# Long-Term Transportation Plan

April 2008

URBANSYSTEMS.

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# EXECUTIVE SUMMARY

It has been over 15 years since the last transportation plan was created for the City and District of North Vancouver. Since that time, the City has adopted a new Official Community Plan (OCP), as well as other supporting documents and programs, which emphasize a vision of becoming a more sustainable community that is vibrant, diverse, and liveable.

The City has chosen to develop a new sustainable, multi-modal Transportation Plan to serve as a "road map" for the next decade and beyond and to help it achieve many of the long-term goals and objectives outlined in the OCP. Implementation of the Transportation Plan will directly and indirectly help the City to achieve goals outlined within each "Policy Path" in the OCP and to move toward its overall Community Vision. It will also help to integrate the Transportation Plan with many of the City's other planning initiatives, such as the land use and parks and greenway strategies. The Transportation Plan will also support the City's goal of reducing greenhouse gas emissions by emphasizing transportation alternatives to the automobile, such as walking, cycling and transit, and by providing a strategy to manage travel demand. In the long term, effective implementation of the Transportation Plan will help the City to achieve many of its goals:

- A transportation system with more travel choices for residents and workers
- A people-oriented, accessible and vibrant community
- Reduced local greenhouse gas emissions
- A healthy local economy supported by efficient movement of goods and services
- A more efficient road network that safely and effectively accommodates all modes
- Collaboration with our neighbouring municipalities and other agencies
- Community well being through active living
- Sense of place through great places, streetscapes and paths for people to interact.

What does the Transportation Plan address?

- ***Walking***
- ***Cycling***
- ***Transit***
- ***Road Network***
- ***Goods Movement***
- ***Travel Demand Management***

The development of the Long-Term Transportation Plan was based on the findings of the *Interim Report – Transportation System Goals & Key Issues*, which presented the overall goals and principles for the Transportation Plan, reviewed the current transportation system in the City, and discussed key issues that have been identified through several meetings with community stakeholders and further technical analysis. These issues have been considered in the development of the improvement strategies in subsequent stages of the process. A Discussion Paper was then prepared to develop preliminary improvement strategies and summarize potential features to be included in the Long-Term Transportation Plan for the City of North Vancouver.

As shown in **Figure ES-1**, the development of this Long-Term Transportation Plan has involved an in-depth review of the existing transportation system in North Vancouver and consultation with stakeholders and the public to identify key issues affecting the City. These issues have been used to direct the identification and evaluation of various improvement strategies for all modes of travel, which have then been refined through analysis and further public consultation to develop the long-term Transportation Plan. Subsequent to the adoption of this Transportation Plan, an implementation strategy will be developed to identify priorities and a timeline for completion of the improvement strategies. The implementation strategy will take into consideration the financial resources available to the City, with the maintenance of existing infrastructure taking priority.

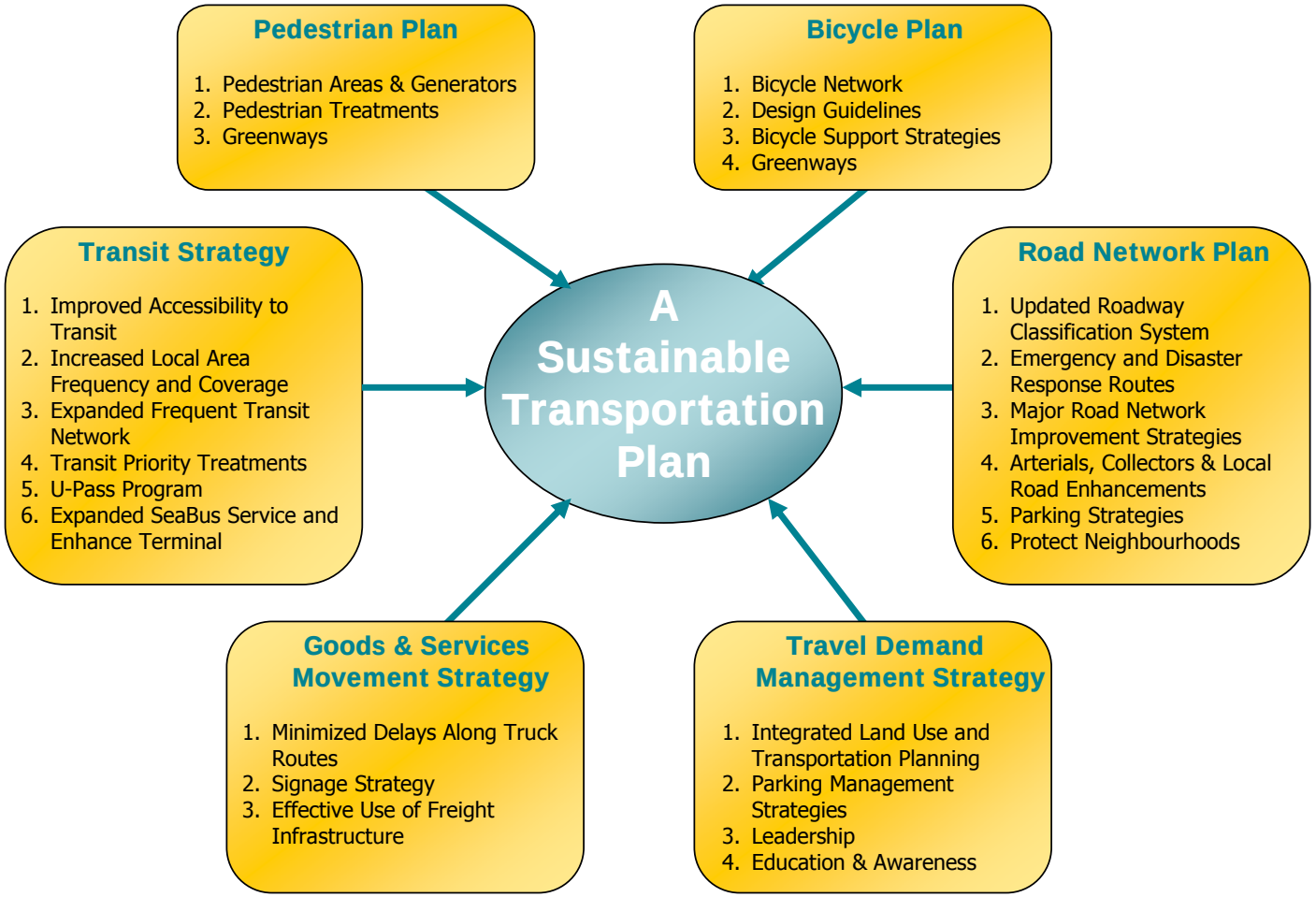
**Figure ES-1: Process for Developing the City's Transportation Plan**

The Long-Term Transportation Plan presents a vision for each of the primary modes of travel – namely, walking, cycling, transit, and the road network. In addition, the Transportation Plan provides guidance regarding a Travel Demand Management (TDM) strategy. The key features of Long-Term Transportation Plan are shown in the **Figure ES-2** and summarized below.

Each component of the Long-Term Transportation Plan contains several features designed to achieve the overall policy objectives for the City of North Vancouver. Although these features are grouped by mode for the purpose of discussion, they are very much interdependent. For example, the Road Network Plan describes features for the Major

Road Network that include provisions for enhanced pedestrian facilities as well as transit priority measures. This approach ensures that the resulting transportation system improvements are seamless and that the overall vision for a sustainable community is achieved. To this end, the Plan is not a "road building" strategy. Unlike traditional transportation plans, all roadway network improvements are designed to support priority modes – walking, cycling, transit and goods movement along dedicated routes. Improvements for general purpose traffic are concentrated on safety issues and making other modes of travel more attractive.

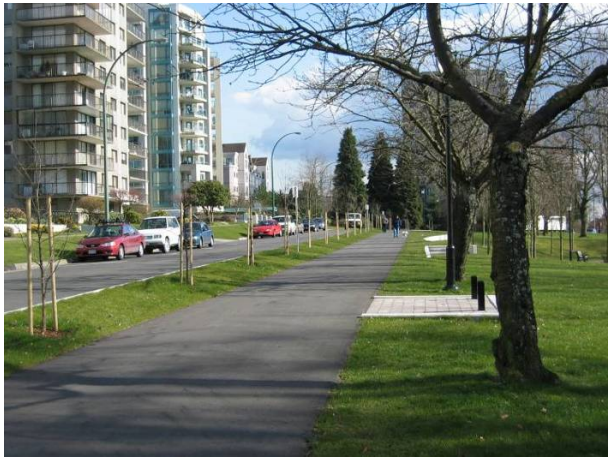
**Figure ES-2: Key Features of the Long-Term Transportation Plan**



## Pedestrian Plan

The City of North Vancouver is well suited to walking for local travel. The City already has an extensive network of sidewalks and trails, although there are some missing links in the network, and some newer areas are without pedestrian facilities. The Pedestrian Plan is an essential feature of a sustainable transportation system and ensures that North Vancouver becomes an even more walkable city. The primary features of the Pedestrian Plan include:

1. ***Pedestrian Areas and Generators.*** The Pedestrian Plan defines four key pedestrian areas throughout the City in which different implementation priorities and treatments may be considered to reflect their different levels of demand for walking. These Pedestrian Areas include:
   - Pedestrian Precincts
   - Primary Pedestrian Generators
   - Secondary Pedestrian Generators
   - Low Density Residential Areas.
2. ***Pedestrian Treatments.*** The Pedestrian Plan includes a range of treatments for each pedestrian area to improve safety, comfort, and convenience, including: sidewalk standards, sidewalk width and accessibility, landscaped boulevards, narrower crossings, curb letdowns, marked crossings, enhanced crosswalk treatments, important connections, accessible pedestrian signals, countdown timers, providing street furniture, enhanced wayfinding signage and maps, public facilities, accessible bus stops, safer design using CPTED principles, street lights, and building design guidelines.



3. ***Greenways.*** The City has identified a network of on-street and off-street greenways throughout the community to support recreational walking and cycling. The Greenway corridors are an integral part of the Pedestrian Plan to serve many of the pedestrian areas and to link recreational areas in the City.

## Bicycle Plan

Cycling is an increasingly important mode of transportation region-wide for both local and long-distance trips, and the City of North Vancouver is developing a safe and attractive network of bicycle facilities to accommodate cyclists. In 2006, the City developed an updated a Bicycle Master Plan (BMP) in cooperation with the District of North Vancouver. Many of the recommendations identified in this Bicycle Plan were identified in the BMP. The primary features of the Bicycle Plan include:

1. ***Bicycle Network.*** The Bicycle Plan includes an extensive network of new and enhanced facilities within the City that will be integrated with the initiatives of the District, including:
   - A low-level connection between the Lions Gate and Second Narrows Bridges
   - Connections to complete gaps in the network
   - Priority improvements
   - Lower priority improvements
   - Crossing treatments.
2. ***Design Guidelines.*** The Bicycle Plan presents a comprehensive set of guidelines for the design, construction, and maintenance of bicycle facilities. The design guidelines provide direction on the design of on-street and off-street routes as well as crossing treatments.
3. ***Bicycle Support Strategies.*** In addition to providing a comprehensive network of bicycle facilities with attractive crossings, support facilities are required to make cycling more convenient. Consequently, providing safe and secure parking at key locations throughout the City is a significant means of encouraging cycling. The Bicycle Plan identifies key areas in which both short-term and long-term bicycle parking will be provided.

4. ***Greenways.*** The City has identified a network of on-street and off-street greenways throughout the community to support recreational walking and cycling. The Greenway corridors are an integral part of the Cycling Plan to link key destinations within the City and surrounding communities.

## Transit Strategy

Transit is seen as the primary alternative to car travel in North Vancouver and across the region, as it can offer competitive travel times and reduce overall environmental and community impacts of transportation. The purpose of the Transit Strategy is to confirm support for many planned transit enhancements in the City and identify other desired improvements to increase ridership and customer satisfaction. The primary features of the Transit Strategy include:

1. ***Improved Accessibility to Transit*** by enhancing services and facilities for all existing customers and to attract new riders. The core elements outlined below largely involve the overarching direction of TransLink, but require municipal support to bolster accessibility standards and practices within the City.
   - Establish Access Transit Office & Users' Advisory Committee
   - Provide better customer support
   - Improve access to transit facilities
   - Increase availability of custom transit
   - Improve safety and security at main transit exchanges.

2. ***Increased Local Area Frequency and Coverage*** with conventional and small bus services through additional fleet and service hours.
3. ***Expanded Frequent Transit Network*** along key corridors, including: Lonsdale Avenue from Queens Street to Esplanade; Marine Drive between 15th Street in West Vancouver through to Capilano College; and Marine/Keith/15th services to augment the local services providing a direct connection between Park Royal and Lonsdale Central.
4. ***Transit Priority Treatments*** along each of the frequent transit corridors where delays and congestion exist today or are anticipated to get worse in the future. These treatments include, but are not limited to signal coordination, bus bulges, intersection queue jumpers, and dedicated bus lanes.
5. ***U-Pass Program.*** The City supports the expansion of the U-Pass Program to Capilano College. The City will also work with TransLink to examine the potential of developing a similar program for new developments located on main transit corridors.
6. ***Expanded SeaBus Service and Enhance Terminal*** to improve transit service to downtown Vancouver and connections to other rapid transit networks that serves other areas of the Lower Mainland.

## Road Network Plan

The roadway network represents a critical component of the City's transportation system, as it supports not only automobile traffic, but transit, walking, cycling and goods movements. Effectively, it is the skeleton of the overall transportation system. The City's road network is built out and significant changes (new roads or large-scale widening) are not anticipated or planned in the coming years. The primary objective of the Road Network Plan is to provide a strategy for managing the existing road network and to promote the integration of all travel modes into the system, particularly along major roadways where most improvements have traditionally been oriented to moving single-occupant cars. The primary features of the Road Network Plan include:

1. ***Updated Roadway Classification System.*** In some cases, the existing road classification neither reflects the current or planned role and function of a given roadway as anticipated. As such, the designation for some roadways is recommended to be adjusted to better reflect their current and planned long-term role and function. Some key changes include:
   - Mackay Road is changed from major arterial to minor arterial
   - Jones Avenue is changed from minor arterial to collector
   - Carrie Cates Court is modified from major arterial to collector.
2. ***Emergency and Disaster Response Routes.*** The City wants to recognize the importance of disaster and emergency response routes in responding to emergencies and supporting design standards and practices that do not significantly inhibit access and response time for emergency vehicles. To that end, the plan identifies proposed emergency and disaster response routes within the City.
3. ***Major Road Network Improvement Strategies.*** The Plan provides for improvement strategies for the Major Road Network to reflect the integrated goals for transit, bicycle, pedestrian and goods movement, as well as opportunities for other safety and mobility improvements to existing facilities.
4. ***Arterials, Collectors & Local Road Improvements.*** The Plan also recommends improvements for the remaining streets within the City of North Vancouver, by focusing on specific Major Arterials, Minor Arterials & Collectors, and Local Streets.
5. ***Parking Strategies.*** In 2004, the City completed a City-Wide Parking Strategy, which was intended to meet the City's goals to increase the economic potential of the City's commercial areas while maintaining the residents' quality of life. The Strategy recommended maintaining the City's current system of time-based (free) on-street parking with additional measures to increase turnover of on-street parking and to better utilise off-street stalls.

The Plan recommends moving forward with these recommendations, particularly as they relate to the Travel Demand Management (TDM) strategy (see below). Pay parking may be considered in the future if required.

6. ***Protect Neighbourhoods.*** The Plan supports traffic calming initiatives throughout the City to ensure residents' safety and neighbourhood livability. The Plan recommends providing 'Traffic Calmed Neighbourhood' signage in each neighbourhood where traffic calming measures have been implemented.

## Goods & Services Movement Strategy

The movement of goods and services around the City is critical to supporting the local, provincial, and national economies, but at the same time can have impacts on local neighbourhoods that need to be managed. To that end, the Goods and Services Movement Strategy identifies several initiatives designed to maintain efficient movement of goods in the City while minimizing community impacts.

1. ***Minimize Delays Along Truck Routes***, by coordinating traffic signals along truck routes, enhancing movement for trucks along key corridors, and maintaining left-turn bays at all major intersections along designated truck routes.
2. ***Signage Strategy*** to ensure that truck drivers understand the designated truck routes in the City of North Vancouver.
3. ***Effective Use of Freight Infrastructure*** connecting Port facilities through the development of a broader regional strategy that not only makes effective use of Port facilities, but maximizes the available transportation systems for both rail and road that connect with each area.

## Travel Demand Management (TDM) Strategy

A major component of developing a sustainable transportation plan includes managing existing transportation infrastructure, providing attractive services and facilities to encourage alternative modes, and developing supportive strategies using a demand-oriented approach. The Travel Demand Management (TDM) Strategy includes regional initiatives, municipal programs, and private sector and other agency initiatives. Key components of the TDM Strategy include:

1. ***Integrated Land Use and Transportation Planning.*** Land use policies and decisions within the City can have the greatest influence on travel demands and mode choice. To that end, the TDM strategy highlights those land use policy directions contained in the OCP that are fundamental toward a sustainable transportation system.

2. ***Parking Management Strategies.*** One way to discourage excessive automobile use and encourage the use of other modes of transportation is to limit the supply of parking. Those recommended parking supply strategies to be implemented in the City include:
   - Bylaw parking maximums
   - Reduced and flexible zoning bylaw requirements
   - Restriction of principal use facilities
   - Parking permit areas.

3. ***Leadership.*** If the City wants to encourage other agencies and private sector businesses to implement TDM measures, the City must lead by its actions for its own employees. The Transportation Plan will recommend a number of initiatives that the City has begun to encourage its own employees to use alternate forms of transportation.

4. ***Education & Awareness.*** TDM is all about changing people's behaviour. However, many residents are not aware of the transportation options available to them. An important part of a TDM program and initiative is marketing and education efforts intended to encourage a shift in travel patterns and greater use of alternative modes of transportation.

## Summary

The Official Community Plan outlines the City's long-term goals and objectives for the development of the community along several "Policy Paths," such as land use, transportation, parks and greenways, leisure and culture, and the environment. Each Policy Path addresses a different topic, each with a set of goals and objectives through which the City will manage future planning and development. As shown in **Table ES-1** on the following page, the Transportation Plan is strongly linked to the achievement of the City's long-term goals within all Policy Paths, as transportation influences many aspects of a community's overall function and quality of life. Implementation of the Transportation Plan will directly and indirectly help the City to achieve its long-term goals within each Policy Path and to move forward toward its overall Community Vision.

**Table ES-1: Transportation Plan Relationship to OCP Policy Paths**

| Transportation Plan features | Official Community Plan Policy Paths | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sense of Place | Land Use | Transportation, Mobility & Access | Community Well-Being | Environment | Parks & Greenways | Leisure & Culture | Community Infrastructure | Economy & Economic Development | Financial Planning |
| **Pedestrian Plan** | | | | | | | | | | |
| 1. Pedestrian Areas & Generators | √ | √ | √ | √ | √ | √ | √ | √ | | √ |
| 2. Pedestrian Treatments | √ | √ | √ | √ | √ | √ | √ | | √ | |
| 3. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | |
| **Bicycle Plan** | | | | | | | | | | |
| 1. Bicycle Network | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 2. Design Guidelines | | | √ | √ | √ | √ | √ | | | |
| 3. Bicycle Support Strategies | √ | √ | √ | √ | √ | √ | √ | | | |
| 4. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | |
| **Transit Strategy** | | | | | | | | | | |
| 1. Improved Accessibility to Transit | √ | √ | √ | √ | √ | | | √ | | |
| 2. Increased Local Frequency & Coverage | √ | √ | √ | √ | √ | | √ | √ | √ | √ |
| 3. Expanded Frequent Transit Network | | √ | √ | √ | √ | | √ | √ | √ | √ |
| 4. Transit Priority Treatments | √ | √ | √ | | √ | | | √ | | √ |
| 5. U-Pass Program | | | | √ | √ | | | | | |
| 6. Expanded SeaBus & Enhance Terminal | √ | | √ | | | | | √ | √ | |
| **Road Network Plan** | | | | | | | | | | |
| 1. Updated Roadway Classification | √ | | √ | √ | | | | √ | | |
| 2. Emergency & Disaster Response Routes | | | | √ | | | | | | |
| 3. MRN Improvement Strategy | | √ | √ | | √ | | √ | √ | √ | √ |
| 4. Arterials, Collectors & Local Roads | | | √ | | √ | | √ | √ | √ | √ |
| 5. Parking Strategies | | √ | | | | √ | | √ | √ | √ |
| 6. Protect Neighbourhoods | | | √ | | | | | √ | √ | |
| **Goods & Services Movement Strategy** | | | | | | | | | | |
| 1. Minimize Truck Route Delays | | √ | √ | | | | | √ | √ | |
| 2. Signage Strategy | | √ | √ | | | | | √ | √ | √ |
| 3. Effective Use of Freight Infrastructure | | | √ | | | | | √ | √ | |
| **TDM Strategy** | | | | | | | | | | |
| 1. Land Use & Transportation Plans | √ | √ | √ | √ | √ | | √ | √ | √ | |
| 2. Parking Management | √ | √ | √ | | √ | √ | | √ | √ | √ |
| 3. Leadership | | | √ | √ | √ | | | √ | | √ |
| 4. Education & Awareness | | | √ | √ | √ | | | √ | | √ |

As shown in **Table ES-1**, each of the core components of the plan contains several inter-related features designed to achieve the overall policy objectives for the City. However, significant costs are involved with implementing many of these features. In order to ensure the success of the Transportation Plan, an implementation strategy will be developed that will prioritize these features while taking into account the financial resources available to the City. Prioritization of the key features of the Transportation Plan will be based in part on how each of these features satisfy the City's long term goals as outlined in the City's Official Community Plan.

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# 1.0 INTRODUCTION

The City of North Vancouver is a relatively small, but well-established, community on the North Shore of the Greater Vancouver region. The City has evolved over the past 150 years from a lumber and shipping town known as Moodyville to a thriving urbanized municipality of over 48,000 residents today.

Unlike in other suburban communities in the Lower Mainland, however, the City of North Vancouver has no opportunities for further "greenfield" development. Future growth in the City will occur through rejuvenation and redevelopment of existing residential, commercial, and industrial areas. An example is the redevelopment of former shipyards at the City's Waterfront, now underway. When complete, the Waterfront developments will offer premier residential and commercial space, complemented by significant and high-profile community amenities.

In well-developed municipalities, the enhancement of transportation facilities and services – such as roadway networks, transit, bicycle routes, and pedestrian facilities – must "fit" with the existing community and evolve as the City grows. This often requires non-traditional and creative transportation solutions that achieve City goals, while minimizing impacts on existing neighbourhoods and residents.

## 1.1 Purpose of the Plan

It has been over 15 years since the last transportation plan was created for the City and District. That plan focussed almost entirely on the roadway network and to a much lesser degree on transit. Since that time, the City has also developed a new Official Community Plan, as well as other supporting documents and programs, which emphasize a vision of becoming a more sustainable community that is vibrant, diverse, and liveable.

The City has chosen to develop a new sustainable, multi-modal Transportation Plan to serve as a "road map" for the next decade and beyond and to help it achieve

many of the long-term goals and objectives outlined in the OCP. Implementation of the Transportation Plan will directly and indirectly help the City to achieve goals outlined within each "Policy Path" in the OCP and to move toward its overall Community Vision. It will also help to integrate the Transportation Plan with many of the City's other planning initiatives, such as the land use and parks and greenways strategies. The Transportation Plan will also support the City's goal of reducing greenhouse gas reduction emissions by emphasizing transportation alternatives to the automobile, such as walking, cycling, and transit, and by providing a strategy to manage travel demand. In the long term, effective implementation of the Transportation Plan will help the City to achieve many of its goals:

- A transportation system with more travel choices for residents and workers
- A people-oriented, accessible and vibrant community
- Reduced local greenhouse gas emissions
- A healthy local economy supported by efficient movement of goods and services
- A more efficient road network that safely and effectively accommodates all modes
- Collaboration with our neighbouring municipalities and other agencies
- Community well being through active living
- Sense of place through great places, streetscapes and paths for people to interact.

## 1.2 Study Process

The development of the Long-Term Transportation Plan was based on the findings of an interim report and a discussion paper. The interim report presented the overall goals and principles for the Transportation Plan, reviewed the current transportation system in the City, and discussed key issues that have been identified through several meetings with community stakeholders and further

technical analysis. These issues have been considered in the development of the improvement strategies in subsequent stages of the process. The discussion paper developed preliminary improvement strategies and summarized potential features to be included in the Long-Term Transportation Plan for the City of North Vancouver.

As shown in **Figure 1**, the development of this Long-Term Transportation Plan has involved an in-depth review of the existing transportation system in North Vancouver and consultation with stakeholders and the public to identify key issues affecting the City. These issues have been used to direct the identification and evaluation of various improvement strategies for all modes of travel, which have then been refined through analysis and further public consultation to develop the long-term Transportation Plan. Subsequent to the adoption of the Transportation Plan, an implementation strategy will be developed to identify priorities and a timeline for completion of the improvement strategies. The implementation strategy will take into consideration the financial resources available to the City, with the maintenance of existing infrastructure taking priority.

**Figure 1: Process for Developing the City's Transportation Plan**

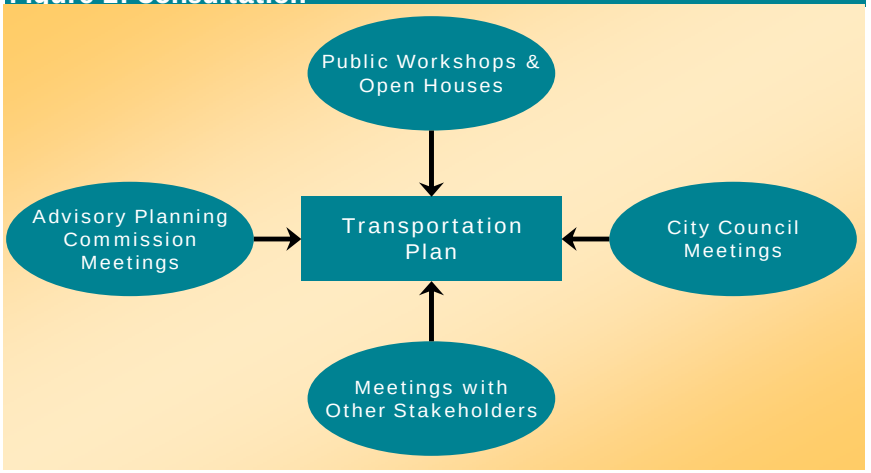
## 1.3 Consultation

The Transportation Plan has been developed with broad participation of the North Vancouver community to ensure that the Plan reflects the values and interests of the community (see **Figure 2**). The Plan has been guided by a steering committee of City staff representing several municipal departments, and there were also several opportunities for public input through various public forums as shown below. A summary of the public input is provided in **Appendix D.**

- **Public open houses.** Two Open Houses have been held to gather input from community residents. The first Open House was held on November 1, 2006 to gather input from residents on the key transportation issues facing the community, and to solicit ideas on potential improvements. The second Open House was held on November 8, 2007 to obtain feedback on the preliminary features identified in the Transportation Plan. Both Open Houses were

held at City Hall, and open house materials were available for public viewing for the entire week in which the open houses were held. Exit surveys were also distributed at these Open Houses to provide community members an opportunity to provide feedback.

**Figure 2: Consultation**




- **Public workshops.** Two interactive public workshops were held throughout the study process. The first workshop was held on November 7, 2006 to identify issues, and the second workshop was held on November 5, 2007 to discuss preliminary features of the Transportation Plan. The workshops were attended by invited representatives of community associations, businesses, emergency services, community groups (such as youth and seniors), and other agencies.

- **City Council meetings.** Council is ultimately responsible for the final decisions and approval of the Transportation Plan. Council has been kept up-to-date on the progress of the Plan through staff reports, and also through a presentation by the project team on May 14, 2007 and a workshop on October 22, 2007.

- **Advisory Planning Commission meetings.** The City's Advisory Planning Commission (APC) has been involved in the development of the Plan through participation in workshops with the project team. Several workshops with the APC have been held to-date, including a workshop with the APC and other advisory groups on January 9, 2008.

- **Other stakeholders.** Key external agencies responsible for transportation planning within and around the City have been consulted and have been kept up-to-date on the progress of the study. They have also been invited to provide input to the Transportation Plan at key milestones, including the interactive public workshops. Agencies involved in these consultations include TransLink, the District of North Vancouver, the Vancouver Port Authority, and the Squamish Nation.

# 2.0 TRANSPORTATION PLAN OVERVIEW

The Transportation Plan is intended to provide the City with a clear vision of the multi-modal transportation system to serve the residents and businesses of the community for the next 20 years and beyond. It is designed to support those modes that the City wishes to prioritize – namely walking, transit, and cycling – to help achieve the City's OCP goals and to work toward a balanced transportation system that is strongly integrated with the City's other plans and programs, and with our neighbouring municipalities.

## 2.1 Official Community Plan Goals

The Official Community Plan outlines the City's long-term goals and objectives for the development of the community along several "Policy Paths," such as land use, transportation, parks and greenways, leisure and culture, and the environment. Each Policy Path addresses a different topic, each with a set of goals and objectives through which the City will manage future planning and development. As shown in **Table 1** on the following page, the Transportation Plan is strongly linked to the achievement of the City's long-term goals within all Policy Paths, as transportation influences many aspects of a community's overall function and quality of life. Implementation of the Transportation Plan will directly and indirectly help the City to achieve its long-term goals within each Policy Path and to move forward toward its overall Community Vision.

## 2.2 Transportation Plan Goals

In support of the City's Community Vision and the Policy Paths set out in the OCP, the following goals are used to guide and measure the success of the Transportation Plan:

- **Liveability.** The Transportation Plan will contribute toward the City's overall Vision of becoming a vibrant, diverse and highly liveable community, where quality of life and community well-being are vital.
- **Mobility.** The Transportation Plan will support the safe, efficient, and accessible movement of people, goods, and services throughout the City and beyond our boundaries.

**Table 1: Transportation Plan Relationship to OCP Policy Paths**

| Transportation Plan features | Official Community Plan Policy Paths | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sense of Place | Land Use | Transportation, Mobility & Access | Community Well-Being | Environment | Parks & Greenways | Leisure & Culture | Community Infrastructure | Economy & Economic Development | Financial Planning |
| **Pedestrian Plan** | | | | | | | | | | |
| 1. Pedestrian Areas & Generators | √ | √ | √ | √ | √ | √ | √ | √ | | √ |
| 2. Pedestrian Treatments | √ | √ | √ | √ | √ | √ | √ | | √ | |
| 3. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | |
| **Bicycle Plan** | | | | | | | | | | |
| 1. Bicycle Network | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 2. Design Guidelines | | | √ | √ | √ | √ | √ | | | |
| 3. Bicycle Support Strategies | √ | √ | √ | √ | √ | √ | √ | | | |
| 4. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | |
| **Transit Strategy** | | | | | | | | | | |
| 1. Improved Accessibility to Transit | √ | √ | √ | √ | √ | | | √ | | |
| 2. Increased Local Frequency & Coverage | √ | √ | √ | √ | √ | | √ | √ | √ | √ |
| 3. Expanded Frequent Transit Network | | √ | √ | √ | √ | | √ | √ | √ | √ |
| 4. Transit Priority Treatments | √ | √ | √ | | √ | | | √ | | √ |
| 5. U-Pass Program | | | | √ | √ | | | | | |
| 6. Expanded SeaBus & Enhance Terminal | √ | | √ | | | | | √ | √ | |
| **Road Network Plan** | | | | | | | | | | |
| 1. Updated Roadway Classification | √ | | √ | √ | | | | √ | | |
| 2. Emergency & Disaster Response Routes | | | | √ | | | | | | |
| 3. MRN Improvement Strategy | | √ | √ | | √ | | √ | √ | √ | √ |
| 4. Arterials, Collectors & Local Roads | | | √ | | √ | | √ | √ | √ | √ |
| 5. Parking Strategies | | √ | | | | √ | | √ | √ | √ |
| 6. Protect Neighbourhoods | | | √ | | | | | √ | √ | |
| **Goods & Services Movement Strategy** | | | | | | | | | | |
| 1. Minimize Truck Route Delays | | √ | √ | | | | | √ | √ | |
| 2. Signage Strategy | | √ | √ | | | | | √ | √ | √ |
| 3. Effective Use of Freight Infrastructure | | | √ | | | | | √ | √ | |
| **TDM Strategy** | | | | | | | | | | |
| 1. Land Use & Transportation Plans | √ | √ | √ | √ | √ | | √ | √ | √ | |
| 2. Parking Management | √ | √ | √ | | √ | √ | | √ | √ | √ |
| 3. Leadership | | | √ | √ | √ | | | √ | | √ |
| 4. Education & Awareness | | | √ | √ | √ | | | √ | | √ |

- **Integration.** The Transportation Plan will support the development and integration of all modes of travel in order to offer more choice to the residents, workforce, and visitors of the City.
- **Affordability.** The Transportation Plan will recognize the financial constraints of the City and promote the development of transportation infrastructure and services that will best support the goals of the Plan.
- **Environment.** The Transportation Plan will support alternative means of transportation, namely walking, cycling and transit and promote strategies to manage travel demand in an attempt to reduce local greenhouse gas emissions.

Transportation Plan Goals:

- ***Liveability***
- ***Mobility***
- ***Integration***
- ***Affordability***
- ***Environment***

## 2.3 Context

The first interim report presented a comprehensive overview of existing transportation conditions in the City, along with key issues limiting the achievement of the overall Community Vision and OCP goals and objectives. The sections below summarize key background information influencing transportation in North Vancouver. Key Facts & Finding identified in the Interim Report #1 for each primary travel mode are included at the introduction to the chapter for each respective mode of transportation.

### *2.3.1 Demographics*

Decisions regarding land use density, mix, and form influence the amount and type of travel that is generated within a community. Key facts and findings regarding demographics and land use in North Vancouver include:

- The City has been growing at an annual rate of 1.5%, well below the Metro Vancouver growth rate of 2.3% per year.
- The population density in the City is relatively high at 3,700 people/km$^2$, comparable to New Westminster and much higher than the Metro Vancouver average of 690 people/km$^2$. Higher densities generally support higher transit usage.
- Median family incomes in the City are relatively low, as compared to other parts of the North Shore and the rest of Metro Vancouver. This may support the use of non-automobile modes of travel.

- Although the City is home to a similar percentage of seniors as found throughout Metro Vancouver (24% aged 55 or over), nearly two thirds of the City's seniors live in either the Central Lonsdale or Lower Lonsdale neighbourhoods. This large concentration of seniors presents an opportunity for accessible transit services in these areas.
- The Lonsdale Regional Town Centre is characterized by high-density mixed uses that support higher transit usage, walking, and cycling. The large employment areas around Capilano Mall, Harbourside, and the AutoMall represent a potentially large and untapped market for transit services.

### *2.3.2 Travel Characteristics*

Travel patterns generated by the City's residents and workforce are shaped by land use characteristics and the transportation system on the North Shore. Key facts and findings about travel characteristics include:

- Fully 70% of daily trips made by City residents remain on the North Shore. These patterns indicate a strong need for transit services that serve key destinations on the North Shore and point to the importance of attractive and safe pedestrian and cycling facilities, which are ideally suited to short-distance travel.
- About 9% of all the City's daily trips are made on transit, and a further 11% of daily trips are bicycle or pedestrian trips, with the remaining 80% of daily trips made by car. However, within the Lonsdale Regional Town Centre, only 50% of trips are made by car and a full 25% are made by transit and 23% on foot. This reinforces the City's land use goals for the Town Centre area and show how denser development supports lower car use.
- Overall, the City's transit, cycling, and walking mode shares compare favourably with the rest of the GVRD.

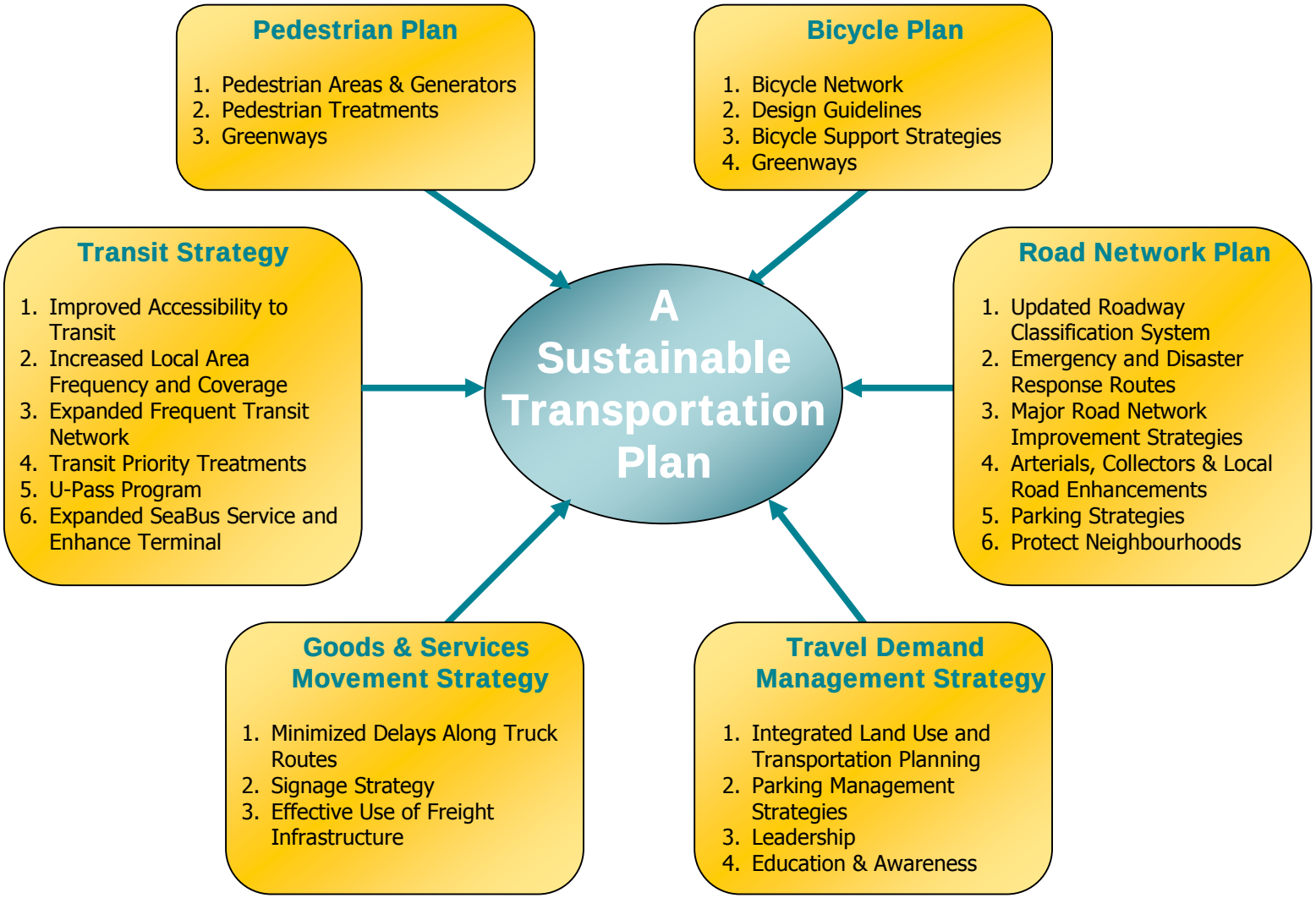
## 2.4 Features of the Transportation Plan

The long-term plan for the City of North Vancouver's multi-modal transportation system is presented in the following sections. This plan presents a vision for each of the primary modes of travel – namely, walking, cycling, transit, and the road network. In addition, this Plan provides guidance regarding a Travel Demand Management (TDM) strategy. This Pan has been developed based on the findings of the interim reports and feedback from City Council and staff, the Advisory Planning Commission, the public, and other stakeholders.

Each component of the Long-Term Transportation Plan contains several features designed to achieve the overall policy objectives for the City of North Vancouver. Although these features are grouped by mode for the purpose of discussion, they are very much interdependent. For example, the Road Network Plan describes features for the Major Road Network that include provisions for enhanced pedestrian facilities as well as transit priority measures. This approach ensures that the resulting transportation system improvements are seamless and that the overall vision for a sustainable community is achieved. To this end, the Plan is not a "road building" strategy. Unlike traditional transportation plans, all roadway network improvements are designed to support priority modes – walking, cycling, transit and goods movement along dedicated routes. Improvements for general purpose traffic are concentrated on safety issues and making other modes of travel more attractive. The key features of the Transportation Plan are illustrated in **Figure 3** and are described in detail in the following sections.

Once the long-term plan is finalized, an implementation strategy and program will be prepared, which will outline implementation constraints and opportunities, costs, and prioritization of improvements.

## Figure 3: Key Features of the Long-Term Transportation Plan



# 3.0 PEDESTRIAN PLAN

As a relatively compact community with a strong transit-oriented commercial core, the City of North Vancouver is well suited to walking for local travel, despite challenging topography in some areas. The City already has an extensive network of sidewalks and trails, although there are some missing links in the network, and some newer areas are without pedestrian facilities. The City is committed to being a pedestrian friendly community and supporting walking as a primary mode of transportation. Through many of its policy paths, the City's OCP strongly endorses the development of a walkable city to support healthy lifestyles, environmental stewardship, and reduced infrastructure demands.

The Pedestrian Plan is an essential feature of a sustainable transportation system and ensures that the City is an even more walkable city for residents and visitors. These initiatives are outlined in this section of the Plan.

## 3.1 Key Facts & Findings: Walking

The City of North Vancouver is ideally suited to becoming a walking community. However, the following issues are affecting walkability of the community:

- Limited sidewalk coverage in some newer areas and missing sidewalk links in established areas.
- Pedestrian safety and security are affected by difficult crossings, limited sidewalk coverage, and insufficient lighting in some areas.
- Narrow and obstructed sidewalks, physical barriers (Upper Levels Highway, Marine Drive, railway, steep grades, etc.), and limited east-west connectivity affect the appeal and accessibility of walking. The overall lower priority of pedestrians can make walking difficult.
- Quality of pedestrian facilities in commercial areas is inconsistent.

## 3.2 External Initiatives

As walking trips tend to cover relatively shorter distances than other modes, there are relatively few external initiatives that will influence the City's pedestrian network. The District of North Vancouver shares a vision of becoming more walkable, and some of their initiatives will enhance connectivity for City residents, particularly near the municipal boundary.

The District is currently developing a Pedestrian Master Plan, which will identify the District's long-term priorities for improving the municipal pedestrian network. In the near term, this will likely focus on improving connections to, from, and within key walking areas, such as Edgemont Village and Lynn Valley. The District's pedestrian initiatives will complement those efforts undertaken by the City so that the overall walking network on the North Shore is improved over time.

## 3.3 The City's Long-Term Pedestrian Plan

What does the Pedestrian Plan Include?

1. ***Pedestrian Areas & Generators***
2. ***Pedestrian Treatments***
3. ***Greenways***

The focus of the City's efforts in the coming years will be on completing key elements of the sidewalk and trail network, as well as enhancing pedestrian facilities in major pedestrian areas so that walking becomes a highly convenient and attractive mode choice for more residents and visitors. In some areas of the City, the provision of sidewalks to complete the network and provide continuity for walking trips is essential. For many areas, such as the City core, where walking will be most prominent, extraordinary treatments are required to make walking even more attractive. These will require treatments within and leading to those areas that go beyond the minimum standard and are accessible for all levels of mobility. As the City's population ages and the diversity of people living in the community increases, pedestrian facilities will be designed to overcome accessibility issues and challenges of today.

The Pedestrian Plan identifies the need to expand and upgrade the sidewalk and trail network throughout the City to support walking as a primary mode of travel. However, the Plan also recognizes that certain areas of the City will generate more pedestrian demand over a larger area than others. To this end, the Pedestrian Plan identifies four types of pedestrian areas, in which different implementation priorities and treatments may be considered to reflect these differing levels of demand.

## 1. Pedestrian Areas & Generators

The Pedestrian Plan defines four key pedestrian areas in which to identify design treatments that will make North Vancouver an even more walkable community in the long-term. For planning purposes, the "catchment" for each pedestrian area has been defined based on the existing street grid and other features, such as topographical limitations, Highway 1 and the railway corridor. However, a radius of approximately 300 metres has generally been used to define these areas for each pedestrian generator. The perimeter of this area is reflective of a four- to five-minute walk and considered to be a reasonable distance to generators for those individuals that walk the entire trip, or use transit or drive to the area and then walk to the specific generator. Because of the proximity of many pedestrian generators in the City, these areas will typically overlap and pedestrian activity closer to the generator will be greatest.

**What Are the Pedestrian Areas?**

- ***Pedestrian Precincts***
- ***Primary Pedestrian Generators***
- ***Secondary Pedestrian Generators***
- ***Low Density Pedestrian Areas***

The discussion below briefly describes each pedestrian area in the City which is illustrated in **Map 1**.

1. ***Pedestrian Precincts*** are those areas where walking could be the primary mode of travel and should be prioritized. These are areas that support a diverse mix of higher-density land uses that attract multi-purpose trip making and where significant volumes of pedestrians can be expected. They are both walking destinations and areas within which people would likely walk between several locations for a variety of needs, such as to home, work, shopping or personal business.

   The Lonsdale Regional Town Centre is already a pedestrian precinct, reflected in high pedestrian demands at many intersections along Lonsdale Avenue and Esplanade and adjacent to the Lions Gate Hospital. The Marine Drive corridor is an emerging pedestrian precinct and will become a more prominent destination for pedestrians as redevelopment occurs in the coming years. Pedestrian facilities – sidewalks and crossings – throughout and surrounding these areas will be made attractive for people of all mobility levels.

2. ***Primary Pedestrian Generators*** are those land uses within the City that will typically generate a higher than average number of walking trips. As such, pedestrian facilities in the immediate area will be provided to encourage walking to and from the area. The specific uses identified as primary pedestrian generators are:

- Public secondary schools
- Community centres
- North Vancouver library
- Other key employment areas, such as the Harbourside Business Park and the 1st Street industrial area.

3. ***Secondary Pedestrian Generators*** include those generators that will attract moderate volumes of pedestrians and where attractive pedestrian facilities will be needed to increase pedestrian travel. These specific uses are identified in the Pedestrian Plan as secondary pedestrian generators and include:

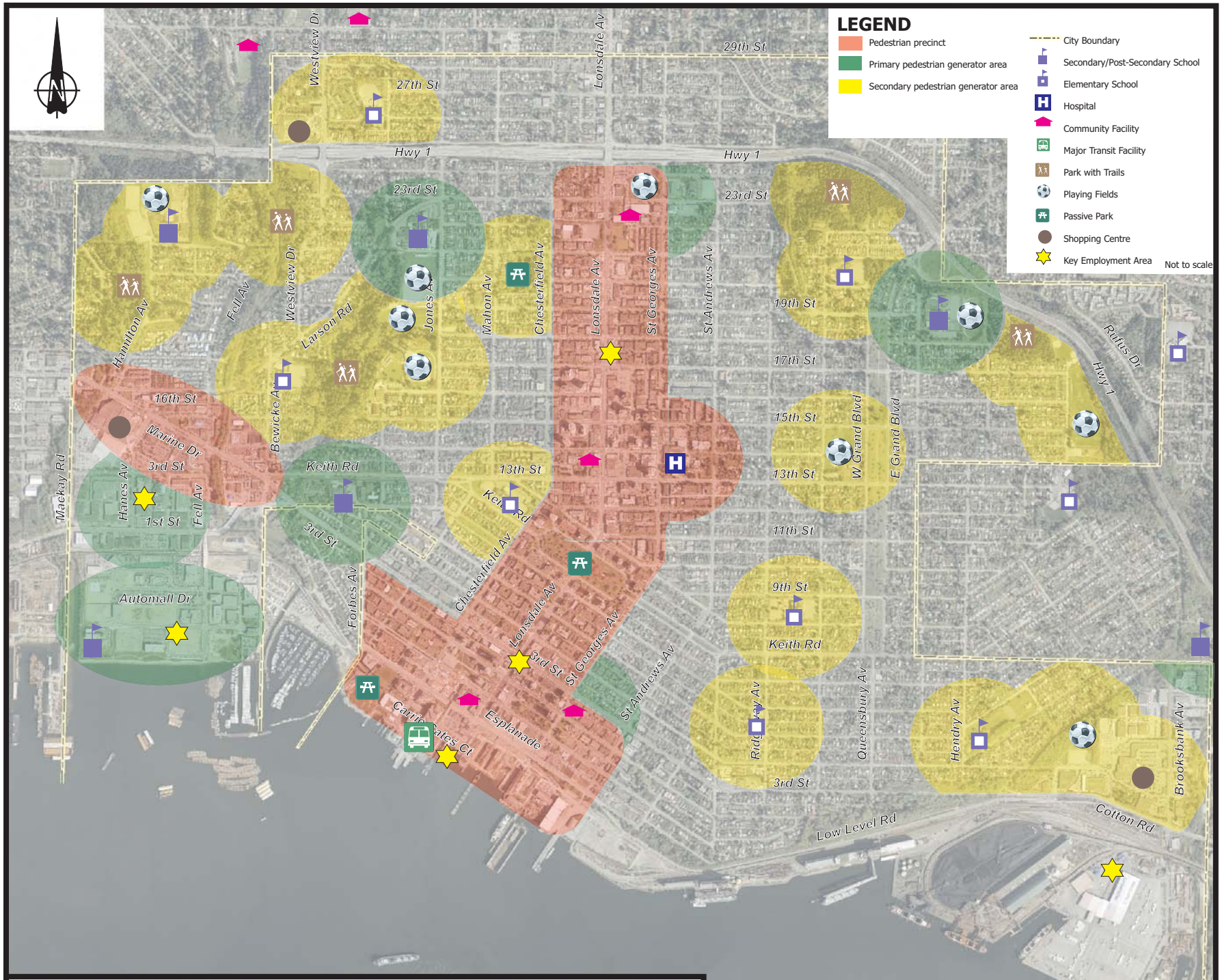
   - Minor and auto-oriented commercial developments
   - Playing fields and parks
   - Public elementary and private schools.

4. ***Low Density Pedestrian Areas*** essentially represent the remaining areas of the City where lower volumes of pedestrians are expected, and where pedestrian facilities will be required to encourage people to walk. These areas comprise low density residential and light industrial developments.

## 2. Pedestrian Treatments

As previously described, the Pedestrian Plan includes a range of treatments for each pedestrian area. In this regard, the areas that could potentially generate the most walking should receive extraordinary pedestrian treatments to encourage people to walk and make these areas "people places". The following discussion highlights the range of pedestrian treatments that are recommended within each of the pedestrian areas to help make the City of North Vancouver more walkable. The focus of the City's efforts in the coming years will be on completing key elements of the sidewalk and greenways network.

- ***Sidewalk standards*** for within the City for sidewalks on both sides of arterial and collector roads and one side of local roads will suit most areas. Areas surrounding pedestrian precincts, primary pedestrian generators, and secondary pedestrian generators would benefit from sidewalks on both sides of all streets.




# Map 1: Pedestrian Areas

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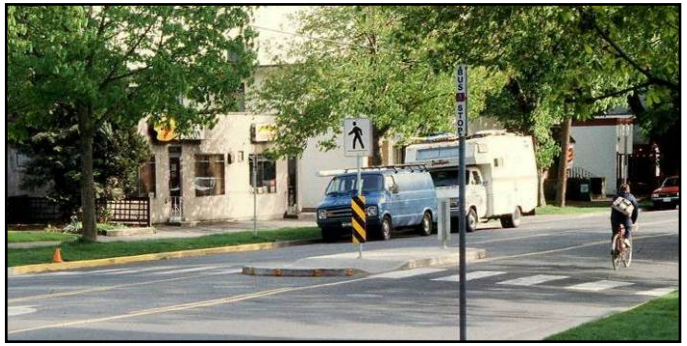
- ***Sidewalk width and accessibility*** are important to ensuring a comfortable space for pedestrians. In general, all sidewalks should have a minimum clear width of 1.5 m and wider in busy pedestrian areas. To be accessible for all individuals, sidewalks must be in good condition and free from major and minor obstructions, such as uneven surfaces, utilities, signs, and other street furniture. Where possible, the following sidewalk widths should be considered in each of the key pedestrian areas.

  - Pedestrian Precincts support higher pedestrian flows and should desirably support 3 m sidewalks
  - Areas surrounding Primary Pedestrian Generators should have minimum sidewalk widths of 1.8 m and preferably 2.0 m to support wheelchair use
  - Secondary and Low Density Pedestrian Generators should have sidewalks of 1.5 m or more.

- ***Landscaped boulevards*** between the curb and sidewalk except on commercial streets, such as Lonsdale Avenue and Marine Drive. Adjacent to commercial uses, sidewalks should generally extend from the curb to the property line/building face to maximize pedestrian space and to accommodate other amenities, such as street furniture and bicycle parking that can comfortably accommodate demands and do not interfere with walking aids. Street trees may be incorporated into the sidewalks according to the City's Street Tree Master Plan. Street trees can be included along streets with high pedestrian demands and where parking does not provide a buffer between the road and sidewalk, as street trees can play an important role in increasing pedestrian comfort and safety.



- ***Narrower crossings*** using intersection or mid-block curb extensions, bus bulges, and median islands wherever feasible in Pedestrian Precincts. Curb extensions extend the sidewalk across the curbside parking lane. They benefit pedestrians by improving visibility and reducing crossing distances. They also offer opportunities for pedestrian amenities, such as landscaping and benches.

- ***Curb letdowns*** at all intersections. Where possible, separate curb letdowns should be properly aligned with crosswalks. Curb cuts should satisfy the North Shore Advisory Committee on Disability Issues' Pedestrian Access Guidelines. Designs which incorporate a single ramp that is positioned between the crosswalks will also be considered depending on the intersection configuration.
- ***Marked crossings*** are the simplest crossing treatment, which involves pavement markings indicating the crosswalk, and accompanying signs. Enhanced pavement markings such as "ladder" and zebra" markings increase the visibility of the crosswalk to approaching motorists.
- ***Enhanced crosswalk treatments*** may include flashing lights which are activated by pedestrians. The flashing lights alert motorists that pedestrians are crossing, and increase visibility of the crosswalk. A flashing light treatment offers advantages over a signalized pedestrian crossing, as there is no delay for pedestrians waiting to cross, and delays to motorists are minimized because as soon as pedestrians clear the crosswalk vehicles can proceed.
- ***Important connections***, such as overpasses, are expensive to construct, typically exceeding $1 million. Consequently, they are usually used only on multi-lane roads or other natural barriers such as rivers where there are few opportunities for pedestrians and cyclists to cross, or existing facilities are sub-standard and more costly to improve. Within the City, the Highway 1 corridor, rail, and several creeks are the most significant barriers for pedestrians and cyclists. Important connections are required as follows:

  - New connection between the Grand Boulevard and Loutet neighbourhoods over Highway 1 east of the Lynn Valley Road interchange, to provide an alternative route to Lynn Valley
  - A new pedestrian overpass to the Harbourside Business Park.
  - New bridge across MacKay Creek at 19th Street
  - New bridge across Mosquito Creek at 23rd Street
- ***Accessible pedestrian signals*** at signalized intersections are increasingly being used and desired in high pedestrian areas to assist pedestrians with disabilities Research has shown that these treatments provide a higher degree of confidence to pedestrians crossing major streets and have generally received positive support among all age groups.

- ***Countdown timers*** at key intersections to provide timing information to all users.
- ***Street furniture*** (benches, water fountains) and other pedestrian amenities outside of the travelled portion of the sidewalk are essential to making people places and creating environments that are comfortable and interesting for pedestrians.
- ***Enhanced wayfinding signage and maps*** to guide people to and around pedestrian precincts for non-residents and tourists. Enhanced wayfinding signage can be of particular benefit to tourists, to help orient visitors to key destinations within the City. Enhanced signage also benefits all users, and helps to ensure a sense of place at key destinations. Signage standards may support a theme for a given area, and should be designed to meet the needs of visually impaired.
- ***Public facilities*** such as washrooms and telephones should be available and accessible for pedestrians of all mobility levels and signed accordingly. For people that experience mobility challenges, public restroom facilities provide a high degree of comfort within key pedestrian areas.
- ***Accessible Bus stops*** consistent with TransLink's design guidelines will be implemented to enhance comfort of all transit passengers and to ensure accessibility for all customers.
- ***Pedestrian safety*** will be enhanced with greater application of Crime Prevention Through Environmental Design (CPTED) audits and design practices.
- ***Street lighting*** to ensure pedestrian comfort as well as safety and security at all times of day. Street lighting can also be designed to support a particular theme for a given area.
- ***Building design*** guidelines within pedestrian precincts will continue to focus on pedestrian orientation features and accessibility for all people, such as sidewalk and streetscape improvements, accessibility features leading to and from buildings, and pedestrian friendly and accessible pathways leading toward buildings.

The potential range of treatments considered in each area is directly related to the potential of encouraging more people to walk in the City. In this regard, more extensive pedestrian treatments should be considered in high pedestrian areas, and perhaps more modest treatments in areas of lower demand. Because everyone is a pedestrian at some point in their trip or for

the entire trip, no areas should be without comfortable and accessible pedestrian facilities. **Table 2** summarizes the potential range of pedestrian treatments that are recommended for each pedestrian area within the City.

**Table 2: Desired Treatments by Pedestrian Area**

| Potential Pedestrian Facility Treatments | Key Pedestrian Areas | | | |
|---|---|---|---|---|
| | Pedestrian Precinct | Primary Pedestrian Generators | Secondary Pedestrian Generators | Low Density Pedestrian Areas |
| Sidewalk Standards | ✓ | ✓ | ✓ | ✓ |
| Sidewalk Width & Accessibility | ✓ | ✓ | ✓ | ✓ |
| Landscape Boulevards | ✓ | ✓ | | |
| Narrower Crossings | ✓ | ✓ | ✓ | |
| Curb Letdowns | ✓ | ✓ | ✓ | ✓ |
| Marked Crosswalks | ✓ | ✓ | ✓ | ✓ |
| Enhanced Marked Crosswalks | ✓ | ✓ | ✓ | |
| Important Connections | | ✓ | ✓ | ✓ |
| Accessible Pedestrian Signals | ✓ | ✓ | | |
| Street Furniture | ✓ | | | |
| Enhanced Wayfinding Signage | ✓ | | | |
| Public Facilities | ✓ | | | |
| Accessible Bus Stops | ✓ | ✓ | | |
| Safer Design (CPTED) | ✓ | ✓ | | |
| Street Lighting | ✓ | ✓ | ✓ | ✓ |
| Building Designs | ✓ | ✓ | | |

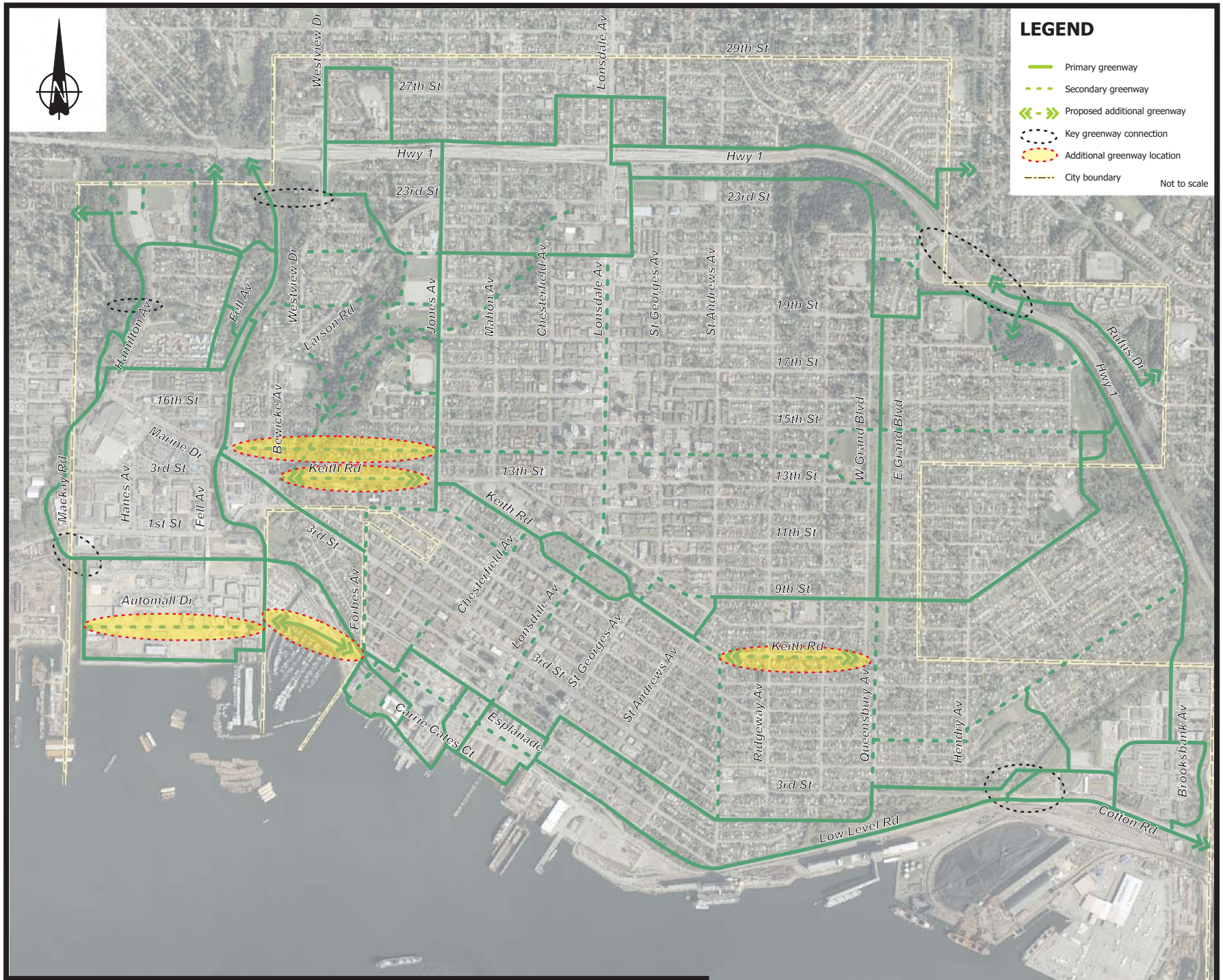
## 3. Greenways

The City has identified a network of on-street and off-street greenway facilities throughout the community to support recreational walking, cycling and other non-motorized modes of transportation. In addition to creating a comprehensive trail and greenway system that links major parks and public destinations, the Greenway system accommodate many of the links needed to make walking to key pedestrian areas more attractive. The Greenway system also redefines the role that City streets and boulevards can play in a sustainable community.

The City has a network of greenways, as shown in **Map 2**. The City has already developed some sections of the greenways network. An example of an existing greenway street is on West Keith Road between 13th Street and Chesterfield Avenue, part of the City's Green Necklace. Potential treatments along greenways include:

- A continuous, accessible wide pathway on one side of the street that can safely accommodate both pedestrians and slow-speed cyclists (some constrained situations may require cyclists to ride on the street)
- Significant landscaping, including a boulevard between the curb and the pathway
- Narrow crossings at arterials using curb extensions
- Traffic calming features along the street to discourage speeding and short-cutting
- Pedestrian rest areas
- Pedestrian-scale lighting
- Public art and interpretive signage
- Alternative stormwater management techniques.

The priorities for implementation of greenways will depend on a number of factors. However, within the greenway network, there are a number of planned off-street connections that would complete critical links in the overall pedestrian and bicycle network, but where on-street sidewalk links cannot be provided because parallel streets do not exist. For example, they may connect across ravines, through parks, or across barriers such as Highway 1 and the railway. These key links in the greenways network are circled on the pedestrian plan and should be considered specifically in the development of greenways implementation priorities.




# Map 2: Greenways

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*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*
1. Bicycle Network
2. Design Guidelines
3. Bicycle Support Strategies

*Transit Strategy*

*Road Network Plan*

*Goods and Services Movement Strategy*

*TDM Strategy*

# 4.0 BICYCLE PLAN

Cycling is an increasingly important mode of transportation region-wide for both local and long-distance trips, and the City of North Vancouver is developing a safe and attractive network of bicycle facilities to accommodate cyclists. It is an effective mode for short-distance trips, but a range of facilities is required to support different cyclists' needs. The City's OCP emphasizes the importance of reducing our environmental impacts, strengthening non-automobile modes, and embracing healthy lifestyles, and the Transportation Plan supports these long-term goals through the Bicycle Plan.

In 2006, the City developed and updated a Bicycle Master Plan (BMP) in cooperation with the District of North Vancouver. The BMP was designed to:

- Accommodate all cyclists.
- Incorporate different types of bicycle facilities.
- Focus on on-street facilities, but be complemented by off-street pathways where appropriate or necessary. Off-street pathways do not replace on-street facilities, however.
- Provide appropriate crossing treatments.
- Serve all important destinations within the City and District.
- Meet up-to-date design guidelines and standards.

Several community consultation activities were undertaken during the update of the BMP. Input was solicited from cyclists, residents, decision-makers and other stakeholders regarding issues affecting cycling in North Vancouver, opportunities for new and improved bicycle routes and facilities, priorities for implementation, and ways to fund improvements. The intent of these consultation activities was to ensure that the updated BMP reflects the needs and desires of cyclists and others in North Vancouver.

The BMP identifies a network of priority routes for implementation, as well as a number of other initiatives to support cycling in North Vancouver. The city-wide Transportation Plan endorses the recommendations of the BMP.

## 4.1 Key Facts & Findings: Cycling

Although the recent Bicycle Master Plan update is designed to address them, the following issues with the existing bicycle network have been identified:

- The City has made progress on its bicycle network, but there are still many incomplete routes throughout the City. An important area of concern is the connectivity between the City's and District's bicycle routes.
- Roadway discontinuities present challenges for establishing continuous bicycle routes along many corridors because intersection geometries and crossings for cyclists are difficult. As well, the Upper Levels Highway is a significant barrier to both pedestrians and cyclists.
- There is a general lack of awareness about cycling routes in the City, and the provision of facilities and programs to support cycling is generally limited.

## 4.2 External Initiatives

Because the BMP was a joint initiative of the City and District, it includes routes in both municipalities. The Plan notes that many of the priorities reflect the need for effective connections between the City and District, as well as to the two bridges crossing Burrard Inlet.

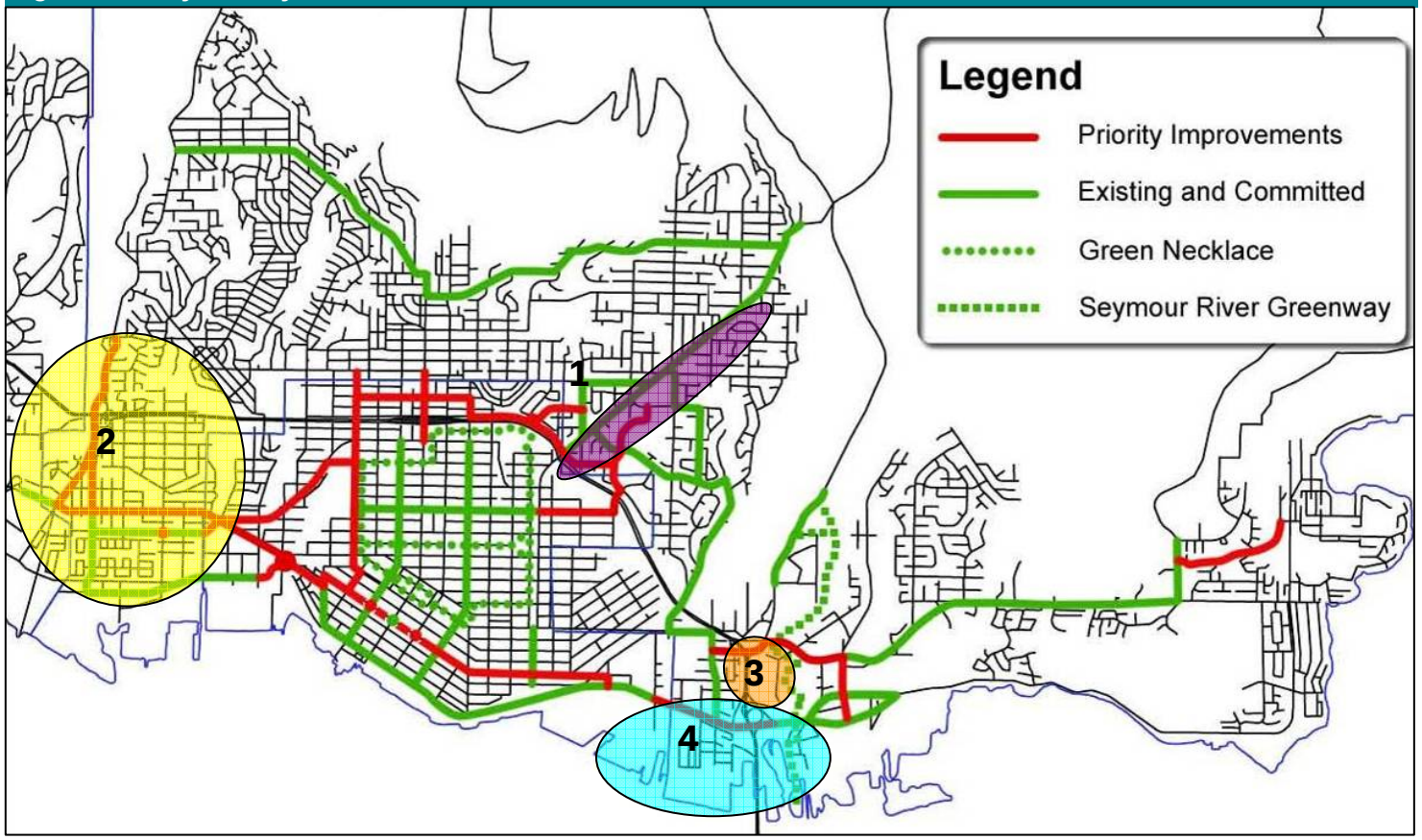
Accordingly, the District is committed toward various bicycle network improvements as a result of the Master Plan. The high priority initiatives identified in the BMP for the District are extensive and include a range of improvements to existing facilities as well as the provision of new designated on-street bike routes. The key facility enhancements for the District located at the periphery of the City are shown in **Figure 4** and briefly highlighted as follows:

1. Bicycle lanes on Lynn Valley Road, especially through the Highway 1 interchange;
2. Planned bicycle facilities along Capilano Road from Marine through to the Grouse Mountain Skyride, and along Marine Drive from the City's western limits through to Capilano Road to connect with the Lions Gate Bridge;
3. Overpass structures for pedestrians and cyclists over Lynn Creek in the vicinity of Crown Street, and Highway 1 overpass at Mountain Highway/Keith Road on the south side connecting to St. Denis Avenue/Keith Road on the north side; and

4. Improved facilities along Main Street to the east of the City. These facilities will have significant benefit to City residents.

In addition to these District projects, the Ministry of Transportation is working on improvements at the north bridgehead of the Ironworkers Memorial Bridge. These projects include some improvements to bicycle routes through the Main Street/Dollarton Highway interchange that will connect with Keith Road and Main Street.

**Figure 4: Key Facility Enhancements in the District of North Vancouver**



## 4.3 The City's Long-Term Bicycle Plan

**What does the Bicycle Plan Include?**

1. ***Bicycle Network***
2. ***Design Guidelines***
3. ***Bicycle Support Strategies***

The Bicycle Plan identifies the planned bicycle network and will provide the primary guidance to the City in the coming years. The Plan recommends a complete network of on-street and off-street cycling facilities that will complete various gaps in the existing network and improve crossings at major roads. The proposed off-street pathways coincide with planned greenways and will benefit both cyclists and pedestrians. These represent critical links in the bicycle and pedestrian networks, because they provide connections where parallel roadway links do not exist. The Plan also provides design guidelines for bicycle facilities and signage, and identifies priorities for implementation. These primary features of the Bicycle Plan are described below.

### 1. Bicycle Network

To achieve the City's objectives to encourage transportation alternatives and promote healthy lifestyles, the Transportation Plan recommends the development of bicycle routes consistent with the Bicycle Master Plan, as illustrated in **Map 3**. These bicycle facilities will support those residents that wish to cycle on designated routes, and provide visiting cyclists with attractive and clear routes within the City. This Plan includes an extensive network of new and enhanced facilities within the City that will be integrated with the initiatives of the District which are highlighted as follows:

1. A ***low-level connection*** between the Lions Gate and Second Narrows bridges. Opportunities which have been suggested include an on-street route (parts of which have been implemented), connections through First Nations lands, and an off-street route along the CN Rail corridor.
2. ***Connections to complete gaps*** in the network:
   a. The area encompassing the intersections of Marine Drive, Keith Road, Bewicke Avenue, Fell Avenue and 3rd Street and 1st Street. Several proposed bicycle routes — which are all currently well-used by cyclists — intersect in this area.
   b. A connection through Tempe Heights Park between 25th Street and Tempe Knoll Drive, and extending along the north side of Highway 1 to Lynn Valley Road and through to 21st Street.

c. New connection between the Grand Boulevard and Loutet neighbourhoods over Highway 1 east of the Lynn Valley Road interchange, to provide an alternative route to Lynn Valley.

### 3. *Key Priority improvements*

a. Jones Avenue between 4th Avenue (via Mahon Avenue) to Queens Road
b. Lonsdale between 23rd Street and Queens Road
c. Marine Drive between Mackay Road and Forbes Avenue
d. 4th Street Street from Mahon Avenue to Heywood Street
e. 16th Street/Larson Road between Marine Drive and 21st Streets
f. 17th Street between East Grand Boulevard and Rufus Avenue, extending northward to the District
g. 25th Street through Tempe Heighs Park with connections to the District
h. 27th Street between Jones Avenue and St. Andrew's Avenue

### 4. *Lower Priority Improvements*

Lower priority improvements have been recommended at the following locations: Fell Avenue, Westview Drive, Bewicke Avenue, Keith Road/13th Street, 23rd Street (between Chesterfield and St. Andrews), Hendry Avenue.

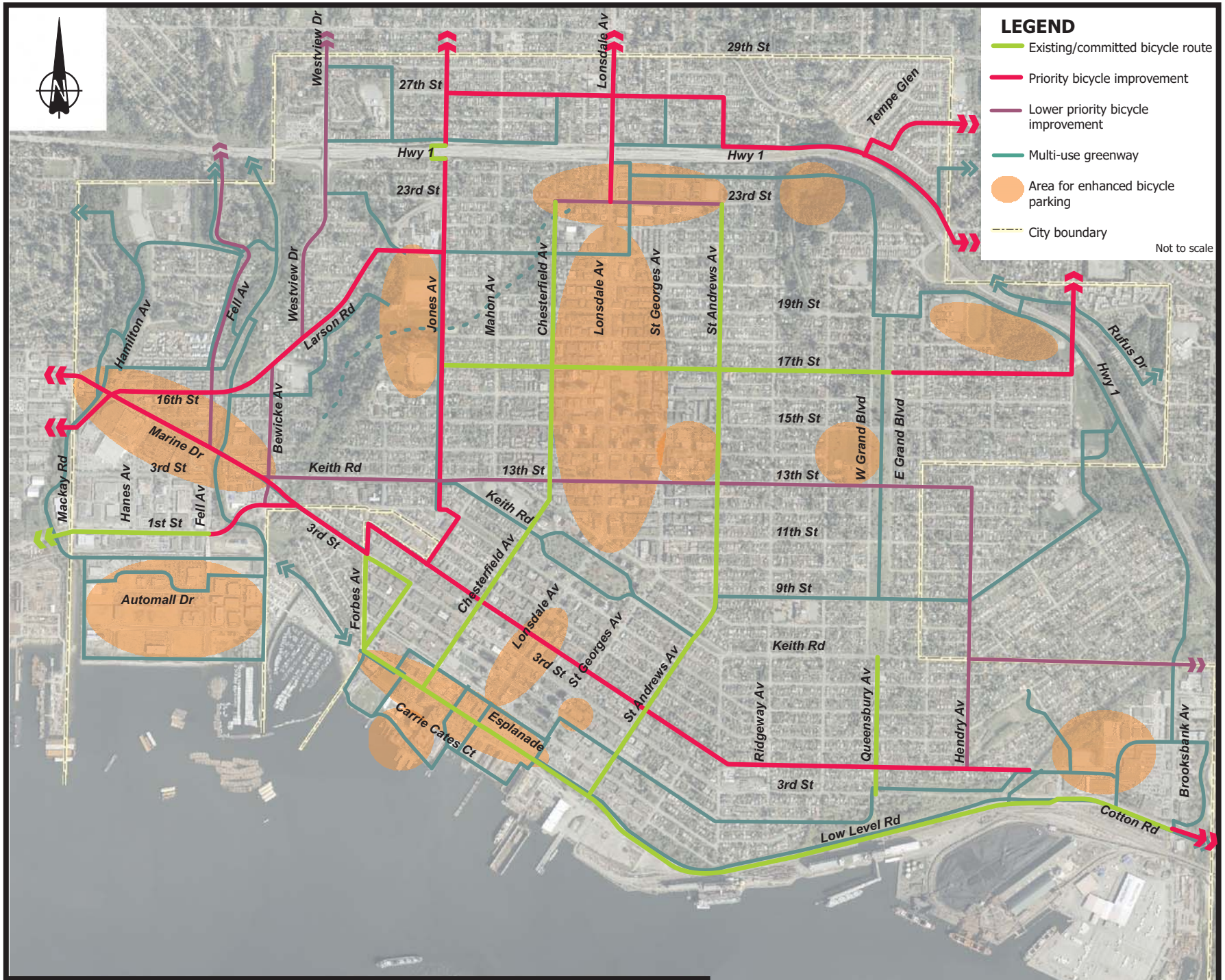
### 5. *Crossing Treatments*

a. 4th Street at Chesterfield, Lonsdale and St. Georges Avenues.

## 2. Design Guidelines

The Bicycle Plan presents a comprehensive set of guidelines for the design, construction and maintenance of bicycle facilities consistent with the Bicycle Master Plan. These guidelines are intended to supplement current design guidelines published by the Transportation Association of Canada (TAC), and consequently current TAC guidelines (such as guidelines related to signage and pavement markings). The design guidelines are based on state-of-the-art practices used in BC and elsewhere in North America, and address situations not encompassed in the TAC guidelines.

The design guidelines provide direction on the design of on-street and off-street routes as well as crossing treatments which are briefly highlighted as follows:




# Map 3: Long-Term Bicycle Network Plan

City of North Vancouver Transportation Plan

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### *1. On-street and Off-Street Facilities*

The City's long-term plan includes the provision of various treatments for on-street and off-street facilities. The selection of specific treatments is influenced by the roadway characteristics and uses. The types of on-street and off-street bicycle facilities include:

- ***Shared bicycle routes*** that make use of collector roads and local streets with low traffic volumes. Along these roadways, it is not necessary to provide extra width for bicycles or designate specific areas of the roadway for bicycle use. All that is required is "bicycle route" signage.
- ***Marked-wide curb lanes*** are wider than a standard travel lane, to provide sufficient width for an automobile to safely overtake a bicycle, without crossing over into the adjacent or oncoming traffic lane. A marked wide curb lane incorporates bicycle symbols stencilled on the right side of the lane at regular intervals. Unlike a conventional bicycle lane, marked wide curb lanes do not include a white line separating bicycles from other traffic. Marked-wide curb lanes are typically used on collector or arterial roads. A width of 4.3 metres (not including the gutter) is recommended for marked-wide travel lanes.

- ***Bike lanes*** are separate travel lanes on the roadway for cyclists, identified with a solid white line that is dashed at intersections to indicate where motor vehicles may cross the lane for turning movements. Bike lanes are typically provided on arterial roads and are recommended to be 1.5 metres wide (exluding the gutter) where the posted speed limit is less than 70 km/h.
- ***Multi-use pathways*** are hard-surfaced — using concrete or asphalt — which means that all non-motorized users can be accommodated, including pedestrians, runners, in-line skaters, skateboarders, persons in wheelchairs, equestrians, persons pushing strollers, and persons walking dogs, for example. These are typically used on designated greenway streets and off-street facilities. The minimum desired width for multi-use pathways is 4.0 metres.

### *2. Crossing Treatments*

The critical locations on a bicycle route or pathway are where these facilities intersect major roads. Crossing treatments can be used to assist cyclists, pedestrians and others in crossing major roads, and to minimize potential conflicts with motor vehicles. The type of crossing treatment depends on the width of the intersecting road, the volume of motor vehicle traffic, and the number of cyclists, pedestrians and others using the crossing. The range of crossing treatments that will be applied throughout the bicycle network in the City are highlighted as follows:

- ***Marked/signed crossings*** resemble a marked pedestrian crossing, with signage and pavement markings identifying the crossing. Marked crossings can be supplemented with curb extensions and/or raised crosswalks in order to reduce the crossing distance, slow motor vehicles at the crossing, increase motorist awareness of the crossing and increase the visibility of cyclists and pedestrians.
- ***Median islands*** incorporate a raised island located on the centreline of the road, separating opposing directions of traffic. The median island allows cyclists and pedestrians to cross one direction of traffic at a time, thereby reducing crossing delay.
- ***Signalized crossings with detectors for cyclists*** may be required where high traffic volumes and/or traffic speeds on a major road mean that cyclists and other pathway users cannot safely cross the road, even with a median island.
- ***Grade-separated crossings*** are identified where it is not possible or desirable to provide an at-grade crossing.
- ***Railway crossings*** require special care where a bicycle route crosses the railroad at-grade.

In addition to the facilities, the BMP identifies recommended priorities for implementation. However, it will be important to consider how BMP-related projects can be incorporated into other road network projects wherever possible, so that efficiencies and economies of scale may be realized.

## 3. Bicycle Support Strategies

In addition to providing a comprehensive network of bicycle facilities with attractive crossings, support facilities are required to make cycling more convenient. In particular, every trip by bicycle requires that the bicycle be parked at the end of the trip. In many cases, this means locking the bicycle on the street where it could be stolen. The fear of theft or vandalism is a significant deterrent to cycling. Regardless of whether a bicycle is worth $100 or $5,000, no-one wants to have their bicycle stolen, particularly if they depend upon it for transportation. Consequently, providing safe and secure parking at key locations throughout the City is a significant means of encouraging cycling. Additional bicycle parking will be provided in key areas of North Vancouver such as:

- Lonsdale Regional Town Centre
- Marine Drive corridor and Esplanade corridors, particularly as redevelopment occurs
- SeaBus terminal and Lonsdale Quay
- Lions Gate Hospital area
- Harbourside area
- Civic centre (City Hall, library)
- All municipal community centres
- Secondary schools
- Key parks (such as Mahon, Greenwood, Boulevard, Loutet, and Sunrise).
- Harry Jerome Rec Centre

Ideally, each of these areas should offer a range of bicycle parking facilities, especially where the duration of parking may vary significantly. Options should include:

- ***Short-term parking*** typically comprises bicycle racks distributed throughout the area and installed on wider sidewalks. Bicycle racks are generally oriented to residents and visitors, who may stop in the area for shopping or other personal business. It is desirable to provide a limited number of covered bicycle racks to provide protection from the elements.

- ***Long-term parking*** is more secure than typical bicycle racks. It may comprise bicycle lockers, which can be rented by individuals, or larger secure facilities, such as bicycle lock-ups. Long-term parking is generally oriented to cyclists who need to park a bicycle for an entire day or longer. Major employment areas (such as the Hospital and Harbourside area), transit terminals (such as Lonsdale Quay), and community facilities (such as school and community centres) are ideally suited to long-term parking facilities. In most cases, long-term parking facilities at employment centres are provided by employers, whereas at transit facilities they are provided by TransLink. Therefore, the City would generally work with these other agencies to encourage the development of long-term bicycle parking at these locations.

In addition, enhanced wayfinding signage and maps can identify designated bicycle routes and can help guide cyclists throughout the bicycle network.

In addition to the provision of public bicycle parking facilities and enhanced wayfinding signage, the City can further support cycling in the community by establishing various policies and programs as set out in municipal bylaws and enforced through the development process.

*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

*Transit Strategy*
1. Improved Accessibility to Transit
2. **Increased Local Area Frequency and Coverage**
3. Expanded Frequent Transit Network
4. Transit Priority Treatments
5. Expanded U-Pass Program and Potential Resident Pass Program
6. Expanded SeaBus Service and Enhance Terminal

*Road Network Plan*

*Goods and Services Movement Strategy*

*TDM Strategy*

# 5.0 TRANSIT STRATEGY

Transit is seen as the primary alternative to car travel in North Vancouver and across the region, as it can offer competitive travel times and reduce overall environmental and community impacts of transportation. The various policy paths in the City's OCP support the use of transit as means of reducing our environmental impacts, reducing infrastructure needs, and promoting alternative modes of transportation. Although the Transit Strategy is presented as a stand-alone strategy in this section, it has been integrated with the plans for other modes, particularly the Roadway Network Plan presented in Section 3.4. This means that initiatives which are important to increase transit use are included in other modal Plans where appropriate. Examples of how the Transit Strategy relates to other modal Plans and strategies include:

- The ***Road Network Plan*** identifies roadway projects which will provide capacity or operational improvements for transit buses on roads that have frequent transit services, or are planned within the Transit Strategy.
- The ***Bicycle Plan*** includes secure parking for bicycles at transit exchanges, along with bicycle racks on all transit vehicles as a means of improving access to transit services.
- The ***Travel Demand Management Strategy*** identifies the interaction between land use decisions and transportation decisions, and highlights the need to concentrate higher densities of mixed-use developments along high frequency transit corridors. The TDM Strategy also describes incentive programs by which employers can subsidize transit passes for employees.

## 5.1 Key Facts & Findings: Transit

Transit is a key priority for many in North Vancouver. In other communities in the Lower Mainland, improved transit has been found to be the most effective means of encouraging people to reduce driving. However, the following issues currently affect the overall attractiveness of transit in the City and on the North Shore in general:

- The hub-and-spoke bus system is heavily oriented to the Vancouver commuter market, which represents less than 20% of daily trips made in the City. Local travel by transit is often indirect and very time-consuming.
- Service is limited and inflexible in some neighbourhoods and employment areas.

- Overcrowding is an issue on specific routes during peak periods.
- Buses are generally inconvenient and costly for most trips and are affected by congestion, so are not competitive with car travel to encourage behavioural change in support of the City's goals.
- There are no direct bus services from the City across the Ironworkers Memorial Bridge to Burnaby and Vancouver, and few direct bus services to post-secondary institutions throughout the region.
- The bus depot is at capacity, affecting the ability to provide reliable accessible transit with bicycle racks on buses.
- Many bus stops in the City are inaccessible for people using mobility aids.
- There is no significant park-and-ride facility on the North Shore to support commuters wishing to combine driving and transit for longer-distance commutes.
- The existing Lonsdale Quay terminal lacks appeal and amenities to attract tourists and make them feel welcome, and general concerns about personal safety and security at terminals are a deterrent to using transit.

## 5.2 External Initiatives

TransLink owns, plans, and funds transit facilities and services in the City of North Vancouver and throughout Greater Vancouver. The TransLink Board approved an Area Transit Plan for the North Shore in 2001 that called for improvement to transit services in the City and District of North Vancouver, the District of West Vancouver, the Village of Lions Bay and Bowen Island Municipality. Improvements identified in this plan were prioritized over a five year time frame. As that time frame has now expired, TransLink plans to begin work on an update to the North Shore Area Transit Plan in 2008.

## 5.3 The City's Long-Term Transit Strategy

The purpose of the Transit Strategy is to confirm support for many planned transit enhancements in the City and identify other desired improvements to increase ridership and customer satisfaction. To be more sustainable, transit must continue to attract a growing proportion of travel external to the North Shore and become much more attractive

for getting around the three communities. The recommended long-term transit services, facilities and support programs may be implemented by TransLink, the City of North Vancouver, or other agencies and employers.

**What does the Transit Strategy Include?**

1. ***Improved Accessibility to Transit***
2. ***Increased Local Area Frequency and Coverage***
3. ***Expanded Frequent Transit Network***
4. ***Transit Priority Treatments***
5. ***Expanded U-Pass Program and Potential Resident Pass Program***
6. ***Expanded SeaBus Service and Enhance Terminal***

## 1. Improved Accessibility to Transit

Increased accessibility to transit is designed to enhance services and facilities for all existing customers and to attract new riders. Today, many individuals experience barriers to using transit for various reasons ranging from the physical challenges of system elements (such as accessing stops and stations) through to those that experience cognitive difficulties getting around on transit. In 2007, TransLink approved the recommendations of the Access Transit Project, which was designed to create *"a seamless and inclusive public transit system that welcomes members of the Region's diverse communities with a fully integrated range of bus, rail, ferry and custom transit services that is inviting, responsive, safe, comfortable, and affordable; and that meets the needs of our customers to access transit vehicles, information, customer service, training, and other programs."* The core recommendations of the Board described below largely involve the overarching direction of TransLink, but require municipal support to bolster accessibility standards and practices.

- ***Establish Access Transit Office & Users' Advisory Committee*** to provide a single point of contact to work with custom transit users and others transit customers to monitor system accessibility, review unresolved issues, and evaluate system performance.

- ***Provide Better Customer Support*** that goes beyond reducing physical barriers, to giving customers clear information that is easy to find, signage they can easily understand, and support from front-line staff in order to use transit successfully. Initiatives such as enhancements to the website, directional signage, customer outreach and specialized training for transit users and staff will make the system more accessible for everyone. Within the City, improved on-street signage to key transit nodes will enhance customer access.

- ***Improve Access to Transit Facilities*** to support a seamless experience for customers on the adjacent street system leading toward transit facilities, riding on transit fleets and using other transit facilities such as stations

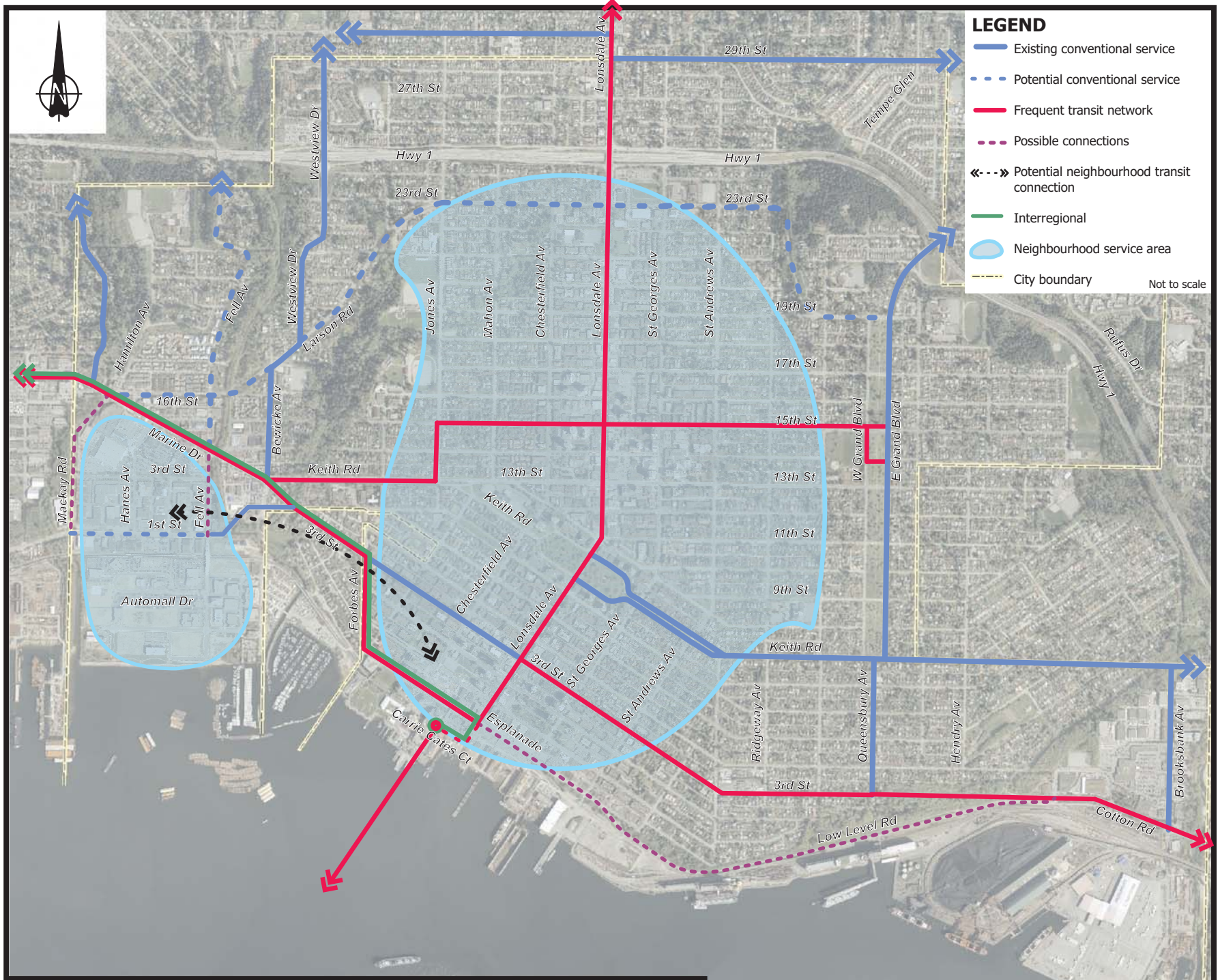
and exchanges. TransLink has developed Universal Accessibility Guidelines for transit vehicles and facilities to set a standard for all future investments in fleets and facilities. The City of North Vancouver will increase accessibility of bus stop facilities and as well as the pedestrian system, including sidewalks and crossings.

- ***Increase Availability of Effective Custom Transit*** by altering the operation and management of HandyDART in order to improve the quality of the service, provide a seamless regional custom transit service and to better integrate custom transit with the overall transit system.
- ***Improve Safety and Security at Main Transit Exchanges*** such as Lonsdale Quay to help ensure the safety and comfort of passengers and increase transit ridership.

## 2. Increased Local Area Frequency and Coverage

The Transit Strategy recommends increasing local area frequency and coverage with conventional and small bus services through additional fleet and service hours. With the provision of other support programs and facilities, these long-term service expansions highlighted below will be designed to provide more attractive connections within the City and with other North Shore communities (see **Map 4**).

- Direct services across the northern areas of the North Shore (i.e. Queen Street/29th Street) to connect with Capilano College.
- Services across the northern edge of Central Lonsdale (i.e. 16th Street, Larson Road and 23rd Street) to Lynn Valley.
- Central Lonsdale and Lower Lonsdale neighbourhood services in order to provide transit coverage and attractive connections for residents to the Lonsdale commercial areas as well as other frequent transit services.
- Explore options for a free shuttle service along the Lonsdale corridor.
- Expanded service to Harbourside Auto Mall area.
- Neighbourhood service connections to 1st Street industrial and business area.




# Map 4: Proposed Transit Coverage

City of North Vancouver Transportation Plan

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## 3. Expand the Frequent Transit Network

The Transit Plan supports expanding the Frequent Transit Network on the North Shore along three primary corridors (see **Map 4**). Within the 2008 Transportation and Financial Plan, TransLink has identified a range of primary roads in Greater Vancouver – such as Marine Drive – where the service levels will be or are already operating at least every 15 minutes, 15 hours per day and 7 days per week. These corridors may be served using conventional bus services, express services or Bus Rapid Transit. In the long-term, the City will want to plan for an expanded frequent transit network to increase ridership and promote densification along the following corridors:

- Lonsdale Avenue from Queens Street to Esplanade
- Marine Drive between 15th Street in West Vancouver through to Capilano College
- Marine/Keith/15th services to augment the local services providing a direct connection between Park Royal and Central Lonsdale.

## 4. Implement Transit Priority Treatments

Transit Priority Treatments are recommended along each of the Frequent Transit Network corridors. Where delays and congestion exist today or anticipated to get worse in future, the City will examine opportunities for priority treatments that reduce delays to bus services. These treatments include, but are not limited to signal coordination, bus bulges, intersection queue jumpers and dedicated bus lanes. These Transit Priority Treatments will improve service for transit, often at the expense of vehicles. Although many of these treatments will impact vehicles, they are key to supporting long-term transit ridership by prioritizing transit over vehicles. The planned transit priority improvements described in the Roadway Network Plan are briefly highlighted as follows:

***Lonsdale Avenue*** (23rd to Esplanade) is identified as part of the frequent transit network in order to serve the two key commercial districts of the City. In order to minimize delays to transit vehicles and to improve the customer experience with enhanced transit stop amenities, bus bulges are recommended at most stop locations. Bus bulges will reduce delays to transit vehicles having to move over to the curb areas between parked vehicles on the street and then merge in with the traffic flow. Overall, this will reduce transit travel times and increase the competitiveness of transit travel. With the provision of bus bulges and other curb extensions to reduce pedestrian crossings, the coordination of signal timing along Lonsdale will be refined to enhance north-south travel time for buses.

- ***Marine Drive/ 3rd Street / Keith Road*** will also be part of the frequent transit network, providing attractive connections to Lower and Central Lonsdale commercial areas as well as Capilano College. TransLink is currently examining transit priority treatments for Marine Drive to the Lions Gate Bridge to overcome peak period traffic delays. The existing and forecast levels of congestion at the convergence of Marine Drive, 3rd Street, Keith Road and Bewicke Avenue will impact transit travel times, and consequently transit efficiency and attractiveness. Transit priority treatments that will be considered include the provision of bus queue jumpers for westbound trips along 3rd Street and Keith Road.

- ***Westbound queue jumper*** will also be considered along 3rd Street, just east of Forbes Avenue. This treatment could be accomplished by restricted parking in the curb lane during the morning and afternoon peak periods. The queue jumper should be long enough to bypass westbound vehicle queues.

- ***Esplanade*** will support more frequent transit services across the North Shore and through to Capilano College in future. Similar to Lonsdale Avenue, bus bulges will be used to prioritize transit operations, to reduce pedestrian crossing areas and to delineate parking areas.

## 5. Expanded U-Pass Program and Potential for Resident Pass Program

The City is supportive of initiatives to expand the U-Pass Program to Capilano College. Today, the Vancity U-Pass program is a joint program between TransLink, post secondary institutions and student societies. The program places a transit pass in the hand of each student as a mandatory program at each participating institution – currently at SFU and UBC. In 2008, TransLink will work with Capilano College through a student referendum to implement the U-Pass program. Based on the experience of other schools, this initiative will significantly increase transit ridership and reduce driving trips, consequently minimizing congestion on the roadway network.

The City will also work with TransLink to examine the potential of resident pass programs along the frequent transit network corridors – such as Marine Drive and Lonsdale Avenue. In core areas of the City where attractive transit services are already or planned to be in place, resident transit pass programs may be possible for new or existing developments to reduce impacts on the roadway network – similar to UniverCity at SFU. In such cases, new developments would be required through the development approvals process to provide transit passes for each unit. Similar to the U-Pass program, a resident pass program would require high participation levels in order to make the reduce pass cost feasible. TransLink and the City would need to monitor usage patterns and perhaps make adjustments to service levels as demands rise.

## 6. Expanded SeaBus Service and an Enhanced Terminal

Expanding the SeaBus Service and enhancing the terminal will dramatically improve transit service to Downtown Vancouver and connections to other rapid transit networks that serve other areas of the Lower Mainland, including the Vancouver International Airport. Today, the existing vehicles can carry up to 400 passengers, making four trips per hour in each direction in the peak periods. In 2009, TransLink is expecting delivery of a third SeaBus that will increase the capacity of the existing service by 50% between Lonsdale Quay and Downtown Vancouver. Once acquired, the new SeaBus will be utilized as a replacement for the existing vessels which are in need of dry dock maintenance. With the increased crossing capacity, bus services to the Londsdale Quay will be increased as previously described, and improvements to the North Vancouver SeaBus Terminal will be required to enhance passenger amenities and increase personal security.

*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

*Transit Strategy*

*Road Network Plan*
1. Updated Roadway Classification System
2. Emergency and Disaster Response Routes
3. Major Road Network Improvement Strategies
4. Arterials, Collectors & Local Road Enhancements
5. Parking Strategies
6. Protect Neighbourhoods

*Goods and Services Movement Strategy*

*TDM Strategy*

# 6.0 ROAD NETWORK PLAN

The roadway network represents a critical component of the City's transportation system, as it supports not only automobile traffic, but walking, transit, cycling, and goods movement. Effectively, it is the skeleton of the overall system and so the Roadway Network Plan brings together many components of the Transportation Plan described earlier.

The City's road network is built out and significant changes (new roads or large-scale widening) are not anticipated or planned in the coming years. To be more sustainable, the primary objective of the Roadway Network Plan is to provide a strategy for managing the existing road network and to promote the integration of all travel modes into the system, particularly along major roadways where most improvements have traditionally been oriented to moving single-occupant cars. This approach will support the overall vision for a sustainable community and support the Policy Paths contained in the City's Official Community Plan.

## 6.1 Key Facts & Findings: Road Network & Parking

The existing road network in the City generally functions well, with relatively few areas of significant delay. However, technical review and consultation with stakeholders and residents have identified the following issues:

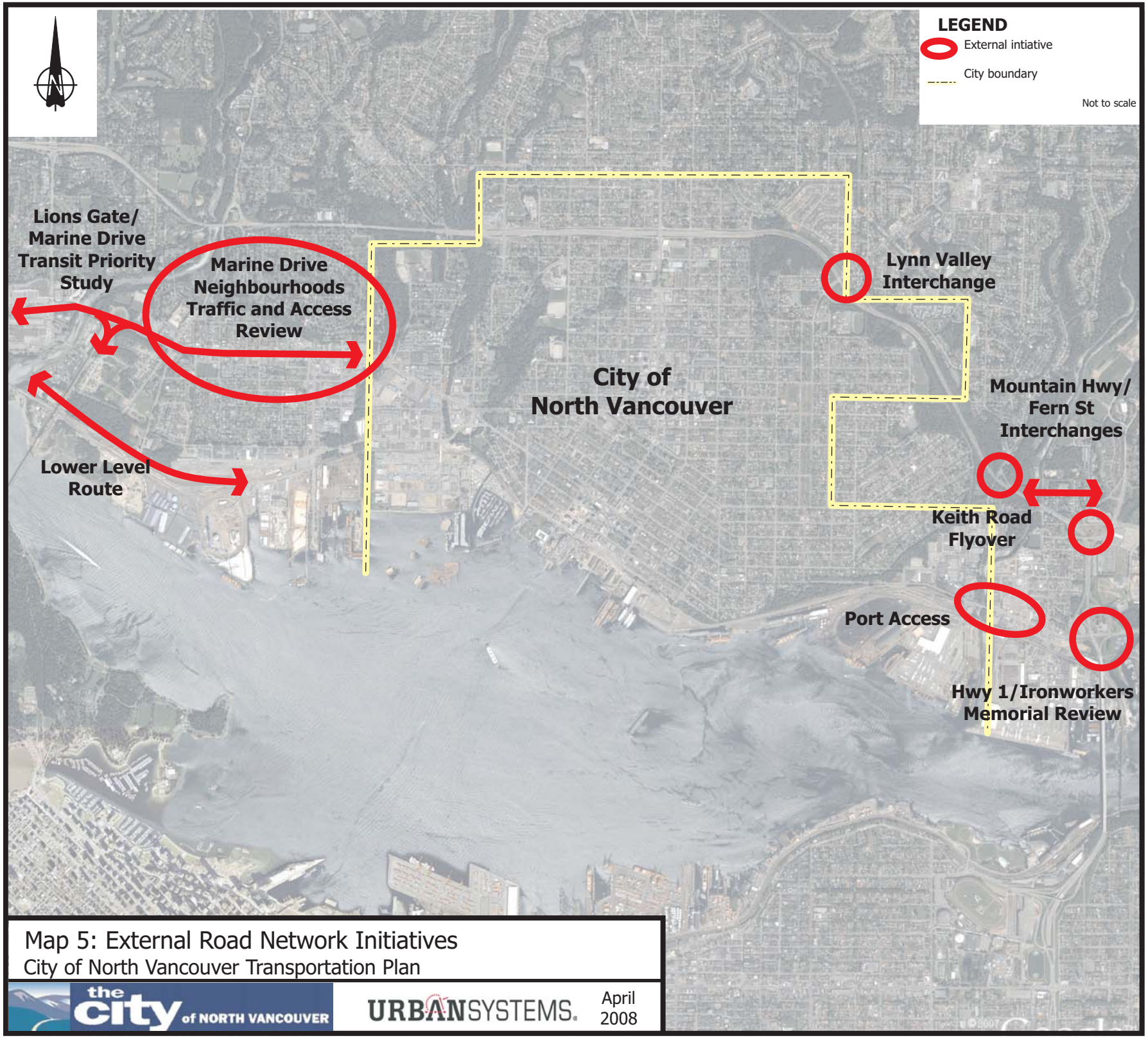
- Several roadways in North Vancouver may not be functioning as intended or indicated by their classification.
- The historical road network pattern limits opportunities for a direct east-west route. The City has been working over time to develop the Lower Level Route, but a number of challenges remain.
- Congestion is not a significant issue, but is affecting accessibility to the City at certain locations near the periphery. There is concern about the potential impacts of further development within the City on congestion.
- There are increasing challenges for emergency access, particularly at the periphery and outside the City limits, where congestion is more common. For example, incidents on the Burrard Inlet bridges have a significant impact on traffic, transit, and emergency response within the City. Traffic calming on emergency routes is a concern.
- Neighbourhood streets continue to experience negative impacts of non-local traffic.

- The City can be directly affected by transportation planning undertaken by external jurisdictions, such as the District of North Vancouver, TransLink, and the Ministry of Transportation.
- The supply of short-term parking in key commercial areas does not always meet demands.

## 6.2 External Initiatives

The City's transportation system is influenced by decisions and directions from neighbouring municipalities and other levels of government, including TransLink and the Province. Over the last few years, all North Shore municipalities, TransLink, the Ministry of Transportation, and the Squamish Nation have been working collaboratively on several transportation initiatives to ensure that goals are shared and impacts are well understood. For most transportation initiatives, a unified vision and approach in working together with other levels of government is essential and should be incorporated in the planning and development of the City's transportation system.

Overall, there are several roadway-related projects being undertaken or considered by agencies external to the City of North Vancouver that will have long-term influences on the transportation system (see **Map 5**). In some cases, there are potential impacts on the City's transportation goals and objectives, whereas other projects are more distant and would have less significant implications for the City of North Vancouver. Appendix B summarizes those roadway network initiatives that are underway or recently completed, other initiatives under consideration and those practices currently in place to manage incidents on major roadway links such as the Ironworkers Memorial Bridge.




Map 5: External Road Network Initiatives
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## 6.3 The City's Long-Term Road Network Plan

The City's roadway network is built out and there are relatively few areas of significant congestion within the City's boundaries today and in the long term. The City's long-term Roadway Network Plan includes five major themes to make best use of the existing infrastructure, address key safety issues, and support the City's goals for other modes of transportation, as follows:

- ***An updated roadway classification system*** to better reflect the current and long-term roles and functions of roadways in the City.
- ***Designated emergency & disaster response routes*** to ensure that frequently used corridors are recognized and that planned transportation system changes do not inadvertently impact response times.
- ***Major Road Network improvement strategies*** to support safety and mobility of priority modes along the major routes – such as transit, trucks, cyclists, and pedestrians.
- ***Arterial, collector and local road enhancements*** that are needed to improve safety and to achieve a multi-modal transportation system.

What does the Road Network Plan Include?

1. ***Updated Roadway Classification System***
2. ***Emergency and Disaster Response Routes***
3. ***Major Road Network Improvement Strategies***
4. ***Arterials, Collectors & Local Road Enhancements***
5. ***Parking Strategies***
6. ***Protect Neighbourhoods***

- ***Parking Strategies*** to increase the economic potential of the City's commercial areas while maintaining the residents' quality of life.
- ***Protect Neighbourhoods*** by supporting traffic calming in residential neighbourhoods in order to ensure residents' safety and community livability.

This section of the Road Network Plan identifies those key features needed to preserve the efficiency of the road network and to integrate all modes effectively into the transportation system.

*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

*Transit Strategy*

*Road Network Plan*
1. Updated Roadway Classification System
2. Emergency and Disaster Response Routes
3. Major Road Network Improvement Strategies
4. Arterials, Collectors & Local Road Enhancements
5. Parking Strategies
6. Protect Neighbourhoods

*Goods and Services Movement Strategy*

*TDM Strategy*

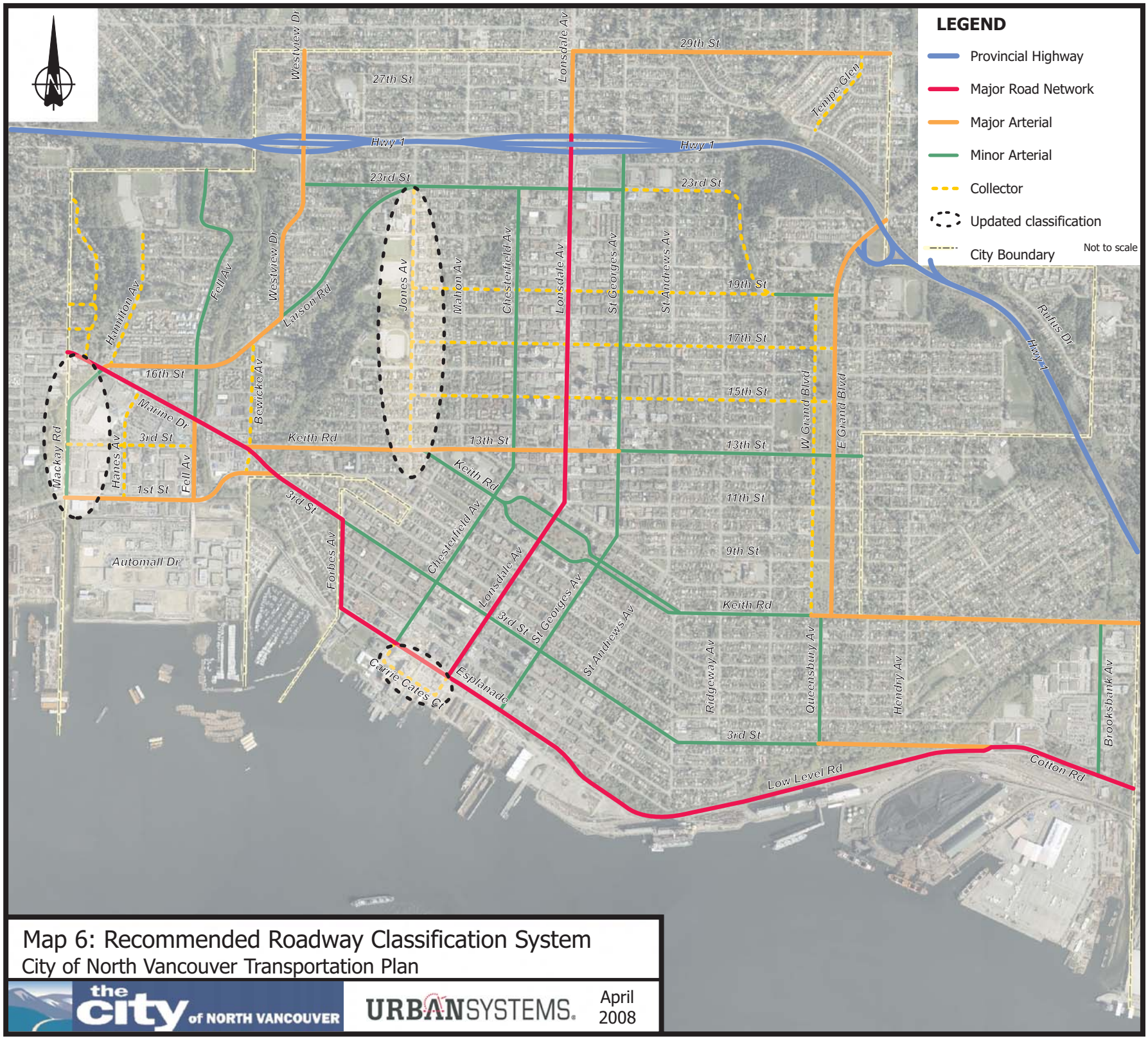
## 1. Updated Roadway Classification System

The roadway classification system is designed to guide the City's short- and long-term decisions regarding the configuration and design of roads and supporting facilities, as well as relationships with adjacent land uses. In some cases, the existing classification neither reflects the current or planned role and function of a given roadway as anticipated and presented in the Official Community Plan.

Because the Transportation Plan outlines long-term directions that are consistent with the classification of all roadways, the Plan includes an updated Roadway Classification System illustrated in **Map 6**. Unlike design standards for roads and other municipal infrastructure, a classification system represents the *typical* form and functions for each class and are meant only as guidelines. There may be some variations in the actual characteristics of certain roadways.

**Table 3 Roadway Classification Guidelines**

| | MRN / Major Arterial | Minor Arterial | Collector | Local |
|---|---|---|---|---|
| Expected traffic demands (approx. daily) | 10,000 + | 5,000-15,000 | 1,000-8,000 | 1,000 |
| Traffic and connectivity | Regional traffic connecting to external destinations and highways | Cross-town traffic connecting to major arterials | Neighbourhood traffic connecting to arterials | Local street traffic connecting to individual properties and collectors |
| Typical form | 4+ lanes plus turn lanes at intersections | 2-4 lanes plus turn lanes at key intersections | 2 lanes | 2 lanes |
| Property access | Very limited | Limited | No limitations | No limitations |
| Control | Generally signalized or roundabouts | Generally signalized or roundabouts | Generally unsignalized | Unsignalized |
| Transit services | Yes – primary transit corridors | Yes – local transit | Yes – local transit | No |
| Typical intersection spacing | 400 m | 200 m | 60 m | 60 m |
| Typical pavement width | 20 m | 20 m | 12 – 15 m | 9 – 12 m |




Map 6: Recommended Roadway Classification System

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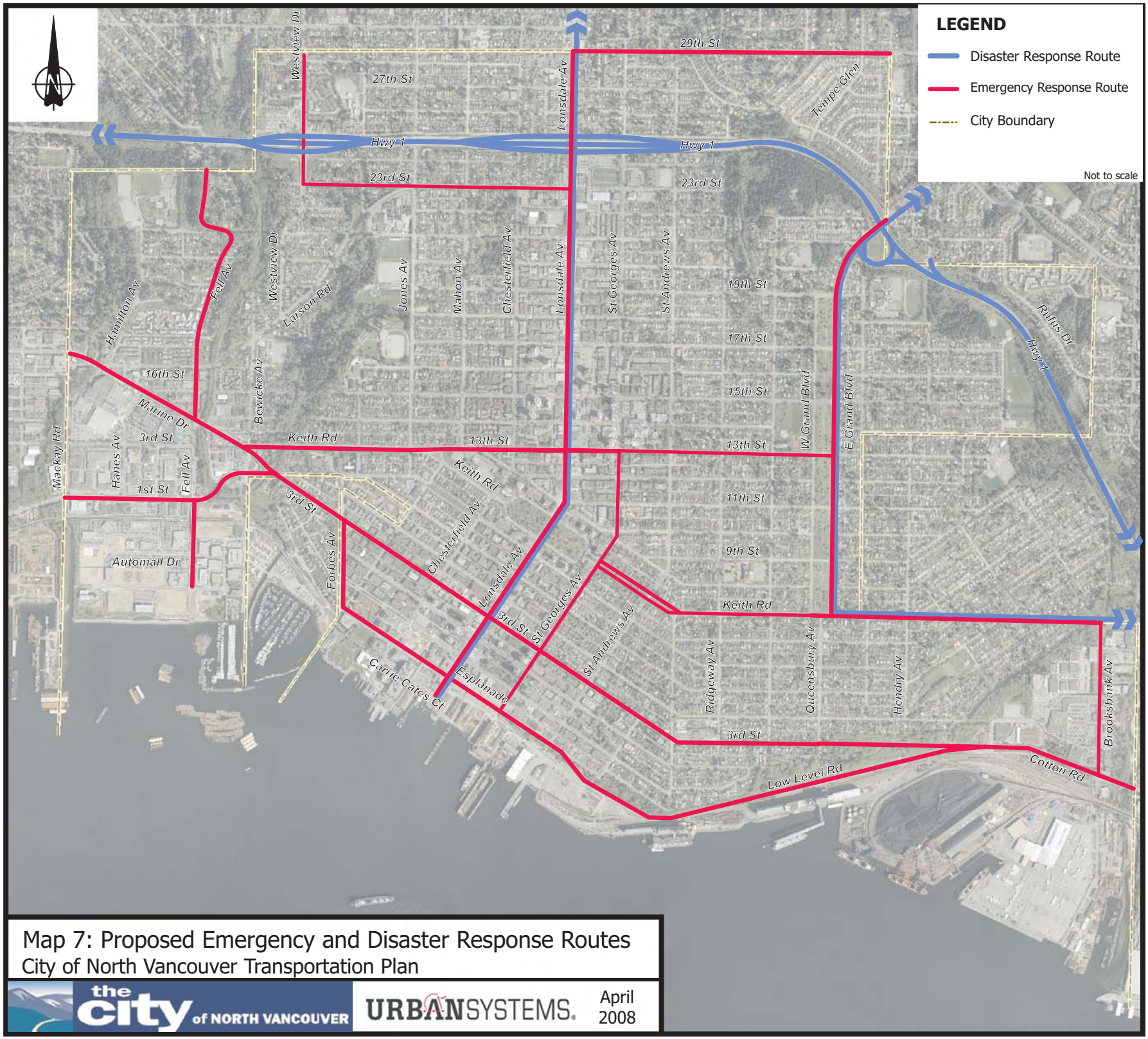
As part of the updated classification system presented in **Map 6**, the designation for some roadways is adjusted to better reflect their current and planned long-term role and function as presented in **Table 3**. The following discussion briefly highlights some of those key changes.

- ***Mackay Road*** is changed from major arterial to minor arterial to reflect lower traffic demands, local connectivity (it is not a through route), and a relatively high level of property access.
- ***Jones Avenue*** is changed from minor arterial to collector to reflect lower traffic demands and form and control characteristics consistent with a collector standard.
- ***Carrie Cates Court*** is modified from major arterial to collector to reflect localized connectivity, numerous property accesses, and form and controls consistent with a collector standard.

## 2. Emergency and Disaster Response Routes

Emergency and disaster response routes are designated by many municipalities to ensure that planned transportation system changes do not inadvertently impact response times. In the case of disaster response routes, the City already has designated routes that must be kept clear in the event of a major disaster, such as Lonsdale Avenue and East Grand Boulevard. Although there are no designated emergency response routes recognized in any City policy, emergency service providers typically have specific routes along major roadways that are frequently used to respond to most emergencies. For both disaster and emergency response routes, the City wants to recognize the added importance of these routes in responding to emergencies and supporting design standards and practices that do not significantly inhibit access and response time for emergency vehicles.

**Map 7** highlights the proposed emergency response routes for the City of North Vancouver. Signal pre-emption measures should be considered at specific locations along the emergency response routes. Map 7 also identifies disaster response routes within the City, although these have previously been designated by provincial and regional agencies.




Map 7: Proposed Emergency and Disaster Response Routes

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*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

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*Road Network Plan*
1. Updated Roadway Classification System
2. Emergency and Disaster Response Routes
3. **Major Road Network Improvement Strategies**
4. Arterials, Collectors & Local Road Enhancements
5. Parking Strategies
6. Protect Neighbourhoods

*Goods and Services Movement Strategy*

*TDM Strategy*

## 3. Major Road Network Improvement Strategies

The Major Road Network (MRN) segments typically function as arterial corridors within the City for which maintenance and capital funding is cost-shared by TransLink and the municipality. These roads typically support the highest traffic and transit demands in the City, as well as goods movement, but some are also located within major pedestrian areas and must therefore provide attractive and convenient sidewalk and crossing facilities. The improvement strategies for the Major Road Network described within this section of the Plan reflect the integration of the transit, bicycle and pedestrian plans described in other sections of the Transportation Plan, as well as opportunities for other safety and mobility improvements to existing facilities.

The following discussion highlights improvement strategies for certain MRN segments within the City recommended as part of the long-term plan. Many of these proposed improvements have been identified through studies previously undertaken by the City. Recognizing that the Transportation Plan is intended to provide broad direction for each of these corridors, specific corridor plans or local area improvement opportunities should be used to confirm suitability of specific treatments.

1. ***Lonsdale Avenue*** is the primary north-south roadway in the City of North Vancouver and the "main street" of the community. Lonsdale Avenue carries up to 27,000 vehicles per day toward the north end and is a designated municipal truck route providing a connection to and across Highway 1. It generally provides four travel lanes and two parking lanes along most of its length, and left-turn lanes are provided at very few intersections. The corridor generally provides wide sidewalks for pedestrians.

The Transportation Plan recognizes the critical multi-modal role of Lonsdale Avenue in achieving many other goals of the community. In addition to being a major corridor for passenger and truck traffic, the corridor also serves as an important transit corridor today and in the long term, providing

frequent bus services for the area in addition to direct connections to the SeaBus terminal for many individuals in the City and beyond. As the core area of the City, Lonsdale Avenue is also recognized as a major pedestrian area where attractive and well-designed sidewalk and crossing facilities are required to accommodate people of all mobility levels, and to encourage people to use alternative modes of transportation. Although not a designated bicycle route, Lonsdale Avenue accommodates bicycle traffic as a key destination for local cyclists.

In order to serve the corridor's multi-modal role, the long-term roadway improvement strategies recommended for Lonsdale Avenue include the following features, which should be examined further to confirm location-specific treatments and suitability:

- ***Bus bulges*** at select bus stops on Lonsdale Avenue. "Bus bulges" extend the curb and sidewalk across the curbside parking lane to allow buses to stop in the traffic stream. They are generally designed to accommodate two buses, depending on the frequency of transit service. Bus bulges eliminate the need for buses to pull out of and into traffic at each stop, thereby reducing delays and prioritizing transit operations. They also provide additional sidewalk space for transit passenger amenities, and shorten the pedestrian crossing distance at intersections. Bus bulges and curb extensions (see below) will significantly enhance the profile of transit and pedestrians along Lonsdale Avenue and help the City to achieve its goals for the corridor.
- ***Curb extensions*** provided at minor cross-street intersections without bus bulges. Curb extensions will shorten the pedestrian crossing distances across Lonsdale itself and across intersecting streets. Curb extensions enhance pedestrian safety and delineate parking along Lonsdale Avenue.
- ***Narrower centre lanes*** in both directions will provide wider curb travel lanes (e.g. 3.3-m median lanes with 4.1-m curb lanes) to allow buses, trucks, cyclists, and other motorists to safely share the road. Lonsdale

Avenue is an important destination area for cyclists and wide curb lanes will in particular help to accommodate them.

- ***Designated bicycle lanes*** are recommended in the Bicycle Plan north of 23rd Street.
- ***Accessible pedestrian signals*** should be installed to provide crossing information to pedestrians. They have been used extensively in some communities with strong support, and would enhance the pedestrian environment along Lonsdale Avenue.
- ***Countdown timers*** to provide countdown information to users crossing at key intersections.
- ***Signal coordination*** to support transit movement along the corridor would need to be adjusted with bus bulges in place and removal of pedestrian pushbuttons.
- ***Signals for pedestrians*** should be considered for both Keith Road intersections to address forecast operational issues.
- ***Feasible safety improvements*** should be implemented at key intersections along the corridor, highlighted in the 2005 Network Screening Program. Although the previous studies recommend implementation of northbound and southbound left-turn lanes at several intersections, this is not feasible at present due to cost and property constraints. Left-turn lanes would also add to the pedestrian crossing distance.

2. ***Marine Drive (Mackay Road to Keith Road)*** is the key east-west roadway on the west side of the City, and is a critical linkage for all modes to the Districts of North and West Vancouver, and the Lions Gate Bridge. It is currently primarily oriented to moving auto traffic, with four travel lanes and dual left-turn lanes at three major intersections. It does, however, support significant transit traffic and is also a designated truck route. The roadway is also part of the City's planned bicycle network.

   Planned redevelopment in the area means that the street will become more oriented to pedestrians and transit in the coming years in support of the City's long-term goals for the area. Although it is envisioned to remain a four-lane roadway accommodating significant traffic and truck volumes, the Transportation Plan supports the long-term goals for pedestrians, transit, and cycling along the corridor. In addition, the Transportation Plan encourages the use of 1st street as an alternative route in order to reduce traffic volumes on Marine Drive. As such, the Plan

recommends a number of improvements to preserve traffic operations and improve pedestrian conditions along the corridor, as follows:

- ***Provide road space for cyclists*** by removing one westbound left-turn lane at Fell Avenue. To preserve intersection operations with the intersection modifications, additional north-south capacity may be required by adjusting laning.
- ***Close or reconfigure several intersections*** along the north side of Marine Drive, and eliminate or consolidate private driveways connecting to Marine Drive as redevelopment occurs.
- ***Implement safety improvements*** at several intersections, as identified in the 2005 Network Screening Program.
- ***Eliminate bus bays*** at all bus stops except the eastbound and westbound bus bay in front of Capilano Mall.
- ***Coordinate signals*** along Marine Drive to support and prioritize the movement of buses along the roadway.
- ***Widen and enhance sidewalks*** where possible and in conjunction with redevelopment, as outlined in the Pedestrian Plan, and add a crosswalk on the west leg of the Hanes Avenue intersection.
- ***Implement bicycle lanes*** as recommended in the Bicycle Plan (which could be achieved more easily by eliminating dual left-turn lanes at Hanes and Fell and narrowing the median).

3. ***3rd Street (Keith Road to Forbes Avenue)***. This section of the MRN corridor traverses the residential area of the Squamish Nation and provides four through lanes and left-turn lanes at several intersections. At the west end, it ties in with the Marine Drive corridor at the five-legged Keith Road/Bewicke Avenue intersection and, just east of that intersection, with 2nd Street, which connects with 1st Street and the Lower Level Route. At the east end, it provides connections to 3rd Street and Forbes Avenue. 3rd Street is a key link in the east-west transit network, accommodating five routes, but eight routes through the Keith Road / Bewicke Avenue intersection. It is also part of the City's planned bicycle network and is a municipal truck route. Although it is a critical network link for all modes and congestion can be an issue toward the west end of the corridor, it is envisioned to remain a four-lane corridor for the foreseeable future.

   Recognizing the importance of 3rd Street in accommodating transit, bicycles, trucks, and general-purpose traffic, the Transportation Plan identifies the following improvements for the 3rd Street corridor:

- ***Encourage use of 1st Street as an alternative route*** by converting one westbound through lane at the 2nd Street intersection to a left-turn lane, such that there would be two left-turn lanes approaching 2nd Street and one through lane. Just west of 2nd Street, two through lanes would again be provided to provide sufficient capacity through the Marine Drive / Bewicke Avenue / Keith Road intersection.
- ***Develop a westbound transit lane*** beginning far enough east of the 2nd Street intersection to bypass any queuing that spills back from the Marine Drive / Bewicke Avenue / Keith Road intersection. Between Bewicke Avenue and 2nd Street, this lane can likely be accommodated within existing right-of-way, but some property may be required east of 2nd Street. This additional lane may also require some realignment of lanes through the 2nd Street intersection.
- ***Develop a bus queue jumper lane*** westbound on Keith Road approaching the Marine Drive / Bewicke Avenue intersection. This lane could be achieved by restricting parking in the existing curb lane during peak periods. The lane should be long enough to bypass queuing on Keith Road.
- ***Implement safety improvements*** identified in the 2005 Network Screening Program at key intersections.
- ***Implement bicycle lanes*** as recommended in the Bicycle Plan. A segment of the westbound bicycle lane along this corridor could be shared as part of the proposed westbound bus lane.

4. ***Forbes Ave (3rd Street to Esplanade)*** is a relatively short north-south connection in the Lower Level Route between 3rd Street and Esplanade. Along the west side of Forbes Avenue is the Squamish First Nation. Forbes Avenue is four lanes wide throughout, with sidewalks along both sides, and is included in the planned bicycle network. In the next year, southbound bicycle lanes will be established along Forbes Avenue with the corresponding northbound bicycle lanes located on Mahon Avenue.

   In addition to the implementation of bicycle lanes, the Transportation Plan recommends the following improvement for this segment of the corridor:

   - ***A westbound bus queue jumper*** should be developed on 3rd Street just east of Forbes Avenue. This could be accomplished by restricting parking in the curb lane during the morning peak period. This queue jumper should be long enough to bypass westbound vehicle queues on 3rd Street.
   - ***Safety improvements*** as identified in the Esplanade and Forbes Avenue Corridor Traffic Operational Review.
   - ***Greenway improvements*** per the Pedestrian Plan.

5. ***Esplanade (Forbes Avenue to Low Level Road)*** is the primary east-west link through the emerging Lower Lonsdale commercial and high-density residential area. Although it passes through an important transit and pedestrian area, it is also a designated truck route. Throughout most of its length, Esplanade provides four travel lanes and two parking lanes with wide sidewalks. It has recently been upgraded east of Lonsdale Avenue with bicycle facilities as part of ongoing redevelopment in the area. In the next two years, bicycle lanes will be extended westward along Esplanade to Forbes Avenue.

   To support the role of Esplanade as a major pedestrian area, the Transportation Plan recommends the following improvements:

   - ***Curb extensions or bus bulges*** at most intersections throughout the corridor to narrow the pedestrian crossing distance, delineate curbside parking facilities, and prioritize transit operations.
   - ***Safety improvements*** for the Chesterfield Avenue and Lonsdale Avenue intersections, as identified in the Esplanade and Forbes Avenue Corridor Traffic Operational Review.
   - ***Enhanced sidewalk facilities*** at the east end of the Esplanade corridor (east of St. George's Avenue) as redevelopment occurs, as identified in the Parks and Greenways Strategic Plan.
   - ***Raised channelization*** at the Esplanade / Low Level Road intersection to clearly delineate movements. As well, it is recommended that the City work toward the prohibition of parking on Esplanade in the immediate vicinity of this intersection. This may not be achievable until redevelopment occurs in the area.

6. ***Low Level Road (Esplanade to Cotton Road)***. This segment of the MRN is a two-lane roadway with bicycle facilities passing adjacent to the City's primary port facilities. It is a designated truck route. The corridor is constrained on the north side by steep grades and on the south side by railway tracks. However, existing and projected traffic demands along Low Level Road support its preservation as a two-lane roadway for the foreseeable future. In addition, Low Level Road is located adjacent to the Spirit Trail, which is identified in the Greenways Plan. Consistent with this, the Pedestrian Plan identifies the need for a trail facility along the length of the corridor.

7. ***Cotton Road (Low Level Road to Lynn Creek)*** is a four-lane roadway connecting Low Level Road and 3rd Street with Main Street in the District of North Vancouver. Main Street subsequently connects with Highway 1 and the Ironworkers Memorial Bridge. It is therefore a key link in the North Shore road, transit, and bicycle network. Bicycle lanes are provided along Cotton Road from Low Level Road to Brooksbank Avenue.

The Transportation Plan includes the following recommendations for this segment of the corridor:

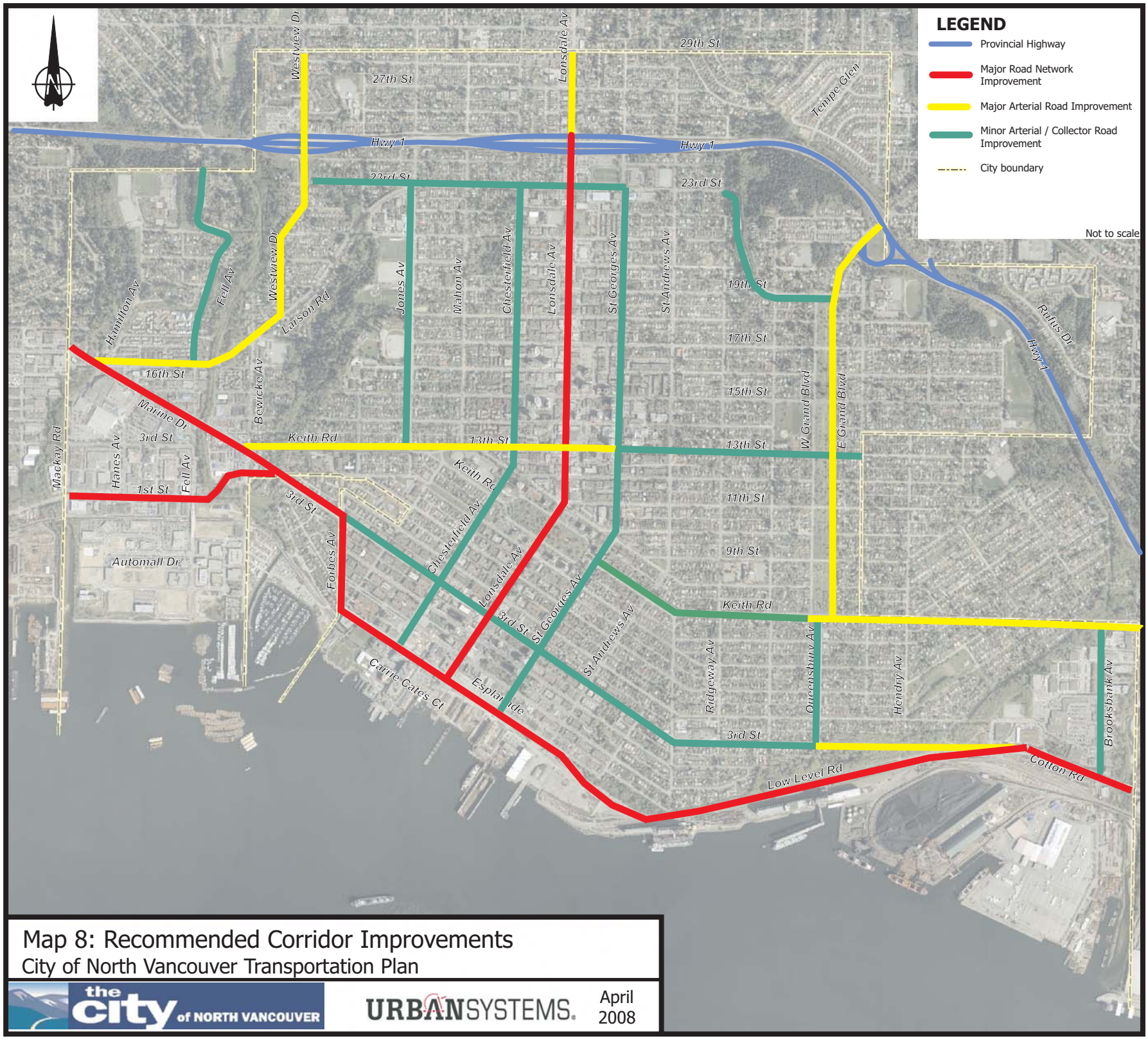
- ***Implement safety improvements*** at the Brooksbank Avenue and 3rd Street / Low Level Road intersections, as identified in the 2005 Network Screening Program.
- ***Implement bicycle lanes*** between Brooksbank and the City boundary across the Lynn Creek bridge (per the Bicycle Plan) by shortening the westbound left-turn lane at Brooksbank Avenue and adjusting the centre median along the bridge.
- ***Implement greenway improvements*** per the Pedestrian Plan.
- If bus volumes increase significantly over time, an ***eastbound bus queue jumper*** may be considered west of Brooksbank Avenue to allow buses to bypass queuing along Cotton Road. This would require widening, and may be considered as part of a larger initiative to improve bus access to and from the Ironworkers Memorial Bridge. To be cost-effective, this would require a significant increase in service along Cotton Road and Main Street toward the bridge.

## 4. Arterials, Collectors & Local Road Enhancements

This section identifies the recommended improvements for the remaining streets within the City of North Vancouver. Corridor improvements for the Major Road Network as well as the arterials and collector roads are shown in **Map 8**. Specific improvements are highlighted in Appendix A.

### *1. Major Arterials*

The major arterials within the City also carry relatively high traffic and transit volumes as MRN roads, but are not serving the same inter-municipal function as MRN roads. Most of the City's major arterials are located outside of the major pedestrian areas. Operational issues are expected at several locations along the major arterial network and minor improvements will likely become necessary as traffic demands increase.




# Map 8: Recommended Corridor Improvements

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### *2. Minor Arterials & Collectors*

The minor arterials and collectors within the City generally carry lower traffic volumes and provide support for access and circulation near major arterials and the MRN. Several intersections within the City are expected to function at marginal levels of service as traffic demands increase over time, and bicycle and greenway facilities are recommended for several of these corridors.

### *3. Local Streets*

The local streets carry the lowest traffic volumes and provide direct access to individual properties. All proposed improvements identified in the Transportation Plan for these streets relate to the implementation of bicycle facilities, greenways, and sidewalks. These are highlighted in other sections of the Transportation Plan.

## 5. Parking Strategies

In 2004, the City completed a City-Wide Parking Strategy, which was intended to meet the City's goals to increase the economic potential of the City's commercial areas while maintaining the residents' quality of life. The Strategy recommended maintaining the City's current system of time-based (free) on-street parking with additional measures to increase turnover of on-street parking and to better utilise off-street stalls. City may consider pay parking in the future. The strategy recommended a number of policy options to assist with implementation. The City has already implemented many of these recommendations, including the creation of a public access zone, developing a policy for heritage buildings, a policy for people with disabilities, a cash-in-lieu policy, and a resident exempt parking policy. Other recommendations that the City should consider include:

- Bicycle parking requirement
- Parking requirements for new developments
- Policy for parking relaxation
- On-street parking setbacks
- Parking and manoeuvring dimensions for commercial/industrial land uses
- Employee parking.

The Transportation Plan recommends moving forward with implementing these policies. Many of the recommendations outlined above are also effective ways in which to manage travel behaviour and, as such, are described in detail in the Travel Demand Management (TDM) Strategy (Section 9.2). As the City evolves over the long-term, other strategies such as parking pricing may also be considered.

## 6. Protect Neighbourhoods

The City has adopted a Community Traffic Calming Program to improve safety for all road users and enhance the livability of neighbourhoods by minimizing the negative impacts of traffic and improving streetscapes. To improve safety and livability, the Traffic Calming Program is intended to:

- Reduce vehicle speeds
- Discourage through traffic on neighbourhood streets
- Minimize conflicts between street users
- Enhance the neighbourhood environment
- Establish an on-going process to address problems.

The City plans to implement traffic calming plans in each of the City's residential neighbourhoods. To date, traffic calming measures have been implemented or are being developed for several neighbourhoods in the City (see **Map 9**). Many of the recommended features in traffic calming plans are also used to address other transportation objectives and have been addressed elsewhere in the Transportation Plan. For example, traffic calming plans often recommend features such as curb extensions to narrow street crossings, which are also recommended as part of the pedestrian plan.

'Traffic Calmed Neighbourhood' signage will be provided to notify drivers that traffic calming measures have been implemented to discourage non-local traffic and particularly goods movement vehicles from using neighbourhood streets. This 'Traffic Calmed Neighbourhood' signage will serve to notify drivers of the conditions ahead so that they may alter their route before entering the City. The City will also want to make the traffic calming measures that have been implemented known to the trucking companies so that they can make route choices based on knowledge of the community. This may be achieved through regular updates to the City's website with mapping that illustrates all traffic calming measures that have been implemented.

*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

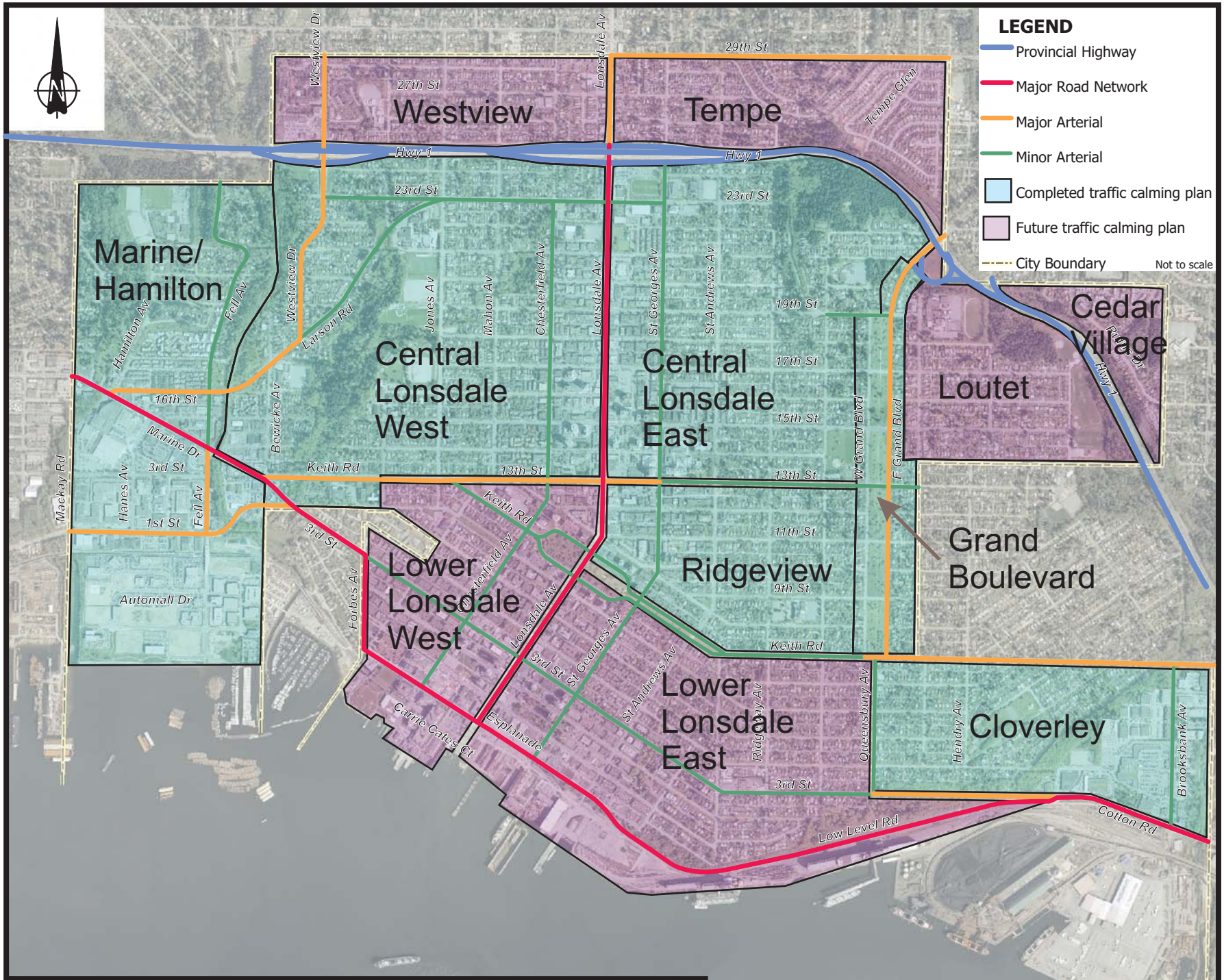
*Transit Strategy*

*Road Network Plan*
1. Updated Roadway Classification System
2. Emergency and Disaster Response Routes
3. Major Road Network Improvement Strategies
4. Arterials, Collectors & Local Road Enhancements
5. Parking Strategies
6. Protect Neighbourhoods

*Goods and Services Movement Strategy*

*TDM Strategy*

In addition to traffic calming measures, the City also supports protecting neighbourhoods by addressing safety issues at drop off zones for elementary and secondary schools.




Map 9: Neighbourhood Traffic Calming Areas

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# 7.0 GOODS & SERVICES MOVEMENT STRATEGY

On the North Shore, the Port of Vancouver facilities are used to ship a range of products overseas – including grains, lumber, pulp and paper, potash, coal, chemicals and machinery. Additionally, these terminal facilities utilize rail to bring raw materials to port from other parts of the Country. In fact, most goods leaving or entering through the North Shore rely on rail facilities located along the Waterfront. The Canadian National Railway corridor traverses the City of North Vancouver with at-grade crossings at Chesterfield Avenue and Bewicke Avenue, as well as tunnel areas.

Despite the predominant use of rail for goods moving through the North Shore Port area, the City also experiences a significant volume of trucks generated along the Waterfront. In order to facilitate the movement of goods by truck and manage the impacts on the community, the City has a designated truck network plan that essentially includes the Low Level route across the North Shore as well as Lonsdale Avenue to connect with Highway 1.

Aside from transit priority treatments, improvements to the existing roadway network are generally limited to enhancements that promote the movement of trucks along the designated routes within and beyond the City limits.

## 7.1 Key Facts & Findings: Goods & Services Movement

The movement of goods and services is critical to supporting the local, provincial, and national economies, but can have impacts on local neighbourhoods. The following issues relating to goods and services movement have been identified:

- Trucks are affected by congestion on City's designated truck routes. Likely related to congestion, residents and emergency services have identified concerns with trucks using routes other than the designated network.
- There is a significant inconsistency between the City's and District's approach to truck routes.
- The Lower Level Route has been envisioned as a desirable opportunity to support goods and service movement, but the route is incomplete to the west of the City.
- The railway acts as a barrier between the City and the Waterfront.
- There may be opportunities to make more effective use of the existing rail and port infrastructure within the City and beyond our boundaries to reduce the negative impacts of road-based goods movement in the community.

## 7.2 External Initiatives

In an effort to ease access to the Ironworkers Memorial Bridge and areas to the west, the City is supportive of incident manage systems and network improvements to enhance east-west connectivity across the North Shore. In particular, North Shore communities, Squamish Nation and the province have been working toward the development of a continuous east-west roadway near the waterfront between the Lions Gate Bridge and the Ironworkers Memorial Bridge. Within the City, this route is essentially complete. However the western connection remains incomplete beyond Garden Avenue. The Districts of North and West Vancouver are working with Squamish Nation to develop a continuous route further west, and is supported by the City to achieve goals for goods movement.

At the eastern edge of the City, the Vancouver Port Authority is considering changes to port facilities south of Cotton Road, such as access consolidation east of Lynn Creek and closure of access at Brooksbank Avenue. These and other improvements along the Low Level route could help to address congestion issues. The City is supportive of other investments that will reduce delays and congestion to trucks leading toward the Second Narrows Bridge.

## 7.3 The City's Long Term Goods and Services Movement Strategy

The movement of goods and services around the City is critical to supporting the local, provincial, and national economies, but at the same time can have impacts on local neighbourhoods that need to be managed. To that end, the Goods and Services Movement Strategy identifies several initiatives designed to maintain efficient movement of goods in the City while minimizing community impacts.

What does the Goods & Services Movement Strategy Include?

1. ***Minimize Delays Along Truck Routes***
2. ***Implement Signage Strategy***
3. ***Protect Neighbourhoods***
4. ***Encourage Effective Use of Freight Infrastructure***

## 1. Minimize Delays Along Truck Routes

As noted in the first Interim Report, the highest traffic volumes and congestion in the City are primarily located at the major entry points – Marine Drive, Cotton Road, and Lonsdale Avenue. These locations coincide with the City's designated truck routes, which means that trucks contribute to and are affected by congestion at the periphery of the City. To minimize delays along designated truck routes, the Transportation Plan identifies the following improvements:

- ***Coordinate signals*** along designated truck routes – Lonsdale Avenue and the Low Level Route – with priorities for through traffic, to support and prioritize the movement of trucks along the these corridors.
- ***Enhance movement for trucks.*** This could be done along several corridors, such as the 2nd Street / 3rd Street corridor with provision of turn lanes. This provision of turn lanes would help encourage trucks to use 1st Street as an attractive alternative to Marine Drive.
- ***Provide and retain left-turn bays*** at major intersections along designated truck routes within the City to maintain mobility and safety.

## 2. Implement Signage Strategy

Truck routes should be signed to direct trucks and minimize the potential for drivers to inadvertently turn onto a non-truck route. The Transportation Plan recommends implementing a signage strategy to ensure that truck drivers understand the designated truck routes in the City of North Vancouver. The City has developed and will implement the signage strategy with signage provided at the locations shown in the figure to the right. Trucks are expected to use the designated truck routes to a point closest to their destination before they leave the designated route to reach their destination. In addition, as noted in the Road Network Plan, 'Traffic Calmed Neighbourhood' signage will be provided for those trucks that leave the designated truck route to get to their destination.

## 3. Encourage Effective Use of Freight Infrastructure

The Transportation Plan encourages effective use of freight infrastructure connecting the Port facilities. Although the movement of goods and services through the Lower Mainland Port facilities are an important part of the economy for the City and other Lower Mainland communities, they influence and are affected by the transportation systems that they connect with. In locations without excellent rail facilities, most goods entering through the Vancouver ports are transferred onto trucks to be distributed. In the case of North Vancouver, most goods are transferred to rail, with a small proportion being handled by trucks. Considering the inter-modal advantages of some Port areas over others, the City will want to encourage the development of a broader regional strategy that not only makes effective use of Port facilities, but maximizes the available transportation systems that connect with each area in the development of strategies for the uses that occupy the North Shore Port facilities. To that end, TransLink is currently conducting a Goods Movement Study that will examine not just how many trucks are using the road network, but the actual movement of goods throughout the region.

*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

*Transit Strategy*

*Road Network Plan*

*Goods and Services Movement Strategy*

*TDM Strategy*
1. Integrated Land Use and Transportation Planning
2. Parking Management Strategies
3. Leadership
4. Education & Awareness

# 8.0 TRAVEL DEMAND MANAGEMENT (TDM) STRATEGY

A major component of developing a sustainable transportation plan includes managing existing transportation infrastructure, providing attractive services and facilities to encourage alternative modes, and developing supportive strategies using a demand-oriented approach. A key direction of the City's Official Community Plan is to reduce the reliance of City residents and employees on single-occupant vehicle travel. In support of this, the Transportation Plan includes long-term directions for transit, cycling and walking for local and inter-municipal travel. In order to encourage residents and the local workforce to make use of these alternatives, support policies and programs may be implemented by public and private sector agencies.

Travel Demand Management (TDM) is the term used to represent a broad range of policies and programs used in many communities throughout North America to encourage people to walk, bike, use transit and rideshare, as well as to discourage individuals from driving alone. Attractive alternatives must be in place in order to make TDM policies and programs more effective. In support of the City's overall goal for a sustainable transportation plan, TDM strategies can be expected to influence travel behaviour in the following three overarching ways, thereby reducing the costs of maintaining and expanding transportation facilities:

- ***Change the amount of travel*** by encouraging trip-makers to combine two or more purposes into a single trip, by avoiding commute trips, and by reducing the length of trips.
- ***Change the mode of travel*** by encouraging the use of non-SOV modes, such as walking, bicycling, carpooling, and transit, and/or by discouraging people from driving alone.
- ***Change the time of travel*** to reduce the growth in peak period travel by encouraging shifting the time in which people travel to outside peak periods.

Trips to work and school only account for approximately 23% of total daily trips on the North Shore, with the remaining 77% of trips being made for non-commuting purposes. However, most TDM programs focus on influencing these commuting trips to work and to school, because these trips are a significant component of peak period travel that are typically made every day from the same origin, to the same destination and around the same time. TDM programs for these trip purposes can be targeted through resident groups, employers and educational institutions. Although most TDM programs focus on commute trips, some TDM strategies can also be targeted towards non-commuter trips as well, such as TransLink's TravelSmart program which focuses on discretionary travel. As shown in **Table 4**, the TDM

Strategy for the City of North Vancouver includes a number of core features that involve programs and policies both at a regional and municipal level, as well as other agency and private sector initiatives. Each of these initiatives is discussed in the Plan. It should be recognized that a successful TDM strategy relies on the participation of all organizations, as well as developing programs and policies that support reasonable transportation alternatives.

**Table 4: Travel Demand Management Strategy**

| Regional Initiatives | Municipal Programs | Private Sector and Other Agency Initiatives |
|---|---|---|
| ▪ Rideshare Program<br>▪ Employer Pass Program<br>▪ Park-and-Ride<br>▪ Car sharing/Company Car Programs<br>▪ Telework<br>▪ TravelSmart<br>▪ Promoting Active Transportation | ▪ Integrated Land Use and Transportation Planning<br>▪ Parking Management Strategies<br>▪ Leadership<br>▪ Education & Awareness | ▪ Flexible Work Arrangements<br>▪ Ride matching<br>▪ Guaranteed Ride Home<br>▪ Facilities for Cyclists/Walkers<br>▪ Preferential Parking for Carpool/Vanpool<br>▪ Transit Pass Programs<br>▪ Incentive Programs<br>▪ Co-Operative Auto Network<br>▪ Fleet/Company Vehicles<br>▪ Transit Management Associations<br>▪ Walking School Bus<br>▪ Bicycle Parking Facilities for Multi-Family Developments |

## 8.1 Key Facts & Findings: Travel Demand Management

To achieve the goals of the Transportation Plan, the City wishes to explore various transportation demand management (TDM) programs. The primary issues pertaining to TDM programs are:

- For the foreseeable future, driving is and will continue to be the most convenient and flexible mode of travel for most people in North Vancouver and throughout the region. There are few policies and programs that encourage City residents to use alternative modes, and there are also few disincentives to driving alone.

- Residents and employees of the City are not well aware of the options that are available to them for using non-automobile modes.

## 8.2 External Initiatives

Although there are several opportunities for TDM programs to be developed in the City of North Vancouver, the effectiveness of local programs will be limited unless they are complimented by regional TDM initiatives. TransLink – the regional transportation authority – has a legislated responsibility to manage TDM programs in the Greater Vancouver area. In addition, as the majority of daily travel trips that originate in the City of North Vancouver remain on the North Shore, the City should work closely with both the District of North Vancouver and District of West Vancouver to develop a TDM strategy that is tailor-made to the North Shore. A summary of the external TDM initiatives is provided in Appendix C.

## 8.3 The City's Travel Demand Management Strategy

The City can play a key leading role in managing existing transportation infrastructure and changing travel behaviour by developing its own programs and policies as well as supporting external initiatives. This section summarizes the recommendations of the Travel Demand Management (TDM) Strategy.

What does the Travel Demand Management Strategy Include?

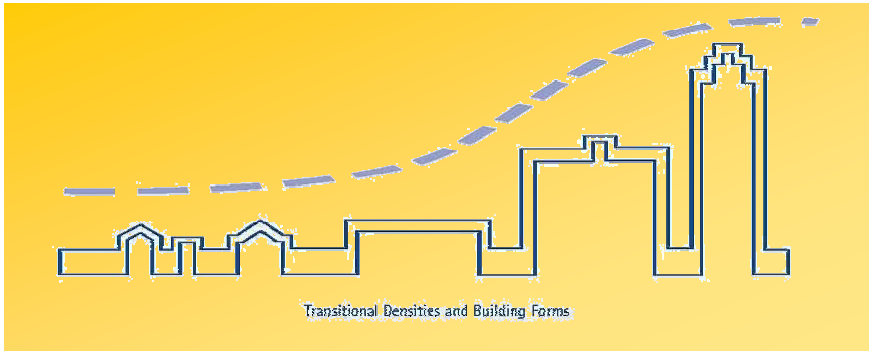
1. ***Integrated Land Use and Transportation Planning***
2. ***Parking Management Strategies***
3. ***Leadership***
4. ***Education & Awareness***

## 1. Integrated Land Use and Transportation Planning

Land use policies and decisions within the City can have the greatest influence on travel demands and mode choice. Land use policies that support high densities are likely to have the most significant impact on mode choice. Lower density development patterns generally encourage automobile use and discourage the use of other modes of transportation. Higher density development patterns, particularly along primary transit corridors, support the development of attractive transportation services and facilities. Consequently, residents of the City will have a range of attractive transportation choices, reducing reliance on the automobile. Mixture of land uses is also critical to support alternative modes of transportation, as this ensures that there are a greater variety of destinations within reasonable distance (such as homes, workplaces, stores, restaurants, or parks) to generate multi-purpose trips in an area for people to walk or bike.

The City's Official Community Plan recognizes that land use choices influences where people work, live, shop and play. It also recognizes that the proximity of uses determine peoples travel needs. The land use policies contained in the OCP embrace many of the key land use relationships needed to provide attractive transportation facilities and services and to influence demands through land use mixture, density and urban form. Example policy objectives embraced in the OCP required to achieve a vision for a sustainable community are briefly highlighted as follows:

- ***Residential Land Use*** objectives include providing a range of housing densities to accommodate the diverse needs of the City in a variety of locations. The form of these higher density areas will protect single family residential areas by avoiding "zoning cliffs." Rather, a transition from high and medium density residential areas will be encouraged. This will also ensure that the highest densities are located along the major roadways in which ridership potential can make for attractive transit services.





*The Long-Term Plan*

*Pedestrian Plan*

*Bicycle Plan*

*Transit Strategy*

*Road Network Plan*

*Goods and Services Movement Strategy*

*TDM Strategy*

1. Integrated Land Use and Transportation Planning
2. Parking Management Strategies
3. Leadership
4. Education & Awareness

- ***Commercial Centres*** in the City are increasingly providing attractive places for people to live, work, shop and play. The City's OCP generally facilitates the development of commercial centres in the following areas:
  - ***Lonsdale Town Centre (Lower)*** extends between the waterfront north to 3rd Street. The City continues to encourage the development of attractive high density mixed-use developments. Commercial space in the area will be increased through the development of the Versatile Shipyard. Street oriented commercial uses along Lonsdale Avenue creates people environments on the adjacent street system and encourages walking through the area. Office uses are particularly encouraged within this area.
  - ***Lonsdale Town Centre (Central)*** extends from Keith Road to 23rd Street, with the core of development concentrated in the area from 11th to 17th. The area is generally recognized as the institutional and administrative core of the City. The area also supports other uses that serve these core functions with support services, such as commercial retail on the ground floor throughout the Lonsdale corridor and some cross-streets. The City's policies encourage the provision of additional mixed-use commercial and residential developments throughout the area, in addition to office uses. These land use types and densities will increase the potential for multi-purpose trip making, minimize vehicle travel that may result from increased development and increase the demands for attractive transit, walking and bike facilities and services.
  - ***Marine Drive Service Commercial Area*** is located on the western edge of the City, adjacent to Capilano Mall. The commercial area will continue to undergo redevelopment as many properties increase densities. As part of the land use plans for the area, residential land uses are encouraged throughout in order to create a sustainable mixed-use area. Growth and development of this area will foster increased demands and opportunities for enhanced transit services as well as pedestrian and bicycle facilities.
  - ***Other commercial nodes*** such as the Capilano Mall, Westview and Park and Tilford Shopping Centres are all serving the commercial needs of neighbouring communities and employment uses. These commercial nodes are located along major roadways where attractive transit services are encouraged and where pedestrian and bicycle facilities will make it attractive for individuals that live and work in the area.

- ***Densification*** through bonus densities, density transfer or gross floor area exclusions is encouraged in the OCP for the purpose of achieving a public benefit or amenities. In particular, densification around major streets that support attractive transit services and can be made attractive through the provision of pedestrian and bicycle facilities will provide that broader public benefit by reducing reliance on private automobiles. Such changes to a property requires a Zoning Amendment and Public Hearing.

In support of a sustainable community with less reliance on cars, the City can continue to focus its land use planning efforts in different ways, whether it be in the Town Centre area, along major transit corridors such as Lonsdale, Marine Drive and Keith Road, and major employment nodes such as Capilano Mall and the North Shore AutoMall.

## 2. Parking Management Strategies

One way to discourage excessive automobile use and encourage the use of other modes of transportation is to limit the supply of parking. Parking supply strategies are a fundamental component of an overall parking management strategy because of the link between the availability of parking and the choice to use an automobile for travel. They aim to limit the oversupply of parking to discourage the use of automobiles in congested areas. Potential areas of applications include large shopping centres such as Capilano Mall and Park & Tilford, and industrial/business parks such as the North Shore AutoMall, the Fell Avenue Industrial Area.

The City of North Vancouver recently completed a City Wide Parking Strategy. The Strategy recommended maintaining the current system of time-based (free) on-street parking with additional measures to increase turnover of on-street parking and to better utilise off-street stalls. The strategy recommended a number of policy options to assist with implementation. Many of the recommendations outlined in the Strategy are also effective ways in which to manage travel behaviour and are described below.

A summary of recommended parking supply strategies which could be implemented in the City is provided below. All of these involve changes in municipal policies, and changes in the way parking is provide for new and existing developments. The most significant change is to municipal bylaws, reducing and capping the amount of parking that is provided in a new development by providing other incentives to walk, bike or use transit, rather than requiring developers and others to meet or exceed a required number of parking stalls as is the case at present.

- ***Bylaw parking maximums.*** In most municipalities, including the City of North Vancouver, there is no restriction on the amount of parking that can be provided in a development. The City currently requires that a developer meet or exceed a specific minimum amount of parking, based on land use type. Although many developers provide only as much parking as is required, frequently developers provide additional parking above and beyond the required amount, often in the belief that additional parking makes their development more attractive to potential buyers and tenants. This situation can be avoided by modifying bylaws to specific a maximum amount of parking, optionally with a minimum amount specified as well.
- ***Reduced and flexible bylaw requirements.*** Many municipalities provide reductions in minimum bylaw requirements in certain circumstances. An example of this is a mixed-use development where the total amount of parking is reduced in recognition of the ability for residents, employees, and restaurant patrons to share a common parking supply, because the peak demand for each group occurs at a different time during the day. Based on the City-wide parking study, parking requirement relaxations (maximum 20%) may be warranted and granted under the following circumstances:
  - established trip reduction programs which support the use of alternative modes of transportation
  - shared parking where complimentary use can be proven
  - Transit Oriented Developments
  - off-site parking may be allowed within 250m of the development.
- ***Restriction of principal use facilities.*** This refers to bylaws and other means of limiting the number of new facilities which are constructed for the sole purpose of providing parking, and also limited the use of land for temporary parking facilities. This provides municipalities with a means of containing the total supply of parking in an area. Otherwise, efforts to manage the parking supply through reduced parking requirements and management of publicly-operated facilities could be offset by an increase in privately-operated parking facilities.
- ***Parking Permit Areas*** are another means of discouraging commuters from parking in an area, which in turn discourages automobile trips to work and to school. Permit areas use signs which indicate that a street is "resident exempt" (or words to that effect), and rely on residents to report offenders to the municipality. As the parking

supply in adjacent commercial and employment areas becomes more restricted, however, a more effective approach than signage may be required. The use of parking permits is a greater deterrent and allows enforcement staff to conduct patrols. The City currently offers Residents Exempt parking program whereby residents of a block can apply to be exempt from on-street parking restrictions on their block.

## 3. Leadership

If the City wants to encourage other agencies and private sector businesses to implement TDM measures, the City must lead by its actions for its own employees. Better Environmentally Sound Transportation (BEST) recently completed a Transportation Demand Management and Policy Options for City of North Vancouver Employees. This report recommends a number of initiatives that the City could take to encourage its own employees to use alternate forms of transportation. The City has already implemented several recommendations, such as creating a TDM coordinator position and implementing a vehicle allowance. Other recommendations include:

- ***Ridematching.*** Provide ridematching assistance to encourage and help facilitate employee ride sharing.
- ***Guaranteed Ride Home.*** Establish and promote a guaranteed ride home (GRH) program.
- ***Preferred Parking.*** Establish preferred parking policy for carpool groups of 2 or more employees.
- ***Flexible Work Arrangements.*** Provide flexibility in start and finish times wherever possible if that flexibility helps facilitate employee carpool arrangements.
- ***Car Sharing.*** Introduce Co-Operative Auto Network Corporate Car Share pilot program (subject to favourable business case evaluation).
- ***Work With TransLink and the District.*** Meet with TransLink and District of North Vancouver staff to discuss the introduction of the EPP discount pass program. Also, encourage and promote transit usage through a visible and ongoing transit promotional program, including the use of Fare Saver tickets for work-related travel.
- ***Bicycle Parking.*** Provide covered bike parking at outdoor locations in the City Hall precinct.
- ***Cycling Support Measures.*** Encourage employee cycling by offering cycling skills course, through active participation in the annual Commuter Challenge, and by ensuring that bicycle route signage in the City meets high standards.
- ***Parking Pricing.*** Parking rates in the new underground parking structure should be priced at a rate that reflects the market value of parking in the Central Lonsdale neighbourhood.

The BEST report estimates that the implementation of the above recommendations would result in a 10-20 percent reduction in vehicle trips to the City Hall precinct below today's levels.

The City also supports working with the Provincial government and with TransLink to develop a regional congestion pricing strategy.

## 4. Education & Awareness

TDM is all about changing people's behaviour. However, many residents are not aware of the options available to them. Consequently, an important part of a TDM program and initiative is marketing and education efforts intended to encourage a shift in travel patterns and greater use of alternative modes of transportation.

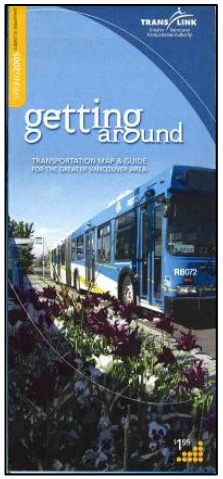
Strategies to improve education and awareness generally fall into two categories: distributing existing information from other groups and agencies, and developing and running more locally generated programs.

### *1. Information Distribution*

The first strategy involves distributing information that has already been produced, either by the City or by other agencies such as TransLink. There are many existing resources that describe programs and initiatives already under way, such as:

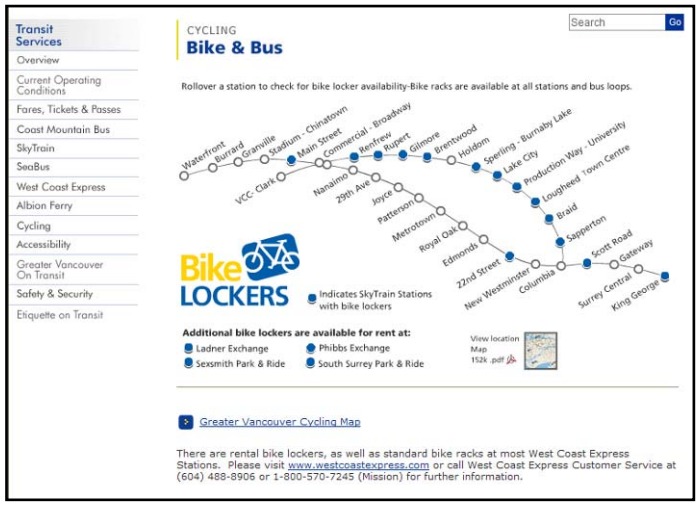
- ***Transit.*** TransLink currently produces a number of materials and resources designed to provide information on transit services and facilities as well as general information on how to use transit, both for the general public and specific groups. Some of the information already produced by TransLink includes:

  - Transit system map for North Vancouver and West Vancouver
  - Route maps and schedules
  - Bus Exchange Maps for Lonsdale Quay, Park Royal, and Phibbs Exchange
  - Information on how to use the transit system
  - Accessible services
  - Customer outreach initiatives.




- ***Cycling.*** A number of cycling resources are available, including maps of cycling facilities throughout the region that are available on TransLink's website as well as general information about cycling provided by a number of organizations outlined below:

  - Greater Vancouver Cycling Map & Guide
  - Bike & Ride Information
  - Bike Locker Availability
  - Better Environmentally Sound Transportation (BEST)
  - Vancouver Area Cycling Coalition
  - Cycling BC
  - Ministry of Transportation Cycling Links and Information for BC Cyclists.




- ***Carpooling and Ridesharing***

  - Jack Bell Foundation (JBF)
  - Co-Operative Auto Network (CAN)
  - The Company Car.

There are many ways in which the City can work to help distribute this information. The City could produce a brochure, newsletter, or newspaper ad, or webpage on the City's website summarizing existing resources and how to find more information.

### *2. Develop Local Programs*

The second strategy involves the City creating developing and running more locally generated TDM programs, and actively working with resident groups, employers and institutions to promote transit, cycling, walking, or carpooling. Under this strategy, it is recommended that the City create a TDM Coordinator position to oversee the development and implementation of these community programs. Some initiatives and programs could include:

- Safety training and education activities targeting cyclists, to improve cycling skills in traffic.
- Marketing activities targeting employers for adoption of transit fare incentives and implementation of trip reduction programs.
- Marketing of ridesharing, carpooling and vanpooling services.
- Improved information for transit users regarding routes, schedules and real-time bus arrival information.
- Education programs for school children and parents intended to improve pedestrian safety and encourage children to walk to school.
- Bike-to-work week and other marketing and education programs to encourage cycling.
- Community-based marketing of transportation services, whereby information regarding available transportation services is customized to a person's needs.
- Recognizing local companies that offer the Employer Pass Program in conjunction with TransLink.
- Encouraging use of alternate fuel vehicles, such as hybrid vehicles, electric cars, Smart Cars, etc.

Before identifying or implementing any new initiatives or programs, the assigned TDM coordinator will need to conduct research to identify key barriers and benefits to reducing SOV use and will use this information to provide recommendations to TransLink in implementing appropriate TDM programs affecting City residents. This research can also be used to identify and prioritize potential initiatives and programs that the City can develop and implement.

## 8.4 Private Sector and Other Agency Initiatives

In addition to the city-led initiatives described in the previous section, there is also a role for major employers, small businesses, schools, and residents in reducing travel demands. Each of these groups provides different opportunities for trip reduction. Each of these groups has a different role to play in encouraging TDM initiatives:

- ***Major employers.*** The are several large employers in the City of North Vancouver, including Capilano Mall, ICBC, Lions Gate Hospital, and the Port of Vancouver. These employers provide the most significant opportunity for implementing successful TDM programs because they have a much larger pool of potential participants.
- ***Small businesses.*** On their own, small businesses may not have the resources and staff requirements to successfully implement TDM initiatives. However, many small businesses are clustered together in specific areas, such as Park & Tilford, Upper Lonsdale, Lower Lonsdale, the Harbourside area / North Shore Auto Mall, and the Fell Avenue Industrial Area. By working together, the businesses in each of these areas can develop the resources required to provide programs and incentives to encourage employees to change their travel behaviour. Examples could include having several businesses in an area participate in a company car sharing program.
- ***Schools.*** Schools present unique opportunities for TDM initiatives because they can target two distinct groups: students and employees. As many schools are large employers, there is an opportunity for the employer to capitalize on this large pool of participants. Schools also provide an opportunity to encourage students to find alternate means of getting to and from school, such as a walking school bus program, improved cycling facilities, and general education and awareness. It is particularly important to promote TDM strategies among students because behaviours that people learn as children often stay with them throughout their life, and because educating children will have spillover effects to their families, as students relay the importance of TDM strategies to their parents and siblings. The City could work with School District 44 in developing policies and programs to reduce car travel from home to school.
- ***Residents.*** TDM initiatives can be targeted specifically to residents, through incentives and agreements with developers on a site-specific basis. For example, the City could work with developers and other agencies where necessary to provide amenities promoting alternative modes of transportation in new developments, such as increased bicycle parking, reduced parking standards, and transit passes at reduced rates. The City also supports working with TransLink to implement the TravelSmart program in one of the City's neighbourhoods.

Each of these different groups provides different opportunities for TDM programs and initiatives. **Table 5** summarizes some possible TDM programs and how each of these programs can be targeted to most effectively serve their target audience. As noted above, it is not enough to simply identify these initiatives. The City itself must play an active role in leading by example by encouraging such initiatives, as it is one of the City's major employers, and by actively educating its residents and businesses about the opportunities available to them, and by establishing a TDM Coordinator.

**Table 5: Private Sector and Other Agency Initiatives**

| TDM Program | Target | | | |
|---|---|---|---|---|
| | Major Employers | Small Businesses | Schools | Residents |
| Flexible Work Arrangements | ✓ | ✓ | | |
| Ridematching (internal) | ✓ | | | |
| Ridematching (TransLink/Jack Bell Foundation) | ✓ | ✓ | | ✓ |
| Guaranteed Ride Home | ✓ | ✓ | | |
| Facilities for cyclists/walkers | ✓ | ✓ | ✓ | |
| Preferential Parking for Carpool/Vanpool | ✓ | | | |
| Transit Pass Programs | ✓ | ✓ | | ✓ |
| Incentive Programs | ✓ | | | |
| Fleet/Company Vehicles | ✓ | | | |
| Transit Management Associations | | ✓ | | |
| Walking School Bus | | | ✓ | |
| Education and Promotion | ✓ | ✓ | ✓ | ✓ |
| Co-operative Auto Network | | | | ✓ |
| Bicycle Parking Facilities for Multi-Family Developments | | | | ✓ |
| TravelSmart | | | | ✓ |

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# 9.0 FINANCIAL PLANNING AND IMPLEMENTATION

The Long-Term Transportation Plan is intended to provide the City with a clear vision for the multi-modal transportation system over the next 20 years and beyond. The plan presents a vision for each of the primary modes of travel – namely, walking, cycling, transit, the road network, and goods and services movement. In addition, the plan provides guidance regarding a Travel Demand Management (TDM) strategy. Each of these core components of the plan contains several inter-related features designed to achieve the overall policy objectives for the City. However, significant costs are involved with implementing many of these features. In order to ensure the success of the Transportation Plan, an implementation strategy will be developed that will prioritize these features while taking into account the financial resources available to the City. Prioritization of the key features of the Transportation Plan will be based on how each of these features satisfy the City's long term goals as outlined in the City's Official Community Plan (see **Table 6**) and will also be based on feedback from the community. The City has started to develop criteria for prioritizing these features based on community input.

Once the Transportation Plan is complete, the City will develop an affordable and manageable strategy for implementing the Plan. This will involve taking the preferred strategies and direction identified in the Plan and developing an implementation strategy for all components of the Plan. The implementation strategy will involve:

- Identifying constraints and opportunities for implementing each element of the Transportation Plan
- Developing order-of-magnitude Class D cost estimates for the preferred improvement strategies
- Developing criteria to be used in the prioritization of the improvement strategies
- Identifying priorities for short-term, medium-term, and long-term improvements
- Developing a monitoring plan to measure the ongoing success of the plan

The resulting implementation strategy will outline those improvements that can be implemented in the short-term (0-5 years), medium-term (5-10 years) and long-term (10+ years) while taking into account the City's financial resources.

## Table 6: Contribution to OCP Policy Paths

| Transportation Plan features | Official Community Plan Policy Paths | | | | | | | | | | Contribution towards Policy Path |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sense of Place | Land Use | Transportation, Mobility & Access | Community Well-Being | Environment | Parks & Greenways | Leisure & Culture | Community Infrastructure | Economy & Economic Development | Financial Planning | |
| **Pedestrian Plan** | | | | | | | | | | | |
| 1. Pedestrian Areas & Generators | √ | √ | √ | √ | √ | √ | √ | √ | | √ | ● |
| 2. Pedestrian Treatments | √ | √ | √ | √ | √ | √ | √ | | √ | | ● |
| 3. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | | ● |
| **Bicycle Plan** | | | | | | | | | | | |
| 1. Bicycle Network | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ● |
| 2. Design Guidelines | | | √ | √ | √ | √ | √ | | | | ◑ |
| 3. Bicycle Support Strategies | √ | √ | √ | √ | √ | √ | √ | | | | ◑ |
| 4. Greenways | √ | √ | √ | √ | √ | √ | √ | √ | | | ● |
| **Transit Strategy** | | | | | | | | | | | |
| 1. Improved Accessibility to Transit | √ | √ | √ | √ | √ | | | √ | | | ◑ |
| 2. Increased Local Frequency & Coverage | √ | √ | √ | √ | √ | | √ | √ | √ | √ | ● |
| 3. Expanded Frequent Transit Network | | √ | √ | √ | √ | | √ | √ | √ | √ | ● |
| 4. Transit Priority Treatments | √ | √ | √ | | √ | | | √ | | √ | ◑ |
| 5. U-Pass Program | | | | √ | √ | | | | | | ○ |
| 6. Expanded SeaBus & Enhance Terminal | √ | | √ | | | | | √ | √ | | ○ |
| **Road Network Plan** | | | | | | | | | | | |
| 1. Updated Roadway Classification | √ | | √ | √ | | | | √ | | | ○ |
| 2. Emergency & Disaster Response Routes | | | | √ | | | | | | | ○ |
| 3. MRN Improvement Strategy | | √ | √ | | √ | | √ | √ | √ | √ | ◑ |
| 4. Arterials, Collectors & Local Roads | | | √ | | √ | | √ | √ | √ | √ | ◑ |
| 5. Parking Strategies | | √ | | | | √ | | √ | √ | √ | ○ |
| 6. Protect Neighbourhoods | | | √ | | | | | √ | √ | | ○ |
| **Goods & Services Movement Strategy** | | | | | | | | | | | |
| 1. Minimize Truck Route Delays | | √ | √ | | | | | √ | √ | | ○ |
| 2. Signage Strategy | | √ | √ | | | | | √ | √ | √ | ◑ |
| 3. Effective Use of Freight Infrastructure | | | √ | | | | | √ | √ | | ○ |
| **TDM Strategy** | | | | | | | | | | | |
| 1. Land Use & Transportation Plans | √ | √ | √ | √ | √ | | √ | √ | √ | | ● |
| 2. Parking Management | √ | √ | √ | | √ | √ | | √ | √ | √ | ● |
| 3. Leadership | | | √ | √ | √ | | | √ | | √ | ◑ |
| 4. Education & Awareness | | | √ | √ | √ | | | √ | | √ | ◑ |

● **High** (Contributes to 8-10 OCP Policy Paths) ◑ **Moderate** (Contributes to 5-7 Policy Paths) ○ **Low** (Contributes to 0-4 Policy Paths)

# APPENDIX A: ARTERIAL AND COLLECTOR ROAD IMPROVEMENTS

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**Table A.1: Arterial Road Improvements**

| Major Arterial | Improvement(s) | Comment(s) |
|---|---|---|
| 1st Street/2nd Street (Mackay Road to 3rd Street) | ▪ Signalize Hanes Avenue intersection<br>▪ Signalize Mackay Road intersection<br>▪ Implement safety improvements at Fell Avenue<br>▪ Implement bicycle facilities per the Bicycle Plan | May require warrant analysis<br>New overpass over CN Rail needs signalized crossing<br>See 2005 Network Screening Program<br>Fell Ave to 3rd Street |
| 3rd Street (Queensbury Avenue to Cotton Road) | ▪ Signalize Queensbury Avenue intersection | May require warrant analysis |
| 16th Street/Larson Road (Hamilton Avenue to Westview Drive) | ▪ Implement feasible safety and operational improvements from Fell Avenue to Westview Drive<br>▪ Implement bicycle facilities per the Bicycle Plan | See Larson Road Safety & Operations Review (2006) and 2005 Network Screening Program<br>Includes modifications to northbound right-turn lane and signal timing at Bewicke<br>Ensure improvements from various studies are coordinated |
| W Keith Road/13th Street (west of St. George's Avenue) | ▪ Signal coordination between Chesterfield Avenue and St. George's Avenue<br>▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Additional secondary greenway connections per the Pedestrian Plan | Ranked as lower priority in Bicycle Plan<br>Bewicke Avenue to Jones Avenue<br>Requires update of Greenways Plan |
| E Keith Road (east of Grand Boulevard) | ▪ Implement safety improvements at Brooksbank Avenue<br>▪ Account for possible changes at Fern Street ramp | See 2005 Network Screening Program<br>MoT may require significant changes due to plans to improve Fern Street overpass |

| Major Arterial | Improvement(s) | Comment(s) |
|---|---|---|
| Westview Drive (Larson Road to 29th Street) | ▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Implement greenway improvements per the Pedestrian Plan | Ranked as lower priority in Bicycle Plan<br><br>23rd Street to 28th Street |
| Lonsdale Avenue (north of 23rd Street) | ▪ Signalize 27th Street intersection<br>▪ Implement bus bulges and curb extensions consistent with recommendations for south of 23rd Street (MRN section)<br>▪ Implement safety improvements at 29th Avenue<br>▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Implement greenway improvements per the Pedestrian Plan | Upgrade existing pedestrian signal<br>See Lonsdale Corridor Master Plan (2000)<br><br>See Lonsdale Corridor Master Plan and 2005 Network Screening Program<br><br>Highway 1 to 27th Street |
| East Grand Boulevard/Boulevard Crescent (Queensbury Avenue to Lynn Valley Interchange) | ▪ Adjust signal timing at Lynn Valley off-ramp as needed<br>▪ Consider operational improvements at Boulevard Crescent<br>▪ Signalize 15th Street intersection<br>▪ Implement feasible safety improvements at 13th Street and 17th Street<br>▪ Improvements at Queensbury Avenue/ Keith Road intersections<br>▪ Ehhanced pedestrian crossings and lane delineation at Keith Road intersections<br>▪ Curb extensions and marked crosswalks at 9th, 11th and 17th Streets | Signal falls under MoT jurisdiction<br><br>See Sutherland Traffic Impact Study<br><br>See 2005 Network Screening Program<br><br>Upgrade existing pedestrian signal<br>Safety and operational improvements<br><br>See Grand Boulevard / Queensbury Transportation Plan |

**Table A.2: Minor Arterial / Collector Road Improvements**

| Minor Arterial/Collector | Improvement(s) | Comment(s) |
|---|---|---|
| E Keith Road (east of St. George's Avenue) | ▪ Additional secondary greenway connection east of St. David's Avenue per the Pedestrian Plan<br>▪ Implement feasible safety improvements between Lonsdale Avenue and St. Andrew's Avenue | Required update of Greenways Plan<br>See 2005 Network Screening Program and Keith Road Corridor Traffic Operations and Safety Review (2005) |
| 3rd Street (Forbes Avenue to Queensbury Avenue) | ▪ Implement feasible safety improvements at Chesterfield Avenue and St. George's Avenue intersections<br>▪ Coordination of signals between Chesterfield Avenue and St. George's Avenue<br>▪ Transit operational improvements at Chesterfield Avenue | See 2005 Network Screening Program<br>Northbound and southbound left-turn lanes may have significant cost and property implications and may not be feasible |
| 13th Street (between St. George's Avenue and Sutherland Avenue) | ▪ Implement bicycle facilities per the Bicycle Plan | Ranked as lower priority in Bicycle Plan |
| 19th Street (Moody Avenue to E Grand Boulevard) | ▪ Safety and operational improvements at 19th Street and Grand Boulevard<br>▪ Implement greenway improvements per Pedestrian Plan | See Grand Boulevard/Queensbury Transportation Plan |
| 23rd Street (Westview Drive to St. George's Avenue) | ▪ Implement safety improvements at St. George's Avenue<br>▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Implement safety improvements | See 2005 Network Screening Program<br>Chesterfield Avenue to St. Andrew's Avenue – ranked as lower priority in Bicycle Plan<br>See Central Lonsdale West Traffic Calming Plan |
| Fell Avenue (north of Marine Drive) | ▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Implement greenway improvements per the Pedestrian Plan | Ranked as lower priority in Bicycle Plan<br>North of 17th Avenue |

| Minor Arterial/Collector | Improvement(s) | Comment(s) |
|---|---|---|
| Jones Avenue (Keith Road to 23rd Street) – to be re-designated as collector | ▪ Implement bicycle facilities per the Bicycle Plan<br>▪ Implement greenway improvements per the Pedestrian Plan<br>▪ Implement traffic calming measures | Measures to be determined following re-classification to collector. Central Lonsdale West Traffic Calming Plan requires update. |
| Chesterfield Avenue (Esplanade Avenue to 23rd Street) | ▪ Signal at 14th Street<br>▪ Signal at 15th Street<br>▪ Curb extensions at 18th Street and 21st Street | Warranted<br>Warranted<br>See Central Lonsdale West Traffic Calming Plan |
| St. George's Avenue (Esplanade Avenue to 23rd Street) | ▪ Signal or roundabout at Keith Road, 17th Street, 19th Street<br>▪ Implement traffic calming measures between 13th Street and 23rd Street | May require warrant analyses<br><br>See Central Lonsdale East Traffic Calming Plan |
| Grand Boulevard (19th Street to 23rd Street) | ▪ Implement greenway improvements per the Pedestrian Plan | |
| Queensbury Avenue (3rd Street to Keith Road) | ▪ Implement remaining improvements as per Grand Boulevard/Queensbury Transportation Plan<br>▪ Implement greenway improvements per the Pedestrian Plan | See Grand Boulevard/Queensbury Transportation Plan |
| Brooksbank Avenue | ▪ Implement pedestrian improvements at 5th Street<br>▪ Account for possible changes at Fern Street ramp<br>▪ Implement greenway improvements per Pedestrian Plan | Recommendations per Traffic Operations and Safety Review (2005)<br>MoT may require significant changes due to plans to improve Fern Street overpass<br>5th Street to E Keith Road |

# APPENDIX B:

# ROAD NETWORK PLAN

# EXTERNAL INITIATIVES

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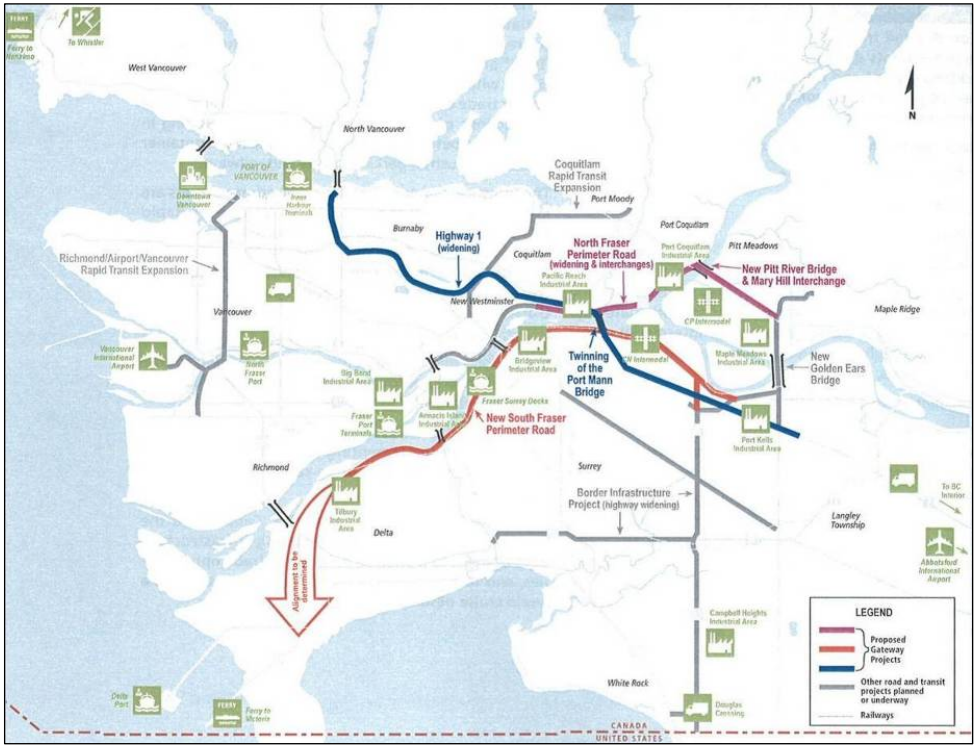
## Initiatives Recently Completed or Underway

Projects recently completed or underway by agencies external to the City include (some illustrated in the diagram below):

- ***Lions Gate Bridge/Highway 1 connector review.*** The Ministry of Transportation recently completed a review of various options to upgrade the connection between Highway 1 and the Lions Gate Bridge in the vicinity of Taylor Way and Capilano Road just west of the City. The study concluded that, because vehicle capacity on the bridge will not be increased for the foreseeable future, expanded roadway capacity to deliver more traffic to the Lions Gate Bridge will have limited benefit. Recognizing these constraints, the Ministry also examined people-moving capacity improvements, such as transit priority measures in the immediate area of the Bridge.
- ***Highway 1/Ironworkers Memorial review.*** The Ministry is working on this initiative as part of a parallel initiative to the Lions Gate review. The study is considering potential improvement strategies for the area network and connections to the Ironworkers Memorial Bridge. Some network improvements have already been undertaken in recent months at the Main Street / Dollarton Highway and Fern Street interchanges.
- ***Marine Drive/Lions Gate Bridge transit priority measures.*** TransLink, with participation of the Ministry of Transportation and the North Shore municipalities, is currently developing a strategy to implement transit priority measures leading to the Lions Gate Bridge along Marine Drive between 15th Street in West Vancouver and Mackay Road in North Vancouver.
- ***Marine Drive Neighbourhoods Traffic and Access Review.*** As part of a recent urban design and rezoning process for the Marine Drive corridor, the District of North Vancouver recently began a study to identify issues related to traffic and access in the neighbourhoods adjacent to the Marine Drive corridor. The results of the study will be used to develop a Traffic and Access Plan for these neighbourhoods.
- ***Sea to Sky project.*** The Province is currently upgrading the Sea to Sky Highway from Squamish to Whistler. This project will have limited impacts on the City, but may generally increase travel demand through the North Shore, primarily along Highway 1.
- ***Gateway Projects.*** The Ministry of Transportation is currently planning several initiatives as part of the Gateway Program, to be implemented over the next five years, as illustrated in the diagram. These include

expanding Highway 1 from Vancouver through to Langley, as well as constructing the South Fraser and North Fraser Perimeter Roads. These will have limited direct impacts on North Vancouver.

- ***Pacific Gateway Initiative.*** The federal government is supporting various infrastructure projects to enhance goods movement from Vancouver's port facilities through western Canada. Although the current projects will not likely have significant direct impacts on North Vancouver, it will make other port, rail and road network facilities on the central and South Shore more attractive to support growing economic activity.




Source: Gateway Program Definition Report, 2006

### *Initiatives Under Consideration*

In addition to the above projects, there are also many other road network projects being considered by external agencies (as illustrated in the diagram below):

- ***Lower Level Route.*** For many years, the North Shore municipalities, Squamish Nation, and the Province have been working toward the development of a continuous east-west roadway near the waterfront from Lions Gate Bridge to the Ironworkers Memorial Bridge. Within the City, this route is essentially complete. The western connection remains incomplete beyond Garden Avenue in the District of North Vancouver. The Districts of North and West Vancouver, along with the Squamish First Nation, are now developing plans to extend the Lower Level Route westward to the Park Royal Mall area. This route could provide an attractive alternative to Marine Drive to access the Park Royal area and potentially alleviate some congestion around the Lions Gate Bridge.
- ***Lynn Valley interchange.*** The Lynn Valley interchange is a significant constraint in the North Shore roadway network and is experiencing increasing congestion resulting from development in the Lynn Valley Road corridor. Congestion, primarily on southbound Lynn Valley Drive through the interchange present a bottleneck for crossing Highway 1 between the City and District of North Vancouver, as well as for transit, pedestrians, and cyclists. The City is encouraging the Ministry of Transportation to consider redevelopment of the interchange to alleviate ongoing network issues. The City is also attempting to improve connectivity in this area for pedestrians by improving the existing interchange or building a new pedestrian/cycling overpass to connect the Grand Boulevard and Loutet neighbourhoods.
- ***Mountain Highway/Fern Street interchanges.*** The Ministry of Transportation is investigating options for significant upgrades to these two interchanges to improve accessibility between the highway and North Vancouver. Some improvements have already been undertaken in the past several months at Fern Street, including a new off-ramp to Lillooet Road and a widened southbound off-ramp. At Mountain Highway, additional ramps and a direct connection to Brooksbank Avenue in the City are being considered. This could change the traffic characteristics on Brooksbank Avenue.
- ***Keith Road overpass.*** As part of a redevelopment proposal, the District of North Vancouver is considering an extension of Keith Road across Highway 1 to connect with Mount Seymour Parkway and Lillooet Road. This could affect traffic demands on Keith Road within the City, but significantly improve east-west linkages and travel options across Highway 1.

- ***Port access.*** The Vancouver Port Authority is considering access modifications for the port facilities south of Cotton Road. One option being considered is the consolidation of accesses at a location east of Lynn Creek and closure of the access at Brooksbank Avenue. This could help to address congestion issues at the Cotton Road/Brooksbank Avenue intersection.

### *Incident Management Strategies*

In addition to the infrastructure initiatives described above, the detection and management of incidents on the North Shore and on the two Burrard Inlet bridges is recognized as critical to maintaining a functional and effective transportation system for the North Shore municipalities. Incidents on the two bridges in particular can have significant and far-reaching effects on the road network, goods movement, transit, and emergency access on the North Shore. Through the North Shore Emergency Management Office, the City has been working with the Ministry of Transportation, other North Shore municipalities, and emergency service providers on the development of incident management strategies for the North Shore. The City will continue to pursue implementation of these strategies with other agencies, which should comprise the following key elements:

- ***Detection.*** Quick detection of incidents, particularly on the bridges, is key to minimizing impacts throughout the North Shore. There are various technologies (such as loop and/or video detection) available to automate the detection of incidents. Automated detection may allow for quicker response.

- ***Response.*** The type and scale of response must be appropriate to the nature of the incident. It is recognized that certain incidents may require closure of a key transportation link, whereas other incidents may be cleared quickly. A systematic approach to response depending on the nature of the incident is required to minimize unnecessary impacts on the North Shore transportation network.

- ***Communication.*** When an incident is detected and confirmed, and the appropriate response is undertaken, a comprehensive communication strategy should be implemented to notify emergency responders, municipal staff and crews, and the general public. This may include the participation of media outlets for broadcasting key information to the public.

# APPENDIX C:

# TDM STRATEGY

# EXTERNAL INITIATIVES

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## Regional TDM Initiatives

- **OnBoard Program**

TransLink offers a number of regional TDM initiatives through its OnBoard Program. The OnBoard program assists employers to identify and implement commuting options for their employees. These options are convenient, cost effective and viable alternatives to driving alone. Options explored through the OnBoard program include a discounted annual transit pass through payroll deduction, ride matching, car and van pooling, car sharing, active transportation (cycling and walking), parking management strategies, teleworking and shuttle buses. Specific initiatives within the Onboard Program include:

- ***RideShare Program.*** TransLink is a sponsor of the Jack Bell RideShare (JBR) program, which offers express door-to-door commuting options to individuals travelling in and out of the Lower Mainland. JBR programs include free on-line ride matching, vanpooling and carpooling. TransLink promotes this RideShare Program through various promotional activities, such as Ride-Share Week.

- ***Employer Pass Program***. The Employer Pass program allows companies to offer discounted annual transit passes to their employees when 25 or more employees are enrolled into the program. The pass entitles the passholder to travel on any bus or Community Shuttle (except HandyDART), SkyTrain and SeaBus. Passes for West Coast Express are also available. The Employer Pass provides approximately 15% discount over the cost of purchasing standard monthly passes. TransLink also encourages employers to provide further discounts. For example, the City of Burnaby and Corporation of Delta offer their employees a further 25% discount, resulting in a 40% discount over the cost of standard monthly passes. TransLink is working with several other municipalities in the region to encourage them to provide these additional discounts.

- ***Car Sharing/Company Car Programs.*** Car sharing is joint access to one or often a fleet of vehicles without the high costs of owning and maintaining a car yourself. It is a way to have a car when you really need one while relying on alternatives such as transit, walking or cycling for other trips. Members of the Co-operative Auto Network (CAN) have access to 200 vehicles throughout the Lower Mainland. They are also entitled to use car share parking spaces at a growing number of SkyTrain stations. Similar to Car Sharing, the Company Car operates a fleet of vehicles available for companies at various locations throughout Greater Vancouver.

- ***Park-and-Ride.*** Park-and-ride facilities provide trip makers the opportunity to use transit for a portion of their trip by providing parking at a convenient intercept point close to their origin. TransLink administers several park-and-ride facilities throughout Greater Vancouver. Although there are no park-and-ride facilities in the City of North Vancouver, there are four facilities on the North Shore, including:
    - Phibbs Exchange (40 parking spaces)
    - Park Royal (166 parking spaces)
    - Gleneagles (120 parking spaces)
    - WestBay (15 parking spaces)
- ***Telework.*** Teleworking is a work arrangement where an employee works at home. This allows employees and employers to focus on the work performed rather than the location where it is performed. Telework also saves time, money, stress, the environment, and helps to decrease congestion by taking cars off the road. TransLink strongly encourages employers to consider flexible working arrangements through its OnBoard Program.
- ***Promoting Active Transportation***. TransLink encourages people to walk or bike to work. TransLink provides a number of materials on its website to encourage cycling in particular, such as the Greater Vancouver Cycling Map & Guide, Bike and Ride information, and an interactive Lock and Ride webpage which allows users to check the availability and request reservations for bicycle lockers at SkyTrain stations and certain transit exchanges. TransLink also supports various activities encouraging cycling, such as Bike to Work Week, Bike Month, and a free day-long Commuter Cycling Skills Course.
- **TravelSmart**

Whereas the OnBoard Program focuses primarily on transportation for *commuting purposes*, TransLink has also developed the TravelSmart Program for *discretionary travel*. TravelSmart is an innovative approach to reducing car travel. Many people are interested in using transit, cycling, walking and ridesharing, but may need more information to better use these travel modes. Through a combination of information, incentives, and rewards TravelSmart encourages people to think more about their transportation options and allows them to make more informed travel choices. TravelSmart's key principles include:

- ***Target interested households***. TravelSmart focuses on households that indicate that they are interested in increasing their use of alternative transportation.

- ***Offer personalized support and resources.*** Direct contact and individualized information, tailored to meet households' specific travel needs, is an effective means to encourage people to think more about their travel choices.
- ***Focus on households.*** By focusing on households, TravelSmart addresses the full range of trips originating from home, not just the work commute trip. Participants can start by considering alternative transportation for small trips, close to home.
- ***Reward those who already use alternative transportation modes.*** Households that already regularly use public transit, cycle or walk are offered a small reward to encourage their continued use of these modes.

Participants in the TravelSmart program can select from a range of free informational materials including transit maps, timetables, cycling route maps, bike safety and maintenance tips, maps to nearby parks and trails, pedestrian tips for children as well as a self-guided walking-tour brochure. Some materials have been especially developed for the TravelSmart program, including:

- TravelSmart Neighbourhood Map (see below)
- Bus Stop Specific Schedules
- Personalized Transit Trip Plan

The TravelSmart program has been developed as a Pilot Project in the Greater Vancouver Area as part the Urban Transportation Showcase Program. This is the first time this program has been launched in Canada. It is being piloted concurrently in six neighbourhoods located in the inner, middle and outer rings of the metropolitan Vancouver region. Although no North Shore communities were included in the first round of pilot projects, TransLink plans on moving forward with this program in more communities in the near future, and it is possible that this program may be targeted at specific neighbourhoods in the North Shore in the future.

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# APPENDIX D:

# PUBLIC CONSULTATION SUMMARY

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The Transportation Plan has been developed with broad participation of the North Vancouver community to ensure that the Plan reflects the values and interests of the community. The Plan has been guided by a steering committee of City staff representing several municipal departments, and there were also several opportunities for public input through various public forums as shown below.

- **Public open houses.** Two Open Houses have been held to gather input from community residents. The first Open House was held on November 1, 2006 to gather input from residents on the key transportation issues facing the community, and to solicit ideas on potential improvements. The second Open House was held on November 8, 2007 to obtain feedback on the preliminary features identified in the Transportation Plan. Both Open Houses were held at City Hall, and open house materials were available for public viewing for the entire week in which the open houses were held. Exit surveys were also distributed at these Open Houses to provide community members an opportunity to provide feedback.

- **Public workshops.** Two interactive public workshops were held throughout the study process. The first workshop was held on November 7, 2006 to identify issues, and the second workshop was held on November 5, 2007 to discuss preliminary features of the Transportation Plan. The workshops were attended by invited representatives of community associations, businesses, emergency services, community groups (such as youth and seniors), and other agencies.

- **City Council meetings.** Council is ultimately responsible for the final decisions and approval of the Transportation Plan. Council has been kept up-to-date on the progress of the Plan through staff reports, and also through a presentation by the project team on May 14, 2007 and a workshop on October 22, 2007.

- **Advisory Planning Commission meetings.** The City's Advisory Planning Commission (APC) has been involved in the development of the Plan through participation in workshops with the project team. Several workshops with the APC have been held to-date, and APC members participated in the interactive public workshops. A Joint Advisory Committee meeting was also held on January 9, 2008.

- **Other stakeholders.** Key external agencies responsible for transportation planning within and around the City have been consulted and have been kept up-to-date on the progress of the study. They have also been invited to provide input to the Transportation Plan at key milestones, including the interactive public workshops. Agencies

involved in these consultations include TransLink, the District of North Vancouver, the Vancouver Port Authority, and the Squamish Nation.

A number of agencies and stakeholders have provided input regarding the development of the draft plan, including the Advisory Planning Commission (APC), the Advisory Design Panel (ADP), Social Planning Advisory Committee (SPAC), Parks and Environment Advisory Committee (PEAC), Joint Bicycle Advisory Committee (JBAC), North Shore Advisory Committee on Disability Isuses (NACDI), and Concert Properties.

This section provides a summary of the input received from the public and during the development of the Transportation Plan.

## KEY TRANSPORTATION ISSUES

### Walking

- Street trees and nice public realm makes walking more enjoyable.
- Change funding policy for sidewalks so residents can't say no and sidewalks because they don't want to pay for them.
- Improve curb bulge designs. The current bulges on St. George's barely reduce the pedestrian crossing distance and increase the turning radius.
- Barriers to walking include significant scale land uses that restrict easy access to key corridors and destinations.
- Lack of sidewalks along some major roads and to major destinations – such as schools, shopping and employment areas
- Transportation barriers to walking include the railway and Highway 1 corridors.
- Sidewalks in key pedestrian areas are too narrow.
- Evolving but still many unsafe areas in the neighbourhood.
- Overall plan to connect municipalities.
- Trails are not connected.
- Pedestrian priority and safety.
- Illumination for pedestrian routes and cross-walks.
- Accessibility on Low Level Road.

**Cycling**

- Need more bike lanes.
- It's really unsafe/scary going East-West on a bike!
- It would be nice to have some pedestrian/cyclist oriented through-ways where carscan't go (e.g. over creeks where there are no roads).
- Bike routes on an orthogonal gird in a hilly community don't work.
- Lack of awareness regarding cycling routes.
- Cycling paths are disjointed (on a route one minute and then on roadway with minimal space).
- Accessibility on Low Level Road.

**Transit**

- Transit system that runs for passengers rather than convenience of the bus operators.
- Keep buses running later.
- SeaBus doesn't start early enough for people who start work at 6:00am.
- Very hard (impossible) to get to Phibbs exchange from 15th and Grand Boulevard bus exchange. For all north shore points east e.g. Deep Cove.
- Many drivers leave early and often buses don't show up.
- Limited east-west transit service that is not directed toward Lonsdale or the transit exchange.
- Travel by transit within the North Shore is not time competitive with driving.
- Transit service not sufficiently oriented toward the key destination areas of the North Shore and the City.
- Intersection congestion at major arterial routes (i.e. Keith @ Marine); possible transit extensions within area
- Transit route frequency issues (i.e. 232 and 255)
- B-Line Capacity Expansion (expensive)
- Seabus planning is too far in advance it is needed now.
- North Shore doesn't get its fair share based on what it gives to Translink.
- Deep Cove to West Vancouver connection of the transit system.
- Crime issues at the bus loops and Seabus terminals.

- Convenience of transit system.
- Inconsistency of transit size to the need.
- Transit is too time consuming and doesn't provide enough route options or to key destinations.
- Lack of short trip transportation vehicles.
- Cost of transit may be a limiting factor to people visiting Recreation Centres.
- Lack of east-west transit between 15th and Trans-Canada.
- Steep grades require more benches as rest stops for pedestrians.
- Transit services to major industrial areas and port facilities
- Illumination at transfer points.
- No car ferry service.

**Roads / Parking**

- Pay parking would penalize Lonsdale businesses.
- Too many traffic lights on Marine Drive.
- More roundabouts, less traffic lights.
- Better connections to Lions Gate and 2nd Narrows to improve flows.
- The E-W collectors between 19th and 13th are too close together. Make 17th a local street and calm to discourage through traffic from Lonsdale to Grand Boulevard. Makes for better pedestrian and bike travel.
- I support pay parking to encourage turn over in Lonsdale shopping area.
- Hospital staff use parking lot at Boulevard Park as their free personal parking space. Need staff to have more TDM for hospital.
- Ban left turns on Lonsdale south of #1 highway, thus traffic would move more smoothly and lessen traffic on neighbourhood streets. Note-more left turn lanes and lights could help.
- Lack of parking (or perception of) in Lower Lonsdale area.
- Roadway should be designed to address emergency vehicle response (i.e. road widths, turning radius, and traffic calming design).

- No park 'n' ride options that would allow people to park long term to allow trips to Vancouver and would save them parking at Lonsdale Quay or around Esplanade.
- Bottlenecks at Westview and Lonsdale over Hwy 1.
- Parking at John Braithwaite Community Centre is brutal.
- Uncontrolled speed and high payloads on Low Level Road.
- Sensitivity of local traffic to Hwy 1 accidents.
- Emergency caused gridlocks.
- Shutting down major roadways for accident investigation.
- Street function does not match neighbourhood.
- Lack of inter municipal planning
- Speeds and volumes along St. George's Street need to be addressed
- Public education needed on safe use of roundabouts

**Goods Movement**

- Major road routes should be kept separate from bike routes! Separate Traffic = smoother traffic conditions = Everyone happy. 80% of vehicles on the roads are cars.
- Insufficient support for movement of goods to and from the North Shore.
- Pollution by large trucks and buses.
- Transportation of dangerous goods and hazardous materials- roads, rail, Hwy 1.
- Traffic flow at peak hours creates congestion that impacts on emergency vehicle response.
- Volume of private vehicles plugging up city roads.
- Insufficient support for goods movement to and from North Shore and the reliability of transportation system.

**Trip Reduction**

- Vehicle shares in new developments.
- No programs.
- Weak emissions reduction programs/initiatives.

- Too much density in our small city.

## TRANSPORTATION PLAN FEATURES

### General

- Make sure land use encourages more people to locate in mixed use areas close to transit.
- Education programs to encourage walking, cycling and transit use.
- Communication and coordination with other North Shore communities.
- Develop education and encouragement programs in support of walking/cycling and transit.
- A policy from city hall that increases traffic through neighbourhoods is not acceptable no matter how slow.
- Collective funding instead of frontage taxes fro sidewalks and streetlights.
- More emphasis on accessibility.
- The current mobility of Youth in the City should be a priority, with emphasis on Education and Awareness. This works well when initiated at the School level, but requires ongoing resources.

### Walking

- Chesterfield Ave. and St. George's Ave. should be more pedestrian friendly
- The plan should address needs of pedestrian commuters versus non-commuter pedestrian.
- More sidewalks set back from curb.
- Better pedestrian connections to Sutherland School.
- Provide benches on Lower Lonsdale to encourage shoppers to shop in their own community, thus improving business. People do not like shopping on steep hills.
- Overpass from Crown/Lynn Creek to Lynnmouth Park.
- Make sure land use encourages more people to locate in mixed use areas close to transit.
- Blacktop all the parks and make it easy to walk on.
- Enhanced connections for pedestrians and cyclists across Highway 1.

- Enhanced pedestrian environments in key areas of the City.
- Improve pedestrian treatments at intersections and signal systems in key pedestrian areas.
- Sidewalks along all major roads and adjacent to pedestrian generators such as schools.
- To improve safety have adequate lighting and route maps.
- Sidewalks should be widened and have more sidewalks in high traffic areas.
- Enhancement of pedestrian safety; separation of pedestrian traffic from large vehicles on major corridors.
- More benches on steep grades to be used as rest stops.
- Improve sidewalks around schools.
- Improve and expand trail system and more links to other trail systems to promote walking (enjoyable walking).
- Use overhead walkways and cycling.
- Improve walking experience by widening sidewalks and burying utilities (no poles).
- Have pedestrian controlled signals.
- Remove driveways from the front of houses and move them to the lanes.
- Pedestrian bridges over Hwy #1 and creeks. Using existing low motor traffic road will provide a better return on assets.
- Walkway over Esplanade should be considered
- More seating in key ped areas (don't block sidewalks)(
- Crossing times for pedestrians should be confirmed (ped speeds)
- Encouragement to walk to schools
- Incentives to walk/cycle - focus on beauty/pleasure of route
- Sidewalk surface - concrete vs pavers
- Safer streets (CPTED) and lighting
- Pedestrian - aesthetics (landscaping, streetscaping, road sharing)
- Pedestrian safety - crosswalk collisions, awareness of rules, signals
- School Board - walk to school programs, school area route planning, etc
- Wayfinding
- Rain protection (urban design, amenities)
- Expand pedestrian precincts to 2 blocks due to parking
- Lighting coordinated with pedestrian areas
- Sidewalks for new developments

- Greenway connection across Reserve and on Wagg Creek
- Sidewalk network must be completed
- Good ped. Connections between destinations, inc. Queensbury to Park & Tillford
- Multi-Use Path along 3rd between Queensbury and Park and Tilford
- Continue building Green Necklace
- More ramps for pedestrians
- More multi-use walking/cycling paths between destinations
- Better sidewalks
- Funding for Casano-Loutet ped/cycle overpass
- Pedestrian connections between all city destinations, including Queensbury/Park & Tilford
- Connection from Lower Grand Blvd to Queensbury/Lower Lonsdale
- Possibility of pedestrian-only areas
- Follow design guidelines for safe sidewalks
- Priority crossings for peds at bus stops

**Cycling**

- Chesterfield Ave. and St. George's Ave. should be more friendly for cyclists.
- Bike lanes along Marine Drive corridor
- 16th street and Larson Road need bike lanes.
- Connect Hamilton School to Highway 1 and Edgemont overpass for pedestrians and cyclists.
- Fix up north end of 2nd Narrows bridge and underpass using rail corridor
- More accessible highway bike routes.
- Bike accessibility on major unadapted routes (Hwy 1/ Marine Drive).
- Bike routes better identified and planned.
- Lighting for cycle paths and signage for multiuse trails.
- Increase bicycle designated pathways along major arterials.
- Bicycle paths designated and illuminated for night use especially around school districts.

- Provide education and maps of cycling routes in newspaper, and website.
- Connect the bike routes and whenever possible have the routes of major roadways.
- Bicycle parking standards for developments
- Security of bike parking
- Consider E-W route parallel to Marine Drive.
- Private cycle parking facilities
- Cycling security (property, lockers, etc)
- Lynn Valley bike connection
- Cycling plan should consider skateboarding/in-line skating
- Complete Bicycle Master Plan projects
- 3rd Street instead of 4th Street for bike route
- More bike lanes on principal streets
- Sidewalks/bike lanes on both sides of 3rd St/Keith Road hills
- Bile lanes at Lower Mtn. Highway interchange
- Chesterfield too busy to be bike route. Mahon would be better.
- Low Level Road too dangerous to be bike route
- Focus more on east-west routes than north-south routes
- Provide safety barrier between cyclist and traffic along Low Level Road
- Concerns about bikes being stolen
- Bike riders break/disobey rules more than cars or pedestrians
- City must better promote cycling/peds - needs higher % of budget
- Bike path on 9th Street ignore connections on Keith
- Showers and stroage at end of trip - links to development requirements
- Bikes need to be transportable on transit at night

**Transit**

- Another SeaBus with longer hours of service.
- Transit is ineffective. We need to consider other options such as joining West Vancouver Transit.
- More bus shelters and benches.

- Provide demand response transit in CNV.
- Have strategy to preserve and encourage jobs around transit rich areas.
- Rapid transit v
- Look at using community shuttles to service areas such as east of Grand Boulevard between 15th. Highway 1 running from Central Lonsdale and SeaBus.
- There should be a direct bus along 3rd Street/Marine Drive to downtown Vancouver, only transit access is SeaBus. There should be an alternate route. SeaBus downtown area is not convenient to everyone.
- Enhanced transit services – coverage, frequency and directness.
- Examine transit priority measures around the City such as bus bulges.
- Make transit an enjoyable experience through amenities and in-vehicle experience.
- Encourage redevelopment of Phibbs Exchange to increase safety and attractiveness.
- Increased funding for transit and transportation from TransLink on North Shore.
- Examine the potential of "premium" services with a "premium" cost.
- Employers should consider employee transit incentives.
- Make better use of rail infrastructure for passenger/transit/freight.
- Use smaller/shuttle buses and more of them in neighbourhoods or to key destinations (i.e. Valley Mall, Cap Mall, Auto Centre etc).
- Build a new transit centre.
- Build a train station at bottom of Lonsdale.
- Transit services for Port Node employees.
- Commuter rail opportunity exists between Lonsdale and H. Bay and beyond to Whistler.
- Investigate optimization of rail yards with a view to freeing up land for pedestrian and road improvements (i.e. Low Level Road).
- Enhancement of mobility for seniors and disabled people. City to be a leader in developing mobility options.
- Making the alternative mode of transportation the most convenient for all not just the cheapest or environmentally friendly.
- Establish a North Shore regional transportation plan.
- Rationalize future rail requirements and create a road/rail interface.
- Creation of a free bus/shuttle from Lower Lonsdale to Upper Lonsdale. Either created by City or jointly created with Translink or bring back the streetcar.

- More bus stop shelters.
- Connect rail transit along waterfront to Skytrain in Vancouver/Burnaby.
- Education programs to change lifestyles focus from single-occupancy vehicles to public transit.
- Create a direct connection from Deep Cove to West Vancouver.
- Encourage development where transit connections work.
- Create over/under rail passes.
- Install bus turn-ins on all major roadways.
- Bus maintenance faciliity needs to be developed
- 2 bus systems - more larger and smaller buses
- Driver training and education
- Lighting at bus stops on minor roads
- Managed Park and Ride
- Taxi/shuttle/coach need to be part of Transit Plan
- New technologies for transit payment, dispatch, demand management
- Bus bulges don't make sense
- Integration of Lions Gate & 2nd Narrows transit priority
- Waterfront rapid transit
- Transit pricing should be 1-zone for SeaBus
- Extend SeaBus hours/increased service in evenings
- Code of conduct for drivers
- Use different types of transit (ie community shuttle)
- Bettter regional connections (ie Burnaby, BCIT, etc)
- Lower emission buses/alternative technologies
- SeaBus Transit exchange is very dark and discourages use
- Second Narrows transit connection through City
- Larger percentage of gas taxes and increased funding for expanding bus transit
- Reduce transit fares to increase ridership
- More buses, more often
- Park and ride lots at Phibbs, Lonsdale Quay, Lions Gate Hospital, Cap Mall

- Cross-shore transit service
- City to run a quasi bus route (ie Blue Bus)

**Roads / Parking**

- Remove parking on Boulevard Crescent to allow traffic to flow instead of bottleneck to 17th.
- West Grand Boulevard needs speed bumps from 13th to Keith Road, too many cars over speeding
- Improvements to east west connections to Second Narrows Bridge.
- Examine pay parking strategies as a disincentive to drive to the City's downtown area, or park further away from the downtown area.
- Parking revenues may pay for other transportation improvements.
- Parking maximums, rather than parking minimums for new developments.
- Consider signal pre-emption to improve access and traffic flow for emergency vehicles.
- Ask first responders not to close traffic lanes when attending traffic accidents.
- Locate communal needs in neighbourhoods.
- Build a multi level parking lot.
- Harmonize city and district traffic flow.
- Park 'n' Ride at top of Lonsdale i.e. Harry Jerome Recreation Centre parking lot (near Hwy #1) so one can bus to Seabus, then Seabus to Vancouver etc.
- Increase municipality run parking lots to keep traffic off the local streets.
- Examine pay parking strategies to increase parking use in commercial areas.
- Close Lonsdale to all traffic except transit (same as Grandville) cross traffic allowed. Improve roads on either side, no parking etc. (Esplanade to Hwy #1).
- Add more traffic circles at larger intersections.
- No left turns on major routes unless using a turning lane.
- Provide more park 'n' ride areas to encourage use of public transit in high congestion areas.
- Control street parking to allow maximum flow at peaks, more turnovers in business areas and eliminate long term transient.
- Synchronize arterial routes with city/District of West Vancouver.
- Address road design at city access/ egress joints therefore reducing congestion.

- Design arterial roads to look like arterials and local roads to look like local roads.
- Have the maximum speed limit to be 30km/h on residential roads.
- Tab parking signs with "turned wheel diagrams" for safety.
- Extend lower road 2nd west.
- Maintenance of residential areas – not every street should carry unlimited traffic.
- If designated major arterial, keep traffic lights to a minimum, it will encourage flow.
- Parking/ access benefits in commercial areas for people who use 'green' vehicles.
- Provide third crossing of inlet and connector to Deep Cove area.
- 30km/h signage too small.
- Grand Boulevard to Lynn Valley interchange
- Emergency Services traffic signal pre-emption
- Enhanced connections between Lynn Valley / Grand Blvd
- Low Level Road - HOV Lane or transit lane across new lanes
- Extension/widening of Esplanade near core areas
- Slow speed lanes for electric/lower power vehicles
- Enforcement of speed regulations through fixed red light cameras and speed cameras
- More pay parking
- Response to new types of vehicles (lower speeds, smaller electric)
- Parking - pricing, or alternatives promoted
- Congestion tolls - needs transit
- Jones should be emergency route (direct, no traffic signals)
- Traffic circle should be considered at Grand Blvd
- Signal coordination (Esplanade, Marine, Major Road Network)
- Traffic calming should be more prominent in Plan
- Reclassification of Jones is vital
- More corner bulges on busy roads
- Remove free on-street parking
- Bewicke/Marine: SB should be through/left; right lane right turn only
- Oasis Car should have no access onto Bewicke b/w 4-5

- Bewicke/Marine SB: light must last longer in the morning
- Bewicke/Marine NW: Right lane for RT only; Left lane straight/LT only
- Speed bumps on major roads is wrong, only in school zones
- Congestion can impact responders ability to provide service to community at key locations
- Traffic calming impact ability to respond
- New developments should incorporate designs for wider vehicles (ie 7.5 metre width)

**Goods Movement**

- Improve and encourage use of rail and water for goods movement.
- Encourage the development of a Low Level Road to support the movement of goods.
- Consider possibilities of moving goods during "off-peak" periods.
- Standardize truck policy.
- Integrated dangerous goods/ truck routes for city/ district/ provincial roads.
- Move more freight by rail rather than road.
- Trucking companies should pay true cost of road network.
- Encourage off peak/night time movement using incentives.
- Ironworkers Memorial bridgehead is an emerging disaster; need to think outside of the box.
- Liaise with GVRD (Joint Emergency Planning Committee) Disaster Response Route planning group to incorporate movement of emergency personnel (ground, air, marine, rail)
- When developing transportation plan consider emergency vehicle access, disaster response and evacuation routes.
- Synchronize signals especially during peak hours.
- Free movement of goods within the city (i.e. reduction on regulations etc.).
- Enhancement of secondary goods movement to support commercial activity.
- Impose fees for inter municipal travel by private vehicles. The method of implementation to be decided.
- Limited to Harbour; need to have alternate access to high employment areas and commercial areas on AM and PM.
- Corridor plan for Low Level Road (lower level route) in favour of goods movement.

- Defined, signed and enforced truck routes.
- Encourage heavy trucks to be equipped with frictionless brakes for additional safety.
- Encourage use of rail based port facilities
- Noise pollution
- Goods movement restricted to non-peak hours rather than trying to build more roads
- Rail should be promoted and expanded/enhanced for goods movement
- Roads are too small for large trucks to use safely
- Lonsdale/Marine are "people" roads not truck routes

**Trip Reduction**

- Encourage "Village" areas where you can park once and visit many shops.
- Encourage new business and industry to locate in the city and/or the North Shore allowing more people to work in their own community. This will prompt them to dispense with their vehicles and use local transit. This improves revenues for TransLink affording the opportunity for more busses. Encourage bicycle and pedestrian overhead walkways. Greater use of roundabouts. Bus route over 2nd narrows needed.
- Condense and encourage live, work, play (total community)
- Free bus passes for residents and/or employee bus passes.
- Create more job opportunities in city to reduce cross bridge, cross town trips. Allow/promote home based businesses.
- Encourage neighbourhood corner stores instead of creating Big Box stores and Malls in such a small city.
- Run the ports 24 hours.
- Provide incentive programs to get people to use alternate modes of transportation instead of single-occupancy vehicles.
- Encouragement of business areas such as Queensbury.
- Decrease development parking requirements and encourage car coops in new buildings.
- Reinforce education and awareness
- Carpooling - rebates/spaces
- Density - supports business without driving
- Mixed uses should be encouraged
- TDM strategy should prioritize alternate modes of transportation
- Tolls collected dedicated to improving non-auto transit

- Incentives needed for residents to be more fuel efficient
- Employer pass needs to be supported by City
- Bus passes to high school students
- Parking advantages for carpools, Zip car, etc

## PRIORITIZATION

The City held a Joint Advisory Committee meeting on January 9, 2008 to provide an overview of the Transportation Plan and to begin to prioritize the key features of the Plan. At this meeting, participants were asked to place dots on the feature of the plan that they felt warranted the highest priorities for implementation. The results of this preliminary ranking exercise are shown in **Table A.3**. The average number of dots placed in each key feature of the plan was then used to identify the preliminary priorities for each key feature of the Plan. This revealed the following preliminary priorities for implementation:

**Ranking (average dots per component):**

1. Pedestrian Plan (10.3)
2. Transit Strategy (8.2)
3. TDM Strategy (5.5)
4. Bicycle Plan (4.5)
5. Road Network Plan (3.2)
6. Goods & Service Movement Strategy (2.0)

**Table A.3: Implementation Priorities**

| Transportation Plan Features | Total # Dots |
|---|---|
| **Pedestrian Plan** | |
| 1. Pedestrian areas & generators | 9 |
| 2. Pedestrian Treatments | 12 |
| 3. Greenways | 10 |
| **Bicycle Plan** | |
| 1. Bicycle Network | 6 |
| 2. Design Guidelines | 1 |
| 3. Bicycle Support Strategies | 6 |
| 4. Greenways | 5 |
| **Transit Strategy** | |
| 1. Improved Accessibility to Transit | 8 |
| 2. Increased Local Frequency & Coverage | 18 |
| 3. Expanded Frequent Transit Network | 13 |
| 4. Transit Priority Treatments | 6 |
| 5. U-Pass Program | 3 |
| 6. Expanded SeaBus & Enhanced Terminal | 1 |
| **Road Network Plan** | |
| 1. Updated Roadway Classification | 0 |
| 2. Emergency & Disaster Response Routes | 2 |
| 3. MRN Improvement Strategy | 1 |
| 4. Arterials, Collectors & Local Roads | 1 |
| 5. Parking Strategies | 9 |
| 6. Protect Neighbourhoods | 6 |
| **Goods & Services Movement Strategy** | |
| 1. Minimize Truck Route Delays | 4 |
| 2. Signage Strategy | 1 |
| 3. Effective Use of Freight Infrastructure | 1 |
| **TDM Strategy** | |
| 1. Land Use and Transportation Plans | 6 |
| 2. Parking Management | 6 |
| 3. Leadership | 2 |
| 4. Education & Awareness | 8 |