives according to the principals of West Vancouver's transportation hierarchy.
4. To inform and educate the citizens of West Vancouver on alternative modes of transportation and engender a move towards adopting more sustainable options.
5. To refine the design of transportation infrastructure to increase the quality of the experience of travelling, and to improve environmental performance;
6. To engage the youth of the community and to give them the tools to travel in safe, socially responsible, and environmentally sound ways.

In fifteen years, the District of West Vancouver will be a community with transportation options, where there is high awareness and use of sustainable transportation modes. The transportation decisions made over the preceding fifteen years will have been guided by West Vancouver's sustainable transportation hierarchy, giving pedestrians the highest priority when planning the transportation network. A whole generation of high school students will think "walk" as their primary transportation option and will be experienced cyclists and transit users. Walking, cycling, and public transit will have replaced cars as the predominant means for children to get to and from school. Commuters will be able to reach downtown Vancouver and other regional destinations by transit as quickly and comfortably as in their private vehicles. Most residents will be within walking distance of frequent, convenient transit service and all residents will have a community transit pass.

Travellers will be prepared to leave their cars at home or reduce the number of family vehicles owned because of user-friendly, convenient, accessible, and efficient transit service. Seniors and persons with disabilities will have transportation options - accessible transit service throughout the day and the active transportation network will allow them to live car-free, with no need to depend on a car for transportation. Cyclists will have options which reflect the community needs allowing for easy and safe access to destinations. Marine Drive and the Spirit Trail will be the spine of the pedestrian and cycling network, providing a linkage from Horseshoe Bay to Lions Gate Bridge for pedestrians, and commuter and recreational cyclists. Beyond the busy corridors for travel, the experience of pedestrian and cyclist routes and transit stops will be exceptional including offering residents the opportunity to engage green spaces, public art, opportunities to shop, and find excuses to start a conversation with one's neighbours.

Marine Drive will be a true multi-modal corridor. Through traffic will be encouraged to use Highway 1 with Marine Drive being developed for community use and mobility. Ambleside and Dundarave will further develop into lively town centres, reminiscent of European town squares, with a focus on pedestrians. Street furniture, wide sidewalks, and enhanced pedestrian crossings will make walking safe and enjoyable. Cycle facilities will be included in the overall streetscape to allow for safe, convenient, and direct access to amenities. Charging stations and other alternative fuel infrastructure will be conveniently available throughout West Vancouver.

Pedestrians and cyclists will be able to traverse the District from Horseshoe Bay to Park Royal on the Spirit Trail and onwards into North Vancouver or over the Lions Gate Bridge into Vancouver. Marine Drive will provide both a continuous pedestrian route and a continuous commuter route for cyclists with sidewalks and bicycle lanes from Horseshoe Bay to the Lions Gate Bridge. At a number of points, pedestrians and cyclists will be able to travel a few blocks north to transfer to transit; or to secure bikes in public bicycle lockers.

Short-term bicycle rentals will allow tourists and residents to pick up and drop off a bike for short distance trips between town centres or for a ride on the Spirit Trail. An east-west transit route will be developed north of the Highway to connect the British Proprieties and emerging commercial areas. Interconnected on-street and off-street bicycle and pedestrian routes will provide access to destinations which include recreational facilities, schools, commercial, residential areas.

The safety of the travelling public will be a primary concern. This will be guided by the transportation hierarchy and realized with the implementation of infrastructure that provides the ability to move safely within the community.

Throughout the District, intermodal hubs will be easily accessed from most locations. In the western part of the District, park-and-ride and bicycle parking facilities will provide transit accessibility for lower density areas. Horseshoe Bay will retain its pedestrian focus with easy access from the ferry to transit.

What is an Intermodal Hub?
An intermodal hub is a safe, comfortable, convenient place to transfer from one mode (e.g. cycling) to another (e.g. transit). Features at intermodal hubs may include:

- Secure bicycle parking;
- Bathrooms;
- Shops and services;
- Sheltered pedestrian waiting areas;
- Lighting;
- Transit information (routes, schedules);
- Transit ticket sale kiosks;
- Electric vehicle recharging facilities;
- Parking (park-and-ride); and,
- Drop-off areas (kiss and ride).

3.3 Applying the Vision – Marine Drive Corridor Example

The Working Group selected the Marine Drive Corridor to illustrate how principles in the STP would impact an existing well travelled route. This section outlines the general approach and high-level options for the corridor. The example emphasizes the strategic decision to encourage citizens to shift from the single occupancy vehicle to alternate, healthier, and more sustainable modes.

Marine Drive is central to the West Vancouver transportation system and defines, in part, the character of the community. It provides the local link to the Lions Gate Bridge, is the spine of Ambleside and Dundarave, and provides access to western residents. Marine Drive varies significantly in character, width, and infrastructure type along its length.

Between Oxley Street and Horseshoe Bay, there are sections of narrow, rural road, winding between water and rock face. In Ambleside and Dundarave, it is an urban arterial, central to auto, transit, cyclist, and pedestrian movement. Marine Drive has become an increasingly popular destination for sport and recreational cyclists, especially on weekends and holidays. The configuration of Marine Drive significantly impacts on the transportation network and liveability of West Vancouver. This section demonstrates how Marine Drive could look when the Vision described in this report is applied. It includes four illustrations that show potential configurations for this roadway moving east to west from the urban areas to the more rural western sections.

Due to use variation and natural infrastructure differences along its length, no single illustration can be applied to Marine Drive as a whole. Upgrading Marine Drive will require significant investment and consultation with stakeholders over the next fifteen years and beyond. Instead, this section provides a range of possibilities. Realizing the concepts in these illustrations will depend on further engineering assessment and design, property requirements, and stakeholder feedback. Further review is required to assess the impacts on associated side streets that must be considered in further analysis.

The four Marine Drive illustrations are:

1. **Exhibit 5**: Dundarave to Ambleside (2-way) – This is the first of two options for Marine Drive through Ambleside and Dundarave. It reconfigures the existing road right-of-way to better provide for cyclists. Sidewalks are maintained at their existing widths in most locations. Parking is removed on the south side to provide road space for an exclusive bike lane.
2. **Exhibit 6**: Dundarave to Ambleside (1-way couplet) – This option shows Marine Drive as one-way westbound with 3 lanes. Sidewalks are extended, bicycle lanes are provided, and parking is removed on the south side. Future review is required to establish the route of the other couplet and the associated impacts.
3. **Exhibit 7**: Oxley to Dundarave – This illustration shows a potential layout for Marine Drive outside of the urban core. Sidewalks and cycling lanes are provided on both sides of the roadway. Parking is provided on one side wherever possible.
4. **Exhibit 8**: West of Oxley – Moving west, the road narrows. This concept shows a walkway on one side, with bicycle lanes on both sides. Where the road width allows, walkways would be provided on both sides.

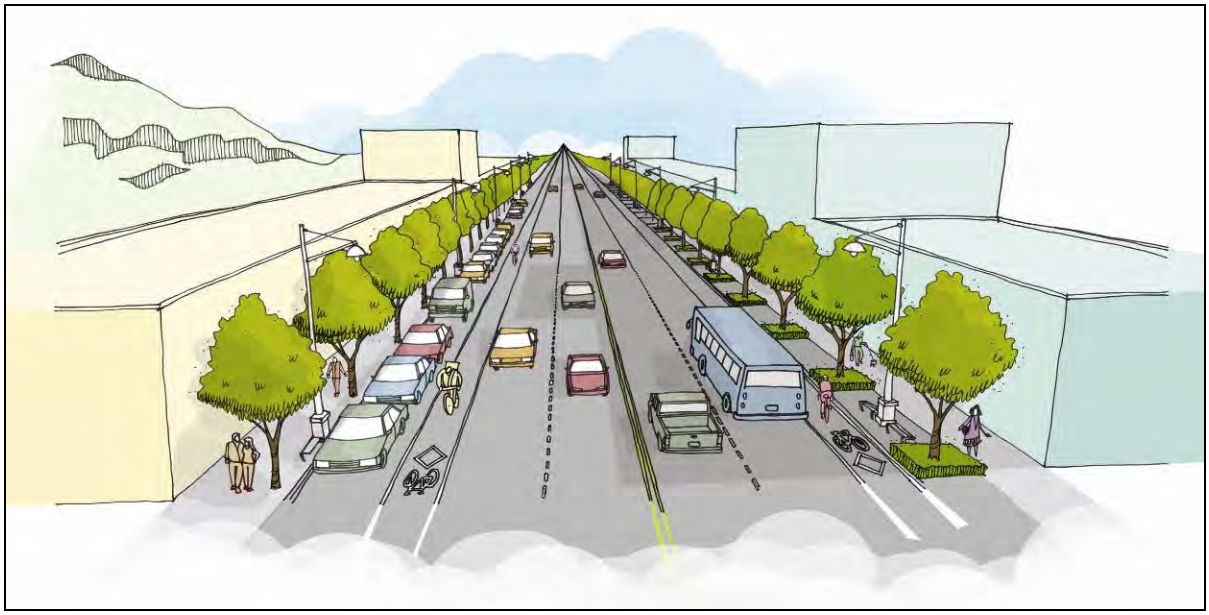


Exhibit 5: Marine Drive Corridor Vision – Looking East, Dundarave to Ambleside (2-way)

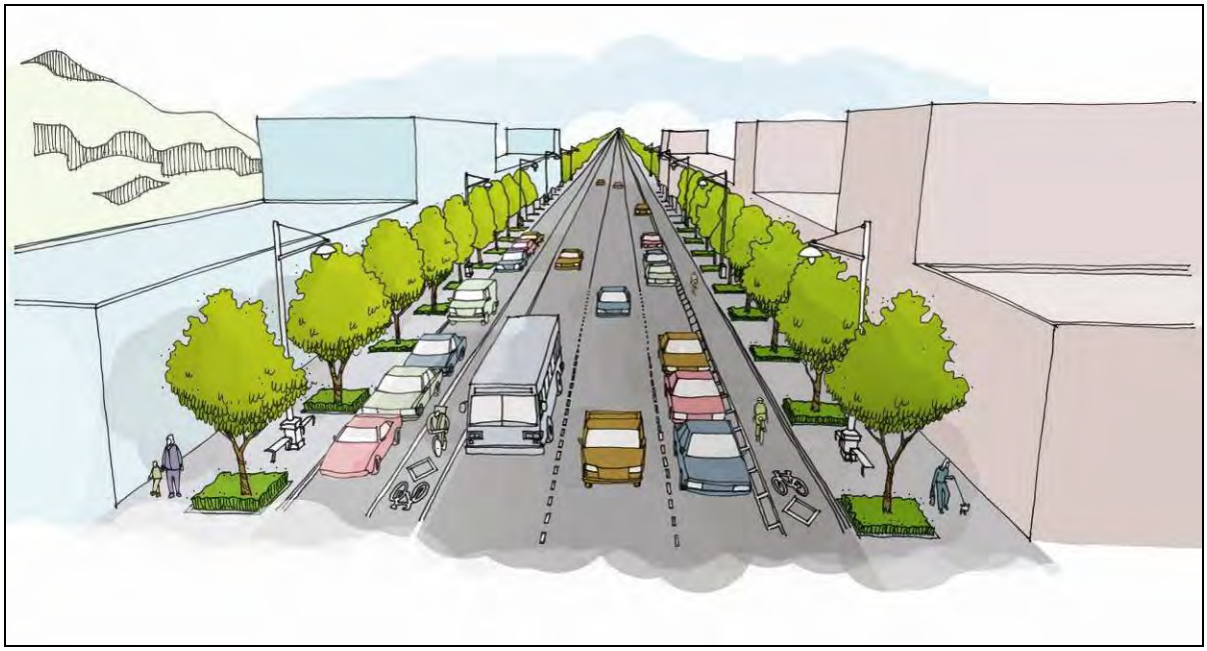


Exhibit 6: Marine Drive Corridor Vision – Looking East, Dundarave to Ambleside (1-way couplet)

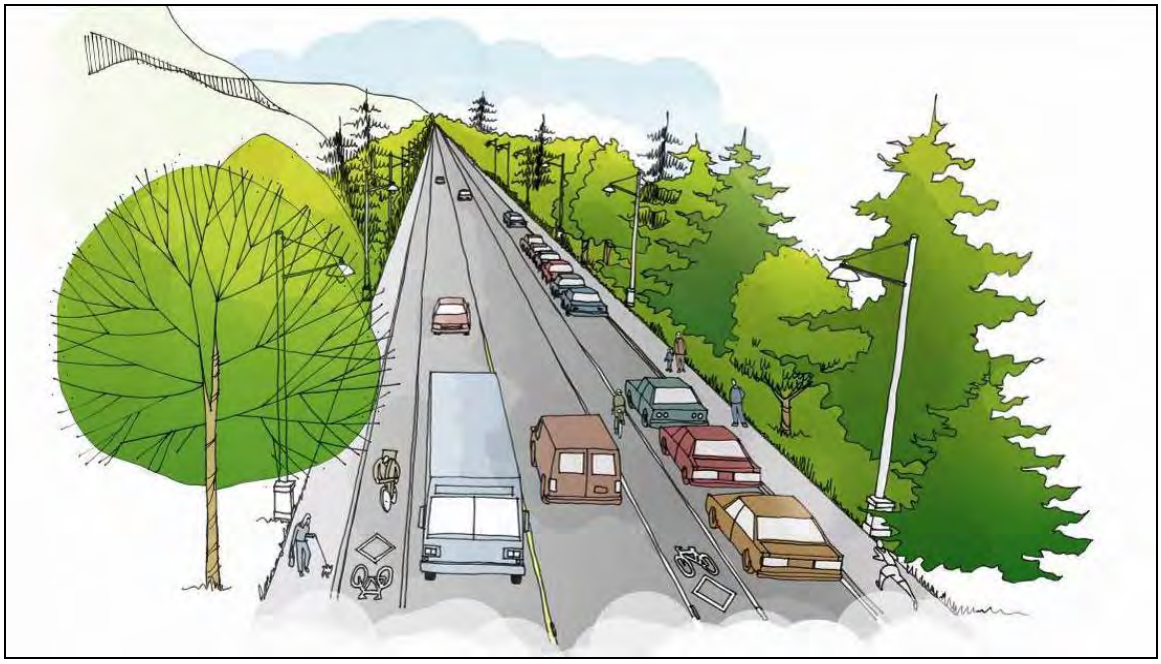


Exhibit 7: Marine Drive Corridor Vision – Looking East, Oxley to Dundarave

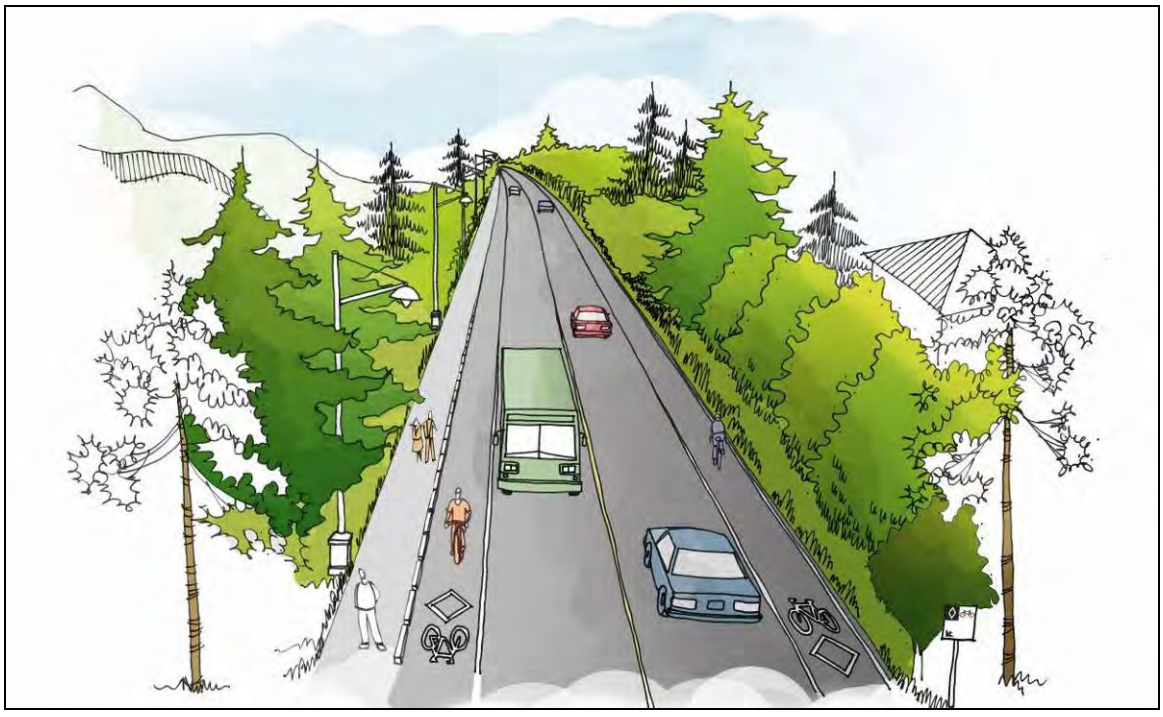


Exhibit 8: Marine Drive Corridor Vision – Looking East, West of Oxley

All of the illustrations share the following common elements, which are included in the Vision as recommended minimum provisions for Marine Drive across West Vancouver:

- Road space assigned to pedestrians: minimum of a sidewalk on one side of the roadway, where space is restricted. Sidewalks on both sides wherever feasible, with a preferred width of at least two meters in commercial areas;
- Road space assigned to cyclists: cycle lanes, paths, bikeways, cycle tracks, or other infrastructure as feasible and appropriate for the road character;
- Parallel parking provided, where possible, to maintain access to local businesses and improve the pedestrian environment by separating pedestrians from moving vehicles; and,
- No additional capacity for private autos.

3.4 Steps Towards Our Vision – 2025 and Beyond per Mode

This section identifies specific strategies that move West Vancouver towards the Vision outlined above. It is inspired by international examples – real, world-class facilities that work in cities across the world – and tailored to the specific needs of West Vancouver. The City of Vancouver, West Vancouver's neighbour, is a North American leader in sustainable transportation and offers many examples of how the principles of the hierarchy can be applied with success in the Lower Mainland.

3.4.1 All Modes

Long-term strategies applying to all modes to achieve the Vision are:

- Design a comprehensive set of metrics suitable to measuring changes in individual modes / travel patterns over time, and to measure progress toward goals;
- Develop a broad public outreach programme to inform citizens about the benefits of both active, and public transportation, report progress on goals and strategies, and make information available about alternative modes;
- Consider better linkages north and south of Highway 1 for all modes (i.e. improve pedestrian and cycling routes, transit);
- Consider the accommodation of skateboards (long boards) and other new, youth transportation modes;
- Share low speed local roads with low speed alternative technology vehicles, traditional autos, and cyclists and pedestrians; and,
- Complete implementation of intermodal hubs at the following locations:
  - Horseshoe Bay;
  - Caulfield;
  - Cypress Bowl Road Commercial Area (future);
  - Junction of Westmount Road / Westridge Avenue / Southridge Avenue;
  - Dundarave;
  - Ambleside;
  - Park Royal; and,

- Cypress Park shopping center south of Marine Drive at Morgan Crescent.

Improving Transportation Safety
All transportation involves a certain element of risk. A good transportation network allows for the efficient movement of people and goods while minimizing the risk to people and property. The Vision calls for continued diligence and improvements that reduce risk to all transportation users, but especially for pedestrians and cyclists. Safety can be improved **by providing appropriate road space for all modes**; **reducing travel by autos**; **education and enforcement**; and **context sensitive design**.

Context sensitive design is a broad term often used in transportation planning to describe project design that takes into account all potential users (as opposed to just motorists) as well as the unique contexts of the neighbourhoods through which the project passes[5]. Elements typically taken into account can include other transportation users such as pedestrians and cyclists, local environmental features, local businesses, neighbourhood buildings, and the overall public realm.

The STP includes many strategies that will improve safety, including traffic calming measures and recommendations for sidewalks and cycling routes. Safety is, and will continue to be, pervasive in the District's planning and design decisions.

3.4.2 Transportation Demand Management and Policy

A critical component of the Vision, a transportation hierarchy, was developed by the Working Group in collaboration with the consultants and District staff. The hierarchy identifies the place and priority of modes when assessing improvements in West Vancouver. This is shown in **Exhibit 9**. All existing and new projects in West Vancouver will be evaluated with these priorities in mind and will be developed to accommodate them.

[5] "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities", ITE 2006

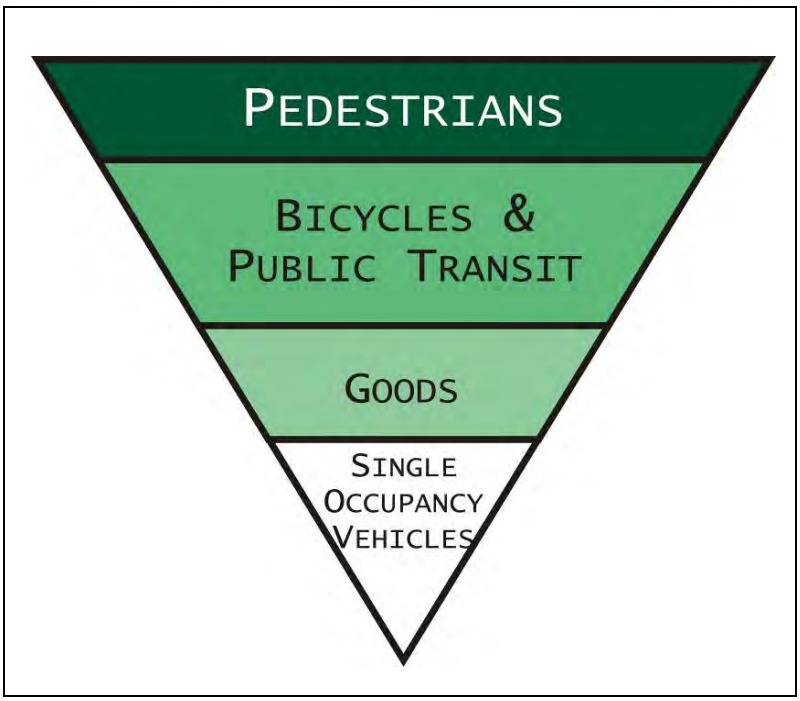


Exhibit 9: West Vancouver's Transportation Hierarchy

Transportation Demand Management (TDM) measures influence the demand for specific modes of transportation by focusing on public attitudes and awareness or by applying incentives and disincentives. Reducing demand can be a cost effective alternative to increasing capacity.

Transportation and land use policies (such as zoning bylaws) impact the built environment and how transportation services and infrastructure are integrated into the community. Policies that support sustainable modes and encourage sustainable mode choices are integral to the overall transportation strategy.

This report groups TDM and policy together because they do not impact the transportation supply, which is addressed separately by mode. The relationship between transportation demand, transportation supply, and land use is illustrated in **Exhibit 10**. Land use strategies are developed during reviews of the Official Community Plan (OCP) and reflected in the OCP and in zoning bylaws.

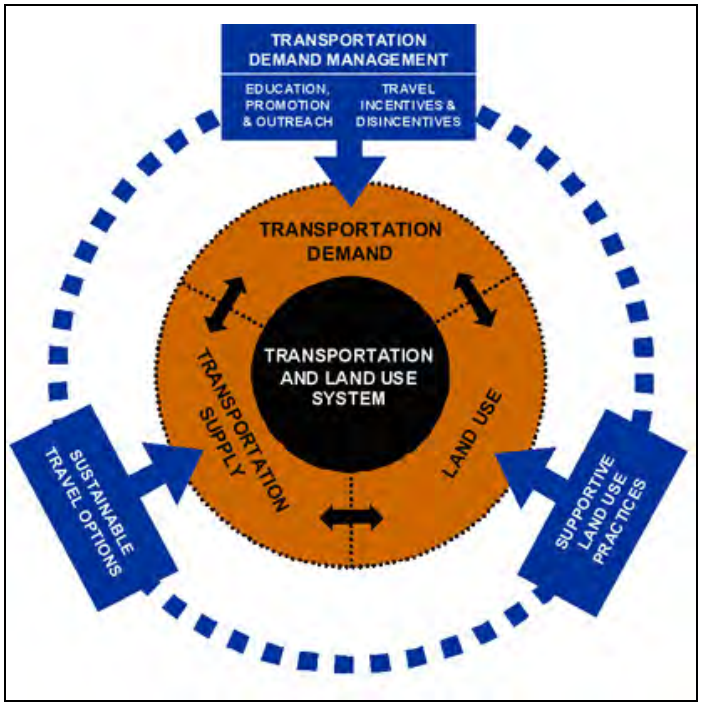


Exhibit 10: Relationship between transportation demand, supply, and land use

Source: Transport Canada (http://www.tc.gc.ca/programs/environment/utsp/TDMIntro.htm)

Long-term TDM strategies to achieve the Vision are:

- New development approval process that has a strong sustainable transportation component and follows West Vancouver's Transportation Hierarchy;
- Policies to discourage Single Occupant Vehicle use during peak periods;
- Continued school-based programmes for elementary students, including:
  - Safe route to school;
  - Walking school bus; and,
  - School zone traffic calming.
- Urban area car license surcharge;
- Enhanced parking management strategies, such as reduced parking availability in new developments, priority parking to car-sharing, and strategic pay parking with any profit from pay parking being directed to infrastructure for more sustainable modes;
- Consider a tax structure supportive of the use of sustainable modes (i.e., incentives, disincentives for types of vehicle, fuels, etc.);
- Encourage work-from home, live-work and other non-commuting alternatives;
- Consider local community business centres, free District-wide wireless, or other incentives to encourage a reduction in commuting trips; and,
- Consider slow vehicle lanes on Marine Drive from 25th Street to Horseshoe Bay.

3.4.3 Pedestrian

Why walk?
Walking (and wheeling in mobility devices) is an easily and almost universally accessible mode of transportation. Walking is healthy; it provides exercise and can be a social activity. Walking allows neighbours to meet; walkers can easily pop into local shops and stop to chat. Walking is safe and it is legal to walk and talk on a cell phone. Walking relieves stress. Walking creates no pollution and usually requires no equipment. Walking is free. Walking is a few minutes of humanity. **Walkers see the world from a different angle.**

The Vision identifies pedestrians as the top transportation priority. Planning and providing infrastructure for pedestrians of all abilities is an important aspect of the Vision.

Wayfinding systems include all measures to help people using any mode of transportation to orient themselves and navigate from place to place. Wayfinding includes signage, mapping, sign posts and poles, sidewalk and road paint, and any other tools provided by the municipality to help travellers find their way.

Long-term pedestrian strategies to achieve the Vision are:

- Continue to develop and maintain pedestrian mapping;
- Continue to install and maintain effective wayfinding;
- 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;
- Consider an Upper Spirit Trail above Highway 1;
- Complete greenways and pedestrian routes as per the Cycling Network and Greenway Plan, June 2007;
- 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 route 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.

Exhibit 11 illustrates key aspects of the long-term vision for pedestrians and includes short to medium- term strategies described in **Section 8**.

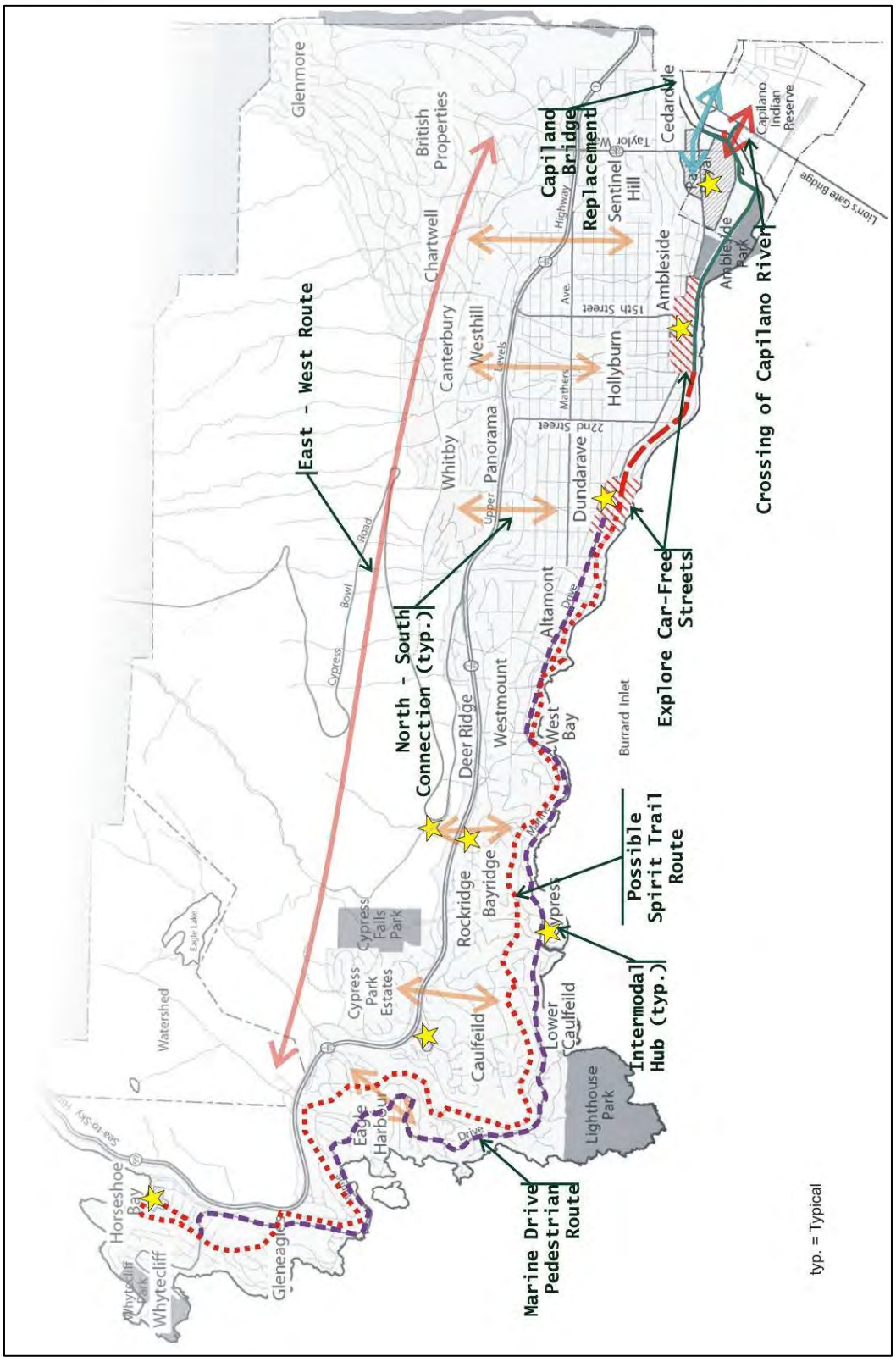


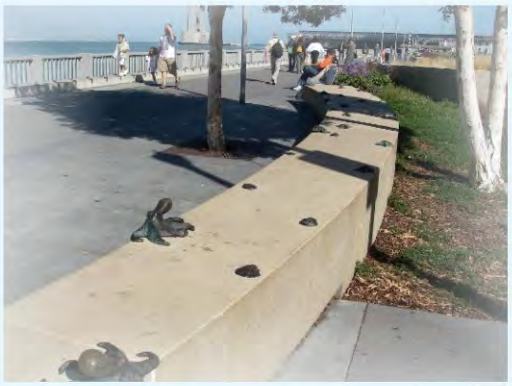
Exhibit 11: Pedestrian Strategies

World-Class Pedestrian Facilities

Pedestrian friendly crossing, 18th Street and Bellevue Avenue.
West Vancouver, BC

Pedestrian only zone and market.
San Francisco, California

Laneways lit, landscaped, and well used by local residents for parking and walking.
Mole Hill, Vancouver, BC



Seawall detail. Public art increases interest, encourages walking. Ledge provides walkers with a place to sit and rest. Ample width permits multiple streams, different speeds, strollers, families etc.
San Francisco, California

Covered pedestrian area with business uses on street.
Balingen, Germany

Pedestrians and vehicles share the street.
Camden Town, England

Shared streets.
Tubingen, Germany

Enhanced pedestrian crossing.
San Francisco, California

Elevator and pedestrian connection between two communities at different elevations. The connection has a dual use functioning as a community connector and direct access to transit.
Hoboken, New Jersey

3.4.4 Cycle

Why cycle?
Cycling is pollution free. Bikes are made in all shapes and sizes, for a variety of uses and users. Cycling is fast and efficient. Bikes are inexpensive to buy, maintain, and operate. Cyclists can park where vehicles can't; best of all, parking a bike is usually free. Cycling is healthy. Cycling saves time by combining exercising and commuting. Bikes can be used for commuting, recreation, or sports. Cycling is fun. Cycling provides freedom for those that cannot drive. **Cycling is a great use of limited resources**.

A safe, efficient recreational and commuter cycling network is a key component of the Vision. Long-term cycle strategies to achieve the Vision are:

- Continue to install and maintain effective wayfinding;
- Complete Spirit Trail;
- Further improve connections across Highway 1;
- Complete bicycling routes and greenway system as per Cycling Network and Greenway Plan;
- Create an environment where higher visibility and priority is given to cyclists;
- Consider an Upper Spirit Trail above Highway 1;
- Bike boxes and / or signal detection at key intersections;
- Develop an integrated West Vancouver Cycling Network east-west and north-south for commuter / recreational riders with connections wherever possible to community centres, parks, schools and to Marine Drive;
- Establish Marine Drive as a bicycle commuter route; and,
- Complete implementation of intermodal hubs.


Arterial roadway with bicycle Path in Ottawa, Ontario


Bicycle Lane, Chicago

Exhibit 12 illustrates key aspects of the long-term vision for cyclists and includes short and long-term strategies described in **Section 8**.

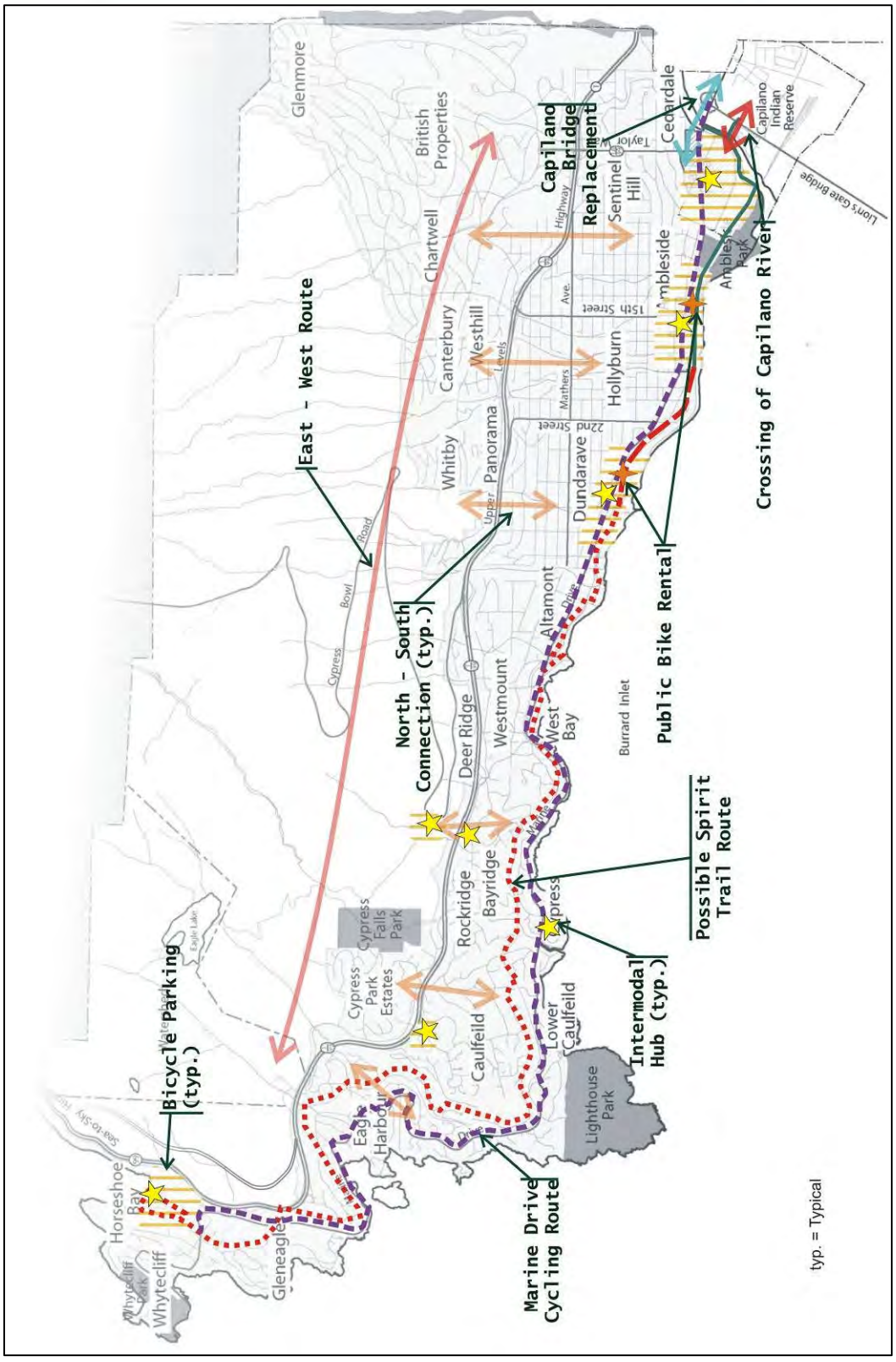


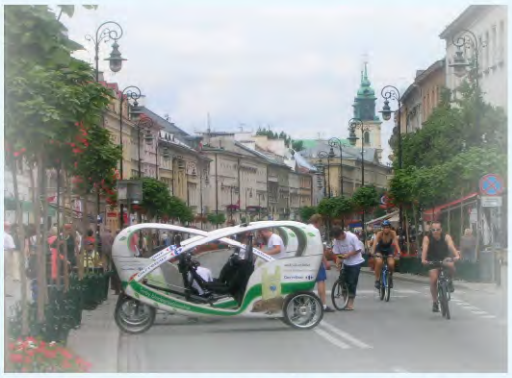
Exhibit 12: Bicycle Strategies

World-Class Cycling Facilities

Cycle track separated from vehicle lanes by parking and boulevards on Carrall Street, Vancouver, BC.
A cycle track is a protected bicycle route that is separated from vehicle traffic.

McDonalds cycling center in Chicago, IL provides secure bicycle parking, rentals, shower, lockers, repair, and other services.

Signs define pedestrian and bicycle space at the cycle track on Carrall Street, Vancouver, BC.



Pedicabs on car-free street in Poland. The pedicabs have fairings which improve aerodynamics and provide some protection from the elements.

Colored asphalt cycle lane in Amsterdam, Netherlands. The lane is adjacent to a transit hub.

3.4.5 Transit

Why take transit?
Transit is less expensive than owning and operating a car. Transit is a very safe way to travel. Transit users don't have the stress of driving and travel by transit is faster in priority lanes than driving in traffic. Transit users can work, read, sleep, or talk on the phone while commuting. Transit users are part of the community. Transit pollutes less per passenger than driving alone. Transit riders don't need to find or pay for parking. Transit users can get exercise walking to and from their stop. Anyone can take transit. **Transit is for everyone**.

In the Vision, transit is a primary mode of transportation for many West Vancouver residents.

Long-term transit strategies to achieve the Vision are:

- Provide incentives for transit use, such as a Community Transit Pass for all of West Vancouver under the municipal tax structure; the pass would reduce the perceived cost of transit while increasing the guaranteed revenue and allowing for improved service;
- Further increase north / south transit service on important corridors;
- Further increase east / west transit service north of Highway 1 to connect to newly developed areas and schools;
- Improve connectivity between communities;
- Enhance transit stops to provide transit information and off-street waiting areas with information and comfortable, well lit, and sheltered waiting areas; consider advertising revenue to offset the costs;
- Improve transit information via automatic auto and visual stop announcement systems;
- Expand bus priority measures to increase speed and efficiency of service;
- Consider some form of regular rapid transit service to improve transit speed and connectivity on a regional level;
- Use smaller buses to serve north-south routes;
- Enhance demand responsive transit, which may provide more effective service in large areas of single-family, low density residential that are hard to serve with conventional transit; and,
- Complete implementation of intermodal hubs.

What does improved transit service look like?
Good transit service is frequent, direct, suitable for the community type, and available within walking distance (400m) of most households and businesses.

Demand Responsive Transit
In some low density areas, conventional transit service may not be viable, especially in the off-peak hours. In these areas, Demand Responsive Transit (DRT) can provide service without the infrastructure and cost of conventional transit. Demand responsive transit is flexible, user-oriented transit with flexible routes and schedules that can take many forms. It may include "dial-a-bus" services, which allows travellers to request a pick-up; an on-demand shuttle service (such as an airport shuttle), or fixed route taxis, which are taxis that travel a transit route on a fixed schedule or on demand, requiring passengers to share service, and have the same fee as conventional transit.

Exhibit 13 illustrates key aspects of the long-term vision for transit and includes short- to medium-term strategies described in **Section 8**.

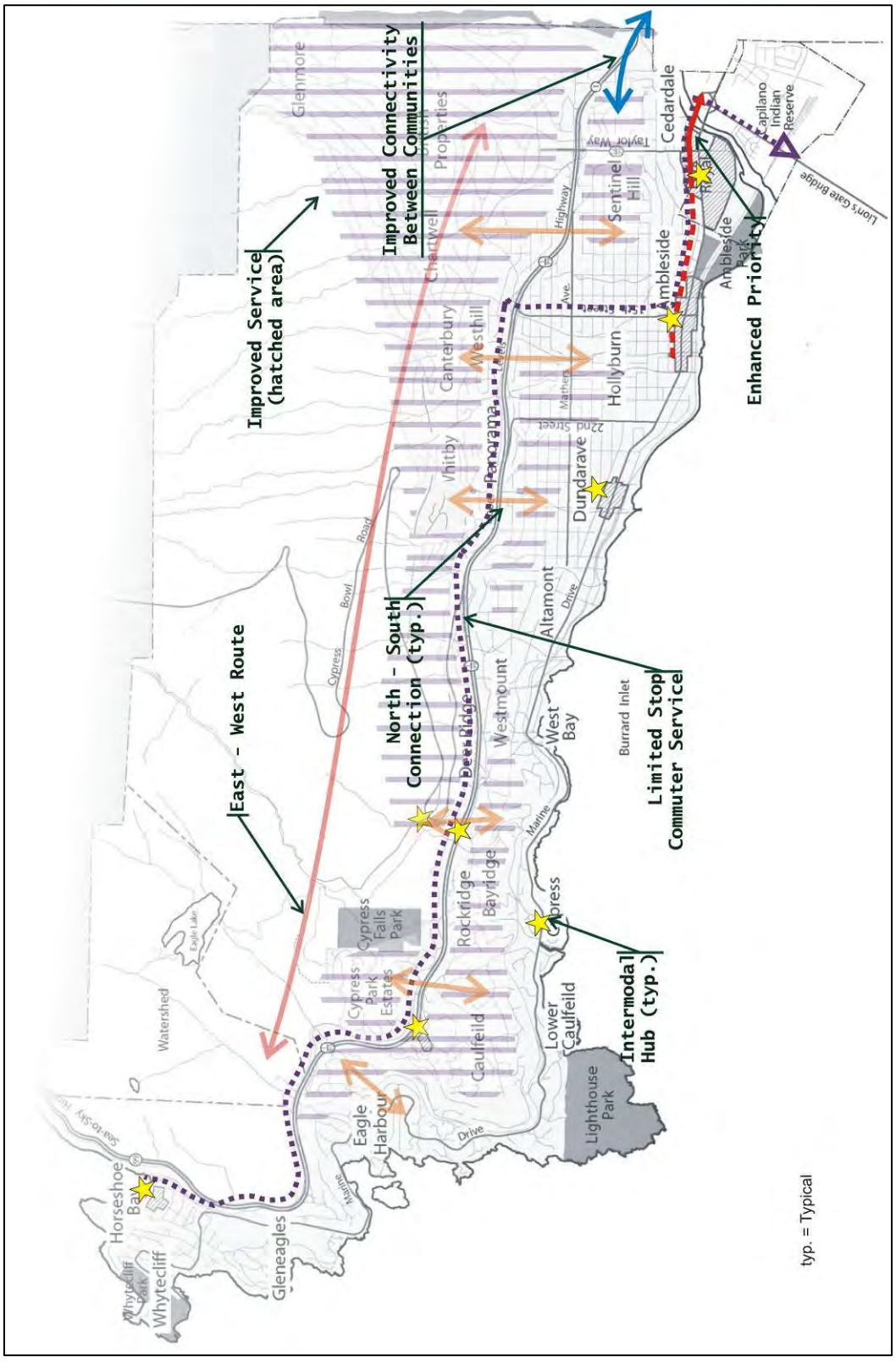


Exhibit 13: Transit Strategies

Enhanced Transit Stop Facilities in Pedestrian Friendly Environments

Passenger information.
Santa Clara County, California

Transit stop with shelter in DWV

Separate transit with sheltered stop adjacent to a pedestrian mall.
Santa Clara County, California

3.4.6 Alternative Technologies

Alternative technologies will play an increasingly important role in transportation in West Vancouver. Long-term alternative technology strategies to achieve the Vision are:

- Implement alternative fuelling stations given technology as the technology becomes available; and,
- Continue to explore leading-edge alternatives to high-emission vehicles.

Electric car, Amsterdam

3.4.7 Traditional Auto

Use of the traditional, single occupancy auto is expected to decrease in prominence in the District as travel shifts to alternative modes, and alternative technologies become more widely available. Strategies focus on improving essential network connections and influencing travel behaviour. Long-term traditional auto strategies to achieve the Vision are:

- Implement Low Level Road as an inter-municipal connection between North Vancouver and West Vancouver;
- Support pay-per-use insurance (e.g., distance based insurance);
- More direct routes;
- Complete implementation of intermodal hubs; and,
- Continue development of park-and-ride, car-share, and car-pooling.

Car Co-op parking in Mole Hill, Vancouver

Traffic Calming

Traffic calming involves using physical features along the roadway / right-of-way to encourage motorists to drive at lower speeds and to reduce the level of 'shortcutting'. Although there are numerous traffic calming measures that can be implemented, some of the most common are curb bulges, traffic circles, and provision of on-street parking.

15th Street and Esquinalt Avenue, West Vancouver, BC

Curb bulges *(also known as curb extensions, chokers, neckdowns, and pinch points) are extensions of the curb / sidewalk that protrude horizontally into the roadway. They can be installed at intersections or mid-block locations, and may be integrated with crosswalks in order to shorten the distance that pedestrians are required to cross, to increase pedestrian visibility and to improve overall pedestrian safety.*

A ***traffic circle*** *is a raised island at the centre of an intersection which prevents traffic from travelling straight through an intersection. Instead, drivers are forced to decelerate and navigate around the circle. Because left turns must be completed by travelling around the circle, the number of conflict points is reduced compared to a standard intersection. Research has shown that pedestrian safety is also improved where traffic circles are implemented.*

Taylor Way / Stevens Drive / Southborough Drive, West Vancouver, BC

West End, Vancouver, BC

Provision of ***on-street parking*** *reduces the roadway width available for travel, and creates a psychological narrowing effect. In comparison to other traffic calming measures it can be relatively inexpensive.*

3.4.8 Goods

Goods movement is the movement of shipments or services (people who must travel as part of their jobs, e.g. plumber). Efficient goods movement is essential to any economy and important to the Vision. Long-term goods movement strategies to achieve the Vision are:

- Loading zone design in new development to minimize the time required per stop; and,
- Distribution – designate routes and provide sites to unload large shipments into smaller vehicles.

What is goods movement?

The transportation network moves people, but it also must move goods. Goods are the shipments and services that people need in their homes and workplaces; it includes both televisions and the service people that connect those televisions to cable. Local businesses depend on delivery of shipments so that they have merchandise available to sell. Despite it's important, most people know very little about goods movement. Below are three important goods movement planning terms:

- **Shipments** include all physical wares including packages, containers, and bulk commodities.
- **Services** are people travelling to provide a service.
- **Goods** are shipments and services.

3.4.9 Marine / Rail

Marine and rail facilities are not currently fully utilized in the District. There is potential for future growth in these modes of transportation. Long-term marine and rail strategies to achieve the Vision are:

- Reassess marine and rail opportunities periodically;
- Working with other governments and private organizations, support existing passenger ferry service from Ambleside and consider expanding marine service to include departures from Dundarave and destinations to Coal Harbour, False Creek and Jericho Beach;
- Continue to invest in docks when and where necessary; and
- Re-evaluate feasibility of higher order transit in the long-term, including the use of the rail line for commuter traffic from West Vancouver and other municipalities along Highway 99 and the potential for light rail on the North shore.

Shared Roadway Spaces and Intermodal Transfer Terminals

Park and Ride at Richmond Hill Centre Viva Station.
York Region, Ontario

Local road in Northern Ireland. Narrow road encourages vehicles to move slowly.

Enhanced pedestrian crossing in San Francisco, California. Marked cycling lane shared with transit. Central lane is shared vehicle and street car.

Waterfront resting place, intermodal transfer, and pedestrian area in Hamburg, Germany. Boarding stations for marine tours are shown. Local shops and services are behind the photographer.

Intermodal terminal.
Santa Clara County, California

4 Existing Transportation System

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4. EXISTING TRANSPORTATION SYSTEM

The District's existing transportation system serves private autos, goods movement vehicles, transit, pedestrians, and cyclists to differing degrees in each neighbourhood. Before developing strategies to move towards the Vision, it is important to understand the existing transportation network. This section provides an overview of the existing policies and infrastructure, as well as existing travel patterns and data. It is important to note that no additional data was collected and only existing available sources were used.

4.1 Existing Policies and Network Attributes

4.1.1 All Modes / Intermodal

There are a few places that facilitate transfers between modes in West Vancouver, the largest of which is Park Royal, which has a park-and-ride facility. There is also a park-and-ride lot just off of the Upper Levels Highway at Westmount. Horseshoe Bay is another major intermodal transfer point. There are other, more informal park-and-ride locations along transit routes.

All West Vancouver Transit buses are equipped with bike racks, which allow cyclists to travel by bicycle to a transit stop, load their bicycle, ride transit, and have their bicycles with them on the opposite side of their trip.

4.1.2 TDM and Policy

The District updated its Official Community Plan (OCP) in 2004. The plan outlines eight Planning Principles for the District, including reducing auto dependency. It also identifies key transportation objectives and policies. The most recently updated map showing special areas and OCP policy highlights is illustrated in **Exhibit 14**. The Dundarave, Horseshoe Bay, and Park Royal areas include guidelines encouraging secure bicycle storage. Guidelines for multi-family areas also encourage secure bicycle storage.

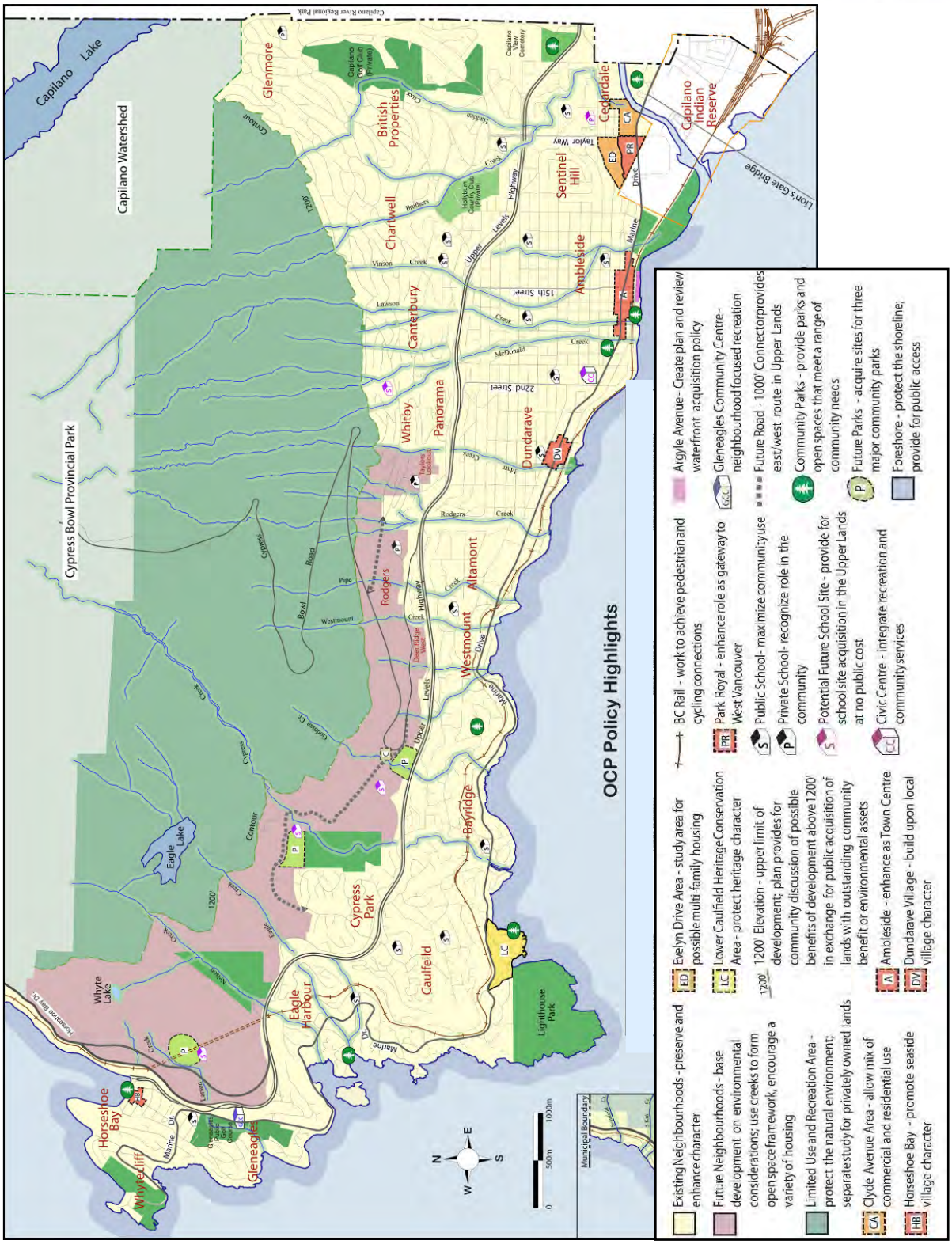

Exhibit 14: OCP Policy Highlights

Source: District of West Vancouver

OCP Transportation Objectives

1. Reduce resident's dependency on private automobiles.
2. Promote alternatives to private vehicles, including the enhancement of public transportation and walking and cycling networks.
3. Endorse road safety standards.
4. Minimize pavement widths and support landscaped boulevards based upon adopted policies for roads and boulevards.
5. Coordinate transportation delivery solutions with neighbouring municipalities and other government agencies.
6. Improve transportation accessibility for persons with disabilities.

OCP Transportation Policies

1. Coordinate and consult with provincial agencies, neighbouring municipalities, and the Squamish Nation to enhance public safety and mobility.
2. Pursue comprehensive approaches to local transportation planning, including support of sustainability principles.
3. Coordinate transportation infrastructure with local area planning to ensure that it contributes to and sustains neighbourhood character.
4. Support efforts to improve transportation safety and accessibility.
5. Enhance and expand transportation options to reduce auto dependency and associated environmental impacts.[6]

The District also has a number of existing transportation policies that are moving towards the objectives outlined in the OCP. An example is Objective 8 of its Environmental Strategy, which states: "Promote and provide sustainable transportation options." The Ambleside Town Centre Strategy was adopted in 2008 via amendments to the Ambleside development permit area and OCP policies. The amendment included allowances for variances to the parking standards and provision of shared parking areas. The Evelyn Drive Development Permit Area is intended to meet Canadian Green Building Council's Leadership in Energy and Environmental Design standards or similar, and includes a guideline that states "roads will be people friendly, and the streetscape will reflect an attractive, intimate friendly neighbourhood".[7]

[6] District of West Vancouver, Official Community Plan, 2004.
[7] Evelyn Drive – District of West Vancouver, Planning, Feb, 2010

District council recently adopted two important bylaws: Bylaw 4370 (Traffic and Parking Bylaw) allows neighbourhood zero emissions vehicles on roads up to 50 km/h and Bylaw 4380 (Good Neighbour Bylaw) prohibits motor vehicle engines from idling more than five minutes in each hour. District fleet vehicles, both transit and construction, have undergone a conversion to 20% bio-fuel, which reduces GHG emissions. Bylaw 2200 (Zoning) for the Comprehensive Development Zone 3 (i.e. the Rogers Creek area) (CD3) requires that cluster housing and apartments have a minimum of 2 bicycle storage spaces per dwelling unit. The District also has low on-site parking requirements for residential developments compared to other municipalities; many residential areas have more parking than required by the bylaw. The CD3 zone has a parking maximum of two spaces per dwelling unit, excluding visitor parking for apartments and cluster housing.

The Spirit Trail is a joint Provincial-Municipal initiative that provides for a multi-use trail from Horseshoe Bay to Deep Cove. It is to be implemented over a number of years by the three North Shore municipalities.

4.1.3 Pedestrian

The pedestrian network includes sidewalks and trails throughout the District and includes both recreational and commuter routes. The Parks and Open Space Plan identified trails in West Vancouver, as shown in **Exhibit 15**. The District does not have a database identifying which roadways have sidewalks.

The District has been rapidly expanding the pedestrian network, with 10 km of new sidewalk constructed since 2004. Marine Drive has sidewalks on both sides of the roadway through Ambleside and Dundarave and proposals for new developments north of the highway have trail networks planned. The Seawall is a wide pedestrian connection along the waterfront through Ambleside and Dundarave. The first stage of the Spirit Trail from Lions Gate Bridge to 19th Street is currently underway. When completed, the Spirit Trail will provide a continuous pedestrian connection across West Vancouver from Park Royal to Horseshoe Bay. It will also link eastwards to North Vancouver District and beyond.

In 2007, schools in the District participated in a Walk to School Week. 78% walked at West Bay Elementary and 83% walked at Lions Bay Community School. Traffic calming measures have been implemented around schools to improve the pedestrian atmosphere, improve safety, and reduce emissions.

The District also completed the Ambleside Gateway project in 2008, including an improved pedestrian environment separated from vehicle traffic between 11th and 13th Streets on Marine Drive, resulting in a 15% increase in pedestrians.[8]

[8] September 2006 to October 2008

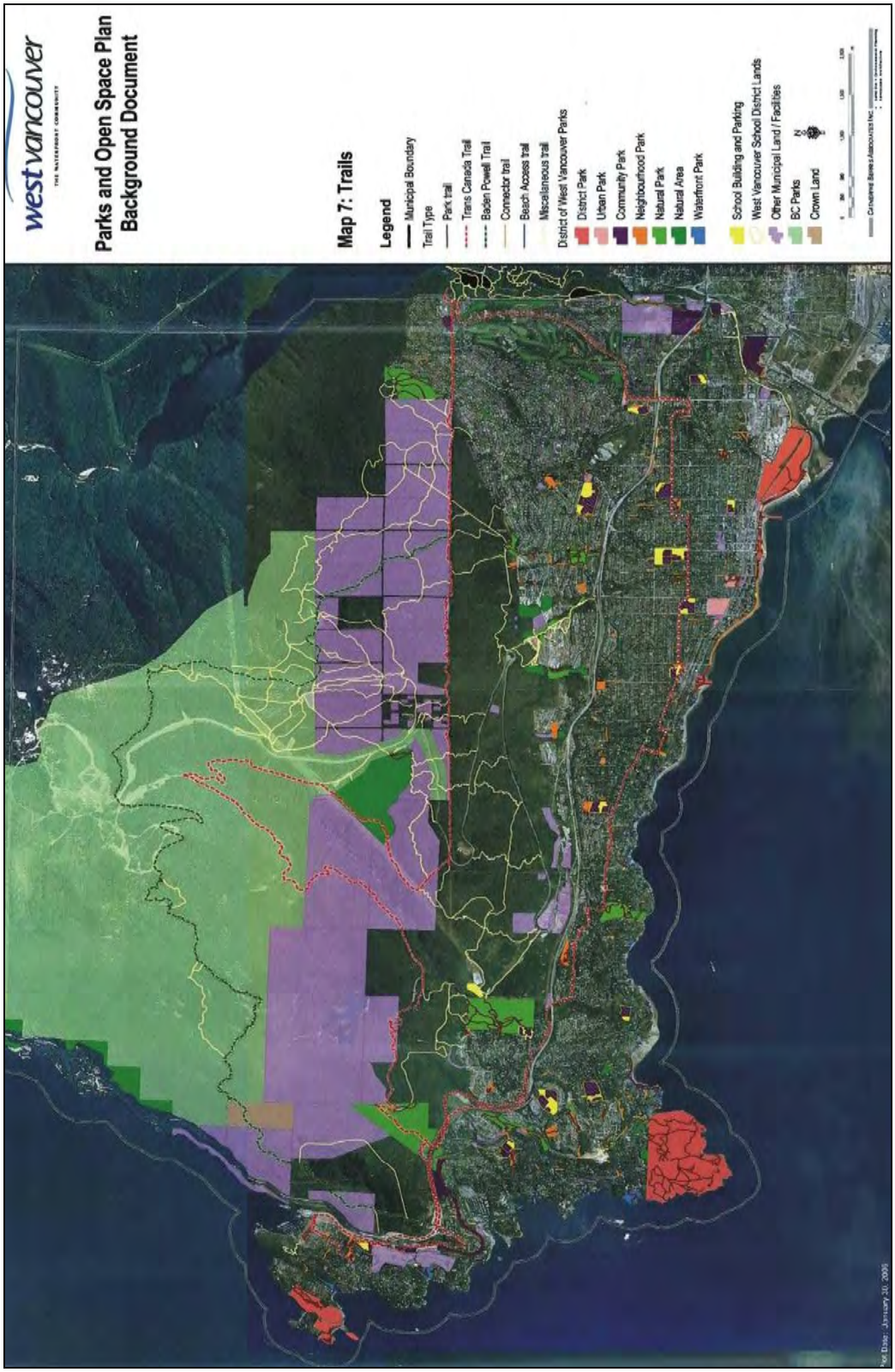

Exhibit 15: Parks and Open Spaces Trails Map

4.1.4 Cycle

Existing cycling routes and lanes are limited and include the shoulders of Highway 1, the approaches to the Lions Gate Bridge, Stevens Drive, and Phase 1 of the Spirit Trail. The existing cycling network is shown in **Exhibit 16**. Historically, cycling has not been a major focus for transportation infrastructure in the District. The topography in some areas can present a challenge for some less experienced cyclists. Recently, the increasing demand for cycling infrastructure and collaboration with local cyclists has brought the needs and gaps of this network into focus.

The District adopted the Cycling Network and Greenway Plan in 2007. This plan is a guide for future bicycle route development in the District. It identifies a number of planned cycling corridors, as shown in **Exhibit 17**. The Spirit Trail is a major success stemming from the Cycling and Greenway Network Plan, although many other recommendations, including those intended to provide for commuter cyclists, have not been implemented. Other recent successes for cycling include the Ambleside Gateway project. Completed by the District in 2008, the Ambleside Gateway resulted in a 40% increase in cyclists.[9]

[9] September 2006 to October 2008, District of West Vancouver, Engineering

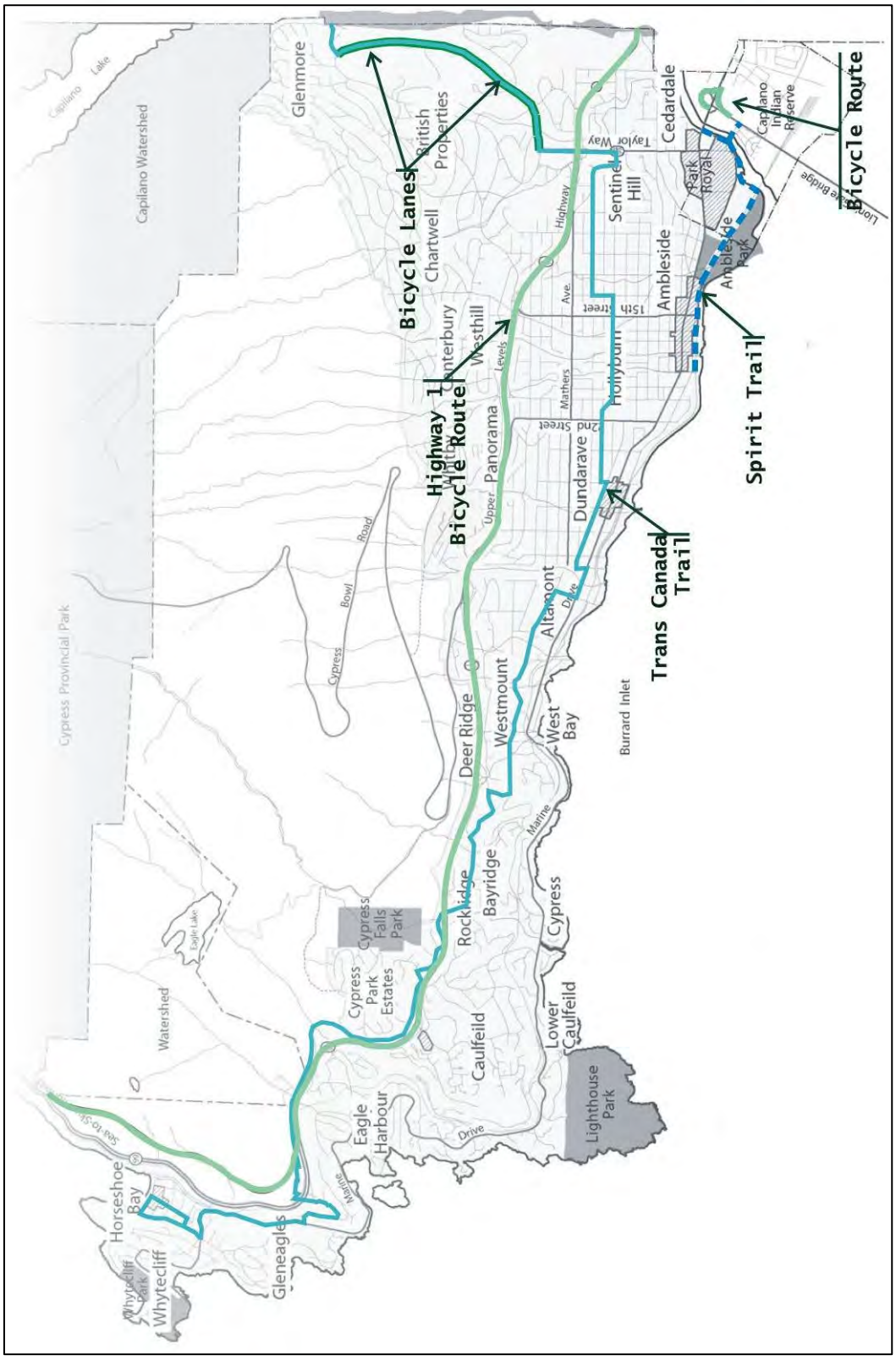

Exhibit 16: Existing Cycling Network

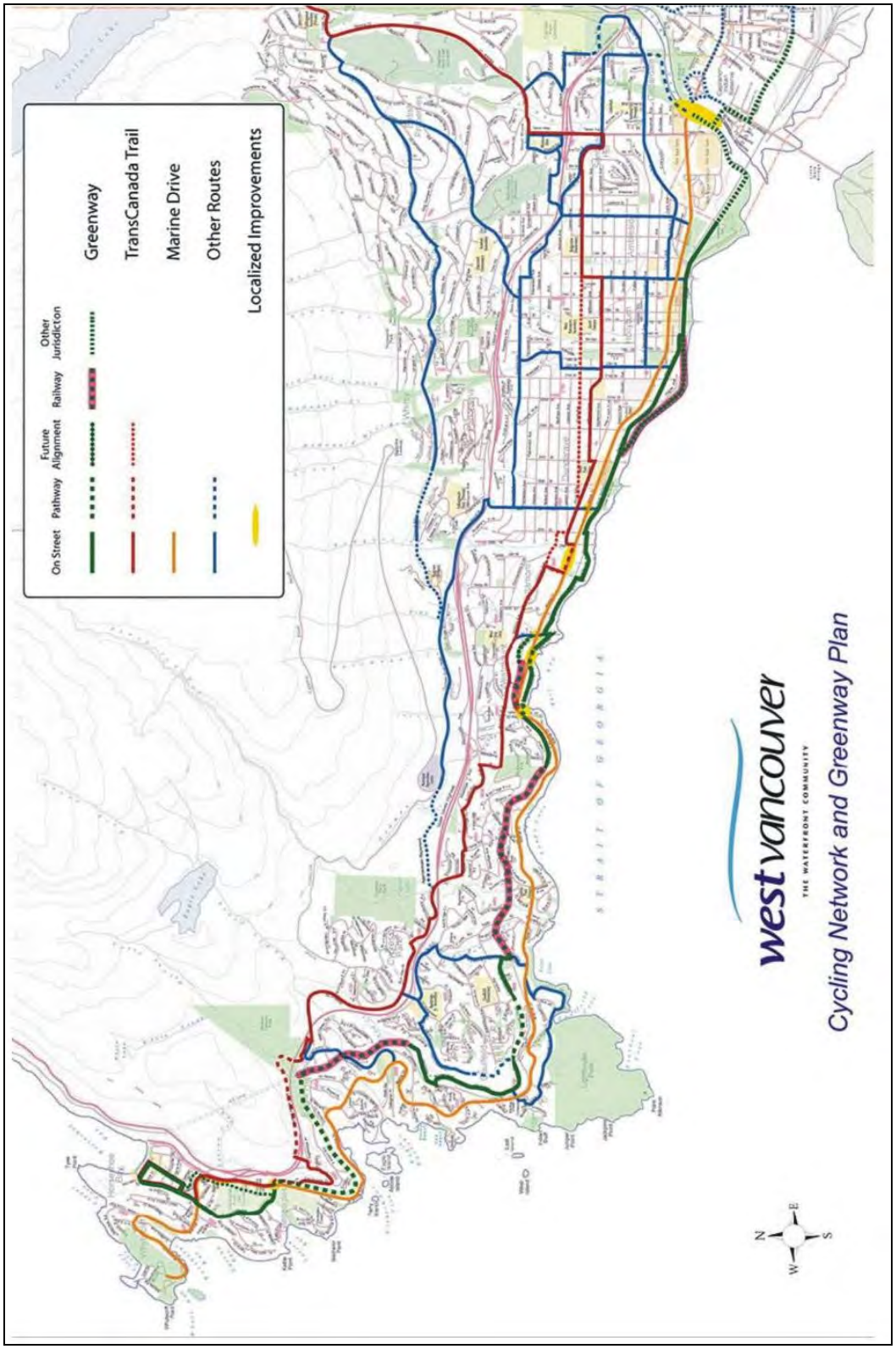

Exhibit 17: Planned Cycling and Greenway Network (2007)

4.1.5 Transit

Transit in West Vancouver is provided by West Vancouver Transit in cooperation with TransLink. West Vancouver Transit has 43 conventional buses, 3 articulated buses, and 5 community shuttles. All buses are bike rack equipped and wheelchair accessible as illustrated by a West Vancouver Blue Bus with bike rack in use on the 250 Horseshoe Bay route. The transit network is primarily focused on the Marine Drive corridor in Ambleside, Park Royal, and Dundarave. Less dense areas are covered by one-way loops. Transit routes are illustrated in **Exhibit 18**.

West Vancouver Blue Bus equipped with bicycle rack

Routes have a variety of frequencies, which result in different levels of service. The quality of transit service to an area is typically determined by service within walking distance (approximately 400 m) from homes and businesses.

Exhibit 19 shows the service frequency for all areas of West Vancouver. Four frequencies are shown:

- Greater than four buses per hour;
- Approximately four buses per hour;
- Alternating service with four buses per hour in the peak direction and two buses per hour in the other direction; and,
- Equal to or less than two buses per hour.

The exhibit shows that the Marine Drive corridor in Park Royal, Ambleside, and Dundarave has the highest quality of service. The highest ridership is on the 250 Horseshoe Bay / Dundarave / Vancouver, the 255 Capilano University / Dundarave, and the 257 Horseshoe Bay Express / Vancouver.

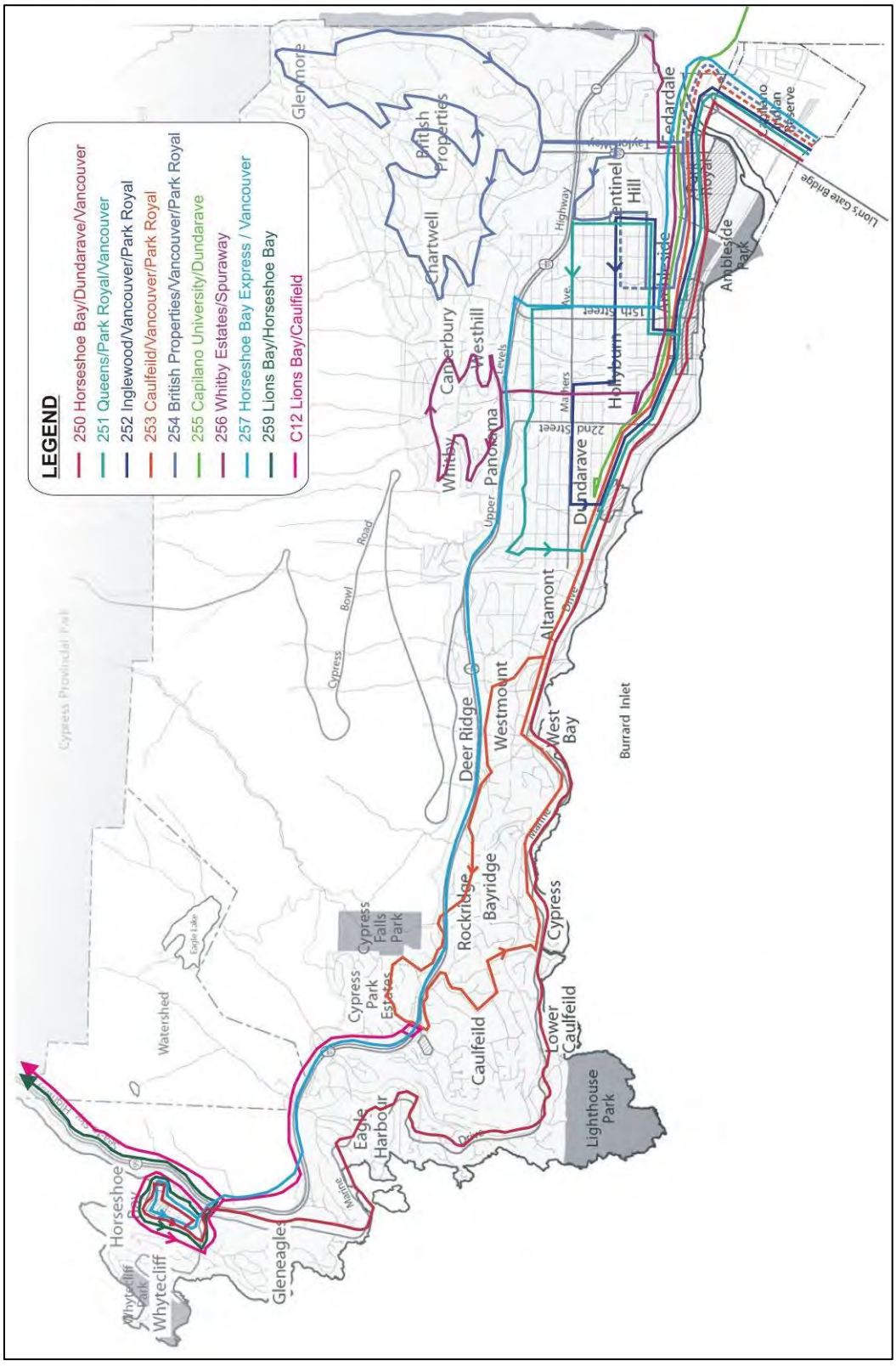

Exhibit 18: Existing Transit Network

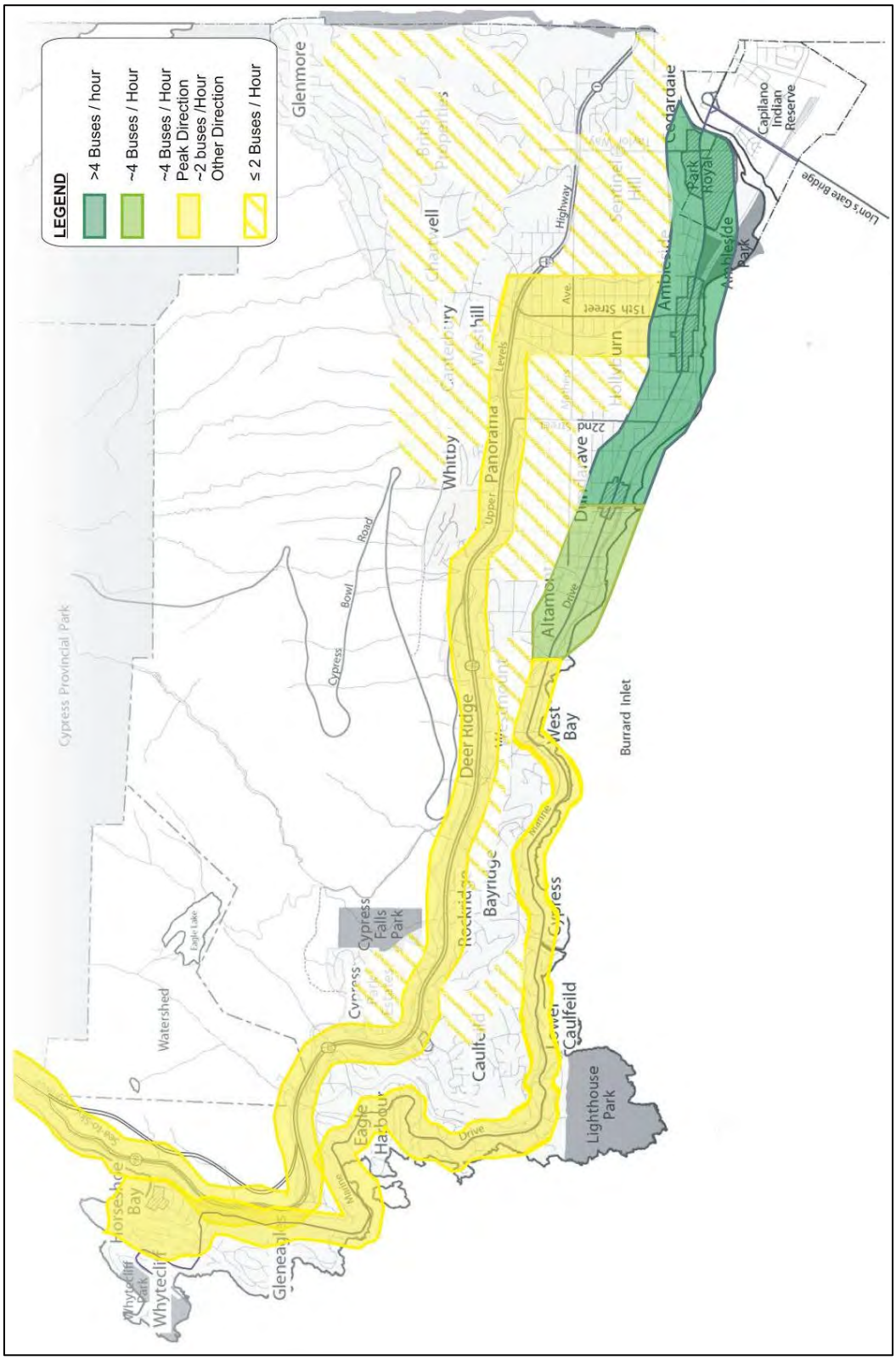

Exhibit 19: Existing Service Frequency

West Vancouver Transit achieved ridership of 4.3 million revenue rides in 2008[10]; ridership increased 21% from 2003 to 2008. Transit service hours increased by 30% since 2000. This is consistent with established patterns shown in **Exhibit 20**; ridership typically increases as services hours increase.

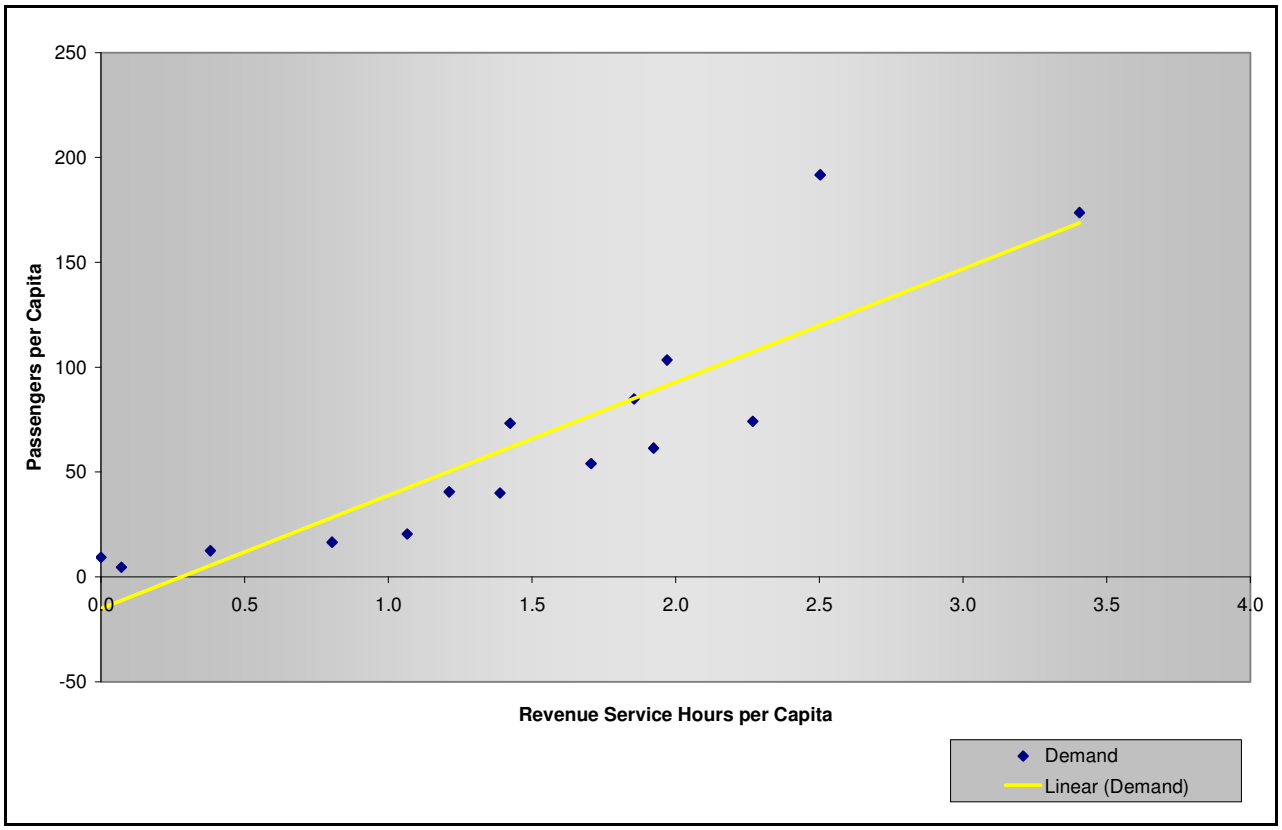

Exhibit 20: Annual Service Demand per Capita in Canadian Transit Agencies[11]

[10] Provided by West Vancouver Transit, 2010

[11] Developed by iTRANS based on data from CUTA Transit Systems Fact Book Agencies shown are: Go (Greater Toronto), AMT (Montreal Region), Toronto, Vancouver, Montreal, CIT Association. The exhibit shows the number of passengers for each transit system compared to the total 'revenue service hours'. A revenue service hour is an hour where a transit vehicle is operational on a route and taking passengers – it does not include out of service buses.

4.1.6 Alternative Technologies and Traditional Auto

The roadway network in West Vancouver has two main east / west spines; Highway 1, which is under the jurisdiction of the British Columbia Ministry of Transportation (MoT) and Marine Drive. Highway 1 is commonly referred to as the Upper Levels Highway and is also designated as Highway 99 until the Eagle Ridge interchange where Highway 1 continues to the BC Ferries terminal, while Highway 99 continues north to Squamish and Whistler.

Below Highway 1, a number of north / south routes connect to Marine Drive. Routes become less direct towards the west of the District. In the east, the District is connected to the City of Vancouver and points south via Lions Gate Bridge. North of Highway 1, Cypress Bowl Road connects the District to Cypress Provincial Park. There are plans to extend the Chippendale Connector as an east / west route north of Highway 1. The alignment of the eastern portion of the Chippendale Connector has been finalized. The western alignment is to be determined. The existing road network is shown in **Exhibit 21**.

Existing Traffic Calming Measures

Traffic Calming feature at Westmount Road in West Vancouver

The District has completed traffic calming and roadway upgrades around schools including pull outs, operational improvements, sidewalks, signage, and no idling regulations. A number of traffic calming projects are now complete, including roundabouts, and narrowings. Traffic calming resulted in an 84% reduction in speeds over 70 km/h on Westmount Road.

The District has embraced alternative technologies, converting all municipal fleet vehicles to 20% biofuel. Council also adopted Bylaw 4370 in 2009 allowing neighbourhood zero emissions vehicles on roads with speed limits up to 50 km/h.

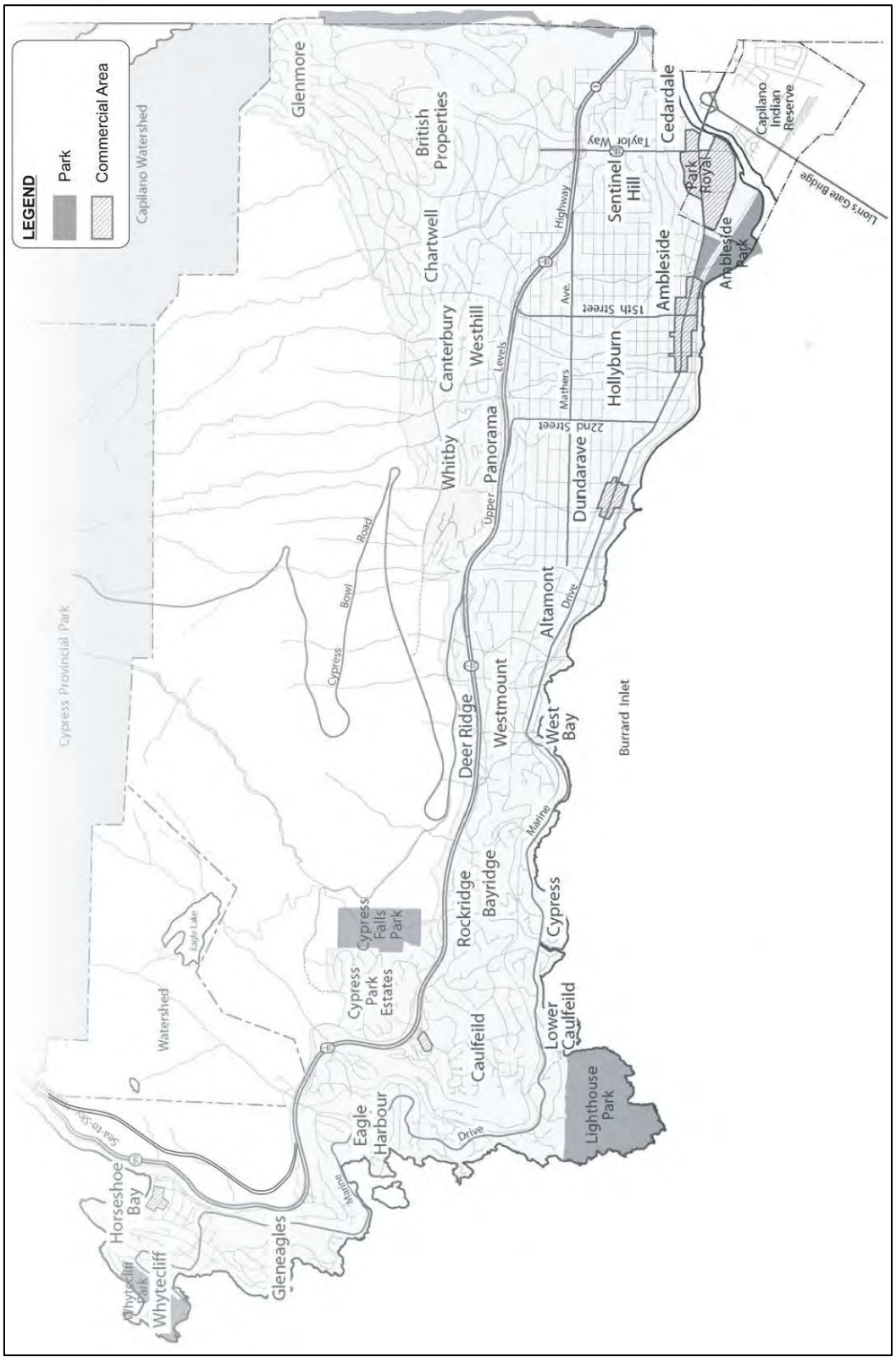

Exhibit 21: Existing Roadway Network

4.1.7 Goods, Marine / Rail

The road network in West Vancouver branches off of two main east / west connections: Marine Drive and Highway 1; trucks are permitted on both of these roadways. Truck movements connecting Highway 1 to Marine Drive are restricted in the downhill direction, except at Taylor Way and in Horseshoe Bay. **Exhibit 22** shows the existing goods movement restrictions in West Vancouver.

In 2009, District Council approved a new pilot project; a marine commuter route from Ambleside to Downtown by a private company. Except for the Horseshoe Bay Ferry Terminal, this is the only marine passenger transportation currently operating in the District.

CN Rail operates a rail line that runs east-west through the District and transports primarily natural resources and commercial goods, except for daily tourist trains to and from Whistler during the tourist season.

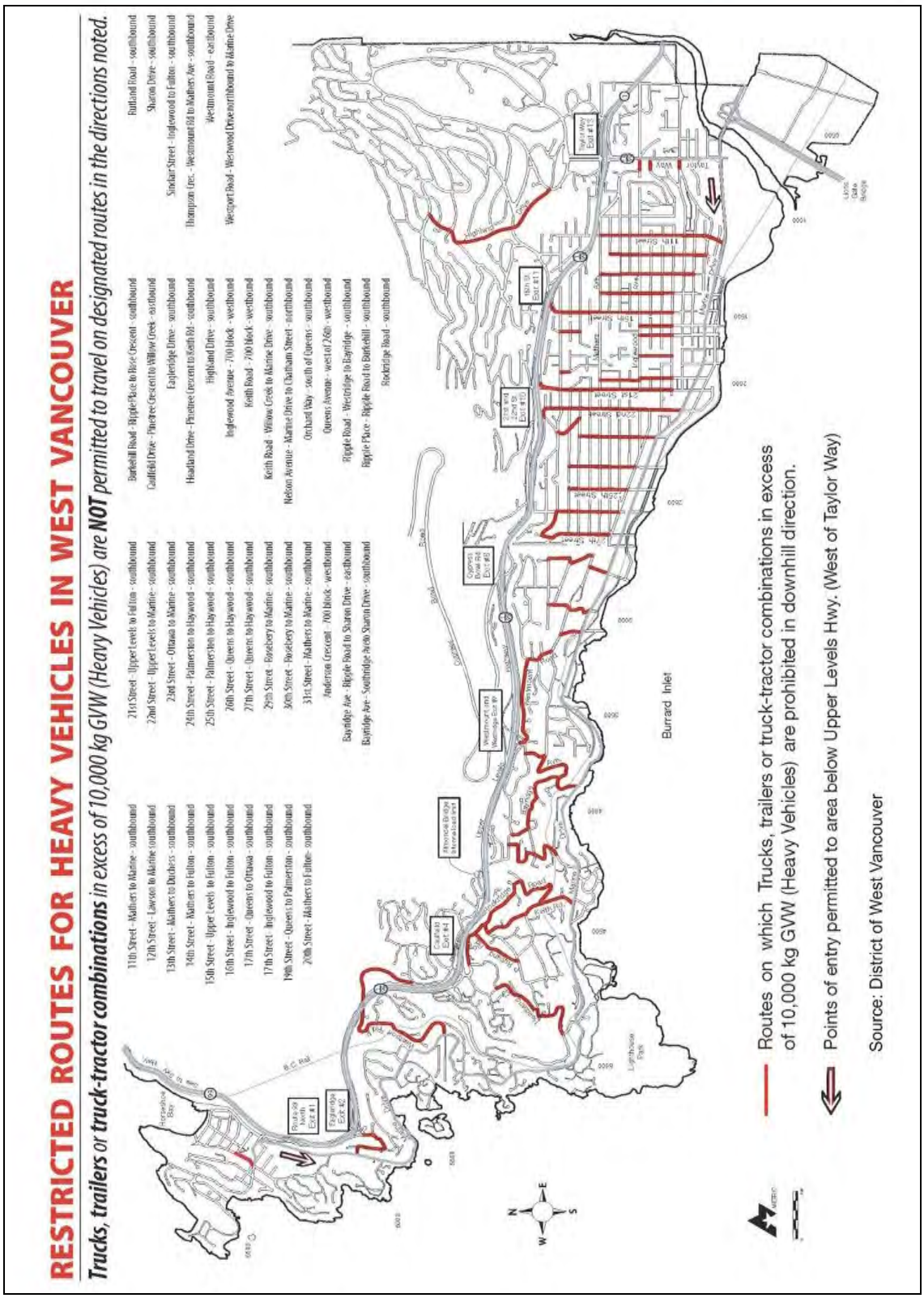

Exhibit 22: Goods Movement Restrictions

4.2 Existing Travel Patterns

Travel in West Vancouver is preliminary by single occupant vehicle, with most commuting trips destined outside of the District. Based on Statistics Canada 2006 Census data, the labour force participation rate is 57.7%, meaning that 42.3% of the population over the age of 15 are not employed or actively seeking employment. The proportion of the population not in the labour force is much higher in West Vancouver than the 35.4% in British Columbia as a whole. This portion of the population does not commute to workplaces but has other transportation needs. The total employed labour force in West Vancouver is 19,565 people; approximately 20% of this total work from home. Approximately 7% have no fixed workplace address; this population is likely to be drivers and unlikely to change their normal commuting mode. Only 17% of the labour force work at fixed locations within the District, while approximately 53% work in neighbouring municipalities. This demographic data shows that commuting travel in the District is focused east to North Vancouver and to the Lions Gate bridge.

Statistics Canada also provides data on the mode used to go to work. The majority of trips to work are by car, truck, or van as the driver at 75%. The mode split is presented in **Table 2** and **Exhibit 23**.

Table 2: Existing Mode of Transportation to Work for the District Municipality of West Vancouver

Mode of transportation to work	Total (people)	Percentage
Car, truck, van, as driver	11,570	75%
Car, truck, van, as passenger	1,040	7%
Public transit	1,445	9%
Walked or bicycled	1,065	7%
All other modes	235	2%
Total employed labour force 15 years and over with a usual place of work or no fixed workplace address	**15,360**	**100%**

Source: 2006 Statistics Canada - www.statcan.gc.ca

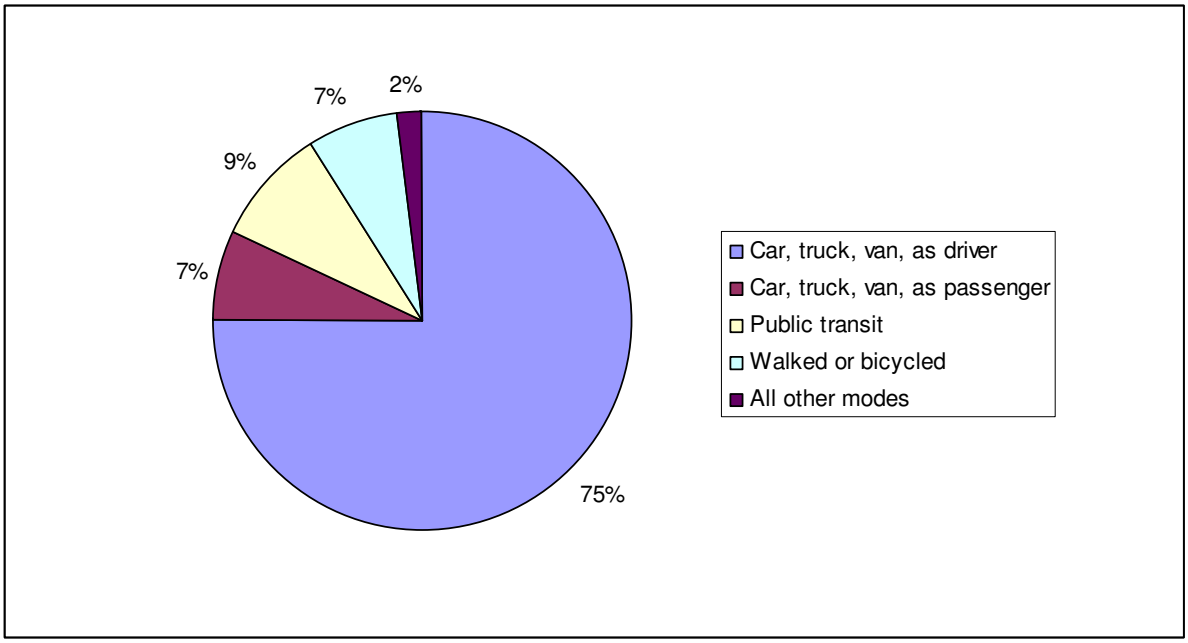

Exhibit 23: Mode of Transportation to Work

Based on the 2004 TransLink Trip Diary survey, approximately 78% of trips that originate on the North Shore stay on the North Shore. This is an increase from the 1999 survey, when only 76% of trips stayed on the North Shore. There is demand for transportation options within the North Shore communities, as well as demand to and from Vancouver.

5

Current Initiatives

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5. CURRENT INITIATIVES

The District has had recent success and continues to have a number of ongoing projects and initiatives that positively impact the transportation network. This section presents some of these projects.

5.1 Recent Successes

There are a number of initiatives over the past ten years that have, with increasing frequency, made a positive impact on the transportation network, both sustainably and functionally. Some of these successes include:

- Pedestrian Space: 10 km of new sidewalk implemented since 2004;
- Safety upgrades adjacent to schools: pull outs, operational improvements, sidewalks, signage, no idling signs;
- Traffic calming: roundabouts, speed humps, medians and curb extensions;
- Traffic calming on Westmount Road: 84% reduction in speeds over 70km/h;
- Increased transit hours by 30% since 2000;
- Increased transit ridership by 21% since 2003;
- Conversion to 20% biofuel for municipal fleet (transit and construction);
- Spirit Trail – Phase 1 under construction;
- New pilot project: marine commuter service from Ambleside to Downtown;
- Adopted Neighbourhood Zero Emission Vehicle Bylaw: Zero emissions vehicles allowed on roads posted at 50km/h or less;
- Ambleside Gateway Project completed: 15% increase in pedestrians, 40% increase in bicycles (September 2006 to October 2008);
- Walk To School week: 78% walked at West Bay Elementary, 83% at Lions Bay;
- Adopted Good Neighbour Bylaw 4380, which prohibits motor vehicle engines from idling (running while the vehicle is stationary) more than 5 minutes out of every hour; and,
- Bicycle Valet: Provided for Ambleside summer concert – Sarah MacLachlan.

5.2 Infrastructure Improvements

There are a number of infrastructure improvements ongoing in the District. These include:

- Proposed bicycle and pedestrian bridge over Capilano River as part of the Spirit Trail;
- New westbound bridge over the Capilano River on Marine Drive with a combined bicycle path and pedestrian walkway;
- Extension of Spirit Trail – West to 19th Street;
- Bus Priority Lane on Marine Drive to access Lions Gate Bridge;
- Proposed upgrade to Welch Road for the Spirit Trail to connect to North Vancouver;
- Development of Low Level Road connection to District of North Vancouver through Squamish Nation IR#5;
- Park-and-ride facilities at key transit nodes;
- Proposed revenue generating bus shelters;
- Revisions to Zoning Bylaw which accommodate alternative modes of transportation;
- Upgrades to Ambleside Field "A" and associated parking; and,
- Proposed installation of automated gates at rail lines to improve safety.

Spirit Trail, West Vancouver

5.3 Climate Action Working Group (CAWG)

The Climate Action Working Group's **goal** is to "facilitate the community's rapid move towards fossil fuel freedom".[12]

The Climate Action Working Group acknowledged that 98% of West Vancouver's emitted greenhouse gases (GHGs) arise from residential homes and automobiles, as opposed to municipal buildings and fleets. Since the Municipality is already taking action to reduce its corporate emissions (as a signatory to the BC Climate Action Charter), the Working Group decided to focus its work on community emissions.

[12] District of West Vancouver Planning Staff

The recommended actions within the final Climate Action Plan (CAP) will, with assistance from Government, concentrate on the citizen's role in climate action to the greatest degree possible.

The Climate Action Working Group has proposed that the community should consider the same targets that the Province of BC adopted, which is at least a 33% reduction of emissions below 2007 levels by 2020 and an 80% reduction by 2050. The Working Group is continuing to refine the details of its CAP, including the measurement and reporting tools required to meet these targets as proposed. The Working Group will also work with the District Planning Department to consult West Vancouver residents on these targets as well as to ensure the CAP is consistent with proposed Bill 27 OCP amendments.

5.4 Policy Changes

The current zoning bylaw is presently being rewritten to update specific policies, including environmental regulations, housing bulk and site development, secondary suites, and park zoning. The current bylaw, as discussed previously, encourages bicycle parking in new multi-family and commercial development, and has low minimum parking requirements for residential zones. The Rodgers Creek zone (CD3), includes a requirement for bicycle parking and parking maximums. The policies recommended in this report will inform updates to the parking and bicycle parking policies in the zoning bylaw.

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6 Transportation Challenges

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6. TRANSPORTATION CHALLENGES

The Consultants, District staff and the Working Group worked together to indentify the challenges facing West Vancouver. The challenges represent gaps and issues in the transportation network that must be addressed to reach the Vision. These challenges were presented to the public for comment, and their input has been incorporated. This section presents the transportation challenges by mode.

6.1 All Modes

In order for a transportation system to be successful, it needs to act as a seamless, well-coordinated network, where transferring between modes is easy and comfortable, and the functioning of the network is taken into account in other decisions such as land-use planning. Transportation must be viewed broadly as the movement of people and goods, not of individual vehicles.

What is lacking or needs improvement for the system as a whole?

- Existing comprehensive data for measuring changes to individual modes / travel patterns over time, as well as for measuring success;
- A social marketing programme whereby citizens are updated on availability of alternatives and motivated to shift mode;
- Transportation planning capability for all modes (e.g. District staff do not have a dedicated sustainable transportation planner);
- Explicit consideration of all modes in development, including trading off one for another;
- Integrated land use planning; and,
- Provision of locations to comfortably transfer between modes, for example:
  - Park-and-ride locations with free parking for transit users;
  - Bicycle parking at transit stations;
  - Pedestrian / transit connectivity and improved bus stops;
  - North / south connectivity; and,
  - Use of marine transportation.

6.2 Transportation Demand Management and Policy

The functioning of the transportation system is intrinsically linked to the demand for transportation itself. In turn, the demand for transportation is influenced by a wide variety of factors and policies, many of which can be effective at the local level. One of the biggest challenges, faced by the District, is changing travel patterns and behaviour to facilitate a shift from single occupancy vehicles to sustainable modes of transportation.

What are the gaps in current TDM and policy?

- Most people in West Vancouver drive;
- A transportation plan for all types of travel;
- Explicit and consistent consideration of all modes in development;
- The need to expand integrated land-use planning;
- Public education about non-auto modes;
- A formal traffic calming policy; and,
- A data collection strategy as well as resources to allow it to succeed.

6.3 Pedestrian

Walking is the most universal form of transportation, and a key component of the transportation network. Pedestrians, including the disabled, are also among the most vulnerable transportation users because they are exposed and they typically travel at a slower rate than other transportation users. The quality and safety of pedestrian infrastructure strongly influence how comfortable pedestrians feel and the likelihood that travellers will choose to walk. Indirect routes cause greater inconvenience to pedestrians than they do to other transportation users because of the time and effort required to travel longer distances.

What is lacking or needs improvement for pedestrians?

- Mapping of existing and planned routes;
- Sidewalks on access points, especially to schools and transit at key locations like 15th Street;
- Appropriate levels of mobility and visibility due to intruding vegetation on sidewalks;
- An adoption of minimum pedestrian standards (policy guidance) – including minimum widths, infrastructure for a variety of roadway types, and walking distance to transit;
- Better accessibility for blind / disabled travellers, including addressing challenges such as grades, stairs, street furniture clearances, crosswalk buttons, audible signals, and Braille;
- Lighting on streets;
- Shortage of linkages to North Vancouver and access along the waterfront and Marine Drive;
- Shortage of connection north / south across Highway 1;
- Improved connections east-west above Highway 1;
- Enhanced pedestrians connections to other modes; and,
- Improved signal timing for pedestrians.

Exhibit 24 depicts the key gaps and issues in West Vancouver's pedestrian infrastructure.

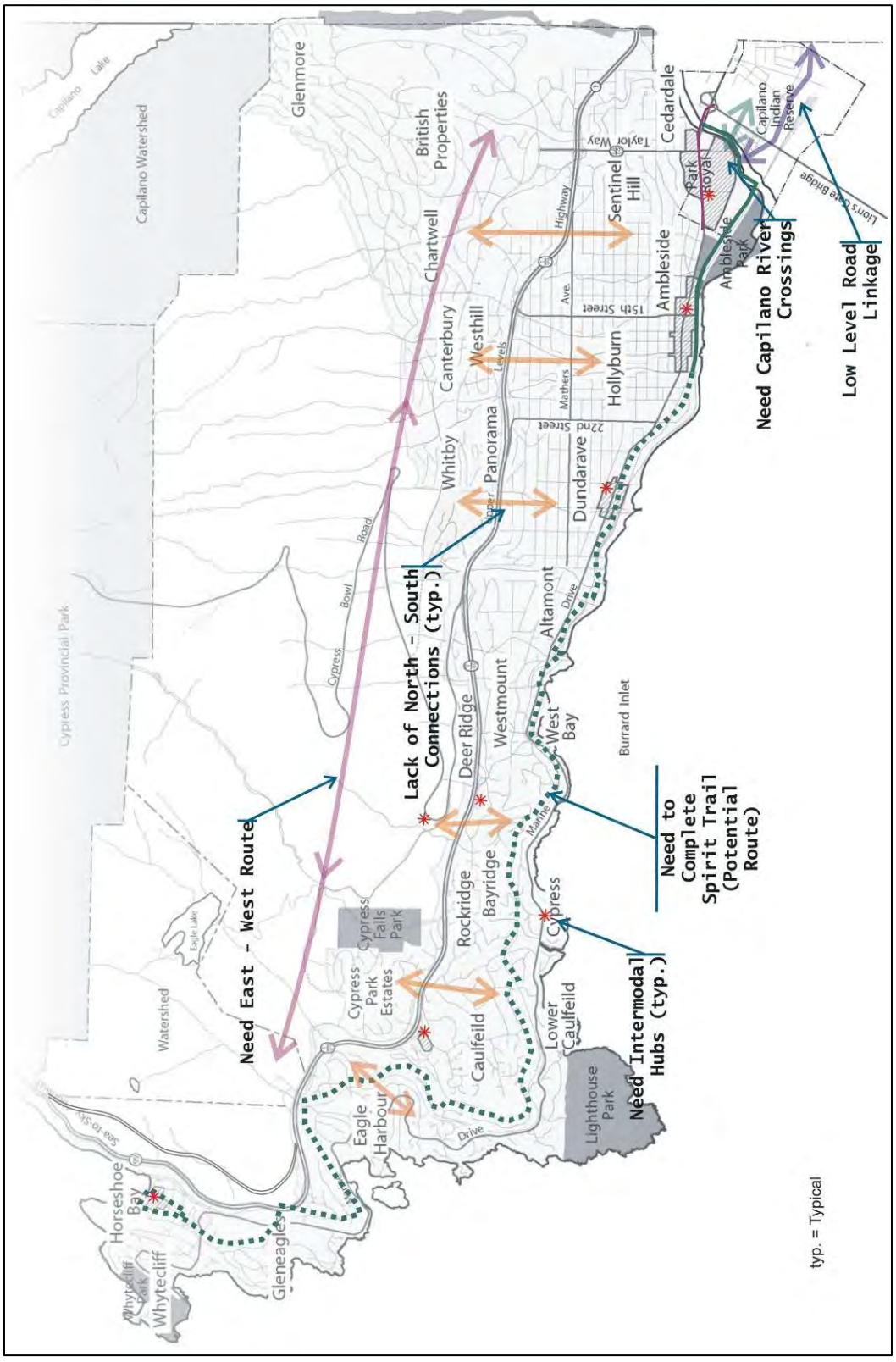

Exhibit 24: Pedestrian Gaps and Issues

6.4 Cycle

Cycling is an active mode of transportation that allows speed and flexibility. Cyclists are often required to share roadways with cars and trucks, and are expected to follow the same traffic regulations as motorised vehicles. Since bicycles generally travel at lower speeds than automobiles, and because they have less visibility and physical protection, special accommodations are required in order to provide equal comfort and safety. Different types of cyclists require different types of infrastructure: commuter cyclists who are comfortable travelling with traffic often travel at high speeds and prefer lanes and on-street routes. Recreational cyclists and many other cyclists aren't comfortable in traffic and require separated routes. There is limited existing commuter cycling infrastructure in the District and there is a desire to increase the number of formalized cycling routes and lanes.

What is lacking or needs improvement for cycling?

- Minimum bicycle standards for route construction (policy);
- Community policies are lacking for cycling;
- Improved safety for commuter cyclists;
- Co-habitation and proper and respectful interaction between cyclists and drivers;
- Formalized map of existing routes, proposed routes, and route types;
- Road markings and signage identifying some bicycle routes;
- Linkages to North Vancouver and access along the waterfront and Marine Drive;
- Shortage of connections north / south across Highway 1;
- Enhanced cycling connections to other modes;
- Shortage of bicycle parking at key locations (security, capacity);
- Requirements for bike facilities in new building developments, e.g. parking, storage, lockers, showers;
- Improved connections to Lions Gate Bridge, especially from Marine Drive and Taylor Way, and east-west above Highway 1;
- Bicycle lanes and signage on the Marine Drive corridor and other major commuting routes;
- Improved bicycle facilities at schools and community centres and bicycle routes to schools and community centres;
- Cycling education; and,
- Designated cycling routes and lanes on major commuting routes intended to allow cyclists to travel to the same destinations as drivers.

Exhibit 25 is a map showing key gaps and issues in the West Vancouver bicycle network.

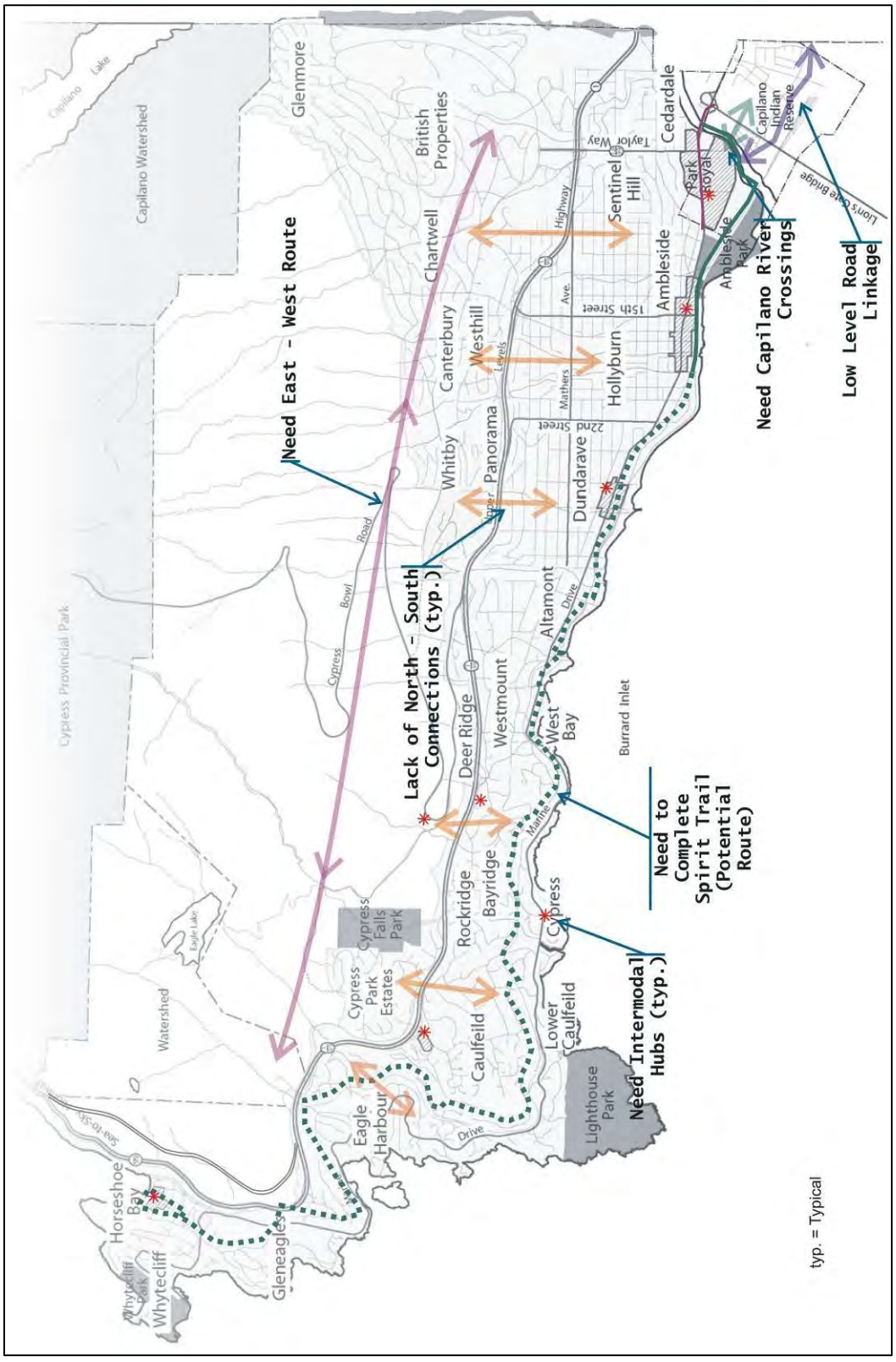

Exhibit 25: Bicycle Gaps and Issues

6.5 Transit

Transit is the sustainable mode that allows the longest trips at the greatest speed. For many transportation users, it is the only way to travel long distances on a regular basis. In addition, it provides a means to move a large number of people at high speeds using a minimal amount of space and energy per person. Because of the special ability for transit to efficiently move people, it is important to ensure that there is adequate service to meet the potential demand, that transit vehicles have priority over other vehicles at key points, and that transit is competitive with other motorised modes. Transit ridership is strongly connected to the frequency of transit service. Travellers will take transit more often if it is close, convenient, and reliable.

What is lacking or needs improvement for transit?

- Transit access for all residents, including frequent service within walking distance, shelters, appropriate hours of operation; accessibility of stops and vehicles for disabled residents;
- Expanded transit priority and better access to Lions Gate Bridge;
- More frequent service (challenge areas include west of 25th Street and north of Highway 1), especially considering the correlation between ridership and frequency;
- Better connectivity between communities; frequency and long routes are issues, travel outside the core area is difficult;
- Direct (no transfer) service to important North Shore destinations and through the region;
- Infrequent or one-way service in many areas (especially west of 25th Street and north of Highway 1);
- Regular east / west service north of Highway 1;
- Improved traveller information - clear schedules and maps for ease of use;
- Service to meet school needs;
- Higher-order transit – such as light rail transit (LRT), streetcar, bus rapid transit;
- Difficult to travel on the North Shore;
- Education and awareness among the public;
- Explore use of smaller buses;
- Funding to provide enhanced service; and,
- Balance of frequency vs. coverage.

Exhibit 26 illustrates key gaps and issues in West Vancouver's transit network.

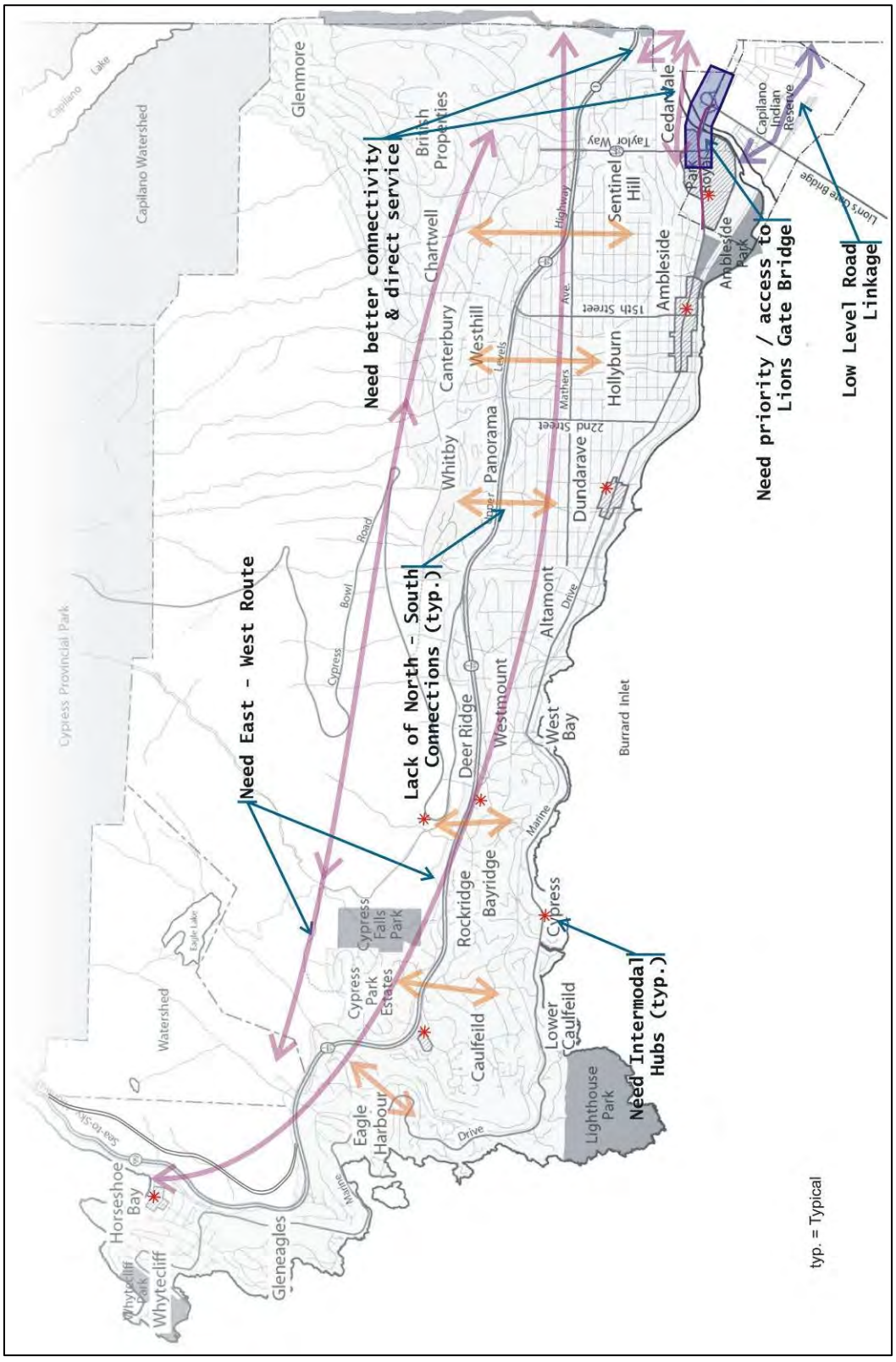

Exhibit 26: Transit Gaps and Issues

6.6 Alternative Technologies

Alternative technologies provide an opportunity to mitigate some of the negative impacts of modes such as traditional auto by reducing emissions and controlling traffic congestion. However, specific support is needed for these technologies to become more widespread.

What is lacking or needs improvement for alternative technologies?

- Infrastructure such as: charging stations for all new multi-family residences, alternative fuel services (e.g. public charging for electric vehicles / hybrid electric vehicles, propane, ethanol stations); and,
- Expanded innovative policies, such as: provisions for low speed vehicles on Marine Drive, policy encouraging / promoting new technologies.

Exhibit 27 illustrates road infrastructure and connectivity gaps and issues.

6.7 Traditional Auto

Traditional auto has the benefit of serving certain specialised trips that would be impossible or impractical by other modes. However, because of their apparent convenience and speed, they have grown to service trips that could more efficiently be taken by other modes, resulting in unnecessary congestion and pollution. In order to maximise the efficiency of the transportation network, solutions are required that provide more room for trips that must be made by traditional auto while encouraging people to explore other options for trips that could easily be taken by other modes.

What is lacking or needs improvement for traditional auto?

- Priority for electric and hybrid vehicles;
- Formal traffic calming policy;
- Limited support for car-sharing, car pooling (e.g. designated parking);
- Parking pricing strategy;
- Key linkages (e.g., Lower Level Road, north / south connectivity in the western section of West Vancouver); and,
- Capacity improvements at key locations (15th Street / Mathers Avenue, at Taylor Way / Marine Drive).

What are the challenges for traditional auto?

- Too many autos at schools during drop-off times;
- Emissions from traditional autos contravene climate change commitments;
- Mitigating increasing costs for road construction and maintenance; and,
- Single occupancy vehicles continue to add congestion.

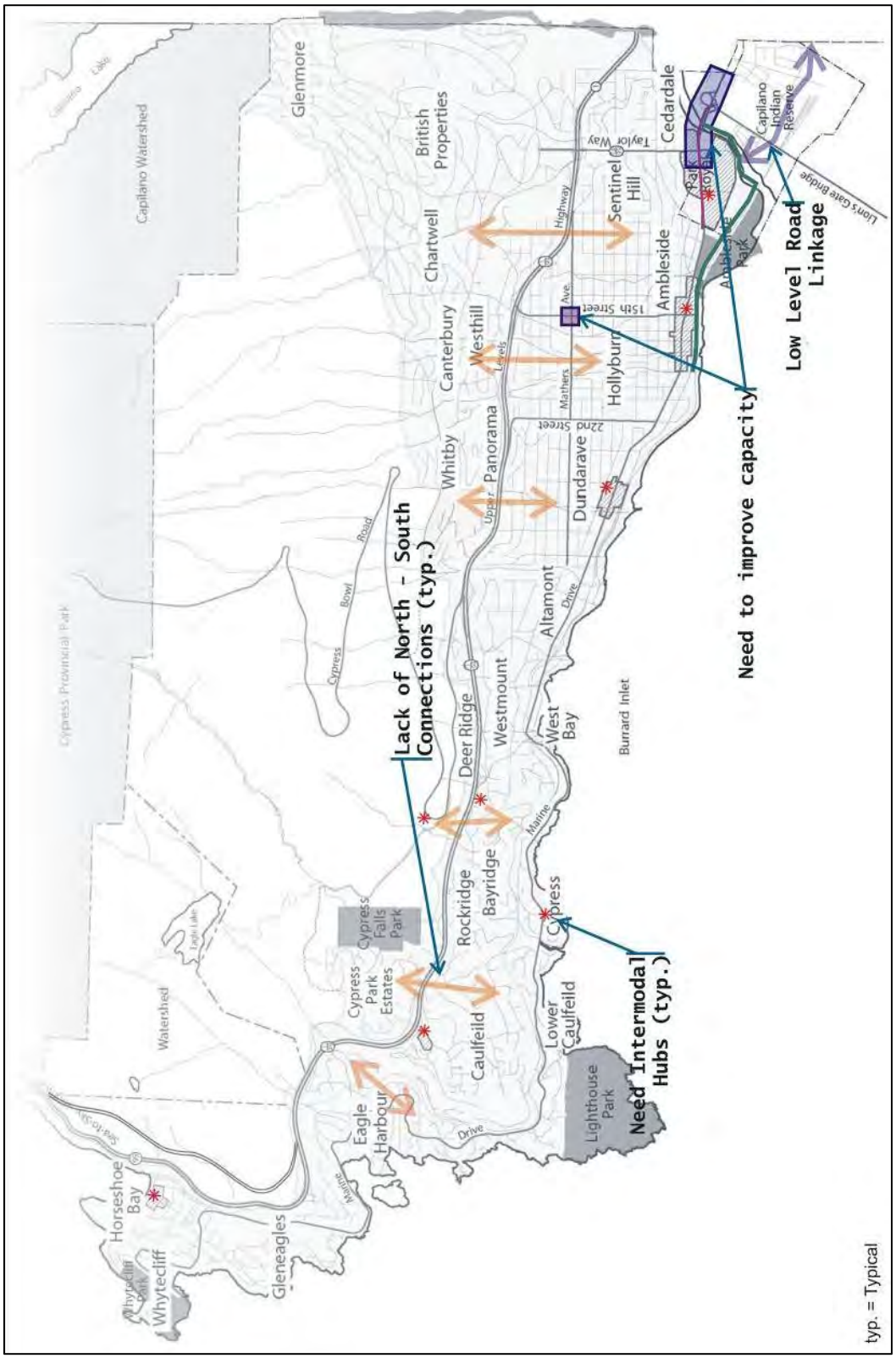

Exhibit 27: Road Infrastructure and Connectivity Gaps and Issues

6.8 Goods

Goods movement is important for the success of the local economy; however it is often overlooked in transportation planning. As well, inefficient use of the transportation network can result in unnecessary challenges to the movement of goods. Policies and targeted infrastructure improvements at key choke points are important factors that must not be overlooked in order to ensure that goods can move smoothly throughout the District.

What is lacking or needs improvement for goods movement?

- Parking priority for goods movement vehicles to avoid double parking and circling the block, which wastes fuel and adds to traffic;
- North / south west of 21st Street;
- Capacity improvements at key locations, e.g., on 15th Street, near schools, near transit exchanges;
- Capacity improvements at Marine Drive approach to Lions Gate Bridge;
- Improved safety for freight vehicles on Taylor Way due to steep grades; and,
- Under height bridge on Marine Drive at the Lions Gate Bridge.

6.9 Marine / Rail

Both the ocean and the rail tracks that run through the District represent potentially efficient means of transportation that are not currently being used to their full potential.

What is lacking or needs improvement for marine and rail transport?

- Increase use of the water for public transportation; and,
- Local infrastructure to accommodate goods and passenger loading and unloading for rail transportation.

6.10 Special Transportation Challenge Area – Approach to Lions Gate Bridge

The Lions Gate Bridge is West Vancouver's connection to Downtown Vancouver and the Lower Mainland. The access to the bridge also serves traffic travelling east / west on the North Shore; it is a key transportation link. This area is currently lacking in pedestrian and cycling connections across the Capilano River, and vehicle and transit movements face congestion in the peak periods. **Exhibit 28** illustrates these challenges.

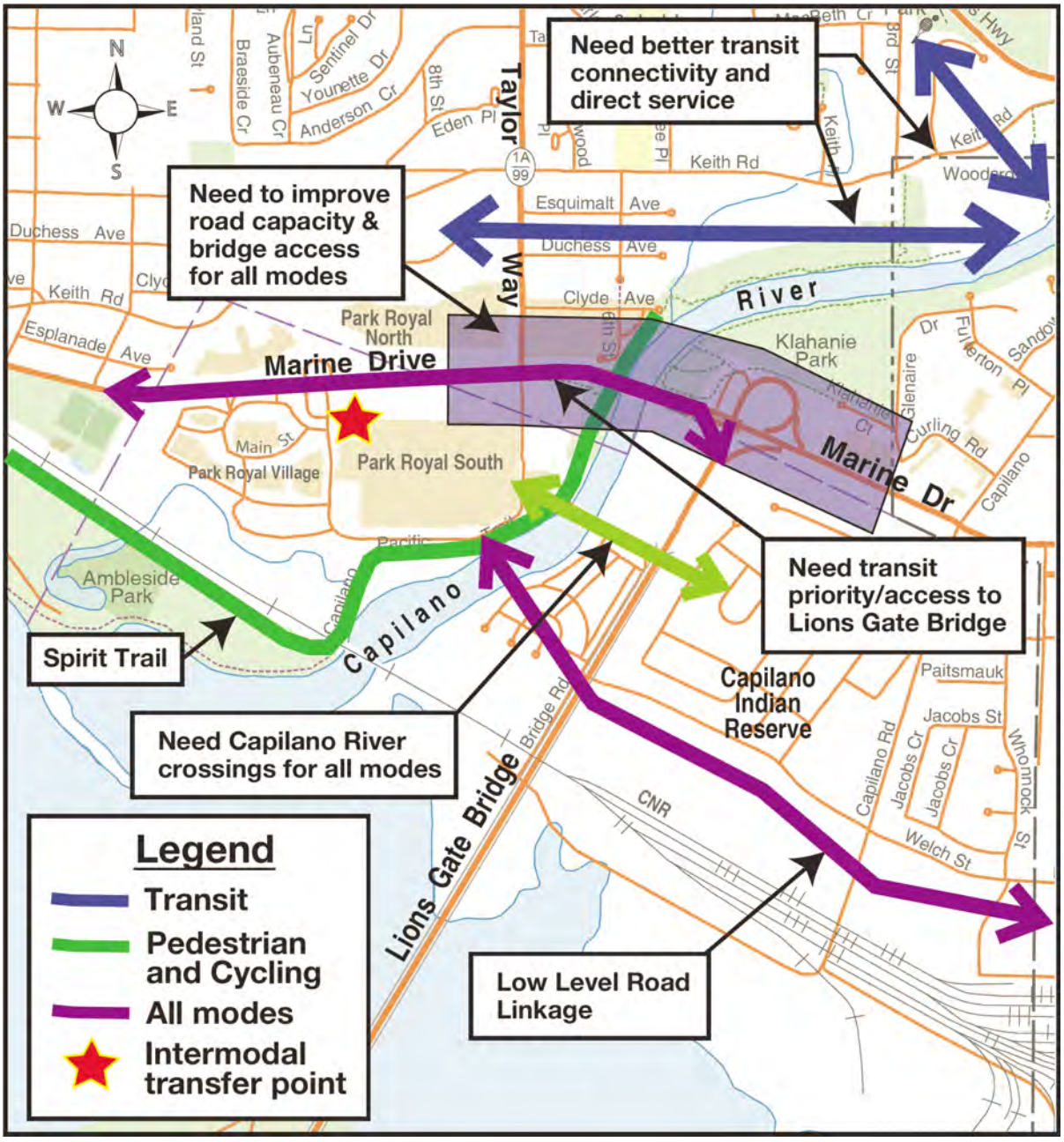

Exhibit 28: Lions Gate Bridge Access Challenges

A number of initiatives intended to address the challenges in this area are already in progress, including crossings of the Capilano River for pedestrians and cyclists, transit priority, and improved roadway capacity. These were discussed previously in **Section 5**.

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7 Data Collection and Monitoring

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7. DATA COLLECTION AND MONITORING

While the District's transportation objectives and issues can be described without statistics, evaluating the success of the implementation of the strategic plan will require a framework of performance metrics and a monitoring programme to track the performance.

The District invests significant amounts of its resources into its transportation network, both for physical infrastructure and for its management. In order to understand how well the infrastructure and systems are operating, they must be monitored.

Data allows the District measurement of past success and to plan for future success. It is an important investment that requires dedicated resources and must be carefully planned to maximize usefulness.

For more information on data collection and monitoring principles, including how to choose indicators and measures, refer to **Appendix B: Data Collection Primer**.

7.1 Data Collection and Monitoring Programme

Data and monitoring programmes require that the community identify goals and objectives. West Vancouver's transportation goals are listed in **Section 3.** Based on these goals and objectives, indicators are chosen to gauge progress and determine what measures correspond with those indicators. The next step is to decide how and when data will be collected and to then collect the baseline data. This section identifies indicators and data sources for specific measures.

After the baseline data is available, the District should choose targets for each indicator and collect regular follow-up data to measure progress.

7.2 Existing Measurement

7.2.1 Available Data Sources

District Staff already collect some transportation data and other data is readily available from other sources such as TransLink and Statistics Canada. Following is a list of currently available data sources that should be used to the fullest extent possible.

	Examples
Statistics Canada	
This data is tracked regularly by the federal government and can be readily accessed – some for free and others with a cost for specific "queries" of their data base. Challenges this data faces include it can be difficult to measure small scale change and is focused on commuting (does not focus on non-work trips).	▪ Mode to work ▪ Place of work (same census division, same province) ▪ Place of work statistics: • Worked at home: 20% • Worked within District of West Vancouver: 17% • Worked within Metro Vancouver: 53%
TransLink Travel Diary	
This data is based on TransLink's research into travel choices and behaviour of residents of Metro Vancouver area. Challenges include a small sample size and it is difficult to specify the performance of any specific municipality. In addition, the methods and sample sets change over time so not all data is directly comparable year to year.	▪ Trips starting by hour to different destinations.
TransLink / West Vancouver Transit	
This data is based on the performance of the District's Blue Bus system. Challenges include it is aggregated into TransLink's overall data base and only includes certain information on ridership.	▪ Ridership on bus routes ▪ On-time bus schedule data
BC Ministry of Transportation and Infrastructure	
This data is based on provincial monitoring of highways and related transportation infrastructure.	▪ Average Annual Daily Traffic (AADT) on Highway 1

A key issue at this time is that, while the highest priority indicator for the District's STP is change in modal share, no comprehensive data currently exists for measuring changes to individual modes / travel patterns over time. Because this is a central focus of the STP, the District needs to develop protocols to access this data over time.

7.2.2 Available and Cost Effective Indicators

Following are indicators that are already available based on data that is currently collected and is cost effective.

Indicator	Data source
Available and Cost Effective Indicators	
Ridership	▪ West Vancouver Transit ridership data
AADT on Highway 1	▪ MoT AADT data for Highway 1
New physical infrastructure as an absolute value (e.g. km of new sidewalk constructed this year)	▪ District Staff Tracking
Bicycle and pedestrian mode share to work	▪ Statistics Canada Mode to Work
Auto mode share to work	▪ Statistics Canada Mode to Work
Transit mode share to work	▪ Statistics Canada Mode to Work
Number of collisions per year	▪ ICBC Collision Data

7.3 Recommended Data Collection Programme

A robust data collection and monitoring programme has three main benefits:

- Target setting: It will support ongoing target setting and monitoring work to track performance on the District's unique goals and objectives;
- Effectiveness: It provides information on what policies and action are effective to trigger change in modal share or other indicators over time;
- Funding: It provides a strong foundation of information and accountability to use when applying for infrastructure grants and other funds.

7.3.1 Basic Data Collection Programme

The District should collect a basic, minimum level of data to build understanding of the transportation network. The following indicators and data are recommended in addition to the currently available data as the "do minimum" data collection and monitoring programme.

Indicator	Data
Basic Programme Indicators	
New physical infrastructure as a percent change	▪ Inventory of infrastructure
AADT at key locations	▪ Automatic count data

7.3.2 New Data Needed

As noted above, where data does not exist that is central to decision making and tracking of targeted performance over time, new protocols need to be established to acquire this data in a cost effective and regular manner.

In order to manage this information effectively over time for various areas in the District, the data should be tied to the existing GIS database for ease of use.

This new data collection programmes should include at a minimum:

Data Type	Measures
Minimum Data Collection Programme	
Inventories of facilities for key sustainable modes	▪ Pedestrian faciltiites (sidewalks) ▪ Bike facilities (lanes, other routes, bike boxes; parking) ▪ Transit facilities (routes, stops, access to stops) ▪ Sustainable mode signage and pavement markings
Inventory of traffic calming	▪ Traffic calming measures (by type) installed ▪ Safety and speed impacts
Traffic counts (AADT) at key locations	▪ Marine Drive around 15th Street ▪ Marine Drive west of 25th Street ▪ 21st Street south of Highway 1 ▪ Taylor Way south of Highway 1 ▪ 15th Street south of Highway 1 ▪ Low Level Road

7.3.3 Supplemental Data Collection

The following indicators and data, in addition to the existing and basic data, comprise the supplemental data that could be added to the collection programme.

Indicator	Data source
Supplemental Data Collection Programme	
Pedestrian mode share to school	▪ Annual classroom based mode to school survey
Cycle mode share to school	▪ Annual classroom based mode to school survey
Transit mode share to school	▪ Annual classroom based mode to school survey
Auto mode share to school	▪ Annual classroom based mode to school survey
Cycle volume at key locations	▪ Cyclist counts on key trails and routes
Pedestrian volume at key locations	▪ Pedestrian counts on key trails and routes
Transit passengers at key locations	▪ On / off transit surveys
Travel time between important locations by different routes and modes	▪ Travel time surveys
Parking inventory	▪ Number of parking spaces at park-and-ride locations ▪ Utilization of park-and-rider parking spaces

7.4 Programme Specific

Many of the transportation indicators discussed in this section will need to be tracked for overall transportation system performance. However, in addition to the general indicators, specific initiatives and programmes should have their own measurement strategies, especially when they are tied to external funding sources or are intended to be trial programmes. These strategies should assess the activities undertaken, participation, behaviour changes, and progress against targets identified for that specific project. Transport Canada's ***Canadian Guidelines for the Measurement of Transportation Demand Management Initiatives User's Guide***[13] is recommended as a resource for the development of programme specific management strategies.

Programme specific measurements strategies can be significantly enhanced using data collected for the District as a whole. For example, trip distance by mode data collected as part of regular Household Surveys can be used to develop GHG reduction estimates.

7.5 Summary

The STP outlines a strong vision with clear goals and objectives to support the District's sustainable community goals and a significant modal shift over time away from the personal automobile in favour of transit, cycling, and walking.

In order to track the successes and challenges of meeting this important goal, a monitoring system needs to be established using a strategic set of effective indicators, drawn from both existing and new data sources. The STP strategies to realize the vision call for an enhanced measurement strategy, as detailed in **Section 8**. The monitoring programme proposed will require increased funding for data collection; **Section 9** provides more information about implementation of the strategies.

[13] iTRANS Consulting, ***Canadian Guidelines for the Measurement of Transportation Demand Management Initiatives User's Guide***, Transport Canada: Ottawa, 2009.

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8 Transportation Strategy to Realize the Vision

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8. TRANSPORTATION STRATEGY TO REALIZE THE VISION

The 2025 Vision cannot be obtained instantly. It will require years of investment and decision making that reflects West Vancouver's transportation hierarchy. This section supplements the long-term vision strategies presented in **Section 3.4** by providing realistic and implementable short-term strategies meant to guide the District in achieving the long-term Vision. First, the section presents what the District could look like one year after the STP and five years after the STP on the path towards Vision 2025. Then, specific strategies by mode are presented. This section is not prescriptive; as it may not be possible for the District to enact every strategy listed within this timeframe. What is provided is a framework for Council and District staff to work within in their pursuit of the transportation Vision for 2025.

8.1 Vision (One and Five Years)

In one year, the District has published the STP and set the groundwork for the future with the establishment of a Transportation Committee comprised of district staff, and representatives from the public and stakeholders; a data collection programme; an asset management system; and the introduction of a key sustainable transportation supportive policy.

In five years, the District has an improved transportation network with better connectivity and information services for all modes. The challenges associated with all modes of transportation in the heavily congested area in the vicinity of the north-end ramp to the Lions Gate Bridge between Taylor Way and Capilano Road have been addressed. Transit frequency has been increased and new routes fill existing gaps. Improvements to service and social marketing have made District residents more open to sustainable modes of transportation.

A dedicated sustainable transportation person on the District staff works with the recommended Transportation Committee to promote sustainable transportation through education, and social marketing. Responsibilities of the Transportation Committee include initiating strategies, reviewing programmes, and commenting on internal and developer-driven projects. The dedicated sustainability transportation resource works with local employers and the school board to implement sustainable transportation programmes and is responsible for tracking the results of these programmes.

Programmes at schools teach children and teens how to use sustainable modes of transportation, build safe cycling skills, and provide a basis for changing attitudes in the home. Similar programmes are provided for seniors and the community at large. Safe route to school programmes and targeted infrastructure improvements around school sites facilitate safe walking and cycling to school. Parents are encouraged to

leave their cars at home. Schools provide a trial ground for programmes and investments and facilitate easy, affordable data collection opportunities.

8.2 Steps Towards our Vision (One and Five Year)

8.2.1 All Modes

8.2.1.1 Year One Strategies

Create momentum for change by publishing the STP, making it widely available to the public via the District's website and in hard copy. The STP outlines the future of transportation in the District and all citizens should know that it is available and have easy access to the document. The STP is also a social marketing tool – it provides valuable information and education about the future of transportation and impetus for investment in alternative modes.

Establish base data through the assembly of existing data and development of the data collection and monitoring programme outlined in **Section 7**. It is important to create a platform of the current status of existing routes, infrastructure which will be the bench mark. The data can be used to identify and prioritize improvements, and produce maps, and can be communicated to the public through a data 'dashboard' as discussed in **Section 7**. This bench mark will also be used for measurement of success. Specific strategies are as follows:

- Establish a updated base map using the existing GIS system;
- Create an asset management system - the asset management database should track existing facilities and status such as - pavement conditions, bicycle facilities (e.g. bicycle parking, bike boxes, bike routes and lanes, signage), sidewalks, greenways, transit routes, bus stops, and all transportation infrastructure; and
- Develop a data collection programme which is meaningful in the context of developing the plan and measuring:
  - Inventory of facilities;
  - Inventory of Traffic Calming;
  - Automatic count data on 5 main corridors – Marine Drive at 15th Street; and, 25th Street, 15thStreet, 21st Street, Taylor Way, Low level Road .

Launch formal social marketing initiatives:
Social marketing is vital to the success and growth of transit. A change in the perception of people toward transit is necessary, away from being unpleasant, uncomfortable, and unreliable. By promoting "try transit" for off-peak and weekend travel, improving frequency and level of service on busy routes, and generally making transit more appealing, a societal shift in the way transit is perceived can be achieved.

Promote transit to change attitudes and facilitate mode shift to transit.

- Enhance marketing opportunities, such as, hand flagging of West Vancouver Bus service; and,
- Provide information on the real cost to own a car and personal and community benefits of sustainable transportation.

In 2003, the cost of owning and operating a car was approximately $7,000 a year[14]

Maximize real-time information availability and trip-planning tools, including using the internet, public terminals or kiosks, and displays.

Other travel planning information includes:

- Parking availability displays on major routes to minimize time and fuel wasted hunting for a space; and,
- Provide current travel time and estimated future travel time for various modes so users can compare and select best on for their immediate needs; this service could also estimate GHG, cost and other impacts as appropriate.

8.2.1.2 Years Two to Five Strategies

Policy Development:

- Create policies that mandate an update of the transportation plan every five years. These five year plans are specific action lists that allow the community to see progress against goals, chart a course, and create capital budget plans for the medium-term; and,
- Adopt key policies and bylaw changes that will move the District towards the Vision, as described in the TDM and Policy section and per mode.

Add to base data collection to enhance the ability to measure – examples are – use of alternative modes to schools, cycle volumes on key corridors, pedestrians volumes at key locations, on-off transit surveys, travel time.

Continue to work towards improving east / west connectivity for all modes of transportation, especially under the Lions Gate Bridge as an alternative to Marine Drive (i.e., Low Level Road, pedestrian and cyclist connection). Improve north / south connectivity for all modes throughout the District.

Other general strategies include:

- Continue to improve on real-time data and trip planning assistance; and,
- Install a trial intermodal terminal with safe, comfortable waiting areas, washrooms, auto parking, bicycle parking, transit information, and transit ticket sales.

[14] http://www.vtpi.org/tdm/tdm82.htm

8.2.2 TDM and Policy

8.2.2.1 Year One Strategies

West Vancouver's Sustainable Transportation Hierarchy will guide all transportation decisions. In order for the hierarchy to take effect, it should be formally incorporated as District policy. This can be assisted by adopting the sustainable transportation hierarchy into District bylaw, and update the OCP bylaw to include the hierarchy.

Allocate budget and dedicate a resource as a **full-time sustainable transportation planner** and a champion for the District to run social marketing campaigns to promote sustainable modes and educate the public about travel options. Strengthen the tie between the Planning and Engineering departments through increased communication and integrate transportation and land use planning.

Establish a Transportation Committee from members of the public to provide input into planning and policy decisions. The Transportation Committee should include representatives from users of all modes of transportation. The Committee will be mandated to oversee the implementation of the short-term strategies and to review initiatives for upgrades to transportation infrastructure and redevelopment, ensuring that the transportation hierarchy is applied to all projects.

Recommended policy and zoning bylaw strategies are:

- Update Zoning Bylaw and policies to require secure bicycle parking at all multi-family developments, as done for the Rodgers Creek area;
- Update Zoning Bylaw and policies to require secure bicycle parking in commercial and recreational areas;
- The consideration of implementing a minimum allotment of bicycle parking in new developments in the application process;
- Encourage policy changes for transit, such as working with school boards to assess parking fees for students; and,
- Change bylaw parking requirements for higher density areas to reduce required minimums and implement maximum parking rates, as done for the Rodgers Creek area.

Create new incentives and programmes, such as:

- Commuter Challenge;
- Programmes to encourage walking:
  - Walk to School programme; and,
  - Walking School Bus programme with parent volunteers to walk younger children to school.
- Programmes to encourage cycling:
  - Bike to Work Week.
- Safe routes to school programme; involve guardians in planning safe walking and bicycle routes to elementary schools and develop maps;
- Consider free transit for children under 13 accompanied by an adult;
- Encourage municipal employees to use sustainable modes for commuting by providing incentives such as carpooling spaces, bike storage, and shower facilities;
- Car free days in Ambleside and Dundarave;
- Encourage car sharing, carpooling, and ridesharing;
- Begin development of travel information materials; and,
- Explore tax structure changes:
  - Municipal tax incentives for green neighbourhoods or communities; and,
  - Provide incentives for households to own fewer vehicles.

Other recommendations include:

- Review of priority for buses and slow vehicles on main routes to improve travel time and provide equal or better access compared to SOVs; and,
- Continue to install traffic calming, especially measures intended to reduce speeds and improve safety.

In order to measure success as the District works towards a more sustainable transportation future, it is recommended that targeted data be collected to allow for measuring success of the implementation of the Vision by gathering baseline data, setting minimum standards, and prioritized improvements. This is described further in **Section 7**.

8.2.2.2 Years Two to Five Strategies

Update planning documents, bylaws, and policies to enhance and promote sustainable transportation.

Update the Official Community Plan (OCP) to reflect the District of West Vancouver's Transportation Hierarchy. This would mean that all existing and new projects in West Vancouver will be evaluated with these priorities in mind and will be developed to accommodate them. These efforts will need to be co-ordinated closely to assess how supportive current zoning and land use policies are to green development and to ensure cohesiveness between initiatives.

Review parking and pay parking policies. Parking pricing should be done dynamically if possible to maximize effect and minimize negative impacts.

Expand the role of the sustainable transportation planner and enhance the programmes and initiatives started in year one.

Other recommended TDM incentives and programmes are:

- Consider tax rebates for properties with one or no cars;
- Parking incentives:
  - Expand the use of preferred parking for car share and carpool;
  - Reduce or remove parking subsidies for employees; and,
  - Guaranteed taxi ride home service for people who live and work in the District of West Vancouver.
- Creation of a new school training programme or education to encourage parents to leave their cars at home;
- Consider a U-Pass for secondary students;
- Continuing to implement traffic calming measures to reduce speeds and improve safety;
- Explore a freeze on new road capacity; i.e. no new roads or wider roads unless it is supportive of an active network (no capacity improvements for SOVs, or likely to be monopolized by SOVs); and,
- Distribute travel information materials.

Trail marker for the Village Walk, West Vancouver

8.2.3 Pedestrian

8.2.3.1 Year One Strategies

Create and maintain a formalized pedestrian map including sidewalks and links to trails for public use (using the newly developed asset management system). This concept is illustrated in **Exhibit 29**.

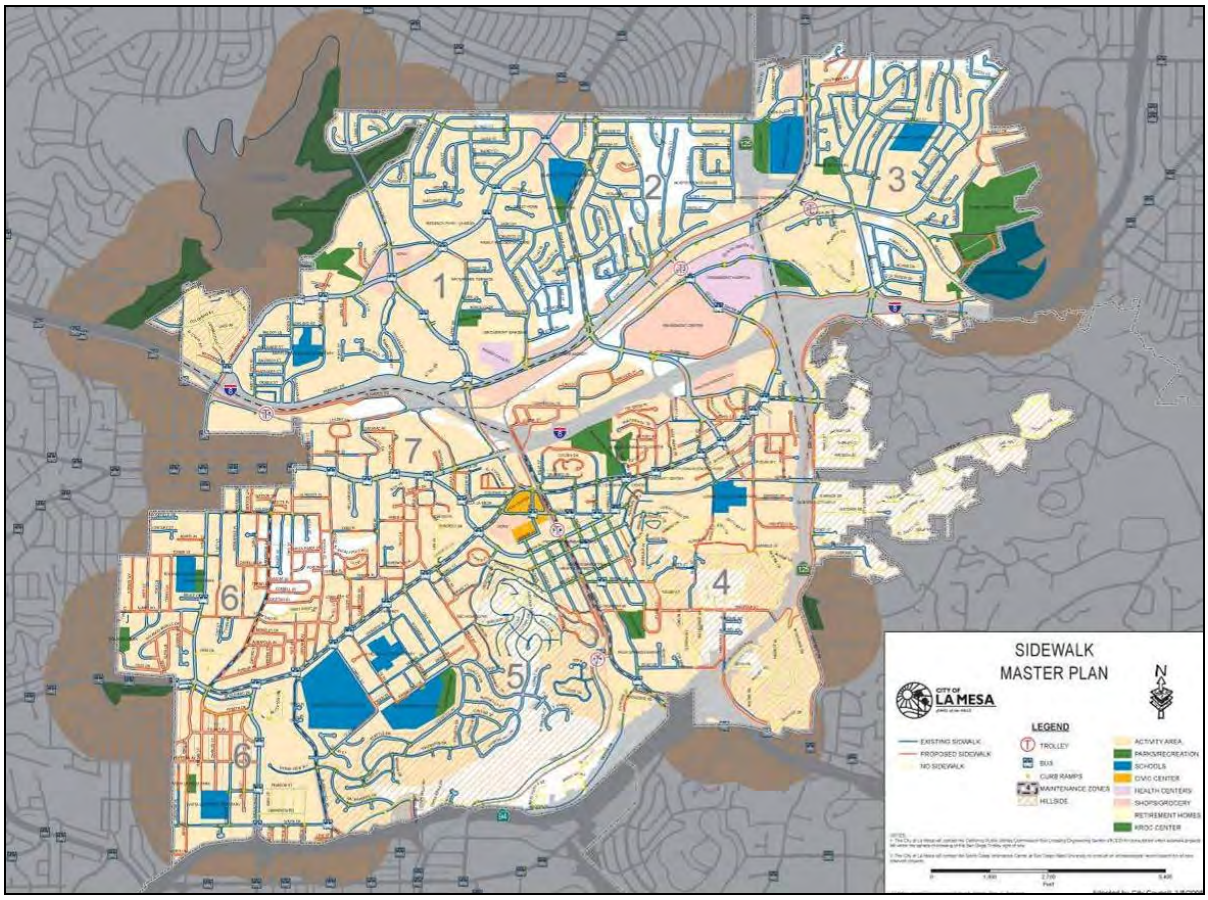

Exhibit 29: Example Sidewalk Map – City of La Mesa, California.

Source – City of La Mesa, California

Establish programmes based on first year success, such as commute challenges, Bike to Work Week, Walk to School, etc.

Create minimum pedestrian standards for each classification of roadway (i.e. arterial, collector, local) in West Vancouver. These standards will be guidelines to allow flexibility of implementation to different areas landscape and neighbourhood type.

The dedicated sustainable transportation planner will also be a resource and champion for pedestrians, and will coordinate integration of sustainable modes into planning decisions. Ensure the interests of pedestrians, including the disabled, are adequately represented on the recommended Transportation Committee.

Other recommended pedestrian strategies are:

- Enforce speed limits, especially in high traffic pedestrian areas and particularly near schools;
- Improve maintenance of sidewalks to ensure they are free of obstructions (e.g. shrubs, bushes, tree roots) and accessible for all pedestrians;
- Improve lighting at main access points;
- Provide informational maps in Ambleside and Dundarave to educate the public about pedestrian routes and facilities; and,
- Improve pedestrian wayfinding, including installing signage for the "Village Walk" upon completion of the Evelyn Drive development and installing signs linking to trail heads.

8.2.3.2 Years Two to Five Strategies

Continue the implementation of the Spirit Trail.

Conduct follow-up studies and establish a 5 to 10 year capital plan that supports the following initiatives:

- Complete an assessment of the pedestrian network to identify deficiencies, identify, evaluate and select pedestrian routes, and prioritize improvements;
- Update the Cycling and Greenways plan – see **Exhibit 30**; and,
- Develop and maintain a monitoring programme.

Other recommended pedestrian strategies are:

- Improve pedestrian connectivity by installing sidewalks at key locations, such as near transit stops, in higher density locations, near schools, and along important roadways;
- Make the Marine Drive corridor more pedestrian and cyclist friendly between Dundarave and Horseshoe Bay by implementing improvements such as shoulder widening, linkages to side streets and trails, review areas where parking can be removed to allow for cyclists, and consider lower speed limit from Oxley Street to Horseshoe Bay;
- Improve north / south connections across Highway 1 and connect north / south pedestrian routes to trail heads or hiking trails whenever possible;
- Explore car-free streets (i.e., temporary or permanent); and,
- Install a trial intermodal hub.

Exhibit 30: Example Greenway Map – City of Vancouver.

Source – City of Vancouver

8.2.4 Cycle

8.2.4.1 Year One Strategies

Establish a formal link between the recommended Transportation Committee and the North Shore component of the Vancouver Area Cycling Coalition to help champion the needs of the cycling community within the District, and charge the dedicated sustainable transportation planner and other District staff with integrating sustainable modes such as cycling into the community. The Transportation Committee would play an integral role in communicating and interacting with District Staff in West Vancouver, to better understand the constraints, challenges, and opportunities that both limit and enhance cycling within the District.

Create a formalized cycling map clearly depicting both commuter and recreational bicycle routes. This could be similar to the City of Vancouver cycle map as illustrated in **Exhibit 31**.

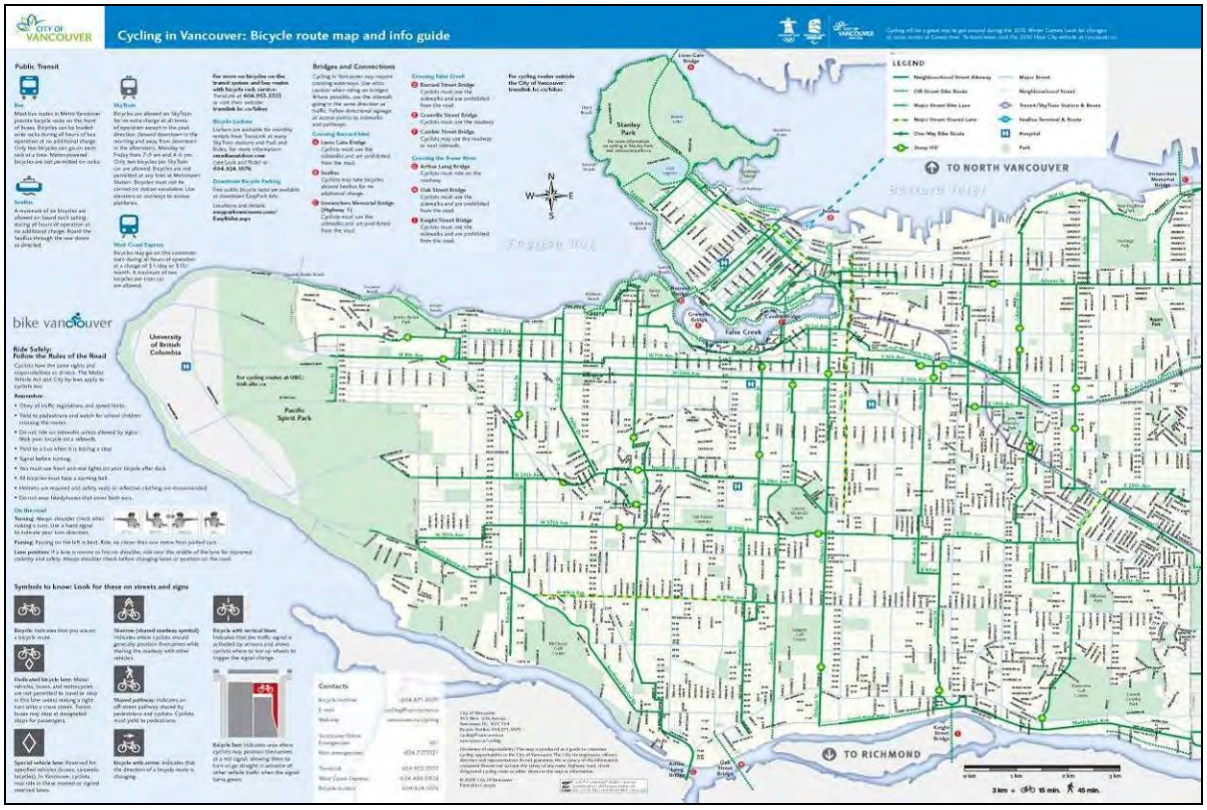

Exhibit 31: Example Cycling Map – City of Vancouver

Source – City of Vancouver

Implement the following bicycle route identification and improvements:

- Install on-street route and signage improvements on existing routes;
- Provide bicycle routes across the Capilano River; and,
- Undertake preliminary work for bike lanes and / or bikeways on Marine Drive corridor from 13 Street to 25 Street; possible configurations could be similar to the Marine Drive Vision illustrations presented in the Vision 2025.

Other recommended bicycle strategies are:

- Implement bicycle education programmes at schools and at the community level, and promote programmes such as Bike to Work / School Weeks and bicycle valet at special community events, including car-free days; and,
- Create, specify, and implement minimum standards for bicycle routes in capital and redevelopment projects and prioritize and construct cycling needs in conjunction with infrastructure or development construction.

8.2.4.2 Years Two to Five Strategies

Safe bicycle routes to school are identified as a top priority for the District of West Vancouver to encourage youth to engage in cycling at a younger age. This will allow them to learn the rules of the road and realized health benefits from the activity. By introducing cycling to more children, this should encourage more adult riders, both recreational and commuter, as these children grow up.

Consider the identification and reallocation of asphalt on high priority routes throughout the City to facilitate and improve the West Vancouver Cycling Network, including improvements for Marine Drive presented in the pedestrian section.

Other recommended infrastructure improvements include:

- Continue implementation of the Spirit Trail;
- Upgrade north-south connections across Highway 1;
- Install public bicycle parking at busy locations such as schools, commercial nodes, and intermodal hubs; suggested trial locations include but are not limited to:
  - Park Royal;
  - Ambleside;
  - Dundarave; and,
  - Horseshoe Bay.
- Install a trial intermodal hub;
- Better identify key bicycle routes, including adding the appropriate signage, markings, decals to adequately identify the West Vancouver Cycling Network;
- Provide short-term public bicycle rental facilities, like BIXI system in Montreal and Ottawa; and,
- Update the Cycling Network and Greenway Plan.

BIXI bike rack installation, Ottawa,Ontario

Routes should be formalized as much as possible and key commuter routes implemented, as identified in the Cycling and Greenways Plan and brought forward by the Transportation Committee in consultation with District Staff. Appropriate marking, signage, and decals should be prominently featured to alert both cyclists and drivers to these routes.

In order to facilitate and provide direction to cycling improvement in the District, develop minimum cycling requirements for different roadway types, including but not limited to:

- Cycling route warrants;
- Installation of bike boxes; and,
- Need for signal detection.

Example bicycle storage – transit station, Salt Lake Citv. Utah

Bike box and cycle track, Carrall Street, Vancouver. BC

8.2.5 Transit

8.2.5.1 Year One Strategies

The sustainable transportation planner will be responsible for championing and coordinating transit needs, including education and information disseminated within the community as well as liaising with other transit authorities throughout the Region.

Social marketing is vital to the success and growth of transit. These initiatives have been described previously under the “All Modes” section.

Ensure the interests of transit users are adequately represented on the recommended Transportation Committee and that feedback is provided to the District on existing service. The transit users will provide input regarding new improvements and suggest potentially useful changes or routes that may be worth exploring.

Recommended policy and infrastructure changes are:

- Provide more frequent buses to serve secondary schools;
- Outsource provision of bus furniture (e.g., bus shelters) and use income from advertising to fund transit upgrades;
- Improve transit information availability with transit stores or at existing intermodal hubs;
- Develop a plan to provide improved transit to the Upper Levels and new communities;
- Update the North Shore Transit Plan (TransLink);
- Improve service on infrequent and one-way routes; and,
- Provide free transit to children under 13 if accompanied by an adult.

8.2.5.2 Years Two to Five Strategies

Transit is an important alternative to the private vehicle; there are many recommendations provided for transit planning, service, and infrastructure.

Engage in the following transit planning and policy activities:

- Consider a limited stop commuter bus service via Upper Levels Highway direct to Vancouver with WIFI, comfortable seats, and other amenities. This service would be a special or luxury service that stops at select park-and-ride and intermodal hubs. It is intended to supplement the existing route 257;
- Expand development within 400 m of the proposed Frequent Transit Network (FTN);
- Review transit routing and frequency on strategic routes;

- Work with TransLink to secure funding, improve service and expand the Frequent Transit Network (FTN) in the District;
- Expand tax deductions for transit use;
- Support technology that reduces transit emissions; and,
- Work towards creating a new programme of a universal transit pass (U-Pass) for all students in Grades 7 and up.

Enhance transit service:

- Introduce more direct and frequent transit routes north of the Highway 1;
- Provide improved east-west transit service (using Highway 1 to facilitate);
- Increase north / south transit service on important corridors (21st Street, 15th Street, Taylor Way);
- Work with TransLink to improve means of payment to increase ease of use for users, such as smartcard technology;
- Provide Demand Responsive Transit, e.g. assess dial-a-ride transit; consider small buses which are more socially acceptable, community oriented, easier to operate given the hilly terrain, or private services (taxi) on fixed routes; and,
- Support the purchase of cleaner transit fleet vehicles with low GHG emissions as buses are replaced.

Implement transit infrastructure improvements:

- Provide additional measures for transit priority improvements, including queue jump lanes;
- Improve bus stop facilities, consider advertising to offset costs;
- Create trial intermodal hubs to facilitate waiting and transfers, including park-and-ride facilities with free parking for transit users;
- Enhance park-and-ride facilities to connect with low density areas of western West Vancouver; and,
- Improve pedestrian connectivity to bus stops by linking sidewalks to bus stops and clearing any obstacles.

8.2.6 Alternative Technologies

8.2.6.1 Year One Strategies

Work with the recommended Transportation Committee to implement more organized education and awareness programmes at the community level, especially at schools, to inform residents of available options and alternatives to the status quo. This should include promoting awareness of electric bicycles, which are ideally suited to the hilly terrain of West Vancouver. Provide education for workers and seniors, and provide online tools to plan trips and highlight the impacts of GHG.

Consider encouraging staff involvement in the relevant alternative technology organizations that exist, such as, the Vancouver Electric Vehicle Association. Consider the following policy changes:

- Allow preferred parking on public streets for sustainably-fuelled vehicles;
- Provide trial charging stations in new residential and commercial developments;
- Retrofit older developments with the appropriate infrastructure; and,
- Consider a trial of low-speed vehicle lanes for neighbourhood zero emissions vehicles to share the roadway on strategic routes.

8.2.6.2 Years Two to Five Strategies

Develop new policy to enable the adoption of vehicles with alternative technologies, including:

- Require preferred parking for electric and hybrid vehicles in private developments;
- Promote the creation of alternative fuelling stations as the technology becomes available;
- Continue to move towards zero-emissions technology for the municipal fleet; and,
- Consider slow vehicle lanes on Marine Drive.

8.2.7 Traditional Auto

8.2.7.1 Year One Strategies

Through partnership with the Jack Bell Foundation, dedicate resources and promotion to enhancing the appeal and functionality of carpooling for residents of the District of West Vancouver.

Possible traditional auto strategies include:

- Incentives for carpooling, including front of the line parking stalls (i.e. the closest parking stalls, excluding stalls required for handicapped parking);
- Promote teleworking and flexible hours to relieve peak hour travel demand and DWV to promote internally where possible through employment contracts;
- Promote use of alternative modes like transit; and,
- Enforce the no-idling policy, especially at schools and ferry terminals.

8.2.7.2 Years Two to Five Strategies

Promote high occupancy vehicle using the infrastructure strategies, including:

- Create and enhance park-and-ride facilities with free parking for transit users;
- Develop rideshare and / or carpool lots in convenient locations with complementary priority for users (e.g. HOV on-ramp to bridge / highway from a rideshare lot);
- Install carpool parking and queuing locations at existing and future park-and-ride locations;

- Install HOV lanes with restrictions that increase with success, e.g. start with two per vehicle and increase to three as lane becomes more full in the peak hour; and,
- Improve the intersections of Marine Drive / Taylor Way and 15th Street / Mathers Avenue.

Other strategies that encourage residents to choose modes other than traditional auto or to change their lifestyles include:

- Encourage live / work developments and employment close to residential;
- Encourage school, business, and institutions to support ride matching and carpooling;
- Work with car share companies to increase the availability of shared cars near commercial centres and multi-family residential areas;
- Provide tax incentives for driving less and using low-emission vehicles; and,
- Explore a Toll option for Lions Gate Bridge for SOV and allow free passage for HOV and transit – use funds to improve transit and alternatives, making toll revenue neutral.

8.2.8 Goods

8.2.8.1 Year One Strategies

Enhance the movement of goods and services within and through the District of West Vancouver using the following strategies:

- Encourage off peak and/or night deliveries in commercial areas;
- Increase the number of truck safety checks;
- Enforce the existing goods movement bylaws;
- Continue to require and enforce existing truck routes and downhill restrictions;
- Discourage truck traffic along Marine Drive through village cores where possible by providing better truck service levels on alternative routes, such as Highway 1; and,
- Consult with the Province and North Vancouver concerning large truck access using Capilano Road and Marine Drive.

8.2.9 Years Two to Five Strategies

Continue the current goods movement practices and enforce as necessary. Highway 1 should be used for through traffic and local District traffic as much as possible.

Other strategies include:

- Improve the standards for delivery access to new developments (parking, loading bay design, truck turning etc.); and,
- Create additional restrictions for goods movement without impacting access or capacity (i.e. time of day restrictions, loading restrictions, etc.).

8.2.10 Marine / Rail

8.2.10.1 Year One Strategies

While marine travel is complicated by the tide and oceanic condition, solicit more proposals and ideas regarding marine transportation linkages within the District and externally. In particular, solicit ideas and proposals for linkages at Park Royal, Dundarave, and Ambleside, and also consult with TransLink on these ideas.

Formalize the trial marine service between Ambleside and downtown if successful and explore opportunities for commuter rail service, possibly using existing infrastructure.

8.2.10.2 Years Two to Five Strategies

The District is encouraged to work with the City of North Vancouver, TransLink, and private companies or developers to assess opportunities for marine transportation and tourism services. Following feasibility assessments, explore opportunities to work with private entities to install or improve one or two trial docks with commuter and tourism service. Assess feasibility of new marine links and dock infrastructure improvements to locations such as Jericho Beach, Granville Island, and North Vancouver.

Revaluate potential opportunities for a commuter rail service building from existing infrastructure in partnership with CN Rail.

8.3 Summary of Strategies

All of the strategies outlined in this section and in the Vision, as well as the transportation challenges leading to their development, are summarized **Table 3**.

Table 3: Strategy Matrix

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
All Modes			
◦ Need more comprehensive data for measuring changes ◦ Need a social marketing program ◦ Need transportation planning capability for all modes ◦ Need explicit consideration of all modes in development ◦ Need better integrated land use planning ◦ Need more comfortable intermodal transfer points	◦ Publish the STP ◦ Establish database including assemble of existing data and update of GIS ◦ Create asset management system ◦ Develop data collection program ◦ Launch social marketing	◦ Enhance policy and development ◦ Continue working towards east-west connectivity for all modes ◦ Make continuous improvements to real-time data availability and trip planning tools ◦ Provide amenities at intermodal hubs	◦ Design a comprehensive set of metrics to measure changes ◦ Develop broad public outreach programme ◦ Improve linkages north and south of Highway 1 ◦ Consider the accommodation of skateboards ◦ Share low speed roads ◦ Complete implementation of intermodal hubs
TDM / Policy			
◦ Most people in West Vancouver drive ◦ Need to plan for all types of travel ◦ Need for consideration of all modes in development ◦ Need expanded integrated land-use planning ◦ Public needs more education about non-auto modes ◦ Need formal traffic calming policy ◦ Need data collection strategy and resources	◦ Adopt sustainable transportation hierarchy ◦ Dedicate a resource as a full-time sustainable transportation planner ◦ Establish transportation working committee ◦ Create new programs (Commuter Challenge, Walk to School, Bike to Work Week) ◦ Update Zoning Bylaw and policies for bicycle storage ◦ Change bylaw parking requirements ◦ Safe routes to school program ◦ Consider free transit for children under 13 accompanied by an adult ◦ Sustainable mode incentives for municipal employees ◦ Car free days ◦ Encourage car sharing, carpooling, and ridesharing ◦ Development of travel information materials ◦ Explore tax structure changes ◦ Continue traffic calming ◦ Priority for buses and slow traffic on main routes	◦ Expanded role for sustainable transportation planner ◦ Update OCP with new transportation priorities ◦ Regular review / update of bylaws & policies to enhance sustainable modes ◦ Review of parking policy and pay parking ◦ Tax rebate for families with one or no cars ◦ Consider U-Pass for secondary students ◦ Parking incentives ◦ Create new School education programs for parents ◦ Continue to implement traffic calming ◦ Distribute travel information materials ◦ Explore freeze on new road capacity for Single Occupant Vehicles	◦ Evaluate all projects with the sustainable hierarchy in mind ◦ New development approval process has strong sustainable transportation component, follows hierarchy ◦ Policies to discourage SOV use during peak periods ◦ Continue school-based programs for elementary students ◦ Urban area car licence surcharge ◦ Enhanced parking management strategies ◦ Consider tax structure supporting sustainable mode use ◦ Consider slow vehicle lanes on Marine Drive from 25th Street to Horseshoe Bay ◦ Encourage non-commuting alternatives ◦ Consider local community business centres

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Pedestrian			
◦ Need for mapping of existing facilities ◦ Lack of sidewalks on access points, especially transit ◦ Need minimum pedestrian standards ◦ Need better accessibility for blind / disabled travellers ◦ Need to improve signal timing for pedestrians ◦ Need more linkages to North Vancouver and access along waterfront ◦ Need better connections north / south across Highway 1 ◦ Need better intermodal connectivity ◦ Lack of lighting on streets ◦ Vegetation intrudes on sidewalks impacting mobility and visibility	◦ Create formalized pedestrian map ◦ Create minimum pedestrian standards ◦ Enforce speed limits ◦ Maintenance of sidewalks ◦ Improved lighting ◦ Provide informational maps in Ambleside and Dundarave ◦ Install pedestrian signage	◦ Continue to implement Spirit Trail ◦ Complete an assessment of the pedestrian network ◦ Improve pedestrian connections by installing sidewalks at key locations ◦ Make Marine Drive corridor more pedestrian and cycle friendly from Dundarave to Horseshoe Bay ◦ Explore car free streets (temporary or permanent) ◦ Improve north / south connections across Highway 1 ◦ Update Cycling and Greenways Plan ◦ Install trial intermodal hub	◦ Complete Spirit Trail ◦ Continue to develop and maintain pedestrian mapping ◦ Continue to install and maintain effective wayfinding ◦ Provide sidewalks on at least one side of main roadways ◦ Maintain sidewalks and walking spaces ◦ Complete greenway system as per Cycling and Greenways Plan ◦ Continue efforts already in place in Ambleside and Park Royal and apply to other areas ◦ Consider car-free streets / pedestrian areas ◦ Enhance pedestrian facilities on Marine Drive west of 25th Street ◦ Consider pedestrian connectivity between areas with different elevations and across Highway 1 ◦ Consider Upper Spirit Trail above Highway 1 ◦ Complete implementation of intermodal hubs

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Cycle			
◦ Need community policies for cycling ◦ Need road markings and signage ◦ Need for minimum bicycle standards ◦ Need to improve safety for commuter cyclists ◦ Need formalized map of existing routes, proposed routes, and route types ◦ Need bike routes and lanes on Marine Drive Corridor ◦ Need better linkages to North Vancouver and access along the waterfront ◦ Need better connections north / south across Highway 1 ◦ Need better intermodal connectivity ◦ Need more bike parking at key locations ◦ Need requirements for bike facilities in developments and intermodal locations ◦ Need improved connections to Lions Gate Bridge ◦ Need improved facilities at schools and community centres ◦ Need more bicycle education ◦ Need designated cycling routes and lanes on major commuting routes ◦ Need more respectful interaction between drivers and cyclists	◦ Establish a cycling committee within the transportation committee ◦ Create a formalized cycling map ◦ Install on-street route and signage ◦ Undertake preliminary work for bike lanes and / or bikeways on Marine Drive ◦ Bicycle education ◦ Develop minimum bicycle standards ◦ Update Zoning Bylaw to require bicycle parking	◦ Identify safe cycle routes to school ◦ Continue to implement the Spirit Trail ◦ Reallocation of road space for cycling ◦ Install public bicycle parking at busy locations ◦ Provide short-term public bike rental ◦ Implement bicycle education programs at schools and in community ◦ Implement key commuter routes as per Cycle and Greenways Plan ◦ Develop minimum cycling requirements for each roadway type ◦ Better identification of key cycling routes ◦ Update Cycling and Greenways Plan ◦ Upgrade north-south connections across highway ◦ Install trial intermodal hub	◦ Install and maintain effective wayfinding ◦ Complete Spirit Trail ◦ Further improve connections across Highway 1 ◦ Complete greenway system as per Cycling Network and Greenway Plan ◦ Create higher visibility and priority for cyclists ◦ Consider Upper Spirit Trail above Highway 1 ◦ Bike boxes / signal detection at key intersections ◦ Develop integrated West Vancouver Cycling Network east-west and north-south for commuter / recreational riders ◦ Establish Marine Drive Corridor as a cycle route from Taylor Way to Horseshoe Bay ◦ Complete implementation of intermodal hubs

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Transit			
◦ Need more frequent service on main arterials ◦ Need better access for all residents ◦ Need transit priority and better access to Lions Gate Bridge ◦ Need better connectivity between communities ◦ Need direct service to important destinations ◦ Two-way service needed in many areas ◦ Need regular east / west service north of Highway 1 ◦ Need for improved traveller information ◦ Need better service to meet school needs ◦ Need better availability of higher-order transit ◦ Need balance of frequency vs. coverage ◦ Need to use smaller buses on some routes ◦ Need better education and awareness among public ◦ Need funding to provide enhanced service	◦ Education and social marketing ◦ Establish a transit users group ◦ Provide more frequent buses to serve secondary schools ◦ Outsource provision of bus shelters ◦ Improve transit information availability ◦ Develop an Upper Levels transit plan ◦ Update the North Shore Transit Plan (TransLink) ◦ Improve service on infrequent and one-way routes ◦ Encourage policy changes	◦ Review of transit routing / frequency on key routes ◦ Limited stop commuter service to Vancouver ◦ Provide demand responsive transit ◦ Expand development near frequent transit network ◦ Consider U-Pass for secondary students ◦ Initiate transit service improvements (e.g. more routes north of Highway 1, east-west service, frequency on main arterials) ◦ Increase north-south service on 21st, 15th, and Taylor Way ◦ Transit infrastructure improvements (e.g. improved bus stops, transit priority, park & ride, pedestrian connectivity) ◦ Expand tax deductions for transit use ◦ Create comfortable transit hubs ◦ Support technology to reduce emissions ◦ Work with TransLink to secure funding, improve service, and expand FTN ◦ Work with TransLink to improve ease of payment for all users ◦ Support purchase of cleaner transit vehicles	◦ Provide incentives for transit use, such as a Community Transit Pass ◦ Increase north / south transit service on important corridors ◦ Increase east / west transit service north of Highway 1 ◦ Improve connectivity between communities ◦ Enhance transit stops with information, comfortable waiting areas ◦ Expand bus priority measures ◦ Consider some form or regular rapid transit service ◦ Expand demand-responsive transit (e.g., dial-a-bus) ◦ Improve connectivity to surrounding communities ◦ Smaller buses to serve north / south routes ◦ Improve transit information via automatic stop announcement

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Alternative Technologies			
◦ Need proper infrastructure (e.g. charging stations) ◦ Need for innovative policy (e.g. permitting Low-Speed Vehicles)	◦ Implement education and awareness programs ◦ Consider staff involvement in alternative technology organizations ◦ Policy changes to accommodate electric and hybrid vehicles ◦ Allow preferred parking on public streets for sustainably-fuelled vehicles ◦ Provide trial charging stations ◦ Policy changes to retrofit older developments with the appropriate infrastructure ◦ Implement a trial of low-speed vehicles for neighbourhood zero emissions vehicles to share the roadway	◦ Require preferred parking for electric vehicles ◦ Promote creation of alternative fuelling stations ◦ Continue to move towards zero-emissions technology for municipal fleet ◦ Consider slow vehicle lanes on Marine Drive ◦ Explore toll option for Lions Gate Bridge	◦ Implement alternative fuelling stations given technology as technology becomes available ◦ Continue to explore alternatives to high-emissions vehicles
Traditional Auto			
◦ Need priority for Electric and Hybrid vehicles ◦ Need formal traffic calming policy ◦ Need more support for car-sharing ◦ Lack of parking pricing strategy ◦ Need to improve key linkages ◦ Need capacity improvements at key locations ◦ Too many autos at schools during drop-off ◦ Emissions from traditional autos contravene climate change commitments ◦ Need to mitigate cost for road construction / maintenance ◦ Single-occupancy vehicles add to congestion	◦ Enhance appeal and functionality of carpooling ◦ Incentives for carpooling ◦ Promote teleworking and flexible hours ◦ Target SOV users when promoting use of alternative modes ◦ Enforce the no-idling policy	◦ Promote HOV use with new infrastructure (e.g. park & ride, rideshare / carpool lots, HOV lanes) ◦ Encourage support for ride matching ◦ Encourage planning for live / work developments ◦ Increase availability of car-sharing (co-op, Zipcar, etc.) ◦ Tax incentives for driving less and using low-emission vehicles ◦ Continue to install traffic calming ◦ Improve intersections at Marine Drive / Taylor Way and 15th Street / Mathers Avenue	◦ Implement Low Level Road as an inter-municipal connection between North Vancouver and West Vancouver ◦ Support pay-per-use insurance ◦ More direct routes ◦ Complete implementation of intermodal hubs ◦ Continue development of park-and-ride, carshare, and car-pooling

Transportation Challenges	Year One	Years Two to Five	Beyond Year Five
Goods			
◦ Need parking priority for freight vehicles ◦ Lack of north / south connectivity in the west ◦ Need for capacity improvements at key locations ◦ Need for capacity improvements at Marine Drive approach to Lions Gate Bridge ◦ Steep grades on Taylor Way ◦ Under-height bridge on Marine Drive at Lions Gate	◦ Encourage off peak and/or night deliveries in commercial areas ◦ Increase truck safety checks ◦ Enforce existing goods movement bylaws ◦ Continue to require and enforce existing truck routes and downhill restrictions ◦ Discourage truck traffic along Marine Drive through village cores ◦ Consult with the Province and North Vancouver concerning large truck access	◦ Use Highway 1 as much as possible ◦ Improve standards for delivery access to new developments ◦ Time of day controls ◦ Additional restrictions for goods movement not impacting access or capacity	◦ Loading zone design in new development to minimize time required per stop ◦ Distribution - designate routes and provide break-bulk sites
Marine / Rail			
◦ Need to increase use of water for public transportation ◦ Need infrastructure to accommodate goods / passenger demand	◦ Solicit proposals and ideas regarding marine transportation linkages ◦ Formalize marine service	◦ Continue to establish new marine links (e.g. Jericho Beach, Granville Island, North Vancouver) ◦ Explore partnership with CN Rail for rail service ◦ Consider investment in dock infrastructure when and where necessary and/or applicable	◦ Reassess marine and rail opportunities ◦ Continue to invest in dock infrastructure when and where necessary ◦ Work with other governments and organizations to consider expanding ferry service ◦ Reevaluate feasibility of higher order transit in the long term

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9 Implementation Plan to Realize the Vision

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9. IMPLEMENTATION PLAN TO REALIZE THE VISION

In order to achieve the Vision, the District will need to develop a planned approach to implement the strategies outlined in the previous sections. Implementing the strategies will require funding, additional planning, and many smaller steps to reach the final goals. This section outlines a high level implementation plan that will set the District on the path to realizing the Vision for transportation in 2025. The implementation plan is divided into three phases:

- Year one;
- Years two to five; and
- Beyond year five.

Each phase is described in more detail in the following sections. The strategies have been grouped according to **Mode** together with an **Action plan.** The **Type** of strategy is listed as:

- **F**: *Foundational* – building blocks, steps to shift behaviour;
- **E***: Easy to implement* – lower cost, utilize existing resources;
- **S**: *Staged* - First step of a larger project; and
- **A**: Require support and/or funding from other *Agencies*

Where possible, current programmes being undertaken by the District that support the STP were identified.

9.1 Year One

The District can begin implementing the year one strategies described in the Transportation Strategy to Realize the Vision section within a year after the STP is approved by Council.

Year One Strategy	Action	Type
All Modes		
Publicize STP	▪ Make the STP available for download on the District website ▪ Advertise availability of STP on District Website, in North Shore News, West Vancouver memorial library, and at West Vancouver Community Centre ▪ Provide hard copies of STP at West Vancouver Community Centre ▪ Cover costs within existing budgets	F, E
Establish database	▪ Retain a consultant to work with mapping staff to update the GIS system to reflect the current systems	F
Create an asset management system	▪ Retain a consultant to set up a database to track existing systems and their status. ▪ Create an asset management system	F

Year One Strategy	Action	Type
Develop a data collection programme	▪ Assemble existing data and create dashboard ▪ Establish a count and inventory programme in house. Outsource traffic count collection.	F
Launch Social Marketing	▪ Use the sustainable transportation planner to develop outreach programmes. Some funds will be required to provide materials for the community.	F; E
TDM and Policy		
General		
Dedicate a full-time sustainable transportation planner	▪ Create a position by consolidation of tasks between Engineering and Planning - try and utilize existing Operating Budget to fund the position through redundancies and retirements. ▪ Sustainable transportation planner to formalize link between Planning and Engineering and improve integration of land use planning and transportation planning ▪ Request funding support from the Federal Government such as the ecoMOBILITY programme or the Provincial Government Transit planning funds.	F
Establish transportation working committee	▪ Establish a working committee with a one year mandate to oversee implementation of the short-term strategies ▪ Committee to review initiatives for upgrades to transportation infrastructure and redevelopment ▪ Utilize existing Corporate Committee framework, funding and support	F; E
Policy and Zoning		
Adopt transportation hierarchy	▪ Internal update by Planning for approval by Council.	F
Update Zoning Bylaw and policies for bicycle storage with development approvals	▪ Internal update by Planning for approval by Council.	F
Change bylaw parking requirements	▪ Internal update by Planning for approval by Council.	F
Incentives and Programmes		
Create new programmes (Commuter Challenge, Walk to School, Bike to Work Week)	▪ Utilize existing Corporate resources to promote these programmes under the community interactions. Some funds will be required for advertising, sponsorship, etc.	F; E
Safe route to school programme	▪ Choose 5 schools to develop maps where there is the most likelihood of increasing pedestrian modes – e.g. flatter terrain, pedestrian infrastructure. ▪ Maps to be developed based on the GIS system. This can be done in-house in Engineering or by a consultant. ▪ Maps would need to be confirmed with the School District and then also advertised. ▪ Funds required for consultant and mapping materials.	F; A
Consider free transit for children under 13 accompanied by an adult	▪ Confirm support by West Vancouver Transit ▪ Present Strategy to Council for approval and send to TransLink. ▪ Lobby TransLink through the Mayor's Council.	F; A

Year One Strategy	Action	Type
Sustainable mode incentives for municipal employees	▪ DWV to be a leader in the community for employee facilities by:- ▪ Providing carpool parking spaces near the entrances ▪ Shower facilities, safe bicycle storage at the Hall and the Yard ▪ Advertise bus stop locations and schedules	F; E
Car free days for Ambleside and Dundarave	▪ Sustainable transportation planner or Corporate Services to work with the local Community Association and Merchants to promote car free days and specific times of year – this could tie in with Community festivities such as arts festivals.	F; E
Encourage car sharing, carpooling, and ridesharing	▪ Sustainable transportation planner or Corporate Services to imbed car sharing, carpooling, and ridesharing in all marketing materials and initiatives.	F; E
Begin development of travel information materials	▪ Sustainable transportation planner or Corporate Services to show travel information more overtly in District materials – on the website, in handouts, on posters in the Hall or Yard, at future intermodal hub sites, etc.	F; E
Explore tax structure changes for incentives	▪ Sustainable transportation planner or Corporate Services to work on options to create incentives for lowering car ownership, increasing alternative mode use.	F; E
Commence review for priority for buses and slow vehicles on main routes	▪ Establish key routes and links for priority - this can be done in-house in Engineering or by a consultant. ▪ Prioritize areas for future implementation	S
Continue traffic calming	▪ Engineering Department to prioritize key areas ▪ Continue to implement measures ▪ Request traffic calming measures with redevelopment	F
Pedestrian		
Create formalized pedestrian map	▪ Maps to be developed based on the GIS system. This can be done in-house in Engineering or by a consultant.	F; E
Create minimum pedestrian standards	▪ Engineering, in collaboration with Planning, to prepare short document to confirm minimum standards to be used for new development, redevelopment, and capital projects. Forward to Council and Committees for information.	F; E
Create a pedestrian committee	▪ It is recommended that this be included within the Transportation Committee.	-
Enforce speed limits	▪ Work with West Vancouver Police to monitor areas of high impact especially at schools. Covered by operating funds.	E
Maintenance of sidewalks	▪ Using developed GIS network, establish current standard of existing sidewalks ▪ Need to prioritize existing sidewalks where maintenance most needed ▪ Summarize funding request in a report to Council to confirm commitment to funds on a long-term basis. ▪ Request some funding for following year.	S
Improved lighting	▪ Need to prioritize where lighting required based on existing network and usage. Criteria need to be established to confirm selection. This will need to tie in with transit stops and crosswalks. ▪ Identify 5 key locations for lighting and summarize funding request in a report to Council.	S

Year One Strategy	Action	Type
Provide informational maps in Ambleside and Dundarave	▪ Planning and Parks to provide overall informational maps for Ambleside and Dundarave which locate walking routes. To be undertaken using internal staff but costs for materials and installation.	E
Install pedestrian signage	▪ District Staff to work with Developers for improved signage between new developments and existing networks – such as looking to re-establish the Village Walk through the Evelyn Drive Development to Park Royal. ▪ Install signage to link north – south pedestrian routes to trailheads in the Upper Lands. ▪ Funding to be sourced from operating budget.	E
Cycle		
General		
Establish a cycling committee	▪ It is recommended that this be included within the Transportation Committee.	-
Create a formalized cycling map	▪ Maps to be developed based on the GIS system. Maps need to draw from existing information and proposed new routes. This can be done in-house in Engineering or by a consultant.	F; E
Route identification and improvement		
Install on-street route and signage on existing routes	▪ Engineering to identify existing routes which have can be signed and marked ▪ Install bike route signs and road markings using existing operating budgets	E
Undertake preliminary work for bike lanes and / or bikeways on Marine Drive from 13th to 25th	▪ Review conceptual options ▪ Undertake option review - traffic impact review on existing streets, parking strategy, alternative routes. Work to be undertaken by consultants. ▪ Consult with Marine Drive Corridor including merchants – in-house ▪ Submit preferred option to Council for approval and implementation in following year. ▪ Request cost share from TransLink, Federal funds, Provincial funds.	S
Bicycle education	▪ Sustainable transportation planner together with Engineering to establish stronger links with the School District to educate students on cycling to school.	F; E; A
Develop minimum bicycle standards	▪ Engineering, in collaboration with Planning, to prepare short document to confirm minimum bicycle standards to be used for new development, redevelopment, and capital projects. Forward to Council and Committees for information.	F; E
Update Zoning Bylaw to require min. bicycle parking	▪ Internal update by Planning for approval by Council.	E

Year One Strategy	Action	Type
Transit		
Establish a transit users group	▪ Establish a user group with a one year mandate to feedback on transit service ▪ Confer with West Van Transit and TransLink and dovetail with other feedback initiatives ▪ Utilize existing Corporate Committee framework, funding and support ▪ Some funding may be necessary for central venues to meet	F; E
Provide more frequent buses to serve secondary schools	▪ Need to establish where there is overcrowding on existing routes - Engineering to work with West Van Transit. ▪ Review routes and service to main high schools ▪ West Van Transit to review where additional hours can be provided at peak drop-off and pick-up. ▪ Engineering to review bus facilities and infrastructure needs leading to schools. ▪ Some provision for consulting fees.	F; A
Outsource provision of bus shelters	▪ Review operation by City and District of North Vancouver to establish what works for outsourcing. ▪ Develop specifications, tender and select preferred contractor ▪ Advertising revenue to flow into dedicated fund to implement transit upgrades.	E
Improve transit information availability	▪ Using the sustainable transportation resource, provide better access to transit information through DWV. ▪ This can include publishing transit schedule on website ▪ Displaying transit information at all public locations	E
Develop a Upper Levels transit plan	▪ Engineering to work with West Van Transit to review existing routes north of Upper Levels in the context of proposed growth in ridership and development. ▪ Review options for improved service ▪ Some provision for consulting fees	S; A
Update the North Shore Transit Plan (TransLink)	▪ Work with other North Shore Engineering Departments to make a case to TransLink to update the Plan. ▪ Present a resolution to Council to request commencement within one year which will be forwarded through to Mayor's Council.	A
Improve service on infrequent and one-way routes	▪ Engineering to work with West Van Transit to prioritize minimum levels of service on low volume routes. ▪ Review eventual removal of one-way systems. ▪ Identify costs for future year implementation.	F; A
Alternative Technologies		
Implement education and awareness programmes	▪ Using the sustainable transportation planner, provide information through the website and District departments on alternatives to the private vehicle and the comparative reduction in emissions. ▪ Promote awareness of electric bicycles. ▪ Promote the use of trip planning tools.	F; E
Consider staff involvement in alternative technology organizations	▪ Engineering and Planning to promote internal awareness of alternative technology organizations and promote engagement.	F; E

Year One Strategy	Action	Type
Policy changes to accommodate electric and hybrid vehicles	▪ In-house review of current policies and establish where use of electric and hybrid vehicles can be promoted.	F; E
Allow preferred parking on public streets for sustainably-fuelled vehicles	▪ Select a preferred corridor or area ▪ Identify a few high profile locations ▪ Work with merchants or owners ▪ Install new signage and markings	F
Provide charging stations	▪ Planning and Engineering to work with a new development, or redevelopment, to install charging station for tenants or customers. ▪ Provide incentives for developer ▪ Monitor	F
Policy changes to retrofit older developments with the appropriate infrastructure	▪ Review existing policies to require upgrades based on size of redevelopment.	F
Implement a trial of low-speed vehicles for neighbourhood zero emissions vehicles to share the roadway	▪ Identify existing routes which can accommodate lower speeds ▪ Review preferred corridor with Council and neighbourhood ▪ Install new signage and marking for trial ▪ Collect speed data before and after implementation ▪ Monitor impact ▪ This can be done in-house in Engineering or by a consultant.	F; E
Traditional Auto		
Enhance appeal and functionality of carpooling	▪ Using the sustainable transportation planner, work with Jack Bell Foundation to raise awareness of this alternative.	F; E
Incentives for carpooling	▪ Engineering and Planning to request carpool parking spots with development applications. ▪ Provide carpool parking spots in front of institutions, commercial areas, recreation centres, City Hall and Yard. ▪ Funds covered under operating or by developers.	F; E
Promote teleworking and flexible hours	▪ Where possible, DWV to promote flexible hours, and teleworking through employment contracts.	F; E
Enforce the no-idling policy	▪ Engineering to ensure main locations have effective regulatory signage for education and enforcement ▪ Engineering to work with Bylaws officers to warn and ticket offenders at schools. ▪ Funds covered by operating.	E
Goods		
Encourage off peak and/or night deliveries in commercial areas	▪ Corporate and Planning to review current Bylaws and policies where goods movement can be undertaken during the off peak.	F
Increase truck safety checks	▪ Continue to support truck safety stop on Highway #1 ▪ Engineering to work with the RCMP Highway patrol, RCMP safety office, and West Vancouver Police to undertake more truck safety checks within West Vancouver.	E; A
Enforce existing goods movement bylaws	▪ Engineering to work with West Vancouver Police to enforce Bylaws on main arterials.	A
Continue to require and enforce existing truck routes and downhill restrictions	▪ Engineering to maintain and monitor existing regulations.	E

Year One Strategy	Action	Type
Discourage truck traffic along Marine Drive through village cores	▪ Engineering to work with the BC MoT on truck routing through West Vancouver and the roles of the Provincial highway. ▪ Engineering to review truck route signage along arterials and Highway#1 ▪ Engineering to ensure that the Province and TransLink have full details of preferred truck routes which will be used at border crossings and for approvals.	E; A
Consult with the Province and North Vancouver concerning large truck access	▪ Engineering to initiate a discussion with BC MoT and the District of North Vancouver on truck access between Marine Drive and Highway #1 using Capilano Road. ▪ High level comparison between Taylor Way and Capilano Road to be undertaken – grade, volumes, capacity, access, etc. ▪ This can be done in-house in Engineering or by a consultant.	F; A
Marine/Rail		
Solicit proposals and ideas re: marine transportation linkages	▪ Engineering to review other options for marine connections.	S
Formalize marine service	▪ DWV to monitor current trial and promote use. ▪ Provide maps and information on DWV website	E

9.2 Years Two to Five

Strategies recommended in years two to five require more planning and analysis before specific actions, timelines, and costs are identified. The District will need to define the scope of work for these projects before budgets can be finalized, however, District Council should be approached for consultant fees plus staff time to complete the earlier studies.

Years Two to Five Strategy	Action	Type
All Modes		
Policy enhancement and development	*See separate action within each mode*	-
Continue working towards east-west connectivity for all modes	*See separate action within each mode.*	-
Continuous improvement to real-time data availability and trip planning tools	Using the sustainable transportation planner to motivate the community to shift modes.	F
Provision of amenities (e.g. waiting areas, washrooms, transit stores) at intermodal facilities	*See separate action within each mode.*	-

Years Two to Five Strategy	Action	Type
TDM and Policy		
General		
Expand role of sustainable transportation planner	▪ Review achievements in year one. ▪ Develop the programmes established and refine outreach. ▪ Continue to request funding support for this position from the Federal Government such as the ecoMOBILITY programme or the Provincial Government Transit planning funds.	F
Policy and Zoning		
Update OCP with new transportation policies – transportation hierarchy	▪ Internal update by Planning ▪ Identify areas of the OCP where sustainable modes can be promoted ▪ Include all updates policies within OCP.	F
Update planning documents, bylaws and polices to enhance and promote sustainable transportation	▪ Internal update by Planning and Engineering ▪ Forward to Council for approval where applicable	F
Review parking policies and the options for pay parking	▪ Review options for pay parking together with possible areas. ▪ On-street, off-street private lots as well as District lots need to be included in the review. ▪ Present options for review and discussion with Council, neighbourhoods and merchants. ▪ Summarize opportunities together with benefit cost analysis that includes sustainable mode impact. ▪ Consultant study	S
Incentives and Programmes		
Consider tax rebates for properties that have one or no cars	▪ Internal review by Planning and Engineering ▪ Discuss this initiative with ICBC and linkage between registration and property ▪ Review options with Council	F
Consider U-Pass for secondary school students	▪ Engineering to initiate discussion with the School District with West Vancouver Transit. ▪ High level review of ability to implement and impact. ▪ Initiate discussions with TransLink. ▪ Review initiative with Council	F; A
Establish programmes (Commuter Challenge, Walk to School, Bike to Work Week)	▪ Review achievements in year one. ▪ Continue to utilize existing Corporate resources to promote these programmes under the community interactions. Funds will be required for advertising, sponsorship, etc. ▪ Develop the programmes established and refine outreach.	F

Years Two to Five Strategy	Action	Type
Parking incentives: ▪ Expand the use of Preferred parking for carpool ▪ Reduce or remove parking subsidies for employees ▪ Provide a guaranteed ride home for employees	▪ Using the DWV role model, encourage businesses to dedicate carpool spots ▪ Using the DWV role model, encourage businesses to reduce or remove parking payments for employees – this can be offset by subsidies for transit or facilities for bikes ▪ Using the DWV role model, encourage businesses in West Vancouver to provide a guaranteed taxi ride home for employees who live in West Vancouver.	F
Create new school education programme for parents	▪ Build on work done in year one with safe routes to school. ▪ Discuss education of parents with the School District ▪ Develop a joint initiative to educate parents on the benefits of alternative modes – input from West Vancouver Police and West Vancouver Transit will also be beneficial. ▪ Identify a few schools to reach out to PAC and school management to start process. ▪ Monitor change. ▪ This can be undertaken in-house or with a consultant.	F; A
Distribute travel information materials	▪ Sustainable transportation planner or Corporate Services to expand and enhance the distribution of travel information. Need to advertise how people can move around and use upgraded services and alternative options.	F; E
Continue traffic calming	▪ Engineering Department to prioritize key areas ▪ Continue to implement measures ▪ Request traffic calming measures with redevelopment	S
Explore freeze on new road capacity for SOV	▪ Engineering to include evaluation of STP vision with new capital projects. ▪ Planning and Engineering to review proposed development capital additions to infrastructure that support the STP Vision.	F
Pedestrian		
Continue to implement the Spirit Trail	▪ Continue to work with the neighbourhoods and Council to obtain funds to complete the next section of the Spirit Trail. ▪ Apply for cost sharing from the Provincial and Federal governments	S; A
Complete an assessment of the pedestrian network to prioritize improvements	▪ Using data collected in year one, set criteria to evaluate needs for new pedestrian linkages. ▪ Establish priorities for new sidewalks ▪ Prepare draft list of quick win sidewalk improvements for immediate implementation under current sidewalk budgets ▪ Identify longer list for more review and functional design	F
Improve pedestrian connections by installing sidewalks at key locations	▪ Identify easy wins for implementation – such as linkages to transit stops, discontinuous sections of sidewalk, frontages along school; linkages to trails. ▪ Apply for cost sharing from TransLink ▪ Apply for budget funds from Council	S

Years Two to Five Strategy	Action	Type
Make Marine Drive corridor more pedestrian and cycle friendly from Dundarave to Horseshoe Bay	▪ Review areas where shoulder widening can take place to allow for pedestrians ▪ Undertake minor widening to allow for pedestrian widths where there are linkages to side streets or trails. ▪ Review areas where parking can be removed to allow for cyclists. ▪ Consider implementing a lower speed limit for the section from Oxley to Horseshoe Bay. ▪ Some consultant work may be needed.	S
Explore car free streets (temporary or permanent)	▪ Engineering and Planning to review areas where roads could be temporarily closed for exhibitions, celebrations, etc. with a view to possible permanent closures.	F
Improve north / south connections across Highway 1	▪ Review gaps using the pedestrian mapping already developed and identified linkages with respect to connectivity between communities. ▪ Identify easy wins for implementation ▪ Apply for cost sharing from TransLink ▪ Apply for budget funds from Council ▪ Some consultant work may be needed.	S; A
Update Cycling and Greenways Plan	▪ Review the current plan ▪ Update for improvements implemented ▪ Update for priorities ▪ Some consultant work may be needed.	F; E
Install trial intermodal hub	▪ Review options for intermodal facilities based on progress to date ▪ Select one facility close to Ambleside or Dundarave ▪ Improvements to be designed which will include bike lockers, informational signage, bus facilities, pedestrian connections, etc. ▪ Apply for cost sharing from TransLink ▪ Apply for budget funds from Council ▪ Some consultant work may be needed.	S; A
Cycle		
Identify safe cycle routes to school	▪ Identify schools which are most likely to succeed with encouraging cycling ▪ Use map base system developed in year one to identify routes that use existing roads that are deemed safe for school age cyclists ▪ Identify any additional signage or road markings necessary to identify routes ▪ Liaise with School District and identified schools for discussion ▪ Some consultant work may be needed.	A
Continue to implement the Spirit Trail	*As listed under Pedestrian*	-

Years Two to Five Strategy	Action	Type
Implement first section of bike lanes and / or bikeways on Marine Drive from 13th to 25th	▪ Undertake preliminary design for complete corridor – establish impact to property, utilities, parking, access, signals, boulevard use, landscaping, etc. ▪ Confirm preliminary estimate ▪ Undertake detailed design for first section ▪ Consult with Marine Drive Corridor including merchants – in-house ▪ Implement ▪ Consultant to be appointed, DWV to undertake consultation	S
Reallocation of road space for cycling	▪ Review bicycle routes from the Cycling Network and Greenway Plan where road pavement can be reallocated to allow greater space for bikes without adding to the pavement ▪ Identify 3 routes for review ▪ Assess each corridor for impact on parking, need for signage and markings, connectivity to other routes, safety ▪ Identify any additional signage or road markings necessary to identify routes ▪ Select one route for implementation ▪ Consult with neighbourhood and affected businesses before ▪ Some consultant work may be needed.	F; S
Implement trial intermodal hub	▪ Identify main intermodal hubs where bicycle routes connect with transit and other activities ▪ Consult with Transportation Committee, West Vancouver Transit, on locations and best success between modes. ▪ Select one location to implement as a trial ▪ Consult with property owners ▪ Implement – can be done in-house – funds needs for materials, maps and shelters	S; A
Install public bicycle parking at busy locations – intermodal hubs	▪ Work with commercial property owners and others to install secure, safe, and dry bicycle parking facilities.	S; A
Provide short-term public bike rental	▪ Review trial bike rental success in other centres and recent bike project in Vancouver ▪ Request tenders from outside suppliers for a trial short tem contract to provide bikes in central areas such as Ambleside or Dundarave. Suggest trial during summer month for recreational use and as a connection between hubs. ▪ This should be revenue neutral but make require some funds for marketing and consultation.	F; A
Implement bicycle education programmes at schools and in community	▪ Extend education within schools using the sustainable transportation planner. ▪ Market cycle mode with key groups.	F; A
Develop minimum cycling requirements for each roadway type	▪ Working off the minimum standards developed in year one, develop standards for local, collector and arterial roads. ▪ Review standards with working Committees to provide balance for modes ▪ Submit to Council for approval ▪ Adopt as policy for any future corridor upgrade	F

Years Two to Five Strategy	Action	Type
Update Cycling and Greenways Plan	*As listed under Pedestrian*	-
Improve north / south connections across Highway 1	▪ As listed under Pedestrian ▪ Review gaps using the cycle mapping already developed and identified linkages with respect to connectivity between communities. ▪ Identify easy wins for implementation ▪ Apply for cost sharing from TransLink ▪ Apply for budget funds from Council ▪ Some consultant work may be needed.	S
Implement key commuter routes as per Cycle and Greenway Plan	▪ Prioritize key commuter routes to be implemented from Cycle and Greenway Plan ▪ Identify next corridor for conceptual option review. ▪ Review with Working Committee and Council ▪ Request funds in capital budget	S
Continue to install on-street route and signage on existing routes	▪ Install bicycle route signs and road markings using existing operating budgets	E
Transit		
Transit Planning and Policy		
Review of transit routing / frequency on key routes and work with TransLink to secure funding, improve service, and expand FTN	▪ Need to use the Area Transit Plan as a base ▪ Engineering to work with West Vancouver Transit and TransLink to establish where more frequency is required. ▪ Business case development to be undertaken which identifies the real costs and benefits of transit to the development of the community towards sustainability. ▪ Some consultant work may be needed	S, A
Consider a limited stop commuter service to Vancouver using Highway 1	▪ Need to use the Area Transit Plan as a base ▪ Engineering to work with West Vancouver Transit and TransLink to confirm this direct route together with other improvements necessary for improved bus access to Lions Gate Bridge. This can tie in with HOV lanes on Marine Drive and improvements to the Capilano Bridge crossing. ▪ Route would be like direct service from White Rock to Vancouver. ▪ Some consultant work may be needed	F, A
Expand development near frequent transit network	▪ Planning to review current and proposed FTN routes and review expanded opportunities for development and densification along those corridors. ▪ Planning to update the OCP and neighbourhood plans to co-ordinate where transit investment is being made.	F
Expand tax deductions for transit use	▪ DWV to review other opportunities to recognize regular transit use with tax deductions. ▪ Need to liaise with Provincial and Federal agencies.	S, A
Promote U-Pass for secondary students and free transit for student under 13 when accompanied by an adult.	▪ Engineering to continue to work with the School District, West Vancouver Transit, and TransLink. ▪ More detailed review for implementation. ▪ Review options with Council within budget debates. ▪ Some consulting assistance may be required.	F, A

Years Two to Five Strategy	Action	Type
Support technology to reduce emissions	▪ Engineering and West Vancouver Transit to continue to work with TransLink on cleaner transit technology.	A
Work with TransLink to improve ease of payment for users	▪ Engineering and West Vancouver Transit to continue to work with TransLink on new technologies such as smart card.	A
Enhance Transit Service		
Initiate transit service improvements (e.g. more routes north of Highway 1, east-west service, frequency on main arterials)	▪ Need to use the Area Transit Plan as a base ▪ Review direct services between developing communities north of Highway 1 to reduce and eventually remove one-way systems. ▪ Engineering to work with West Vancouver Transit and TransLink to motivate for expanded service. ▪ Implement one improved or expanded route ▪ Funds will be needed for complementary infrastructure.	S, A
Increase north-south frequency on 15th Street, 21st Street and Taylor Way	▪ Need to use the Area Transit Plan as a base ▪ Review direct services between communities north and south of Highway 1. ▪ Engineering to work with West Vancouver Transit and TransLink to motivate for expanded service.	S, A
Provide Demand Responsive Transit such as expanded community shuttle, dial a ride, taxis on fixed routes etc	▪ Engineering to work with West Vancouver Transit and TransLink to provide options for alternatives to the 40ft bus. ▪ Engineering and Planning to support transit technology that is less intrusive on neighbourhood, more appealing for potential users, and that is more in line with planning lane use development.	F, A
Support the purchase of cleaner transit vehicles	▪ Engineering to work with West Vancouver Transit to support the purchase of cleaner transit vehicles.	A
Implement Transit Infrastructure		
Transit infrastructure improvements (e.g. improved bus stops, transit priority, park & ride, pedestrian connectivity)	▪ Engineering to make allowance for enhanced transit infrastructure to support and encourage transit use. ▪ Request cost share with developers, TransLink, and Province. ▪ Engineering to work with West Vancouver Transit and TransLink to motivate for expanded service.	S, A
Create comfortable intermodal hubs	▪ Working with initiatives within the community, allow for good access for transit users and direct linkages to other modes such as walking and cycling. ▪ Engineering to work with Planning so that the transit interface links directly with corridor and community plans.	S

Years Two to Five Strategy	Action	Type
Alternative Technologies		
Require preferred parking for electric / hybrid vehicles	▪ Engineering to request preferred parking with new developments ▪ Engineering to install dedicated spots for electric vehicles in prominent locations	F
Promote creation of alternative fuelling stations	▪ Engineering and Planning support installation of alternative fuelling stations as use increases.	F
Continue to move towards zero-emissions technology for municipal fleet	▪ Engineering to continue current initiatives to reduce emissions.	F
Consider slow vehicle lanes on Marine Drive	▪ Engineering to review success of slow vehicle lanes on trials and review options for Marine Drive. ▪ Some consultant assistance may be necessary.	S
Traditional Auto		
Promote HOV use with new infrastructure with Park & Ride, rideshare / carpool lots, etc.	▪ Engineering to review current Park-and-ride lots. ▪ With the development of the Area Transit Plan, establish convenient locations where new Park-and-ride lots can be established. ▪ Require park-and-ride spaces within new commercial development along FTN. ▪ DWV to be a leader to promote park-and-ride options with existing facilities. ▪ Seed funds will be required for cost sharing and some upgrades to proposed lots.	F, A
Encourage carpooling and shared ride with application and operation of HOV lanes	▪ Engineering to review HOV options in a gradual scale to encourage carpooling and move away from the SOV.	F, S
Improve intersections at Marine Drive / Taylor Way, and 15th Street / Mathers Avenue	▪ Engineering to upgrade these intersections where delay is impacting general movements of people. ▪ Consultant to review current and proposed improvements with design supporting alternative modes.	S
Encourage support for ride matching	▪ The sustainable transportation planner to promote ride matching by using existing systems through the District website and other measures	F
Encourage planning for live / work developments	▪ Planning to review and support options for live-work within new development and re-development.	F
Increase availability of car-sharing (co-op, Zipcar, etc.)	▪ DWV to support car-sharing within current facilities such as the Rec Centre, and District Hall ▪ Install dedicated spots in prominent locations	F
Tax incentives for driving less and using low-emission vehicles	▪ Engineering to work with TransLink and ICBC for significantly reduced license fee for lower emission vehicles and for reduced travel.	A

Years Two to Five Strategy	Action	Type
Goods		
Continue to encourage and enforce use of Highway 1 as the main goods movement route	▪ Engineering to continue to work with the BC MoT as well as Goods Movement Associations.	A
Improve standards for delivery access to new developments	▪ Engineering to work with Planning to refine and enhance goods access to developments to provide improved efficiency and reduce impact to other modes.	F
Additional restrictions for goods movement not impacting access or capacity	▪ Engineering to continue to encourage and enforce goods delivery outside of peak periods with time of day restrictions, loading restrictions, etc. ▪ Work with the commercial owners to encourage more efficient use of existing infrastructure.	F
Marine/Rail		
Continue to establish new marine links (e.g. Jericho Beach, Granville Island, North Vancouver)	▪ Engineering to review other options for marine connections	S, A
Explore partnership with CN Rail for rail service	▪ Engineering to continue discussions with CN Rail for opportunities for commuter services.	S, A
Consider investment in dock infrastructure when and where necessary and/or applicable	▪ Engineering to monitor.	S

9.3 Beyond Year Five

After the implementation of the year one and years two to five strategies, the transportation network in the District will have changed. Possible projects for 5 years and beyond have been listed in **Table 3**.

The District should review all of the strategies outlined in the STP and the transportation data collected to assess the effectiveness of specific programmes, and progress against the goals outlined in this document. An implementation plan for the remaining applicable strategies should be developed at this time. The possible projects need to be reviewed and refined.

The Vision for beyond five years is outlined in **Section 3**. The STP is a living document that should be updated every five years to reflect progress and changes in goals and strategies.

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10 Conclusions and Recommendations

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10. CONCLUSIONS AND RECOMMENDATIONS

There are a number of main themes that can be drawn from the work undertaken and the strategies that have been developed.

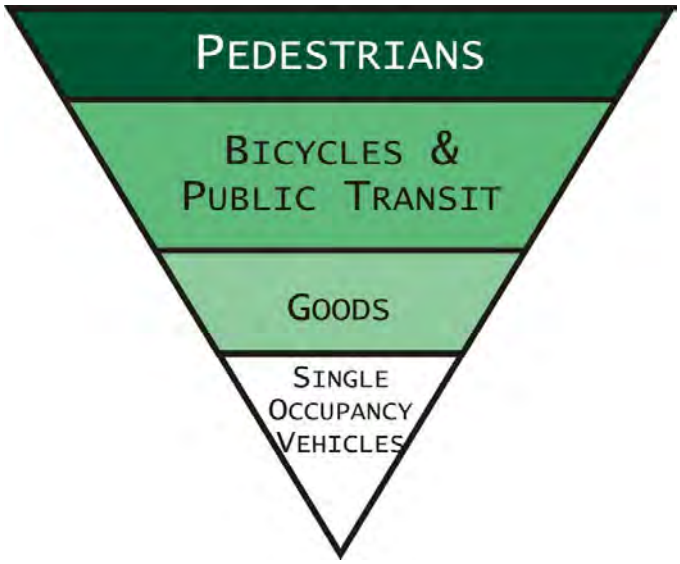
The main themes are:

1. There is strong support at the community, Council, and staff level to make a shift towards a more sustainable transportation system.
2. There is a need to show some quick wins to demonstrate action within a longer term Vision.
3. The need to change will be guided by emerging challenges and opportunities instead of by historical trends - changes will need to take place at a number of levels – with policy, clear planning, supply of the right infrastructure, and social marketing.
4. The long-term Vision will set the scene for an integrated plan with a staged implementation schedule.
5. Change will be planned with foundational strategies which will set the basis from which change occurs together with larger projects that will need to be staged over a number of years.
6. The continuous improvement of transportation safety is a key stone in the Vision and strategies.
7. To succeed there is a need to forge stronger partnerships with School Districts, West Vancouver Transit, TransLink, BC MoT, the Squamish Nation and West Vancouver Police and Emergency Services.

The main strategies have been developed for each mode and are based on the goals of the plan. A summary matrix of all of these strategies can be found in **Section 8.3** (**Table 3: Strategy Matrix**).

The transportation goals are repeated in this section to provide the context for the main strategies to move forward.

West Vancouver's Transportation Hierarchy



West Vancouver's Transportation Goals

1. To provide equitable, safe and accessible transportation options for all of West Vancouver's residents, including the disabled and aging populations by investing in a complete, connected transportation network for all modes.
2. To reduce overall greenhouse gas (GHG) emissions from transportation and enable West Vancouver to meet it's climate action targets.
3. To shift travel away from carbon emitting, single occupancy vehicles towards sustainable modes and to improve the infrastructure for transportation alternatives according to the principals of West Vancouver's transportation hierarchy.
4. To inform and educate the citizens of West Vancouver on alternative modes of transportation and engender a move towards adopting more sustainable options.
5. To refine the design of transportation infrastructure to increase the quality of the experience of travelling, and to improve environmental performance;
6. To engage the youth of the community and to give them the tools to travel in safe, socially responsible, and environmentally sound ways.

Four main types of strategies were developed, which are:

1. *Foundational* (building blocks, steps to shift behaviour);
2. *Easy to implement* (lower cost, utilize existing resources);
3. *Staged* - First step of a larger project; and
4. Those that require support and/or funding from other *Agencies*.

West Vancouver believes it is important to show early leadership by implementing visible change in the first year of the programme while developing the building

blocks for a shift in thinking and behaviour. A number of strategies are listed below which can be included in current programming, or requested in future budgets. The high priority strategies are listed below in three groups: *Foundational* and *Easy* (easy to implement are shown in **bold**); *Staged*; and collaborative with other *Agencies*.

Foundational and Easy to Implement
▪ **Publicise the Strategic Transportation Plan.**
▪ Dedicate a transportation planner position.
▪ **Establish Transportation Working Committee.**
▪ **The District is to lead by example by shifting to alternative modes.**
▪ **Create minimum standards for pedestrian and cycle facilities.**
▪ **Sign and mark existing and proposed cycling and pedestrian routes.**
▪ **Create formalized map for pedestrians, cyclists, and park-and-ride users. .**
▪ **Update policies, bylaws to support sustainable development and TDM.**
▪ **Adopt transportation hierarchy.**
▪ Assemble existing data and establish a data collection programme.
▪ Encourage off-peak and / or night delivery of goods in commercial areas
▪ **Continue existing programmes on a year by year basis (e.g. traffic calming, sidewalk infill)**
▪ **Outsource provision on bus shelters and use revenue for transit upgrades.**
▪ **Implement a trial of low speed vehicles on selected roadways.**
Staged
▪ Commence Marine Drive Corridor study from Ambleside to Horseshoe Bay.
▪ Update the North Shore Area Transit Plan.
▪ Develop improved north / south pedestrian and cyclist routes including connections to the trailheads in the Upper Lands.
▪ Continue implementation of the Spirit Trail.
Collaboration with other Agencies
▪ Implement public outreach and community-based marketing initiatives, including at schools.
▪ Consider free transit for children under 13 accompanied by an adult.
▪ Provide more frequent services to school.
▪ Initiate discussion with CN regarding proposed future commuter use of the corridor.
▪ Support current ferry crossing trial

The STP is a living document that should be updated every five years to reflect progress and changes in goals and strategies.

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11 Glossary

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11. GLOSSARY

This section explains and defines key terms that are useful to understand transportation planning activities, infrastructure, and measurement. These definitions are taken from a number of sources, including the Transport Canada ***Canadian Guidelines for the Measurement of Transportation Demand Management Initiatives,*** and the Transportation Association of Canada (TAC) ***Best Practices for the Technical Delivery of Long-Term Planning Studies in Canada***, both by iTRANS Consulting Inc.

Average Vehicle Ridership (AVR)
This is the ratio of the total number of travellers (all modes) to the total number of private vehicles. Again, this number is always equal to at least 1.0. It can be calculated as the total number of person trips (all modes) divided by the number of vehicle trips.

Best Practices
The term "Best Practices" is used across many disciplines to describe desirable or successful approaches to a process or problem. In the Transportation Association of Canada (TAC) ***Best Practices for the Technical Delivery of Long-Term Planning Studies in Canada***, best practices were defined as either "applied innovation" or "practices proven successful."

Bicycle Facilities
All infrastructure intended for use by cyclists. This includes bicycle routes, parking, and end-of-trip facilities like change rooms, showers, and lockers.

Bicycle Lane
A segregated space on a roadway assigned to bicycles. The lane is typically separated from vehicle space by a painted line, but other delineation, such as coloured or textured pavement, or a physical barrier may be used. Bicycle lanes in Canada are identified with a standard bicycle symbol painted on the lane at regular intervals, as well as signage.

Bicycle Route
A bicycle route describes any travelled way signed and marked for use by bicycles. The route can be an on-road or off-road facility that is exclusive to bicycles or shared by bicycles and vehicles, transit, or pedestrians.

Bike Box
A marked area at the stop bar of a signalized intersection that provides space for bicyclists ahead of waiting traffic. The box is intended to increase the visibility of cyclists and reduce conflict as the cyclists can pull ahead of traffic when the light

turns green. They are normally identified by coloured pavement and a painted standard bicycle symbol.

Community Based Social Marketing
Social marketing is a type of TDM that works to inform the public's attitude concerning transportation and encourages changes to travel patterns to make better use of the transportation network. Community-based social marketing emphasizes direct, personal contact among community members and the removal of barriers to desired actions and behaviours.

Commuter Cyclist
The term commuter cyclist is typically used to refer to cyclists who are comfortable travelling with traffic on higher volume vehicle routes and often travel at high speeds. Generally, commuter cyclists prefer lanes and on-street routes to less direct off-street routes where they may encounter slower bicyclists and / or pedestrians. The term is derived from the assumption that these cyclists are often using cycling as a mode of transportation to commute to and from work, although not exclusively.

Cost-effectiveness
Cost effectiveness is the value received for the investment. This is normally an economic measure of the results of a programme, although it can also be expressed as a cost per unit (i.e. cost per tonne of CO_2 reduced).

Counts
Counts record and report data using actual observations (manual or automatic). Counts can record the number of vehicles, vehicle occupants, pedestrians, bicycle riders, or other information across a cordon, at an intersection, or generated by a site.

Criteria Air Contaminants (CACs)
Environment Canada identifies seven air pollutants that are considered to be CACs. The seven contaminants are Total Particulate Matter, Particulate Matter with a diameter less than 10 microns, Particulate Matter with a diameter less than 2.5 microns, Carbon Monoxide, Nitrogen Oxides, Sulphur Oxides, and Volatile Organic Compounds.[15] More information on CACs can be found through various Environment Canada sources (www.ec.gc.ca).

Efficiency versus Equity
Transportation systems often have two different purposes. The first is the efficient movement of people and goods. The second is providing equitable access to all people. Often, one investment may provide both equity and efficiency, but other times they are mutually exclusive. For example, a new LRT line connecting a dense

[15] Environment Canada, *Air Pollutant Emissions: Glossary*, http://www.ec.gc.ca/pdb/cac/cac_gloss_e.cfm,2007-03-09.

residential development to a downtown core may provide good efficiency returns based on the number of people moved and travel time for the financial investment. A bus serving a sprawling community with few riders may not be efficient (low returns for investment) but high equity (provides access for residents in that community who don't have access to a car).

Evaluation Measure

An evaluation measure is the means used to quantify or qualify the indicator and provides an assessment of that attribute. For example, the variations in volume to capacity ratio during an evaluation period across the network, or the percentage change in the transit modal share during a typical peak hour. The measure can be expressed quantitatively as a percentage, index, rate, or some other metric or as a threshold, standard, benchmark or logical value; or it could be a qualitative assessment (e.g. high, medium, low). It should be monitored at regular intervals.

Greenhouse Gases (GHG)

Environment Canada defines GHG as "gases in the atmosphere that trap energy from the sun. Naturally occurring GHGs include water vapour, ozone, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Without them, the Earth's average temperature would be about 33°C lower than it is, making the climate too cold to support life (Schneider, 1989). While these naturally occurring gases are what make life possible, a serious concern today is the enhanced effect on the climate system of increased levels of some of these gases in the atmosphere, due mainly to human activities."[16] In order to meet Canada's GHG reduction targets, Canada monitors six gases (carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulphur hexafluoride (SF_6), perfluerocarbons (PFCs), and hydrofluorocarbons (HFCs)).[17] Emissions from fossil fuel combustion for transportation include CO_2 (94.7%), N_2O (5.1%) and CH_4 (0.3%).[18]

Greenway

A separate facility for pedestrians and cyclists that provides an enhanced environment. A greenway normally connects public plazas and gathering areas, parks and natural features, and may run along natural corridors or along other separate rights-of-way.

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16 Environment Canada, *Greenhouse Gas Sources and Sinks: Frequently Asked Questions*, http://www.ec.gc.ca/pdb/ghg/about/FAQ_e.cfm,2006-11-18.

17 Environment Canada, *Information on Greenhouse Gas Sources and Sinks: Monitoring, Accounting and Reporting on Greenhouse Gases*, http://www.ec.gc.ca/pdb/ghg/ghg_home_e.cfm, 2008-12-11.

18 Environment Canada, *Information on Greenhouse Gas Sources and Sinks: Factsheet 3 – Transportation*: 1990-2000, http://www.ec.gc.ca/pdb/ghg/inventory_report/1990_00_factsheet/fs3_e.cfm, 2009-02-04.

Mobility Management (MM)
Mobility Management is the European term used to describe activities that promote sustainable transportation and reduce or manage demand for auto travel.[19] It is used in essentially the same context as **TDM**.

Mode share, Mode split, and Mode shift
A transportation mode describes a type or means of transportation. The number of modes differs for different types of analysis, organizations, or areas. Often, transportation models or analysis will take into account only one mode (auto) or two modes (auto and transit). For other models or types of analysis, the list of modes can be very extensive, with a number of sub categories. Some of the modes used for analysis include:

- Auto:
  - Drive alone (also known as single occupancy vehicle (SOV))
  - Auto as driver
  - Auto as passenger
  - Auto with others from the same household
  - Auto with others from different households
  - Taxi
  - Motorcycle
- Transit:
  - Bus
  - Light rail
  - Heavy rail (subway)
  - Commuter Rail
  - Ferry
- Active transport (modes of transport that are human-powered):
  - Walk
  - Cycle
  - Skateboard / rollerblade
  - Wheeling (wheelchair, scooter)

Some trips may include two or more modes. For example, a traveller may walk to a bus stop or drive to a park-and-ride.

Three different terms are used to describe the relationship between the different modes. These are mode share, mode split, and mode shift.

1. **Mode share** describes the percentage of all travellers using that mode. This is usually used when there are multiple modes and considers auto, transit, cycling, and walking.

[19] European Platform on Mobility Management, General Information, http://www.epomm.org/index.phtml?Main_ID=820

2. **Mode split** normally describes the ratio of travellers between two or more modes (often auto and transit; although this also can be applied to other modal combinations) rather than among all travel modes.
3. **Mode shift** describes a change in travel patterns of a percentage of travellers from one mode to another over a given period of time. For example, if 100 of 100 employees in an office complex drove to work before the TDM initiative and 15 of 100 of those employees walked to work after the TDM initiative, the initiative has resulted in a mode shift of 15% from auto to walk mode.

Mode share, split, and shift should always be qualified (which mode (share); which mode compared to which mode(s) (split); which original mode(s) to which new mode(s) (shift))

Objectives, Indicators, and Measures

To evaluate the effectiveness of a programme (specifically for a TDM programme in the ***Canadian Guidelines for the Measurement of TDM Initiatives***, but also widely applicable to other types of investment), a programme must first set objectives, identify indicators and then choose measures to evaluate success based on those indicators.

- **Objectives** are the overall goals of the programme. They should reflect the purpose of the organization and the intention of funding bodies.
- **Indicators** describe the desired output or outcome based on the objectives set for the programme. It describes an attribute of the programmes performance.
- **Measures** are the means used to quantify or qualify the indicator. Measures can be quantifiable values such as percentages or rates, or they can be clearly defined qualitative values such as high, medium, low. Measures must be monitored at regular intervals to show changes over time.

For a TDM programme, an example objective may be to lower travel by car with an indicator of reducing VKT by 5% a year. The measure would be the year-to-year change in VKT.

Outputs versus Outcomes

Programmes have two types of results: outputs and outcomes.

- **Outputs** are the activities and processes of the programme itself. They are the actions taken to achieve the overall goals of the program. Outputs include measures like the number of customers served or the number of brochures distributed. Outputs are necessary to achieving outcomes.
- **Outcomes** are the results of the programme that will be measured against the overall goals. These may include emissions reduced, mode shift, or VKT reduced.

Pedestrian Route:
A pedestrian route is any travelled way intended for use by pedestrians. It may include sidewalks, walkways, and other roadside infrastructure, or separate rights-of-way, such as greenways or trails.

Performance Indicators
Describes an attribute of a transportation system's performance – an example might be planning level of service of the transportation system. The indicator is not the same as, but rather should correspond to, an objective or goal (e.g., maintain level of service "C"). It must describe clearly and precisely a desired output or outcome (e.g., 'roadways operating at volume to capacity ratio of 0.85' as opposed to 'acceptable level of service'), and must be usable for documenting and monitoring progress towards the goal. The indicator is intended to enable a common, systematic ranking and comparison among competing projects; therefore, it must be usable for all potential projects or locations to be measured.

Person-Trip
A person-trip is a movement between one origin and one destination by a single person for a single purpose, using any mode or combination of modes. One person travelling by car between home and work is one person trip. Two people in one car travelling from home to work is two person trips.

This definition describes both ends of a trip. It should be noted that some measures also consider the person-trip, or vehicle-trip (see below) in terms of the trip end to or from that site (i.e., the other end of the trip is not important): this is the case when considering trip generation rates to/from a specific site.

Recreational Cyclist
The term recreational cyclist is used to describe bicyclists who are less comfortable riding on high volume traffic routes and prefer protected and / or separate routes. Recreational cyclists are typically travel at a more leisurely pace than commuter cyclists. Not all trips by recreational cyclists are for recreational purposes; some recreational cyclists may commute between work and home by bicycle.

Revenue Rides
A revenue ride is a linked transit trip where the person travelling pays one fare. For example, a trip from home to work that involves one transfer uses two buses, but is one revenue ride.

Surveys

Surveys ask individual respondents to provide data about their own actions and experiences directly. There are several different types of surveys:

- **Origin-Destination Survey**, also known as a revealed preference or travel behaviour survey, quantifies people's travel patterns by asking them to describe their actual travel activity (i.e., what they actually did) over a specified period of time. Information typically is gathered about the trip's origin, destination, purpose, mode(s) used, start time and end time.
- **Stated Preference Survey** quantifies how people *would* behave under a situation with which they do not yet have any experience. Stated preference surveys typically are used to quantify how people value travel time saved for a new toll road (i.e., their willingness to pay a toll of $X in order save Y minutes of time), or the willingness of transit patrons to make a transfer to a new, faster rapid transit system, which might replace taking a slower bus all the way (i.e., the inconvenience of having to transfer mid-way in a trip, even if that trip is now faster or more comfortable).
- **Attitudinal Surveys** also assess why people make the travel decisions they do, and how they might behave in a new situation, among other attributes (e.g., customer satisfaction with an existing programme). While this assessment is qualitative, it provides useful information for programme managers.

Sustainable Transportation

Transportation that reduces resource use, including energy, while still meeting the transportation needs of the current population.

Transportation Demand Measurement (TDM)

TDM influences the demand for travel by using education, promotion and outreach to change personal attitudes and awareness or by applying travel incentives and disincentives that make one travel option more attractive (or less attractive) than others. TDM policies and programmes are typically intended to:

- Shift private automobile use to other modes
- Disperse travel from times of peak demand
- Eliminate travel all together

Vehicle Kilometres Travelled (VKT)

VKT, or Vehicle Miles Travelled (VMT) is a fundamental measure of vehicle activity, or usage – in this context, the reference is to the activity of personal vehicles. VKT measures the distance travelled by autos in a given time period in a given area. It reflects both the total number of vehicle trips and the distance of those vehicle trips (hence reductions in auto trips and auto trip distance will both reduce VKT).

Changes in VKT are directly linked to changes in GHG and CAC emissions, as well as fuel use and other indicators.

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Appendix A: Public Comment Summary

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HDR | iTRANS
400 - 601 West Cordova St.
Vancouver, BC V6B 1G1
Tel: (604) 682-8119
Fax: (604) 682-8170
www.hdrinc.com
www.itransconsulting.com

File: 2.2
Project # 5263

Appendix A: Memorandum

To:	STP Working Group
Cc:	Brent Dozzi, West Vancouver
From:	Sasha Naylor, P. Eng. Allison Clavelle, EIT
Date:	January 4, 2010
Re:	Public Comment Summary from December 2nd Open House

The comments received from the project open house held on December 2nd, 2009 were reviewed. Below is a brief summary of the major themes that emerged in the public comments.

General / Transportation Demand Management

There is broad support for sustainable transportation among those who submitted comments. Comments reflected a desire to create a transportation system which allows for efficient movement of people and goods in an equitable manner, without adding to congestion, pollution, or costs. Many comments reflected a desire to make sustainable modes (particularly modes other than the private automobile) the "obvious" first choice for transportation in West Vancouver.

Nearly all respondents were appreciative of efforts to communicate with them and seek their input.

Specific items for TDM include:

- Reduce hidden subsidies for auto use by implementing pay parking
- Make parking subsidies explicit so they can be compared to transit subsidies
- Lead by example and eliminate designated parking spots for municipal employees
- Stop building new parking lots
- Use the transport hierarchy to guide all civic decisions and building / road design

Transit

Transit was identified by the community as an important part of the transportation network, and most of the comments received concerned the transit system. The majority of comments requested an increase in transit service levels; particularly service hours, headways, and routes. Some comments asserted that West Vancouver has lower relative levels of transit service compared to other parts of the region, despite having higher municipal taxes. Some comments

also reflected a willingness to pay more for transit through taxes if better service was provided.

Other comments concerned aspects of service such as driver selection / training and fare / transfer policy. Respondents were typically happy with the customer service aspect of the Blue Bus system, reserving their requests for increased service. A number of respondents also mentioned specific technologies, such as LRT, and there was notable support for commuter rail on the existing CN rail line.

Comments regarding service times:
- Provide service in early morning
- Improve service to operate later on weekdays and at half-hour headways

Comments regarding routing:
- Review the looping bus route through Park Royal – it causes a big time delay to downtown
- Provide new service from Park Royal to Grouse Mountain
- Provide new service from Horseshoe Bay to Lonsdale Quay
- Better bus access to West Vancouver Community Centre and the Library
- Provide new east-west service on Westmount Road
- Run more busses on Westhill (at least two per hour)
- Provide express services across the north shore – current travel times are too long
- Connections to other regional transit
- Sunday bus shuttles to a grouping of churches near Taylor Way / Mathers
- More express / limited stop bus routes

Comments regarding fares:
- Explore a flexible monthly pass based on date of purchase (rather than first of the month)
- Provide free transit for people under 13 all the time or on weekends
- Add more time to transfers

Comments regarding parking / intermodal transfers:
- Build more Park-and-Ride facilities
- Improve facilities at transit hubs (e.g. waiting rooms, beverage machines)
- Improve bus shelters to make them more weather resistant

Comments regarding technology and information:
- Provide automated ticketing on busses that accepts credit cards
- Make posted bus schedules more readable
- Make announcements on the ferry when tickets are for sale
- Speed bus loading at Horseshoe bay by having ticket machines at bus stops and on BC Ferries
- Provide GPS-based next bus info at each stop

Other comments included:

- Allow UBC express busses to pick up passengers if under-capacity and on-time
- Create a user and driver advisory committee
- Hold more public forums prior to decision making
- Use of smaller buses for routes with lower ridership
- Allow pets on transit at certain (e.g. off-peak) times
- Manage bus frequency better to eliminate bunching
- The new bike racks are difficult to use and block drivers' sightlines
- Bus drivers should be more aware of people with disabilities
- Bus drivers should be selected purely based on personality

Pedestrian

There is strong support for active transportation. There was strong support for completion and maintenance of the Spirit Trail. Many respondents requested that the team examine ways to improve cyclist and pedestrian safety. Sidewalks were broadly seen as an important feature to improve and maintain, and there were many requests for more sidewalks in general, and for policy changes to require better pedestrian environments (lighting, trimming vegetation, awnings). Some respondents also mentioned changes to traffic signal timings / functions to give priority to pedestrians. There was a perception that West Vancouver is unsafe for pedestrians.

Specific items include:

- Provide pedestrians crossings at mid-block locations
- Provide crosswalks on Gordon Avenue from Kiwanis to the Community Centre
- Provide better lighting and crosswalks at 14th and Bellevue
- Provide a cantilevered sidewalk over the cliff north of Eagle Harbour
- Some sidewalks need to be wider (such as the sidewalk near the library)
- Improve maintenance and signage for Village Walks
- Provide programmed Accessible Pedestrian Signals (APS)
- Increase pedestrian crossing times across Marine Drive
- Provide overhead lights for the pedestrian crossing at 11th
- Marine Drive – 13th is unsafe for pedestrians
- The crossing at 15th and Mathers is unsafe for schoolchildren
- Need a sidewalk on Mathers from 22nd to 25th
- Need a sidewalk on Keith Road between 14th and Taylor Way
- Provide sidewalks all along Marine Drive
- Provide a footbridge over Cypress Creek
- Should be able to walk to Horseshoe Bay on a boardwalk or seawall
- Create a trail from Deep Cove to Whytecliff
- Develop trail maps
- The audible pedestrian signals are not effective and are too far from the curb

Bicycling
Many respondents requested new bicycle lanes on a variety of streets, most notably Marine Drive (many respondents were concerned about a lack of cycling lanes here). Completion of the Spirit Trail was also mentioned a number of times. In general, there was a perception that West Vancouver is 'behind' other jurisdictions in providing bicycle facilities. Cyclist safety was a concern for respondents.

Specific items include:
- Provide rain-sheltered and secure bicycle parking
- Install more bike lanes
- Consider reversing cycling lanes with parking lanes for the Visionary Concept for Marine Drive
- No new arterial roads should be built without cycling lanes
- Create a cycling lane adjacent to Marine Drive from 13th to Park Royal by taking a few feet from the soccer fields
- Need cycling facilities near the seawalk
- Use notices on the bridge and other cycling routes to communicate with cyclists
- Provide a bike / pedestrian bridge over the Capilano River
- It is difficult to get into West Vancouver after crossing the Lions Gate Bridge
- Create a bike lanes between Park Royal and 13th
- Need clearer signage at intersections to determine who has right-of-way
- Do not put cycling signage on the roadway because it gets covered up by leaves, snow, etc.
- Licensing bicycles seems extreme

Traditional Auto / Alternatives
Respondents demonstrated strong support for traffic calming initiatives, and there was very little opposition to such initiatives. A number of respondents also suggested roundabouts. Many respondents requested traffic calming measures on specific sections of roadway. A number of comments requested more Park-and-Ride facilities to link auto use with transit. There were fewer comments for traditional auto than for other modes.

Specific items include:
- Improve transportation in Park Royal (traffic, pedestrians, and bikes)
- Provide speed bumps at Park Royal
- Provide traffic calming on 21st Street from Marine Drive to Queens
- Synchronize traffic signals
- Overhaul intersections and install roundabouts
- Reduce the number of lanes for slow but steady traffic
- Implement a no-idling policy for residential streets
- Improve intersections at 21st / Fulton, 21st / Mathers, and 21st / Queens to calm traffic
- Provide a new north / south connector west of 21st Street
- Encourage use of scooters and motorbikes
- Low emissions vehicles are too unsafe in a crash with larger vehicles

- Create a 4-way stop at 15th and Inglewood
- Create a roundabout at Welch & Capilano
- On Marine Drive, create left turn lanes with advanced greens

Goods / Marine / Rail

A number of comments reflected a desire for increased ferry service for West Vancouver residents, and for such services to connect seamlessly with other transit modes both in West Vancouver and other nodes (e.g. Vancouver).

Specific items include:

- Provide more ferry service / service to more destinations (like in Sydney)
- Make ferry service year-round
- Provide a ferry from 14th to Bowen Island
- Provide temporary moorage / ferry pick-up at Dundarave
- Provide lanes for people, not for trucks (goods)
- Look at running commuter rail service on existing rail corridors

Other / Out-of-Scope Comments

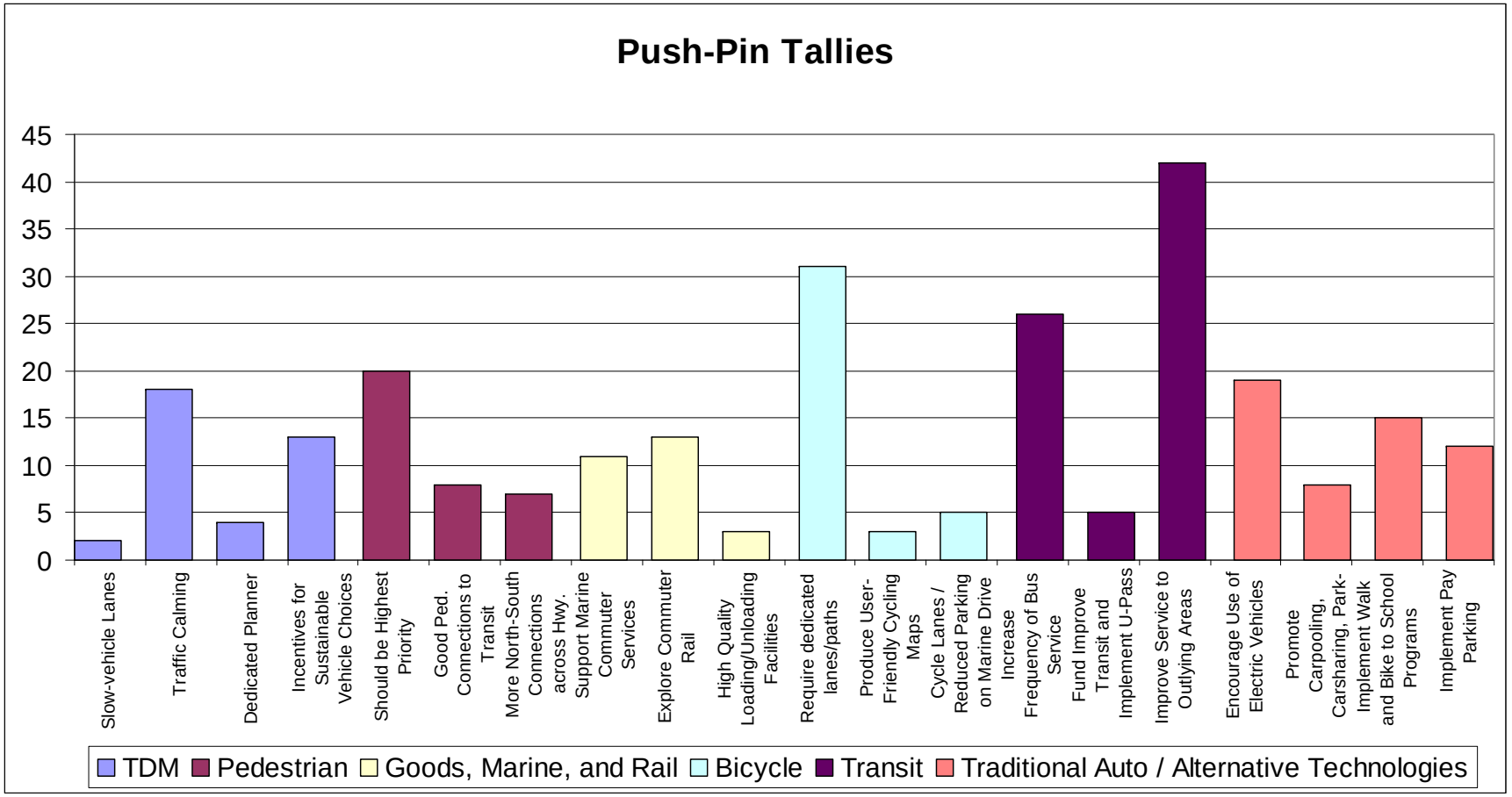
A number of other comments received were deemed to address issues outside of the scope of this study. They are summarised below for informational purposes.

Comments include:

- Provide a gondola between Dundarave, Rodger's Creek, and Cypress
- Provide rollerblading paths and paths for dogs off-leash
- The roundabout at 21st and Fulton is unsafe for pedestrians
- Close Marine Drive one way every Sunday and implement a cycling lane
- Construct a tolled tunnel with four traffic lanes, two rail transit tracks, and possibly two rail freight tracks to replace / complement Lion's Gate Bridge
- The District of West Vancouver should resist demands from eastern municipalities for more TransLink services
- Construct a downtown streetcar connecting Dundarave and Ambleside
- Increase intercity passenger rail services (Whistler, Chilliwack, etc.)
- Choose less expensive technologies over SkyTrain
- Improve security on the SkyTrain system and install gates
- Construct a hotel in Ambleside / Park Royal to help allow the community to grow
- Instead of setting up downhill speed traps, police should crackdown regularly on unsafe highway trucks
- The road medians on Westmount are ugly and do not slow down traffic at all

Summary of Push-Pin Responses

The public were also invited to comment on 20 proposed strategies as posted on a board. Each member of the public was given six push pins and asked to show support for one or more statements by placing their push pins beside the statement. The summary is shown on the following page.


Push-Pin Tallies
45
40
35
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25
20
15
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0
Slow-vehicle Lanes
Traffic Calming
Dedicated Planner
Incentives for Sustainable Vehicle Choices
Should be Highest Priority
Good Ped. Connections to Transit
More North-South Connections across Hwy.
Support Marine Commuter Services
Explore Commuter Rail
High Quality Loading/Unloading Facilities
Require dedicated lanes/paths
Produce User-Friendly Cycling Maps
Cycle Lanes / Reduced Parking on Marine Drive
Increase Frequency of Bus Service
Fund Improve Transit and Implement U-Pass
Improve Service to Outlying Areas
Encourage Use of Electric Vehicles
Promote Carpooling, Carsharing, Park-Implement Walk and Bike to School Programs
Implement Pay Parking
TDM
Pedestrian
Goods, Marine, and Rail
Bicycle
Transit
Traditional Auto / Alternative Technologies

B

Appendix B: Data Collection and Recommendations

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Appendix B: Data Collection Primer

A data collection and monitoring strategy needs to reflect the purpose of the organization undertaking the work and the goals of the program; it will specify what will be monitored (**indicators** of success), what data will be collected (**measurements** for those indicators), and finally, how it will be reported (**dashboard**).

Objectives, Indicators, and Measures
To evaluate the effectiveness of TDM, a program must first set objectives, identify indicators, and then choose measures to evaluate success based on those indicators.

- **Objectives** are the overall goals of the program. They should reflect the purpose of the organization and the intention of funding bodies.
- **Indicators** describe the desired output or outcome based on the objectives set for the program. It describes an attribute of the programs performance.
- **Measures** are the means used to quantify or qualify the indicator. Measures can be quantifiable values such as percentages or rates, or they can be clearly defined qualitative values such as high, medium, low. Measures must be monitored at regular intervals to show changes over time.

Source: iTRANS Consulting, Transport Canada Canadian Guidelines for the Measurement of Transportation Demand Management Initiatives User's Guide, 2009.

Objectives

The goals and objectives of the STP have been discussed elsewhere and it is important that the District select indicators that directly relate to the goals. Management consultant Peter Drucker is credited with the famous statement: "We manage what we measure." As such, the selection of the indicator will define what "success means" and therefore indicators must be selected with care.

This process can be challenging and it is recommended that as various options for indicators are evaluated, the District ensure that achieving a high level of performance on the chosen indicators will in fact meet its goals and objectives.

The STP has a number of objectives that speak to changes over time, such as shifting modal share away from private automobiles to other modes. In order to know whether that objective is being met, a baseline of current performance is needed to compare against future performance.

Indicators

The selection of effective indicators is a very challenging task. There is a natural tendency to want to know more information and to create a long list of indicators to track. However, all monitoring

requires time and resources and not all indicators will lead to different management decisions in response to performance levels.

There are several types of indicators to consider:

Institutional policies, programs and dedicated resources	• These measure the existence of policies, programs and dedicated staff and budgets to an initiative.	• Examples: o A policy to promote cycling. o A dedicated cycling program. o The existence of a funded cycling coordinator.
Physical elements	• These measure the physical elements that relate to or support the actions required to meet the District's objectives.	• Examples: o Kms of bicycle lanes o No. of bicycle racks in key locations o Presence of cyclist facilities such as showers
Specific performance outcomes	• These measure the specific performance or behaviour that is being targeted.	• Examples: o Modal share of cyclists overall, by age group, or on a specific route or at a specific destination.
Aggregate performance outcomes	• These measure the overall outcomes that are desired that may have many contributing factors.	• Examples: o Air pollution or GHG emissions ~ which cycling affects but which also have many other contributing factors.

What is a good indicator?
A good indicator will have the following characteristics

Linked to goals and objectives	• As noted above, indicators are not the ends in themselves, they are a device to measure whether we are achieving the stated goals and therefore they need to be carefully selected to ensure they guide performance toward the District's goals.
Targetable	• A good indicator will lend itself to having a meaningful performance target set for it.

Decision linked	• A good indicator will result in different decisions and action when reported on.
Jurisdictionally relevant	• A good indicator will be as closely linked as possible to the District's jurisdiction. To focus on indicators whose performance factors the District has little control over may be important in some cases, but may result in the District being held responsible for things it has no control over (e.g.: Roads under Ministry of Transportation and Infrastructure's control).
Will show performance change on appropriate timelines	• A good indicator will show change in performance on a timescale that is relevant to the decisions and investment involved in making change. Selecting indicators that show slow change over decades may be appropriate but it will not be a useful input for local government decision making cycles.
Based on accessible data	• A good indicator will, wherever possible, be based on data that is already available from public or other low-cost sources.

Measures

A final consideration for indicators is what the "measure" is that will be used to report out on the indicator. The most basic aspect of a measure is reporting on any indicator typically as a comparison to another number. A simple number (e.g.: # of cyclists) means very little as a "measure" until it is compared to another number such as the # of cyclists in previous years, or in other municipalities, or at other times of the year.

One of the most important parts of this consideration is that indicators need to have a "temporal" or time-based aspect, so performance change can be evaluated from year to year.

Dashboard

Because the District is committed to shifting modal share away from the private automobile over time and this change will require changes in personal behaviour, it is wise to create a "dashboard" to make the performance visible and easily understandable to the residents of the District. There are many types of dashboards, from simple written reports to complex web-based live reporting systems and the District can develop its own to meet its needs.

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