
# City of Langley
# Master Transportation Plan



NOVEMBER 2014

CITY OF LANGLEY

URBAN systems

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# Executive Summary

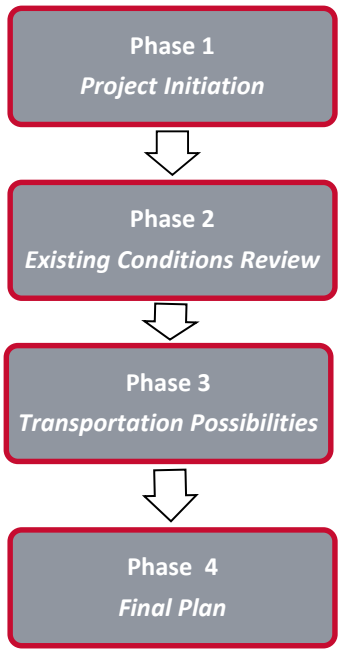
## INTRODUCTION

The City of Langley is a compact and vibrant community, with a distinct small-town character, along with a well-developed urban core that continues to serve a growing local and regional population. The City is geographically unique, as it is bordered on all sides by the larger and rapidly growing municipalities of City of Surrey and the Township of Langley.

With a population of approximately 26,000 residents today, the City has one of the highest population densities in addition to having one of the highest ratios of jobs to population in the region today. Between 1991 and 2011, the City of Langley's population increased by almost 5,000 residents. Over the next 20 years, the City's population is anticipated to grow to about 35,000 residents by the year 2031.

The City's 2004 Master Transportation Plan (MTP) recommended a number of transportation improvements to accommodate the demands of growth to a planning horizon of 2021. Since that Plan was adopted by Council, the City and surrounding municipalities have experienced significant growth and development, in particular the City of Surrey and Township of Langley. This rapid growth is expected to continue over the next several years, which will place increasing pressures on the local and regional transportation systems.

Over the past decade, the City and other agencies have also invested in a number of transportation improvements, such as the 204th Street Overpass, Fraser Highway Nicomekl River Bridge and the Roberts Bank Rail Combo Project including the 196th Street Overpass and Mufford/64th Avenue Overpass. Additionally, the City has placed increased efforts on redevelopment and revitalization throughout the community, particularly in the Downtown Area, while making a number of commitments towards improving sustainability and livability.




Recognizing the changes in the transportation network and the expected growth on the horizon in and around the City of Langley, an update to the 2004 MTP was initiated in 2012. The 2014 Master Transportation Plan update was developed over a four-phased process, which provided a number of opportunities for stakeholder and public engagement through open houses, surveys, staff workshops, external agency meetings as well as meetings with Council at several stages.

The updated Master Transportation Plan (MTP) seeks to address growth-related challenges and shape long-term investments in transportation infrastructure and programs. The 2014 MTP provides the City with updated guidance on priorities for development of a multi-modal transportation system, which serves the City of Langley residents and businesses into the future. The benefits of long-term transportation planning go far beyond the provision of roads, transit infrastructure, bicycle routes, trails, and pedestrian facilities. In fact, transportation can be regarded as a foundational element to achieving community goals and objectives related to health, environment, economy, and social sustainability.

The goals and objectives of the 2014 MTP are to:

- Address **safety**, with emphasis on intersection design standards for pedestrians/cyclists, as well as street design improvements in high traffic areas, including the Downtown, schools and parks.
- Identify opportunities for **enhanced road network connectivity and functionality** for all modes on both a local and regional context;
- Identify improvements to **support pedestrian/cycling facilities** and programs; and
- Identify strategies to **enhance local and regional transit connection** and **transit accessibility**.

Although part of an integrated strategy, the Plan highlights the issues and challenges and long-term directions for each mode based on input and feedback from residents and Council. The Plan also outlines the conceptual capital costs as well as an implementation strategy largely based on needs in response to current conditions and issues as well as pressures of growth. Ultimately, the long-term plan is influenced by overall affordability as well as the City's capital planning program. In addition to guiding local funding programs (such as Development Cost Charges and property taxes), the MTP directions also allow the City to pursue other funding sources regionally, provincially and federally. An approved long-term plan demonstrates the City's commitment to implement capital improvements within the next 20 years or so.

## STRATEGIC DIRECTIONS

Long-term strategic directions have been developed for the City of Langley's transportation network that reinforces the City's aspiration in providing safe, convenient, efficient and sustainable transportation choices in and around the community. The MTP document outlines the issues and challenges as well as the long-term directions by mode, as briefly highlighted below:

**Pedestrian Plan** identifies facilities and programs required to support and encourage walking for people of all ages and mobility levels. The Pedestrian Plan focusses on five strategic areas, which are:

a. **Enhance Sidewalk Coverage** focusses on sidewalk coverage improvements in areas with the highest pedestrian demand and potential including the Downtown area, employment areas, schools and bus stops. This strategy identifies where the City should prioritize sidewalk improvements and enhance walkability in these areas by providing sidewalks to enhance coverage, meet sidewalk standards and accommodate pedestrian demand, as well as providing pedestrian amenities in critical areas to make walking even more attractive.

b. **Supportive Pedestrian Facilities** provide a more walkable and attractive environment for pedestrians. This strategy focusses on incorporating urban design features to enhance and improve pedestrian infrastructure and crossings in high activity areas, in particular in Downtown. The range of urban design features identified includes wider sidewalks, boulevards, accessible bus stops, wayfinding, street furniture, planters, narrower crossings, garbage cans, street lighting, public facilities, building design guidelines and weather protection.

c. **Crossings & Accessibility** is a strategy that seeks to enhance pedestrian safety, accessibility and visibility at crossings within the Downtown, employment areas, around schools and bus stops. The range of crossing treatments identified includes curb letdowns, crosswalks. These strategies and practices can be applied to sidewalk improvements recommended in the Plan as well as other local area plans being developed for areas of high pedestrian activity.

d. **Trails & Pathways** is a strategy that support and uphold the recommendations made in the City's ***2013 Parks, Recreation and Culture Master Plan***. The recommendations seek to provide an improved network of trails and pathways that are safe, comfortable and integrated with other areas of the City. Additional areas of opportunities including

connections with surrounding municipalities, trail lighting, mid-block crossing treatments and improved trail access are identified.

e. **Support Programs** are complementary measures through information, education and awareness initiatives to enable people to feel more safe and comfortable when using active modes to move around.

**Bicycle Plan** provides a framework for implementing bicycle facilities and programs that encourage cycling as a safe and attractive mode of travel. The main strategies in the Bicycle Plan that will guide the development of the bicycle network over the next 20 years are summarized below.

a. **Bicycle Facility Standards** provide design guidelines to ensure high quality bicycle facilities are provided on a wide-range of road types. This strategy identifies standards that range from multi-use pathways in areas that are off-street to cycle tracks in high vehicle traffic areas. It is recommended that the City integrate these standards into the City's infrastructure planning to encourage cycling and provide a safe and comfortable environment for people of all ages and abilities.

b. **Expand the Network** theme is designed to increase the presence of designated on-street bicycle facilities in the City. Key north-south and east-west cycling 'mobility spines' connect neighbourhoods south of the Nicomekl River to Downtown, and to key employment and industrial areas. This theme also outlines a network of supportive routes to provide local route connections to and between the mobility spines, in addition to integration with existing and planned facilities in neighbouring municipalities.

c. **Improved Crossings** increase cyclist safety and comfort, particularly when crossing major streets. This part of the plan recommends a variety of intersection treatments including bicycle detection at signalized intersections, coloured bicycle lanes, bicycle lane markings through intersections, bike boxes, bicycle left-turn pocket lane and bridge crossings on the trail network.

d. **Bicycle Parking** encourages cycling by providing safe and secure on-street bicycle parking at key locations throughout the City. The Plan outlines various short and long-term bicycle parking facilities in areas such as the commercial/shopping districts, cultural and civic facilities, schools, parks and transit exchanges.

e. **Support Programs** are important complementary measures to ensure that residents have the skills, information and confidence when using the City's bicycle network. Some key initiatives can include bicycle user map, signage and wayfinding and events to promote active transportation.

**Transit Strategy** represents a long-term vision for local and regional transit service in the City. The Transit Strategy recognizes that transit is ultimately the responsibility of TransLink. The MTP outlines the challenges and aspirations conveyed by residents as well as possible features of the transit system in the long-term that may be achieved through local area plans and projects, Area Transit Plans and other system planning initiatives. The key features of the Transit Strategy include:

a. **Local Network Enhancements** are intended to enhance coverage and frequency of transit connections between neighbourhoods and local destinations within the City, as well as providing frequent or rapid transit service on Fraser Highway.

b. **Regional Connections** highlight aspirations to improve inter-municipal connections between the City and other communities south of the Fraser and beyond. This part of the strategy would be achieved through supporting rapid transit along Fraser Highway and to Highway 1 and communities north of the Fraser, supporting attractive transit connections to South Surrey and Campbell Heights, as well as establishing strong connections to new and planned transit exchanges such as the Willowbrook Centre Transit exchange.

c. **Downtown Transit Exchange** will serve as a focal point of the City's transit network through a transit hub concept, with transit-oriented development supporting high-density development with a diverse mix of land uses to encourage walking, cycling and transit use in Downtown Langley.

d. **Passenger Amenities** include facilities that provide a safe and comfortable environment for transit passengers and increase the attractiveness of transit use. This strategy recommends a range of measures to consider including enhancing passenger facilities at bus stops and the transit exchange as well as improving accessibility around transit stops and stations in addition to wayfinding.

**Road Network Plan** identifies the City's long-term directions for maintaining a safe and efficient road network for automobile and truck travel, while supporting other improvements for transit, cycling and pedestrians. Over the past decade, both the City and other agencies have made significant investments on a majority of the improvements identified in the previous plan. The key strategies that shape the Road Network Plan are grouped into seven primary categories:

a. **Major Road Network Improvements** on key corridors to maximize use of existing roadways in response to growth pressures are identified. In some cases, candidate improvement concepts are identified along provincial highways within the City that would need to be led through the Ministry. Improvements identified along the Major Road Network would need to be planned with TransLink and other communities.

b. **Network Connectivity and Circulation Improvements** focusses on enhancing mobility and accessibility within the City and surrounding municipalities. These improvements include optional concepts for the 50th Avenue and Grade Crescent connection as well as the 62nd Avenue works completed in 2014.

c. **Local Network Changes Beyond the MTP** contemplates potential improvements beyond the 20 year horizon of the Plan. Because of the significant impact of rail activity on the quality of life, safety and mobility within the City, Council does not support further increases in freight traffic through the city. If further growth in rail traffic occurs, the City prefers a strategy that maximizes use of recently built infrastructure and only as a last resort may consider additional grade-separations along major corridors such as the Langley Bypass, Fraser Highway and 200th Street.

d. **Operational and Safety Improvements** identify minor intersection improvements at several locations in the City to maximize use of existing infrastructure while increasing overall mobility and safety on the City's street system.

e. **Intersection Roundabouts** are an alternate strategy to address intersection delays and safety. Rather than implementing conventional stop-controlled or signalized intersections, modern roundabouts can be considered to support higher traffic volumes. It is recommended that the City consider the use of roundabouts as part of any intersection improvement to enhance safety and mobility. The City should also work with ICBC to establish a proactive implementation strategy.

f. **Roadway Classification Update** is a strategy to define the projected function of the road network within the City. The roadway classification system generally provides guidance to

planning land uses along the corridor, as well as the physical design characteristics based on the intended function for each class.

g. **Designated Truck Routes** are established to restrict truck traffic from using certain corridors within the City in order to reduce impact on residential neighbourhoods and the physical design characteristic of the roadway. This strategy identifies routes that trucks are permitted to use for travel to and from destinations within the City.

## Implementation & Priorities

The MTP is intended to provide a long-term direction for the City's transportation system. To achieve the goals of the MTP, an implementation strategy is necessary to provide a framework for advancing specific improvements over the short-term (0 to 5 years), medium-term (5 to 10 years) and long-term (10 or more years). For each of the capital investments identified in the MTP, conceptual order-of-magnitude cost estimates in current dollars (2013 dollars) were developed to provide guidance on prioritizing transportation investments over the next 20-years. These are summarized in the **Table ES.1** below. ***These order-of-magnitude costs are for comparative purposes only, and are based on a conceptual level of design and should be refined when establishing funding requirements and project budgets.***

Although the priorities are generally identified based on the overall assessment of existing conditions and planned development, changes in growth patterns, funding partnership opportunities and property requirements may affect timing and priorities.

**Table ES.1**
**Summary of Priorities and Capital Costs**

| MTP Direction | | Short Term ( 0 to 5 years) | Medium Term ( 5 to 10 Years) | Long Term (10+ Years) | Total |
|---|---|---|---|---|---|
| Pedestrian Plan | Enhance Sidewalk Coverage | $1.8 mil | $3.4 mil | $2.8 mil | $8.0 mil |
| | Supportive Facilities | $0.1 mil | $0.1 mil | $0.2 mil | $0.5 mil |
| | Crossings & Accessibility | $0.5 mil | $0.5 mil | $0.5 mil | $1.5 mil |
| | Trails & Pathways | As per Parks and Recreation Master Plan | | | |
| | Support Programs | $0.1 mil | $0.1 mil | $0.2 mil | $0.5 mil |
| | **Total Pedestrian Investment** | **$ 2.5 mil** | **$4.2 mil** | **$3.8 mil** | **$10.5 mil** |
| Bicycle Plan | Bicycle Facility Standards | - | - | - | - |
| | Develop and Expand the Network | $0.5 mil | $0.8 mil | $1.4 mil | $2.7 mil |
| | Improved Crossings | $0.1 mil | $0.1 mil | $0.1 mil | $0.4 mil |
| | Bicycle Parking | $0.05 mil | $0.05 mil | $0.05 mil | $0.2 mil |
| | Support Measures | $0.1 mil | $0.1 mil | $0.2 mil | $0.5 mil |
| | **Total Bicycle Investment** | **$0.8 mil** | **$1.1 mil** | **$1.8 mil** | **$3.7 mil** |
| Transit Strategy | Downtown Transit Hub | *To Be Determined In Conjunction with TransLink* | | | |
| | Local Network Enhancements | *TransLink Area Transit Plan* | | | |
| | Enhanced Regional Connections | *TransLink Area Transit Plan* | | | |
| | Passenger Amenities | $0.5 mil | $0.5 mil | $1.0 mil | $ 2.0 mil |
| | **Total Transit Investment** | **$0.5 mil** | **$0.5 mil** | **$1.0 mil** | **$2.0 mil** |
| Road Network Plan | Major Network Improvements | - | $1.7 mil | - | $1.7 mil |
| | Network Connectivity & Circulation | $0.3 mil | - | $1.3 mil | $1.6 mil |
| | Safety & Operational Improvements | $1.9 mil | - | - | $1.9 mil |
| | **Total Road Network Investment** | **$2.2 mil** | **$1.7 mil** | **$1.3 mil** | **$5.2 mil** |
| | **Total Capital Investment** | **$6.0 mil** | **$7.5 mil** | **$7.9 mil** | **$ 21.4 mil** |

# Chapter 1.0
# INTRODUCTION

# 1.0 Introduction

The City of Langley is a vibrant and historic community centrally located within Metro Vancouver. With a population of approximately 26,000 residents, the City has become an employment, business, and service hub for many surrounding communities. The City is one of the smaller municipalities in Metro Vancouver in terms of population and geography, but has one of the highest population densities and is surrounded by two of the fastest growing municipalities in Metro Vancouver, the Township of Langley and City of Surrey. Population growth is expected to continue in the City of Langley, with an additional 13,000 residents anticipated to live in the community by the year 2041. Local growth, combined with population growth in surrounding municipalities, will place significant pressures on the City's transportation system into the coming years.

The updated Master Transportation Plan (MTP) seeks to address growth-related challenges and shape long-term investments in transportation infrastructure and programs. The 2014 MTP provides the City with updated and relevant guidance on priorities for development of a multi-modal transportation system, which serves the City of Langley residents and businesses into the future. The benefits of long-term transportation planning goes far beyond the provision of roads, transit infrastructure, bicycle routes, trails, and pedestrian facilities. In fact, transportation can be regarded as a foundational element to achieving community goals and objectives related to health, environment, economy, and social sustainability. Thus, the MTP will guide the City to achieve larger community aspirations, including supporting a vibrant Downtown, providing alternatives to the automobile, promoting a healthy population and environment, and ensuring a vital economy, while also supporting regional people and goods movement.

The MTP is also designed to address the changes in the transportation landscape seen since the previous 2004 MTP was prepared. For example, growth and development in the region has resulted in major transportation investments to facilitate traffic flow in the City and surrounding municipalities, including

the 204th Street Overpass, Fraser Highway Bridge, Golden Ears Bridge, Highway 1 Improvements, Roberts Bank Rail Corridor Program projects, and the South Fraser Perimeter Road. In addition to these projects, a number of recent planning and policy initiatives, such as the Downtown Master Plan, Community Energy and Emissions Plan, and Parks, Recreation and Culture Master Plan update, have placed an increasing emphasis in the City on sustainability, livability, and improved transportation options. The MTP builds upon the City's existing directions and commitments in these and other key policy documents, and successful application of the MTP will in turn support these documents. The MTP ultimately intends to shift the City's transportation system to be more safe, equitable, efficient and accessible, to promote a healthier community, and provide improved mobility options for residents and visitors of all ages and abilities.

## 1.1 Purpose and Features of the Plan

The MTP presents a comprehensive review of all aspects of the transportation system and is intended to produce a clear vision of the multi-modal transportation system to serve the community over the next 20 or so years. The framework of the Plan is developed around the long-term directions for walking, cycling, transit, and the roadway network serving the City, as briefly highlighted below.

- ***Pedestrian Plan***. Walking is the most fundamental form of transportation in that it may be the means by which people choose to get around the City or simply form part of their trip. Attractive pedestrian facilities also contribute toward the City of Langley as a vibrant city. Active streets where people are moving around in different areas of the community in safe and comfortable areas and spending leisure time in public spaces along the streets will serve to strengthen the sense of community within the City.

  The Pedestrian Plan identifies facilities and programs needed to make walking in the City an integral part of the transportation system. The Plan recognizes the needs for key pedestrian areas of the City that will support and encourage walking as the primary mode of travel or to connect with others such as transit and cycling facilities. The Plan outlines the provision of sidewalks that will address gaps in the most critical pedestrian areas, identify crossing and accessibility treatments that will reduce barriers to walking and present supportive treatments to enhance the walking experience in the most active 'people' areas of the City of Langley.

- ***Bicycle Plan***. Cycling in the City and region-wide for leisure, socializing, work, school and other trip purposes is ever increasing. A safe and comfortable bicycle network with support facilities and programs will serve to enhance the experience for cyclists and attract a large population of people that are "interested but concerned" people. The Bicycle Plan identifies existing and

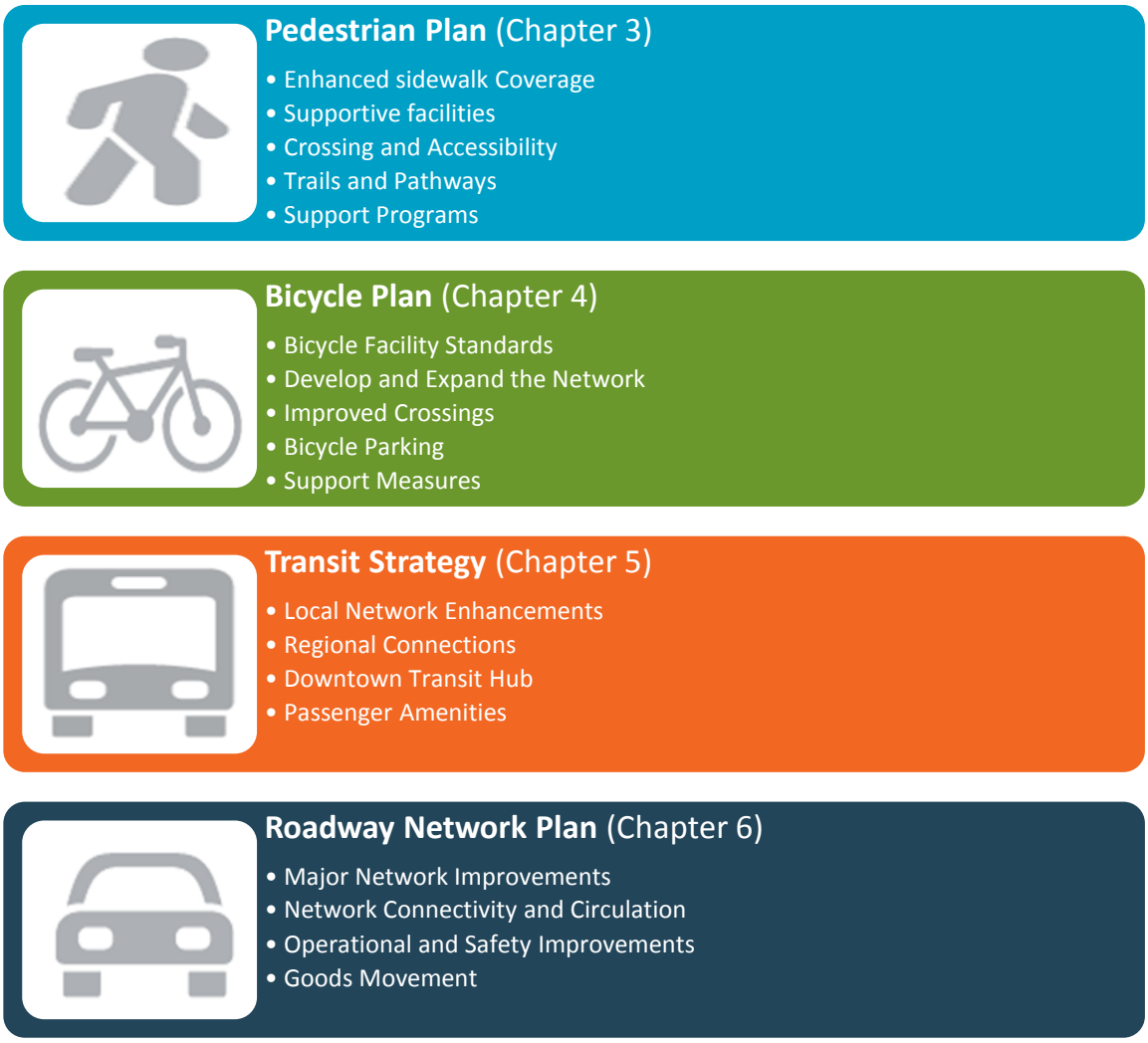
proposed bicycle facilities in the City to serve the core areas where people are most likely to bike and to connect with the trail system identified in the Parks, Recreation and Culture Master Plan.

- ***Transit Strategy***. The transit system in the City of Langley is largely planned and managed by TransLink, and operated by Coast Mountain Bus Company. The Transit Strategy is a local initiative used to inform TransLink of the City's needs, aspirations and priorities for expanded transit services within and to the community. In this regard, the Transit Strategy identifies potential local and inter-municipal transit markets to support residents and employees that live and work in the City of Langley.

- ***Road Network Plan.*** The City's roadway network consists of the Major Road Network, arterials, collectors and local streets that serve local and regional travel and connect to the Provincial highway system. The Road Network Plan identifies the committed local and regional network changes that will influence travel on the City's street system, and outlines the long-term network improvements needed to support forecast growth in local and regional traffic. The Plan also outlines minor changes to the roadway classification system as well as designated truck routes based on planned network improvements included in the Roberts Bank corridor improvements.

The themes and supporting strategies highlighted in **Figure 1.1** on the following page provide the guidance and actions required to achieve the overall Plan.

**Figure 1.1**
**Master Transportation Plan Themes**




## 1.2 Process

The MTP was developed in three progressive phases that also included preparation of two interim Discussion Papers and a Final Plan as described below.

- **Discussion Paper #1: Existing Conditions** summarized existing transportation, demographic, and policy conditions that influence City's transportation system, and provided guidance for the City as it began to develop the MTP. The report included a comprehensive assessment of the existing road, transit, bicycle and pedestrian networks, and summarized key transportation issues and opportunities that emerged from public consultation activities.

- **Discussion Paper #2: Transportation Possibilities** presented a range of preliminary transportation possibilities for each mode, in order to inform planning and investment within the transportation system into the long-term.

- **Final Master Transportation Plan** summarizes the previous two discussion papers and presents the transportation improvement strategies for the City and its partners to enhance the road, transit, pedestrian and bicycle systems.

## 1.3 Community & Agency Engagement

During the process, the Plan has been developed with the participation of the City of Langley community to ensure that it addresses current transportation issues, and reflects the values and interests of residents and key stakeholders. Throughout the course of developing the Plan, there were several opportunities for stakeholder and public input through various forums, including two open houses, surveys, staff workshops, meetings with agency stakeholders and working sessions with Council. The consultation and engagement activities are summarized below:

- **Two public open houses** were held throughout the development of the MTP. The first was hosted on January 23, 2013 at City Hall, and the second was held on October 30, 2013 between 4 – 8 pm at City Hall. The January 2013 Open House presented existing transportation conditions and gathered resident feedback on issues related to the walking, cycling, transit, and road networks. The October 2013 Open House presented the draft directions of the MTP and solicited feedback from attendees on the draft recommendations. There were approximately 25-35 attendees at each MTP open house.

- **Surveys.** Two surveys were distributed as part of the development of the MTP. The first survey was made available at the first Open House, and was also available through City Hall. The survey asked residents to identify the top transportation issues or challenges facing the City of Langley, as well as the top transportation improvements for implementation. The second online survey (November 2013) asked residents to review the draft MTP directions and provide any feedback.

- **Staff and Council Workshops.** Workshops were held with Council, as well as City staff from several municipal departments throughout the study process, to discuss issues, identify possibilities and provide directions for the MTP.

- **External Stakeholder Workshop.** At the onset of the project, an interactive workshop was held with several representatives from different agencies and organizations, including TransLink, Ministry of Transportation and Infrastructure, City of Surrey and the Township of Langley. This workshop provided an opportunity to understand local and regional plans and projects that may impact the direction of the MTP.

Chapter 2.0

# POLICY CONTEXT

# 2.0 Policy Context

This section describes the planning context for the Master Transportation Plan (MTP) update which includes an overview of the community profile of the City of Langley as well as the overall policy context which the Master Transportation Plan (MTP) supports and guides.

## 2.1 Community Profile

The scale, mixture, density and form of land uses influence travel demands as well as how people choose to travel. This section of the Plan describes the demographic and land use character of the City of Langley and the travel characteristics that exist today. These patterns influence not only the demands on the transportation system, but shape the improvements that will support more sustainable modes of travel.

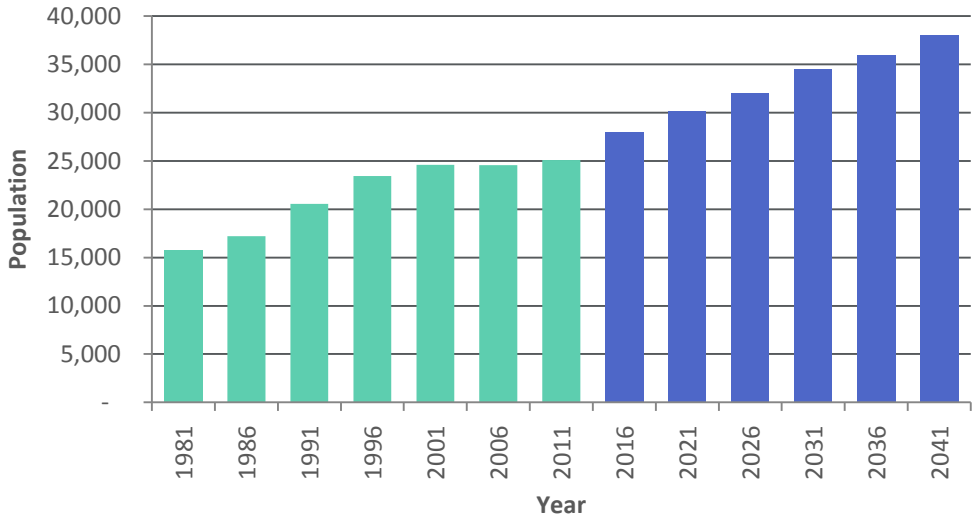
### DEMOGRAPHIC PROFILE

Demographics play a key role in influencing transportation choices and travel patterns. Overall, the City of Langley is experiencing similar population trends as many surrounding municipalities, with smaller households, more people living alone, families with fewer children, and older residents moving into seniors housing. Overarching demographic trends that will continue to shape the way transportation behaviours and trends take place in the City of Langley are described below.

- **The City of Langley population will increase from more than 26,000 residents today to approximately 38,000 residents by the year 2041.** Future population growth is expected to occur in neighbourhoods north of the Nicomekl River, including in and around the Downtown, as plans for multi-family and multi-use buildings are realized through Downtown revitalization initiatives. In fact, the City estimates that the population in the Downtown commercial area will increase by more than three times by 2041. **Figure 2.1** shows the historic and projected growth in the City of Langley to the year 2041.

**Figure 2.1**

**Historic and Projected Population Growth in the City of Langley 1981-2041**

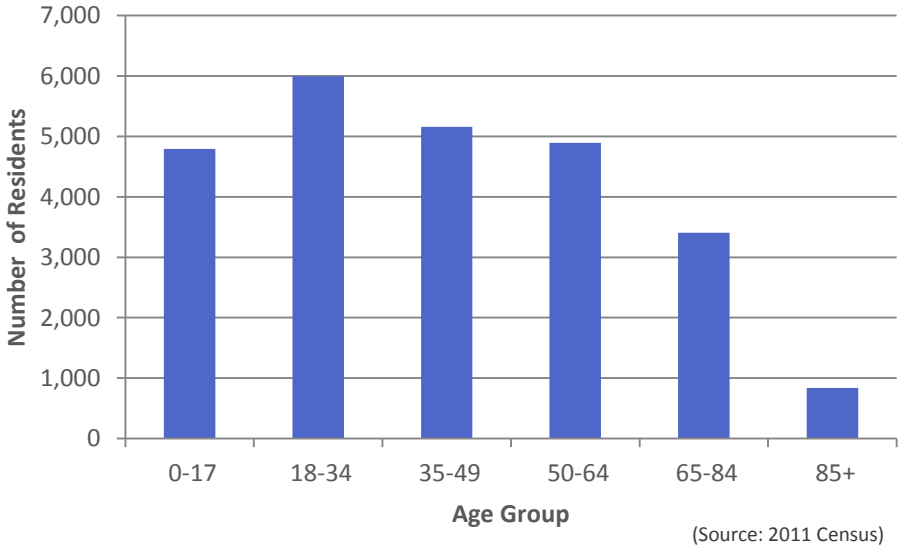



(Source: City of Langley, Metro Vancouver)

- **The City is home to a strong contingent of young families as well as aging residents with unique transportation needs.** The community's demographic profile indicates a large young professional and family-aged demographic, as 70% of the City's residents are under the age of 55 (see **Figure 2.2**). Approximately 21% of this group is under 19 years old. The 2008 Regional Trip Diary Survey results reflect the behaviours of this younger age demographic, reporting that nearly one-fifth of daily walking and transit trips in the City are made by children and youth (aged 19 and under), and over half of all daily cycling trips in the community are made by this demographic also.

**Figure 2.2**

**Current Population by Age Group**



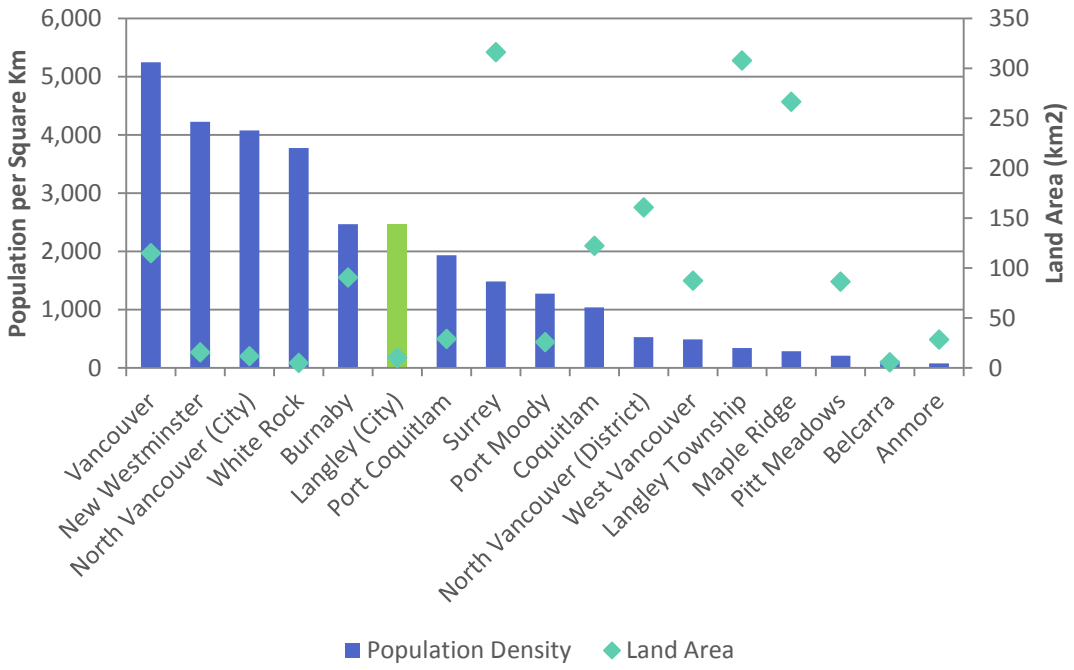

(Source: 2011 Census)

Approximately 17% of City residents are 'baby boomers' (demographic of 65 years and older), and an additional 27% are within their pre-retirement years (45-64 years old). As the City's population ages, travel making behaviour will change considerably as older groups create new and varied transportation needs for the City. For instance, seniors tend to travel more during the mid-day and are also more inclined to walk or use transit (similar to the youth).

- **The City of Langley has one of the highest density and mixture of uses within a compact area compared to other communities in Metro Vancouver**. The City of Langley has one of the highest population densities in the region, as shown in **Figure 2.3**. Today, the City supports approximately 2,450 people per square kilometre – 6th highest density in Metro Vancouver. By 2041, this will increase to more than 3,700 people per square kilometre. A greater concentration and mixture of land uses to support this population is conducive to shorter and more walking trips.

**Figure 2.3**

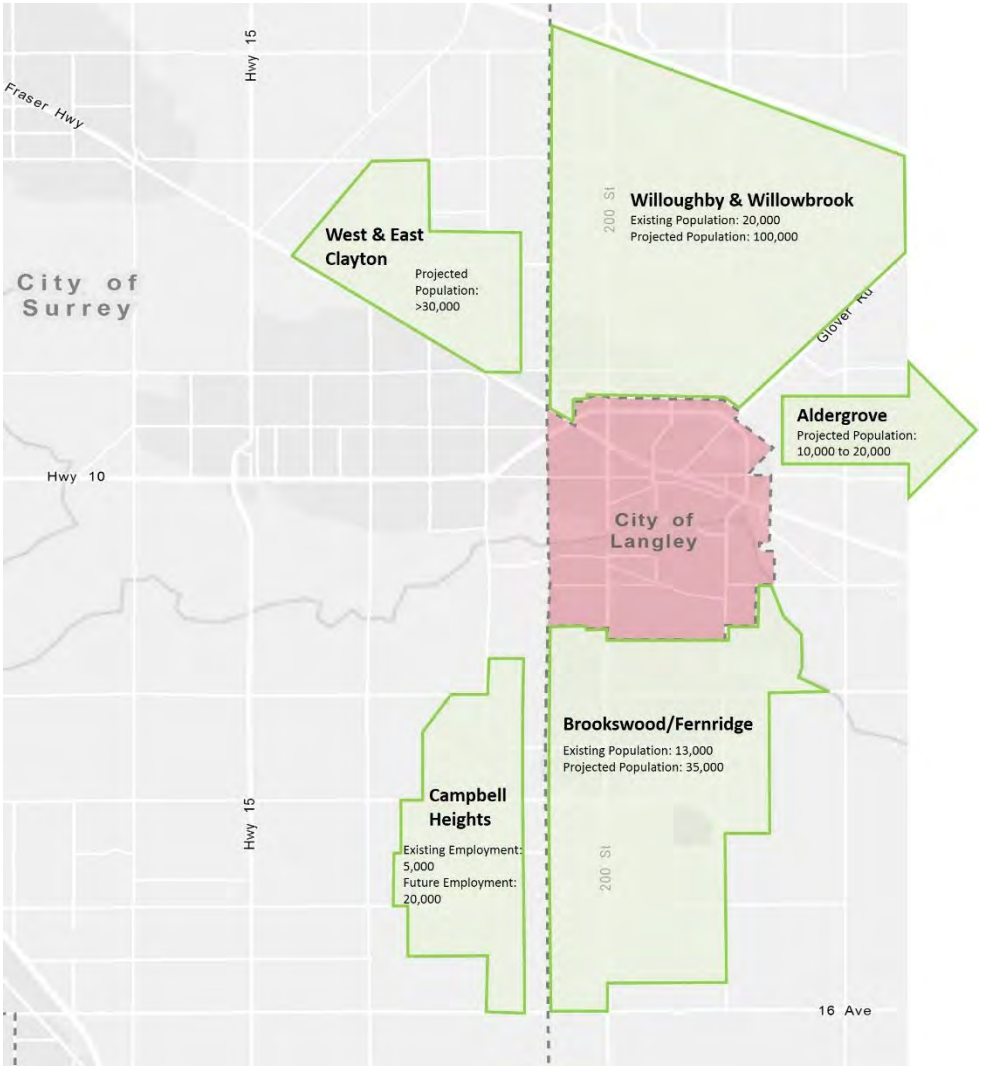
**Population Densities across Metro Vancouver**




(Source: 2011 Census)

- **Growth in neighbouring municipalities will influence travel to, from and through the City.** Not only will the City of Langley's growth and development patterns influence the local transportation network – significant growth is also expected in the neighbouring municipalities of Surrey and Township of Langley (see **Figure 2.4)**.

**Figure 2.4**
**Adjacent Neighbourhood Growth and Development**




Note: Brookswood/Fernridge area growth plan includes more modest changes in population.

For example, the communities of Willoughby and Brookswood/Fernridge, located north and south of the City respectively, are projected to experience moderate growth and development. Willoughby is projected to almost triple, while Brookswood is also projected to grow over the next few decades. Other communities including West and East Clayton in Surrey, Aldergrove

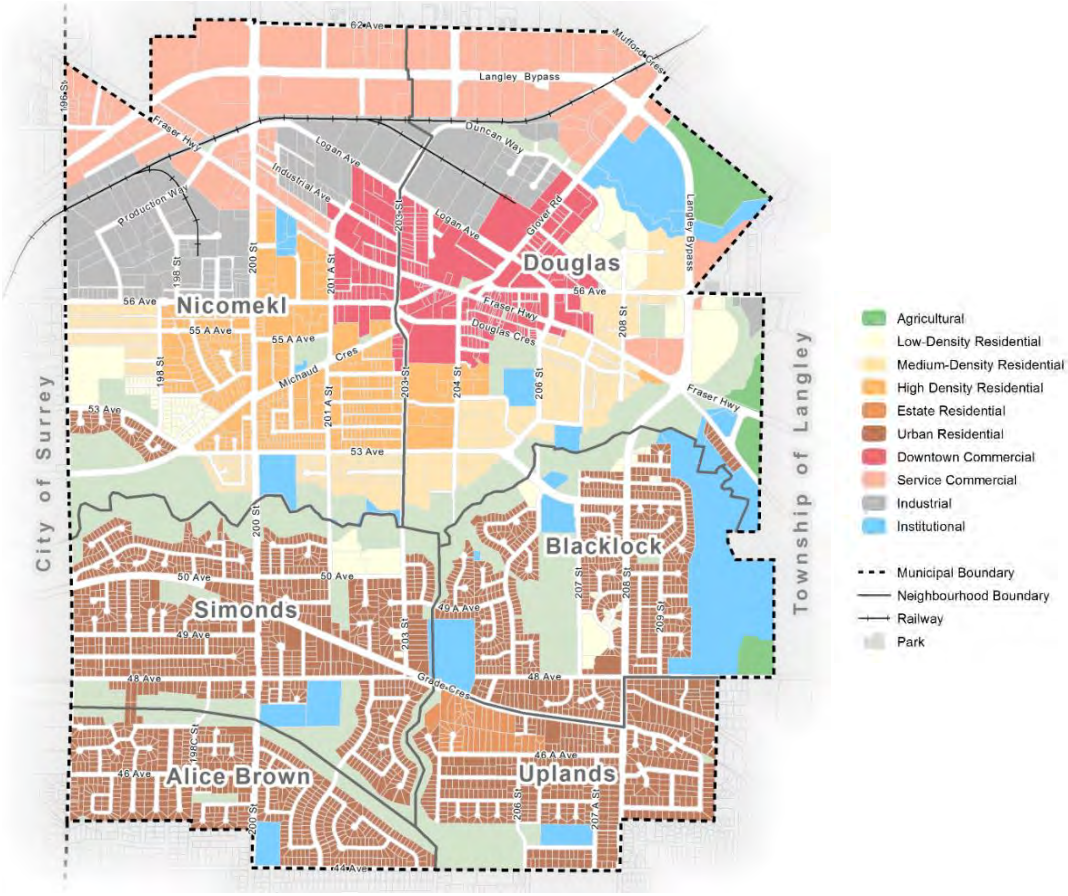
(Township of Langley) and Campbell Heights (Township of Langley) are also projected to experience major growth and development in the future. As the City of Langley is a centrally located hub in close proximity to many of these communities, nearby growth will result in more trips destined for and going through the community, placing increasing pressure on the City's transportation network.

## Land Use & Neighbourhood Profile

While the City of Langley is smaller than other Metro Vancouver municipalities in terms of physical size and population, the community contains a diverse range of land uses. Today, the City's commercial, industrial, and retail land uses are mainly located north of the Nicomekl River, in close proximity to the rail corridor that is used by CN Rail and CP Rail. Commercial and retail services are primarily located adjacent to the Langley Bypass corridor, while industrial uses are located mainly in the Logan Avenue, Production Way and Duncan Way areas. More compact commercial services and amenities are located in the City's historic Downtown district, while west of Downtown there is a significant pocket of high density residential uses. South of the Nicomekl River, the Simonds, Blacklock, Alice Brown, and Uplands neighbourhoods are characterized by primarily low-density residential uses. With a significant contingent of the City's housing located in the south, many residents must travel from these car-oriented neighbourhoods to the services, amenities, and employment areas in the north. The City of Langley's neighbourhoods and land use patterns are shown in **Figure 2.5.**

**Figure 2.5**

**Neighbourhoods and Land Use in the City of Langley**



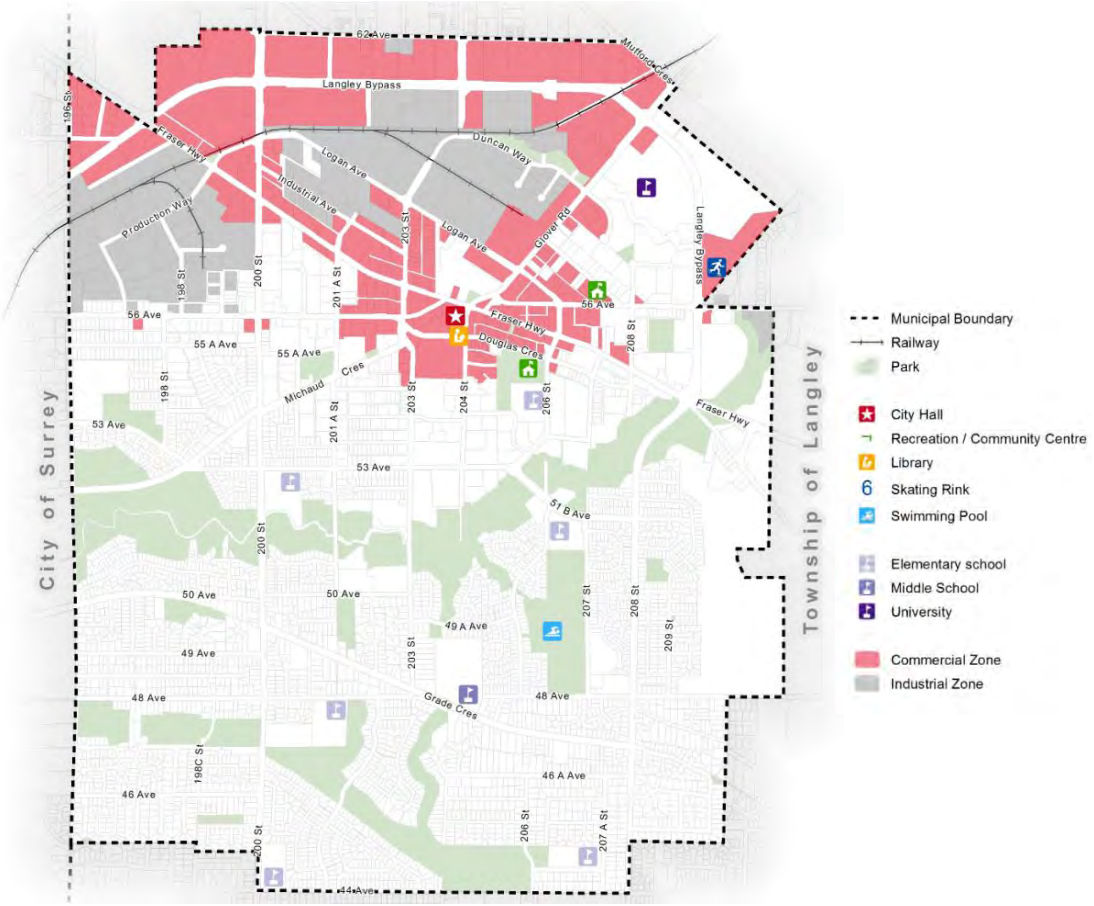

## TRANSPORTATION SYSTEM PROFILE

The following discussion highlights where, when and how people from the City of Langley typically travel today. This information provides insights to the transportation needs of the community today and possibilities to enhance mobility for the long-term.

- **Where people travel locally (i.e. major trip generators).** There are a number of key destinations in the City that generate significant driving, walking, cycling, and transit trips. In addition to roadway infrastructure, it is important that facilities support active transportation trips to and from these activity areas, allowing residents to access the many services and amenities within their community on foot or by bicycle. Key trip generators in the City of Langley are illustrated on the following page in **Figure 2.6.**

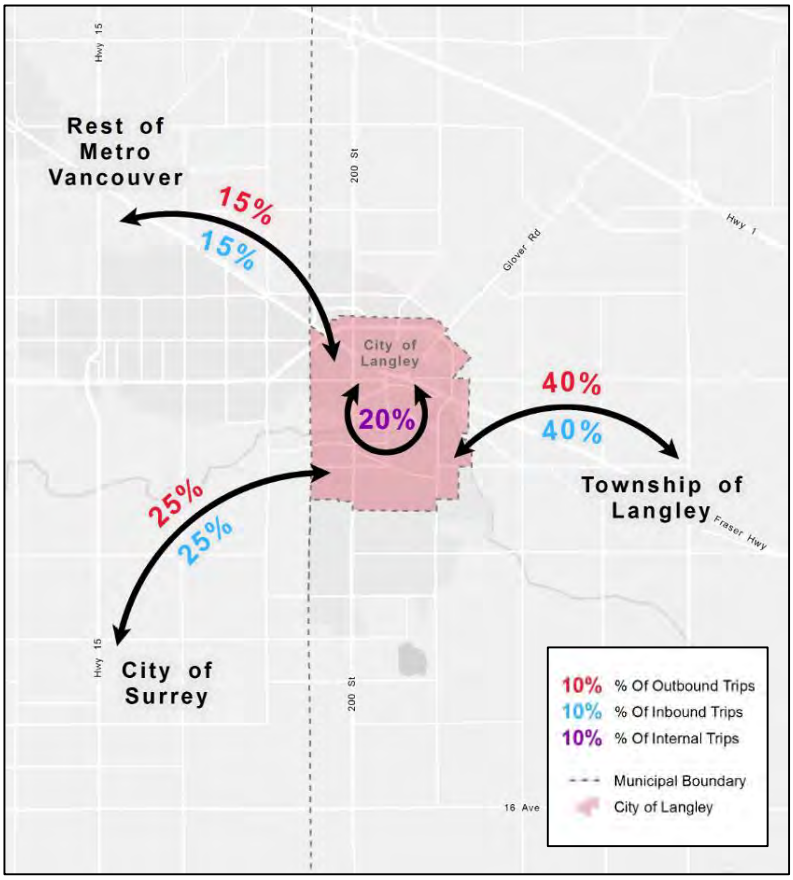
**Figure 2.6**

**Trip Generators in the City of Langley**




- **Where people go regionally.** The 2008 Regional Trip Diary reports on the travel patterns between municipalities. As seen in **Figure 2.7** on the following page, 20% of daily trips generated from the City of Langley are internal, while the majority (40%) of outbound trips are to the Township of Langley, with the remaining to Surrey and other municipalities. Likewise, the majority of trips destined for the City of Langley are from the Township. It is worth noting that the number of jobs in the City exceeds the size of resident labour force. In fact, it has one of the highest ratios of jobs to population amongst Metro Vancouver municipalities.

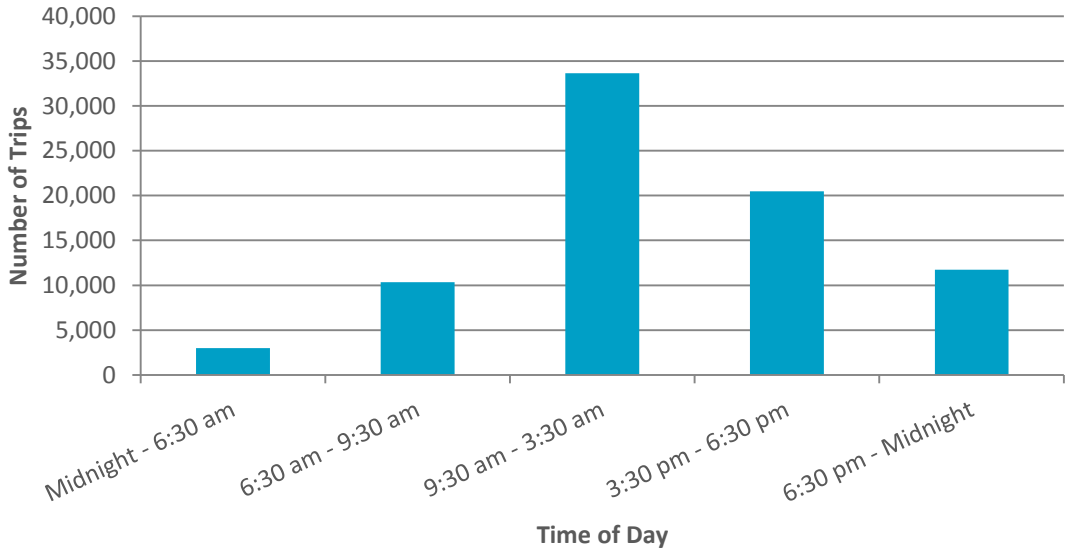
**Figure 2.7**
**Regional Trip Origin and Destinations**




- **When people travel.** When people travel also influences the transportation system demands and opportunities to use transit, walk or bike. For residents of the City of Langley, the midday period between 9:30 a.m. and 3:30 p.m. supports approximately 40% of the daily trips as shown in **Figure 2.8**. The morning and afternoon peak periods accommodate approximately 30,000 trips, or less than 40% of the daily travel.

**Figure 2.8**

**Daily Trip Distribution in the City of Langley**

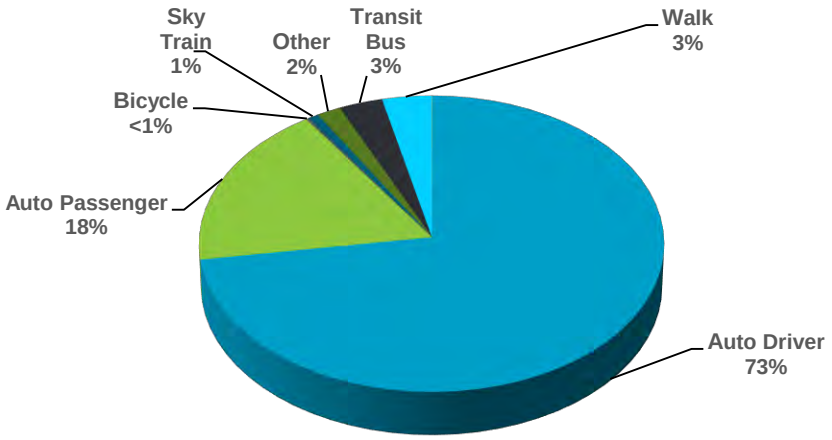



(Source: 2008 TransLink Regional Trip Diary)

- **How people travel – mode share.** TransLink's 2008 Regional Trip Diary Survey indicates that over 90% of total trips generated from the City of Langley are by car, as is shown in **Figure 2.9** below. These patterns suggest that residents are less likely to walk, bike, or take transit for day-to-day business, such as shopping, errands, and recreation as well as to work and school. These patterns also indicate that while local pedestrian and cycling facilities will serve to decrease the proportion of people driving within the City, transit services and facilities must be enhanced to serve the regional trip making to and from the City of Langley and increase sustainable travel.

**Figure 2.9**

**Mode Share of Total Daily Trips in the City of Langley**

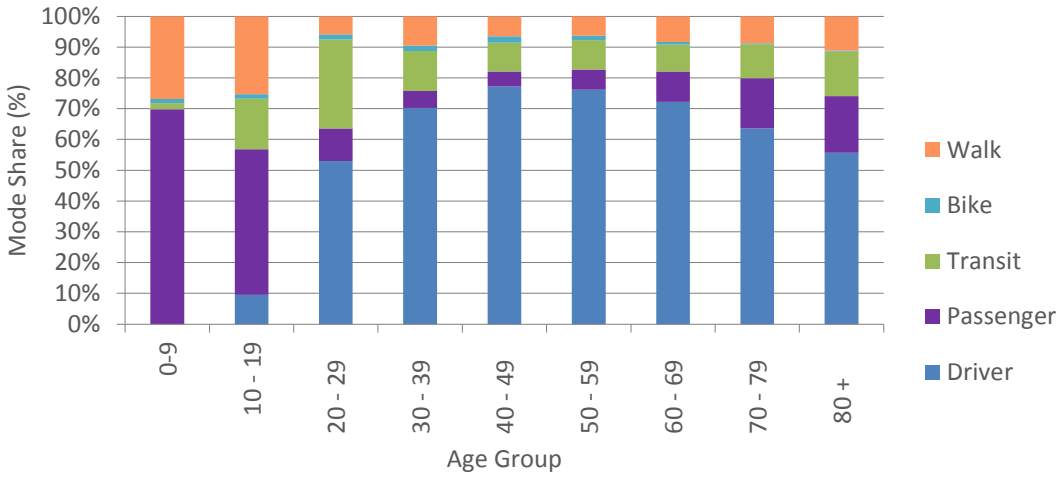



(Source: 2008 TransLink Regional Trip Diary)

- **Travel choices by age Group. Figure 2.10** shows mode share by age group across Metro Vancouver, illustrating that while driving continues to be the main form of transportation for most age groups, there is an increase in both walking and transit use among seniors, particularly those aged 70 and above. Likewise, children and youth represent a considerable proportion of walking and transit trips, activity that decreases in people aged 20 and over.

**Figure 2.10**

**Mode Share by Age Group in Metro Vancouver**




(Source: Regional Trip Diary Survey)

## 2.2 Policy Context

The MTP builds upon the directions and commitments of several key community policy documents in which the City has made significant advancements and commitments towards multi-modal transportation. In particular, several relevant plans and strategies have been developed that guide local planning and development activities, and provide direction on transportation and mobility. Many of these documents allude to a hierarchy of street users, and give priority to walking, cycling, public transit before private vehicles, and use this hierarchy to guide policy goals. These influential documents are briefly highlighted below:

- The previous **2004 Master Transportation Plan** addressed challenges associated with rapid growth in and around the community, traffic and congestion pressures from surrounding communities, a constrained network, lack of bicycle facility standards, gaps in the sidewalk system, and truck regulations. The Transit Strategy, Pedestrian Plan, Bicycle Plan, and Road

Network Plan of the MTP provided the City with a long-term vision and prioritized improvements to address local transportation challenges.

- The City's **Downtown Master Plan (2010)** outlines a vision for a revitalized and vibrant Downtown. This includes a pedestrian-oriented and mixed-use Downtown core. The Master Plan emphasizes walking, cycling, and transit, with a framework for a pedestrian zone, streetscaping, a mixed-use transit hub, and enhanced bicycle and pedestrian linkages in Downtown. This mobility vision for the future of Downtown serves as a guide for the MTP. Conversely, the MTP will provide guidance on Downtown revitalization from a transportation perspective, and strategic ways to promote sustainable modes. In addition, the City's **Accessibility & Inclusiveness Study (2007)** identifies actions for improving accessibility for individuals with disabilities, particularly in the Downtown area.


- The City's **Official Community Plan (2005)** is a very important tool at the community level to integrate local land use and transportation planning. The OCP contains transportation policies that directly support the implementation of the MTP, and contains policies that support high density and mixed use development and promotion of road management, public transit, walking, and cycling. The OCP contains direct linkages to the directions of the 2004 MTP, and supports implementation of the 2004 policies and action areas.

- The **Parks Recreation and Culture Master Plan (2013)** provides an updated direction on the development and expansion of parks, trails, and recreational facilities. The vision of the updated plan describes the city as a place where "people have healthy and active lifestyles." The Plan recommendations emphasize enhanced trail connectivity, improvements to trails and sidewalks that require upgrading, and expansion of the on-road bicycle network.

- The **Economic Development Strategy (2012)** identifies actions for capturing economic development opportunities, many of which are strongly integrated with the transportation network. These include supporting pedestrian mobility and enhanced streetscapes in Downtown, promotion of rapid transit to connect to regional destinations, and support of goods movement (trucks and rail).

- The **Wayfinding Strategy (2011)** outlines the importance of assisting residents and visitors in all modes to get around the City. The Strategy includes wayfinding priorities to make walking and cycling in the community more convenient, including providing signed routes that connect residential areas to the Downtown Core, and wayfinding at transit stops and exchanges.


- The **Community Energy and Emissions Plan (2010)** indicates that the on-road transportation sector is responsible for 35% of total community GHG emissions. The Plan identifies that GHG reductions can be achieved through enhanced walking, cycling, and transit investments, parking management, and transportation demand management strategies community-wide.

- The City's **Sustainability Framework (2010)** identifies the provision of rapid transit service, transit incentives, ride-share programs, and improved facilities and end-of-trip amenities for cyclists as opportunities to build a sustainable transportation system. From a land use perspective, the Framework identifies more enhanced pedestrian and cycling facilities in service commercial areas, and more intensive land use in the Downtown to promote walking, cycling and transit.

At a provincial level, there are several plans and strategies that provide high-level directions for the MTP in terms of growth, land use management, and transportation planning. This includes the **Climate Action Plan (2008)** which sets targets for BC to reduce its GHG emissions by 33% from 2007 levels by 2020 and by 50% by 2050. Similarly, the provincial **Climate Action Charter (2007),** developed in partnership with the Union of BC Municipalities (UBCM), is a commitment by local governments to measure and report on their community's GHG emissions profile and work toward creating compact, more energy efficient communities. Similarly, transportation-specific initiatives at the provincial level have included the **Provincial Transit Plan (2008)** which seeks to increase transit ridership in British Columbia, and speaks to providing rapid transit between Surrey and Langley.

Regional initiatives such as the **Regional Transportation Strategy (2013)** provides a strategic framework over the next 30-years with emphasis on the importance of integrating land use and transportation, while supporting sustainable transportation choices. Likewise, Metro Vancouver's **Regional Growth**

**Strategy (2011)** sets out a framework on growth management to enhance livability and sustainability, while providing guidance on transit infrastructure investments, including priorities for rapid transit investments within the Langley area.

# Chapter 3.0
# PEDESTRIAN PLAN

# 3.0 Pedestrian Plan

Walking is the most fundamental form of transportation and forms part of almost every trip in the City of Langley, whether that trip is made by car, transit, or bicycle. Walking can be an attractive and convenient alternative to driving for short trips, especially where destinations are close and connections between them are convenient, such as in the Downtown area of the City. Just like any mode of transportation, many people will choose to walk if it is a comfortable and convenient way to travel. In addition, there are many benefits to promoting walking and active transportation in general, as residents that choose to walk and cycle for transportation or recreation get more exercise, which can help combat health issues such as obesity, diabetes, and chronic and cardiovascular diseases.

The City of Langley has the advantage of being a small and compact city, with many pathways, shortcuts, and trails that facilitate walking. The compact downtown also places many services and amenities within walking distance of neighbourhoods and civic destinations. However, challenges that must be overcome to get even more people to walk in the City include addressing gaps in the provision of sidewalks, uncomfortable walking environments, lack of lighting, and unsafe crossings. In industrial and commercial areas (i.e. Downtown Langley), traveling on foot can be unappealing, as auto-oriented development, long distances, and high traffic volumes can make walking uncomfortable and inconvenient.

To address these challenges, future pedestrian improvements in the City are strategically oriented towards areas with significant potential for increasing walking travel rather than disperse improvements throughout. In this regard, one of the key strategies of the Pedestrian Plan is to enhance the walkability of areas with high pedestrian demand, such as the Downtown, commercial areas, industrial areas, and around schools. A range of treatments are identified to enhance walkability, including streetscape improvements (i.e. landscaped boulevards, street trees, public art, lighting, and pedestrian amenities), as well as enhanced crossings and accessibility. Additional initiatives include focussing on trail network connections, and support programs that encourage active transportation.

## 3.1 Local Walking Characteristics

With increased scale, density and mixture of land uses, the demand for, and opportunities to increase walking trips will continue to grow. The following discussion highlights some of the characteristics of walking trips in the City.

- **Mode Share.** According to the 2006 census, approximately 6% of City residents walk to work. The 2008 Regional Trip Diary Survey reports that approximately 4% of all daily trips originating in the City of Langley are made by walking.

- **Trip Purpose.** The Regional Trip Diary Survey states that the majority of walking trips in the City of Langley are made for personal business (28%), followed by shopping (23%), pick-ups and drop-offs (20%), and to go to work (16%).

- **Trip Destination and Distance.** The vast majority of walking trips originating in the City remain within the city (70% of all walking trips), with the remainder of all walking trips destined for the Township of Langley. The majority of walking trips (72%) are less than 3km in distance, equivalent to approximately a 30-40 minute walking distance.

- **Walking Activity by Age.** 27% of all daily walking trips in the City of Langley are taken by those under 19 years of age. In addition, 25% all daily walking trips are by those aged 60 and over. This indicates a significant presence of vulnerable user groups that rely on walking to travel around the community, demonstrating the continued need for a safe, connected, and accessible pedestrian network for residents all ages and abilities.

## 3.2 Key Issues and Opportunities

Public engagement and consultation activities provided input and feedback on key transportation issues and opportunities facing the City today and in the long-term. Some of the key themes that emerged during the consultation included:

- **More pedestrian-oriented streets** within the Downtown core, including McBurney Lane, Fraser Highway, and Douglas Street with links to surrounding neighbourhoods;
- **Trail improvements** including more lighting, pedestrian and bicycle separated trails, and more off-leash areas;
- **Sidewalk improvements,** including sidewalk widening, better maintenance, lighting and accessibility features;
- Inadequate **wayfinding;**
- **Lack of sidewalks** creating a fragmented network;
- **Unsafe places** to walk (i.e. 203rd Street to Downtown), including lack of separation between sidewalks and roadway (no landscaping);
- **Limited pedestrian access** along 204th Street between Langley Bypass and 62nd Avenue;
- **Unsafe intersection** crossings;
- Conflicts with **traffic volumes**, speeds and short-cutting
- More **traffic calming**; and
- **Community services and amenities** not within close walking distance.

## 3.3 Pedestrian Plan Directions

The Pedestrian Plan guides the City in completing key elements of the pedestrian network that will support and encourage walking in areas with high walking demand and/or potential. Investing in pedestrian facilities in areas with high walking activity or with high potential can also position walking as a more convenient and attractive travel choice. In some areas of the city, providing more sidewalks to complete the network for walking trips is essential. For many areas, such as the Downtown, extraordinary treatments are required to make walking even more attractive. This will require treatments within and leading to high activity 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 City increases, pedestrian facilities should also be designed to overcome accessibility challenges.

***Directions of the MTP Pedestrian Plan:***

- Enhance Sidewalk Coverage
- Supportive Facilities
- Crossings & Accessibility
- Trails & Pathways
- Support Programs

The walking strategies of the Pedestrian Plan focus on enhancing sidewalk coverage in areas with high pedestrian demand (or activity), improving pedestrian crossings and accessibility, enhancing trail connections, and pursuing softer measures that support walking education and awareness.

### 3.3.1 Enhance Sidewalk Coverage

A key message heard from the City of Langley residents was the need to address gaps in the sidewalk network, as fragmented sidewalks can discourage walking, even for short trips. Bringing the City's sidewalk network up to standard would require significant financial resources. In light of this, the MTP Pedestrian Plan focusses sidewalk coverage improvements in areas with the highest pedestrian demand and potential. The areas within the City of Langley with high pedestrian demand and potential are identified as **Downtown**, **employment areas** (industrial and commercial areas outside of Downtown), **schools**, and **bus stops**. There are two approaches to enhance walkability in these areas:

- Provide **enhanced sidewalk coverage** to fill in gaps, meet sidewalk standards, and accommodate pedestrian demand; and

- Provide **pedestrian amenities** in critical areas to make walking even more attractive.

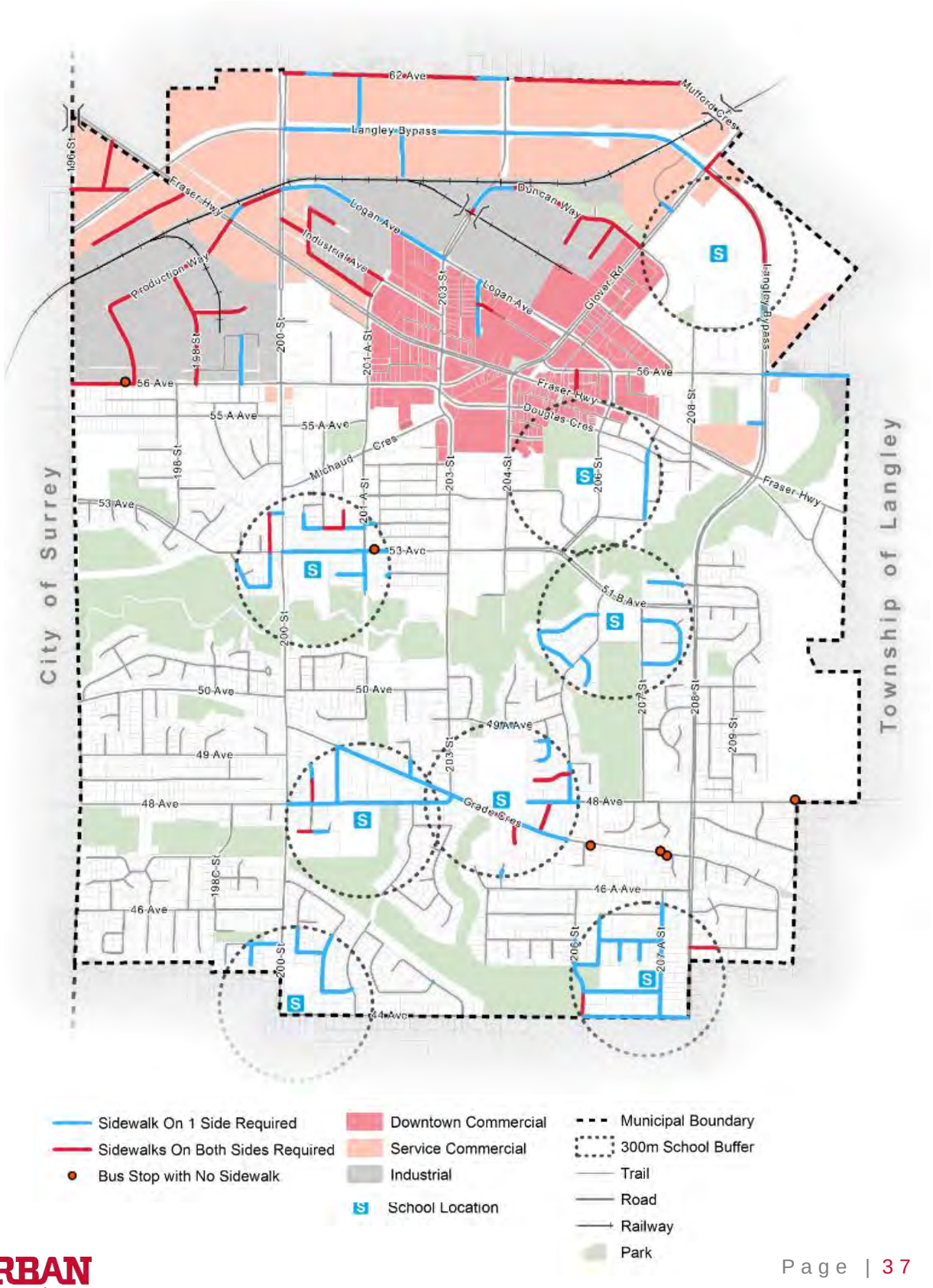
Each of the high pedestrian activity areas in the City are described below along with associated sidewalk coverage recommendations. While standard sidewalk coverage should apply in key pedestrian areas, the recommended sidewalk improvements for priority areas are illustrated in **Figure 3.1.**

**Downtown Langley** is where walking can become the primary mode of travel and should be prioritized over other modes. Downtown is at the intersection of the road, transit, walking and bicycle networks, and offers a significant opportunity to create a pedestrian-oriented core. Downtown supports a diverse range of land uses and higher densities, which mean people can walk between several locations for a variety of needs, such as work, shopping or personal business. Due to the presence of the commercial services and amenities in Downtown, the area currently experiences the highest level of pedestrian demand in the City and will continue to be an area of significant pedestrian activity as the City grows. Guidelines for sidewalk provision in areas zoned Downtown Commercial are:

- Arterial Roads – Provide sidewalks on two sides
- Collector Roads – Provide sidewalks on two sides
- Local roads – Provide sidewalks on two sides

**Figure 3.1**

**City of Langley Sidewalk Priorities**



- City of Langley's commercial and industrial areas support the largest employment levels in the City**,** that act as major trip generators and destinations. Outside of Downtown, commercial areas are located adjacent to Langley Bypass (including Langley Centre), with industrial employment areas found around Production Way, Logan Avenue, and Duncan Way. Currently, the land uses in these areas are more dispersed and lower-density, with longer distances in between destinations that encourage automobile use. However, due to the compact nature of the City, many of these employment areas are reasonably close to residential neighbourhoods and Downtown, and are almost entirely within 400m of a bus stop. Many of the roads serving industrial areas have utilities, ditches, and lack of curb and gutter which make walking uncomfortable, especially if no sidewalk is present. These conditions can also make sidewalk infill more costly, and is thus likely only to occur over the longer-term with redevelopment activities. In particular, the City will want to continue working with the Ministry of Transportation and Infrastructure (MoTI) on improving sidewalk facilities along the Langley Bypass through redevelopment. Guidelines for sidewalk provision in areas zoned Industrial and Service Commercial Area are:

  - Arterial Roads – Provide sidewalks on two sides
  - Collector Roads – Provide sidewalks on two sides
  - Local roads – Provide sidewalks on two sides

- **Schools** typically attract and generate a high number of walking trips, especially at peak times. Good sidewalk coverage in the immediate area around schools should be provided to encourage more youth, children, and parents to walk to and from school. Schools identified in this analysis include elementary, secondary, and Kwantlen Polytechnic University. Guidelines for sidewalk provision in and around schools are:

  - Sidewalks provided on both sides of all roads, within 300m of a school (excluding cul-de-sacs where no pathway exists)

  Recognizing that many students walk more than 300m, it is important to ensure that, in the long-term, the sidewalk network around school precincts is complete.

- **Bus stops** are areas of high pedestrian activity, as all bus passengers must walk to and from the bus stop at either end of their journey. Providing sidewalk facilities around bus stops is important to facilitate transit access, and to making the transit experience more safe and enjoyable for passengers. It is recommended that all transit stops be served by an adjacent sidewalk. **Figure 3.1** identifies all bus stops that currently lack an adjacent sidewalk.


### 3.3.2 SUPPORTIVE PEDESTRIAN FACILITIES

In addition to sidewalks, there are a number of urban design features that can make Downtown and other high activity areas more walkable and attractive. Urban design features that can enhance and improve pedestrian infrastructure and crossings are already seen in some areas of Downtown (i.e. McBurney Lane, Fraser Highway) including pavers, planters, benches, and banners. Other features to enhance the walking environment can include street trees, café seating, curb extensions, accessible bus stops, and street lighting.

It is recommended to continue focussing urban design features primarily in Downtown, where improvements can benefit many people and enhance the experience of walking in the core area. The City's Downtown Master Plan identifies five major street corridors that should be revitalized over the short- to medium-term, providing areas of opportunity where urban design features should be focussed to continually improve the walking experience in Downtown. These corridors are west, central, and east Fraser Highway, Douglas Crescent, Glover Road / 204th Street, 203rd Street and Logan Avenue.

Outside of Downtown, improving the walking experience city-wide should also entail providing urban design components in and around other key areas that generate walking trips, such as schools, civic/community centres, and employment areas. It is important to provide urban design features around key activity areas on public right-of-way, and to work with developers to provide amenities on private property. Guidelines for the provision of supportive urban design features in City's high activity pedestrian locations are summarized in **Table 3.1** and briefly described below.

**Table 3.1**

**Sidewalk Provision Guidelines**

| | Downtown* | Schools, Civic, Community Centres | Industrial Areas |
|---|---|---|---|
| Wider Sidewalks | ✓ | ✓ | |
| Boulevards | ✓ | ✓ | ✓ |
| Accessible Bus Stops | ✓ | ✓ | ✓ |
| Wayfinding/signage | ✓ | ✓ | ✓ |
| Street furniture | ✓ | ✓ | |
| Planters | ✓ | | |
| Narrower crossings | ✓ | ✓ | |
| Garbage cans | ✓ | ✓ | |
| Street lighting | ✓ | ✓ | ✓ |
| Public facilities | ✓ | | |
| Building design guidelines | ✓ | | |
| Weather protection | ✓ | | |

**Focus on Fraser Highway, Douglas Crescent, Glover Road / 204th Street, 203rd Street, and Logan Avenue.*

- **Enhanced sidewalk clear width** to make walking more comfortable for all, particularly in high activity areas. Sidewalk clear width of less than 1.5m is generally considered quite narrow, where walking in single file may be necessary when passing other pedestrians. Sidewalk clear widths of 1.5 to 2.0m can improve pedestrian accessibility and comfort, and clear widths greater than 2.0m (i.e. what is seen in many areas of Downtown) can comfortably accommodate many pedestrians and make for a more pleasant walking experience. In addition, scooter traffic can be accommodated. It is also important that the placement of features such as bus stop amenities, garbage cans, bicycle racks, and planters does not reduce sidewalk clear width to maintain accessibility. Wider sidewalks (greater than 1.5m) should be concentrated in Downtown, around schools and multi-family areas where more people are and can be attracted to walking.

- **Boulevards** between the sidewalk and the roadway place a buffer in between pedestrians and moving vehicles which can make the walking experience more pleasant. Boulevards also create a space to place street lights, poles and furniture.

- **Street lighting** can ensure pedestrian comfort as well as safety and security at all times of day. Street lighting is especially important in the winter for off-street pathways that are part of the pedestrian network.

- **Wayfinding** is an important measure to ensure people can navigate between key destinations and neighbourhoods. The City will continue to build from the pedestrian level wayfinding signage implemented in downtown (2013).

It is important to ensure that sidewalks and entrances to pedestrian crossings remain **free from obstructions**, so that people of all abilities can safety navigate the sidewalk clear width and access crossing areas.

- **Pedestrian amenities** can improve the attractiveness and comfort of walking in high activity areas, including the provision of litter and recycling bins, planters, banners, and street furniture. These amenities should be located outside of the travelled portion of the sidewalk, and are essential to making "people-focused places" and creating environments that are comfortable and interesting for pedestrians.

- **Street trees** can be incorporated into sidewalk zones with high pedestrian demand and where parking does not provide a buffer between the road and sidewalk. Street trees not only play a role in supporting pedestrian comfort and safety, but also add a 'green' aesthetic element to the streetscape.

- **Weather protection** can provide more comfortable conditions for pedestrians, primarily to provide protection from rain (though this can also extend to snow and sun protection) and to create more inviting and sheltered outdoor spaces year -round.

- **Laneways or alleyways** can also be subject to urban design enhancements, especially as Downtown Langley revitalizes, and development moves toward what is envisioned in the Downtown Master Plan. For example, alleyways can be converted into more vibrant spaces that welcome pedestrians by providing alternative routes to streets. They can support business-supporting features such as patios, as well as design elements such as public art, graffiti walls, lighting, and planters.

  Laneways can also provide short-cutting opportunities for pedestrians, as they provide alternative routes removed from major streets. Where businesses back on to lanes, lanes do not typically make for very inviting walking environments, but nonetheless, they are well-traveled by pedestrians in the City and provide a key opportunity to improve Downtown walkability (some laneways are on private property, and will require working with property owners and businesses to address improvements). Some locations for laneway improvements can include Salt Lane, Locke Road, the east-west lane between Fraser Highway and Douglas Crescent (between 204th to 206th Street), as well as the lane that bisects Salt Lane and connects to 206th Street.

### 3.3.3 Crossings & Accessibility

Accessible, safe, and visible crossings are an important part of a quality walking environment in the City of Langley, especially as there is a growing number of aging residents, and a strong family-oriented demographic. For vulnerable road users such as youth, children and seniors, it is important that crossings be designed to support safety and comfort within the pedestrian network, so that residents and visitors of all ages and abilities feel confident walking in the City. The City of Langley has already installed

curb letdowns and audible signals at many of its signalized intersections, and also has some pedestrian countdown timers in place at intersections in Downtown and near schools. A range of crossing and accessibility treatments should be considered citywide, with more extensive treatments in high activity areas of the Downtown, employment areas, and school precincts. Building off the Downtown Master Plan and the Accessibility and Inclusiveness Plan, crossing improvements should be focussed along the City's primary corridors and gateways at the following intersections:

**Primary Corridors & Gateways:**

- Glover Road at Duncan Way, Logan Avenue, and 56th Avenue;
- Park Avenue at 204th Street;
- Fraser Highway at196th Street, 200th Street, 201A Avenue, 203rd Street, 204th Street, 206th Street, and Production Way;
- Douglas Crescent at 201A Street, 203rd Street, 204th Street, and 206th Street;
- 200th Street at Michaud Crescent, 53rd Avenue, and 48th Avenue;
- 203rd Street at 53rd Avenue and Grade Crescent;
- 208th Street at 48th Avenue and 51B Avenue;
- 51B Avenue at 206th Street; and
- Logan Avenue at 56th Avenue.

**Appendix A** provides an inventory of the intersection locations listed above that require audible signal and countdown timer upgrades. In addition to the above locations, pedestrian crossings along the Langley Bypass should also be improved, since street width and vehicle volumes may make the pedestrian crossings feel uncomfortable. As indicated by ICBC data, many intersections along Langley Bypass are also high collision locations for pedestrians, and addressing safety at these intersections can effectively make walking more safe and comfortable experience city-wide. The Langley Bypass is under provincial jurisdiction and the City should work with MoTI to improve pedestrian safety along the Langley Bypass corridor.

The foundation guidelines for the provision of crossing and accessibility treatments in City's high pedestrian areas are summarized in **Table 3.2** and briefly described below.

**Table 3.2**

**Crossing & Accessible Infrastructure Provision Guidelines**

| | Primary Corridors & Gateways | School & Civic Areas | Employment Areas |
|---|---|---|---|
| Curb Letdowns | ✓ | ✓ | ✓ |
| Narrower Crossings | ✓ | ✓ | |
| Accessible Pedestrian Signals | ✓ | ✓ | |
| Countdown Pedestrian Timers | ✓ | ✓ | ✓ |
| Marked Crossings | ✓ | ✓ | ✓ |
| Enhanced Crosswalks | ✓ | ✓ | |

- The provision of **curb letdowns**, with preference for accessible curb letdowns which are aligned directly with crosswalks where possible.

- **Narrower crossings** such as curb extensions and median islands, which benefit pedestrians by improving visibility and reducing crossing distances. Curb extensions can be implemented by extending the sidewalk across the curbside parking lane.

- **Accessible pedestrian signals** at signalized intersections for areas with high pedestrian activity, to assist pedestrians with disabilities. Accessible signals can provide a higher degree of confidence to pedestrians crossing major streets and generally receive positive support among all age groups. Accessible signals communicate when to walk or not walk in non-visual formats, such as through audible tones, speech messages, or vibrating surfaces. The use of braille on pedestrian signals can also enhance the accessibility of intersection crossings.

- **Countdown timers** at key intersections to provide timing information to all users.

- **Tactile strips** to let pedestrians with physical or cognitive disabilities of intersection approaches;

- **Extended pedestrian phases** can allow more time for pedestrians to cross the street, which can be particularly beneficial to seniors (and children) who may take longer to cross streets.

- **Marked crossings** to enhance the visibility and safety of crossing pedestrians, where warranted.
- **Enhanced pedestrian crossings,** including special crosswalks and pedestrian half signals, where warranted.

### 3.3.4 TRAILS & PATHWAYS

The 2013 ***Parks, Recreation and Culture Master Plan*** identifies a network of off-street trails and pathways, and areas of improvement to make the trail system more safe, comfortable, and integrated with other areas of the City. As such, the Pedestrian Plan support and uphold the recommendations within the ***Parks, Recreation and Culture Master Plan*** that enhance walkability, including the recommendations to:

- Expand the trail system to provide connectivity, with links to potential destinations;
- Improve trails and sidewalks that require upgrading;
- Design and build infrastructure to support the trail system;
- Ensure that all trails are maintained appropriately;
- Provide a higher level of surveillance along trails to deter inappropriate uses;
- Prepare standards for park and trail way-finding signs that are consistent with the park identification signs and the Wayfinding Strategy; and
- Plant more trees in City parks and on road boulevards and medians.

Connections to surrounding municipalities could also be supported by the trail system. For example, the City will want to work with the City of Surrey and Township of Langley in exploring the possibility of a multi-use pathway along the municipal boundary on 196th Street from 53rd Avenue to 50th Avenue.

Additional areas of opportunity within the trail network include:

- Providing adequate **trail lighting**, including lighting that decreases light pollution and is energy efficient – is an critical area of opportunity to encourage trail use outside of daylight hours, while promoting safe and comfortable off-street environment for pedestrians and cyclists.

- **Mid-block crossing treatments** may be used to connect pedestrian generators on both sides of the street where upstream or downstream signalized intersections are inconvenient and unlikely to be used. Within the City of Langley, mid-block crossings may be used within the downtown areas, and to provide convenient and safe crossings to connect off-street trails. For example, the City will want to examine the potential of a mid-block crossing of 200th Street at Penzer Bike Park with a pedestrian signal and median area or an extension of a pathway to 48th Avenue. Further review of options should be completed through a planning and design process.

- **Improve access** to the trail network. In general, multi-use pathway access should be designed to restrict access from unauthorized motor vehicles (i.e. cars, motorcycles, all-terrain vehicles). The use of removable bollards can be explored to facilitate access to pathways for all users, while maintaining access for maintenance and emergency vehicles. Bollards should be properly placed to minimize the obstruction for cyclists and pedestrians, and should be placed some distance from the intersection so users are focussed on the cross-traffic rather than the bollard. Bollards should also be reflective for night-time visibility.

- The City's **Subdivision and Development Servicing Bylaw** should incorporate requirements that developers provide pathways through neighbourhoods and cul-de-sacs, in order to enhance the ability of pedestrians to short-cut and make more direct connections in residential areas with circuitous road networks.

### 3.3.5 Pedestrian Support Programs

Supportive measures, such as programs, events, and education and encouragement initiatives should also be in place to encourage more people to walk in the City of Langley. Often, supportive programming targeted at walking is combined with programs to support cycling as well, as both provide alternatives to driving for short-distance and local trips. Sharing information and awareness about walking and cycling is a cost-effective initiative that can enable people to feel more safe and comfortable using active modes to get around the City, while encouraging increased use of existing pedestrian (and cycling) facilities.

- **Safe Routes to School** can be delivered through partnerships with the School District, and can include programs that promote walking (and cycling) education and road safety awareness. Safe Routes to School programming involves investigating engineering, encouragement, enforcement, education and evaluation measures that can improve the safety for youth and children walking and cycling to school sites. This can include working with schools and students to identify preferred walking and cycling routes to school, identifying areas where infrastructure improvements are needed, and developing volunteer-based programs (i.e. crossing guards, student valet programs) to promote better traffic safety during drop-off and pick-up times.

- **Mobile applications** can be used to give people better information on walking in the city, that can include interactive features that allow people to identify routes or comment on favorite or preferred places to walk in the City of Langley.

- A **dedicated City webpage** providing general information about the benefits of walking and cycling in the City, information on popular walking (and cycling) routes, pedestrian and bicycle maps, and other education/safety resources. The website could potentially be a combined 'walking and cycling in the City of Langley's webpage.

- **Walking education & awareness initiatives**, as promoted through the City and/or partnerships with ICBC, RCMP, school district, and other organizations.

- Host and/or promote **community events** such Langley Walk, World Walking Day, iWalk, Move for Health, and Active Month.

- A **parklet program** or similar initiatives that promote active and vibrant streets through the conversion (temporary or permanent) of on-street parking into public spaces, such as restaurant patios or seating areas.

- **Signage** to guide people around activity areas (i.e. Downtown, Douglas Park, Nicomekl trail network). Enhanced wayfinding signage can benefit residents and visitors, to help orient pedestrians to key destinations and commercial areas of 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, and should be designed to meet the needs of visually impaired.

## 3.4 Capital Costs & Priorities

The Pedestrian Plan includes recommendations on sidewalk infill and construction projects to encourage walking within identified high pedestrian activity areas (shown earlier in **Figure 3.1**). Based on recent construction pricing, the unit cost of $300 per linear metre of new sidewalk has been applied to develop cost estimates for sidewalk improvements, as can be seen in **Table 3.3**. These costs include curb and sidewalk construction, but do not account for significant driveway rehabilitation or landscaping and right-of-way acquisition.

Priorities have also been established, with a focus on filling in gaps in the sidewalk network in Downtown, commercial areas and around bus stops in the short-term (i.e. over the next 1-5 years). Enhancing sidewalk connections around schools is identified as a medium-term priority (5-10 years). Providing more sidewalks in the City's industrial/employment areas is identified as a long-term priority (10 years and beyond), since employment growth in these areas over time will lead to more pedestrian activity in the long-term. The cost of implementing the short-term sidewalk improvements is estimated to be **$2.5 million**, or approximately $0.5 million per year.

As shown in **Table 3.3** (and summarized in **Appendix A**)**,** pedestrian crossing improvements in the form of countdown timers and audible signals have also been identified for 26 intersections, with an identified cost of approximately $100,000 in the short-term, or about $25,000 per year. In total, the capital pedestrian improvements identified in the Pedestrian Plan will cost approximately **$0.5 million per year over the short-term** to implement**.** The locations of sidewalk network improvements and crossing improvements are detailed further in **Appendix A.** These investments can be funded through

local programs such as Development Cost Charges (DCCs) and property taxes, as well as through regional or provincial partnerships.

**Table 3.3**

**Pedestrian Plan Improvements and Priorities**

| Pedestrian Plan Directions | Short Term (1-5 years) | Medium Term (5-10 years) | Long Term (10 years +) |
|---|---|---|---|
| **1. Enhance Sidewalk Coverage** | $1.8 mil ($360,000/year) | $3.4 mil ($680,000/year) | $2.8 mil ($280,000/yr) |
| **2. Supportive Facilities** | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) | $0.3 mil ($25,000/year) |
| **3. Crossings & Accessibility** | $0.5 mil ($100,000/year) | $0.5 mil ($100,000/year) | $0.5 mil ($100,000/year) |
| **4. Trails & Pathways** | As per Parks and Recreation Master Plan | | |
| **5. Support Programs** | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) | $0.3 mil ($25,000/year) |
| **Total** | **$2.5 mil ($0.5 mil/year)** | **$4.2 mil ($0.8 mil/year)** | **$3.8 mil ($0.4 mil/year)** |

# Chapter 4.0
# BICYCLE PLAN

# 4.0 Bicycle Plan


Cycling is an important mobility option in the City of Langley for both commuting and recreation. The City has the advantage of being a relatively compact community, and developing a comprehensive bicycle network can make cycling a more convenient and attractive option, especially for short-distance trips. The City also boasts an extensive off-street pathway network through the Nicomekl floodplain and BC Hydro right-of-way, which provide high quality and comfortable east-west bicycle connections through the City. Much of the City is relatively flat, which also supports ideal conditions to encourage and support cycling activities.

Today, most of the bicycle routes in the City are shared with vehicles or on roads with high traffic volumes and speeds, which are not comfortable for many people and likely discourage many from cycling for short trips. Critical gaps in the bicycle network also make it difficult to make convenient cycling connections between certain areas of the community.

The MTP Bicycle Network Plan envisions a bicycle network of higher quality north-south and east-west cycling 'mobility spines', with neighbourhood route connections, and regional connections to the bicycle networks in Surrey and Township of Langley. Supportive policies and programming are also included as part of the Bicycle Network Plan, in order to encourage more education and awareness around cycling locally. Ultimately, the strategies seek to increasingly position cycling as a safe, comfortable and convenient mobility option for residents and visitors to the City of Langley.

## 4.1 Local Cycling Characteristics

Although bicycle travel to, from and within the City accounts for a very small portion of all trips, the conditions for cycling in terms of trip generators and topography makes the City of Langley a very bikable community. The following discussion highlights some of the bicycle travel characteristics within the City of Langley.

- **Mode Share.** According to the 2006 Census, 1% of trips to work in the City of Langley were made by bicycle. The 2008 Regional Trip Diary Survey states that less than 1% of all daily trips are made by bicycle. This is slightly lower than the regional average of 1.6% of all trips made by bicycle.

- **Trip Purpose and Distance.** The 2008 Regional Trip Diary reports that most bicycle trips in the City of Langley are made for the purpose of going to work and home. The majority of cycling trips (75%) are 5 km or less in distance, indicating an average trip time of 15-20 minutes.

- **Trip Destinations.** The majority (82%) of bicycle trips originating in City have destinations within the Township of Langley, with the remainder of trips staying within the City.

- **Cycle Trips By Age.** The age profile for bicyclists in the City of Langley is dominated by youth and children, with 57% of daily cycle trips taken by those 19 and under. Approximately 25% of bicycle trips are made by those in their forties, while the remainder of daily bicycle trips are by those in their fifties.

## 4.2 Key Issues and Opportunities

Public input and feedback was gathered through various public consultation activities on key transportation issues and opportunities in the City, including cycling. Key issues around cycling that emerged from the feedback included:

- **More off-street pathways**, so cyclists can have route options away from vehicle traffic;
- More **bicycle lanes**;
- More **bicycle parking** in shopping districts, schools, and near the hospital;
- Better **end-of-trip facilities** for employees and customers;
- Need for more bicycle **wayfinding and signage**;
- More **bicycle route coverage** throughout the city's local neighbourhoods; and
- Safer **bicycle crossings**.

## 4.3 Bicycle Plan Directions

The Bicycle Network Plan focusses on expanding the network and providing additional safety and convenience measures that will support more people to bicycle for their day-to-day needs in the City of Langley. In particular, the Bicycle Plan seeks to fill in gaps within the city-wide bicycle network, in order to provide enhanced connectivity across the community and to tie in with regional bicycle connections outside of the City's boundaries. Providing more designated facilities, such as bicycle lanes and neighbourhood bikeways, that better connect cyclists between neighbourhoods, Downtown, employment areas, and trails can position cycling as more convenient and attractive choice, particularly for short local trips. While

***Directions of the MTP Bicycle Plan:***

- Bicycle Facility Standards
- Develop and Expand the Network
- Improved Crossings
- Bicycle Parking
- Support Measures

expanding and enhancing the network is fundamental to ensure cycling is a convenient travel option in the City of Langley, the Bicycle Plan also seeks to provide certain safety and convenience elements, such as crossing treatments and bicycle parking, which can make cycling even more attractive. Lastly, the Bicycle Plan complements infrastructure and facilities with guidance on support programs and initiatives that can encourage more residents and visitors to cycle in Langley.

### 4.3.1 Bicycle Facility Standards

To attract more people to cycle in Langley, high quality bicycle facilities must be provided on key cycling routes that are safe and comfortable. It is recommended that the key north-south and east-west routes in the City integrate comfortable bicycle facility and route design, through the use of bicycle lanes, off-street facilities, and neighbourhood bikeways, so that cyclists of all ages and abilities can feel safer using their bicycle for transportation. There is a range of different types of bicycle facilities that can be considered in different contexts, and which have varying levels of appeal. **Figure 4.1** illustrates a bicycle facility hierarchy, in which facilities physically separated from vehicle traffic, such as off-street pathways and cycle tracks, are the most comfortable and attractive to existing cyclists and those interested in cycling more. The middle of the spectrum has facilities, such as bicycle lanes and traffic calmed routes, which have dedicated features and/or space for bicyclists.

**Figure 4.1**
**Bicycle Facility Hierarchy**

It is recommended that these standards be integrated into the City's bicycle infrastructure planning, and that the design of cycling mobility spines in the City align with more comfortable on and off-street facilities, such as multi-use pathways, local street bikeways and bicycle lanes. Cycle tracks are recommended to be considered as a potential option in Downtown Langley, where there are high levels of vehicle traffic, pedestrian traffic, and cycling traffic. There are also some corridors with high traffic speeds that may be uncomfortable for many cyclists, but provide strategic connections to Downtown services and amenities, where protected bicycle facilities could enhance the comfort for cyclists.

### 4.3.2 Expand the Network: Mobility Spines & Neighbourhood Routes

The recommended bicycle network for the City of Langley is built off a network of key north-south and east-west cycling 'mobility spines' that connect neighbourhoods south of the Nicomekl River to Downtown, and to key employment and industrial areas. A supportive network of neighbourhood routes is also identified to provide local low-stress route connections to and between the mobility spines. Overall, the recommended bicycle network provides links between key destinations of the City, and ensures that every school is accessed by a bicycle route. The bicycle network has been designed to provide route spacing every 200m – 400m in Downtown, with route spacing of approximately 500m outside of Downtown. Where possible, recommended bicycle facilities have been selected which incur minimal impact on vehicle capacity of the roadway. The recommended bicycle network is shown in **Map 4.2**, with a further description of the key features below:

- **Cycling Mobility Spines.** The recommended spine network of north-south and east-west bicycle routes serves to connect major destinations in the City, including the Downtown, employment and industrial areas, Kwantlen Polytechnic University, Nicomekl trail network, and residential neighbourhoods to the south. The mobility spines target areas where there is greatest potential to increase the number of cycling trips, such as within surrounding high-density neighbourhoods.
  - **North-South Cycling Mobility Spines.** The priority north-south mobility spines are on 203rd Street and 208th Street. 203rd Street provides a convenient central connection from neighbourhoods in the south, straight into Downtown Langley, and then beyond into Langley Bypass commercial areas. A bicycle lane is currently recommended for this corridor, though the City is currently evaluating whether the 203rd Street Bridge can accommodate a separated pathway. In general, there is an opportunity to upgrade some of the facilities on these mobility spines to protected facilities in the future. In particular,

an area of opportunity for a separated bicycle facility (cycle track or multi-use pathway) exists along south 203rd Street (between Downtown and the Nicomekl trails), and is recommended for consideration in the long-term.

- 208th Street provides a convenient north-south route on the city's east-side, connecting the Township's Brookswood neighbourhood in the south, to Kwantlen Polytechnic University and the Langley Bypass in the north. On the segment of 208th Street that bisects the Nicomekl floodplain, two optional configurations should be explored in greater detail, considering design requirements, impacts and costs. The first option includes the widening of 208th Street and the river crossing. This concept may require a retaining wall structure along portions to minimize encroachment into the floodplain area. The second option is a new west side 3.5m pathway with a crossing from 51B Avenue through to Fraser Highway. This option also includes a new river crossing structure as well as a crossing at 51B Avenue for northbound cyclists. Both optional treatments are estimated to be approximately $2 million.

- **East-West Cycling Mobility Spines.** East-west cycling mobility spines include both on and off-street facilities. First, the Nicomekl trail network is recommended as the primary mobility spine, providing a safe and comfortable off-street route through central City of Langley. 53rd Avenue and 48th Avenue provide more direct on-street east-west connections on either side of the river, primarily accessing different residential neighbourhoods, with links to the north-south routes. Facilities on these east-west spines include bicycle lanes, multi-use pathways, and neighbourhood bikeways.

- **Neighbourhood Routes.** These routes are primarily in the form of bikeways that connect to residential areas to cycling mobility spines, and are primarily located on lower volume local streets. Bikeways require lower-cost treatments such as wayfinding signage, pavement markings, and traffic calming measures to encourage low traffic volumes and speeds that make it comfortable for cyclists to share the road with vehicles. The bikeways are also designed to support more fine-grained access to the trail network than the major

mobility spines can provide.

- **Regional Integration.** Recognizing the desire for many City of Langley residents to travel to and from destinations in Surrey and Township of Langley, it is critical that the city's bicycle network be integrated with both existing and planned bicycle facilities in neighbouring communities. Bicycle route connections are identified in the City of Surrey's 2012 Cycling Plan, as well as the Township of Langley's 2012 Ultimate Cycling Network. These regionally serving connections are described in more detail below (and indicated by arrowheads on **Figure 4.2**).

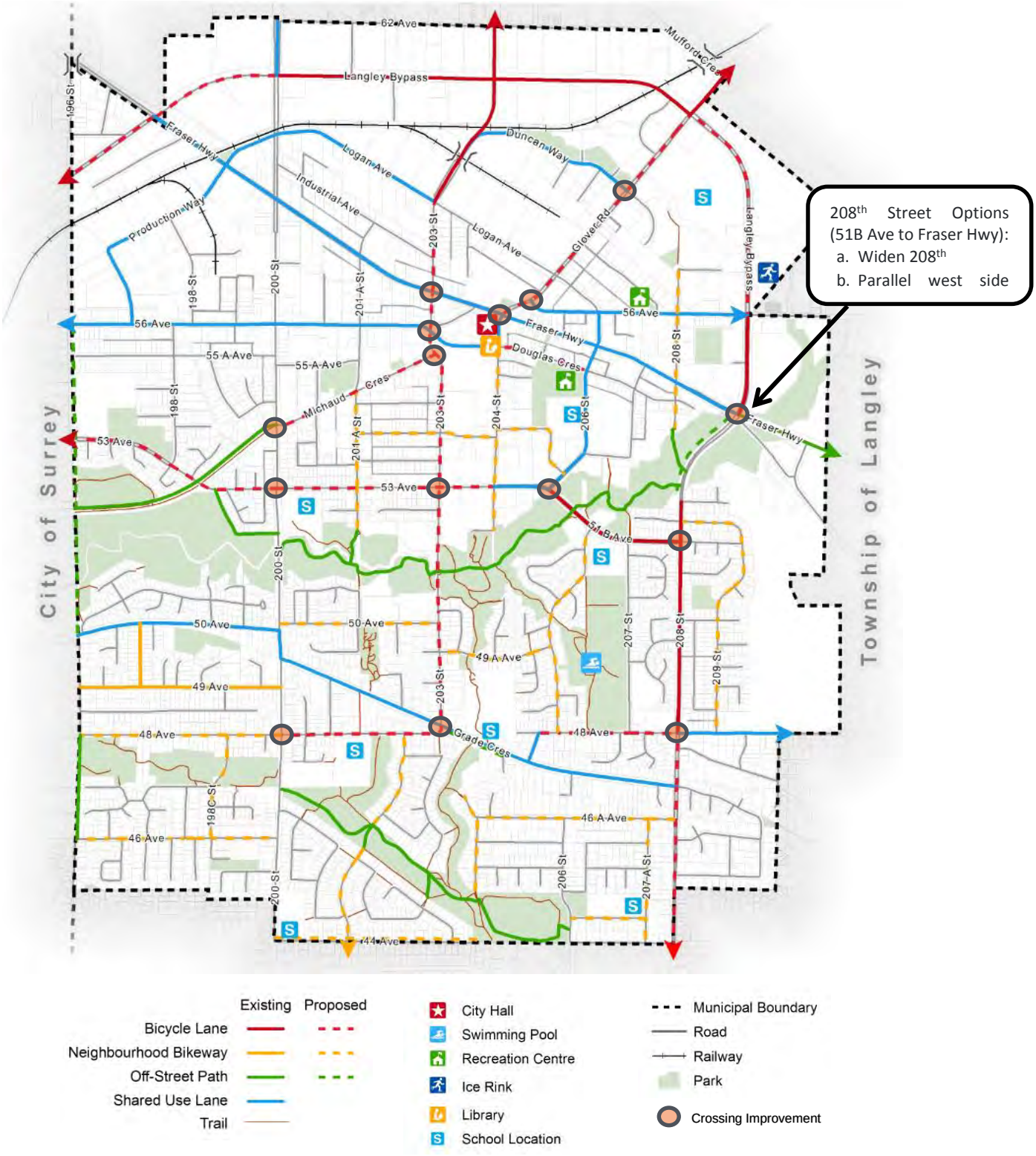
    - **City of Surrey.** The City of Surrey's 2012 Cycling Plan identifies existing and planned bicycle routes on Langley Bypass, 56th Avenue, and 53rd Avenue.

    - **Township of Langley.** The Township's Ultimate Cycling Network includes future cycling connection points on 204th Street, Glover Road, 56th Avenue, Fraser Highway, 48th Avenue, 208th Street, and 202nd Street.

As identified previously in **Section 3.3.4**, the City, in collaboration with the City of Surrey and Township of Langley, can consider the possibility of a multi-use pathway along the municipal boundary on 196th Street from 53rd Avenue to 50th Avenue to enhance regional connections for cyclists. This connection can build on the existing path that currently exists through the area.

**Figure 4.2**

**Recommended Bicycle Network**



### 4.3.3 IMPROVED CROSSINGS

New and potential cyclists can be deterred to cycle or to use a certain route because of unsafe intersections and crossings. Crossing treatments assist cyclists in crossing major roads, and to minimize potential conflicts with motor vehicles. It is critical that safe crossings are provided where bicycle routes intersect with each other, where multi-use trails and routes cross major streets (i.e. on 200th Street, 56th Avenue, Fraser Highway, and Langley Bypass). **Figure 4.2** identifies where some of these critical junctions are and where crossing improvements should be provided. Intersection treatments that should be considered within the bicycle network include:

- **Bicycle detection at signalized intersections.** Cyclists should be able to activate a traffic signal through a number of ways, such as bicycle loop detectors, bicycle pushbuttons, or video detection at traffic signals. If bicycle loop detectors are used, they should be marked so that cyclists know where to position their bicycles to activate the detector. In many cases, the same detector that is used for automobiles can be used for bicycles. At intersections with bicycle lanes, additional detectors may be required in the bicycle lane. Several locations throughout the City have been identified for bicycle pushbuttons, typically where bicycle routes intersect and where bicycle routes / facilities cross major roads. These recommended locations for installing pushbuttons are seen in **Figure 4.2** and are detailed further in **Appendix A.**

- **Coloured bicycle lanes** may be used to position cyclists appropriately with respect to other traffic, especially right turning vehicles and motorists, and to highlight the area of potential conflicts. Green thermoplastic is the preferred colour and material to be used.

- **Bicycle lane markings through intersections.** Bicycle lane markings may be provided through complex intersections to guide cyclists through these locations and to alert motorists to the presence of a bicycle route through the intersection. Bicycle lane markings are dashed through the intersection to connect with the far-side bicycle lane, either in through movements or left-turning movements.

- **Bike boxes** can be used at signalized intersections to provide cyclists an opportunity to position themselves in front of queued traffic, and to proceed through the intersection when the signal turns green, in advance of vehicles. This reduces conflicts between cyclists and motorists and improves safety for cyclists. Bike boxes are beneficial where cyclists turn left from a traffic lane shared with left-turning and through traffic, and where cyclists travel straight through an intersection in a traffic lane shared with through and right-turning traffic.

- **Bicycle left-turn pocket lane.** Using a standard-width bicycle lane adjacent to the left-hand turn lane, bicycle left-turn pocket lanes reduce conflicts with turning motor vehicles. A "Bicyclists Merging" sign may be placed on the right side of the road before the left-side turn pocket.

- **Trail network bridge crossings**. The City of Langley's trail network contains a number of bridge crossings, some of which are inaccessible to cyclists due to stairways and other features. Consideration of trail improvements should include improving bridge connections and pathways to improve the ability of bridges to safety accommodate cyclists where possible.

### 4.3.4 BICYCLE PARKING

The fear of bicycle theft or vandalism is a significant deterrent to cycling, and it is important to provide safe and secure on-street bicycle parking at key locations throughout the City. Improving the availability of bicycle parking is relatively inexpensive and can be seen as a positive 'quick win' solution for the cycling network.


A mix of both short and long-term bicycle parking facilities should be considered. For example, bicycle racks and on-street bicycle corrals are often suitable for areas that typically have short-term visits, such as in shopping areas (i.e. Downtown, Langley Centre), community/recreation centres, and parks. Longer-term bicycle parking options, such as bicycle shelters, cages, or lockers, are more suitable for employment and visitor destinations such as Kwantlen Polytechnic University and the Langley Centre transit exchange. Additional and/or improved bicycle parking is recommended in the following areas:

- **Commercial / Shopping districts**, including Downtown, Langley Centre, and other commercial sites along Fraser Highway.
- **Key cultural and civic facilities,** including City Hall / library, the Douglas Recreation Centre, and
- **Schools**, including elementary and secondary schools, and Kwantlen Polytechnic University.
- **Parks** and at **trail access points**.
- **Langley Centre transit exchange,** to facilitate better 'bike-and-ride' long-distance cycling trips.

The locations described above include sites within the public and private realms. Within the public realm, the City should work to implement bicycle parking where possible within the right-of-way. This can take place primarily on sidewalks, while ensuring that sufficient sidewalk clear width is provided for pedestrians. In the public realm, consideration should also be given to replacing an on-street vehicle parking space with an on-street bicycle corral. Within the private realm, the City's Zoning Bylaw contains bicycle parking requirements for any new developments, and it is important to explore opportunities for amending the Zoning Bylaw to create additional bicycle parking where possible, especially in Downtown developments and in key employment and activity areas. The City could also develop a program to

encourage private developments to retrofit existing buildings to include bicycle parking, particularly in multi-family developments.

### 4.3.5 SUPPORT PROGRAMS

In addition to infrastructure and facilities, support programs can be used to provide more education and awareness around cycling in the community. Support programs are critical to increase awareness about existing bicycle facilities and amenities, and to provide information on cycling skills and road safety. For those who do not currently cycle, support programs can make it easier to start riding. Initiatives can include:

- Developing a **Bicycle User Map** that identifies bicycle routes, trails, and major destinations in the City of Langley. This should differentiate between different facility types, provide recommended routes, and can highlight bicycle amenities, transit exchanges and bus stops, bicycle parking locations, and bicycle retailers.

- Creating a **dedicated City webpage** with information on cycling in the City, with links to the bicycle map, City of Surrey and Township of Langley route maps, community bicycle events (i.e. activities at Penzer Bike Park) and other informative resources. The website could be a combined 'walking and cycling in the City of Langley's webpage in order to centralize information on active transportation opportunities in the City.

- Hosting **festivals and events** that encourage walking and cycling, such as Bike to Work, Langley Community Day, Langley Walk, and Penzer Bike Park activities. The City can also consider improving bicycle accessibility and bicycle parking opportunities at community events and activities.

- **Signage and Wayfinding** is an important feature to integrate into the City's bicycle network in order to improve conditions for cyclists. Signage is a relatively cheap and effective measure to make cycling more convenient, through the provision of simple and consistent signs to assist cyclists in navigating to their destination. Signage is important for two types of cyclists, including the inexperienced cyclist who requires information about how to make their cycling journey, as well as the experienced cyclist who could ride further and more often if better information was provided. Wayfinding can benefit cyclists by guiding them off heavy traffic routes and onto lower-volume routes, to prevent cyclists from making a wrong turn and wasting time, and to help cyclists keep momentum and make smooth manoeuvres. In addition to the guidance within

the City's Wayfinding Strategy, it is recommended that the City also align its wayfinding approaches for the bicycle network with TransLink's 2013 *Wayfinding Guidelines for Utility Cycling in Metro Vancouver*.

- **Bicycle – transit integration.** Currently, all busses in Metro Vancouver are equipped with bicycle racks. Further bicycle-transit integration can also be achieved through more visible bicycle parking at the Langley Centre transit exchange. Introducing options such as safe and secure bicycle storage is important to facilitate bike-and-ride trips, and it is recommended that the City of Langley engage with TransLink for better bicycle connections and parking within the Langley Centre exchange (and future transit hub).

- **Slow Speed Zones.** The implementation of 30 km/hr zones in neighbourhoods can also be considered a method to improve cyclist (and pedestrian) safety. Recent initiatives in areas of the United Kingdom, have initiated campaigns such as "20 is Plenty" to call for slower traffic speeds (less than 20 mph or 30 km/hr) on residential roads. It is believed that a speed limit of 20 mph (30 km/hr) on residential roads is necessary to make the road environment more safe and comfortable for those walking and cycling in the roadway. Another type of slow speed zones is seen in the City of Vancouver, which has posted all local street bikeways as 30 km/hr. For the City to implement this on neighbourhood roads, 30km/hr speed limit signs would need to be posted in all streets where the speed limit is in effect. Another option is to implement a Slow Speed Zone in Downtown Langley (i.e. on Fraser Highway). This would slow down vehicles on Fraser Highway, and allow cyclists to comfortably share the road with vehicles, without the need for dedicated cycling infrastructure on the corridor. The City can also consider adopting this strategy with other traffic calming measures to improve cyclist and pedestrian safety in residential areas.

## 4.4 Capital Costs & Priorities

Based on the capital improvements identified in the Bicycle Network Plan (**Figure 4.2**), conceptual capital costs (Class D without property and other utilities) were developed based on the unit cost assumptions summarized in **Table 4.1** below. **Appendix A** details the individual bicycle network project costs by segment, as well as the overall priorities for implementing bicycle facilities.

**Table 4.1**
**Unit Capital Cost Assumptions**

| Bicycle Plan Direction | Short Term (1-5 years) |
|---|---|
| **Bicycle Lane (no widening required)** | $30,000/km |
| **Bicycle Lane (widening required)** | $300,000/km |
| **Local bikeway (new route)** | $40,000/km |
| **Off-Street Pathway (new route)** | Varies by site |
| **Bicycle pushbuttons** | $5,000 |

It should be noted that the actual cost for the implementation of bicycle facilities could vary significantly for each project, depending on various site-specific characteristics. For example, the unit costs stated above allow for sub-base and base construction, as well as asphalt pavement, and they also include contingency and an allowance for engineering. For urban cross-sections, they also include the cost to relocate curbs and sidewalks. The unit costs account for improvements to both sides of the roadway and include signage and roadway restriping where no widening is required. However, the unit costs do not include any allowance for significant earthworks, driveway reconstruction, landscape restoration, property and legal costs, significant utility relocation, administration, and taxes, all of which could add significantly to the cost. Pathway costs do not include costs for environmental compensation. These unit costs also do not include any allowances for crossing treatments, such as signals and/or median refuges. As such, the cost estimates provided in this section are for planning purposes only and should not be used for detailed budgeting. Order-of-magnitude cost estimates have been developed for the long-term bicycle network based on unit costs and are show in **Table 4.2** below. The total cost to complete the long-term bicycle network is approximately **$4.2 million**, though it should be noted that half of this cost is attributable to the off-street pathway adjacent to 208$^{th}$ Street.

Bicycle network priorities have been assigned for implementation over the short, medium or long-term. Short-term priorities are identified as neighbourhood bikeways and bicycle lane projects that directly serve the Downtown (on 203rd Street, 204th Street, Glover Road, and Michaud Crescent). Short-term implementation indicates a horizon of approximately 1- 5 years, and it is estimated that the highest priority bicycle network projects would cost approximately **$0.8 million** over this period, as shown in **Table 4.2**. Bicycle crossing improvements are estimated to cost $375,000, and have been equally distributed over the short to long-term for implementation. In total, the short-term bicycle network implementation costs are equivalent to an annual investment of approximately **$0.2 million per year over the next 5 years**.

Medium-term bicycle network priorities are identified as city-wide neighbourhood bikeways, and key east-west and north-south bicycle lanes that would connect between Downtown and residential neighbourhoods.

Funding for the bicycle network priorities can be achieved through local programs such as Development Cost Charges (DCCs) and property taxes, as well as through regional, provincial or federal funding.

**Table 4.2**
**Bicycle Facility Implementation Costs**

| Bicycle Plan Direction | Short Term (1-5 years) | Medium Term (5-10 years) | Long Term (10 years +) |
|---|---|---|---|
| **1. Bicycle Facility Standards** | - | - | - |
| **2. Develop and Expand the Network** | $0.5 mil ($101,500/year) | $0.8 mil ($160,000/year) | $1.4 mil ($280,000/year) |
| **3. Improved Crossings** | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) |
| **4. Bicycle Parking** | $0.05 mil ($10,000/year) | $0.05 mil ($10,000/year) | $0.05 mil ($10,000/year) |
| **5. Support Measures** | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) | $0.2 mil ($25,000/year) |
| **Total** | **$0.8 million ($0.2 mill/year)** | **$1.0 million ($0.2 mill/yr)** | **$1.7 million ($0.2 mill/yr)** |

Chapter 5.0

# TRANSIT STRATEGY

# 5.0 Transit Strategy

Transit services in the City of Langley, and throughout Metro Vancouver, are planned and funded by TransLink and operated by various subsidiary companies and contractors. Municipalities throughout Metro Vancouver not only participate in the planning and design of transit services and major facilities, but also provide the local infrastructure in which to accommodate transit services and passengers.

Today, approximately 5% of the City's residents take transit to commute to work. While transit supports many City of Langley residents in their daily journeys, frequency and coverage limitations prevent transit from being a convenient travel mode for more people. More people will use transit if it satisfies their travel needs and is competitive with other modes. The advantage of transit is that it serves longer trip distances required to connect with many major destinations in the region, and shifting towards more transit use requires more attractive transit services and facilities. It should be recognized that increased scale, mixture and density of land use along the transit network is required to make transit viable.

In general, improved transit services and support facilities, and land use patterns that enable greater investments in transit are required for the City and region to achieve collective goals for transit. As the City will see future population and employment growth, efficient, equitable and convenient transit services to and from the City of Langley and to other key regional destinations is critical.

The MTP provides the City with a critical opportunity to examine the role of transit within a multi-modal framework to support and shape land use patterns and other City goals and objectives. The preferred transit directions can be used as input and guidance to the area transit planning processes, rapid transit studies, and other on-going work of TransLink.

## 5.1 Local Transit Ridership Characteristics

With increased transit-oriented land use patterns in the downtown and investments in walking and bicycle facilities in the City, transit ridership potential should continue to increase with the provision of enhanced services to support key travel markets. The following discussion highlights key transit travel characteristics generated by the City of Langley.

- **Mode Share.** As reported by the 2006 Census, approximately 6% of City of Langley residents commute to work by transit. The 2008 Regional Trip Diary found that approximately 4% of all daily trips made by the City's residents were made by transit.

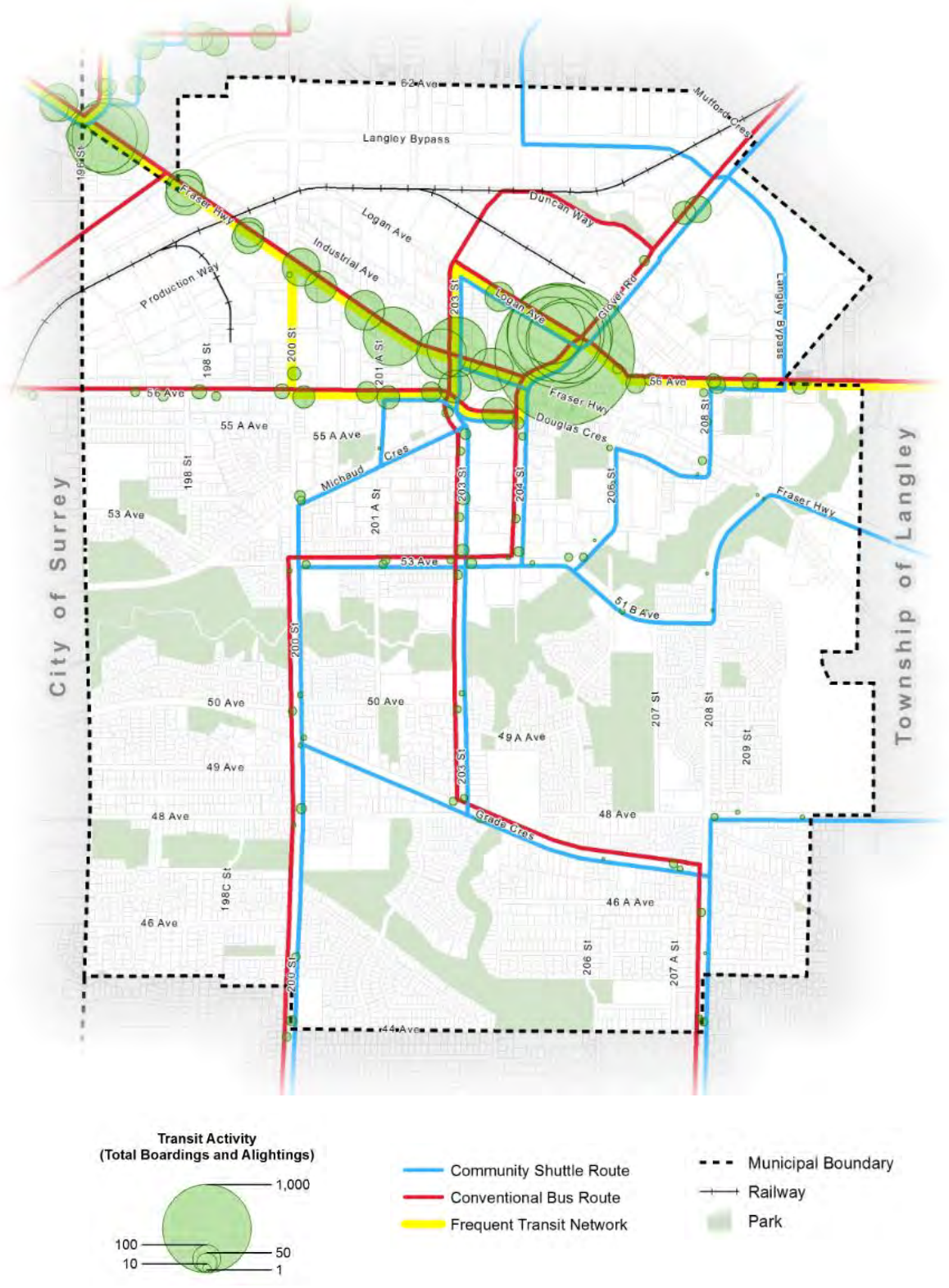
- **Trip Purpose.** The 2008 Regional Trip Diary states that more than 40% of all daily transit trips made by City of Langley residents were for the purpose of going to and from work. Recreation and social trips account for 20% of daily transit trips, while shopping and dining trips account for 22% of daily transit trips.

- **Trip Destinations.** The majority (approximately 50%) of transit trips originating in the City of Langley are destined for the Township of Langley. Another 25% of transit trips from the City of Langley have a destination in Surrey. Only 6% of transit trips start and end within the City itself (versus 20% of all daily trips). The remainder of transit trips starting in the City of Langley have destinations in Delta, Coquitlam, Abbotsford, Richmond, Vancouver and White Rock. While the majority of these trips account for bus transit (the only option to get in and out of the City), approximately 17% of transit trips include a connection on SkyTrain.

- **Where people board and alight transit.** Transit boarding and alighting activity represents where most passengers start and end their trip on the transit system. **Figure 5.1** illustrates the weekday total transit boardings and alightings in the City of Langley. As indicated, the Langley Centre transit exchange as well as the Fraser Highway and 56$^{th}$ Avenue corridors support the majority of passenger activity (with anywhere between 100-500 passengers per day) in the City.

**Figure 5.1**

**Bus Ridership (Projected Average Weekday Boardings and Alightings)**



## 5.2 Key Issues and Opportunities

Through the MTP consultation activities, residents identified transit issues and challenges facing the City of Langley today and in the future. Commonly identified issues and opportunities that emerged through the process included:

- More **frequent** service;
- More **regional connections** between Langley and other Metro Vancouver Regional Centres;
- **More service capacity** for busy routes, such as Route #502 connecting City of Langley with Surrey Central Station along Fraser Highway;
- **Community shuttles** for neighbourhood routes;
- More transit **connections** between neighbourhood and key commercial areas;
- Extended **rapid transit** down Fraser Highway to City of Langley;
- Enhanced **service coverage** and **frequency** to the southeast areas of the City.

## 5.3 Transit Strategy Directions

The Transit Strategy for the City of Langley includes long-term alterations to the structure from a hub and spoke with indirect service to more of a grid system of services along local corridors connecting to planned rapid transit as well as other regional and inter-regional services. In addition to the long-term adjustments to the local and regional service structure to connect Langley residents and businesses, transit passenger amenities are required to provide comfortable and accessible facilities to enhance the transit customer experience.

***Directions of the Transit Strategy:***

- Local Network Enhancements
- Regional Connections
- Downtown Transit Hub
- Passenger Amenities

### 5.3.1 Local Network Enhancements

The local transit network should connect neighborhoods to local destinations within the City, and to the frequent or rapid transit service on Fraser Highway. Local service enhancements would encourage residents and visitors to take transit to access work, school, local shopping areas, or to undertake other personal errands. In some cases, smaller transit vehicles can be utilized to better match customer demand and operating conditions to local roads. The local transit network for City of Langley is envisioned to provide relatively frequent service (15 minutes on key corridors and 30 minutes for conventional and local shuttle services) with good coverage running all day and into the evening. The long-term local area transit network structure to be explored with TransLink is illustrated in **Figure 5.1** and briefly described below:

- **Strengthen the grid system of frequent transit services connecting through the City of Langley and Township areas**. More direct, frequent north-south services along 200th Street and 204th / 208th Street that connect with planned rapid transit in the City's downtown and the Willowbrook Mall will provide attractive regional and inter-municipal connections between the City, Surrey and Township communities. These frequent transit routes would generally be located within approximately 400m or so of most residents and employment areas in the City. More direct routing will ultimately reduce travel times between areas of the City, making transit a more attractive experience for all customers.

- **Implement community shuttle or flexible transit services in residential neighbourhoods to support local connections and provide access to and within the downtown area.** In addition to the more frequent, grid system of services, community shuttles (or flexible transit services) may continue to be used in other corridors to serve local trip making and in some cases provide connections to the frequent transit and rapid transit networks. Flexible routing could be explored for segments of community shuttle routes as a means to better serve low density neighborhoods, particularly those south of the Nicomekl River. Flexible routing also allows for the expansion of transit service coverage on an on-demand basis.

- **Expand periods of operation.** Currently many community shuttle and some conventional bus services do not operate in the late weekday evening periods or on Sundays and holidays. The City should work with TransLink to explore the potential that a frequent transit network serving the City's communities would support later evening and weekends services.

### 5.3.2 Enhanced Regional Connections

Given that many City of Langley residents work, shop, and conduct day-to-day errands in other municipalities, expanded regional transit connections are also needed to make transit a more attractive alternative for residents connecting to destinations outside of the City. Rapid transit and conventional bus services should better connect the City of Langley to Surrey City Centre, South Surrey, Abbotsford, and communities north of the Fraser River. The City should continue to work with TransLink and other neighbouring municipalities to explore the following regional service improvements as described below and illustrated in **Figure 5.1.**

- **Support rapid transit service** along the Fraser Highway corridor between Langley Centre and Surrey City Centre (or King George) SkyTrain Station. Ongoing work by TransLink along with the Provincial government and local agencies on the ***City of Surrey Rapid Transit Study*** is designed to evaluate rapid transit technologies, route alternatives and configuration options to connect Langley Centre to the Surrey City Centre. The Study has identified a shortlist of four rapid transit options, including bus rapid transit, light rail transit and elevated rail. Agencies have not identified a preferred option, but most options would provide an estimated travel time of 20 to 30 minutes to connect Surrey Centre and Langley Centre, in comparison to current travel times of over 45 minutes.

  Providing rapid transit service with two-way peak frequencies along the Fraser Highway corridor between Langley Centre and Surrey City Centre would allow the City of Langley residents the

benefit of being only 'one-connection' away from the regional SkyTrain network. This service would also provide connections to key hubs along Fraser Highway, and would potentially support attractive transfers from other services as well as vehicle drop-off and park-and-ride facilities. As part of the rapid transit strategy, exclusive runningways or transit priority treatments are essential to provide enhanced transit travel speeds and maintain reliability for passengers.

- **Support rapid bus services to Highway 1 and north of the Fraser communities**, in the form of bus rapid transit, planned for 200th Street, to provide strategic connections for the City's residents to growing commercial and industrial areas of Pitt Meadows and Maple Ridge, as well as to the West Coast Express stations. The opening of the Golden Ears Bridge in 2009 facilitated these linkages, and significant growth and economic ties between the communities north and south of the Fraser River supports the need for more efficient and convenient transit connections.

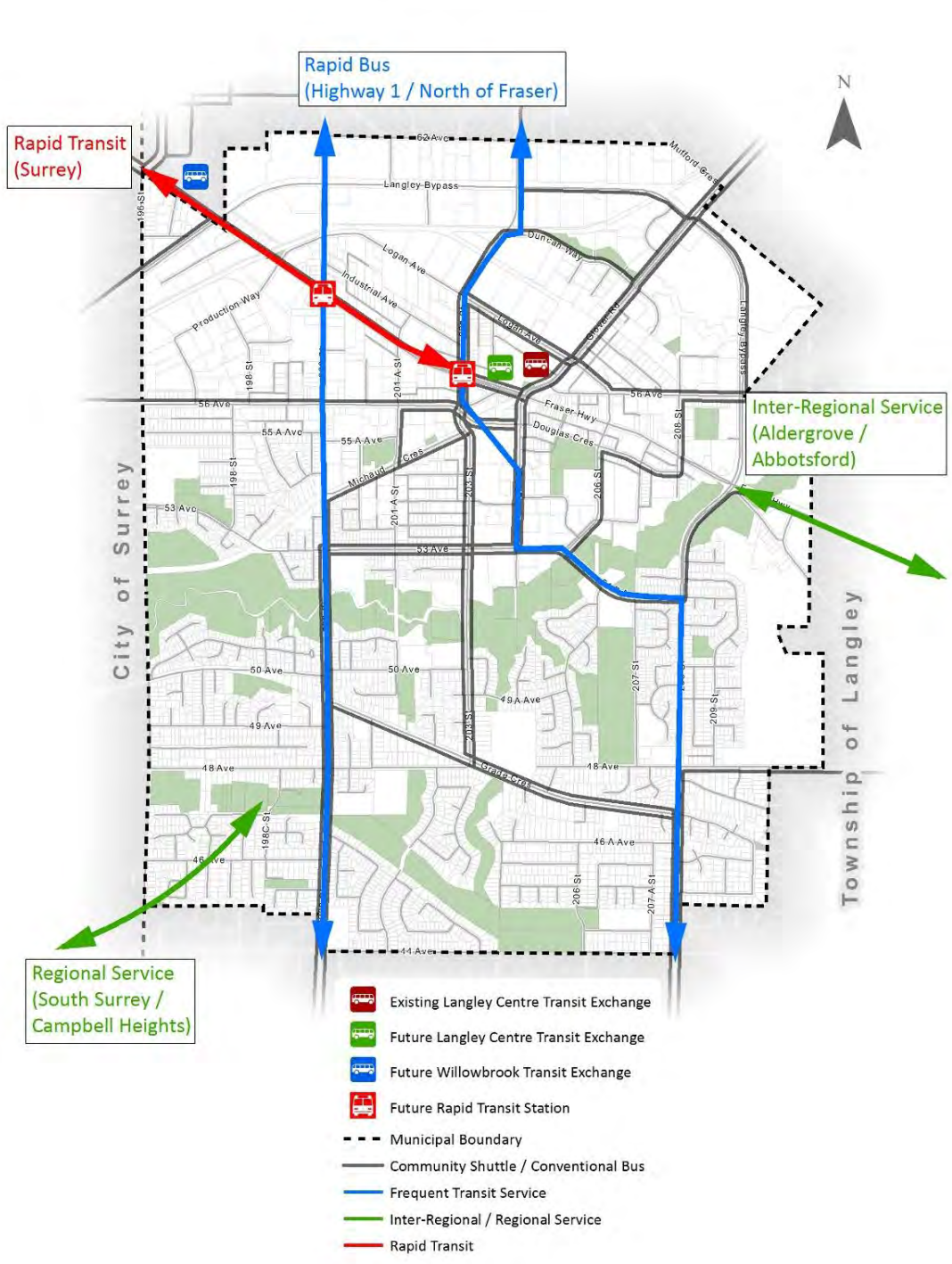
- **Explore regional and inter-regional transit connections on Fraser Highway to Aldergrove and Abbotsford** serving the growing population in the Fraser Valley. This service would require discussions and agreements between both TransLink and BC Transit. This service could ultimately provide travel options to the Abbotsford International Airport and downtown areas.

- **Support attractive transit connections to South Surrey and Campbell Heights**, to serve the growing population and employment centres that will increasingly generate more travel to and from the City of Langley for job opportunities, services and amenities.

- **Establish strong connections to new and planned exchanges**, including the Carvolth Transit Exchange and the Willowbrook Centre Transit exchange, both in the Township of Langley. The planned Willowbrook exchange is anticipated to change from one to two central transit exchange and would be located upstream on Fraser Highway in Township of Langley, and would support the redevelopment of the surrounding area into a more transit-oriented development node. One central transit exchange to two exchange. The Carvolth Transit Exchange will be located at 202nd Street and will act as the eastern hub for the new ExpressBus service that will run over the new Port Mann Bridge, and will provide improved transit access to the Golden Ears Bridge for busses. Stronger network connections between City of Langley and these exchanges will provide stronger regional integration and can expand transit links for City residents.

**Figure 5.2**

**Proposed Long-term Transit Network Structure**



### 5.3.3 DOWNTOWN LANGLEY TRANSIT EXCHANGE

Land use patterns significantly influence overall travel and, consequently, the success of transit. Communities that are more 'transit oriented' not only support higher levels of transit service, but also tend to be more pedestrian and bicycle friendly. Transit-oriented development means concentrating higher density, mixed-use, human scale development around frequent transit stops and stations, in combination with management measures (i.e. parking restrictions) that discourage unnecessary driving. In the City of Langley, integrating the land use and the transportation system particularly around the Downtown can encourage the core area to continue to be a major community node, as well as a multi-modal transportation hub, supporting walking, cycling, and transit in the area. In particular, the City has been working with TransLink on a downtown transit hub. The transit hub will be a multi-modal activity area located at Fraser Highway and 203rd Street.

The transit hub is to be supported with high density development, with a diverse mix of land uses envisioned for the precinct around the hub. These land uses and resident populations within close proximity are intended to increasingly support more frequent transit service. Ultimately, the transit hub is identified as a mixed-use residential and commercial area, centred on the transit exchange that fosters safe and attractive pedestrian connections to Downtown and other major destinations in the City. The Transit Strategy supports the transit hub concept as the focal point of City's transit network, with transit-oriented development in and around this area to support greater walking, cycling, and transit use in Downtown Langley.

### 5.3.4 Passenger Amenities

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

- **Enhance passenger amenities** at bus stops and the Langley Centre transit exchange. Currently, most bus stops in the City have benches, while a limited number of stops equipped with bus shelters. In the long-term, the City should strive to provide seating, lighting, and customer information at all bus stops along FTN corridors (i.e. along Fraser Highway, 56th Avenue, Logan Avenue, 203rd Street). The City should develop a prioritization methodology for bus stop improvements, where precedence is given to:
  - Bus stops along frequent transit network routes;
  - Bus stops near key existing or future employment areas such as Downtown Langley, Logan, Production and Duncan way industrial areas, and near commercial areas along Langley Bypass; and
  - Bus stops that service key population growth areas such as south Langley.

- **Improve accessibility to transit** to enhance services and facilities for all existing customers and to attract new riders. Additionally, increased conventional transit accessibility should offset demands on the HandyDART system – a far costlier service to operate. Today, many individuals experience barriers to using transit for various reasons, ranging from the physical challenges of system elements (such as accessing bus stops and transit exchanges) through to those that experience cognitive difficulties getting around on transit. With a rapidly aging population, the number of people with mobility impairments in the City will increase in the future. Recommendations to improve transit accessibility include:

  - **Improving access to transit facilities**. Currently, approximately 70% of the City's 121 bus stops are fully accessible. It is recommended that the City strive to make 100% of all transit stops accessible in the long-term, with a priority on upgrading bus stops along FTN routes. In addition to the stops themselves, there are opportunities for the City to improve infrastructure leading up to bus stops, such as ensuring that there is a sidewalk leading to the bus stop (see **Section 3.2**), crosswalks near bus stops, and accessible curb letdowns.
  - **Providing better customer support** goes beyond reducing physical barriers, to giving customers clear information that is easy to find, signage they can clearly understand, and support from front-line staff in order to use transit successfully. The City should work with TransLink on initiatives for better customer support, such as enhancements to the TransLink website, real-time transit information showing the actual time until the next bus arrives, directional signage, customer outreach, and education and awareness around transit trip-planning tools and accessibility.

- **Wayfinding.** Building on the directions of the City's Wayfinding Strategy, wayfinding and signage can improve the ability of transit passengers to understand transit scheduling, find key destinations once they disembark the bus, and to find transit facilities. This can be done through improved on-street signage to key transit nodes and Downtown, enhanced transit information at bus stops, including route maps and schedules at all bust stops on an FTN corridor.

## 5.4 Capital Costs & Priorities

The service improvements noted in the Transit Strategy and associated funding should be examined and confirmed as part of area transit planning work carried out by TransLink in partnership with local municipalities, as well as through local planning of the downtown transit hub. In the meantime however, the City will want to allocate financial resources to ensure that all stops are accessible and the busiest stops have amenities that will enhance the transit customer experience. **Table 5.1** summarizes the capital cost allocations and priorities reflected in the Transit Strategy. Overall, it is anticipated that investments of approximately $100,000 per year would be required to make transit passenger facilities accessible in the City and to support amenity improvements over the next 20 years. Implementation of these investments can be achieved through local funding programs such as Development Cost Charges or through partnerships with external agencies such as TransLink.

**Table 5.1**

**Transit Strategy Costs and Priorities**

| Transit Strategy Directions | Short-term (1 – 5 years) | Medium Term (5-10 years) | Long Term (10 years +) |
|---|---|---|---|
| **1. Downtown Transit Hub** | To be determined in conjunction with TransLink- | | |
| **2. Local Network Enhancements** | TransLink Area Transit Plan | | |
| **3. Enhanced Regional Connections** | TransLink Area Transit Plan | | |
| **4. Passenger Amenities** | | | |
| **Accessibility Improvements** | $0.3 mil ($50,000/year) | $0.3 mil ($50,000/year) | $0.5 mil ($50,000/year) |
| **Amenity Improvements** | $0.3 mil ($50,000/year) | $0.3 mil ($50,000/year) | $0.5 mil ($50,000/year) |
| **Total** | **$0.5 mil ($100,000/year)** | **$0.5 mil ($100,000/year)** | **$1.0 mil ($100,000/year)** |

# Chapter 6.0
# ROAD NETWORK PLAN


# 6.0 Road Network Plan

Maintaining a safe and efficient street network to support all modes is one of the key elements to enhancing mobility and quality of life in the City. With a growing population locally and regionally, vehicle travel will continue to increase over the next 20 years, placing increased pressure on the existing road network. Recognizing that vehicle use is the primary mode of transportation in the City, and that future population and employment growth in Langley and surrounding municipalities will continue, it is important to plan for and manage the movement of vehicles now and into the future. The Road Network Plan is a critical component of the MTP as it accommodates for the efficient movement of automobiles, including truck traffic. To date, significant roadway network investments that have been made in and around the City include the 204th Street Overpass and Fraser Highway Nicomekl River Bridge, Port Mann/Highway 1 Improvements, South Fraser Perimeter Road and the Roberts Bank Rail Combo Project. The potential roadway network improvement concepts explored within this section of the assessment are separated into major network improvements, network connectivity and circulation as well as operational and safety improvements. These road improvement concepts must be supportive of other improvements for transit, cycling and pedestrians, benefiting a broad range of transportation users. The Road Network Plan also includes an update to the City's truck network based on recent network improvements.

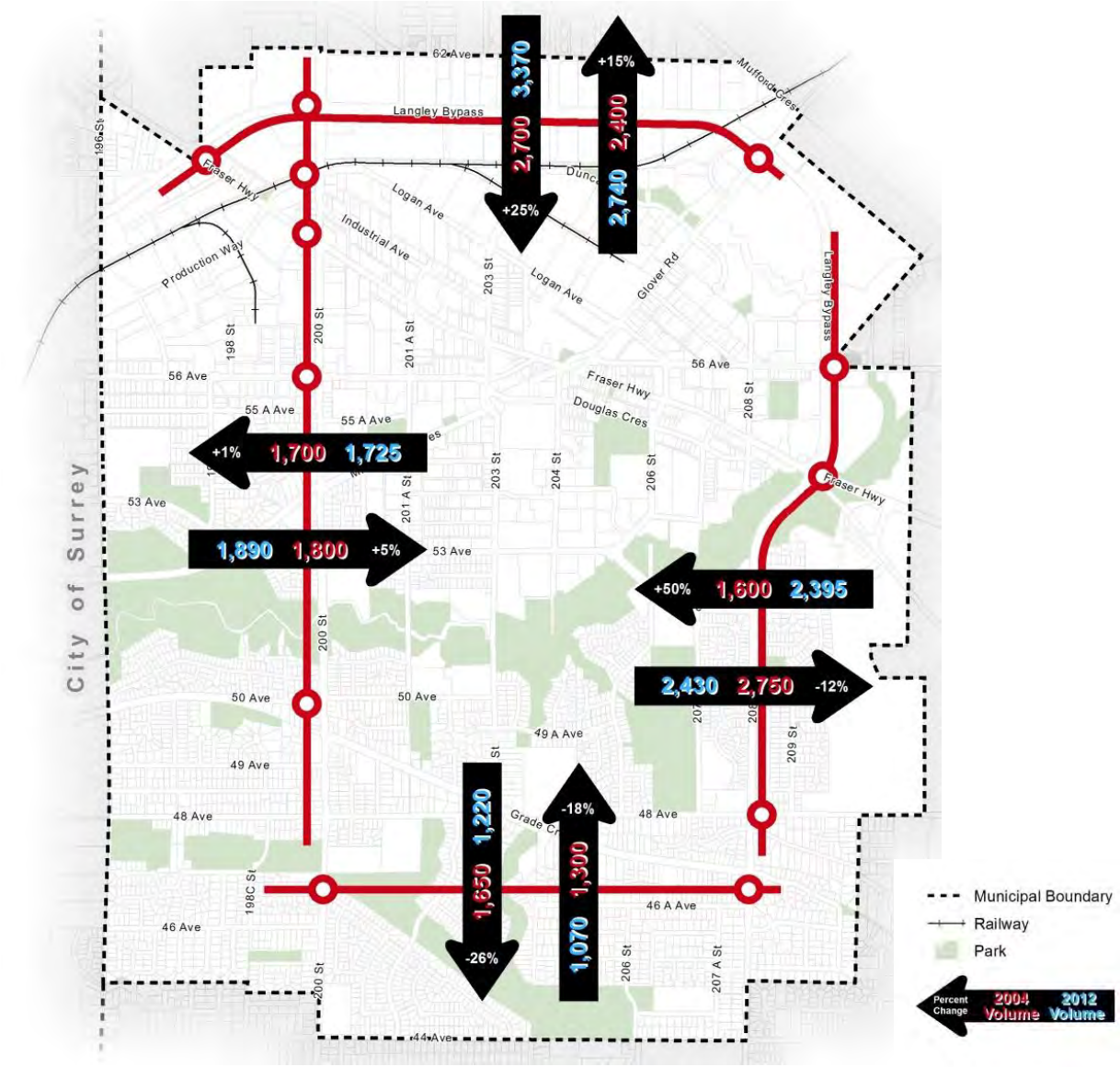
## 6.1 Local Roadway Traffic Characteristics and Conditions

In order to better identify and define the need for improved or new transportation facilities and services, it is important to first understand the travel characteristics of vehicle travel throughout the City. Using the 2008 Trip Diary Survey, the following key facts can be summarized for the current travel patterns within the City.

- **Mode Share.** Today, over 90% of the daily trips originating in the City of Langley are made by private vehicle, either as a driver or passenger. The 2006 Census reports that approximately 86% of commute to work trips in the City of Langley are made by driving (private vehicles).
- **Trip Purpose**. Approximately 40% of the daily trips originating in the City of Langley are made for work, while 38% of daily trips are made for shopping and dining purposes. In addition, 8% of daily trips are made for elementary and post-secondary school, while the remaining trips are made for business and recreational/social purposes.
- **Time of Day.** Driving trips made during the midday peak period (9:30am to 3:30pm) account for over 40% of the daily trips in the City of Langley, while afternoon peak period trips (3:30pm to 6:30pm) account for approximately 25% of all daily trips.
- **Trip Origin and Destination.** Approximately 20% of daily trips originating in the City of Langley are internal, while the 40% of outbound trips are destined to the Township of Langley, with the remaining destined for Surrey and rest of Metro Vancouver. Likewise, the majority of trips destined for the City of Langley are from the Township of Langley.
- **Traffic Volumes.** Since 2004, the City has made several transportation investments to improve network mobility and connectivity. **Figure 6.1** provides a comparison of 2004 and 2012 PM peak hour traffic volumes across several screenlines throughout the City. The comparison indicates that most of the traffic growth since 2004, has occurred north of the Langley Bypass. Towards the southern part of the City, in particular, south of 48th Avenue, traffic has been reduced by approximately 20% from 2004. While east-west travel across 200th Street has remained relatively the same since 2004, westbound travel across 208th Street has increased by approximately 50% during the afternoon peak hour.

  The major corridors throughout the City, including 200th Street, Langley Bypass and Fraser Highway, accommodate the highest traffic volumes. The highest traffic PM peak hour volumes are experienced on the corridors in the northern part of Langley, with approximately 1,500 to 1,700 vehicles/hour. These corridors include Fraser Highway, 200th Street and Langley Bypass.

**Figure 6.1**
**PM Peak Hour Screenline Traffic Volumes**




- **Congestion and Delay.** The overall performance of an urban roadway is typically measured by the delays experienced at major intersections, also referred to as the Level of Service (LOS). In most urban areas, signalized intersections are the source of most delay experienced on the roadway network. The level of service is a measure of vehicle delay where LOS A suggests that there is no delay and LOS F indicates that there is significant delay and the intersection is experiencing significant queuing. A LOS C or better is generally used as the target for planning purposes. As illustrated in **Figure 6.2**, most signalized intersections in the City are currently

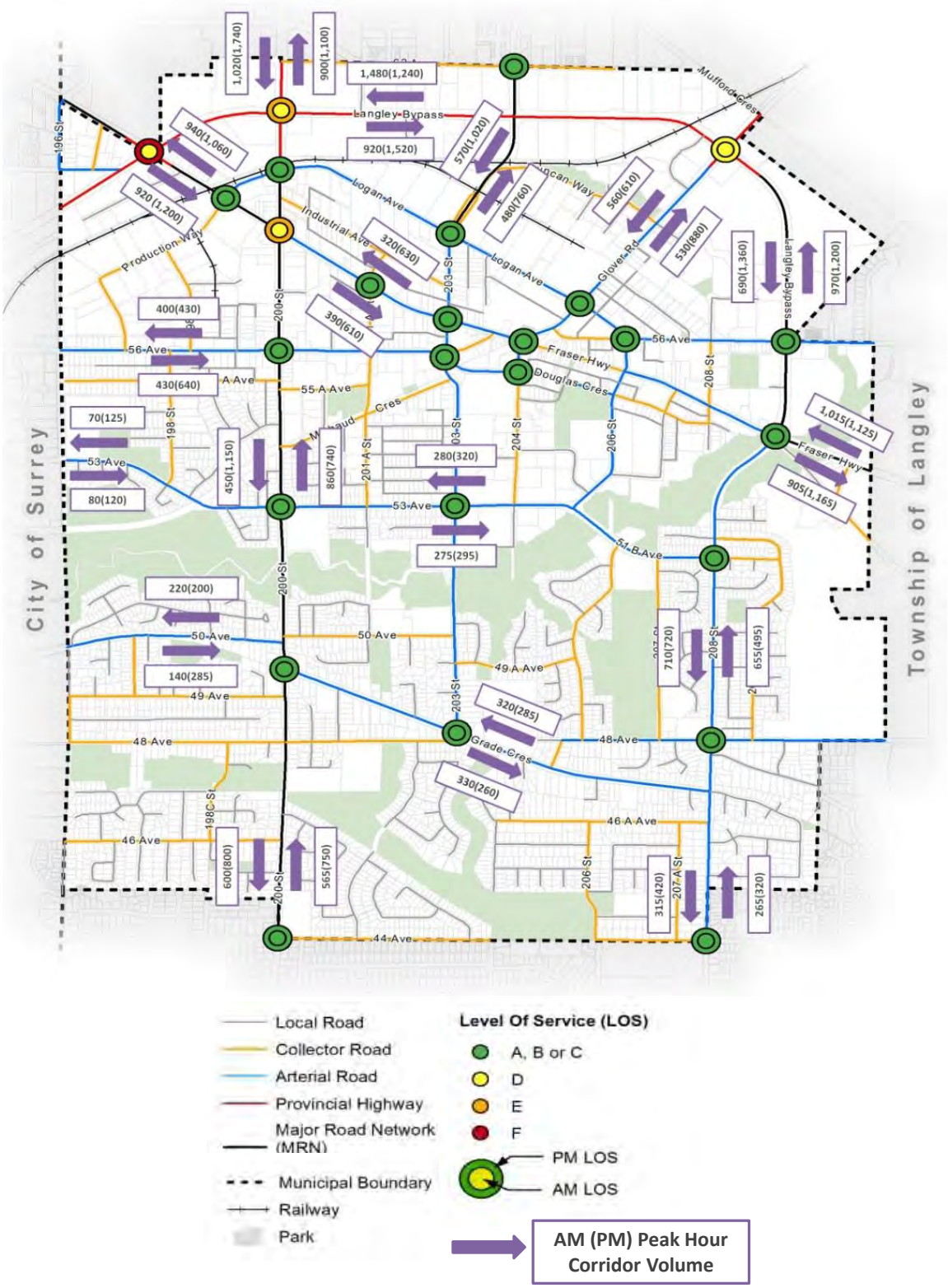
operating at LOS C or better. Several intersections experience congestion or delay during the peak periods, including:

- Fraser Highway at 200th Street
- Fraser Highway at Langley Bypass
- Langley Bypass at 200th Street
- Langley Bypass at Glover Road

The locations listed above are operating at a LOS D or worse and were also identified as locations with high collision frequencies. Traffic concerns as it relates to mobility and safety will be reviewed to assess improvement opportunities. Existing PM peak hour intersection volumes are provided in **Appendix B**.

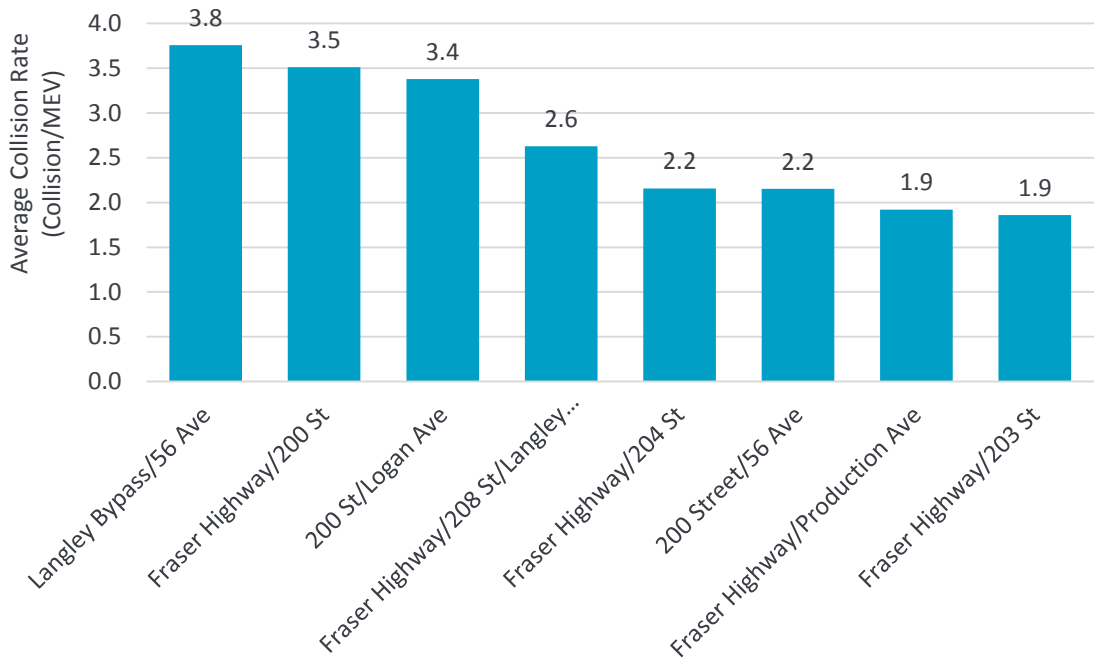
**Figure 6.2**

**Existing PM Peak Hour Levels of Service and Corridor Volumes**



- ***Intersection Safety***. In an urban area, the majority of collisions tend to occur at intersections and intersection safety can be a function of the geometry and operations of an intersection. With increasing congestion at key intersections over the next 20 years, it is important that the design and operations at these intersections allow the safe crossing for pedestrians, cyclists and motorists. The top collision prone locations in the City and corresponding collision rate (defined as collision per million entering vehicle (MEV)) are summarized below in **Figure 6.3.**

**Figure 6.3**
**Historical Intersection Collision Rates (2009 to 2011)**




## 6.2 Issues & Opportunities

Key themes that emerged through public engagement and consultation feedback on the topic of Langley's major and neighbourhood road network included:

- On-street **parking restrictions**;
- Too many **traffic signals**, including along 53rd Avenue;
- Need for **traffic calming**;
- **Traffic delays** caused by train traffic;
- **Rail overpasses on 200th Street and on Fraser Highway;**
- **Road safety concerns** at key intersections and locations with narrow road cross-sections;

- **Impacts of truck traffic** on the road network, including on residential streets and schools zones; and
- **Consider roundabouts** rather than to implement new or replace existing traffic signals.

## 6.3 Road Network Plan Directions

Road network improvements within the MTP are grouped into seven primary categories, which are:

- ***Major road network improvements*** include corridor widening and intersection treatments to address existing and/or projected areas of congestion along the City-owned roadways. **Figure 6.4** illustrates the major road network changes described in the Plan.
- ***Network connectivity and circulation improvements*** were identified to enhance mobility and accessibility to and from key areas of the City. These projects identified in the MTP include new connections and improvements aimed at enhancing circulation and connectivity within the City, as well as to the surrounding municipalities. **Figure 6.4** illustrates the network connectivity and circulation improvements described in the Plan.
- ***Local network changes beyond the MTP*** have been identified through discussions with staff and Council recognizing the potential changes and impacts of increased railway traffic on the City's roadway network. As a critical part of the urban character for the City of Langley, these potential changes would be designed to serve local pedestrians, cyclists, transit, goods movement and traffic.

***Directions of the MTP Road Network Plan***

- Major Network Improvements
- Network Connectivity and Circulation Improvements
- Local network changes beyond the MTP
- Operational and Safety Improvements
- Intersection Roundabouts
- Roadway Classification System Update
- Designated Truck Routes

- ***Operational and safety improvements*** were identified at select City intersections to reduce long-term delays and improve safety at minor intersections.

- ***Intersection Roundabouts*** may be considered as an alternative to a conventional stop controlled or signalized intersection. Strategies for identifying potential locations in the City for implementing roundabouts were identified.

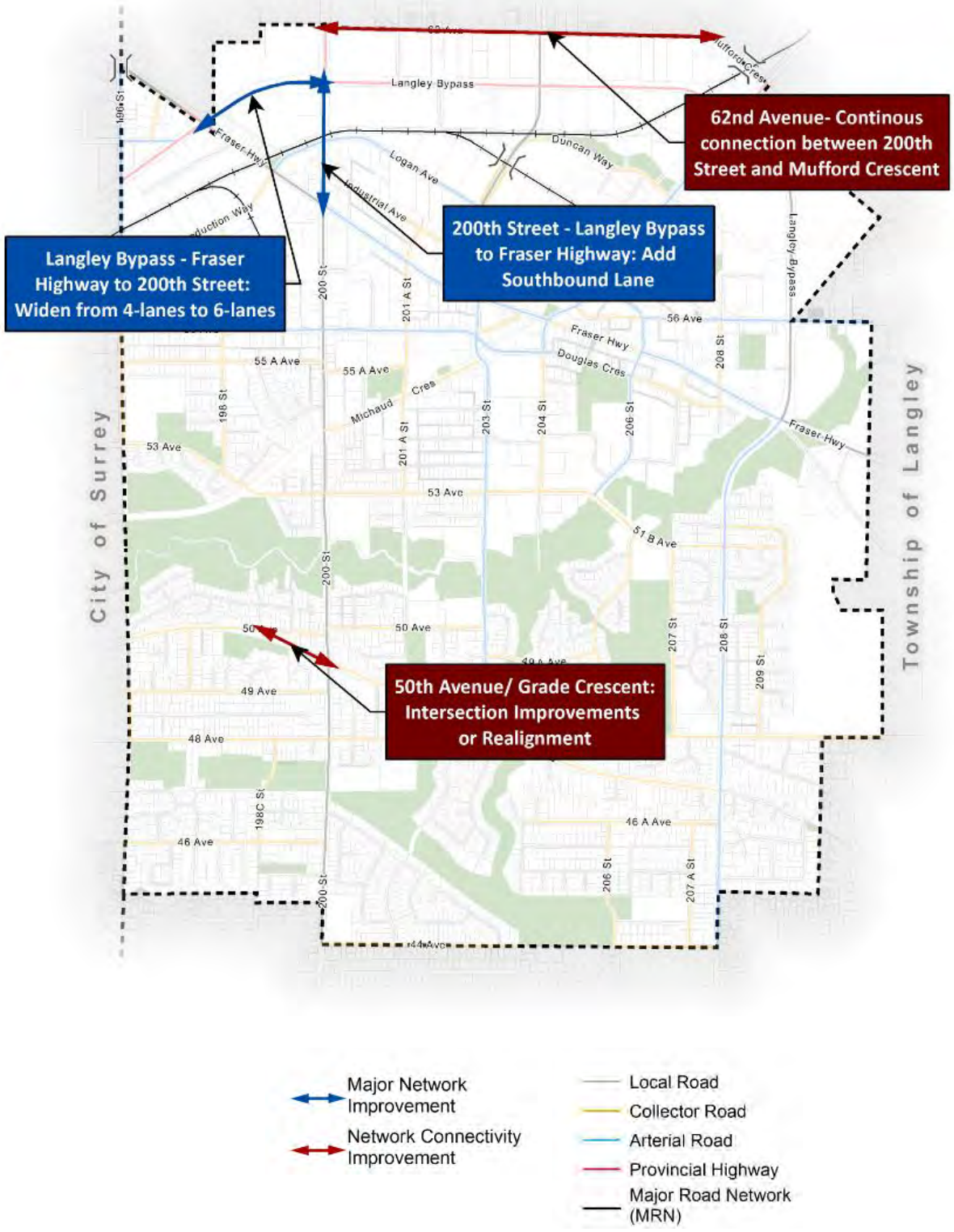
- ***Roadway Classification System Update*** included slight modifications to the City's classification system to better capture the different road functions.

- ***Goods movement, or the designation of truck routes*** have been modified to reflect the long-term network plan changes, most of which are already under construction at the time of this update to the MTP.

It is worth noting that future travel projections highlighted in the following sections account for modest growth and development in the neighbouring municipalities, in particular, in the Brookswood/Fernridge area.

**Figure 6.4**

**Network Improvements**



### 6.3.1 MAJOR NETWORK IMPROVEMENTS

Although much of the City's road network is already developed, there are a number of corridor improvements that are needed to address some of the key mobility issues facing the City of Langley over the next 20 years. These major improvements are intended to maintain mobility throughout the City and to allow key corridors to function as its intended road classification. A discussion of each of these improvement strategies is included below along with a brief overview of the benefits, property impacts and capital costs associated with each.

The two major roadway network improvements included in the Plan are concentrated on the widening of 200th Street as well as the widening of the Langley Bypass, which is under the jurisdiction of the Ministry of Transportation and Infrastructure (MOTI). These roadway improvements are described in more detail below.

**1. 200th Street – Langley Bypass to Fraser Highway**

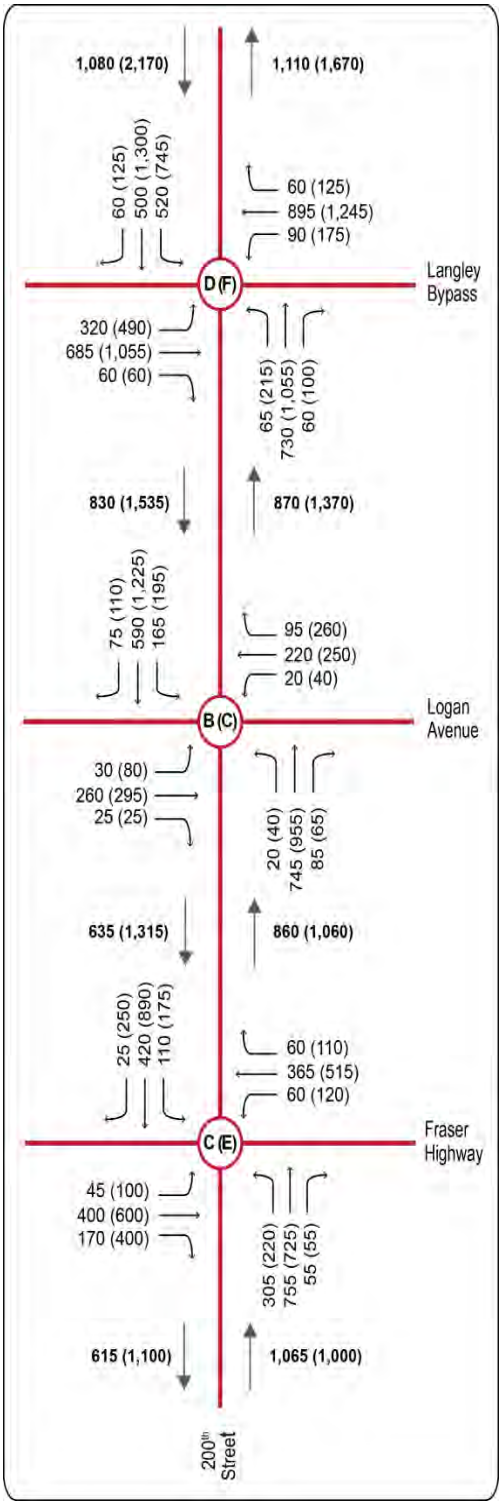
On the western side of the City, 200th Street is a key north-south route that runs between the northern and southern City limits, serving both local and regional connection to/from the City and surrounding municipalities. Within the City's boundaries, 200th Street is generally a four-lane arterial, with the exception of the segment between 62nd Avenue and north of Logan Avenue. The segment between 62nd Avenue and Langley Bypass is a six-lane arterial. The segment between Langley Bypass and Logan Avenue consists of three travel lanes in the northbound direction, while the southbound direction remains as a two-lane arterial.

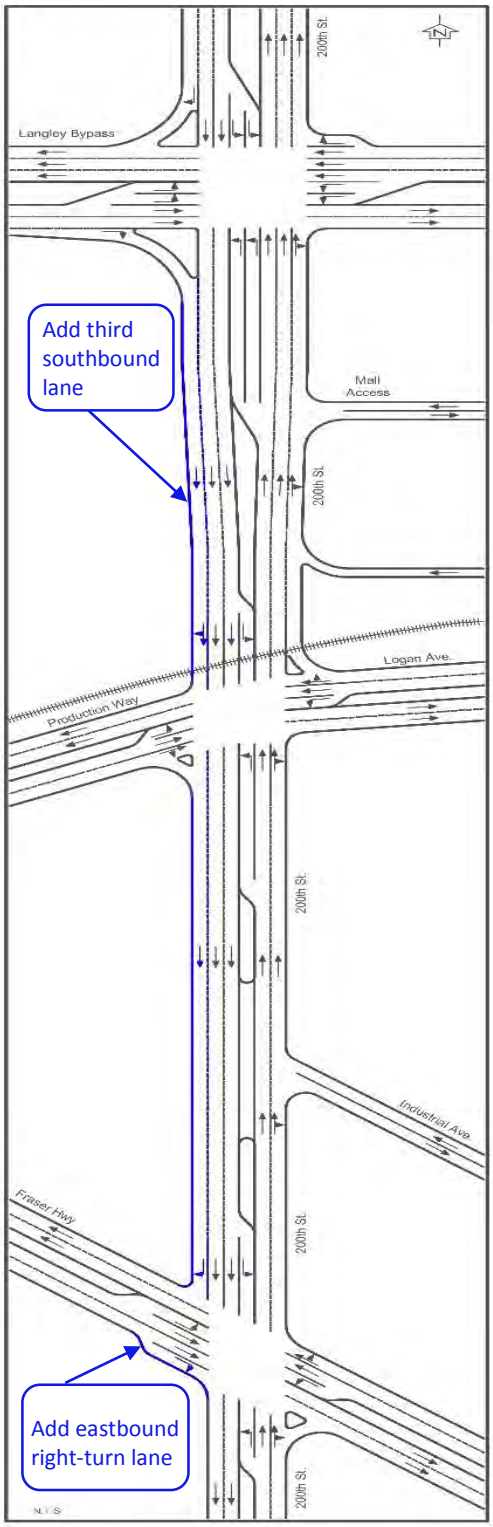
Currently, this section of the corridor carries approximately 1,750 vehicles in the peak direction during the afternoon peak hour just north of the Langley Bypass. By 2031, forecast volumes are projected to increase by an additional 450 vehicles in the peak direction, as shown in **Figure 6.5** . Moving south towards Logan Avenue, the PM peak hour volumes on 200th Street are slightly lower, with approximately 1,315 vehicles per hour at Fraser Highway. The key intersections along this segment of 200th Street are currently operating under moderate to significant delays during the peak hours. With increasing travel demands over the next 20 years, the levels of service at the key intersections are expected to decline. In particular, the intersection at 200th Street and Fraser Highway is projected to operate at LOS E during the PM peak hour – close to capacity.

**Figure 6.5**

**200th St – Langley Bypass to Fraser Hwy**

**2031 AM (PM) Peak Hour Volumes/Levels of Service & Improvement Concept**



In order to respond to the increased delays, a third southbound lane on 200th Street between south of the Langley Bypass and Fraser Highway is included in the Road Network Plan. The third southbound lane will provide additional capacity on this segment of the corridor to support the forecast travel demands. As shown in **Figure 6.5**, the third southbound lane will begin south of the Langley Bypass and ultimately terminate as a right-turn lane at the Fraser Highway intersection. In addition to the corridor improvements, intersection upgrades at Logan Avenue and Fraser Highway will also be provided to address operational and safety issues.


The intersection at Logan Avenue is expected to maintain relatively good levels of service over the next 20 years during the peak periods, however there are some safety issues that need to be addressed as traffic demands continue to increase. A review of the ICBC safety data for Logan Avenue at 200th Street indicates that over 50 collisions have been reported at this intersection over a 3-year period. Rear-end collisions are the most dominant in both the northbound and southbound direction.

These collisions are typical at signalized intersection, especially at intersections with high traffic volumes, consequently solutions to address this issue are limited. In the westbound direction, sideswipe collisions were most common and are likely impacted by the geometry of the curve approaching the intersection. Left-turn collisions are the most common in the eastbound direction and this can be attributed to the limited sight-distance for turning vehicles. Reconfiguring the intersection could be a possible solution to address the east-west safety issues, however, there would be significant impacts to the adjacent property, as well as the rail-crossing. It is recommended that a protected left-turn phase be implemented for the eastbound left-turn. Considering the low eastbound left-turn volumes, minimal impacts to the overall delays at the intersections are expected.


The intersection of 200th Street and Fraser Highway currently operates under acceptable level of service (LOS D) during PM peak hour. As traffic demands continue to increase on 200th Street, the overall intersection is expected to operate near capacity at LOS E, with key movements operating at near or failing conditions. Historically, intersection safety at this intersection has been problematic and will become more of an issue with growing demands. A review of the ICBC safety data for this intersection

indicates that over 120 collisions have been reported at this intersection over a 3-year period. Approximately 70% of these collisions were classified as rear-end collisions. Considering the skewed alignment of the intersection and the high traffic volumes, provision for an eastbound right-turn lane is recommended in addition to the southbound right-turn lane included as part of the overall corridor improvement.

The order of magnitude cost estimate for widening 200th Street between Langley Bypass and Fraser Highway, including intersection improvements is approximately $1.7 million. This estimate does not include property and other servicing costs.

### 2. Langley Bypass – 200th Street to Fraser Highway

Under the jurisdiction of the BC MoTI, the Langley Bypass is a critical east-west route that traverses across the northern part of the City and serves local, regional and inter-regional travel demands. The Langley Bypass also serves as primary truck route within the city, accessing the commercial and industrial areas to the south. At the City's western limit, the Langley Bypass crosses 196th Street and continues eastward to Glover Road. From Glover Road, the Langley Bypass continues south and crosses Fraser Highway. Classified as Provincial Highway, the Langley Bypass is primarily a four-lane undivided facility with signalized intersections at Fraser Highway (east and west), 200th Street and Glover Road.

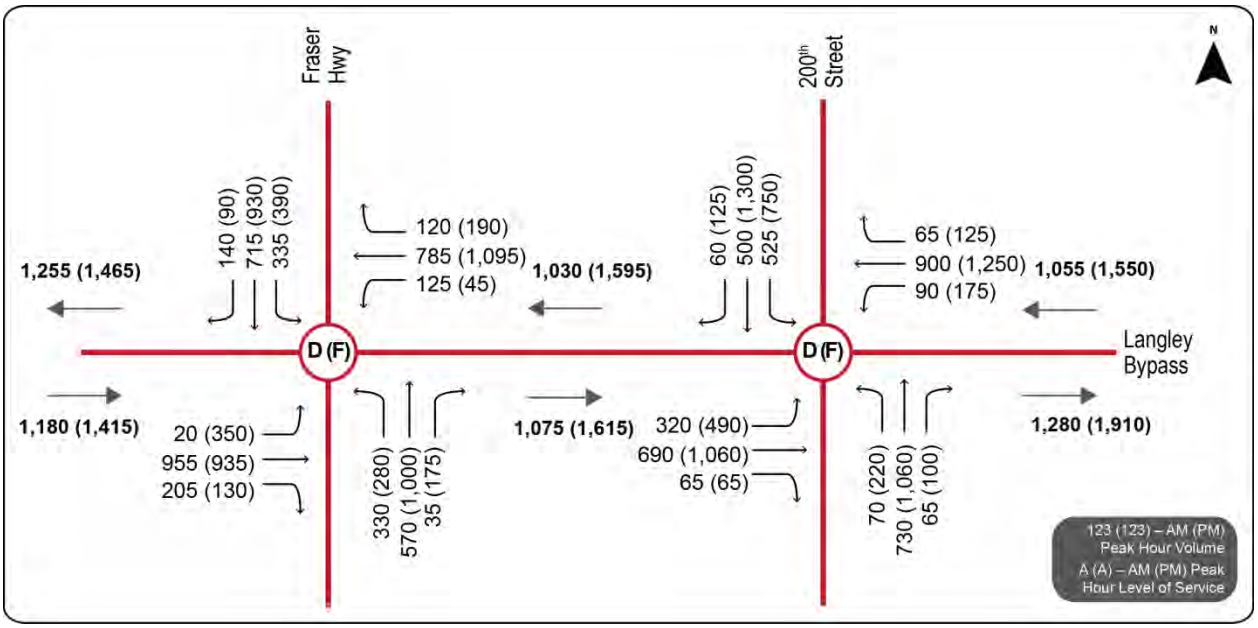
In the westbound direction, the Langley Bypass currently has three travel lanes through the intersection at 200th Street. The segment of Langley Bypass between Fraser Highway and 200th Street carries almost 1,300 vehicles in both eastbound and westbound direction during the PM peak hour between west of 200th Street. By 2031, these peak directional volumes are projected to increase by approximately 300 vehicles on the corridor in each direction, as shownError! eference source not found.. The key intersections along this segment of 200th Street are currently operating under significant delays during the peak hours. With increasing travel demands over the next 20 years, the signalized intersections will continue to operate under failing levels of service.

Safety data provided by ICBC over a three-year period indicates that the intersection at 200th Street/Langley Bypass and Fraser Highway/Langley Bypass are two of the highest collision prone locations within the City. This is expected considering the high traffic volumes at these locations.

To support the anticipated travel demands and address operational and safety issues, the City should continue planning with the MoTI on widening the Langley Bypass from four to six lanes between Fraser Highway and 200th Street to address overall corridor mobility.

**Figure 6.6**

**2031 Peak Volume & Level of Service - Langley Bypass**




## 6.3.2 Network Connectivity and Circulation

A number of minor network improvements that will benefit the overall connectivity and circulation within the City been identified in the Road Network Plan. The recommended improvements are identified to enhance traffic flow and accessibility within the City's network, as well as improved connections to the surrounding municipalities. Beyond enhanced connectivity, other benefits associated with these improvements include improved access for residents in addition to alternative routes for walking, cycling and transit in addition to emergency response vehicles. The discussion below describes the connectivity and circulation improvements recommended in the MTP.

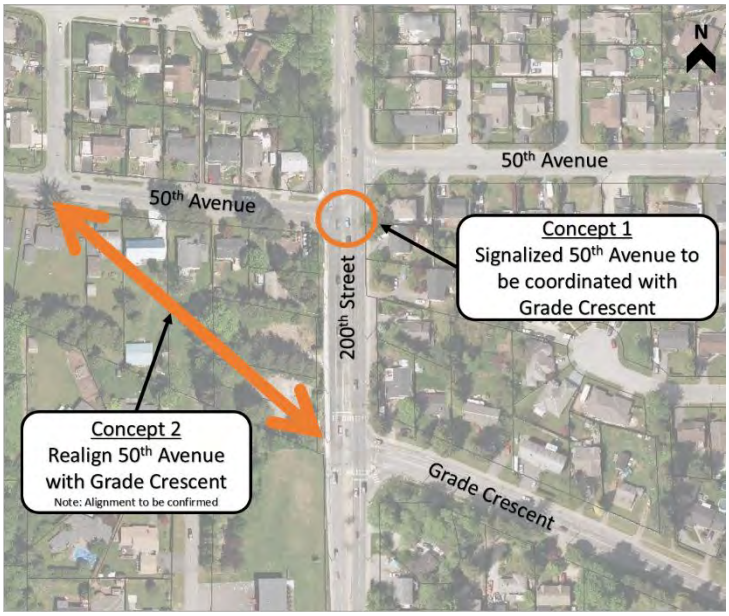
### 1. 50th Avenue/Grade Crescent

50th Avenue and Grade Crescent are both east-west arterials that intersect with 200th Street approximately 100 metres apart. 50th Avenue is currently a two-lane arterial road that provides connection between 192nd Street and 200th Street, while Grade Crescent provides east-west connection between 200th Street and 208th Street. The intersection at 50th Avenue and 200th Street is an unsignalized, full movement T-intersection which supports a northbound left-turn

lane. The Grade Crescent intersection and 200th Street is a signalized T-intersection with a southbound left-turn lane.

Traffic continuing east-west between 50th Avenue and Grade Crescent are forced to weave across two lanes of traffic under a very short distance (approximately 30 metres) before approaching the left-turns lanes along 200th Street. As volumes increase in the medium- to long-term, the City will want to address the weave challenges for east-west travel accessing 200th Street. Two improvement concepts have been developed to support east-west connections between these two closely spaced intersections. As illustrated in **Figure 6.7** and described in detail below, the first concept is expected to address existing weaving and accessibility issues on 200th Street and 50th Avenue, while Concept 2 would provide enhanced east-west connectivity in the long-term as traffic volumes increase.

**Figure 6.7**
**50th Avenue/Grade Crescent Concept 1 & 2**



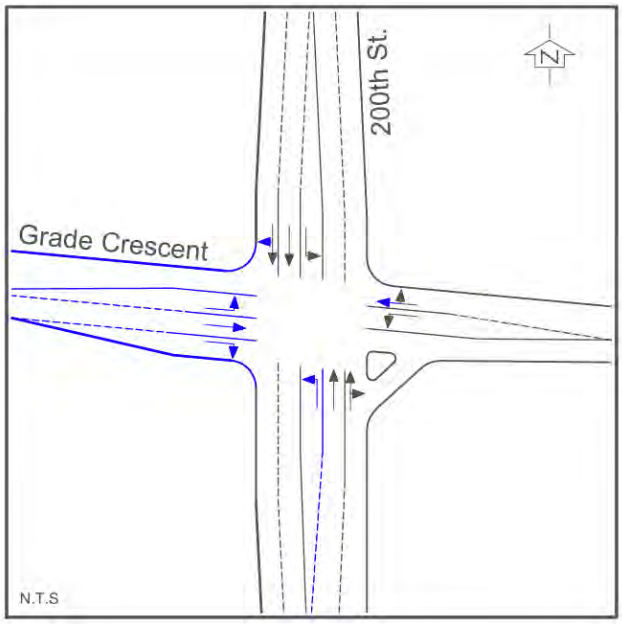

- **Concept 1:** Maintain the existing configuration of the intersections and provide a new signal at 50th Avenue to be coordinated with the Grade Crescent signal. This new signal would address weaving issues on 200th Street, and improve the connection between 50th Avenue and Grade Crescent.

- **Concept 2:** As traffic on 200th Street increases, the City may consider realigning the two intersections as identified in the 2004 MTP and illustrated in **Figure 6.8**. The current access to 200th Street at 50th Avenue would be closed off with a cul-de-sac. Property would be required to accommodate this concept, however the City has been historically acquiring properties.

The order of magnitude cost estimate for the short-term concept at 50th Avenue/Grade Crescent is approximately $300,000, while the cost of the long-term concept is approximately $1.26 million. These estimates do not include property and other servicing costs.

It is also recommended that the City consider working with the community through consultation to identify other possible concepts to address future mobility and safety issues.

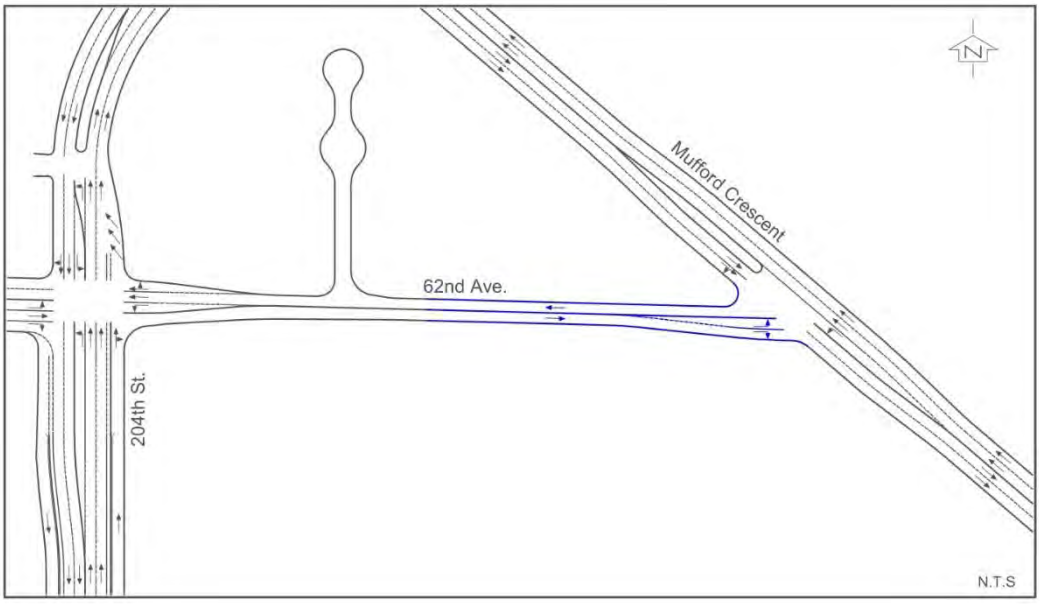
**Figure 6.8**
**200th Street and Grade Crescent Concept 2**




## 2. 62nd Avenue – 200th Street to Glover Road

62nd Avenue is an east-west connector that is located on the northern boundary between the City and the Township of Langley. It is currently a two-lane local facility that provides connections between 200th Street and 204th Street, as well as access to adjacent commercial and industrial land uses. 62nd Avenue is discontinuous between 204th Street and Mufford Crescent. Through the Mufford Crescent/64th Avenue Overpass upgrades that are currently underway, the connection between 200th Street and Mufford Crescent will be made continuous and is expected to be completed in Summer 2014 (see **Figure 6.9**).

**Figure 6.9**
**62nd Avenue Improvement**




2011 AADT volumes indicate that the 62nd Avenue corridor carries between 8,100 and 8,500 vehicles per day. Assuming a 25% growth over 20 years, the future AADT is estimated to be over 10,000 vehicles per day. West of 204th Street, the PM peak hour corridor volume in the peak direction is currently in the range of 600 vehicles and is estimated to increase to approximately 750 vehicles by 2031. The PM peak hour directional volumes east of 204th Street are relatively low and are currently in the range of 170 vehicles. The directional volumes in this segment are projected to increase by more than 200 vehicles by 2031.

As commercial and residential development continue to grow in the Willoughby Area, immediately north of 62nd Avenue, the network in the northern part of the City will see increasing pressures. These changes will likely have an impact on the functionality of 62nd Avenue. To support these anticipated changes, the widening of the 62nd Avenue from 2 to 4 four lanes has been identified by the City and reviewed as part of this MTP.

The traffic analysis indicates that modest growth is expected with a continuous connection on 62nd Avenue between 200th Street and Mufford Crescent. This suggests that a four-lane upgrade would not be required to support projected growth over the next 20-years. However, if growth extends beyond the modest increase projected with changes to the new 62nd Avenue connection, the City and Township may wish to preserve for the 4 lane cross-section.

### 6.3.3 NETWORK CHANGES BEYOND THE MTP

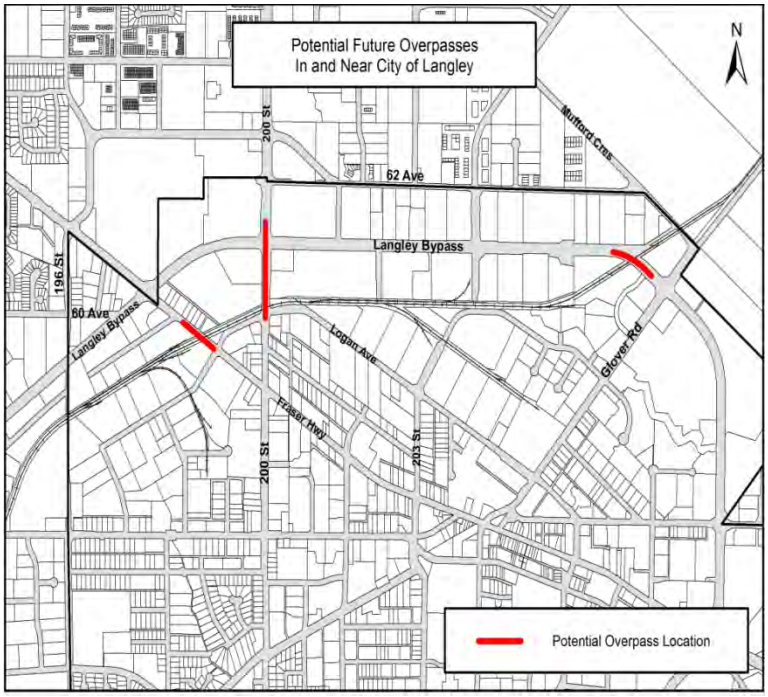
Port Metro Vancouver has recently identified plans to implement the Roberts Bank Terminal 2 Project. Recognizing that rail traffic through the City of Langley will continue to grow beyond the planning horizon of this MTP with the Terminal expansion, further study will be necessary to identify and mitigate the impacts to the City's transportation network. Increased train size and activity will increase delays and impacts on mobility within the City for all modes – traffic, transit, walking and cycling – will introduce new safety and quality of life impacts.

Although City residents and Council do not support increased rail activity through the City, the MTP acknowledges the need for potential strategies to mitigate the impacts on mobility that are within local controls and may be requested of the railway operators. The following discussion highlights some of the mitigation strategies and priorities for the City.

a. **Make best use of existing / new overpass structures.** Over the last five or more years, the City has worked with neighbouring municipalities, TransLink and the Province on the provision of grade-separated crossings of the railway to enhance north-south mobility for all modes of travel. The 204th Street Overpass was identified in the 2004 MTP and subsequently constructed in 2007. The 196th Street and Mufford crossings have been planned and delivered as part of the Roberts Bank Rail corridor project.

In support of these new network connections within and around Langley, the City will want to first maximize the benefits of these investments through the Rail Corridor Information System (RCIS) to direct traffic to these grade-separated crossings as rail traffic increases. Drivers will be alerted to the presence and direction of trains traversing through the City in order to make use of alternative crossings and the grade-separated options in the network.

b. **Consider new crossings for priority modes.** Admittedly, any further grade-separations of the railway would be costly and could impact the urban character of the City. In some cases, the City may wish to consider new crossing locations to serve priority modes such as walking, cycling and transit in order to maintain access and circulation within the City. Grade-separated crossings for priority modes will potentially off-set the impacts of increased rail activity on mobility and manage the costs and impacts on the City's urban character.




c. **Consider new crossings for general purpose traffic.** As a last resort, the City identified additional grade-separated crossings of the railway corridor to minimize the impacts of increased rail activity on mobility and accessibility for goods movement, emergency vehicles and general purpose traffic (in addition to walking, cycling and transit). The potential crossing locations to be explored include Fraser Highway, 200th Street and the Langley Bypass.

It should be noted that the 200th Street crossing was identified as a possible location for grade-separation under the Roberts Bank Terminal 1 Project, however, it was not considered as a priority.

### 6.3.4 Safety & Operational Improvements

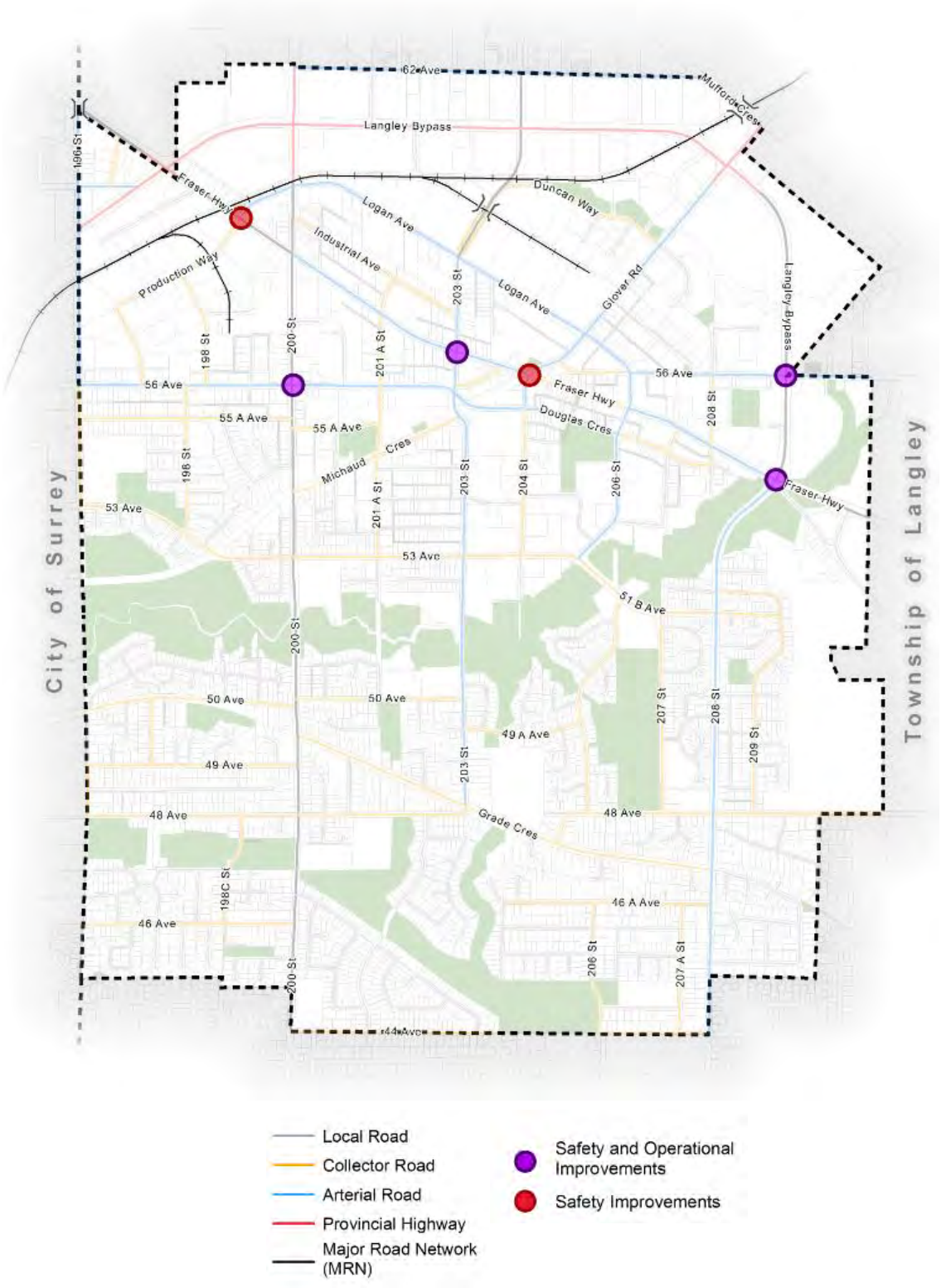
Since the 2004 MTP, the City has implemented improvements at several intersections including 203rd Street/Douglas Crescent and Glover Road/Logan Avenue. Over the next 20 years, additional intersections beyond those included in the corridor and connectivity improvement discussions will experience increasing delays with the projected traffic growth. The City may want to consider provision of turn-lanes and signal timings to reduce delays and improve safety at signalized intersections.

In general, the City's key intersections are expected to operate with significant delays during the peak hours by 2031. For those intersections operating below LOS D during the peak hours, further operational review was conducted as the key movements at these intersections are expected to operate near or at failing conditions.

In addition, a detailed safety review was conducted for the intersections where traffic data was available. Based on calculated collision and severity rates, the top 10 intersections were identified for further safety review. It should be noted that the Ministry's intersections have been excluded from this review. The Ministry's intersections include the ones located on the Langley Bypass at Fraser Highway, 200th Street and Glover Road. **Figure 6.10** highlights the intersections recommended for operational and/or safety improvements as described on the following pages.

**Figure 6.10**

**Recommended Safety and Operational Improvements**



The following improvements have been identified to enhance intersection operations and/or safety:

### 1. Langley Bypass/56th Avenue

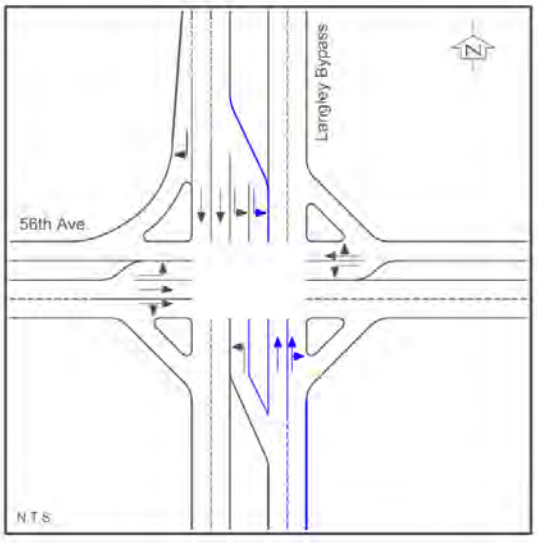
A review of the safety data provided by ICBC for the 2009 to 2011 period indicates a high number of rear-end collisions in the westbound direction. These collisions are likely due to higher traffic volumes in the westbound direction, as well as the 'lane drop' approaching the intersection in the westbound direction.

The intersection of Langley Bypass and 56th Avenue is projected to operate with significant delays at LOS F by 2031. Westbound left-turns (540 vehicles in the AM peak hour), westbound right-turns (560 vehicles in the PM peak hour) and southbound left-turns (415 vehicles in the PM peak hour) contribute to the future delays.

Considering the limited right-of-way in the westbound direction, widening the intersection to provide additional lanes without significant property impacts would be challenging. As illustrated in **Figure 6.11,** the following improvements are recommended to address the operational and safety issues at the intersection:

- Re-mark current pavement marking on the westbound left-turn lane to provide clearer lane guidance for drivers (i.e. by demarcating the left-turn lane with the introduction of a painted island at the transition rather than 'dropping the through lane at the intersection);
- Provide advanced green phase for both the eastbound and westbound left-turns and optimize signal timing;
- Provide dual southbound left-turn storage bay and eliminate the northbound channelized right-turn.

**Figure 6.11**
**Langley Bypass and 56th Avenue Improvement Concept**




The proposed pavement improvements will enhance driver awareness and better prepare drivers for the lane drop ahead. Operational improvements at the intersection will also reduce delays in the southbound and westbound direction.

## 2. Fraser Highway/Langley Bypass/208th Street

Collision data collected by ICBC between 2009 and 2011 indicate that a high number of rear-end collisions have occurred in both the eastbound and westbound direction at Fraser Highway and 208th Street. These collisions can be attributed to high volumes and the fact that the eastbound and westbound left-turns movements are permissive rather than protected. In addition, in the westbound direction, two through lanes reduces to one through lane at the intersection, with the curb lane transitioning into an exclusive right-turn lane.

The intersection of Fraser Highway and Langley Bypass/208th Street is expected to experience increased delays resulting in an overall LOS D by 2031 (LOS E for westbound through traffic).

To address the identified operational and safety issues, an additional westbound through-lane can be provided at the intersection, which would require widening the current bridge structure on Fraser Highway and impacting adjacent property. Rather, an advance green (protected/permitted phase) for the westbound and eastbound left-turn is recommended for the intersection of Fraser Highway and Langley Bypass/208th Street:

This proposed improvement will allow the overall intersection to continue operating at a LOS D, while providing an exclusive, protected left-turn phase. The Highway Safety Manual suggest that changing from permissive to protected/permissive phasing can reduce collisions at an intersection by 26%. Collision types that would particularly benefit from a protected phase are rear-end and left-turn collisions.

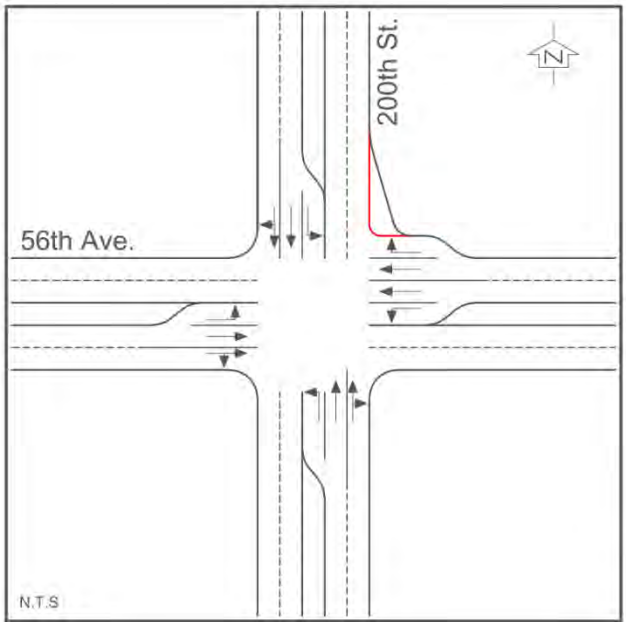
## 3. 200th Street/56th Avenue

The intersection of 200th Street and 56th Avenue currently operates at LOS C during the PM peak hour. By 2031, forecasts suggest that operations will deteriorate to LOS D, with the southbound approach reaching a LOS E. Most of the collisions reported at the intersection between the 2009 and 2011 period, occurred in the northbound and eastbound directions. These collisions include rear-ends, sideswipe and left-turns that can be attributed to accesses in close proximity to the intersection, as well as higher intersection volumes.

To address the identified safety constraints, the following improvements are recommended:

- Provide advance green (protected/permitted phase) for the eastbound left-turn
- Eliminate the short right-turn merge on the northeast corner and replace with a curb extension, as shown **6.12.**

**Figure 6.12**
**200th Street and 56th Avenue Improvement Concept**




The proposed improvements will address reduce long-term delays with a LOS D or better during the peak hours. The advance green for eastbound left-turns will provide an exclusive, protected left-turn phase and reduce rear-end and left-turn collisions. In addition, eliminating the short right-turn merge will reduce driver confusion on which lane they should be turning into and possibly avoiding sideswipe collisions.

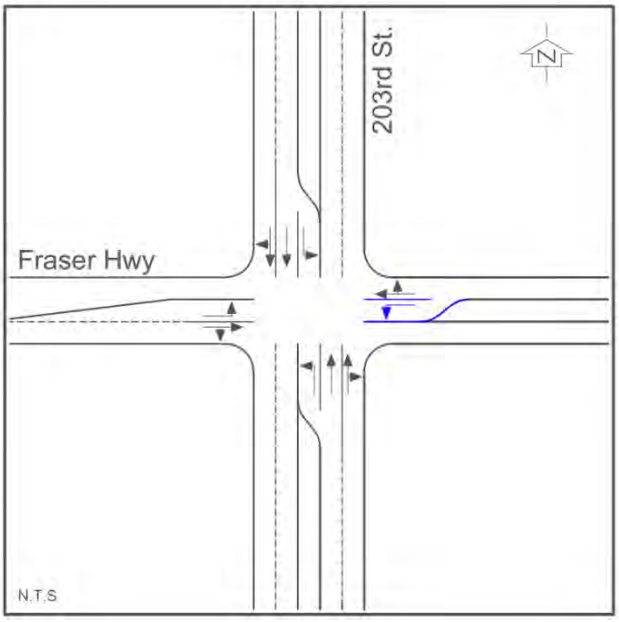
## 4. Fraser Highway/203rd Street

Collision data collected from ICBC indicate a higher number of rear-end collisions in the eastbound and westbound direction occurred between 2009 and 2011. These collisions can be attributed to the fact that the westbound approach includes a wide shared through right-turn and left-turn lane. As such, westbound through vehicles have adequate space to pass the left- or right-turning vehicles. Consequently, this may make it difficult for the eastbound left-turning vehicles to gauge on-coming traffic.

In the summer of 2013, the provision of a westbound left-turn lane and re-alignment with the east-bound left-turn was completed in conjunction with a repaving of Fraser Highway. To address the additional safety issues, the following improvements are also recommended (see **Figure 6.13**):

- Provide advanced phase for the westbound direction;
- Shorten the "taper" that leads to 204th Street such that adequate time and space is provided for eastbound drivers to select the correct lane, thus providing reducing the friction for eastbound vehicles exiting the intersection.

**Figure 6.13**
**Fraser Highway and 203rd Street Improvement Concept**



## 5. Fraser Highway/204th Street/Glover Road

A review of the ICBC collision data (2009 to 2011) for the intersection of Fraser Highway and 204th Street/Glover Road indicate a disproportionately high number of rear-end and sideswipe collisions in the southbound approach. These collisions can be attributed to the horizontal curve combined with foliage limiting the visibility of the traffic signal. In addition, the southbound curb-lane becomes a right-turn only lane (except buses) at the intersection. Regulatory signs (text "Right Lane must Turn Right") are provided; however, these signs may be difficult to process and comprehend by drivers. When encountered with a lane drop, southbound drivers tried to merge, resulting in a high number of sideswipe collisions.

To address these safety issues at the intersection, the following improvements are recommended:

- Trim foliage
- Add a tertiary signal head on the near right side.
- Provide Advanced Lane Designation Signs – overhead signs would be preferred, while roadside mounted signs would be less desirable.

The proposed improvements are intended to provide clearer sight lines and enhance driver awareness of the intersection and regulatory signs ahead.

## 6. Fraser Highway/Production Way

A review of the ICBC collision data (2009 to 2011) for the intersection of Fraser Highway and Production Way indicate that rear-end collisions are the most prominent in the southbound and eastbound directions. A lane drop occurs in the southbound direction, and no advanced signal phase is provided for the left-turns. To address these issues and collision patterns, the following improvements are recommended:

- Provide additional signage in the southbound direction advising motorist of lane drop
- Provide advance green phase for the eastbound left-turn

Additional signage will enhance awareness of the lane drop for motorists, while an advance left-turn phase can address rear-end collisions.

### 6.3.5 INTERSECTION ROUNDABOUTS

Modern roundabouts are emerging in many jurisdictions as a preferred means of intersection control in specific situations. Review and research of roundabouts throughout North American and Europe indicate that roundabouts can greatly improve safety and mobility, as well as reduce greenhouse gas emissions in comparison to other types of intersection treatments such as signalization and four way stop controls.

Looking ahead, the City will continue to be faced with the need to address operational and safety matters at intersections such as the provision of traffic control signals or four-way stops to address delays. Rather than simply implement conventional stop controlled or signalized intersections, modern roundabouts can serve to support higher traffic volumes than stop controlled intersections where space permits.

**Figure 6.14**
**Basic Features of a Roundabout**


Adapted from: BC MoTI & Federal Highway Administration, Roundabouts: An Informational Guide, Report No. FHWA -RD-00-067, June 2000.

The basic features of a modern roundabout, as shown in **Figure 6.14**, include:

A. **Central Island**: The central island is the raised area in the center of a roundabout around which traffic circulates.

B. **Splitter Island**: A splitter island is a raised or painted area on an approach used to separate entering from exiting traffic, deflect and slow entering traffic and provide storage space for pedestrians crossing the road in two stages.

C. **Circulatory Roadway**: The circulatory roadway is the curved path used by vehicles to travel in a counter-clockwise fashion around the central island.

D. **Truck Apron**: If required on smaller roundabouts to accommodate the wheel tracking of large vehicles, an apron is the mountable portion of the central island adjacent to the circulatory roadway.

E. **Yield Line**: A yield line is a pavement marking used to mark the point of entry from an approach into the circulatory roadway and is generally marked along the inscribed circle. Entering vehicles must yield to any circulating traffic coming from the left before crossing this line into the circulatory roadway.

F. **Pedestrian Crossings**: The crossing location is set back from the yield line and the splitter island is cut to allow pedestrians, wheelchairs, strollers and bicycles to pass through.

It is recommended that the City work with ICBC to establish a proactive strategy to consider the implementation of roundabouts as a way of addressing operational and safety issues at unsignalized intersections. Consideration should be given to the following general criteria for identifying potential locations in which roundabouts may be considered in future:

1. **Traffic Volumes and Operation:** direction and saturation flow - ratio of major versus minor road traffic flow and through versus turning volumes.
2. **Historical Collisions:** average relevant collision rates (collisions that would be mitigate within the implementation of a roundabout); and serve collisions compared with property damage only collisions.
3. **Road Function:** road classification; right-of-way width; transit, bike and truck routes; and sidewalks.
4. **Existing Utilities:** utilities impacts; drainage; sanitary; and water (catch basins, manholes, hydrants, culverts, valves, etc.); and Hydro Poles and Street Lighting Impacts.

### 6.3.6 Roadway Classification System

The roadway network within the City of Langley generally serves two primary objectives - access and mobility for all modes. The City's classification system provides a hierarchy to capture different road functions in the City as illustrated on the following page in **Figure 6.15.** The specific roadways and classifications in the MTP are generally consistent with the 2004 Plan, with some slight modifications as directed by City Staff that are briefly summarized below:

- **Provincial Highways** are under the jurisdiction of the Ministry and are intended to serve interregional and provincial travel. The primary role of highways is to move traffic with limited or no access to adjacent properties. Posted speeds are generally more than 70km/hr and parking is typically prohibited along the Highway. Langley Bypass and a small segment of 200th Street and Glover Road are considered part of the Provincial Highway system.

- **Major Road Network (MRN)** is principally comprised on municipal arterial roadways that serve a regional function for traffic, trucks and transit. Although the MRN is owned by the City, these

roadways are jointly managed and operated with TransLink. The existing and planned MRN in the City of Langley include:

- 204th Street – North of Logan Avenue to the City of Langley/Township of Langley border;
- Fraser Highway (west) - East of Langley By-Pass to 200th Street;
- Fraser Highway (east) - Langley Bypass to City of Langley/Township of Langley border.
- Langley Bypass - North of Fraser Highway to east of Glover Road;
- 200th Street – City of Langley/Township of Langley border to the south of Langley Bypass

- **Arterial Roads** are typically designed to provide mobility for long-distance regional mobility across and between Metro Vancouver communities. Direct access to arterial roads is usually limited to commercial driveways. The arterial roadways in the City include:

  - Logan Avenue
  - Glover Road
  - Fraser Highway
  - Douglas Crescent
  - 56th Avenue
  - 196th Street
  - 203rd Street
  - 206th Street
  - 208th Street

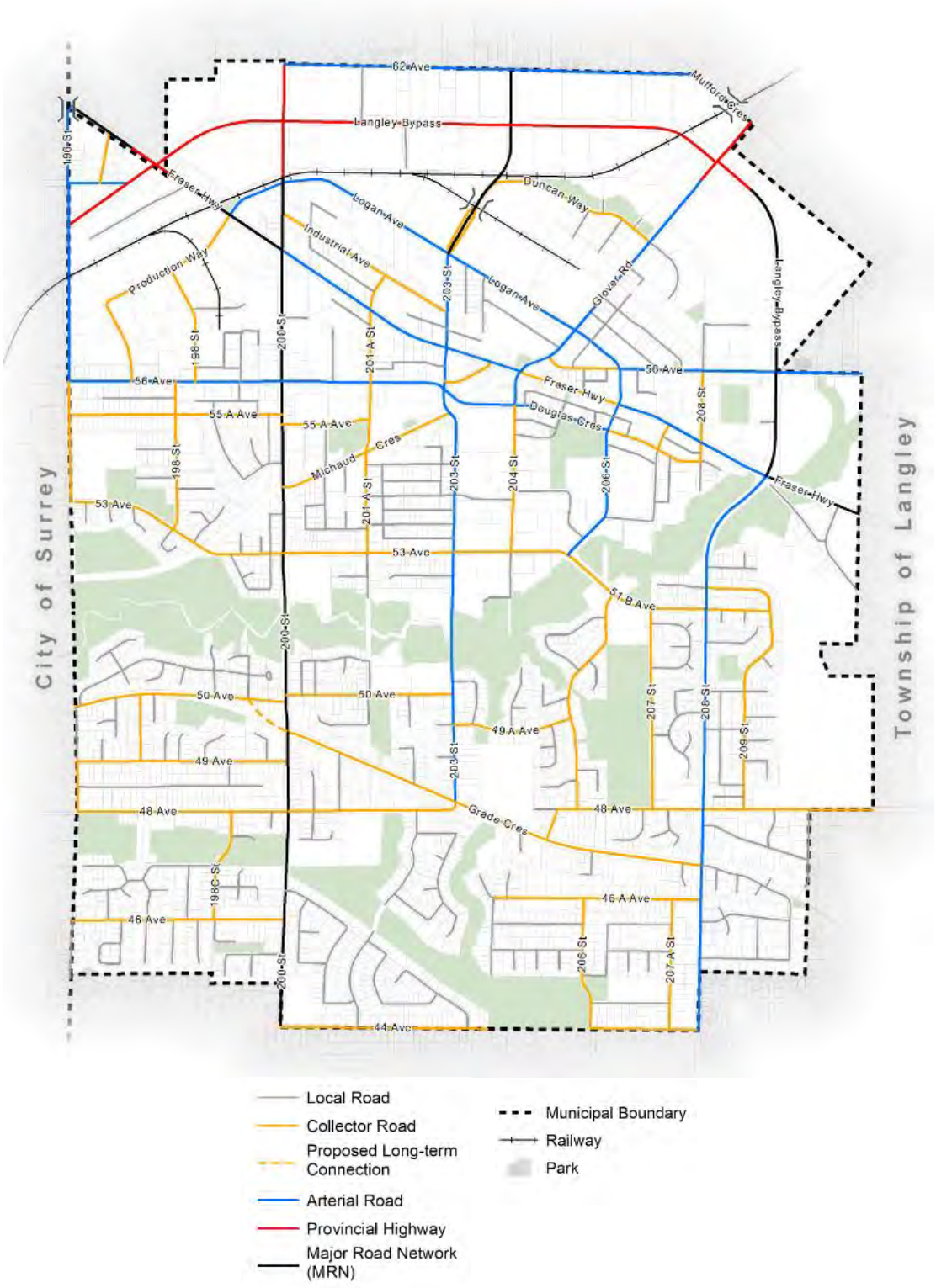
- **Collector Roads** primarily serve a dual function of mobility between neighbourhood streets and the arterial network as well as access to individual properties. On-street parking is usually permitted and transit service is also supported. The collector network in the City includes:

  - 44th Avenue
  - 46th Avenue
  - 46A avenue
  - 48th Avenue
  - 49th Avenue
  - 49A Avenue
  - 55A Avenue
  - 50th Avenue
  - 53rd Avenue
  - 53B Avenue
  - 62nd Avenue
  - 198th Street
  - 201A Street
  - 206th Street
  - 207th Street
  - 208th Street
  - 209th Street
  - Grade Crescent
  - Michaud Crescent
  - Production Way
  - Industrial Avenue
  - Duncan Way

In this Plan, 48th Avenue, 50th Avenue, 53rd Avenue, 53B Avenue, and Grade Crescent has been reclassified from an arterial to a collector roadway as directed by City Staff to better align with the actual function of this corridor.

- **Local Streets** are primarily designed to serve access to private properties and allow neighbourhood residents to travel to the arterial and collector road system. Parking is usually permitted and transit service is not normally supported other than HandyDart.

**Figure 6.15**
**Proposed Roadway Classification System**



### 6.3.7 DESIGNATED TRUCK ROUTES

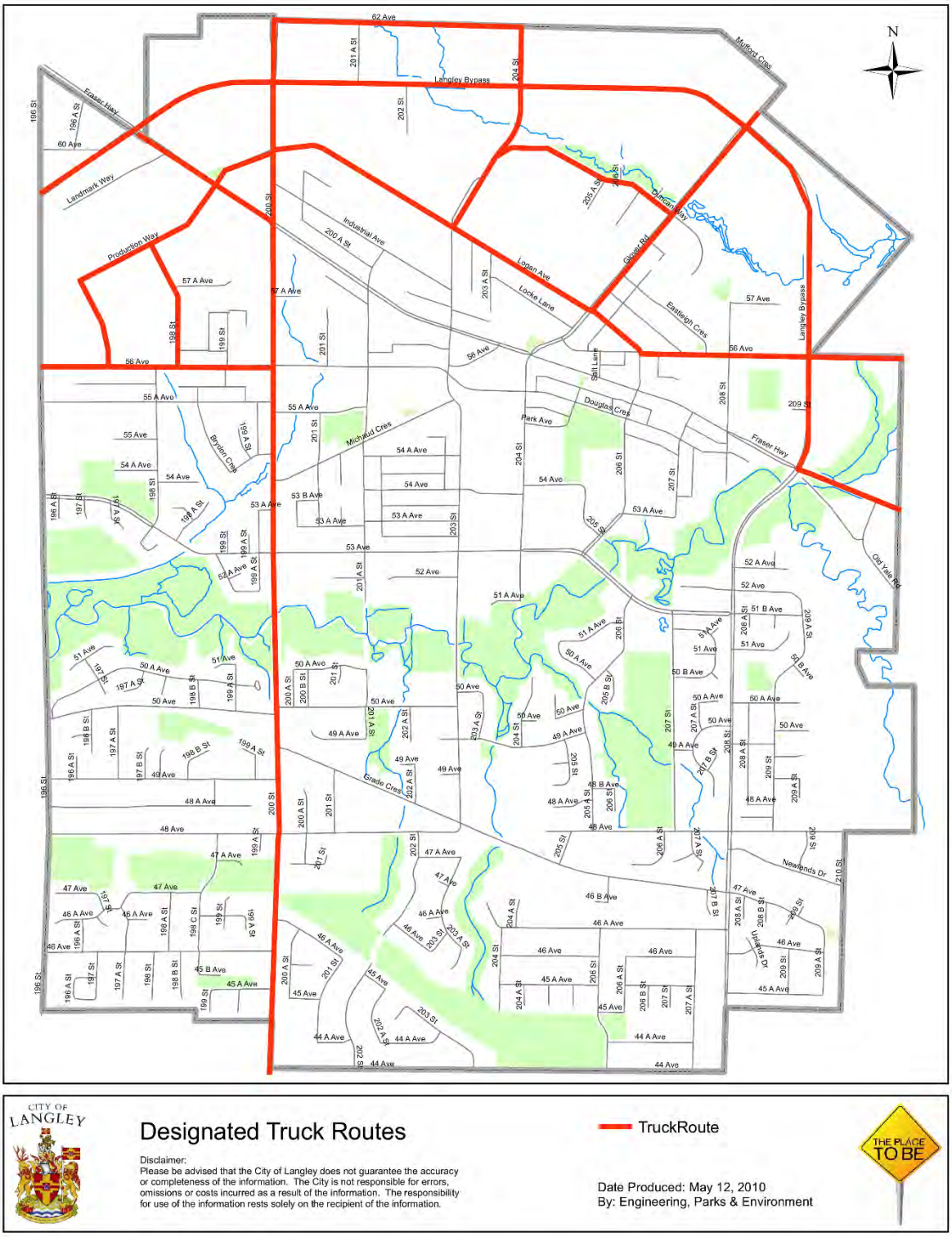
The City's truck route bylaw is contained within the current Traffic Regulation Bylaw No. 2871. The bylaw defines what a "truck" is and how trucks are required to travel to and from their destinations throughout the City, or what routes they are permitted to use.

Consistent with surrounding municipalities, a "truck" is defined in the City of Langley as any vehicle that has a licensed gross vehicle weight (GVW) of greater than 10,000 kilograms. The photo at right illustrates a 15,000 kg truck that would be impacted by the bylaw.

According to the City's bylaw, trucks must travel along designated truck routes, then arterial and collector roads as close to their destination as possible before leaving the specific roadway and using other City streets to access their final destination.

The City's updated truck route map is illustrated in **Figure 6.16**. Recognizing the constraints on 200th Street, the City may consider extending the truck route on 208th Street towards the City's southern limits to provide an alternate north/south route to 200th Street in the future.

**Figure 6.16**
**City of Langley Designated Truck Routes**



## 6.4 Capital Costs & Priorities for Road Network Plan

The capital costs, potential funding partners and overall priorities from all road network improvements described in Section 6.2 of this plan are summarized in **Table 6.1**. Although the priorities are generally identified based on the overall assessment of existing conditions and planned development, changes in growth patterns, funding partnership opportunities and property requirements may affect timing and priorities.

The order of magnitude (Class "D") cost estimates are based on 2013 dollar unit prices and include a 30% contingency allowance, but do not include property acquisition, administration, legal, utility or drainage costs, as well as any other mitigation measures that may be required. Allowances for grading have been included as appropriate. Cost estimates provided in **Table 6.1** should not be used for budgeting purposes until functional planning and design have been undertaken.

**Table 6.1**
**Summary of Road Network Improvement Projects**

| Road/Location | Description | Priority | Capital Cost ($) | TransLink | Provincial/ Federal | City | Private |
|---|---|---|---|---|---|---|---|
| **Major Network Improvements** | | | | | | | |
| 200th Street – Langley Bypass to Fraser Highway | Provide additional southbound lane | Medium-Term | $1,700,000 | ✓ | | ✓ | ✓ |
| Langley Bypass – 200th Street to Fraser Highway | Upgrade from 4-lanes to 6-lanes | Medium-Term | n/a | | ✓ | | |
| **Network Connectivity and Circulation** | | | | | | | |
| 50th Avenue/Grade Crescent | Signalize both 50th Avenue and Grade Crescent | Short-Term | $300,000 | ✓ | | ✓ | |
| 50th Avenue/Grade Crescent | Extension of Grade Crescent to 50th Avenue | Long-Term | $1,260,000 | ✓ | | ✓ | |
| 62nd Avenue – 204th Street to Mufford Crescent | Complete 62nd Avenue from 204th Street to Mufford | Short-Term | n/a | | ✓ | ✓ | |
| **Safety & Operational Improvements** | | | | | | | |
| 1. Langley Bypass / 56th | | Short-Term | $1,500,000 | ✓ | | ✓ | |
| 2. Fraser Highway / Langley Bypass | | Short-Term | $100,000 | | | | |
| 3. 200th Street / 56th Ave | | Short-Term | $100,000 | ✓ | | | |
| 4. Fraser Highway / 203rd St | | Short-Term | $50,000 | | | ✓ | |
| 5. Fraser highway / 204th St | | Short-Term | $50,000 | | | ✓ | |
| 6. Fraser Highway / Production Way | | Short-Term | $50,000 | | | ✓ | |

Appendix A

# DETAILED COST ESTIMATES & PRIORITIES

## Table A1. Bicycle Network Plan Projects (By Segment)

| Project Location | From | To | Length (m) | Cost | Priority |
|---|---|---|---|---|---|
| ***Neighbourhood Bikeways*** | | | | | |
| 54 Ave | 201a St | 204 St | 560m | $22,400 | Short-term |
| 54 Ave | 204 St | 205 St | 203m | $8,120 | |
| 205 St | 54 Ave | 53a Ave | 204m | $8,160 | |
| 204 St | 51a Ave | Douglas Crescent | 735m | $29,400 | |
| 198C St | 46 Ave | 48 Ave | 431m | $17,240 | Medium-term |
| 201A St | 52 Ave | Michaud Crescent | 506m | $22,400 | |
| 202 St | 44 Ave | 45 Ave | 400m | $15,960 | |
| | 46 Ave | 48 Ave | 403m | $16,120 | |
| 204 St | 45a Ave | 46a Ave | 400m | $16,000 | |
| 205a St | 48 Ave | 51a Ave | 104m | $4,160 | |
| 206 St | 51a Ave | 51b Ave | 787m | $31,480 | |
| 207A St | 44 Ave | 46a Ave | 497m | $19,880 | |
| 208 St | 208 St | 56 Ave | 466m | $18,640 | |
| 209 St | 48 Ave | 50a Ave | 450m | $18,000 | |
| 44 Ave | 200 St | 204 St | 814m | $32,560 | |
| 44A Ave | 206 St | 207A St | 301m | $12,040 | |
| 46A Ave | 204 St | 208 St | 792m | $31,680 | |
| 46 Ave | 196 St | 200 St | 794m | $31,760 | |
| 48 Ave | 196 St | 200 St | 800m | $32,000 | |
| 49 A Ave | 203 St | 205a St | 466m | $18,640 | |
| 50 Ave | 200 St | 203 St | 627m | $25,080 | |
| 52 Ave | 50a Ave | 208 St | 647m | $25,880 | |
| | | | ***Subtotal*** | ***$457,600*** | |
| ***Bike Lanes (no widening required) - Cost $30,000/km*** | | | | | |
| 203 Street | 48 Ave | Logan Ave | 2120m | $63,600 | Short-term |
| Michaud Crescent | 203 Street | 200 Street | 646m | $19,380 | Short-term |
| 53 Ave | 196A St | 204 Street | 1708m | $51,240 | Medium-term |
| 48 Ave | 200 Street | 203 Street | 650m | $19,500 | Long-term |
| | | | ***Subtotal*** | ***$153,720*** | |
| ***Bike lane (widening required) – Cost $300,000/km*** | | | | | |
| Langley Bypass* | 56 Ave | Glover Road | 895m | $268,500 | Long-term |
| Langley Bypass* | 196 Street | 200 Street | 939m | $281,700 | Long-term |
| 48 Ave | 205 St | 208 St Audible signals not present | 570m | $171,000 | Long-term |

## Table A1. Bicycle Network Plan Projects (By Segment)

| Project Location | From | To | Length (m) | Cost | Priority |
|---|---|---|---|---|---|
| 208 Street | 44 Ave | 48 Ave | 856m | $256,800 | Medium-term |
| Glover Road | Fraser Hwy | Langley Bypass | 1105m | $331,500 | Short-term |
| | | | ***Subtotal*** | ***$1,309,500*** | |
| ***Off-street pathway*** | | | | | |
| 208th Street | 52a Ave | Fraser Highway | 350m | $1,200,000 | Long-term |
| 196th Street | 53 Ave | 50 Ave | 800m | $120,000 | Long-Term |
| | | | ***Subtotal*** | ***$1.3 million*** | |

*These corridors are under MOTI Jurisdiction and total costs are not included in City of Langley implementation costs

NOTE: The cost estimates provided in Table A1 include construction (both sides of roadway), engineering and contingencies. They do not include any allowance for significant earthworks, driveway reconstruction, landscape restoration, property and legal costs, significant utility relocation, administration, and taxes, all of which could add significantly to the cost. Pathway costs do not include costs for environmental compensation. These unit costs also do not include any allowances for crossing treatments, such as signals and/or median refuges. As such, the cost estimates provided are for planning purposes only and should not be used for detailed budgeting.

## Table A2. Sidewalk Network Improvements

| | Street | From | To | No. of Sides | Total Length | Cost ($300/m) |
|---|---|---|---|---|---|---|
| 1 | 196 St | Fraser Hwy | 60 Ave | 1 | 298 | $ 89,400 |
| 2 | 60 Ave | 196 St | Langley Bypass | 2 | 438 | $ 131,400 |
| 3 | 196 A St | Fraser Hwy | 60 Ave | 2 | 382 | $ 114,600 |
| 4 | Landmark Way | Fraser Hwy | Langley Bypass Access | 2 | 840 | $ 252,000 |
| 5 | 56 Ave | 196 St | Production Way | 2 | 480 | $ 144,000 |
| 6 | Production Way | 56 Ave | Fraser Hwy | 2 | 2238 | $ 545,400 |
| | | Fraser Hwy | ICBC Claim Centre Access | 1 | | $ 20,400 |
| | | ICBC Claim Centre Access | 200 St | 2 | | $ 105,600 |
| 7 | Logan Ave | 200 St | 203 St | 1 | 711 | $ 213,300 |
| 8 | 198 St | 56 St | Production Way | 2 | 908 | $ 272,400 |
| 9 | 57 A Ave | 198 St | Cul-de-sac | 2 | 410 | $ 123,000 |
| 10 | 199 St | 56 Ave | | 1 | 188 | $ 56,400 |
| 11 | 200 A st | 201 A st | North of Industrial Ave | 2 | 1170 | $ 351,000 |
| 12 | Industrial Ave | 200 St | 201 A St | 2 | 912 | $ 273,600 |
| 13 | Locke Lane | 203 A st | | 2 | 118 | $ 35,400 |
| 14 | 203 A st | Logan Ave | Imperial Ave | 1 | 212 | $ 63,600 |
| 15 | 62 Ave | 200 St | mid-block access W | 2 | 3000 | $ 43,800 |
| | | mid-block access W | mid-block access E | 1 | | $ 36,000 |
| | | mid-block access E | W of 204 St | 2 | | $ 337,800 |
| | | W of 204 St | 204 St | 1 | | $ 32,400 |
| | | 204 St | Mufford Cresecent | 2 | | $ 450,000 |
| 16 | 201 A St | 62 Ave | Langley Bypass | 1 | 215 | $ 64,500 |
| 17 | 202 St | Langley Bypass | N of Railway | 1 | 173 | $ 51,900 |
| 18 | Duncan Way | At Railway Crossing | At Railway Crossing | 2 | 1330 | $ 9,000 |
| | | N of Railway Crossing | Pedestrian Overpass | 1 | | $ 57,600 |
| | | Pedestrian Overpass | Glover Rd | 2 | | $ 332,400 |
| 19 | 205 A St | Duncan Way | Cul-de-sac | 2 | 240 | $ 72,000 |
| 20 | 206 A St | Duncan Way | Cul-de-sac | 2 | 314 | $ 94,200 |
| 21 | Collection Dr | Glover Rd | N of Glover Rd | 1 | 49 | $ 14,700 |
| 22 | Langley Bypass | Glover Rd | Kwantlen PU Access | 2 | 1098 | $ 288,000 |
| | | Kwantlen PU Access | N of 57 Ave | 1 | | $ 41,400 |
| 23 | 56 Ave | Langley Bypass | 211 St | 1 | 333 | $ 99,900 |
| 24 | 209 St | Langley Bypass | Safeway Parking Lot | 1 | 53 | $ 15,900 |
| 25 | Salt Lane | Fraser Hwy | 56 Ave | 2 | 188 | $ 56,400 |
| 26 | 207 St | Douglas Cres | 53 A Ave | 1 | 268 | $ 80,400 |
| 27 | 53 A Ave | 200 St | Road N of 199 A St | 1 | 673 | $ 16,500 |
| | Road N of 199 A St | 53 A Ave | 53 Ave | 2 | | $ 90,600 |
| | 199 A St | 53 Ave | 52 Ave | 1 | | $ 40,800 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 52 Ave | 199 A St | 199 St | 1 | | $ 24,900 |
| | 199 St | 52 Ave | S of 53 Ave | 1 | | $ 29,100 |
| **28** | 53 Ave | 200 St | E of 201 A St | 1 | 399 | $ 119,700 |
| **29** | 201 A St | 53 Ave | Cul-de-sac | 1 | 151 | $ 45,300 |
| **30** | 52 Ave | 201 A St | Cul-de-sac | 1 | 108 | $ 32,400 |
| **31** | 52 Ave | Cul-de-sac @ W of 203 St | | 1 | 15 | $ 4,500 |
| **32** | 53 A Ave | 201 St | E of 201 St | 1 | 40 | $ 12,000 |
| **33** | 54 A Ave | 202 St | mid-block access | 1 | 80 | $ 24,000 |
| | | mid-block access | 201 St | 2 | 156 | $ 46,800 |
| | | 201 St | 200 A St | 1 | 77 | $ 23,100 |
| **34** | Mid-block access between 201 A St & 201 St | 53 A Ave | N of 53 A Ave | 2 | 134 | $ 40,200 |
| **35** | 200 A St | 54 A Ave | S of 53 B Ave | 1 | 57 | $ 17,100 |
| **36** | 52 Ave | W of 208 St | Cul-de-sac | 1 | 132 | $ 39,600 |
| **37** | 51 A Ave | 207 St | 207 B St | 1 | 417 | $ 41,100 |
| | 207 B St | 51 A Ave | 50 B Ave | 1 | | $ 42,300 |
| | 50 B Ave | 207 B St | 207 St | 1 | | $ 41,700 |
| **38** | 205 B St | 205 A St | Cul-de-sac | 1 | 125 | $ 37,500 |
| **39** | 50 A Ave | 205 A St | 51 A Ave | 1 | 193 | $ 57,900 |
| | 51 A Ave | 50 A Ave | 205 A St | 1 | 232 | $ 69,600 |
| **40** | 47 A Ave | E of 200 A St | 200 A St | 1 | 166 | $ 19,800 |
| | 47 A Ave | W of 200 A St | 200 A St | 2 | | $ 30,000 |
| **41** | 200 A St | 48 Ave | mid-block | 2 | 248 | $ 56,400 |
| | 200 A St | mid-block | Cul-de-sac | 1 | | $ 18,000 |
| **42** | 201 St | 48 Ave | Grade Cres | 1 | 217 | $ 65,100 |
| **43** | 48 Ave | 200 St | Grade Cres | 1 | 660 | $ 198,000 |
| **44** | 204 A St | Grade Cres | Cul-de-sac (South) | 2 | 168 | $ 50,400 |
| **45** | 204 A St | N of 46A Ave | | 1 | 24 | $ 7,200 |
| **46** | Grade Cres | 201 St | H.D. Stafford Middle School Access | 1 | 1063 | $ 200,400 |
| | Grade Cres | H.D. Stafford Middle School Access | 204 A St | 2 | | $ 60,600 |
| | Grade Cres | 204 A St | W of 206 St | 1 | | $ 57,900 |
| **47** | 205 St | Grade Cres | 48 Ave | 2 | 248 | $ 74,400 |
| **48** | 48 Ave | H.D. Stafford Middle School East Access | 205 A St | 1 | 197 | $ 59,100 |
| **49** | 205 A St | 48 Ave | 48 B Ave | 1 | 147 | $ 44,100 |
| **50** | 48 A Ave | 205 A St | Cul-de-sac (west) | 2 | 284 | $ 85,200 |
| **51** | 48 B Ave | Cul-de-sac (west) | 205 St | 1 | 142 | $ 14,400 |
| | 205 St | 48 B Ave | 49 Ave | 1 | | $ 17,100 |
| | 49 Ave | 205 St | Cul-de-sac (west) | 1 | | $ 11,100 |
| **52** | 49 A Ave | W of 204 St | E of 204 St | 1 | 135 | $ 40,500 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **53** | 199 A St | 45 A Ave | Cul-de-sac (south) | 1 | 80 | $ 24,000 |
| **54** | 45 A Ave | 199 A st | 200 St | 1 | 134 | $ 40,200 |
| **55** | 200 A St | 45 Ave | 45 A Ave | 1 | 98 | $ 29,400 |
| **56** | 45 Ave | 200 A St | 201 St | 1 | 108 | $ 32,400 |
| **57** | 201 St | 44 A Ave | S of 46 A Ave | 1 | 226 | $ 67,800 |
| **58** | 44 A Ave | 201 St | 202 St | 1 | 119 | $ 35,700 |
| **59** | 206 St | N o f 45 Ave | 45 Ave | 1 | 350 | $ 11,100 |
| | | 45 Ave | 44 A Ave | 1 | | $ 33,900 |
| | | 44 A Ave | 44 Ave | 2 | | $ 60,000 |
| **60** | 45 Ave | 206 St | 206 A St | 1 | 92 | $ 27,600 |
| **61** | 206 A St | 45 Ave | 46 A Ave | 1 | 172 | $ 51,600 |
| **62** | 45 A Ave | 206 A St | 207 A St | 1 | 245 | $ 73,500 |
| **63** | 206 B St | 45 A Ave | Cul-de-sac (south) | 1 | 76 | $ 22,800 |
| **64** | 207 St | 45 A Ave | Cul-de-sac (south) | 1 | 76 | $ 22,800 |
| **65** | 207 A St | S of 46 A Ave | 44 Ave | 1 | 443 | $ 132,900 |
| **66** | 44 A Ave | 206 St | 207 A St | 1 | 301 | $ 90,300 |
| **67** | 44 Ave | 206 St | 208 St | 1 | 408 | $ 122,400 |
| **68** | 45 A Ave | 208 St | E of 208 St | 2 | 218 | $ 65,400 |
| **69** | Glover Road | Langley Bypass | Mufford Crescent | 2 | 410 | $ 123,000 |
| **70** | Langley Bypass* | 200 St | Glover Road | 1 | 1700 | $ 510,000 |
| | | | | | **Total** | **$ 8,483,700** |

***These corridors are under MoTI jurisdication and total costs are not included in the City of Langley implementation costs**

## Table A3. Pedestrian & Bicycle Crossing Improvements

| Project Location (Intersection) | Improvement | Cost |
|---|---|---|
| Glover Road at Duncan Way | ▪ Countdown timers not present<br>▪ Bicycle pushbutton not present | $4,000<br>$5,000 |
| Glover Road at 56th Avenue | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| Park Avenue & 204th Street | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| Fraser Highway & 201A Avenue | ▪ Audible signals present<br>▪ Countdown timers not present | -<br>$4,000 |
| Fraser Highway & 204th Avenue | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| Fraser Highway & Production Way | ▪ Audible signals not present<br>▪ Countdown timers not present | $7,500<br>$4,000 |
| Fraser Highway & 200th Street | ▪ Audible signals not present<br>▪ Countdown timers present | $7,500<br>- |
| Douglas Crescent & 204th Street | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| Douglas Crescent & 203rd Street | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| 200th Street & Michaud Crescent | ▪ Audible signals present<br>▪ Countdown timers not present<br>▪ Bicycle pushbutton not present | -<br>$4,000<br>$5,000 |
| 200th Street & 53rd Avenue | ▪ Countdown timer present<br>▪ Audible signal present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| 200th Street & 48th Avenue | ▪ Audible signal not present<br>▪ Countdown timer present<br>▪ Bicycle pushbutton not present | $7,500<br>-<br>$5,000 |
| 203rd Street & Fraser Highway | ▪ Audible signals present<br>▪ Countdown timers present<br>▪ Bicycle Pushbutton not present | -<br>-<br>$5,000 |
| 203rd Street & 53rd Avenue | ▪ Audible signals present<br>▪ Countdown timers not present<br>▪ Bicycle Pushbutton not present | -<br>$4,000<br>$5,000 |

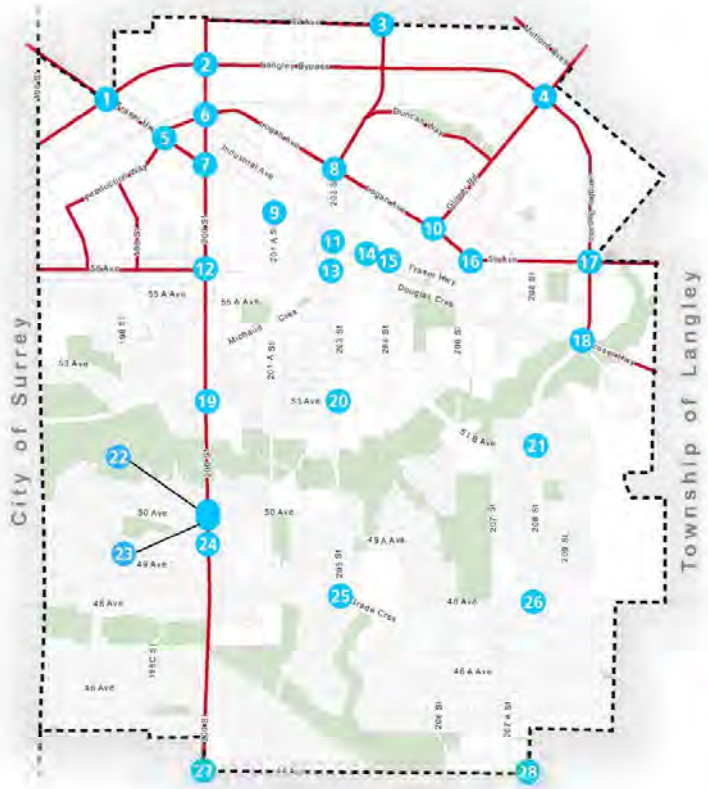
## Table A3. Pedestrian & Bicycle Crossing Improvements

| Project Location (Intersection) | Improvement | Cost |
|---|---|---|
| 208th Street & 48th Avenue | ▪ Audible signal not present<br>▪ Countdown timer not present<br>▪ Bicycle pushbutton not present | $7,500<br>$4,000<br>$5,000 |
| 203rd Street & Grade Crescent | ▪ Audible signal not present<br>▪ Countdown timer not present<br>▪ Bicycle pushbutton not present | $7,500<br>$4,000<br>$5,000 |
| 208th Street & 51B Avenue | ▪ Audible signal present<br>▪ Countdown timer not present<br>▪ Bicycle pushbutton not present | -<br>$4,000<br>$5,000 |
| 51B Avenue & 206th Street | ▪ Audible signal present<br>▪ Countdown timer present<br>▪ Bicycle pushbutton not present | -<br>-<br>$5,000 |
| | ***Total*** | ***$1,395,000*** |

Appendix B

# EXISTING INTERSECTION TURN MOVEMENTS

# Existing AM (PM) Peak Hour Intersection Volumes




**1 — Langley Bypass & Fraser Hwy**

| | | |
|---|---|---|
| | 109 (70) ↰ | |
| 764 (748) → | 571 (742) ← | |
| 163 (103) ↱ | 18 (279) ↱ | 269 (309) → |
| | 261 (224) ↳ | 99 (36) ↰ |
| | 457 (800) → | 627 (675) ← |
| | 26 (140) ↱ | 95 (150) ↱ |

**2 — 200th St & Langley Bypass**

| | | |
|---|---|---|
| 48 (100) ↰ | 400 (1,040) ← | 418 (597) ↱ |
| 257 (392) ↳ | | 50 (100) ↰ |
| 550 (845) → | | 718 (997) → |
| 50 (50) ↱ | | 71 (140) ↱ |
| | 53 (174) ↑ | |
| | 584 (845) → | |
| | 50 (80) ↱ | |

**3 — 204th St & 52nd Ave**

| | | |
|---|---|---|
| 40 (72) ↰ | 479 (825) ← | 51 (46) ↱ |
| 37 (130) ↳ | | 30 (46) ↰ |
| 77 (57) → | | 28 (80) → |
| 186 (382) ↱ | | 30 (41) ↱ |
| | 127 (207) ↑ | |
| | 367 (705) → | |
| | 31 (9) ↱ | |

**4 — Glover Rd & Langley Bypass**

| | | |
|---|---|---|
| | 458 (287) ↰ | |
| 423 (669) → | 369 (371) ← | |
| 160 (206) ↱ | 308 (487) ↱ | 270 (411) → |
| | 305 (276) ↳ | 29 (29) ↰ |
| | 221 (541) → | 813 (619) ← |
| | 3 (60) ↱ | 329 (237) ↱ |

**5 — Production Way & Fraser Hwy**

| | | |
|---|---|---|
| | 161 (255) ↰ | |
| 409 (850) → | 112 (59) ← | |
| 107 (82) ↱ | 198 (204) ↱ | 1 (7) → |
| | 62 (68) ↳ | 18 (16) ↰ |
| | 49 (116) → | 508 (724) ← |
| | 14 (53) ↱ | 11 (6) ↱ |

**6 — 200th St & Logan Ave**

| | | |
|---|---|---|
| 62 (87) ↰ | 471 (980) ← | 133 (156) ↱ |
| 25 (64) ↳ | | 75 (210) ↰ |
| 207 (236) → | | 178 (199) → |
| 22 (20) ↱ | | 18 (31) ↱ |
| | 15 (33) ↑ | |
| | 596 (762) → | |
| | 67 (54) ↱ | |

**7 — 200th St & Fraser Hwy**

| | | |
|---|---|---|
| 22 (200) ↰ | 337 (711) ← | 87 (141) ↱ |
| 36 (80) ↳ | | 50 (90) ↰ |
| 321 (481) → | | 293 (413) → |
| 137 (320) ↱ | | 47 (96) ↱ |
| | 245 (175) ↑ | |
| | 603 (581) → | |
| | 45 (46) ↱ | |

**8 — 203rd St & Logan Ave**

| | | |
|---|---|---|
| 91 (70) ↰ | 252 (583) ← | 224 (361) ↱ |
| 75 (106) ↳ | | 103 (275) ↰ |
| 205 (343) → | | 237 (295) → |
| 40 (64) ↱ | | 83 (108) ↱ |
| | 44 (41) ↑ | |
| | 302 (381) → | |
| | 58 (133) ↱ | |

**9 — 201B St & Fraser Hwy**

| | | |
|---|---|---|
| 9 (55) ↰ | 20 (160) ← | 15 (42) ↱ |
| 39 (70) ↳ | | 9 (19) ↰ |
| 356 (487) → | | 234 (510) → |
| 46 (101) ↱ | | 29 (78) ↱ |
| | 66 (93) ↑ | |
| | 49 (127) → | |
| | 36 (59) ↱ | |

**10 — Logan Ave & Glover Rd**

| | | |
|---|---|---|
| | 67 (127) ↰ | |
| 259 (485) → | 149 (269) ← | |
| 71 (66) ↱ | 145 (162) ↱ | 39 (66) → |
| | 25 (85) ↳ | 18 (36) ↰ |
| | 122 (195) → | 341 (379) ← |
| | 6 (14) ↱ | 39 (53) ↱ |

**11 — 203rd St & Fraser Hwy**

| | | |
|---|---|---|
| 33 (47) ↰ | 284 (524) ← | 71 (133) ↱ |
| 41 (68) ↳ | | 37 (65) ↰ |
| 287 (430) → | | 222 (475) → |
| 30 (58) ↱ | | 28 (39) ↱ |
| | 67 (105) ↑ | |
| | 327 (349) → | |
| | 31 (47) ↱ | |

**12 — 200th St & 56th Ave**

| | | |
|---|---|---|
| 63 (77) ↰ | 299 (940) ← | 44 (97) ↱ |
| 89 (104) ↳ | | 47 (84) ↰ |
| 267 (402) → | | 207 (235) → |
| 68 (130) ↱ | | 34 (76) ↱ |
| | 127 (120) ↑ | |
| | 628 (574) → | |
| | 38 (42) ↱ | |

**13 — 203rd St & 56th Ave**

| | | |
|---|---|---|
| 59 (103) ↰ | 183 (448) ← | 55 (122) ↱ |
| 175 (162) ↳ | | 60 (76) ↰ |
| 222 (411) → | | 188 (306) → |
| 13 (61) ↱ | | 48 (137) ↱ |
| | 50 (64) ↑ | |
| | 240 (275) → | |
| | 19 (10) ↱ | |

**14 — 56th Ave & Fraser Hwy**

| | | |
|---|---|---|
| | 44 (108) ↰ | |
| 353 (543) → | 62 (63) ← | |
| 19 (24) ↱ | 38 (105) ↱ | 16 (21) → |
| | | 232 (391) ← |
| | | 9 (6) ↱ |

**15 — 204th st & Fraser Hwy**

| | | |
|---|---|---|
| 205 (372) ↰ | 115 (217) ← | 27 (55) ↱ |
| 103 (217) ↳ | | |
| 217 (340) → | | |
| 44 (87) ↱ | | |
| | 50 (75) ↑ | |
| | 86 (138) → | |
| | 21 (53) ↱ | |

**16 — 206th st & 56th Ave**

| | | |
|---|---|---|
| 9 (19) ↰ | 112 (287) ← | 105 (331) ↱ |
| 2 (19) ↳ | | 211 (158) ↰ |
| 64 (197) → | | 155 (160) → |
| 11 (40) ↱ | | 38 (34) ↱ |
| | 69 (125) ↑ | |
| | 164 (230) → | |
| | 277 (44) ↱ | |

**17 — Langley Bypass & 56th Ave**

| | | |
|---|---|---|
| 6 (16) ↰ | 508 (674) ← | 178 (330) ↱ |
| 28 (47) ↳ | | 198 (447) ↰ |
| 159 (352) → | | 334 (285) → |
| 41 (73) ↱ | | 429 (147) ↱ |
| | 102 (132) ↑ | |
| | 684 (714) → | |
| | 219 (76) ↱ | |

**18 — Langley Bypass & Fraser Hwy**

| | | |
|---|---|---|
| 25 (25) ↰ | 340 (350) ← | 415 (500) ↱ |
| 10 (25) ↳ | | 535 (500) ↰ |
| 360 (595) → | | 430 (550) → |
| 30 (60) ↱ | | 50 (75) ↱ |
| | 85 (140) ↑ | |
| | 490 (290) → | |
| | 130 (70) ↱ | |

**19 — 200th St & 53rd Ave**

| | | |
|---|---|---|
| 6 (35) ↰ | 392 (975) ← | 76 (110) ↱ |
| 13 (25) ↳ | | 70 (60) ↰ |
| 29 (50) → | | 32 (40) → |
| 37 (45) ↱ | | 55 (90) ↱ |
| | 33 (50) ↑ | |
| | 666 (630) → | |
| | 51 (55) ↱ | |

**20 — 203rd St & 53rd Ave**

| | | |
|---|---|---|
| 20 (40) ↰ | 125 (300) ← | 75 (105) ↱ |
| 25 (50) ↳ | | 85 (55) ↰ |
| 125 (130) → | | 150 (185) → |
| 30 (30) ↱ | | 45 (80) ↱ |
| | 31 (10) ↑ | |
| | 185 (140) → | |
| | 75 (60) ↱ | |

**21 — 208th St & 55th Ave**

| | | |
|---|---|---|
| 90 (90) ↰ | 345 (450) ← | 10 (10) ↱ |
| 165 (110) ↳ | | 10 (10) ↰ |
| 10 (15) → | | 5 (5) → |
| 90 (175) ↱ | | |
| | 140 (125) ↑ | |
| | 510 (365) → | |
| | 5 (5) ↱ | |

**22 — 200th St & 56th Ave**

| | | |
|---|---|---|
| | 530 (1,045) ← | 40 (20) ↱ |
| | 15 (50) ↱ | |
| | 775 (775) ↑ | |
| | 25 (25) → | |

**23 — 208th St & 58th Ave**

| | | |
|---|---|---|
| 40 (65) ↰ | 480 (980) ← | |
| 30 (50) ↳ | | |
| 110 (235) → | | |
| | 180 (135) ↑ | |
| | 770 (750) → | |

**24 — 208th St & Grade Crescent**

| | | |
|---|---|---|
| | 540 (980) ← | 160 (100) ↰ |
| | 115 (185) ↱ | 125 (150) → |
| | 845 (750) ↑ | |
| | 100 (99) → | |

**25 — 203rd Ave & Grade Cres**

| | | |
|---|---|---|
| 96 (130) ↰ | 35 (50) ← | 110 (80) ↱ |
| 50 (70) ↳ | | 100 (95) ↰ |
| 150 (140) → | | 180 (155) → |
| 0 (10) ↱ | | 40 (35) ↱ |
| | 5 (0) ↑ | |
| | 45 (45) → | |
| | 70 (40) ↱ | |

**26 — 200th St & 48th Ave**

| | | |
|---|---|---|
| 249 (6) ↰ | 419 (505) ← | 42 (208) ↱ |
| 37 (13) ↳ | | 101 (121) ↰ |
| 137 (85) → | | 83 (89) → |
| 43 (43) ↱ | | 216 (181) ↱ |
| | 57 (47) ↑ | |
| | 393 (351) → | |
| | 17 (112) ↱ | |

**27 — 200th St & 44th Ave**

| | | |
|---|---|---|
| 3 (3) ↰ | 520 (694) ← | 76 (102) ↱ |
| 16 (21) ↳ | | 30 (40) ↰ |
| 23 (30) → | | 21 (27) → |
| 9 (12) ↱ | | 7 (10) ↱ |
| | 25 (33) ↑ | |
| | 519 (692) → | |
| | 6 (6) ↱ | |

**28 — 208th St & 44th Ave**

| | | |
|---|---|---|
| 10 (73) ↰ | 250 (334) ← | 55 (10) ↱ |
| 25 (34) ↳ | | 10 (10) ↰ |
| 6 (8) → | | 4 (6) → |
| 10 (10) ↱ | | 16 (21) ↱ |
| | 13 (18) ↑ | |
| | 227 (302) → | |
| | 30 (40) ↱ | |

URBAN systems