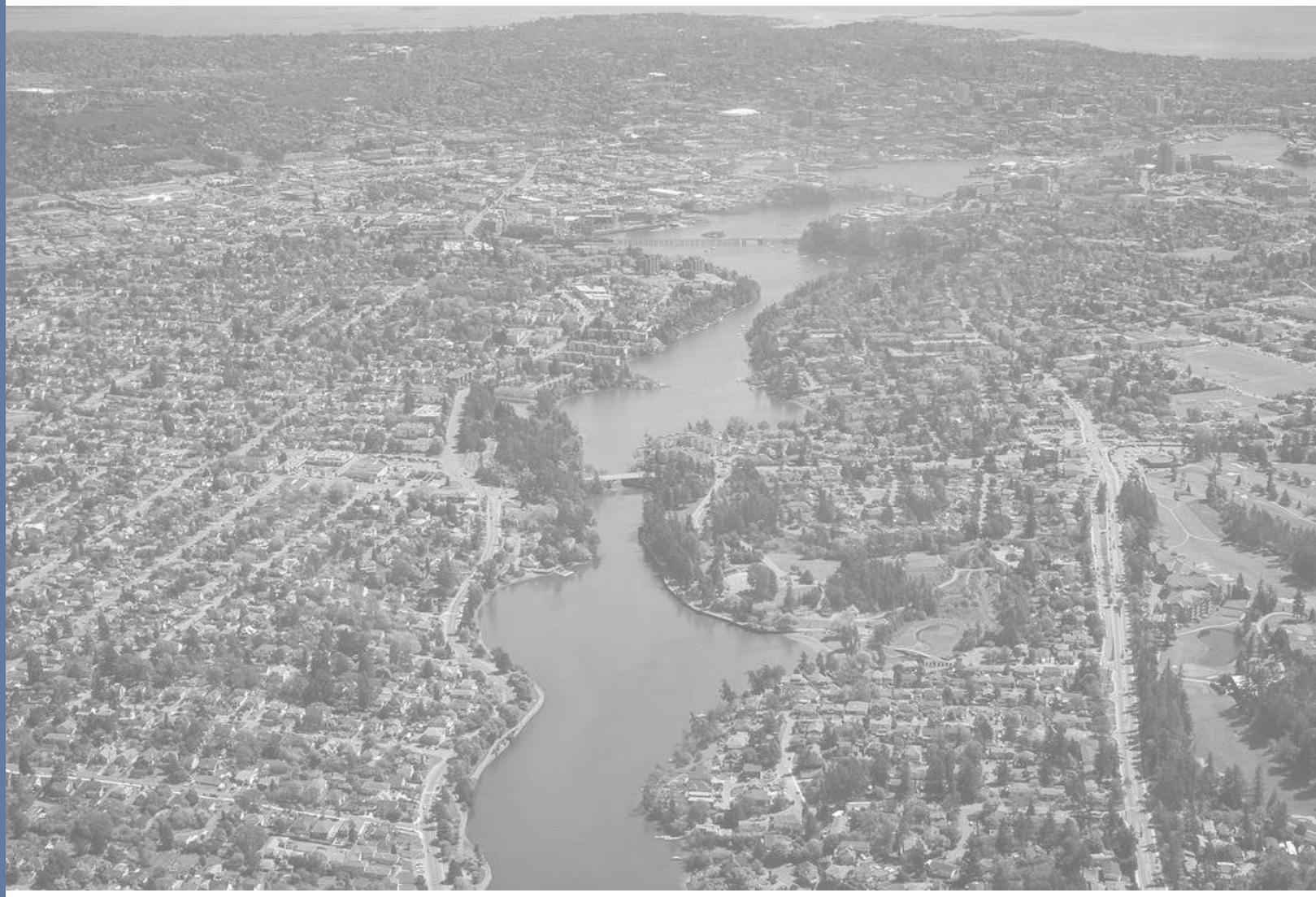
SOUTH ISLAND
TRANSPORTATION STRATEGY

Technical Report no.2

September 2020



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1. Introduction

1.1 What is the South Island Transportation Strategy?

The ***South Island Transportation Strategy*** (SITS) is a comprehensive assessment of the transportation challenges and opportunities for southern Vancouver Island (South Island). The Strategy does more than build on the many previous transportation planning initiatives completed in the South Island by the Ministry and others. It is a new way of thinking that seeks to develop a distinct set of goals that still align with the current policies, goals, planning and priorities of Indigenous, local and regional governments, and key stakeholders.

Inter-regional travel is the focus of the Strategy, with consideration of both Provincial aspirations as well as Indigenous, local and regional policy directions. The Strategy considers all travel modes and opportunities for trips that involve two or more travel modes. The Strategy considers all modes of transportation, including public transportation, active transportation, rail, marine and air travel, and commercial and private vehicles.

The COVID-19 pandemic has highlighted the true potential of our transportation network and the opportunity to create an integrated network that is desirable to use. People must feel safe using active transportation routes. Using public transportation must be appealing for commuters. This will require careful thought and consideration moving forward. The pandemic has also highlighted the need for investments in our transportation infrastructure to be dynamic and responsive to rapidly changing circumstances.

1.2 About the Technical Report Series

The ***South Island Transportation Strategy*** is comprised of two distinct technical documents and a Summary Report (Transforming South Island Transportation). Each builds on directions established in the previous toward a strategy for enhanced mobility in the South Island.

Technical Report no.1
Transportation Snapshot

The first Technical Report highlights the South Island's existing transportation system, including key policies and aspirations, current travel characteristics, transportation infrastructure and services, and a summary of the key issues and challenges facing the South Island. This document was intended to provide a baseline of understanding to be used as a resource to inform future initiatives.

Technical Report no.2
South Island Transportation Strategy

This second Technical Report identifies, develops, assesses and compares all transportation opportunities for the South Island to serve and shape regional and inter-regional travel in terms of: Public Transportation; Active Transportation; Intermodal Nodes and Gateways; Transportation Demand Management; and Highway and Marine Corridors. These opportunities generally include potential policies, services, programs, and infrastructure that may be considered to achieve the overall goals and aspirations for the SITS.

Many of the transportation opportunities described within this document include historical ideas such as options for addressing transportation issues across the region. Other opportunities include newer ideas that have been considered and developed through more recent policies and plans as well as feasibility studies for active transportation and the Island Rail Corridor and the Westshore Ferry. Individually, the opportunities described in this document have been developed and refined based on current standards and expectations to address key issues and challenges identified in the ***Technical Report no.1 - Transportation Snapshot***. It is important that the opportunities ultimately be considered to inform an investment strategy to advance all areas together and that they are reinforcing the same goals developed for the SITS. All forecasting is based on a 2038 horizon for consistency with other regional initiatives.

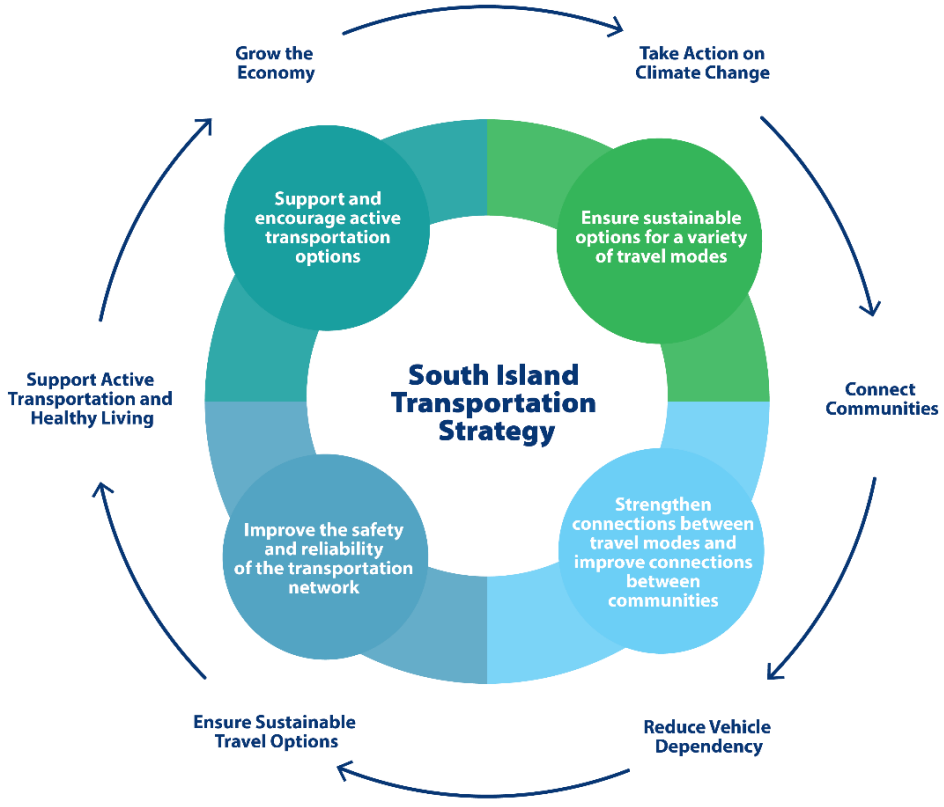
1.3 Goals + Aspirations

Technical Report No. 1 – Transportation Snapshot highlights current local, regional, and provincial policies that have been used to inform plans and actions by various levels of government. They generally capture common themes that include the following:

- Take Action on Climate Change
- Connect Communities
- Reduce Vehicle Dependency
- Ensure Sustainable Travel Options
- Support Active Transportation and Healthy Living
- Grow the Economy

Through Ministry discussion with agency stakeholders, including leaders from Indigenous communities, local and regional governments and special interest groups, four distinct goals have been established along with supporting strategies that help prioritize action areas. These goals are broadly aligned with local, regional, and provincial strategies as described below and illustrated in **Figure 1.1**.

Figure 1.1 Goals for the South Island Transportation Strategy



Goal 1.

Ensure Sustainable Options for a Variety of Travel Modes

Integrating transportation investment and policies with land use, housing, and economic development policies to support sustainable development will support aspirations for affordable housing, accessibility, climate change and quality of life in the region. Policies Programs and strategies to accelerate the move from gas-powered transport to alternative fuels such as electric vehicles, also are key elements to advance this goal. Sustainability objectives will be addressed by supporting and encouraging people to take public transportation and engage in active transportation wherever possible. Specific strategies will include:

- Working with partners to establish an economic vision for the South Island.
- Promoting investment, economic development and job opportunities near affordable housing and services.
- Encouraging growth and densification in designated growth areas served by public transportation and active transportation networks.
- Supporting and implementing bus lanes on highways and other inter-regional corridors.
- Implementing public transportation priority treatments at intersections along highways.
- Supporting the provision of strategically located transit exchanges and park and rides.
- Improving access to sustainable transportation choices for Indigenous communities.
- Expanding programs to add electric vehicle charging stations.
- Developing policies and support infrastructure to increase use of energy efficient vehicles and alternative fuels.
- Support policies and programs that encourage a shift away from single occupant vehicles towards sustainable travel choices.

Goal 2.

Strengthen Connections Between Travel Modes and Improve Connections Between Communities

Better integration between communities and employment and industrial areas will enable more people to access services, participate in economic opportunities and support resource sectors across the South Island and beyond.

Integrating travel will be accomplished by identifying the missing links that prevent or discourage people from using sustainable choices, and partnering with Indigenous, local, and regional agencies to address key gaps. This will include addressing the 'first and last mile' barriers within the region. By providing better travel choices in land use and development that align with regional growth strategies, the SITS will support sustainable growth and the creation of integrated communities.

- Connecting communities in the South Island, including Indigenous communities.
- Supporting attractive intermodal connections at mobility hubs serving inter-regional travel.
- Implementing policies and regulations to support new forms of mobility for sustainable choices that are aligned with regional growth strategies.
- Identifying and prioritizing gaps in and between the networks.
- Work with local and regional government to expand bike-share and car-share.

Goal 3.

Improve the Safety and Reliability of the Transportation Network

Safe, reliable, and cost-effective networks for all travel options are critical for the movement of people of all ages and abilities and goods throughout the region and are necessary to support all goals in this Strategy.

The safety and reliability of inter-regional travel will be addressed through upgrades that improve travel times for public transportation, active transportation and general-purpose traffic and that target high crash locations. Specific strategies include:

- Exploring regional trail enhancements to increase safety of people walking and cycling.
- Focusing on intersection improvements to protect vulnerable road users.
- Implementing facilities that support sustainable modes and goods movement.
- Supporting Vision Zero initiative.
- Implementing highway safety and reliability improvements.
- Targeting investments to improve network connectivity and redundancy.

Goal 4.

Support and Encourage Active Transportation Options

Active transportation networks and support facilities for all ages and abilities provide transportation options that are accessible to all and create attractive connections to community services. They are also critical to enabling sustainable land use patterns, affordable housing choices and economic development as well as reducing reliance on single-occupancy vehicles, resulting in lower GHGs.

Support for active transportation will be accomplished primarily through partnerships to establish and improve facilities as well as addressing gaps in inter-regional networks. This aligns with the Province's Active Transportation Strategy, as well as strategies developed by Indigenous, local, and regional governments.

Specific strategies include:

- Implementing active transportation facilities along corridors serving inter-regional travel
- Supporting upgrades to active. transportation facilities and crossings of highways.
- Exploring pedestrian and cycling separations for regional trail networks.
- Improving comfort and safety of active transportation crossing highways around key urban and sub-regional population centres.
- Identifying and prioritizing intersection accessibility issues on urban highways.
- Expanding funding for regional active transportation priorities.
- Encouraging and supporting regional policies and directions for incentives for sustainable travel modes serving. designated urban centres, gateways and sub-regional population centres.

1.4 Document Overview

This Technical Report No.2 is separated into six sections that highlight all opportunities considered in supporting the SITS as follows.

Section 2.
Community & Travel Highlights

Building on the detailed analysis contained in ***Technical Report No. 1 – Transportation Snapshot***, this section highlights key information on South Island communities, projected growth, and current and future travel demands.

Section 3.
Public Transportation

This section provides an overview of the current characteristics and strategic context for public transportation in the South Island, as well as key opportunities to advance specific public transportation options based on historical and more recent technical reports.

Section 4.
Active Transportation

In support of ***BC's Active Transportation Strategy, Move. Commute. Connect.*** this section considers opportunities to shape regional and inter-regional active transportation, with options to support local pedestrian improvements and for targeted growth of cycling trips in the region.

Section 5.
Mobility Hubs, Intermodal Nodes & Gateways

This section describes the opportunities to develop and further enhance intermodal connections at the key entry and integration points in the region, referred to as Mobility Hubs, Intermodal Hubs and Gateways. These locations are the primary generators of travel in the region and are central to both maintaining regional and inter-regional mobility, while increasing mode share for public transportation and active transportation, as well as a focus for Transportation Demand Management (TDM) incentives and policies.

Section 6.
Transportation Demand Management (TDM)

Opportunities to further enhance sustainable regional and inter-regional travel choices are considered through targeted TDM programs, with the goal of broadening travel options and addressing regional transportation objectives.

Section 7.
Highway and Marine Corridors

A series of possible highway improvement opportunities are reviewed that are intended to address safety, mobility, and redundancy concerns on key highway corridors. Improvements include both highway works, as marine crossings as alternatives to address key challenges described in the ***Technical Report No. 1 – Transportation Snapshot***. Specific consideration is given to highway improvement options that have been identified historically and how well they are aligned with current goals and aspirations.

2. Community & Travel Highlights

2.1 Community Highlights

The South Island is home to approximately 412,500 people between the 14 municipalities, the traditional territories of 16 First Nations, and two Regional Districts. Geographically, the area extends as far west as Sooke and as far north as Duncan.

As illustrated below in **Figure 2.1** the Capital Regional District (CRD) ***Regional Growth Strategy*** refers to two key settlement designations that influence travel demand – Metropolitan Centre and Regional Growth Areas.

The Metropolitan Centre and Regional Growth Areas are the primary generators of current and forecast travel in the region and are critical areas to provide and support sustainable transportation choices. Additionally, the scale, mixture, density, and form of these urban growth areas are essential to manage travel demands and to provide attractive sustainable transportation choices.

By 2038 the population is expected to increase by approximately 23.6% – or an additional 97,000 people - bringing the population to approximately 510,000 people. Over 95% of this growth will occur within the Growth Boundary in the Core Area including Victoria and Saanich as well as in the West Shore area, as illustrated in **Figure 2.2**.

Figure 2.1
Study Area Communities + Growth Boundaries

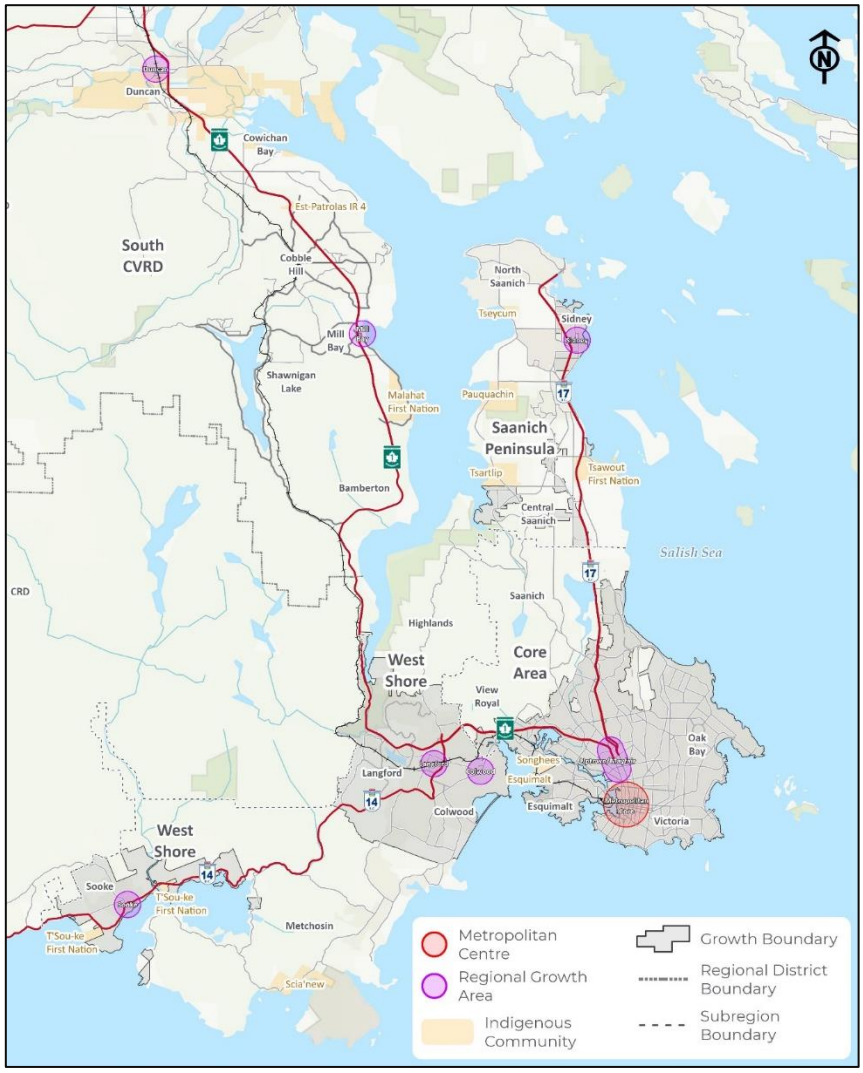
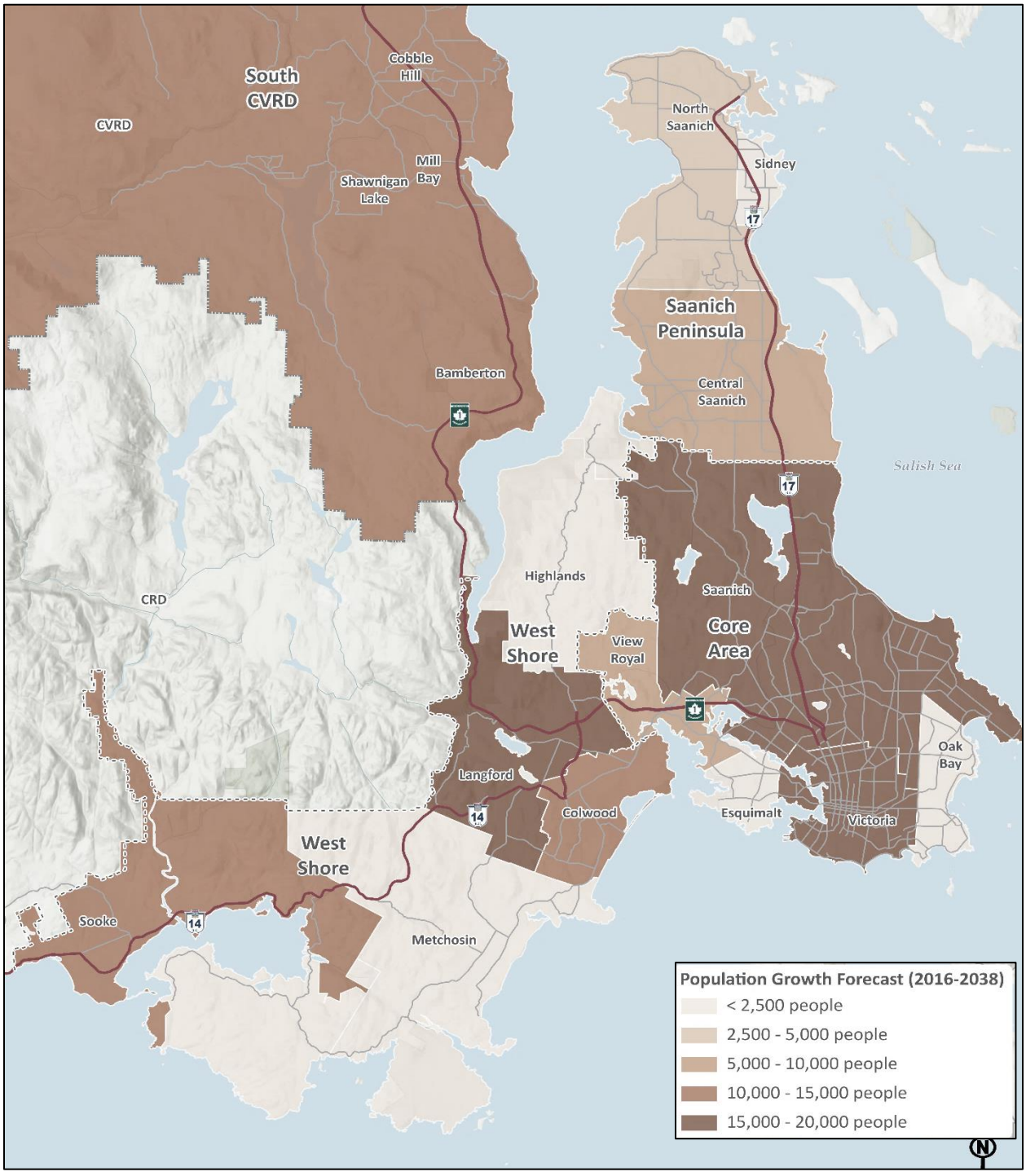


Figure 2.2
South Island Population Growth Projections[1]



[1] Source: Capital Regional District, *2018 Regional Growth Strategy*, Table 1 for CRD communities.

2.2 Travel Demands

The Capital Regional District generates over 1.1 million trips a day – approximately 56.0% as auto driver, 15.5% as auto passenger, 7.5% by public transit, 5.0% by bicycle, 14.2% by walking and 1.8% by other modes.

In terms of provincial, national, and international highway, marine and air travel, the region also supports approximately 83,000 person trips per day from areas outside the South Island, primarily across the Malahat (36%) and through the Swartz Bay Ferry Terminal (28%) as illustrated in **Figure 2.3**. The Victoria International Airport accommodates approximately 5,500 trips per day and 2,000 trips per day enter through the Victoria Harbour – mostly passenger trips.

By 2038 travel demands are projected to increase by approximately 23.6%. The largest areas of population growth include Victoria, Langford, Saanich, Colwood, and Sooke that together account for over 80% of the increase. Although much smaller in scale, the southern areas of the CVRD are projected to grow by approximately 50%, over the same timeframe, contributing further travel demand from north of the Malahat. Considering historical patterns and planned growth, **Figure 2.4** illustrates the forecast annual rates of growth in travel demands in the South Island.

The designated regional centres, strategic gateways to the South Island, as well as major post-secondary institutions and employers such as the Department of National Defense (DND) and University of Victoria (UVic), will continue to be the centre of most travel in the region. Subsequently, these areas and gateways are also critical to shaping an integrated transportation system for the South Island to serve inter-regional and regional travel.

Figure 2.3 Existing Daily Travel Demands (Island (V), Provincial (P) & National / International (I))

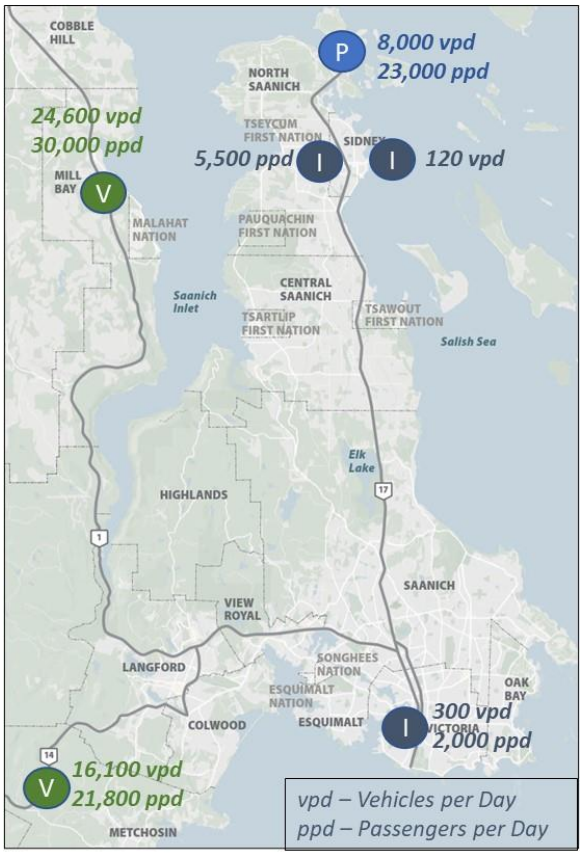
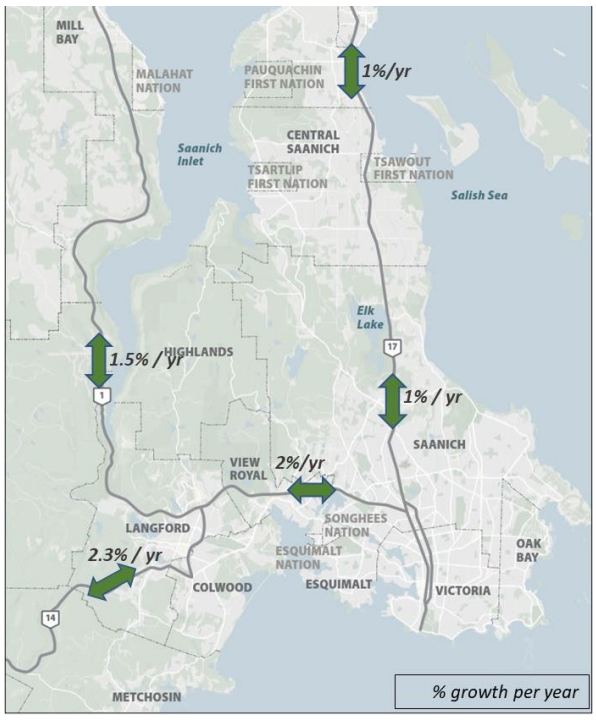


Figure 2.4 Projected Annual Increase in Travel Demands (% growth per year to 2038)



3. Public Transportation

3.1 Background

Public transportation is the primary alternative to driving for many people in the South Island area, particularly for longer distance for inter-regional and regional travel. Today, approximately 7.5% of all daily trips in the Capital Region are by public transportation (approximately 82,500 trips per day). The Victoria *Region Transit Future Plan* identified a target to increase public transportation mode share to 12% (over 155,000 trips per day by 2038).

Given that the intent of the SITS is to build from regional directions on transportation, this section of the Technical Report highlights current strategic directions for public transportation in the Capital Region and Cowichan Valley in terms of regional and inter-regional public transportation services. Opportunities to advance specific public transportation options based on historical and more recent technical reports are described and highlighted. In support of these public transportation infrastructure related opportunities, Sections 5 and 6 outline additional opportunities to support public transportation with connections to other travel modes at mobility hubs and Transportation Demand Management measures to achieve sustainable mode choice targets in the region.

3.2 Strategic Context

Daily ridership levels along some of the busiest public transportation corridors in the South Island is shown in **Figure 3.1**, to include Douglas Street, Highways 1 and 17, Old Island Highway and the Malahat.

Douglas Street through downtown Victoria supports several major public transportation routes from across the region, including frequent transit routes from the Westshore and Saanich Peninsula that attract almost 20,000 passengers per day. Between the Westshore and core area, Highway 1 and Old Island Highway accommodate approximately 11,100 passengers per day, while the southern sections of Highway 17 support approximately 8,600 daily public transportation trips. The 300 public transportation trips per day across the Malahat is a reflection of a peak, one-way commuter bus services that operates between Duncan and downtown Victoria. Also of note, daily public transportation mode share between sub-regions along these corridors is about 10% of all travel.

Figure 3.1 Daily Ridership on Rapid Transit Corridors

Direct, frequent inter-regional public transportation services connect Urban Centres and Regional Growth Areas in the region as well as to key gateways that provide transportation choice for some of the major travel demand patterns previously noted. Designated Urban Centres and Regional Growth Areas in the CRD and CVRD include downtown Victoria, Uptown/Saanich, Langford, Sooke, Sidney, Mill Bay and Duncan. With concentrations of population and employment in these designated centres, two-way travel demands during peak and off-peak periods make them ideal for frequent, all-day public transportation services. As illustrated in **Figure 3.2**, these Urban Centres and Regional Growth Areas are the major generators of inter-regional day public transportation travel in the South Island today as represented by daily passenger boardings. For example, the downtown core along Douglas Street, Uptown/Saanich and Langford centre all represent the most significant locations for public transportation boardings on a typical weekday.

Travel time reliability is less about recurring congestion and more about variability in travel times from one day to the next that need to be included in everyone's trip planning. Although travel time variances can occur due to incidents on the network, variable peak travel times from one day to the next in the core areas of the region have more to do with slight increases in vehicle demands during a peak period on an already congested network. Considering the forecast rates of growth in travel demands between the Westshore and Core areas, travel time variability will continue to increase for inter-regional travel.

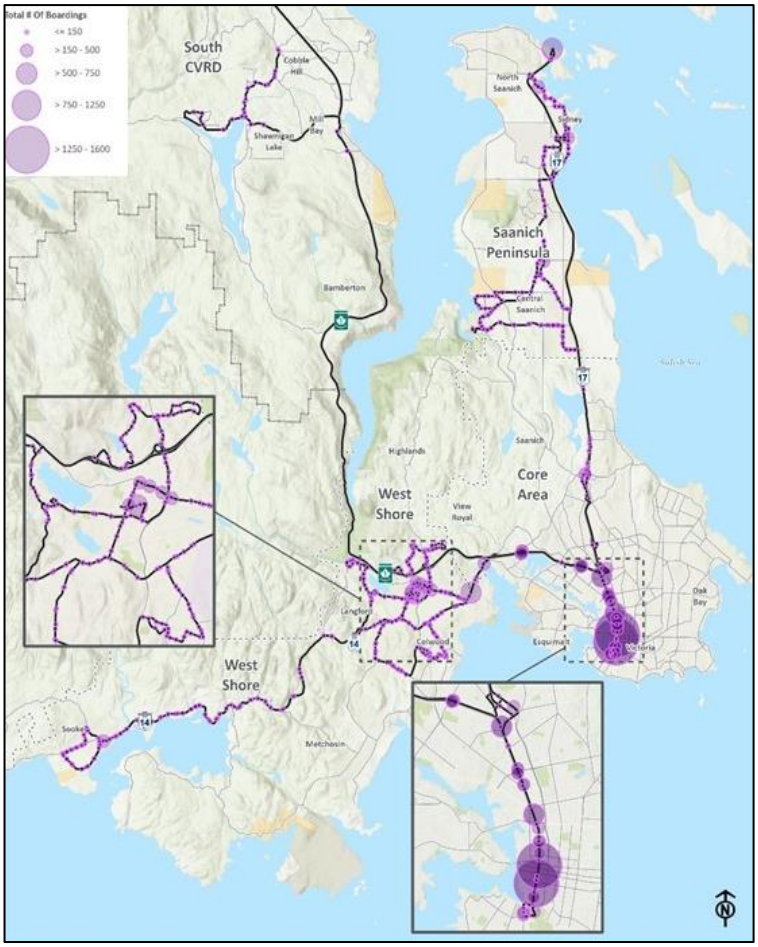
Without growth pressures and limited dedicated space for public transportation on the remaining sections of Highway 1, Old Island Highway, Highway 17 and sections of Douglas Street in the downtown area, the variability in public transportation travel times will increase exponentially.

Looking ahead, the ***Victoria Region Transit Future Plan*** presents four layers of public transportation service that make up the future network, as follows:

- Rapid Transit Network (RTN)
- Frequent Transit Network (FTN)
- Local Transit Network
- Other targeted services

The RTN is the foundation of the future public transportation system, with supporting infrastructure, technology, vehicles and services levels that can be combined to provide attractive, reliable services throughout the region.

Figure 3.2
Daily Boardings, Inter-Regional Routes



3.3 Public Transportation Opportunities

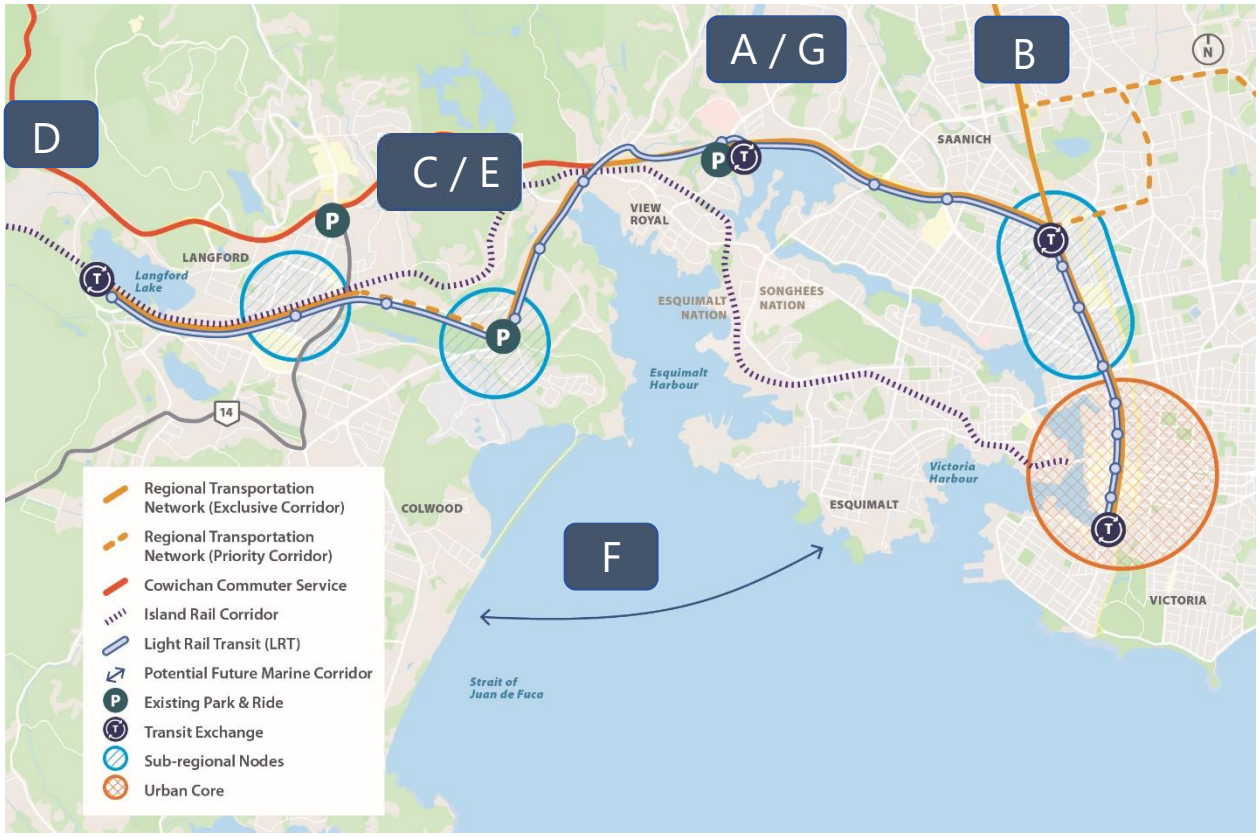
Through collaboration with Indigenous communities, BC Transit, CRD and CVRD, and the Technical Advisory Group established for this study, the SITS has reviewed a range of potential opportunities to address public transportation challenges in the South Island area. These opportunities range from adjustments to existing services to major capital projects. Improvements include continuing dedicated bus lanes and intersection queue jumpers between Langford and Downtown Victoria, restoring passenger service to the Island Rail Corridor (IRC), enhancing inter-city public transportation service on the IRC, repurposing the IRC as a busway, a West Shore ferry service and a Light Rail Transit (LRT) service.

This section of the Technical Report provides comparative highlights of the public transportation opportunities to support existing public transportation ridership and expanding regional and inter-regional public transportation travel between mobility hubs and gateways of South Vancouver Island.

The public transportation opportunities examined within this section of the Technical Report are illustrated in **Figure 3.3** on the following page and include:

- **A.** Douglas Street – Westshore Bus Transit Priority
- **B.** Peninsula Transit Priority Corridor
- **C.** IRC Commuter Service
- **D.** IRC Inter-City Service
- **E.** IRC Busway
- **F.** Westshore Ferry
- **G.** Light Rail Transit

Figure 3.3 Public Transportation Opportunities



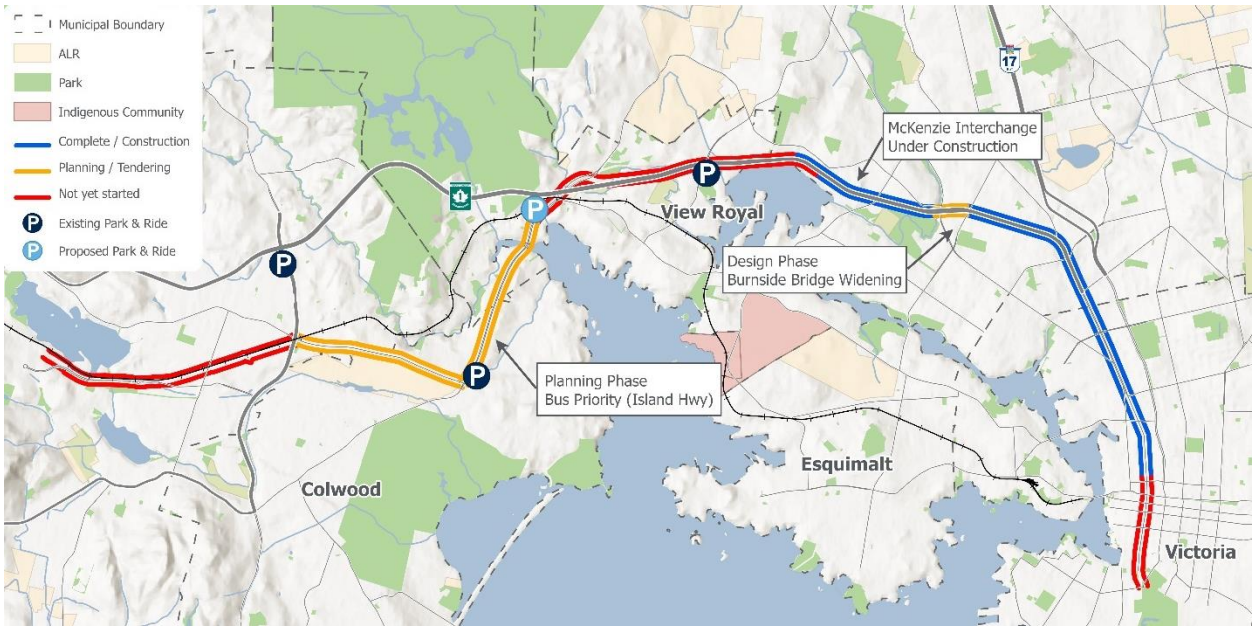
Public Transportation Opportunity A.

Douglas – Westshore Bus Transit Priority Corridors

i. Background

Recent planning and investments over the last five years or so has been centred on extending bus transit priority along Douglas Street in Victoria through to Langford, via Highway 1, Old Island Highway and Goldstream Avenue. **Figure 3.4** below and the following discussion highlights what is currently in place, under construction and part of on-going planning and design. Public transportation supportive facilities (i.e. park-and-ride and exchanges) are addressed in **Section 5**.

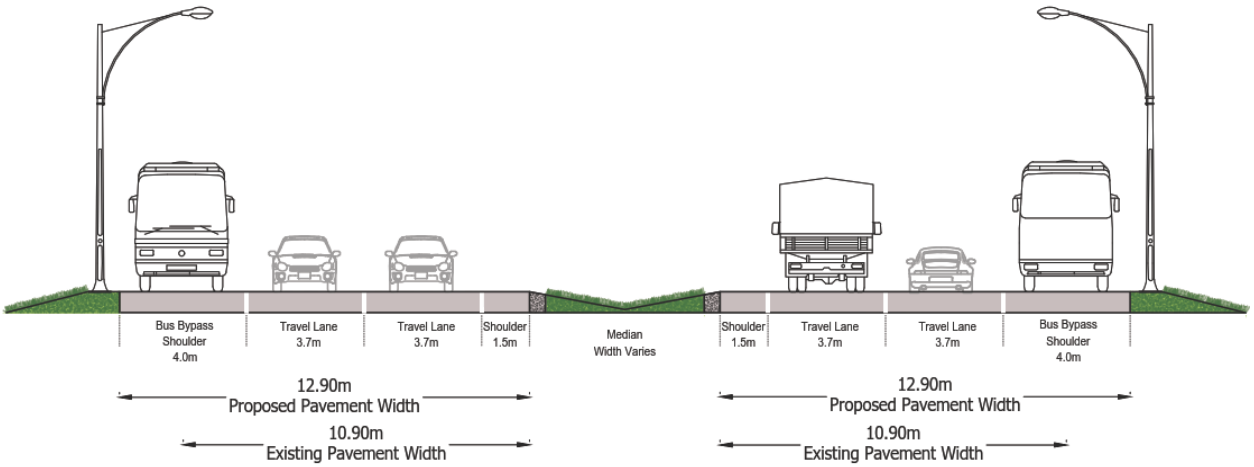
Figure 3.4 Douglas – Westshore Bus Transit Priority



ii. Highlights

Dedicated bus lanes and queue jump facilities at intersections will allow public transportation to bypass areas of recurring congestion between Langford and Downtown Victoria. Bus lanes have been now completely implemented between Fisgard Street in Victoria through to just east of the Admirals/McKenzie Interchange. South of Fisgard Street, buses share space with general purpose traffic in a highly constrained urban corridor that is nearing capacity. Further west on Highway 1, the SITS includes opportunities to extend bus-on-shoulder lanes from the Admirals/McKenzie Interchange to Old Island Highway as shown in **Figure 3.5**. Prior to this study, the Ministry considered centre or side-running bus lanes in conjunction with HOV lanes. It was concluded at the time that bus-on-shoulder lanes without HOV lanes was the most appropriate configuration, considering the closely spaced interchanges and limited space for additional vehicle lanes south of Uptown. BC Transit has also been working with local municipalities to provide public transportation priority treatments on Old Island Highway and Goldstream Avenue, such as queue jumpers at signalized intersections.

Figure 3.5 Example Highway 1 Bus-on-Shoulder Lanes



Features (Highway 1 & Uptown)

- Widening of the existing Highway 1 bridges over Interurban Road and Colquitz River to provide bus-on-shoulder lane continuity west of Tillicum Road.
- Shoulder widening between the McKenzie Interchange and the east-facing ramps at the Old Island Highway/Colwood Interchange, including widening the Helmcken Interchange off-ramps.
- Improvements to the queue-jumper facilities at Helmcken Interchange ramp terminal intersections.
- Improvements to the Uptown Mobility Hub that include better amenities, improved connectivity for all modes, and two to three dedicated bus bays to accommodate scheduled stops and bus layover for time transfers.
- Bus rapid transit stations at key interchanges.

Schedules

- Services between West Shore and Downtown currently operate every three minutes in the peak directions during the morning and afternoon periods.
- Forecast demands suggests that service frequencies should be improved to two minutes to support growth and every minute or so to support long-term public transportation ridership targets with increased vehicle size and capacity.

Fleet

- Increased use of larger capacity buses (preferably articulated or double decker buses) would provide the additional passenger capacity required to the corridor and provide an urban style public transportation experience with frequent boarding and alighting.

iii. Conceptual Cost Estimates

The Douglas-Westshore bus transit priority treatments include urban street sections along Old Island Highway, Goldstream Road as well as the Douglas Street corridors. These are being developed incrementally in partnership between area municipalities, BC Transit and MoTI. The remaining Highway 1 segments extend between Tillicum Road and Old Island Highway Interchange. The conceptual cost estimates for the Highway portion are show in **Table 3.1** below:

Table 3.1 Highway 1 Transit Priority Class D Concept Cost Estimate (2020 $)

	Burnside Bridge	Old Island Highway – Admirals / McKenzie	Total Cost
Capital & Contingencies	$9.0M	$18.0M	$27M
Project Delivery Costs	$4.3M	$7.8M	$12.1M
Total	**$13.3M**	**$25.8M**	**$39.1M**

Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design. Source: Mott MacDonald, 2019; Urban Systems, 2020.

iv. Travel Projections

Today, public transportation ridership along Old Island Highway and Highway 1 are similar in that they serve the same regional public transportation services. Within the Douglas Street corridor (south of Uptown), rapid transit services from the Peninsula and McKenzie Avenue join the Westshore services where the ridership is highest. **Table 3.2** below highlights the existing and projected bus transit ridership on the Highway 1 corridor based on forecast land use changes and east-west demand patterns in the CRD.

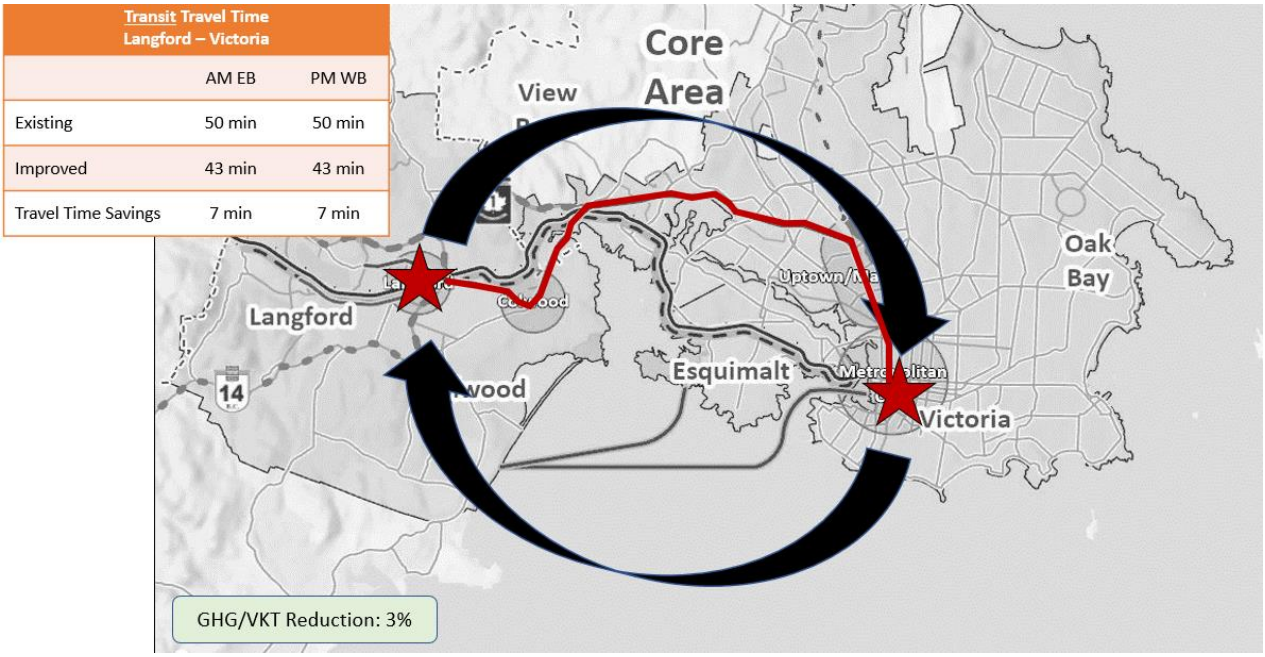
Table 3.2 Forecast Daily Transit Ridership (Highway 1) (minimum 2% / year growth)

	Daily Trips
2020	11,100 passengers / day
2038	15,850 passengers / day

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times across the Highway 1 corridor without bus priority between Tillicum Road and Old Island Highway can vary in the peaks. The provision of extending bus-on-shoulder lanes for this segment results in improved travel time and reliability for customers and the operator in the range of 7 minutes as illustrated below in **Figure 3.6** with the entire trip taking 43 minutes in future. The reduction in vehicle travel associated with rapid bus through this section would result in an estimated reduction in GHGs of approximately 3% for this segment of the corridor.

Figure 3.6 Douglas – Westshore Bus Transit Priority Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Douglas-Westshore rapid transit services and priority facilities along each of the key corridors will address key challenges identified today and in future within the ***Technical Report no.1 - Transportation Snapshot*** and supports key goals for the SITS in several ways as summarized below in **Table 3.3**.

Table 3.3 Highway 1 Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	Reduced average travel times for public transportation between Westshore and Victoria.
Reliability	•	Improved overall public transportation reliability with greater consistency of travel times and ability to manage bus headways on Highway 1.
	•	Increased service frequency and ridership on Douglas Street and Old Island Highway will increase need for higher capacity priority treatments for buses leading toward higher capacity public transportation in the long-term.
Safety	•	Moderate benefit for mode shift from driving.
Redundancy	•	No added vehicle capacity, although public transportation lanes may be used by emergency service vehicles to bypass congestion (particularly important given Victoria General Hospital is on the corridor).
Sustainable Transportation	•	Improved public transportation travel times and reliability (along with support infrastructure, policies & programs) will contribute toward increased public transportation ridership as well as first mile and last mile bike and walk trips.
Connectivity	•	Metro Centres and Regional Growth Areas are better connected by public transportation.
Advancing SITS Goals		
Climate Action	+	Encourages and supports public transportation ridership growth.
	+	Reduction in vehicle-km traveled and GHGs.
Communities	+	Serves & connects designated urban nodes and highest growth areas of the South Island.
	–	Potential impacts on known archaeological areas (potential human remains) near Helmcken Interchange.
Safety & Reliability	+	Reduced vehicle travel or managed growth improves road safety.
Health	+	Encourages more walk and bike travel to connect with high capacity public transportation.

Public Transportation Opportunity B.

Peninsula Transit Priority Corridor

i. Background

The ***Highway 17 Planning Study*** (2014) found that the corridor experiences recurring and unplanned delays during peak and non-peak periods that impact mobility and reliability, particularly for public transportation. The ***Victoria Region Transit Future Plan*** provides strategic direction toward the overall expansion of bus services in the region, including the identification of the bus rapid transit network. As part of that Plan, Highway 17 is identified as a rapid transit corridor designed to move high volumes of passengers between major regional destinations. This section of the Technical Report provides a refreshed assessment of the highway related public transportation facilities. **Section 5** of the report describes the intermodal connection opportunities along the corridor, and **Section 7** outlines grade separation and interchange opportunities.

ii. Highlights

As illustrated in **Figure 3.7**, the Peninsula rapid transit corridor on Highway 17 is intended to provide an exceptional service and reliability. The *Highway 17 Planning Study* identified the potential of bus-on-shoulder facilities along with other highway improvements. Although consideration was given toward shared HOV/bus lanes, right-side running HOV lanes were problematic for the many driveways and minor side streets that exist today and future interchanges if and when they are constructed. Centre bus/HOV lanes would not support public transportation stations at major cross-streets today or long-term. Thus, bus-on-shoulder lanes were identified as the preferred treatment across the corridor with opportunities for interim bus queue jumpers at signalized intersections.

Figure 3.7 Peninsula Bus Transit Priority

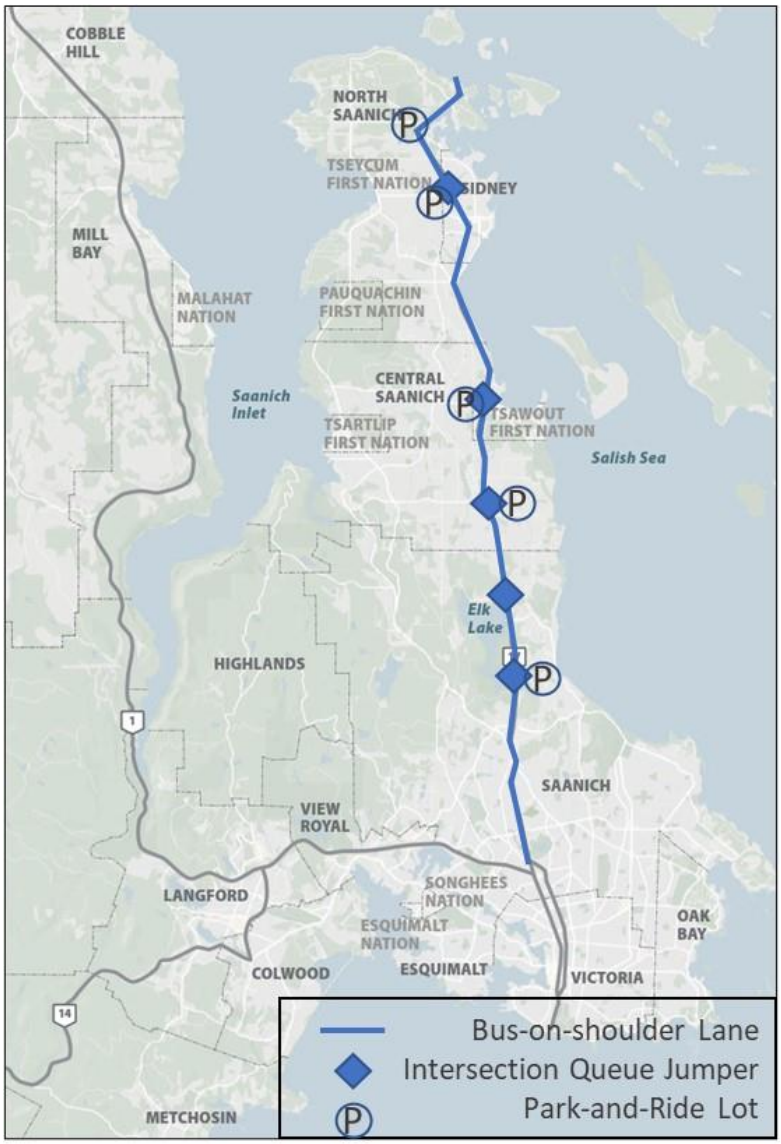
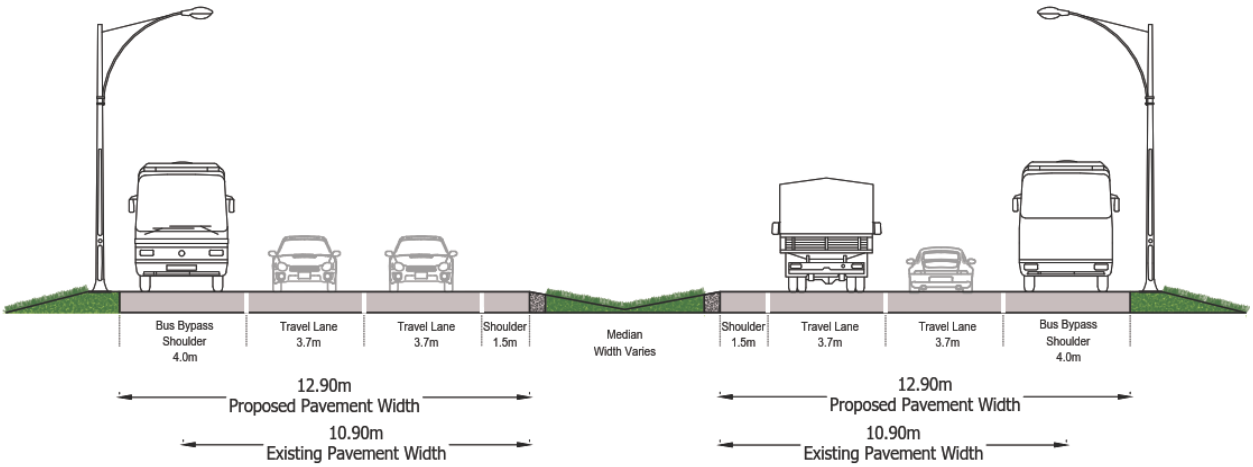


Figure 3.8 Example Highway 17 Bus on Shoulder Lanes



Features (Highway 1 & Uptown)

- Similar to the bus-on-shoulders proposed for Highway 1, the existing Highway 17 shoulder may be widened along the corridor (Swartz Bay to Royal Oak Drive) to achieve the example shown in **Figure 3.8**.
- Intersection bus queue jump lanes and signal priority could be provided at all signalized intersections through the corridor, allowing buses to bypass general purpose traffic queues in both directions.
- Buses would merge with right-turn lanes approaching intersections, with highway traffic yielding to approaching buses where right-turn exist.
- Bus rapid transit stations would be installed at existing stop locations along the corridor with intermodal connections (described in Section 5). Beyond the rapid bus station features, intermodal features may include: accessible pedestrian and cycling connections; pick-up and drop off areas; park-and-ride lots; EV charging; local bus transfers; and bike lockers.

Schedule

- Services on Highway 17 operate as much as every five minutes in the peak directions during the morning and afternoon periods.
- Forecast demands suggests that service frequencies should be improved to four minutes to support growth and every three minutes or so to support long-term public transportation ridership targets with increased vehicle size and capacity.

Fleet

- Increased use of larger capacity buses (preferably articulated or double decker buses) would provide additional passenger capacity to the corridor and serve urban style public transportation with frequent boarding and alighting.

iii. Conceptual Cost Estimates

The Highway 17 corridor cost estimates include provisions for either transit priority treatments at key intersections or bus-on-shoulder lanes between Swartz Bay Ferry Terminal and the southern sections of the highway. The conceptual cost estimates for both treatments are highlighted in **Table 3.4** below.

Table 3.4 Highway 17 Transit Corridor Class D Concept Cost Estimate (2020 $)

	Intersection Bus Queue Jumpers (5)	Bus-on-Shoulder Lanes
Capital & Contingencies	$22M	$103.5M
Project Delivery Costs	$14.3M	$44.9M
Total	**$36.3M**	**$148.4M**

Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design. Source: Urban Systems, 2020.

iv. Travel Projections

Today, regional public transportation services along Highway 17 support one of the highest levels of daily public transportation ridership in the region outside the core areas, slightly below Highway 1. **Table 3.5** below highlights the existing and projected bus transit ridership on the Highway 17 corridor based on forecast land use changes and north-south demand patterns in the CRD.

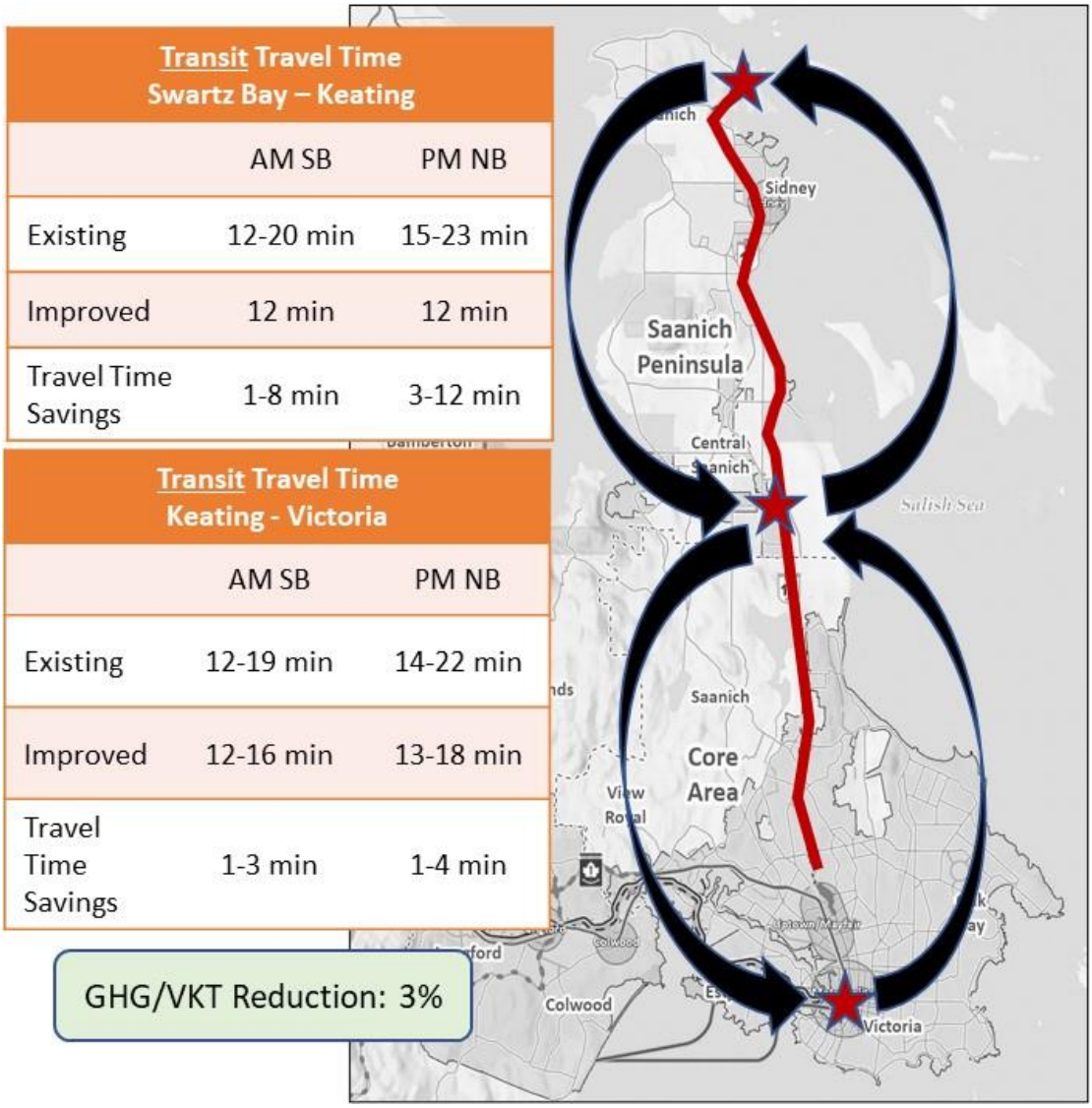
Table 3.5 Forecast Daily Transit Ridership (Highway 17)

	Daily Trips
2020	8,600 passengers / day
2038	10,300 passengers / day

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times along Highway 17 corridor without bus priority between Swartz Bay and Victoria can vary from anywhere from 24 to 50 minutes during peak periods. The implementation of bus-on-shoulder lanes would reduce public transportation travel times by anywhere from one to sixteen minutes during peak periods of the day as summarized below in **Figure 3.9**. It should be noted that forecast growth will continue to impact typical travel times for general purpose traffic, increasing the long-term savings for public transportation with priority lanes. The reduction in vehicle travel associated with rapid bus through this section would result in an estimated reduction in GHGs of approximately 3% for this segment of the corridor.

Figure 3.9 Highway 17 Bus Transit Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Highway 17 rapid bus services and priority treatments will address key challenges identified today and in future within the ***Technical Report no.1 - Transportation Snapshot*** and supports key goals for the SITS in several ways as summarized below in **Table 3.6**

Table 3.6 Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	Reduced average travel times for public transportation between Swartz Bay and Victoria.
	•	Average vehicle travel speeds will continue to decline as demands increase.
Reliability	•	Improved public transportation reliability with greater consistency of travel times and ability to manage bus headways as well as reduced impacts from collisions.
Safety	•	Modest safety benefit from mode shift from driving.
Redundancy	•	No added capacity, although public transportation lanes may be used by emergency service vehicles to bypass congestion.
Sustainable Transportation	•	Improved public transportation travel times and reliability (along with support infrastructure, policies & programs) will contribute toward increased public transportation ridership as well as first mile and last mile bike and walk trips.
Connectivity	•	Provides important public transportation connections to key gateways such as the Swartz Bay Ferry Terminal and Victoria International Airport as well as designated sub-regional nodes between Sydney and Uptown.
Advancing SITS Goals		
Climate Action	+	Encourages and supports public transportation ridership growth.
	+	Reduction in vehicle-km traveled and GHGs.
Communities	+	Serves key gateways such as the Swartz Bay Ferry Terminal and Victoria International Airport and urban centres of Victoria and Uptown.
	+	Is strongly supported by community and regional plans.
	–	Limited land use potential in the immediate area of stations, requires intermodal connections by public transportation, driving and cycling.
Safety & Reliability	+	Reduced vehicle travel or managed growth improves road safety.
	+	Can be implemented incrementally in the most critical areas from south to north.
Health	+	Encourages more walk and bike travel to connect with high capacity public transportation.

Public Transportation Opportunity C.

IRC Commuter Service (Langford – Victoria)

i. Background

The railway corridor is owned through the non-profit Island Corridor Foundation (ICF) which is a partnership between 13 Indigenous communities and 5 local governments. The Ministry retained the services of WSP to examine restoration of inter-city rail between Courtenay and Victoria as well as a commuter service between Langford and Victoria utilizing the Island Rail Corridor – ***Island Rail Corridor Condition Assessment***, *April 2020*. The review included a condition assessment that identified restoration requirements to reinstate rail operations on the corridor for commuter rail services. As this study focused on broadly reassessing the feasibility of re-establishing inter-city rail service and implementing a new commuter rail service in the South Island area (Langford – Victoria), there were varying scenarios considered with respect to service levels, upgrade requirements, stations, ridership and costs.

This section of the Technical Report specifically highlights the findings of the commuter rail service between Langford and Victoria as illustrated below in **Figure 3.10** and described in the report and memo prepared by *WSP Canada Group*.

Figure 3.10 IRC Commuter Rail & Stations

ii. Highlights

Commuter rail service along the Island Rail Corridor between Victoria and Langford (approximately 16km) would have five stations located in Victoria (Esquimalt Road & Johnson St Bridge), Admirals (Admirals Road and Colville Road), Six Mile (Atkins Road and Brydon Road), Langford (Jacklin Road and Peatt Road) and Westhills (near Westshore Parkway). These stations support connections between designated mobility hubs in Langford and Victoria's downtown area.

- At the eastern end, the Victoria Station is located near Esquimalt Road approximately 120m west of the Johnson Street Bridge. The station would serve most trips within a 5- to 15-minute walk to the majority of downtown Victoria. Intermodal connections are largely in place for cyclists and pedestrians leading to and across the Johnson Street Bridge. Frequent and local public transportation routes can be accessed on Esquimalt Road, immediately adjacent the station.

- At the western edge, West Hills Station is located nearby the Westshore Parkway and potential future development area. Connectivity for pick-up/drop-off, park-and-ride, public transportation, walking and cycling would need to be addressed with overall area planning and station development. Overnight and weekend storage would be required at this location for the rolling stock.

Features

For the commuter rail sections, the scope of improvements and facility requirements would include several track upgrades and station facilities as noted below:

- New track and new turn-outs, new ballasts and rail lift to support higher rail and passenger loadings.

- Five stations with intermodal facilities and connections for walking, cycling, public transportation and vehicle travel to be determined.

- Potential for increased land use scale, density and mixture around public transportation stations to promote greater public transportation use and livable communities.

Schedules

- Four trips per day in the morning eastbound direction and westbound in the afternoon peak periods.

- Travel times between West Hills Station and Victoria is approximately 28 minutes (average speed of approximately 35km/hr).

- Schedules include early morning trips to downtown and late day runs to West Hills Station.

Fleet

- Referenced rolling stock include Light Rail Transit vehicles or Diesel Multiple Units. Track work costs do not include electrification.

iii. Conceptual Cost Estimates

The cost estimates prepared as part of the *Island Rail Corridor Condition Assessment, April 2020* summarizes concept cost estimates for the West Hills to Victoria Stations (approximately 16km with six stations as previously illustrated). The conceptual cost estimates for rail upgrades, stations, rolling stock, as well as storage and maintenance facility have been provided **Table 3.7**.

Table 3.7 IRC Commuter Service Class D Concept Cost Estimate (2020 $)

	Cost
Station & Rail Construction & Contingency	$326.7
Rolling Stock	$38.4
Property	$44.2
Storage & Maintenance	$77.2
Project Delivery Costs	$108.5
Total	**$595.0M**

Source: Island Rail Corridor Condition Assessment, WSP, April 2020. Commuter Rail Section costs include: Ultimate phase track improvements; signal upgrades; rolling stock; stations; property; storage; maintenance facility; contingencies; and other soft costs (engineering, overheads, First Nations, construction supervision, etc). Costs are concept only and are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Ridership projections for commuter rail between Langford and Victoria have been provided in the Island Rail Corridor Condition Assessment based on multiple service level scenarios. The initial scenario for commuter rail would see 4 trains in peak AM and PM directions. Ridership projections are shown in **Table 3.8**. This service could be enhanced to an 8 train peak AM and PM direction scenario in the future as demand increases. If this service was integrated with the Inter-City service between Courtenay and Victoria, ridership and demand for the commuter service would increase significantly. It is also worth noting that the projected demands for the IRC Commuter Service could be impacted by provision of bus rapid transit services and facilities or the Westshore Ferry.

Table 3.8 Forecast Daily Ridership (IRC Commuter Service)

2020	1,130 passengers / day
2038	1,610 passengers / day*

* *Passenger forecasts based on projections from the Island Rail Corridor Condition Assessment, WSP, April 2020, 2% annual growth rate applied over 18 years*

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times are compared between existing bus services and potential rail between Langford and Victoria. As summarized in **Figure 3.11** below. With a more direct connection between downtown and Langford, the IRC Commuter Service would provide a substantial improvement to public transportation travel times between these two regional centres. The reduction in vehicle travel associated with Commuter Service through this section would result in an estimated reduction in GHGs of approximately less than 1% for this segment of the corridor based on the initial service and ridership levels.

Figure 3.11 IRC Commuter Service Travel Time & GHG Savings

vi. Alignment with Challenges & Goals

The IRC Commuter Service between Langford and Victoria will address key challenges identified today and in future within the Technical Report no.1 - Transportation Snapshot and supports key goals for the SITS in several ways as summarized below in **Table 3.9.**

Table 3.9 IRC Commuter Service Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	New public transportation option presents time savings over existing service. • May result in modest increase in traffic delays for at-grade crossing locations.
Reliability	•	Provides reliable public transportation travel times between Langford and Victoria. • Vehicle travel times on parallel routes may continue to become more variable.
Safety	•	Modest benefit for mode shift from driving, however use of at-grade rail crossings require further investigation.
Redundancy	•	Dedicated public transportation connection provides secondary and supplemental service to Highway 1 / Douglas Street rapid bus services and facilities.
Sustainable Transportation	•	Improved public transportation travel times and reliability (along with support infrastructure, policies & programs) will contribute toward increased public transportation ridership as well as first mile and last mile bike and walk trips. • Adds additional capacity to overall public transportation network.
Connectivity	•	New connection option between designated mobility hubs and major employment centres in the Westshore and Victoria.
Advancing SITS Goals		
Climate Action	+	Encourages and supports public transportation ridership growth with strong intermodal connections. + Reduction in vehicle-km traveled and GHGs.
Communities	+	Supports and serves designated urban centres of Langford, Colwood and downtown Victoria. + Supports and serves the Esquimalt Nation and Songhees Nation, and the communities of View Royal and Esquimalt. + Is supported by community and regional plans. + Opportunity for transit oriented development / land use.
Safety & Reliability	+	Reduced vehicle travel or managed growth improves road safety.
Health	+	Encourages more walk and bike travel to connect with high capacity public transportation.

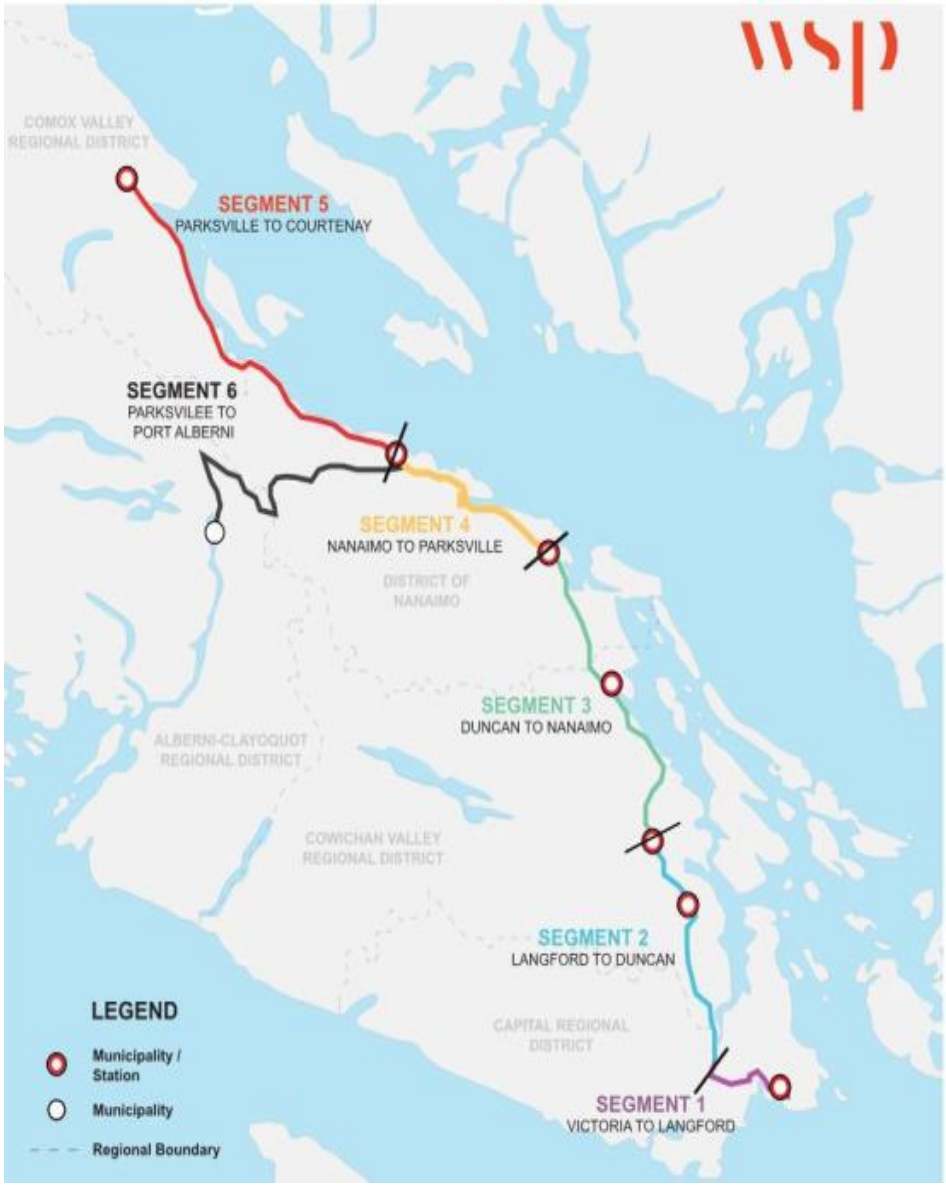
Public Transportation Opportunity D.

IRC Inter-City Service (Courtenay – Victoria)

i. Background

For the purpose of the South Island Transportation Strategy, inter-city rail provides a public transport alternative to single occupancy vehicle travel on Highway 1 and Highway 19 and can be combined with the Commuter Rail connections previously described. This section of the Technical Report highlights the findings from the inter-city rail assessment between Courtenay to Victoria as documented in the ***Island Rail Corridor Condition Assessment***, April 2020, WSP Canada. The corridor and station locations for the Victoria and Alberni rail lines are illustrated below in **Figure 3.11**.

Figure 3.11 IRC Inter-City Service Rail & Stations



ii. Highlights

The inter-city rail service between Courtenay and Victoria (approximately 225 km) would connect the communities of Qualicum, Parksville, Nanaimo, Ladysmith, Duncan, Shawnigan Lake and the South Island area as previously described for the Commuter Rail section. Within the South Island area, inter-city rail stations would essentially extend and serve the commuter shed through to Duncan.

The Shawnigan Lake Station would be located west of Shawnigan Lake-Mill Bay Road adjacent to the Shawnigan Lake Community Centre and the former station location. This is approximately 46 km to downtown. To maximize access and ridership, the station would require intermodal connections as described in **Section 5**. They would include, but not be limited to park-and-ride, pick-up and drop-off facilities, public transportation connections as well as active transportation facilities within the surrounding area.

The nearby Duncan Station would be located in downtown Duncan at the existing station house on Canada Avenue (approximately 64km to downtown Victoria). The station is well served by Intermodal connections including walking and cycling facilities as well as public transportation connections.

Features

The scope of improvements and facility requirements for the inter-city portion would include several track upgrades and station facilities as noted below:

- New track and new turn-outs, new ballasts and rail lift to support higher rail and passenger loadings.
- 6 stations with intermodal facilities and connections for walking, cycling, public transportation and vehicle travel to be determined.

Potential for increased land use scale, density and mixture around public transportation stations to promote greater public transportation use and livable communities.

Schedules

- One trip per day in both directions initially.
- Intermediate level track investments would produce a travel time of approximately 3 hours between Courtenay and Victoria (average speed of 75km/hr including stop times).
- Travel time between Duncan Station and Victoria is approximately 65 minutes and between Shawnigan Lake and Victoria is approximately 52 minutes.
- 50 km/hr travel speeds could be achieved between Victoria Station and Shawnigan Lake Station, and up to 85 km/hr between Shawnigan Lake and Courtenay Stations.
- For comparison, the Cowichan Commuter service is an average of 83 minutes between Duncan and Victoria at an average public transportation travel speed of approximately 50km/hr. These services are impacted by reliability of travel on the Malahat and core areas of Highway 1 without bus priority treatments.

Fleet

Referenced rolling stock include Light Rail Transit Vehicles or Diesel Multiple Units. Track work costs do not include electrification.

iii. Conceptual Cost Estimates

The cost estimates prepared as part of the ***Island Rail Corridor Condition Assessment***, *April 2020* summarizes concept cost estimates for the Commuter Service and Inter-City Service segments of the corridor. The conceptual cost estimates for rail upgrades and station provisions have been provided in **Table 3.10**.

Table 3.10 IRC Inter-City Service Class D Concept Cost Estimate (2020 $)

	Langford-Victoria Commuter Service	Courtenay – Langford Inter-City Service
Station & Rail Construction & Contingency	$326.7	$416.6M
Rolling Stock	$38.4	Exact costs to be determined
Property	$44.2	
Storage & Maintenance	$77.2	
Project Delivery Costs	$108.5	$96.2
Total	**$595.0M**	**$512.8M***

** Courtenay-Langford Inter-City Service total costs are likely to increase once Rolling Stock, Property and Storage & Maintenance costs have been determined*

Source: Island Rail Corridor Condition Assessment, WSP, April 2020. Commuter Rail Section costs include: Ultimate phase track improvements; signal upgrades; rolling stock; stations; property; storage; maintenance facility; contingencies; and other soft costs (engineering, overheads, First Nations, construction supervision, etc). Inter-City Rail costs include track related upgrade costs for the ultimate upgrade conditions identified in the 2020 WSP report. Costs are concept only and are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Ridership projections for inter-city rail service between Courtenay and Victoria have been provided in the Island Rail Corridor Condition Assessment based on multiple service level scenarios. The initial scenario for inter-city rail service would see 1 train in peak AM and PM directions. Ridership projections are shown in **Table 3.11.** This service could be enhanced to a 2 train peak AM and PM direction scenario in the future as demand increases. If this service was integrated with the commuter service between Langford and Victoria, ridership and demand for the inter-city rail service would increase significantly.

Table 3.11 Forecast Daily Ridership (IRC Inter-City & Commuter Service)

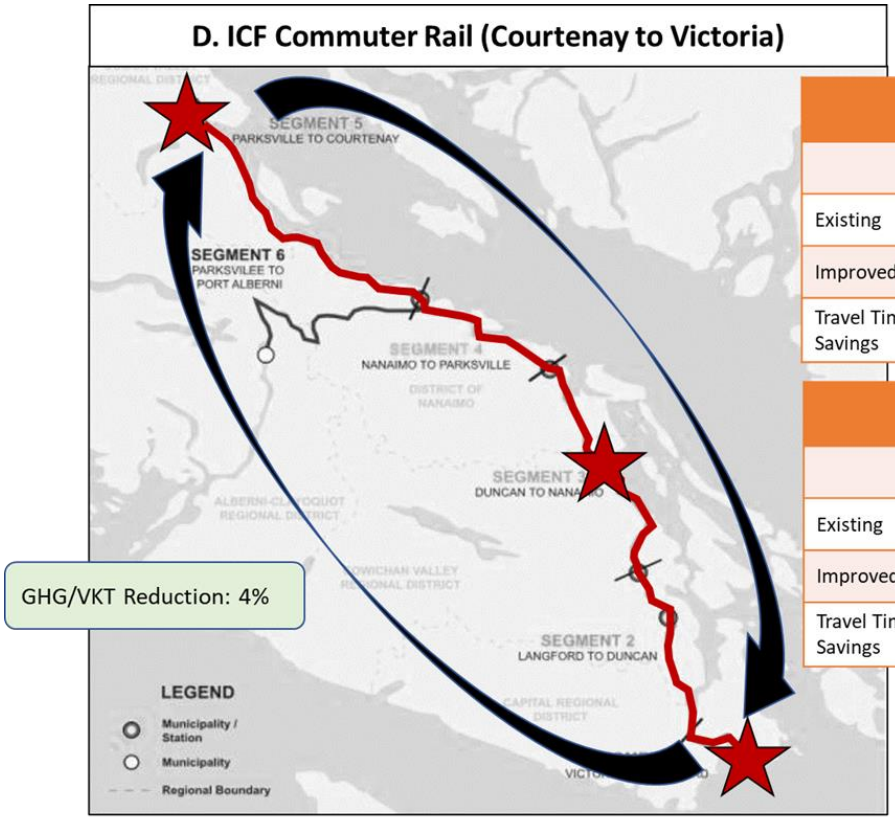
	Langford-Victoria Commuter Service	Courtenay – Langford Inter-City Service
2020	1,130 passengers / day	1,420 passengers / day
2038	1,610 passengers / day*	2,030 passengers/day*

* *Passenger forecasts based on projections from the Island Rail Corridor Condition Assessment, WSP, April 2020, 2% annual growth rate applied over 18 years*

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times are compared between existing vehicle and train travel between Courtenay and Victoria as summarized in **Figure 3.12** below. Overall, travel times are slightly higher for rail travel except in the south areas toward Victoria as previously described for the Commuter Rail section between Langford and Victoria. The reduction in vehicle travel associated with Inter-City rail through this section would result in an estimated reduction in GHGs of approximately 4% for this segment of the corridor.

Figure 3.12 IRC Inter-City Service Travel Time & GHG Savings



GHG/VKT Reduction: 4%

Transit Travel Time Courtenay – Victoria		
	AM SB	PM NB
Existing	140 to 200 min*	140 to 190 min*
Improved	180 min	180 min
Travel Time Savings	-40 to 20min	-40 to 10 min

Transit Travel Time Duncan – Victoria		
	AM SB	PM NB
Existing	45 to 70 min*	50 to 70 min*
Improved	50 min**	50 min**
Travel Time Savings	Up to 20 min	Up to 20 min

Notes:
**Existing travel time is based on Google Auto Travel time*
*** Transit travel time based on distance assuming constant transit speeds*

vi. Alignment with Challenges & Goals

The IRC Inter-City Service between Courtenay and Victoria will address key challenges identified today and in future within the ***Technical Report no.1 - Transportation Snapshot*** and supports key goals for the SITS in several ways as summarized below in **Table 3.12**.

Table 3.12 IRC Inter-City Service Alignment with Challenges and Goals

Addressing Key Challenges	
Mobility	• Supports commuter early morning and late evening travel. • Provides daily service alternative on corridor to connect communities. • May result in modest increase in delays for at-grade crossing locations.
Reliability	• Provides reliable public transportation travel times between Courtenay and Victoria. • Provides reliable commuter public transportation travel times between Duncan and Victoria.
Safety	• Modest benefit for mode shift from driving. • Use of at-grade rail crossings requires further investigation.
Redundancy	• Dedicated public transportation connection provides alternative to Highway 1 and Highway 19 between Courtenay and Victoria.
Sustainable Transportation	• Improved public transportation travel times and reliability (along with support infrastructure, policies & programs) will contribute toward increased public transportation ridership as well as first mile and last mile bike and walk trips. • Flexibility to add service/fleet over time.
Connectivity	• New transportation alternatives to communities between Victoria and Courtenay.
Advancing SITS Goals	
Climate Action	+ Encourages and supports public transportation ridership growth with strong intermodal connections. + Moderate reduction in vehicle-km traveled and GHGs.
Communities	+ Supports and serves commuter travel between several urban centres with population and employment hubs including Courtenay, Parksville, Nanaimo, Duncan, Langford and Victoria. + Is strongly supported by community and regional plans. + Provides opportunity for transit-oriented development and land use.
Safety & Reliability	+ Reduced vehicle travel or managed growth improves road safety.
Health	+ Encourages more walk and bike travel to connect with high capacity public transportation.

Public Transportation Opportunity E.

IRC Busway (Langford – Victoria)

i. Background

The Ministry recently completed a planning level assessment to investigate the technical feasibility and cost of an exclusive busway on the Island Rail Corridor (IRC) between Langford / Westhills and Vic West. This section of the Technical Report highlights the alternative use concepts and findings from the ***High Level Planning Assessment: Feasibility of Bus Lanes on Island Rail Corridor*** (Associated Engineering, July 2020).

The corridor and assessment sections are illustrated below in **Figure 3.13**.

Figure 3.13 IRC Busway Corridor + Station Locations

ii. Highlights

Between Westshore Parkway in Langford and Sitkum Road in Vic West (approximately 16 km), the IRC crosses seven bridges over roadways as well as five major roads and eight minor roads at-grade. The existing ROW is 30m wide except for a short portion at the east end that is only 15 m wide. The much of the corridor runs parallel to and crosses major roadways and multiuse pathways, waterbodies as well as high-power overhead transmission lines.

The alternative use concept is to repurpose the IRC alignment for buses. This would provide a dedicated busway for services between downtown Victoria and the Westshore as an alternative to routes along key corridors such as the Old Island Highway, Highway 1, and Douglas Street.

Two conceptual design options are considered for the IRC:

- Option 1: One-lane dedicated bus facility with pullouts to facilitate passing in either direction. The corridor is widened up to two lanes around sharp curves to provide safe passing opportunities without the need for multiple pullouts where sight distance is limited.
- Option 2: Two-lane dedicated bus facility

Six key station locations are identified - Westshore Parkway, Westhills Exchange (existing exchange), Langford Exchange (existing exchange), Veterans Memorial Parkway, Esquimalt Station at Admirals Road / Colville Road, and Esquimalt Road at Catherine Street. Additional stops / stations could be added in future, particularly where there are opportunities to include park and ride facilities.

Features

- Corridor would be redesigned to low volume street specifications and cross-section with a 50 km/h design speed. Refer to **Figure 3.14**. The cross-section includes open shoulders except for Concrete Roadside Barrier (CRB) and flares at bridge locations.
- Five stations with intermodal facilities and connections for walking, cycling, public transportation and vehicle travel.
- Access control and possible traffic control and lighting upgrades would be required at five major and eight minor street crossings.
- There may be opportunities for buses to deviate off the IRC alignment to avoid challenging intersection and/or bridge upgrades, although this would result in longer distances and increased travel time.

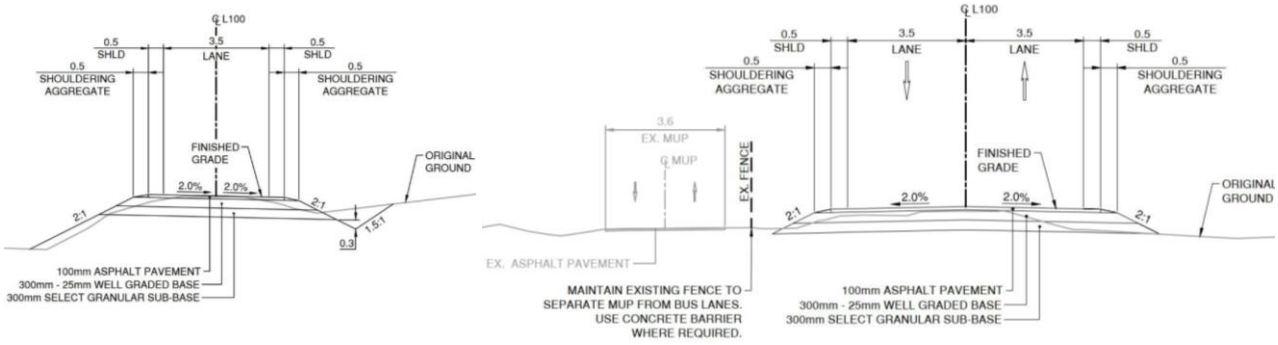
Schedules

- A dedicated busway could initially be part of BC Transit's designated Frequent Transit Network (FTN) providing services between downtown Victoria and Langford. As development centres along the corridor grow, service levels may be enhanced in peak directions as required.
- Service levels for the FTN are generally planned for 15-minute frequencies, 15 hours a day, 7 days per week. Based on ridership levels experienced on other FTN routes, service levels in the off-peak directions may take time to build with ridership.
- Travel time between Westshore Parkway and Vic West is assumed to be 30 minutes (average travel speed of approximately 31 km/hr).

Fleet

- The Feasibility Study identified need for ten high-capacity diesel buses, each with a 13-year lifespan.

Figure 3.14 IRC Bus Facility Typical Cross Section, One-Lane (left) and Two-Lane (right) Options



iii. Conceptual Cost Estimates

The *High Level Planning Assessment: Feasibility of Bus Lanes on Island Rail Corridor, July 2020* report included concept cost estimates for both the one- and two-lane bus facility options. Costs associated with the two-lane option are approximately 20-25% higher than the one-lane option, as summarized in **Table 3.13** below.

Table 3.13 IRC Busway Class D Concept Cost Estimate (2020 $)

	Option 1 (One-Lane)	**Option 2** (Two-Lane)
Construction (including 50% contingency)	$185.8	$241.8
Capital & Operating Costs of Buses (13 year lifetime)	$28.2	$28.2
First Nations Consultation & Accommodation	$27.9	$36.3
Property Acquisition	$90.0	$90.0
Project Administration, Engineering, Environmental Mitigation & Contingencies	$91.9	$120.0
Total	**$423.8**	**$516.3**

Source: High Level Planning Assessment: Feasibility of Bus Lanes on Island Rail Corridor, Associated Engineering, July 2020. Costs are concept only and are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

A variety of bus service levels could be implemented along the IRC alignment – from creating a new route specifically for the corridor to realigning existing routes to the busway. For the purpose of this Technical Report, the basic service design for the FTN is assumed with peak directional frequencies similar to other parallel corridors where service levels in the peak direction (15 minutes) are two or more times the frequency of the off-peak direction (30 minutes). During mid-day, evening, and weekend periods, a 30-minute frequency is assumed for 2020. Ridership projections are shown in **Table 3.14** and escalated by 2% per year through to 2038 for comparative purposes.

Table 3.14 Forecast Daily Ridership, IRC Busway

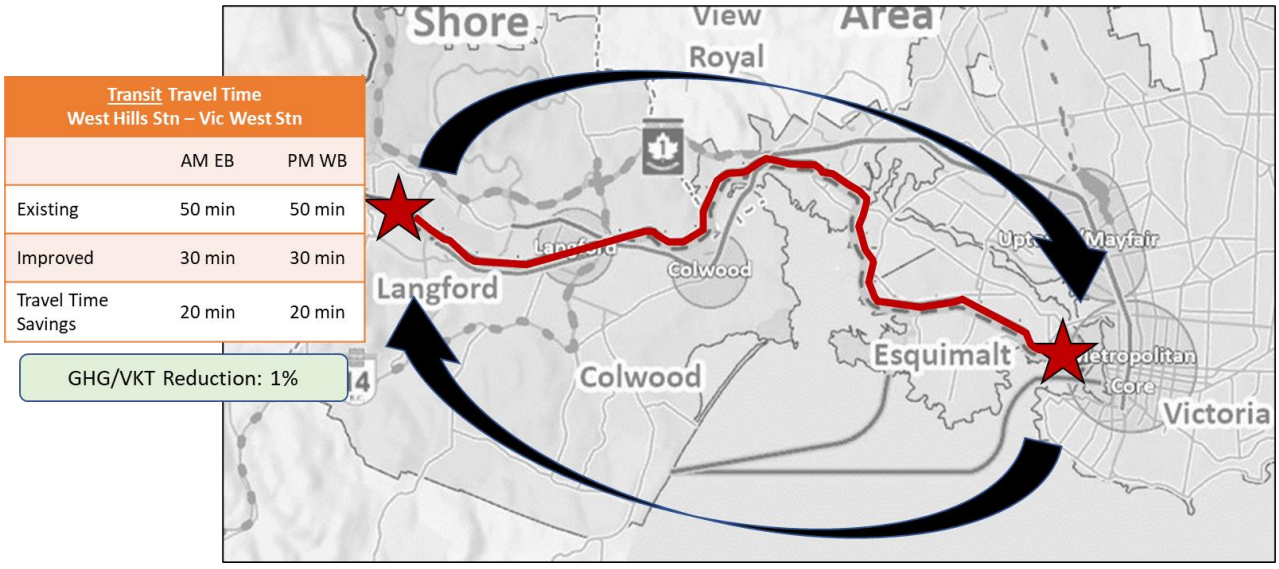
2020	4,000 passengers / day
2038	5,710 passengers / day*

* *Ridership forecast based on estimates provided by BC Transit for the assumed service level identified above, with a 2% annual growth rate applied over 18 years*

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times are compared between existing bus services and a potential dedicated busway on the IRC alignment between Langford and Victoria. As summarized in **Figure 3.15** below, a more direct connection between downtown and Langford on a dedicated corridor would provide a substantial improvement to public transportation travel times between these two regional centres. The reduction in vehicle travel through this section would result in an estimated reduction in GHGs of approximately 1% for this segment of the corridor based on the initial service and ridership levels.

Figure 3.15 IRC Busway Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The IRC Bus Facility between Langford and Victoria will address key challenges identified today and in future within the Technical Report no.1 - Transportation Snapshot and supports key goals for the SITS in several ways as summarized below in **Table 3.15**.

Table 3.15 IRC Busway Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	Two-way service along dedicated busway would improve travel times between Westshore and downtown Victoria.
	•	May result in modest increase in traffic delays for at-grade crossing locations.
Reliability	•	Increases reliability of travel times with exclusive busway between Langford and Victoria.
	•	An alternative to vehicle travel on parallel routes that continues to become more variable.
Safety	•	Modest safety benefit for mode shift from driving, however at-grade crossing locations require access control and further safety considerations.
	•	Safety risk for buses minimized with two-lane cross-section throughout corridor.
Redundancy	•	Dedicated public transportation connection provides secondary and supplemental service to Highway 1 / Douglas Street rapid bus services and facilities.
Sustainable Transportation	•	Improved public transportation travel times and reliability (along with support infrastructure, policies & programs) will contribute toward increased public transportation ridership as well as first mile and last mile bike and walk trips.
	•	Adds additional capacity to overall public transportation network.
Connectivity	•	New connection option between designated mobility hubs and major employment centres in the Westshore and Victoria.
Advancing SITS Goals		
Climate Action	+	Encourages and supports public transportation ridership growth with strong intermodal connections.
	+	Reduction in vehicle-km traveled and GHGs.
	+	Potential for environmental impacts on watercourses, vegetation, and wildlife can be mitigated.
Communities	+	Supports and serves designated urban centres of Langford, Colwood and downtown Victoria.
	+	Supports and serves the Esquimalt Nation and Songhees Nation, and the communities of View Royal and Esquimalt.
	+	Opportunity for transit oriented development / land use.
Safety & Reliability	+	Reduced vehicle travel or managed growth improves road safety.
	+	Two-lane configuration improve safety and reliability for transit.
Health	+	Encourages more walk and bike travel to connect with high capacity public transportation.

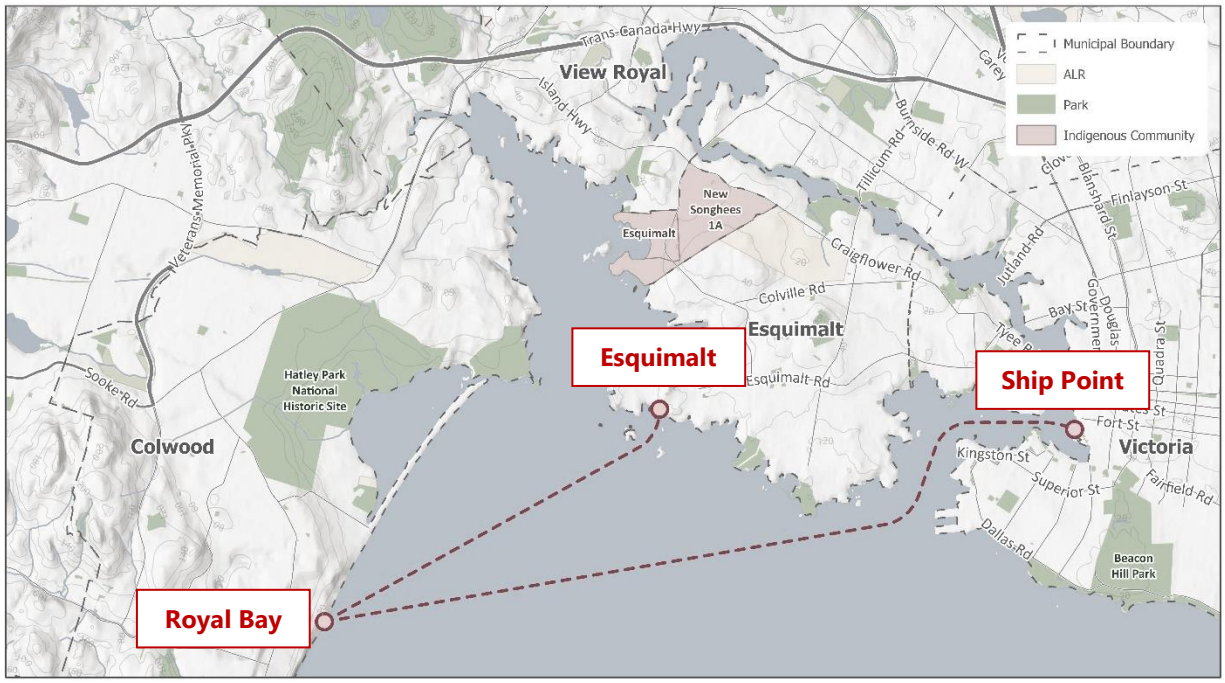
Public Transportation Opportunity F.

Westshore Ferry

i. Background

BC Ferries recently prepared a pre-feasibility study of a passenger ferry service between the Westshore and Esquimalt as well as Victoria entitled ***Westshore Express Passenger Ferry Service – Pre-feasibility Study***, SNC Lavalin, March 2019. The following discussion highlights the key findings from the study. This section of the Technical Report highlights the findings from the Ferry Service Study as illustrated below in **Figure 3.16**.

Figure 3.16 Westshore Ferry Routes



ii. Highlights

BC Ferries pre-feasibility study considered opportunities for a fast-catamaran passenger-only ferry service linking the Westshore communities and downtown Victoria and Esquimalt Harbour.

The Royal Bay Terminal would be located nearby the highest growth areas of the region, Langford and Colwood, where the population is expected to increase by approximately 30,000 and 5,000 people respectively over the next 20 years. Similarly, employment levels are projected to increase by approximately 8,000 jobs in Langford and 1,200 jobs in Colwood. The terminal would be located on an old quarry site which is part of a large housing development project in Colwood.

The Esquimalt Ferry Terminal would be located at the Pacific Fleet Club nearby the Esquimalt Naval Base. The population of Esquimalt is projected to increase by approximately 2,500 people (or 13%) over the next 20 years, though employment levels are not expected to change significantly over this period.

Public Transportation Opportunity F.
Westshore Ferry, cont.

The potential ferry service would also connect to downtown Victoria via Ship Point – an existing timber wharf that has been undergoing rehabilitation to restore full capacity. Over the next 20 years, the population and employment of Victoria are expected to both increase by 18,000 people and jobs.

Features

- **Royal Bay** upland terminal infrastructure would include park-and-ride (approximately 250 stalls with bike parking), exchange, pick-up and drop-off area, comfortable waiting area and facilities at the terminal and other bike, pedestrian and road infrastructure. Marine terminal infrastructure would include long, covered jetty for passengers, concrete platoons for stability and 130m breakwater to protect terminal area. Potential for increased land use scale and density around Royal Bay Terminal.
- **Esquimalt** upland terminal infrastructure would include passenger waiting areas and facilities as well as public transportation connections nearby. Marine terminal infrastructure would include an extended jetty for moorage and passengers, concrete platoons and 100m breakwater to protect terminal.
- **Ship Point** upland terminal infrastructure would include passenger waiting areas and potential for pick-up and drop-off facilities nearby as well as public transportation connections. Marine terminal upgrades would be required to replace timber floats with more stable concrete floats for passenger ferry services.

Schedules

- Services frequencies were considered for various levels: anywhere from every 20 to 40 minutes to Ship Point and every 60 minutes to Esquimalt.
- Travel times between Royal Bay and Ship Point may range anywhere from 25 to 30 minutes.
- Travel times between Royal Bay and Esquimalt would range anywhere from 10 to 12 minutes.
- Services could operate throughout the day and evening from approximately 6am through to 10pm.

Vessel

- High-speed, passenger catamaran that can support approximately 300 passengers.
- Potential design vessels could include Damen Fast Ferry that operates on diesel, can maintain speeds of up to 25 knots and operate with wave heights of up to 2.5m.
- Depending on frequency of service, study assumed provision of 4 vessels for Ship Point route and 1 vessel for Esquimalt.

iii. Conceptual Cost Estimates

The cost estimates prepared as part of the ***Westshore Express Passenger Ferry – Pre-Feasibility Study*** include concept costs for capital and vessel acquisition. Class D estimates for the three terminals at Royal Bay, Esquimalt and Ship Point are summarized in **Table 3.16** below.

Table 3.16 Westshore Ferry Class D Concept Cost Estimate (2018 $)

Marine & Upland Construction & Contingency	$41.6M
Vessels (5)	$54.0M
Total	**$95.6M**

Source: Westshore Express Passenger Ferry Service, Pre-feasibility Study, SNC, 2019. Costs are concept only for capital construction and vessels. Capital costs include contingency and engineering but do not include property, utilities, mitigation of impacts, and other overhead costs. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Comprehensive ridership demand and revenue forecasts were prepared as part of the Westshore Ferry study. For consistency, bus transit fares were used to forecast relative demand patterns for the Ferry between Royal Bay and Ship Point (downtown Victoria) and Royal Bay and Esquimalt. **Table 3.17** highlights the projected ridership. As noted, ridership forecasts are significantly higher for the Royal Bay to Ship Point connections. It is worth noting that the projected demands for passenger ferry could be impacted by provision of rapid transit services and facilities such as LRT and/or IRC commuter service.

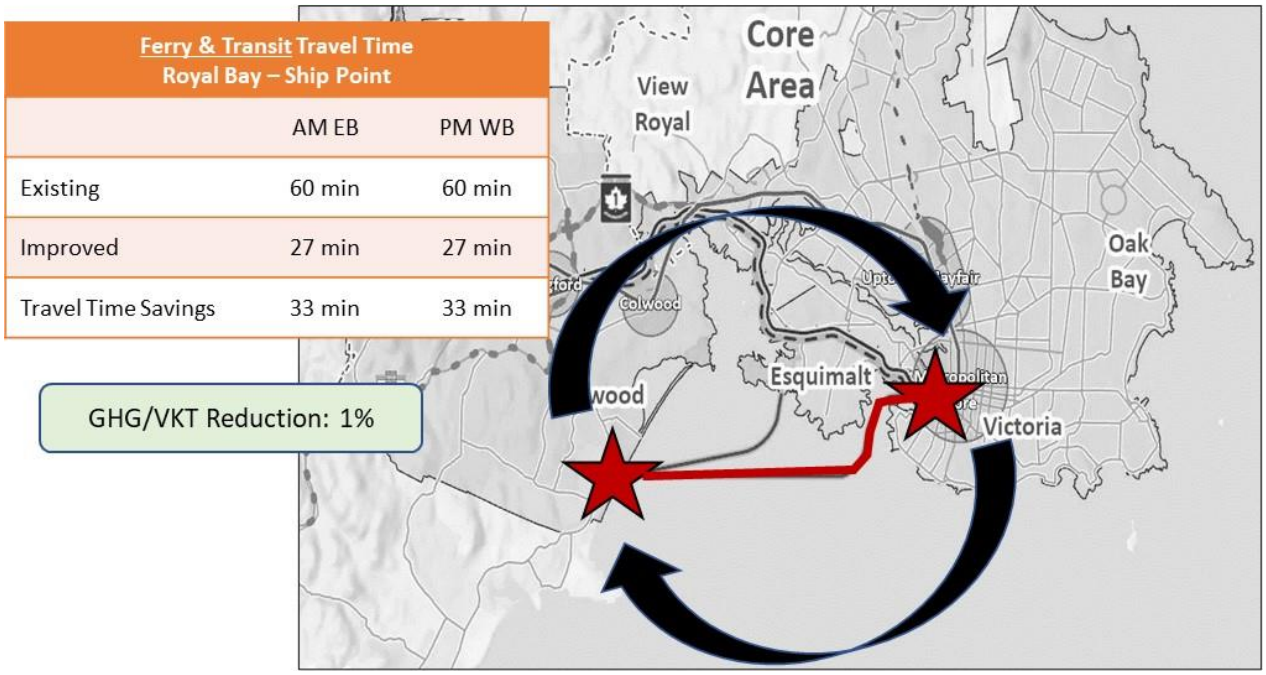
Table 3.17 Forecast Daily Ridership (Westshore Ferry)

	Royal Bay – Ship Point	Royal Bay – Esquimalt	Total
2038	3,700 passengers/day	300 passengers/day	4,000 passengers/day

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times are compared between existing public transportation connections and a passenger ferry service between Royal Bay and downtown Victoria in **Figure 3.17** below. With a direct ferry connection between Royal Bay and downtown, the travel time savings for each trip are approximately 33 minutes. The modest reduction in vehicle trips however results in a less than 1% reduction in GHGs.

Figure 3.17 Westshore Ferry Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Westshore passenger ferry service would address some of the key challenges identified in the ***Technical Report no.1 - Transportation Snapshot*** and supports key goals for the SITS in several ways as summarized below in **Table 3.18**.

Table 3.18 Westshore Ferry Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	New public transport option presents time savings over existing transportation options between Royal Bay and downtown / Esquimalt.
	•	Moderate diversion from vehicle travel and improvement to base mobility levels.
Reliability	•	Provides reliable public transportation travel times in ideal conditions between Westshore and downtown Victoria, whereas vehicle travel times on parallel routes will continue to increase.
	•	Service reliability can be impacted by weather conditions.
Safety	•	Modest benefit for mode shift from driving.
Redundancy	•	Alternative travel choice between Royal Bay and the core area.
Sustainable Transportation	•	Additional transportation choice for growth areas.
	•	Requires first mile and last mile facilities to promote walking and cycling.
	•	Flexibility to add ferry service/fleet over time.
	•	Significant changes to public transportation service structure in Westshore would be required to serve Royal Bay Terminal.
Connectivity	•	New connection option between designated mobility hubs in the Westshore and Victoria.
Advancing SITS Goals		
Climate Action	+	Encourages and supports alternatives to driving with strong intermodal connections.
	+	Reduction in vehicle-km traveled and GHGs.
Communities	+	Supports and serves daily travel between key growth areas in south Colwood and downtown Victoria.
	+	Is strongly supported by community and regional plans.
	+	Provides opportunity for transit-oriented development and land use.
Safety & Reliability	+	Minor reduction in vehicle travel or managed growth improves road safety.
Health	+	Encourages more walk and bike travel to connect with urban hubs.

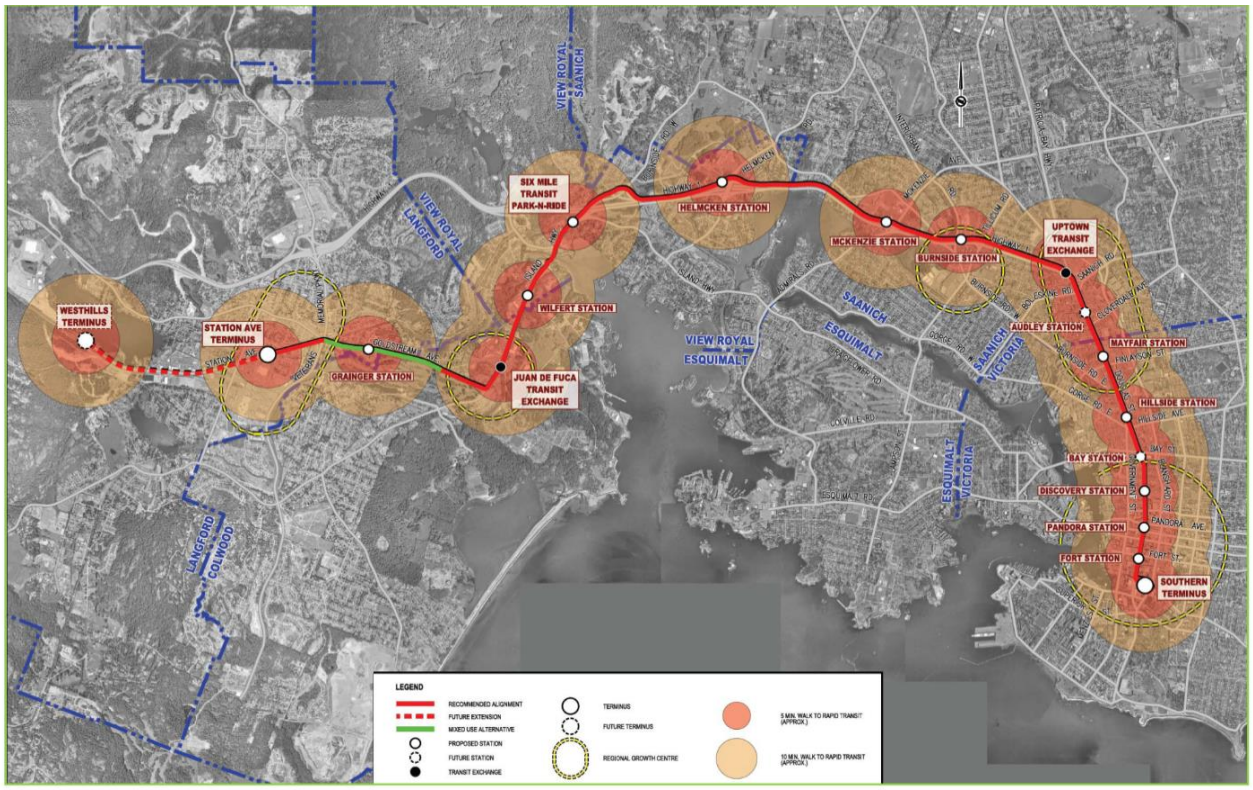
Public Transportation Opportunity G.

Light Rail Transit (LRT)

i. Background

In 2011, BC Transit completed the ***Victoria Regional Rapid Transit Study (Victoria / Westshore Link)*** examining options between Bus Rapid Transit (BRT) and Light Rail Rapid Transit (LRT) options to connect Westshore communities and downtown Victoria. LRT was found to provide the capacity to achieve the project's goals, deliver the most long-term benefits and have the highest level of community support. The following discussion highlights the key features of the recommended LRT option as illustrated in **Figure 3.18**. The study examined alternative routings and technologies for rapid transit serving the Westshore communities and developed a multiple account evaluation of the alternatives with cost estimates. While LRT was recommended over BRT, a bus-based system can and is being used to build ridership and other supporting infrastructure that could eventually be replaced by LRT essentially along the same corridors, serving many of the same station locations.

Figure 3.18 Light Rail Transit



ii. Highlights

Provision of a 16km Light Rail Transit (LRT) corridor connecting the Westshore communities to downtown Victoria. For the purpose of the original study, Station Avenue was chosen as the western limit. This terminus is located nearby the Island Rail Corridor railway and allows a future westward extension to the Westhills Terminus. The route would extend eastward between the IRC Railway and Station Avenue before crossing over Veteran's Memorial Parkway and following Goldstream Avenue through the core areas of Langford and Colwood centres. The proposed LRT route would then follow Old Island Highway through to the Colwood Interchange and then alongside the Highway 1 corridor and Galloping Goose through to Uptown. LRT would then operate within the Douglas Street right-of-way between Uptown and Victoria's downtown core.

Features

- Fourteen stations proposed along the alignment with provisions for an additional two in future (extending the line further west).
- Operate within roadway right-of-way along Goldstream Avenue in Langford/Colwood and Douglas Street in Saanich / Victoria.
- Traffic lanes would generally be maintained throughout, except for the final 2km south of Hillside Avenue on Douglas Street, where one general purpose lane in each direction and on-street parking would be eliminated.
- LRT would operate at-grade through major urban intersections, with rapid transit vehicles receiving signal priority across the corridor.
- Along Highway 1, grade-separated crossing would be required at four major arterial roads (Tillicum, McKenzie, Helmcken, and Burnside).
- Planned increased land use density and mix around stations to promote greater public transportation use and livable communities.
- Enhanced, branded station areas would require intermodal connections for walking, cycling and bus transit services as well as pick-up and drop-off facilities.
- May require realignment of Galloping Goose Regional Trail in places to accommodate active transportation users side-by-side with LRT.
- Will render the Douglas – Westshore bus transit priority network redundant

Schedules

- Services would operate every 5 minutes or less during peak periods.
- Periods of operation could be from approximately 5am through to 1am.
- Public transportation travel time from Westshore to Downtown is estimated to be 40 to 45 minutes.

Fleet

- Approximately 20 light rail vehicles of anywhere from 30m to 40m in combined train lengths and approximate vehicle capacity of 230 passengers.

iii. Conceptual Cost Estimates

The LRT costs were prepared by a cost estimator and documented in the ***Victoria Regional Rapid Transit Study***, *Volume 5, 2011.* These Class D cost estimates from 2010 include construction of track and station facilities, rolling stock, property and other delivery costs. They have been increased for the purpose of this study by approximately 4% per year (or by 50%) to provide a comparative cost range to other transportation opportunities and are summarized in **Table 3.19** below.

Table 3.19 LRT Class D Concept Cost Estimate (escalated from 2010 $)

	Cost Estimate
Station & Rail Construction & Contingency	$575M
Rolling Stock	$90M
Property	$18M
Storage & Maintenance	$35.7M
Project Delivery Costs	$117M
Total (2010 $)	**$782M**
Escalation & Inflation (approx. 4% per year)	$391M
Total (2020 $)	**$1,173M**

Source: VRRT Study, Volume 5, SNC, August 2011.
Costs include: the infrastructure associated with the development of the exclusive right of way (running surface, stations); re-construction of the entire road right of way along the urban sections alignment, new roadway and improved landscaping; electrical power supply and distribution to power the LRT vehicles control, signaling and communications for operation of the system procurement of LRT vehicles; construction of a maintenance centre for the LRT vehicles; the engineering, management, approvals, legal, survey and other professional services cost; contingencies based on the conceptual state of the design

iv. Travel Projections

The regional transportation model (TransCAD) was used to prepare public transportation ridership forecasts for the alternative public transportation technologies between the Westshore and downtown Victoria using planned demographic changes. The growth forecasts for LRT indicated that the demands would initially increase at a rate ranging from an average of 1.9% per year up to 3.4% per year. These growth rates would decline to below 2% per year after 10 years. For the purpose of this work, an average annual growth rate of 2% in ridership has been assumed and is summarized below in **Table 3.20**. It is noted that a portion of the public transportation ridership on the LRT system within the core areas of Douglas Street are transfer trips from Peninsula and McKenzie Avenue rapid bus services.

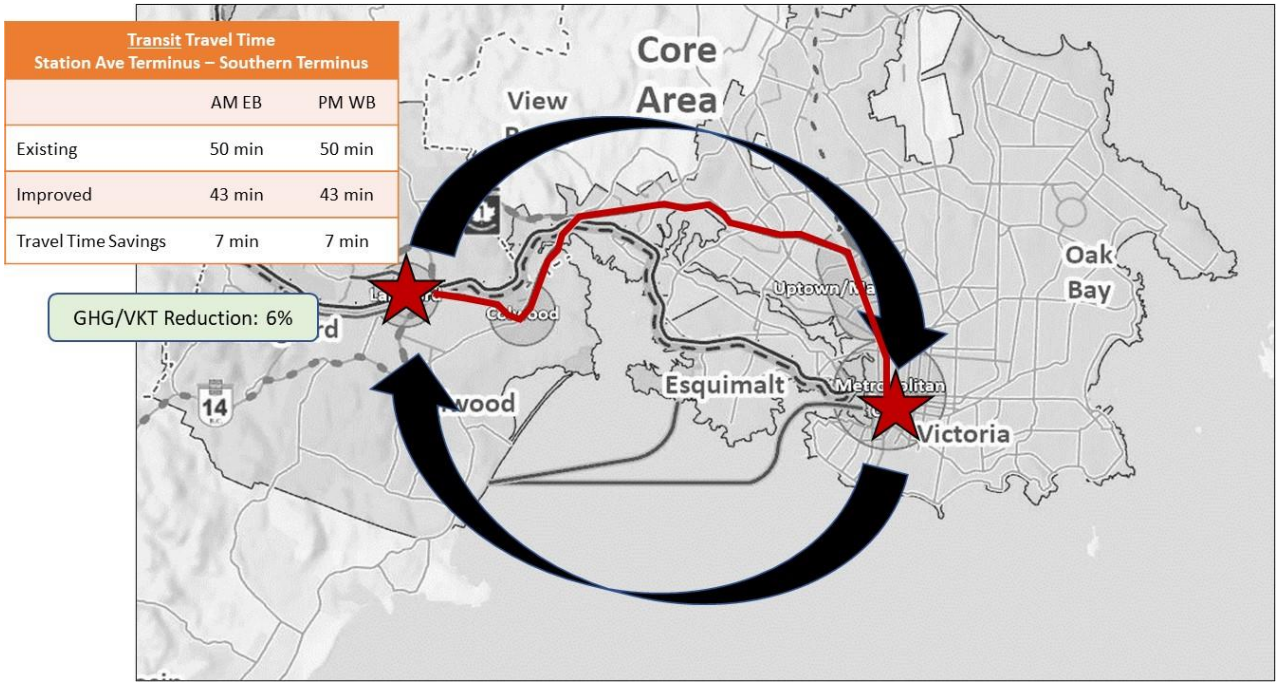
Table 3.20 Forecast Daily Travel (Douglas – LRT)

	Daily Trips
2020 (bus)	24,000 passengers/day
2038 (LRT)	32,000 passengers/day

v. Travel Time Savings & GHG Reductions (existing base)

Public transportation travel times are compared between existing public transportation connections and an LRT service between Langford and Victoria in **Figure 3.19**. Using today's scheduled travel times for bus services, LRT would provide a 7-minute travel time savings per trip in the peak periods. Existing public transportation travel times will decrease with completion of the Douglas-Westshore bus transit priority. The diversion of car trips would result in reduced GHGs of approximately 6% for the corridor.

Figure 3.19 LRT Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Victoria – Westshore LRT connection would address some of the key challenges identified in the Technical Report no.1 - Transportation Snapshot and supports key goals for the SITS in several ways as summarized below in **Table 3.21**.

Table 3.21 LRT Alignment with Challenges and Goals

Addressing Key Challenges	
Mobility	• New public transport option presents time savings over existing transportation options between Westshore and downtown / Esquimalt.
Reliability	• Provides reliable public transportation travel times between Westshore and downtown Victoria, whereas vehicle travel times on parallel routes will continue to increase.
Safety	• Modest benefit for mode shift from driving.
Redundancy	• Provides modest redundancy to transportation network.
Sustainable Transportation	• Increases potential public transportation mode share for growth areas. • Requires first mile and last mile facilities to promote walking and cycling. • Flexibility to add service/fleet over time.
Connectivity	• New connection option between designated mobility hubs and regional growth areas in the Westshore and Victoria.
Advancing SITS Goals	
Climate Action	+ Encourages and supports alternatives to driving with strong intermodal connections. + Reduction in vehicle-km traveled and GHGs.
Communities	+ Supports increased scale, density and mixture of land uses in designated urban centres and sub-regional nodes. + Is strongly supported by community and regional plans.
Safety & Reliability	+ Significant reduction in vehicle travel and managed growth improves road safety.
Health	+ Encourages more walk and bike travel to connect with urban hubs and regional growth areas.

3.4 Summary

Public transportation opportunities across the South Island are critical to addressing many of the challenges described in ***Technical Report no.1 - Transportation Snapshot*** and achieving the climate change commitments of ***CleanBC*** and the strategic goals presented in Section 1 of this report. These opportunities also require partnerships in various forms with Indigenous, local, regional, provincial and federal governments. **Table 3.22** highlights the relative costs, projected ridership, and reduced vehicle-km and GHGs per trip for each opportunity.

It should be noted that, with the exception of LRT and the Douglas – Westshore Bus Rapid Transit Network, all rail and ferry opportunities are complementary or supplementary to the RTN by adding capacity, sustainable travel choices and redundancy to the network.

Highlights for each opportunity are briefly summarized in terms of relative costs, projected ridership as well as overall alignment with key challenges, climate change, and goals for the SITS.

- **Relative Cost**. Some conceptual cost estimates were prepared specifically for this Technical Report while others were referenced from other technical reports. Overall, the costs range anywhere from $95M for the West Shore Ferry Service to almost $1.2B for LRT. The bus rapid transit related facilities on Highways 1 and 17 cost anywhere from $40M for bus queue jump lanes on Highway 17 through to $100M and $180M for Highway 1 and Highway 17 bus-on-shoulder lanes, respectively. IRC commuter and inter-city rail facilities are estimated to cost approximately $595M through to $1.1B respectively. Costs associated with the IRC busway are in the range of $420M to $515M. Once again, it should be noted that these costs are conceptual only and should not be used for budgeting purposes. They are intended to understand relative costs for each opportunity.

- **Daily Ridership Projections**. In general terms, the projected ridership levels highlighted with this Technical Report are reflective of service levels assumed for bus and rail transit opportunities. The specific demands will also be influenced by any incentives provided to use public transportation and the disincentives to drive. It should be noted that ridership forecasts are not the same as target mode shares. Additionally, combining public transportation investments, intermodal connections, land use patterns and transportation incentives are essential to improve on the ridership forecasts contained in this Technical Report.

Each of the public transportation opportunities serve different travel markets. Both the Douglas – Westshore Bus Transit Priority and Light Rail Transit serve many of the designated mobility hubs and sub-regional nodes in the region including Langford, Colwood, Uptown and downtown Victoria. The projected 2038 daily ridership ranges from 15,850 to 32,000 passengers. These ridership figures are not exclusive and the ridership is similar between the RTN and LRT options. The other opportunities for public transportation to the Westshore include the IRC commuter rail, IRC busway and ferry. The IRC options directly serve the Esquimalt Nation and Songhees Nation, with an approximately 30-minute direct trip between the Colwood/Langford areas and downtown Victoria.

Inter-regional commuter bus services may be supported by intermodal facilities as described in **Section 5**, as well as public transportation priority treatments at intersections to improve overall customer service. Ridership levels would be dependent on service levels but could easily double from today's ridership with the provision of more frequent, all-day services. Inter-city rail highlighted in the Technical Report is a longer-distance connection between Victoria and Courtenay which may be built in stages to support inter-regional mobility between Island communities.

- **Alignment with Key Challenges**. The key transportation challenges – mobility, safety, network redundancy, reliability, sustainable transportation, connectivity – were presented for different areas of South Vancouver Island in the ***Technical Report no.1 - Transportation Snapshot***. On a relative scale, the public transportation opportunities that connect mobility hubs and intermodal nodes described in **Section 5** of this report provide alternatives to reliability challenges within the core areas, and create greater redundancy in the transportation system have the greatest potential of addressing key challenges. In this regard, the ratings are considered in relation to the challenges in those areas.

- **Alignment with Climate Change**. All public transportation options reduce vehicle travel to some degree and therefore contribute toward reducing GHG emissions.

- **SITS Goals**. **Section 1** of this Technical Report highlights the goals for the South Island transportation system – sustainable travel options, strong community connections, improve safety and reliability, support active transportation. All public transportation opportunities considered in this Technical Report are generally very well aligned with the first three goals.

Table 3.22 Summary of Public Transportation Opportunities

Candidate Initiatives	Class D Cost Estimate (Capital)	Projected Daily Ridership (2038)	Travel Time Savings per trip (minutes)	% GHG / VKT Reduction by trip
A. Douglas – Westshore Bus Rapid Transit Network (Hwy 1)	**$40M**	15,850 psg/day	7 mins	3%
B. Peninsula Bus Rapid Transit Network (Hwy 17)	**$36M – $150M**	10,300 psg/day	<12 mins	3%
C. IRC Commuter Service	**$595M**	1,610 psg/day	22 mins	<1%
D. IRC Inter-City Service	**$512M**	2,030 psg/day	20-40 mins	4%
E. IRC Busway	**$420-$520M**	5,700 psg/day	20 mins	1%
F. Westshore Ferry	**$95M**	4,000 psg/day	33 mins	1%
G. Light Rail Transit	**$1,200M**	32,000 psg/day	7 mins	6%

4. Active Transportation

4.1 Background

Communities in the South Island have made considerable progress toward supporting active transportation through policies, programs and facilities. Today, approximately 5% of all daily travel (55,600 trips) within the Capital Region are by bicycle. The CRD ***Regional Transportation Plan*** (RTP) recognizes that there is a strong foundation for increasing the share of cycling trips in the region and set a 15% cycling mode share target by 2038. Assuming a nearly 25% increase in population and travel for that period, this goal means that almost 200,000 cycling trips would occur each day in the region.

In support of advancing commitments toward more sustainable and healthy modes of travel, MOTI recently released ***BC's Active Transportation Strategy, Move. Commute. Connect.*** for cleaner, more active transportation as part of the Province's ***CleanBC*** plan to build a better future for all British Columbians. This Strategy also looks forward to significant increases to the share of trips taken by active transportation in communities throughout BC as well as to improve overall safety at the same time.

This section of the Technical Report is focused on active transportation opportunities that are of significance to shaping regional and inter-regional travel. Building from the current plans and strategies for active transportation in the Capital Region and from Indigenous communities and communities in the Cowichan Valley, this section outlines the strategic context for active transportation that includes highlights of existing and planned regional and inter-regional serving networks as well as local areas of significance for targeted growth in cycling trips in the region. Opportunities to advance the Province's Active Transportation Strategy will be identified for further discussion and consideration with municipal and regional agencies as well as Indigenous communities in the South Island.

Many communities have identified expanding active transportation infrastructure through partnerships as a key priority to support and encourage walking and cycling as a way to advance their collective climate goals.

4.2 Strategic Context

Today, over 60% of the daily cycling trips within the Capital Region are work-based travel, followed by school, recreation, shopping, and other trip purposes. Consistent with many other communities, cycling trips for all purposes average approximately 3 km in length. This means that areas of high concentration of regional travel today and in the long-term – Urban Centres and Regional Growth Areas, Intermodal stations between home and work, etc. – are areas of focus for increasing mode share and heathy forms of travel.

BC's Active Transportation Strategy, Move. Commute. Connect. includes goals to:

- Double the percentage of trips taken with active transportation by 2030;
- Inspire people of all ages and abilities to choose active transportation; and
- Work together with communities to create policies and plans that enable complete active transportation networks.

Achieving these goals requires partnerships with Indigenous, local and regional governments, transportation organizations and special interest groups. Through strong working relationships, the Province is actively working to align policies, programs, and funding to support growth of active transportation.

During the development of the Strategy, the themes most commonly heard across the Province around active transportation and barriers to achieving these goals were threefold, as follows:

- Need for more, better and safer infrastructure in all regions.
- Desire for improved education about active transportation and rules of the road for all modes.
- Need to shift the way infrastructure is developed and how funding is allocated to support desired goals.

The Province identified three ways to make advancements towards making significant shifts in active transportation mode share that have been targeted. For the South Island area, these may be translated as follows:

- Supporting Indigenous communities, CRD, CVRD and municipal active transportation plans and priorities.
- A strong commitment toward increasing active transportation within the South Island area through recently enhanced Active Transportation Grant program and continued safety improvements along inter-regional trail networks.
- Identifying the overlapping interests between, Indigenous, local and regional governments and working collaboratively with those partners to advance their collective goals of increasing active transportation mode share

The specific actions supporting each pathway included in ***BC's Active Transportation Strategy, Move. Commute. Connect.*** are summarized in **Table 4.1**.

Table 4.1 Provincial Active Transportation Strategy Key Pathways

Key Pathways	Year 1	Year 1 to 2	Year 3+
1. Active transportation should be safe, easy and convenient	• Increase E-Bike support • Learn-to-ride programs • Employer programs	• Support facilities in government buildings • Promote Vision Zero • Boost enforcement • Active Transportation Education Toolkit • Anti-theft programs	• Awareness campaigns • Partnerships with tourism sectors
2. Integrated, safe and accessible active transportation system	• Expanded grant programs • Community Safety Enhancement Program • Integrate active transportation in highway projects • Improve connections at public transportation hubs and stops. • Road maintenance for cyclists • Planning and design support for communities	• Safe infrastructure on local roadways • End of trip facilities at transfer points • Federal funding support • Integration with public transportation	• Enhance rail trails and bridge connections
3. Supportive policies and plans for integrated active transportation networks.	• Provincial cycling policy • Research barriers to cycling • Use of BC Active Transportation Design Guide	• MVA reviews to improve safety • Accessible tools and resources • R&D and data collection to monitor progress • Wayfinding for active transportation • Integrated networks for all infrastructure	• Work with ICBC on improved driver education • Enhanced use of local government tools (i.e. DCCs) for active transportation • Incorporate active transportation into new construction • Encourage policies, plans and strategies supporting AT

Regionally, there have been several areas of commitment to help address active, sustainable transportation goals through land use and development:

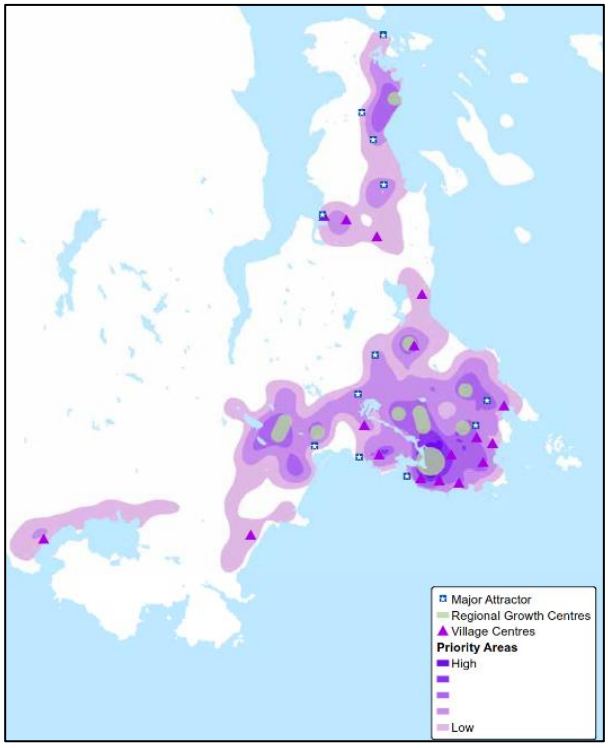
- The CRD ***Regional Transportation Plan*** (RTP) highlights some of the key aspirations and commitments across the region toward increasing integration of active transportation plans, programs and facilities.
- Regional Outcome Statement 4: Cycling is appealing, safe, convenient and viable travel option for residents and visitors.
- Priority Actions relevant to this strategy include:
    1. Implement recommended cycling facilities and amenities as presented in the AT plan.
    2. Expand harmonized regional cycling data collection program.

Beyond the transportation specific policies and priority actions, the RTP places emphasis on the importance of integrated land use and transportation planning. In particular, the important role that land use and transportation function for Growth Centres identified in the Regional Growth Strategy and previously described in this document.

The RTP also highlights the importance of active transportation in Growth Centres and Mobility Hubs. By matching population with job opportunities with supportive densities, inter-municipal travel demands can be managed by supporting shorter trips. This in turn strengthens potential for active transportation trips that are typically shorter in nature and where facilities can be built with all ages and abilities in mind to encourage safer walking and cycling and a broader range of the population engaging in active transportation.

The CRD ***Pedestrian and Cycling Master Plan*** (PCMP) identifies areas with the greatest potential for walking and cycling, typically concentrated near regional population centres and key areas of employment, as shown in **Figure 4.1**. The PCMP identifies a Primary Inter-Community (PIC) bikeway network that includes over 900km of on- and off-street bikeway facilities designed to connect major Urban Centres and key Regional Growth Areas throughout the region.

Figure 4.1
Regionally Significant Trip Generators



The CRD ***Regional Trails Management Plan*** (RTMP) identifies management approaches and improvement priorities for the four regional trail corridors – Galloping Goose Regional Trail, Lochside Regional Trail, E+N Rail Trail and the TransCanada Trail (or Great Trail).

4.3 Active Transportation Opportunities

In working with Indigenous communities, the CRD and CVRD, as well as the Technical Advisory Group established for this study, the Technical Report no.1 - Transportation Snapshot identified some of the key challenges toward increasing walking and cycling mode share. These challenges have been flagged in local and regional active transportation plans and outlined in ***BC's Active Transportation Strategy, Move. Commute. Connect.***

This section of the Technical Report provides an overview of the opportunities to advance active transportation in the South Island to support significant mode shifts towards walking and cycling. In particular, this stage of the process is focused on identifying potential opportunities that support active transportation for inter-regional and regional transportation choice that will ultimately provide residents and visitors with safe and attractive options that are integrated with other modes.

Building from ***BC's Active Transportation Strategy, Move. Commute. Connect.***, as well as further discussions through the SITS**,** there are significant opportunities to advance active transportation policies, programs, and facilities in partnership with or support of Indigenous, local, and regional governments. In some cases, the Province can lead and leverage investments on inter-regional travel in the South Island. In other cases, Indigenous, local, and regional governments are in the best position to lead on advancing shared goals.

Specific opportunities to advance these key pathways in the South Island grouped in four areas noted and described further below.

a. Safe, Easy, and Convenient Active Transportation Incentives
b. Integrated, Safety and Accessible Transportation Facilities
c. Supportive Policies and Plans
d. Network Gaps and Improvement Opportunities

A. Safe, Easy, and Convenient Active Transportation Incentives

Greater recognition of active transportation as a viable, safe and efficient mode of transportation is essential to meet the target set out by the CRD of increasing cycling to almost 200,000 trips per day by 2038. Within the South Island area, various incentives to support active transportation are critical to achieving regional mode share targets.

Key incentive opportunities to support safe, easy and convenient access to active transportation are summarized below.

- **Eliminate serious injuries and fatalities** through promotion of Vision Zero principles and improved enforcement of motorist speed and driving behavior.
- **Develop incentives** to facilitate more people cycling through opportunities such as financial subsidy on electric bicycle (e-bike) purchases through the Province's Scrap-It program, safe and active routes to school planning initiatives, and promoting learn-to-ride programs.
- **Promote active transportation** by encouraging large employers in the South Island, including the Province, to support commuting by active transportation and through provision of end-of-trip facilities at workplaces, including bicycle parking and shower/change facilities.
- **Expand training and education** through the creation of a provincial Education Toolkit specific to active transportation, delivery of safety training and education, partnering with communities on public safety and anti-theft campaigns, and encouraging employer support for commuting by active modes.
- **Promote active transportation benefits** through support of community programs and events, developing new promotional programs, and launching public awareness campaigns.

B. Integrated, Safe and Accessible Active Transportation Facilities

The South Island area is already connected by a comprehensive network of active transportation infrastructure. However, there are still barriers for those of all ages and abilities (AAA) as well as supporting the goal to significantly increase mode share and ridership up to 2030. Potential active transportation facilities to advance these goals with municipal and regional partners are highlighted below.

- **Invest in active transportation networks and connections** throughout the South Island. The following are some of the opportunities:
  - Develop, improve, or reconfigure provincial highways to support AAA active transportation facilities
  - Enhance shoulder cleaning on provincial roadways to make active transportation safer and more comfortable
  - Pursue facilities to support connections to existing and planned public transportation hubs, exchanges & park-and-rides (i.e. bike racks, lockers, sidewalks and shelters).
  - Establish end-of-trip cycling facilities at gateways and transfer points (ferry terminals, airports).
- **Cost-share funding for Mobility Hubs / Centres** by expanding provincial cost sharing programs for AAA cycling infrastructure and support facilities specifically at regional mobility hubs and urban centres.
- **Establish partnerships for active transportation opportunities** by providing planning and design support within the CRD and CVRD, leveraging federal funding programs for active transportation, assisting with improving active transportation connections over private lands, and improving active transportation and public transportation integration.

C. Supportive Policies and Plans

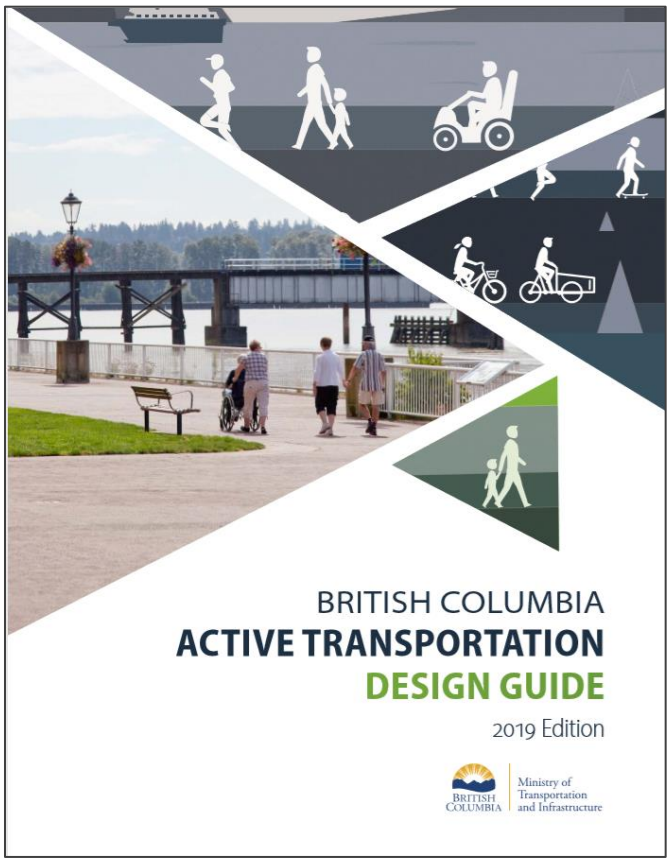
As participation in active transportation continues to grow, updates to existing policies, strategies and plans will be required to better meet the needs of communities in the South Island area. Potential opportunities for the Province to advance support development of legislation, policies and plans needed to support provision of active transportation in the South Island are highlighted below.

- **Policy and legislative changes** to facilitate active transportation. Opportunities include:
  - Adopting a provincial active transportation policy
  - Review of legislative, regulatory and policy frameworks for all road users
  - Collaboration with ICBC on driver education, rights and responsibilities
  - Consideration of alternative sources for local funding of active transportation facilities
  - Establishing requirements for active transportation in new construction

- **Support local and regional network plans** by encouraging integration of local, regional and provincial active transportation infrastructure, and supporting efforts on inter-modal connections.

- **Encourage use of the *BC Active Transportation Design Guide*** to support communities in the planning and design of active transportation facilities, as well as ensure safe, high-quality active transportation opportunities throughout BC.

- **Support planning and development** that facilitates active transportation through supporting research on barriers to active transportation and by collecting and sharing public data on active transportation usage, as well as establishing a provincial website with tools and best practices.



D. Network Gaps and Improvement Opportunities

Figure 4.2 illustrates the network of inter-regional and regional cycling connections across the South Island that are important to advance many of these opportunities. Key regional trail gaps and improvement opportunities have been identified in **Table 4.2** based on established priorities from the ***CRD Regional Trails Management Plan*** as well as through discussions throughout the SITS.

Figure 4.2 Inter-regional Active Transportation Opportunities

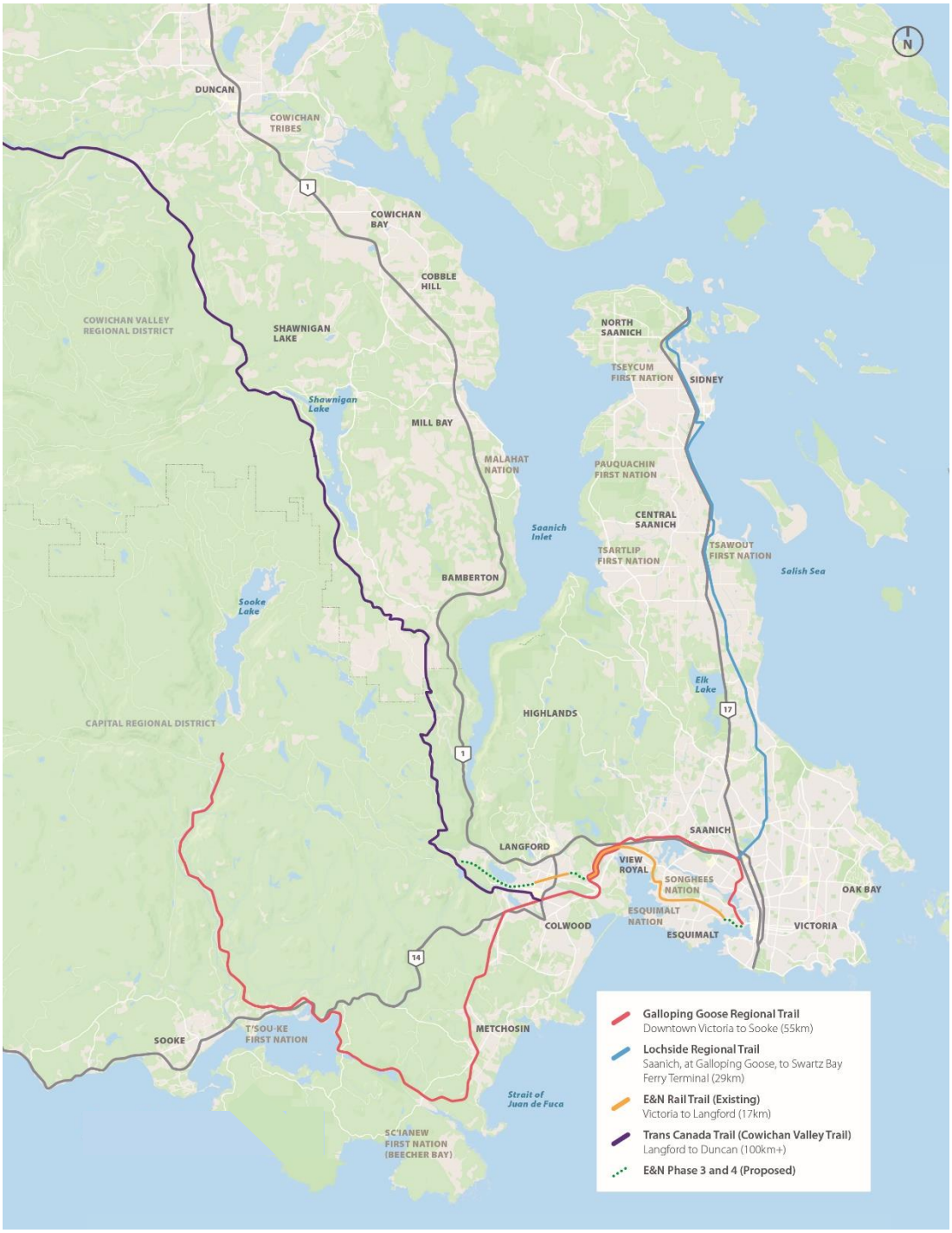


Table 4.2 Inter-regional Trail Gaps + Improvement Opportunities

	Trail Gaps / Challenges	Improvement Opportunities
Galloping Goose Regional Trail	Connection between the trail and Witty's Lagoon / Devonian Regional Park (Metchosin)	Improvements to key road crossing locations, including: • Sooke Rd / Glen Lake Rd (Langford) • Harriet Rd (Saanich) • Rocky Point Rd / Kangaroo Rd (Metchosin) • Gillespie Road (Sooke) Expand Atkins Road parking facility or create new park-and-ride facility between Atkins Rd and Tillicum Rd Possible paving of the trail east of Wale Rd to Highway 14 / Royal Roads Potential trail widening, user separation or grade separation
Lochside Regional Trail	Connections to the following: • "Flight Path' trail at the airport • Mt Douglas Park and Swan Lake • Brentwood Bay and Anacortes ferry terminals • Regional Parks (Elk/Beaver Lake, Island View, Horth Hill) • Arterial roads with bike lanes and sidewalks Areas of high use / conflict: • Lochside Park (Saanich) • Some areas of Lochside Dr	Active transportation facility between Lochside Trail / McTavish Exchange and Airport Flight Path Potential trail widening or user separation between Switch Bridge and McKenzie Ave Possible paving of unpaved sections Trail alignment change at Sidney to Weiler Avenue / Highway 17 ROW
E+N Rail Trail	Incomplete trail sections include: • Esquimalt Road to Johnson Street Bridge • Jacklin Road to Sooke Hills Wilderness Park	Develop trails for the incomplete segments: • Phase 4 (Esquimalt Rd to Johnson Street Bridge) • Phase 5 (Jacklin Rd to Sooke Hills Wilderness Park) Address critical trail crossing locations, including allowing cycling across crosswalks on regional trail route
TransCanada Trail		Connect key active transportation facilities and park and ride locations in the Cowichan Valley to the TransCanada Trail

4.4 Summary

Active Transportation opportunities within the South Island can address many of the challenges described in ***Technical Report no.1 – Transportation Snapshot*** and help to achieve both community and transportation goals of the South Island area. Walking and cycling trips can be the mode of choice for entire trips and can also be a viable first mile and last mile option to connect with attractive public transportation alternatives as described in **Section 3**. Active transportation facilities can also contribute toward healthy, vibrant, and sustainable communities.

In support of advancing commitments toward more sustainable and healthy modes of travel, ***BC's Active Transportation Strategy, Move. Commute. Connect.*** is BC's strategy for cleaner, more active transportation as part of the Province's ***CleanBC*** plan to build a better future for all British Columbians. This Strategy also looks forward to significant increases to the share of trips taken by active transportation in communities throughout BC as well as to improve overall safety at the same time.

Highlights for each of the active transportation opportunities described within each theme area are briefly summarized in terms of alignment with key challenges, climate change, and goals for the SITS.

- **Alignment with Key Challenges**. The key transportation challenges – mobility, safety, network redundancy, reliability, sustainable transportation, connectivity – were presented for different areas of the South Island in ***Technical Report No. 1 - Transportation Snapshot***. Overall, there are many barriers to substantially increasing active transportation mode share in the South Island, from the provision of safe and attractive active transportation facilities through to the support programs and facilities. While all initiatives in each theme area will contribute toward addressing the challenges of providing sustainable transportation choices, investments in active transportation infrastructure and support facilities will have the biggest impact.

- **Alignment with Climate Change**. Cycling trips in the South Island are 3km on average. Improving the network and reducing barriers for inter-regional travel. Many of the investments in active transportation facilities are centred on improving access to public transportation within and around mobility hubs, intermodal nodes, as well as gateways, as described in **Section 5**. Providing attractive facilities and safe crossings is likely to achieve the greatest reduction in vehicle travel and in turn reduce greenhouse gases.

- **SITS Goals**. Section 1 of this Technical Report highlights the goals for the South Island transportation system – sustainable travel options, strong community connections, improve safety and reliability, and support active transportation. All active transportation opportunities considered in this Technical Report are generally very well aligned with all goals presented in the Strategy.

5. Mobility Hubs, Intermodal Nodes + Gateways

5.1 Background

The South Island is made up of settings that include urban, suburban, and rural areas. As noted in **Section 2**, the region is expected to grow by almost 25% over the next 20 years, and the urban areas of Victoria, Langford, Colwood, Saanich, and Sooke are expected to make up over 80% of the total population growth in the Capital Region.

The CRD ***Regional Transportation Plan*** *(RTP)* identifies the principle of mobility hubs as the places where people have access to housing, employment, services, and amenities. These are also the places where travelers have transportation choice in local nodes, sub-regional nodes (including Uptown Saanich as well as the core areas of Langford, Colwood, Sidney, and Sooke), and the regional metropolitan centre (Downtown Victoria).

Beyond these regionally significant mobility hubs, there are also intermodal nodes within the region as well as gateways that are integral to the South Island transportation system. These intermodal nodes principally support access to attractive, direct public transportation services in various areas. Intermodal nodes are typically 'intercepting' points for longer distance trips such as park-and-rides or public transportation exchanges. The gateways to the South Island are also opportunities to provide attractive intermodal connections that support attractive transportation choice for visitors and residents.

An objective of this Strategy is to promote and facilitate connections between travel modes and varied choices across the South Island. Mobility hubs, intermodal nodes, and gateways are critical to supporting transportation choice for inter-regional and regional travel.

This section of the Technical Report describes the opportunities to develop and, in some cases, further enhance connections at these generators of travel in the region. As described in previous sections, these nodes are central to increasing mode share for public transportation and active transportation.

5.2 Strategic Context

The region generates over 1.1 million trips per day, which includes approximately 83,000 people trips per day from other parts of the Island, province, nationally and internationally. The majority of those regional trips occur between the Urban Centre and Regional Growth Areas, as illustrated in **Figure 5.1**.

The ***CRD Regional Transportation Plan*** identified regional hubs as places where people have access to housing, employment, services and amenities. The plan also suggests that these regional hubs should provide transportation choices on a local, sub-regional and regional scale. In fact, mobility hubs have been identified to achieve the following:

- Give high priority to walking, cycling and public transportation.
- Provide convenient and attractive transitions between modes.
- Build greater opportunities to live, work, learn, shop and play within these hubs to support shorter distance travel and opportunities for walking and cycling.

Specific actions statements supporting mobility hubs in the RTP include:

- Recognizing mobility hubs in future regional and local area planning.
- Develop guidelines to inform planning and development guidelines for mobility hubs.
- Fund municipal planning efforts for mobility hubs.

5.3 Mobility Hub, Intermodal Connection, and Gateway Opportunities

This section explores opportunities for intermodal connectivity around mobility hubs, intermodal nodes, and gateways. For the purpose of this Strategy, these nodes are generally captured as follows:

- **Mobility Hubs**

  Mobility hubs generally include urbanized areas such as downtown Victoria, Uptown Saanich, as well as the core areas of Langford, Colwood, Sooke, Sidney, Mill Bay and Duncan.

- **Intermodal Nodes**

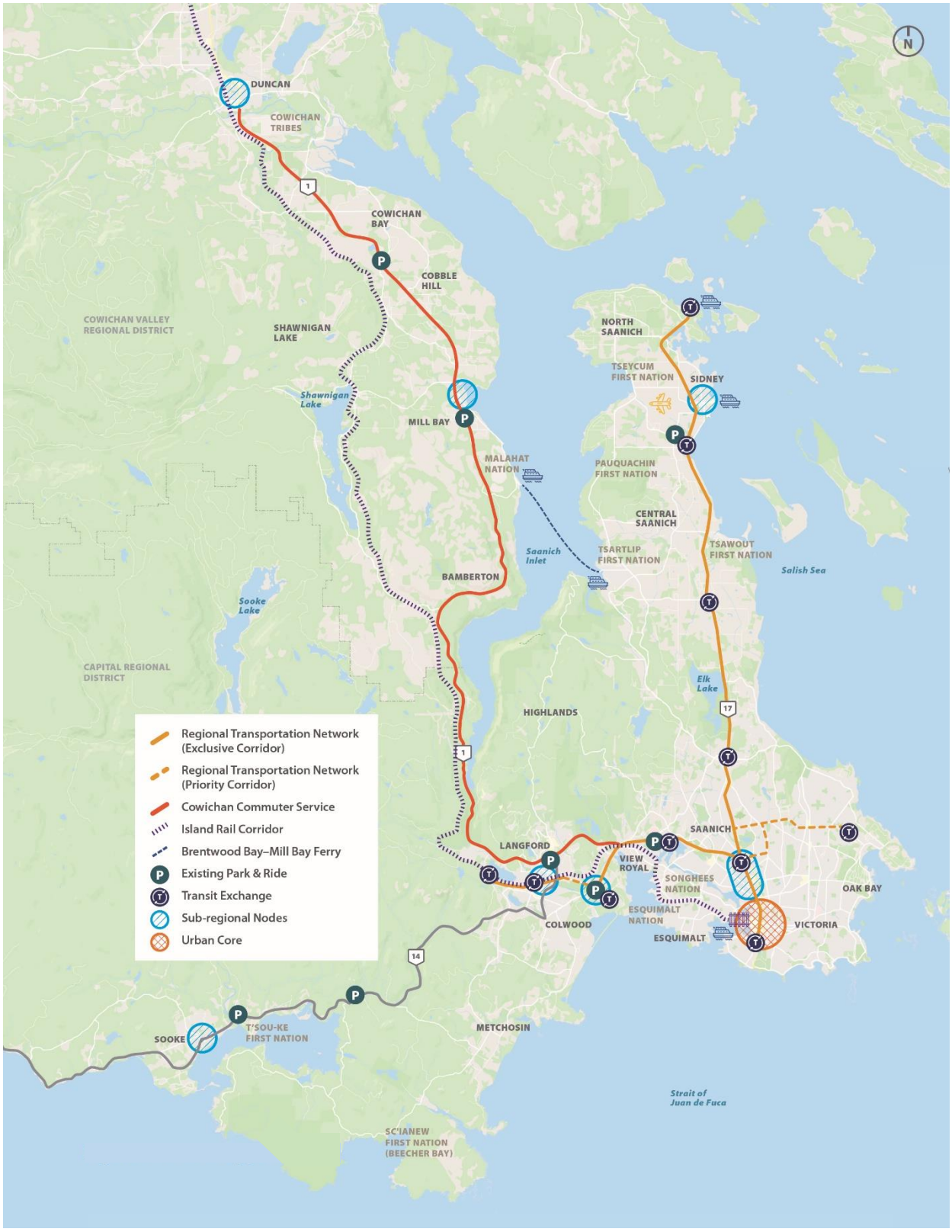
  Intermodal nodes are captured by existing and planned connections to rapid transit services and commuter services in the form of public transportation exchanges and park-and-rides.

- **Gateways**

  Serving inter-regional, provincial, national and international travel, gateways include connections to Cowichan Valley Regional District and other parts of Vancouver Island, the Victoria International Airport, Swartz Bay and Anacortes Ferry Terminals, as well as downtown ferry and seaplane services.

Figure 5.1 illustrates these key areas for considering intermodal needs and opportunities. As illustrated, these nodes serve as important connections to inter-regional and regional serving public transportation, active transportation and the highway system opportunities described in previous sections of this Technical Report.

Figure 5.1 Mobility Hubs, Intermodal Nodes and Gateways



A. Mobility Hubs

Complete transportation networks service a variety of transportation choices for people of all ages and abilities is essential to support existing land uses and planned growth and development within the South Island mobility hubs, including the metropolitan centre in downtown Victoria and include designated regional growth areas. Potential transportation opportunities and features to be included in mobility hubs in the South Island are identified in **Table 5.1** below. They include excellent pedestrian and cycling infrastructure and support facilities within the mobility hubs and immediately surrounding the areas within at least 1km to support large volumes of people walking and rolling between population and employment uses. They also require connections to excellent public transportation services with attractive passenger facilities. As discussed in **Section 6**, supporting transportation policies and programs are also important support features to reduce vehicle use and encourage people to walk, bicycle and take public transportation.

Table 5.1 Potential Mobility Hub Features

All Ages and Abilities Cycling Facilities	Comfortable and attractive cycling facilities to, from, and within approximately 1km of mobility hubs.
Secure Bicycle Parking	Short- and long-term bicycle parking facilitating cycling to and from mobility hubs.
Accessible Pedestrian Facilities	Enhanced pedestrian facility design facilitating universally accessible pedestrian within 800m of mobility hubs to facilitate connections between travel modes.
Bus Rapid Transit Stations / Enhanced Stops	Rapid transit stations supporting high-efficiency, high-ridership bus service
Transportation Demand Management	TDM incentives such as priority parking and carshare / bikeshare concentrated in mobility hubs

Example Mobility Hub

UPTOWN MOBILITY HUB INTERMODAL CONNECTIONS

The Uptown Mobility Hub is located in the Uptown Centre portion of the District of Saanich, where Highway 1 / Douglas Street and Highway 17 / Blanshard Street converge. It is a significant generator of regional travel by all modes and a hub for regional public transportation services between Downtown Victoria, the West Shore, Saanich Peninsula, and east to the University of Victoria. Additionally, the Galloping Goose Regional Trail intersects the Lochside Regional Trail at the Switch Bridge, which a high volume of cyclists and pedestrians passing through this location.

The importance of the Uptown Mobility Hub is identified in numerous local and regional planning initiatives, each recognizing the importance in facilitating regional travel and intermodal connections. The BC Transit ***Victoria Region Transit Future Plan*** identifies Uptown as a future public transportation exchange serving the convergence of the Rapid Transit Network along with exclusive or priority public transportation priority treatments. The District of Saanich ***Uptown-Douglas Corridor Plan*** highlights the strategic importance of the Uptown area as both a focus of planned future growth and a key role in the provision and integration of regional transportation. The Plan specifically notes the role of the area in creating a connected, sustainable and balanced transportation system, and supporting the development of complete streets and future rapid transit. The CRD ***Regional Transportation Plan*** identifies Uptown as a "Complete Hub" that is a location of major trip origin/destination served by multiple or frequent transit routes, and convenient access to bikeways, arterials and major collector roads.

The Ministry will continue to work with BC Transit as well as other local and regional partners on the planning and design for the Uptown Mobility hub to support implementation of the Rapid Transit Network as well as attractive and accessible connections for pedestrians and cyclists to the area.

B. Intermodal Nodes

Intermodal nodes include critical locations where trip transfers occur between various modes. Recognizing everyone's travel requirements are different, intermodal nodes provide flexibility to choose between modes and support sustainable options as much as possible. For the purpose of the SITS, intermodal nodes include existing and planned public transportation exchanges and park-and-rides that facilitate transfers between travel modes. Potential opportunities and features to be included in intermodal nodes in the South Island are identified in **Table 5.2** below. Key examples include the Sooke River Road Transit Exchange and McTavish Transit Exchange, where the Ministry and BC Transit have been working toward improvements to support bus rapid transit services and intermodal connections.

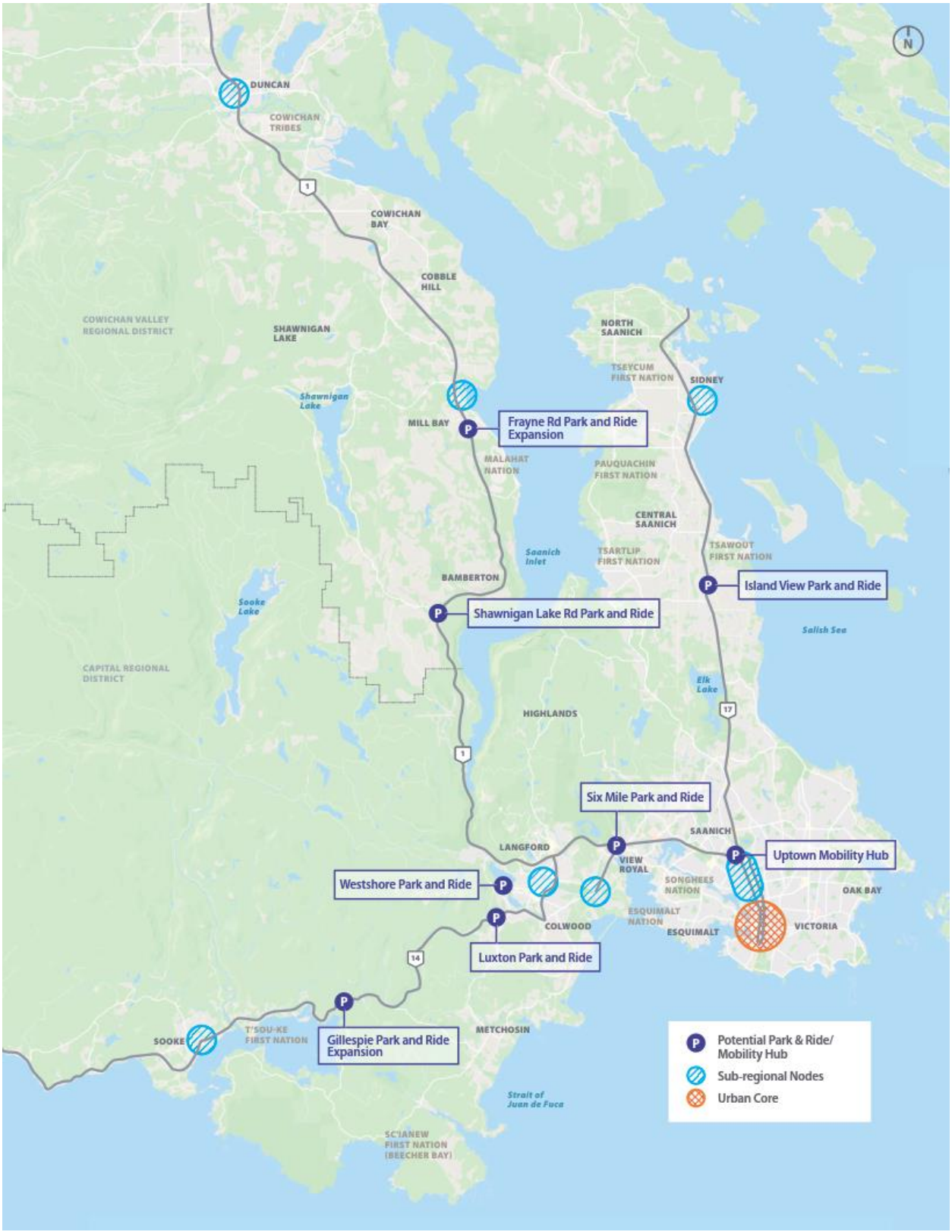
Table 5.2 Potential Intermodal Node Features

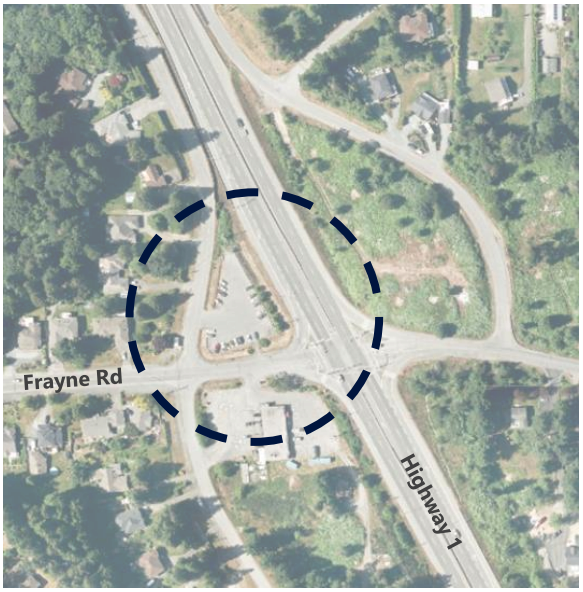
All Ages and Abilities Cycling Facilities	Comfortable and attractive cycling facilities to and from intermodal nodes
Secure Bicycle Parking	Short- and long-term bicycle parking facilitating cycling to and from intermodal nodes
Accessible Pedestrian Facilities	Enhanced pedestrian facility design facilitating walking connections between travel modes
Bus Rapid Transit Stations	Rapid transit stations supporting high-efficiency, high-ridership bus service, connected to adjacent public transportation exchange and/or park-and-ride facilities
Pick-up / Drop off	Easy access to public transportation exchange areas and park-and-rides for pick-up and drop-off trips by car
EV Charge Stations	EV charging stations provided to facilitate access to public transportation via zero emissions vehicles

Priority intermodal node locations have been identified at strategic locations throughout the South Island where there are opportunities to address the goals of this Strategy, specifically to encourage sustainable travel options, strengthen intermodal connections, and support active transportation. The priority locations are along key inter-regional corridors with frequent public transportation service and in areas of planned growth, with the potential to encourage travel by public transportation for regional trips and reliance on active transportation to access public transportation. Some present an opportunity to enhance intermodal connections concurrent with other planned improvements.

The locations of priority opportunities to invest in intermodal nodes are illustrated in **Figure 5.2** and described in the following pages. As suggested, the Ministry in collaboration with agency stakeholders could consider strategies to incorporate the key features described in **Table 5.2**.

Figure 5.2 Priority Intermodal Hub Locations



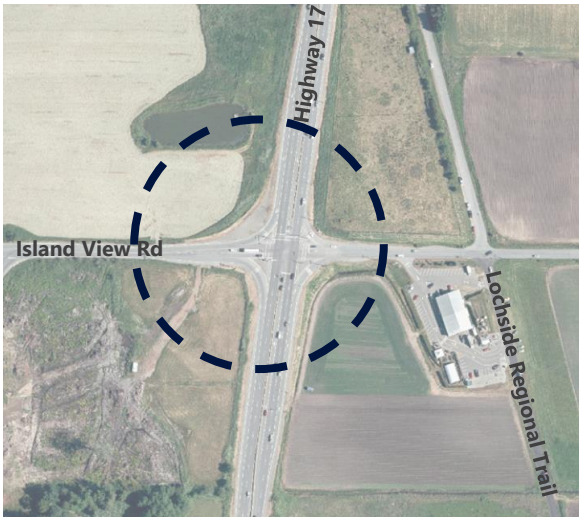


Frayne Rd Park and Ride Expansion

Located immediately adjacent Highway 1, the Frayne Road Park and Ride facilitates parking and transfer to the Cowichan Commuter service for public transportation commuters to/from the Capital Region, as well as carpooling. The current 35-space facility is well utilized and the expanded facility would not only accommodate increasing demands, but also support future increases in ridership on the Cowichan Commuter service and residential growth in the Mill Bay area.

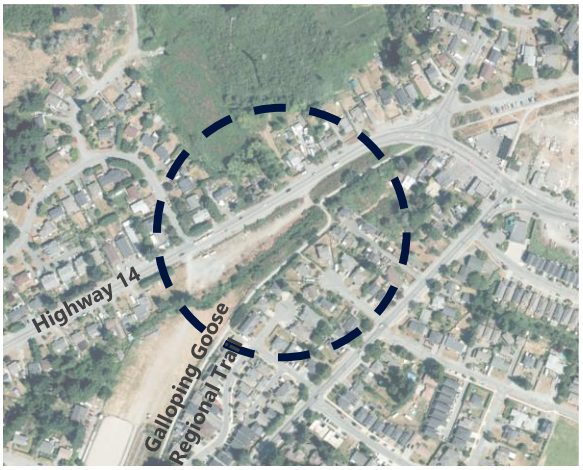
Gillespie Park and Ride Expansion

The Gillespie Road Park and Ride facility provides opportunity for residents of Sooke and East Sooke to park to access public transportation (Route No. 61), as well as to facilitate carpooling. The current facility has limited capacity and is informal, with limited amenities and challenging access to/from Highway 14. An improved facility would include additional parking capacity, formalized parking spaces and access location, and improved amenities. The improved Park and Ride facility would be pursued concurrent with safety improvements to Highway 14 in the vicinity of Gillespie Road, as identified in **Section 7**.



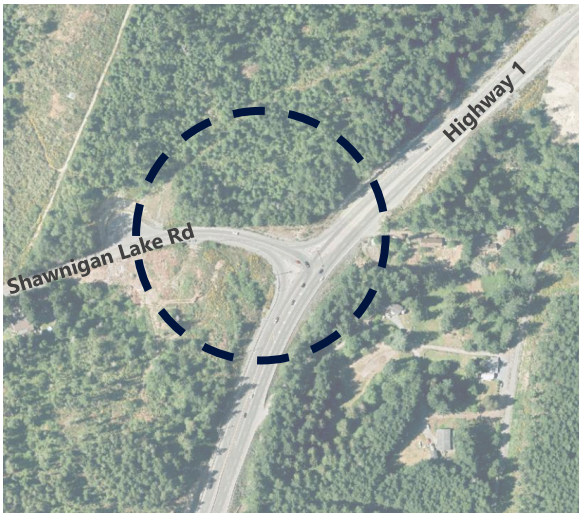
Island View Park and Ride

The Island View Park and Ride is located in Central Saanich at the Highway 17 / Island View Road intersection. The location is served by frequent public transportation service on Highway 17, with future service improvements realized through possible corridor public transportation improvements. This location will appeal to residents of the Saanich Peninsula south of the existing McTavish Park and Park, including areas such as Saanichton, Brentwood Bay and Tanner Ridge. Located nearby the Lochside Regional Trail, this facility will also facilitate cycling trips to access public transportation.



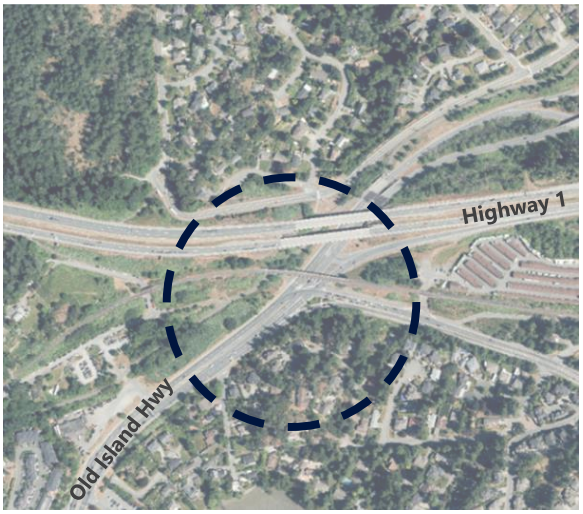
Luxton Park and Ride

The Luxton Park and Ride location is in Langford on Highway 14 nearby the Galloping Goose Regional Trail crossing at Glen Lake Road. A park and ride in this location provides the opportunity for Langford and Metchosin residents to access regional public transportation service on Highway 14 by bicycle via the Galloping Goose or by vehicle.



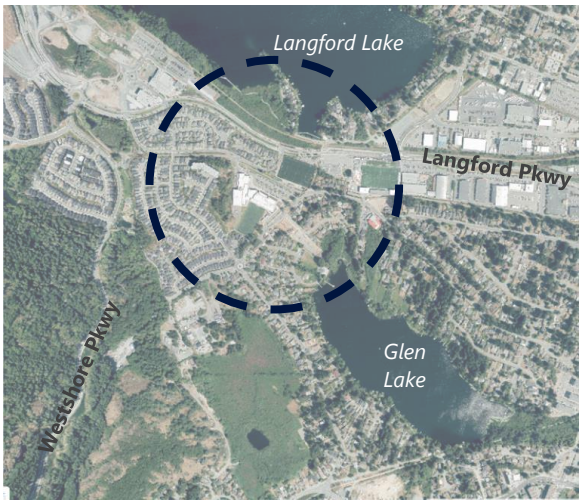
Shawnigan Lake Rd Park and Ride

The Shawnigan Lake Road Park and Ride is on the Malahat adjacent the Highway 1 / Shawnigan Lake Road intersection. The location allows Shawnigan Lake residents the opportunity to access the Cowichan Commuter Service on Highway 1, as well as the potential to facilitate carpooling among commuters to major employment destinations in the South Island. The Park and Ride facility may be pursued concurrent with potential safety improvements and grade separation at the Highway 1 / Shawnigan Lake Road intersection (refer to **Section 7**).



Six Mile Park and Ride

The Six Mile Park and Ride is located in View Royal where Highway 1, Old Island Highway and Burnside Road meet, as well as where the Galloping Goose and E&N Trails converge. A large number of regional commuters originating in Colwood and View Royal travel through this location each day. A Park and Ride would facilitate bicycle and vehicle trips to access public transportation and carpooling, as well as appeal to certain commuters that current rely on the well-used Helmcken Road Park and Ride.



Westshore Park and Ride

One possible location could be in the vicinity of the Langford City Centre / West Hills community. This location will serve the growing West Hills residential community with enhanced access to public transportation and opportunity for carpooling. The facility would be adjacent the Island Rail Corridor and the planned extension of the E+N Rail Trail (identified in **Section 4**), as well as access to any possible future rail service that may operate on the corridor in future, as described in **Section 3**. There are other possible locations to service Westshore communities along the Westshore Parkway and Langford Parkway which could also be considered.

C. Gateways

There are several gateways to the South Island where sustainable transportation choices could be encouraged and where facilities and incentives could be improved. Travel options and opportunities for multi-modal trip making at key entry / exit points to the South Island presents a significant opportunity to enhance mobility and influence travel choices. Potential opportunities and features to be included in Gateways in the South Island are identified in **Table 5.3** below.

Table 5.3 Potential Gateway Features

All Ages and Abilities Cycling Facilities	Comfortable and attractive cycling facilities to and from gateways
Carshare	Access to carshare services to facilitate multi-modal trips
Attractive Public Transportation Stops / Stations	Well-designed public transportation access at key Gateways to facilitate intermodal trip making
Ride-Hailing Facilities	Enhanced design and treatments for rapid bus stations / stops to improve customer service, comfort and safety
EV Charge Stations	EV charging stations provided at key Gateway locations to help support long-distance EV trips

MARINE + AIR GATEWAYS

Swartz Bay Ferry Terminal

Swartz Bay is a key gateway to the Gulf Islands and the Lower Mainland. The Ministry will continue to work with BC Ferries on terminal development plans to support and encourage the development of key features that support inter-regional travel.

Victoria International Airport

The airport is a key gateway for domestic and international travel. The Ministry will work with partners to support and encourage the development of key intermodal connections that include facilities that support sustainable transportation choices.

5.4 Summary

Strategies focused on Mobility Hubs, Intermodal Nodes and Gateways are largely about influencing travel choices at the busiest generators of regional and inter-regional travel in the South Island. Through targeted implementation of strategies in these locations, inter-regional and regional sustainable transportation, mobility, and connectivity objectives are achieved, with significant potential to shift long-distance vehicle travel to public transportation and active travel modes.

The importance of attractive, seamless, and accessible intermodal connections for each of these areas are briefly summarized in terms of alignment with key challenges, climate change, and goals for the SITS.

- **Alignment with Key Challenges**. Technical Report No. 1 - Transportation Snapshot documented the key challenges for the South Island – Mobility, Safety, Network Redundancy, Reliability, Sustainable Transportation, and Connectivity. Intermodal opportunities help address many of the stated challenges. Key highlights include sustainable transportation, where active transportation integration with rapid transit service and EV charging facilities will shift travel demand to sustainable travel modes. Community connectivity and mobility challenges are also addressed through improved modal integration, thereby reducing congestion and improving mobility.

- **Alignment with Climate Change**. While difficult to quantify the GHG emissions reduction associated with each, all intermodal opportunities support climate action objectives by facilitating intermodal trip making and enhancing alternatives to single-occupant vehicle trips. Rapid bus stations, for example, make for a more attractive public transportation service. Opportunities such as carshare / bikeshare broaden travel options for non-vehicle users, while EV charging supports the use of zero emissions vehicles.

- **SITS Goals**. The overarching goals for the South Island transportation system are identified in **Section 1**, as follows: Sustainable Travel Options, Strong Community Connections, Improve Safety & Reliability, and Support Active Transportation. By their nature, intermodal opportunities present a significant opportunity to enhance connections between modes. This is important given the specific highway, public transportation and active transportation opportunities being considered, and allows for the full benefit of infrastructure investments to be realized. More broadly, these coordinated strategies support the SITS goals of encouraging sustainable travel options (i.e., public transportation, zero emissions vehicles) and supporting active travel modes such as walking and cycling.

6. Transportation Demand Management

6.1 Background

Transportation Demand Management (TDM) is a term used to capture overarching policies and programs that can be used to reduce travel demands as well as to support and advance shifts toward sustainable modes of transportation. In an effort to achieve the desired mode share targets in the South Island toward significantly more public transportation and active transportation, providing attractive services and facilities are not enough. TDM related policies and programs are needed to provide added incentives and support sustainable modes, and in some cases disincentivize single-occupant vehicle (SOV) trips. This also requires commitment and coordinated efforts from all levels of government that control many of the levers that are considered in this document.

An objective of this study is the desire to explore region-specific TDM measures and how they could influence travel choices and reduce transportation emissions. The possibilities to be explored included, but were not limited to, parking-related strategies, financial incentives for using public transportation, real-time information to encourage non-peak travel, high-occupant vehicle (HOV) lanes on major corridors, ride-sharing related facilities, and closer links between land use and transportation planning, policies and decision-making.

This section of the report highlights TDM opportunities that may support strategic directions for an integrated transportation system with varied travel options throughout the South Island.

6.2 Strategic Context

Where and how far people are travelling on a typical day shapes the transportation choices they make as well as the potential for using sustainable modes of travel. Longer distance trip making lends itself to public transportation as the primary alternative to vehicle travel, whereas shorter trips provide the most significant opportunities for active transportation.

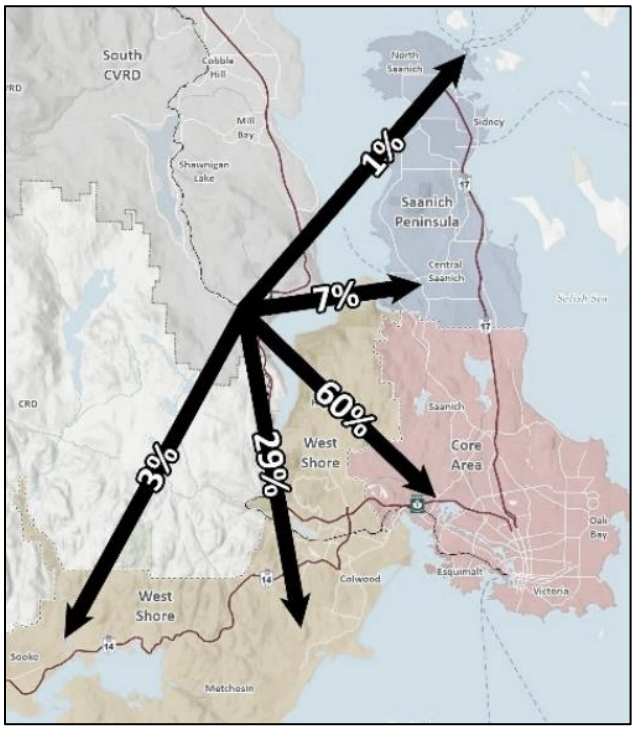
At the same time, these travel patterns can shape the strategy for planning and designing services and facilities for sustainable modes as well as TDM programs. As previously described in this Technical Report, designated Urban Centres and Regional Growth Areas as well as gateways to the region are opportunities to shape travel patterns as well as mode choices.

Within the South Island, travel demand patterns across key gateways highlight the primary regional destinations of Langford / Colwood and Victoria / Saanich as illustrated in **Figure 6.1**. As illustrated, approximately 90% of daily trips entering the South Island area from the Malahat are destined for the Westshore communities of Langford / Colwood (29%) and Victoria / Saanich (60%). Similarly, daily trips entering the South Island via the Swartz Bay Ferry are principally destined for areas of Victoria / Saanich (59%) and North Saanich / Sidney (29%).

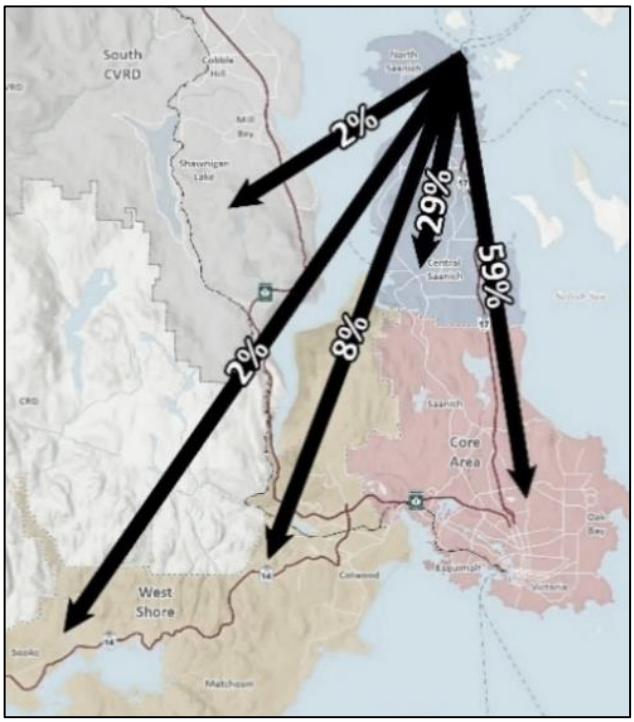
It is worth noting that a small proportion of the daily vehicle trips through these gateways are trips travelling through the region (without a local stop along the way).

Figure 6.1 Distribution of Daily Travel Across Key Gateways

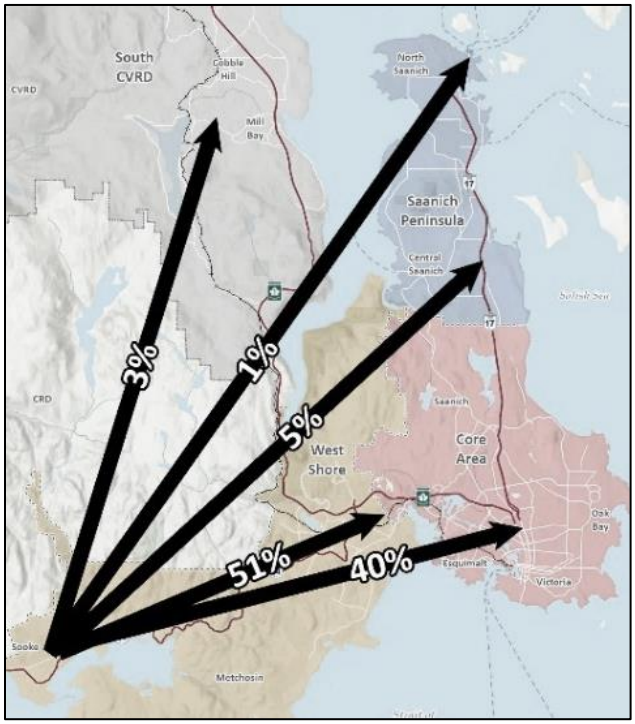
To / From Malahat



To / From Swartz Bay



To / From Sooke



Source: Processed from 2018 TomTom O-D Data.

TDM initiatives that have historically been considered in the South Island include, but are not limited to, the following:

- A **Universal Bus Pass** ('U-Pass') is a mandatory semester public transportation pass included in post-secondary student tuition entitling the individual to unlimited public transportation use for those at University of Victoria, Camosun College, and Royal Roads University.
- The **ProPASS** is an employer bus pass program offering monthly public transportation passes deducted via payroll at a reduced rate to any organization committing ten or more individuals.
- A **Carshare** service consists of a fleet of collectively owned vehicles that individuals typically pay membership dues and costs associated with the time and length of trips.
- **Bike to Work Week** is perhaps the most successful TDM promotional event in the South Island, attracting more than 10,000 participants in late May each year.
- Similar to carshare, **bikeshare** systems consist of a fleet of collectively owned bicycles. One-way bikeshare systems operate in the core municipalities and Langford, while two-way systems are offered at select employment and hotel sites in the region.

The *CRD's* ***Regional Transportation Plan*** *(RTP)* highlights 'that in order to make alternatives to single occupant vehicle travel attractive… a comprehensive suite of infrastructure, support programs and education available to residents and visitors'. Although there are examples of TDM programs in the region as previously noted, the RTP characterizes them as 'one-offs' in that they are not regionally coordinated and consistent. Some are led by specific agencies or organizations and others are regional incentives that apply to a specific group or key travel node such as the U-Pass for the University of Victoria.

TDM action areas identified in the RTP including those that would impact local and regional trip making and encourage choices that are more sustainable than SOVs.

Some of the stated actions to support TDM outcomes outlined in the RTP are below:

- Establish and implement a region-wide TDM program for businesses, institutions, local governments and government agencies.
- Undertake workplace and institutional incentive programs aimed at peak hour travel.
- Partner with other agencies to develop a region-wide Mobility Pass or Smart Card to provide seamless integration between transportation modes.
- Establish and expand partnerships with car-sharing operators to increase coverage.
- Maintain a comprehensive database for intermodal trip making.
- Identify partnerships to accelerate Active and Safe Routes to Schools.
- Fund existing programs and events and identify new events.

6.3 TDM Opportunities

TDM opportunities are highlighted in the following section that aim to facilitate increased active transportation and public transportation use, and which support the infrastructure investments highlighted in previous sections. TDM opportunities are identified as either TDM incentives or TDM policies. Both play an important role in supporting alternative transportation options and discouraging SOV trips.

It is acknowledged that there are many more localized policies and programs that have been identified in the RTP and local government transportation planning initiatives to encourage change for local area travel that may be pursued at the local level to help support regional TDM objectives.

This section of the technical report identifies candidate TDM programs and policies that may be used in different environments. For example, some candidate initiatives may be targeted within areas of high travel to increase sustainable mode share during peak and off-peak periods across the region. Others may be applied regionally or across key gateways in the region to encourage mode shift changes. No matter where and how they get applied, support and commitment from all levels of government and other agencies in the South Island will be important to advance and achieve overall transportation targets.

Candidate TDM incentives are designed to encourage and support sustainable transportation choices such as walking, cycling, public transportation, and ridesharing by providing support programs. Some TDM incentives could be applied to mobility hubs and intermodal nodes and coordinated with major land owners in those areas as well as employers and government agencies.

The following discussion highlights some of the noted candidate TDM incentives.

- **Flexible Work Arrangements**

  Many employers in the region already have flexible work arrangements with staff and/or start times for post-secondary schools. Region-wide or targeted application of flexible work arrangements within key mobility hubs and around other major employers and institutions within the South Island area have the potential to reduce the need to travel five days per week and/or during peak periodsThe recent COVID-19 pandemic has highlighted the potential for flexible work arrangements including working from home.

- **Transit Fare Incentives**

  The U-Pass program in effect at the University of Victoria and Camosun College can be expanded to employers throughout the region, or in targeted areas such as for mobility hubs as well as to other major employment areas. BC Transit offers the ProPass program, where a portion or all employees of an organization are entitled to a discounted monthly public transportation pass. The overall cost decreases with a greater number of participants. The employer may also further subsidize employee costs to further encourage public transportation use.

- **Ridematching**

  Ridematching was historically provided by Jack Bell Foundation (JBF) Rideshare, on behalf of BC Transit. To provide an attractive, effective ridematching service, the database could be expanded significantly (i.e. to 10,000 persons or more), region-wide or across gateways such as the Malahat to encourage ridesharing and to reduce SOV travel. Regular maintenance is required to ensure that entries in the database are up-to-date and valid. Additionally, marketing of the ridematching program should be initiated and sustained on an on-going basis to encourage people to add their names to the ridematching database, as well as encourage them to seek ridematches and form carpools.

- **Rideshare / Carshare / Bikeshare / Ride-Hailing**

  Rideshare and carshare continue to expand in the region, with over 70 carshare vehicles in the South Island. More recent and emerging options include bike sharing and ride-hailing which was recently permitted by the Province. Increasing transportation options for people that encourage greater occupancy, flexibility for choosing different modes of travel will serve a broader transportation goal of increasing travel by sustainable modes and reduce the need to own a first or second vehicle.

- **Parking for Priority Modes**

  High-occupant vehicles and/or electric vehicles minimize are desirable in that they either reduce SOV trips and encourage low emission vehicles on the road. Within mobility hubs in the region as well as at major employers and institutions, parking for priorities modes will support climate change aspirations and address some of the key challenges related to mobility and reliability of the transportation system.

- **Guaranteed Ride Home**

  The potential for an unforeseen emergency over the course of the workday (i.e., a sick child) can be a barrier to commuters choosing to carpool or share rides. To address this concern, employers may offer a guaranteed ride home in case of emergency. Experience in other communities has indicated that the guaranteed ride home is infrequently used when there are limits or an allowance placed on individuals.

- **Electric Vehicle and E-Bike Incentive**

  The provincial Scrap-It program offers financial incentive to replace older, high polluting vehicles for an electric vehicle (EV), electric bicycle (e-bike) or other low carbon forms of transportation to reduce transportation related GHG emissions.

- **Electric Vehicle Incentive Program**

  The Go Electric Incentive program is intended to make zero-emission vehicles (ZEVs) more affordable for British Columbians by providing financial subsidy on the purchase or lease of a new ZEV.

- **Bike Locker Program**

  The established regional bike locker program allows bicycle commuters to access secure long-term bike lockers at key locations in the Capital Region. The program is operated by the Greater Victoria Cycling Coalition (GVCC), with lockers current located at the McTavish Road Park and Ride (near the Airport), the Colwood Exchange Park and Ride (Juan de Fuca) and the Langford Exchange / Station Avenue location.

- **Transit Oriented Development**

  Transit oriented development (TOD) refers to the integration of land use and transportation planning, specifically public transportation, that seeks to put more people within safe, comfortable walking distance of high-order public transportation service. This is achieved by encouraging higher density and mixed land uses within close proximity of key public public transportation stations and exchange points. Key Regional Growth Strategy policies are aligned with the goals of TOD, including specific policies seeking to locate growth and major trip-generating uses where they can be served by public transportation (Policy 4.2) and the desire to prioritize public transportation in community planning (Policy 4.3). Many local governments in the South Island have established policy and supporting regulations in pursuit of TOD along the Douglas Street corridor and Uptown, as examples.

6.4 Summary

Transportation Demand Management (TDM) strategies present a significant opportunity to address climate change and sustainable transportation objectives, while broadening travel choices and enhancing mobility. These strategies can often be applied broadly at reduced cost as compared to many of the public transportation or highway investment opportunities. These require partnership and buy-in from organizations representing significant trip generators in the region (i.e., large employers, institutions) as well as from transportation service providers.

Many of the TDM incentives and policies being given consideration were identified in the CRD's ***Regional Transportation Plan*** (RTP) and some are already in-place in selection locations in the region. The key TDM opportunities are briefly summarized in terms of alignment with key challenges, climate change, and goals for the SITS.

- **Mode Shift / Uptake**. The uptake in identified TDM incentives and policies will largely depend on the level of commitment and investment in TDM. For TDM incentives, in particular, the commitment may come at both the provincial and regional levels, with partner agencies such as transportation providers and major employers and trip generators having much of the ability to affect change through TDM. Above all other transportation opportunities presented elsewhere in this document, TDM options will require partnerships with other regional agencies to realize their full impact.

- **Alignment with Key Challenges**. ***Technical Report no.1 - Transportation Snapshot*** documented the key challenges for the South Island – Mobility, Safety, Network Redundancy, Reliability, Sustainable Transportation, and Connectivity. The TDM opportunities identified will all help address the challenge of achieving sustainable transportation objectives by decreasing reliance on single-occupant vehicles and facilitating a shift to sustainable modes such as public transportation, cycling and shared rides. To a lesser extent, TDM opportunities will also address regional mobility and connectivity challenges by reducing congestion and strengthening alternative transportation options.

- **Alignment with Climate Change**. Fundamental to each of the TDM incentive and policy options identified is a shift in travel demand away from vehicle trips and toward sustainable modes that are aligned with regional climate change objectives. The impact that the TDM incentives, in particular, may have on addressing climate change will ultimately depend on the level of commitment and investment in programs such as public transportation fare subsidies and ridesharing.

- **SITS Goals**. The overarching goals for the South Island transportation system are identified in **Section 1**, as follows: Sustainable Travel Options, Strong Community Connections, Improve Safety & Reliability, and Support Active Transportation. All TDM opportunities offer full support to the first two goals, where they generally support a shift to sustainable travel options and work to broaden mode choice and improve connections. Certain TDM policy opportunities help shift emphasis away from vehicle travel toward active travel modes, such as the transportation allowance, parking cash out, road pricing and distance-based insurance policies.

7. Highway and Marine Corridors

7.1 Background

Regional roadways and provincial highways serve all modes of transportation to provide important connections to Urban Centres and Regional Growth Areas. They also function as Gateways that provide connections to other areas of the Island, province, nationally and internationally for passenger and commercial vehicles, as well as public transportation.

Today, approximately 71.5% of daily travel in the Capital Region is by car (drivers and passengers). With planned growth and limited change to mode share, daily car travel could increase from 790,000 to 930,000 trips per day by 2038, or grow by approximately 23.6%.

In terms of inter-regional and provincial travel via the Swartz Bay Ferry and the Malahat, these Gateways carry 8,000 and 24,000 vehicles per day respectively (or 23,000 and 30,000 people per day respectively). Both Gateways are important for goods movement throughout the region, where trucks account for approximately 8% to 10% of daily traffic on South Island area Highways.

An objective of this Strategy was to undertake an analysis and provide an update of the following:

- Update the technical work involved in the 2007 ***Malahat Corridor Study*** to reflect changed conditions and cost estimates.
- Re-assess the transportation options from 2007 along with any reasonable alternatives that may have been put forward since 2007 as well as develop potential new options and make recommendations on next steps.

Beyond the Highway 1 options, this review also updated and confirmed improvement strategies for the Highway 14 and Highway 17 corridors. These strategies are assessed relative to the key issues and challenges presented in ***Technical Report no.1 - Transportation Snapshot***.

This section of the technical report examines each of the major improvement alternatives that have been historically considered on Highways 1, 14 and 17. It includes updates of previous high level concept designs and development of new options to understand feasibility, orders-of-magnitude costs as well as general assessment of the potential system benefits and impacts.

For each alternative, descriptions, key features, and technical challenges are highlighted. Alignment with each sub-region's specific challenges are identified, potential pros and cons are highlighted, traffic forecasts and diversions are estimated, and conceptual levels costs are identified for comparative purposes.

7.2 Strategic Context

Today, highways and regional serving roads facilitate inter-regional vehicle travel, public transportation, active transportation, and goods movement, connecting key Gateways, Urban Centres, Regional Growth Areas and Indigenous communities throughout the South Island. The primary road network is supported by other municipal arterials, which in turn provide access to/from key Urban Centres, Regional Growth Areas and strategic Gateways to and from South Vancouver Island. **Figure 7.1** below illustrates the inter-regional serving roadway networks across the study area along with daily traffic volumes at key locations.

Consistent with population and employment growth projections, travel demands from Westshore communities are expected to increase at a rate of approximately 2.3% per year to 2038 (the most in the South Island). Travel demand across Highway 1 is projected to increase by approximately 1.5% per year, followed by the Peninsula at 1% per year for the next 20 years. This is shown in **Figure 7.2**, below.

Figure 7.1
Regional Road Network,
Existing Daily Traffic Volumes

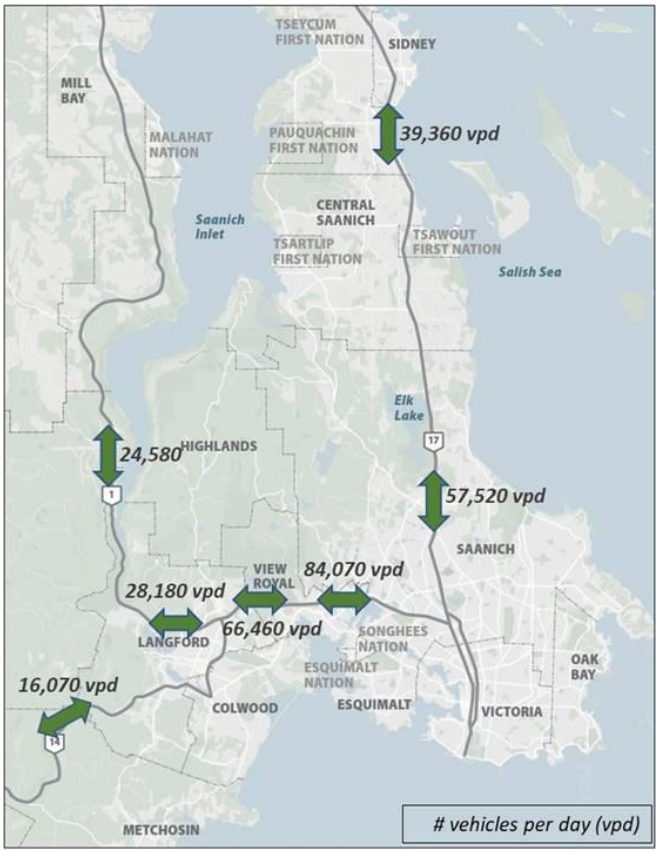
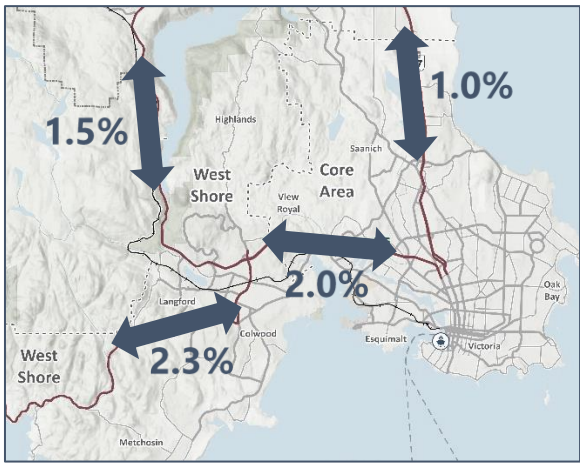


Figure 7.2
Forecast Base Increase in Demands
(% per year to 2038)

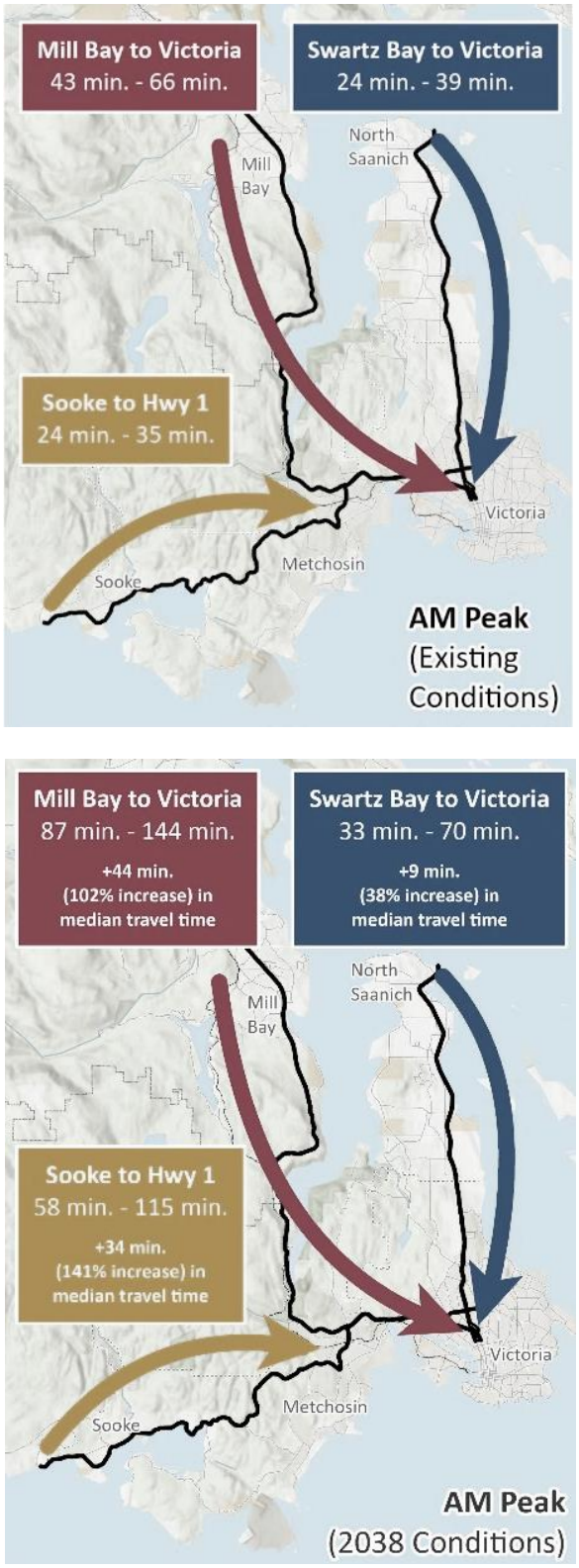


As the backbone of the inter-regional transportation network, the performance of these major corridors affects everything from travel mode choice through to economic and social connectivity in the South Island and beyond. Performance is measured in terms of mobility, reliability, and safety, where mobility refers to the typical, everyday travel time and reliability captures the variability or additional time to account for in planning travel. As illustrated in **Figure 7.3**, travel times across the South Island by 2038 will increase by 50% to 100%, with increasing variability in travel times from one day to the next. These patterns impact passenger and commercial vehicles as well as public transportation reliability.

Beyond mobility related challenges, ***Technical Report no.1 - Transportation Snapshot*** also highlighted safety issues as well as the need for greater redundancy in the transportation system to address unplanned closures. This can be addressed through strategic investments in the highway system and provisions made for alternative modes in order to improve transportation choices.

The strategic framework for managing and investing in highways and regional serving roadways in the South Island has shifted over the years. It has moved from addressing capacity issues to addressing safety in collision 'hotspots' and improving reliability and redundancy, particularly for public transportation and commercial vehicles. In fact, recent studies and strategies for Highways 14 and 17 have been focused on addressing safety and reliability in strategic locations as well as providing public transportation facilities that include improvements such as transit queue jumper lanes on Highway 14 at Jacklin Road.

Figure 7.3 Regional Travel Times + Reliability (2018 – 2038)



7.3 Highway + Marine Reviews

In working with Indigenous, local and regional government, and the Technical Advisory Group established for the Strategy, the SITS has compiled, reviewed, and updated previous highway-related studies, and in some cases completed new technical work related to potential highway improvement strategies.

This section of the Technical Report provides comparative highlights of the larger infrastructure investment opportunities that have historically been considered in terms of their general features (concept alignment and configuration), feasibility as well as potential benefits and impacts. **Figure 7.4** highlights the corridor opportunities considered in this section of the report.

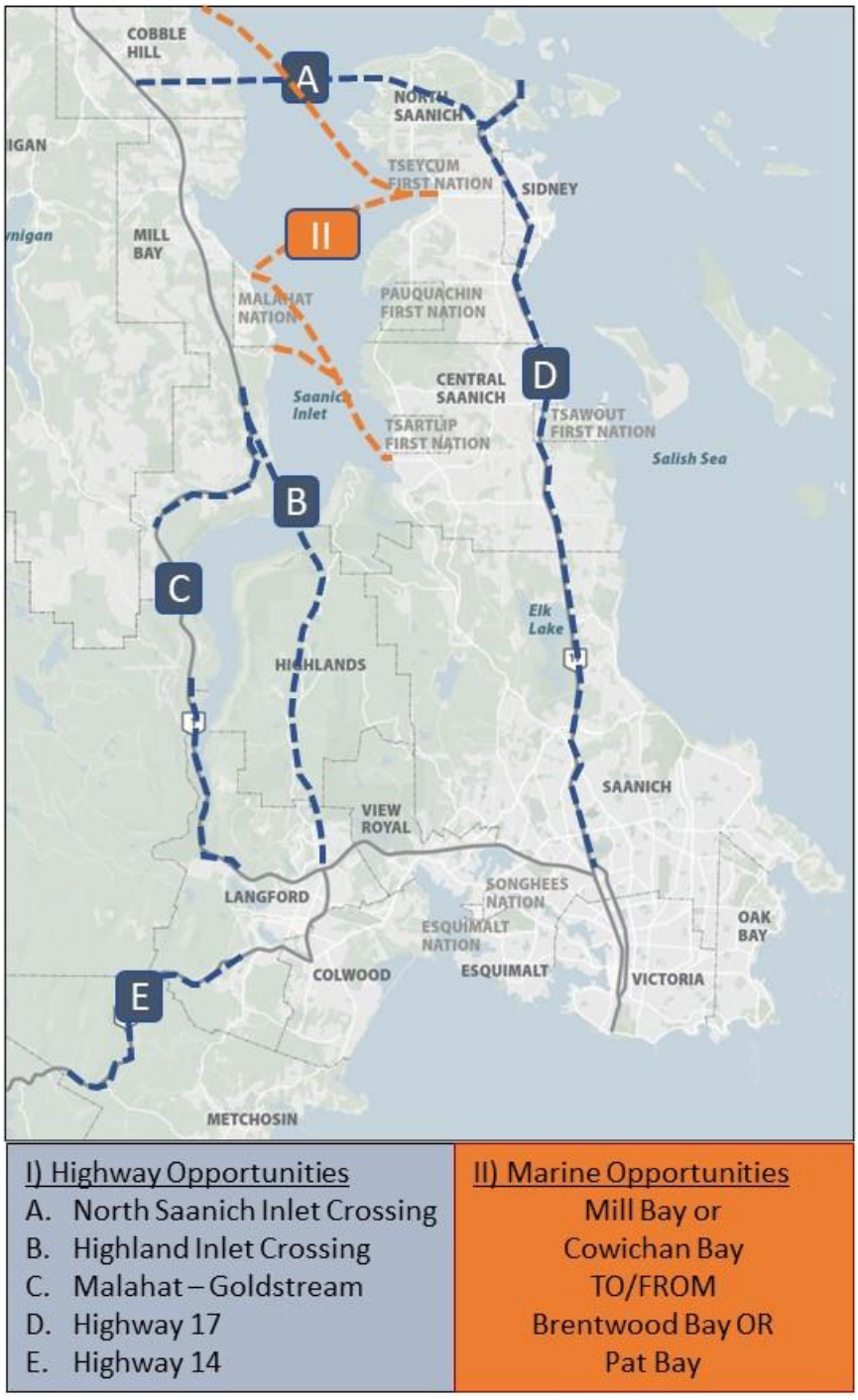


Figure 7.4
Potential Highway + Marine Corridor Opportunities

A. North Saanich Inlet Crossing

i. Background

The possibility for a bridge across the Saanich Inlet has been discussed for several decades as an alternate route to the Malahat, connecting Victoria / Saanich Peninsula to the communities north of Mill Bay. The North Saanich Inlet Crossing was considered at a concept level in terms of possible roadway connections through North Saanich and Cobble Hill, as wells as potential bridge crossing types and configurations.

The origin and destination of trips crossing the Malahat is important context for assessing alternative routes. Travel patterns highlighted in the ***Technical Report no.1 - Transportation Snapshot*** indicate that approximately 90% of the daily trips crossing the Malahat are headed to Victoria/Saanich (60%) and Langford/Colwood (30%). A North Saanich Inlet Crossing could technically serve up to 60% of daily travel on the Malahat.

ii. Highlights

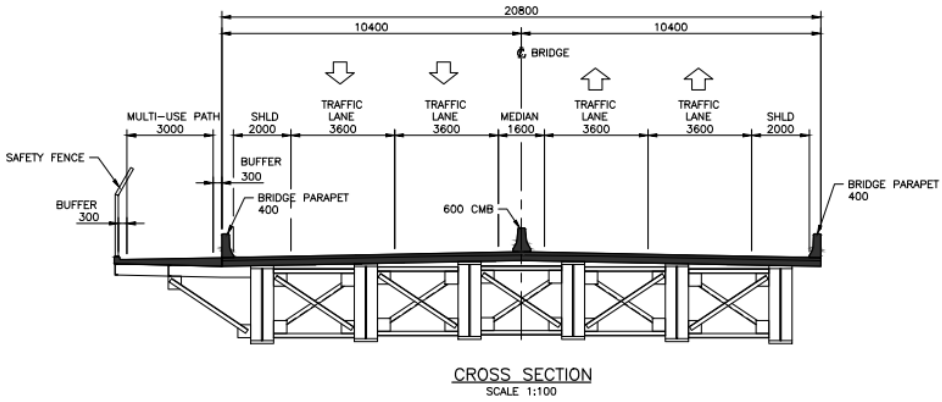
As illustrated in **Figure 7.5**, the crossing would consist of a new 4-lane fixed link between Highway 1 and the north end of the Saanich Peninsula, including a floating bridge and new rural arterial roadways through North Saanich and the Cobble Hill / Arbutus Ridge area of the Cowichan Valley. A new roadway connecting Highway 1 to the crossing on the west side of the Inlet would follow a predominantly new alignment, crossing Telegraph Road, immediately north of the Pauquachin First Nation's Hatch Point 12 IR lands. On the east side, the crossing would connect to an upgraded roadway in North Saanich along Tatlow Road and then to Wain Road before connecting with Highway 17.

Figure 7.5 North Saanich Inlet Crossing

Features:

- 3.5 km of new roadway through the CVRD, including 1 minor bridge over Telegraph Road (see Figure 7.6).
- A floating bridge arrangement was considered the most economical and viable solution, though it would still require construction of pontoon anchorages in 50m to 70m deep water using techniques typically reserved for deep sea, off-shore structures.
- The 4.5 km long bridge would be a maximum of 80m above sea level at the west end and include a 40m high by 40m wide navigation channel.
- 4.5 km of widened and improved 4-lane roadway through North Saanich, largely along the existing alignments of Tatlow Road and Chalet Road.

Figure 7.6 North Saanich Crossing Potential Cross-Section



iii. Conceptual Cost Estimates

The overall cost for the project is composed of onshore and offshore works. The offshore works accounts for nearly 90% of the project cost – though it should be highlighted that property acquisition costs associated with the onshore works are not included in the estimate (summarized in **Table 7.1**, below).

Table 7.1 North Saanich Crossing Class D Concept Cost Estimate (2020 $)

	Cost
Capital & Contingencies	$1.57B
Project Delivery Costs	$0.68B
Total	**$2.25B**

Source: Urban Systems / COWI, 2020. Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Forecast vehicle travel diversion to the Inlet were estimated based on current and forecast increases in travel demands (approximately 1.5% per year), trip distribution patterns as well as travel time comparisons between the Malahat and Highway 17. **Table 7.2** summarizes the forecast diversion and resulting changes in overall vehicle travel.

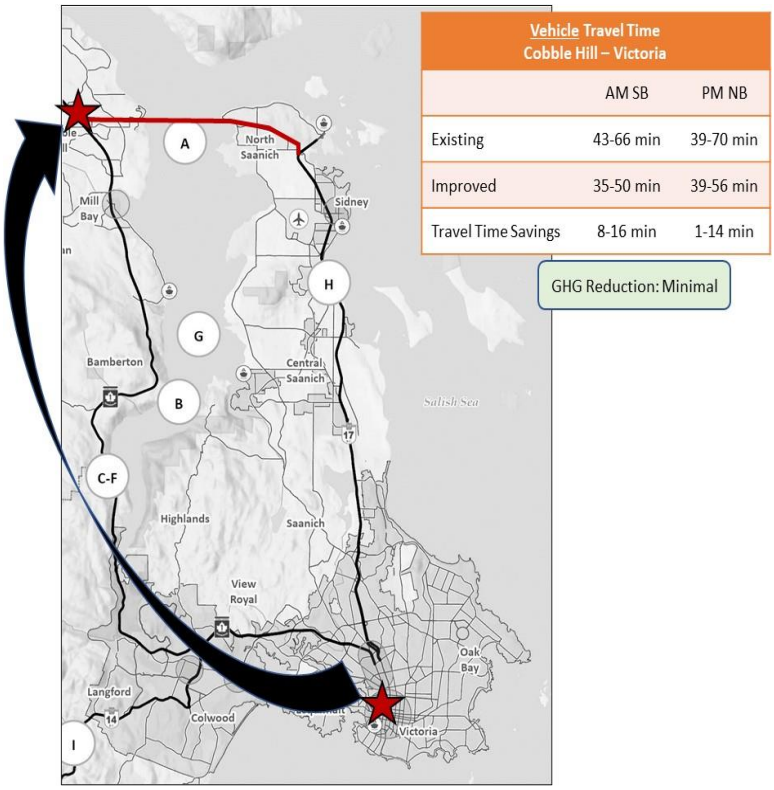
Table 7.2 North Saanich Crossing Forecast Daily Travel and Diversion

Existing Daily Vehicle Travel	
Malahat	24,500 vehicles/day
Forecast 2038 Daily Vehicle Travel	
Malahat	25,000 vehicles/day
Crossing	7,000 – 10,000 vehicles/day

v. Travel Time Savings & GHG Reductions (existing base)

A new crossing of the North Saanich Inlet would result in reduced average travel times and variability compared to today's conditions. **Figure 7.7** below summarizes the estimated travel time savings considering factors of growth and diversion on the Highway 17 corridor and the new crossing. As indicated, travel times for the new connection would be reduced up to 16 minutes. However, the improved average vehicle speeds with modest reductions to vehicle-km travelled would result in a marginal increase in GHGs.

Figure 7.7 North Saanich Crossing Travel Time & GHG Savings



North Saanich Inlet Crossing, cont.

vi. Alignment with Challenges & Goals

The North Saanich Inlet Crossing and supporting road connections would address some of the key transportation challenges identified in the ***Technical Report no.1 - Transportation Snapshot*** but are not strongly aligned with the core goals for the SITS as summarized below in **Table 7.3.**

Table 7.3 North Saanich Crossing Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	Adds approximately 10,000 additional vehicle trips to Highway 17 (or 10% to south areas) and may accelerate the need for improvements in the southern sections. • Provides some relief to the increasing congestion on the Highway 1 section between Langford/Colwood and Victoria/Saanich.
Reliability	•	Provides an alternative route to the Malahat during incidents, closures and/or extreme weather.
Safety	•	Traffic diversions from the Malahat will reduce collision frequencies and potentially severities with an improved alternative.
Redundancy	•	An alternative route between the Saanich Peninsula and Cowichan Valley.
Sustainable Transportation	•	Potential for improved connections for cycling and public transportation with connection to North Saanich Peninsula
Connectivity	•	Improved connectivity by way of more direct routing, with particular benefit for the Saanich Peninsula. • Improved connectivity for moving goods to and from the Island through Swartz Bay.
Advancing SITS Goals		
Climate Action	-	May reduce potential shifts to sustainable modes in long-term. - Marginal changes to vehicle-km traveled and GHGs. - Impacts on marine ecosystems would need to be considered.
Communities	+	Improves access to between South Island Gateways such as Swartz Bay Ferry, Victoria International Airport and the Malahat. - Is not supported by Official Community Plans. - Significant impacts on property (31 hectares), parklands (0.2 hectares), ALR (16 hectares) and Indigenous lands.
Safety & Reliability	+	Modest safety improvement for the Malahat with alternative route.
Health	-	Limited personal health benefits other than safety.

B. South Saanich Inlet Crossing

i. Background

The possibility for a southern bridge across the Saanich Inlet has also been considered for several decade as an alternate route to the Malahat, connecting Victoria to the communities north of Mill Bay. The South Saanich Inlet Crossing was considered at a concept level in terms of possible roadway and crossing connections as illustrated in **Figure 7.8**.

ii. Highlights

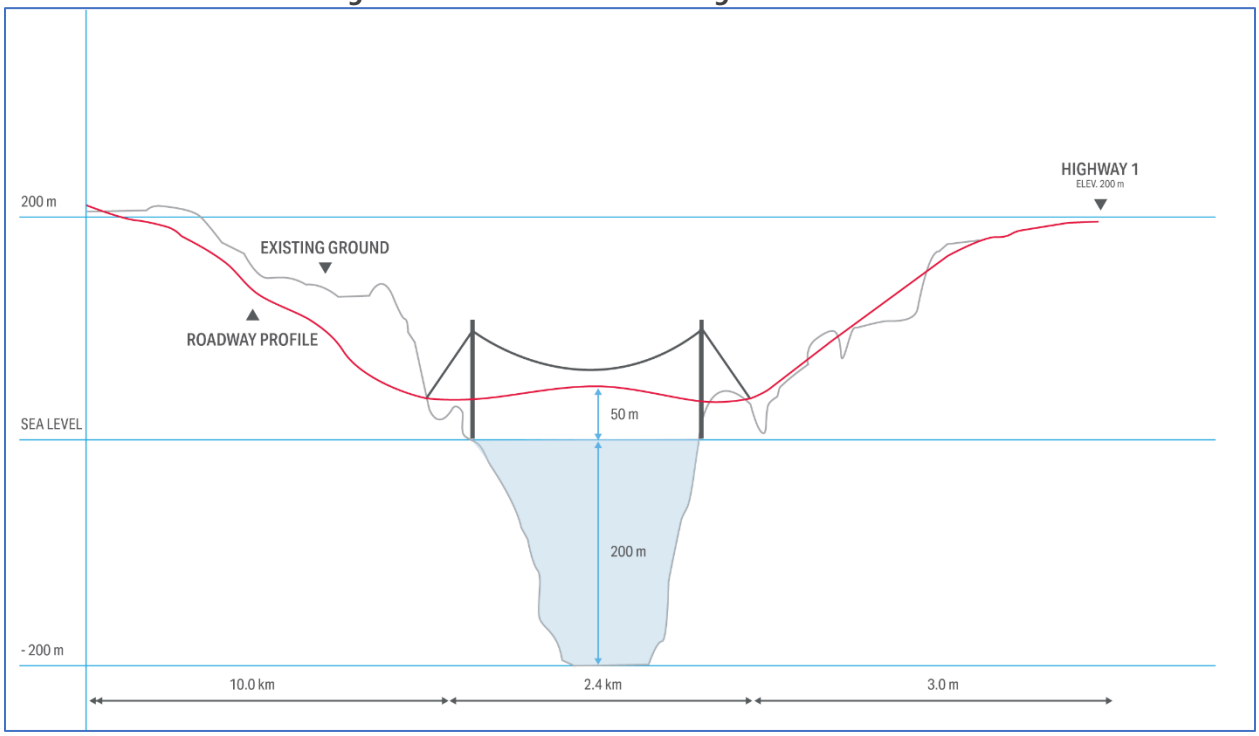
The South Saanich Inlet Crossing would be a new 4-lane roadway connecting Highway 1 from south of Bamberton to Highway 1 at Millstream Parkway. The elevation levels on either side of the crossing are well above sea level and cut-and-fills as well as structures on the approaches to the bridge (see **Figure 7.9**).

Features:

- 3.0 km of new roadway from the north side of the bridge to Highway 1, including 2 bridges on the approach to the main span.
- 2.2 km long suspension bridge, with 1.5 km long main span across the inlet (which has maximum depth of >200m).
- 10.0 km of new roadway through the Municipality of Highlands, including 1.5km of new roadway though Gowlland Tod Provincial Park.
- Significant grade along the new alignment: from the north connection point with Highway 1 near Bamberton at elevation 200m, drivers would descend to elevation ~50m at the bridge crossing, then back up to elevation 200m through Gowlland Tod Provincial Park and Highlands

Figure 7.8 South Saanich Inlet Crossing

Figure 7.9 South Saanich Crossing Potential Profile



iii. Conceptual Cost Estimates

The overall cost for the project is composed of onshore and offshore works. Offshore works accounts for nearly 90% of the project cost. It should be highlighted that property acquisition costs associated with the onshore works are not included in the estimate (summarized in **Table 7.4**, below).

Table 7.4 South Saanich Crossing Class D Concept Cost Estimate (2020 $)

	Cost
Capital & Contingencies	$1.88B
Project Delivery Costs	$0.86B
Total	**$2.74B**

Source: Urban Systems / COWI, 2020. Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Forecast vehicle travel diversion to the Inlet were estimated based on current and forecasted increases in travel demands (approximately 1.5% per year), trip distribution patterns as well as travel time comparisons between the Malahat and the new connection to Highway 1. **Table 7.5** summarizes the forecast diversion and resulting changes in overall vehicle travel.

Table 7.5 South Saanich Crossing Forecast Daily Travel and Diversion

Existing Daily Vehicle Travel	
Malahat	24,500 vehicles/day
Forecast 2038 Daily Vehicle Travel	
Malahat	25,000 vehicles/day
Crossing	8,000 – 11,000 vehicles/day

v. Travel Time Savings & GHG Reductions (existing base)

A new crossing of the South Saanich Inlet crossing would result in reduced average travel times and variability compared to today's conditions. **Figure 7.10** below summarizes the estimated travel time savings considering factors of growth and diversion on the Highway 17 corridor and the new crossing. As indicated, travel times for the new connection would be reduced by up to 6 minutes. However, the improved average vehicle speeds with modest reductions to vehicle-km travelled would result in a marginal increase in GHGs.

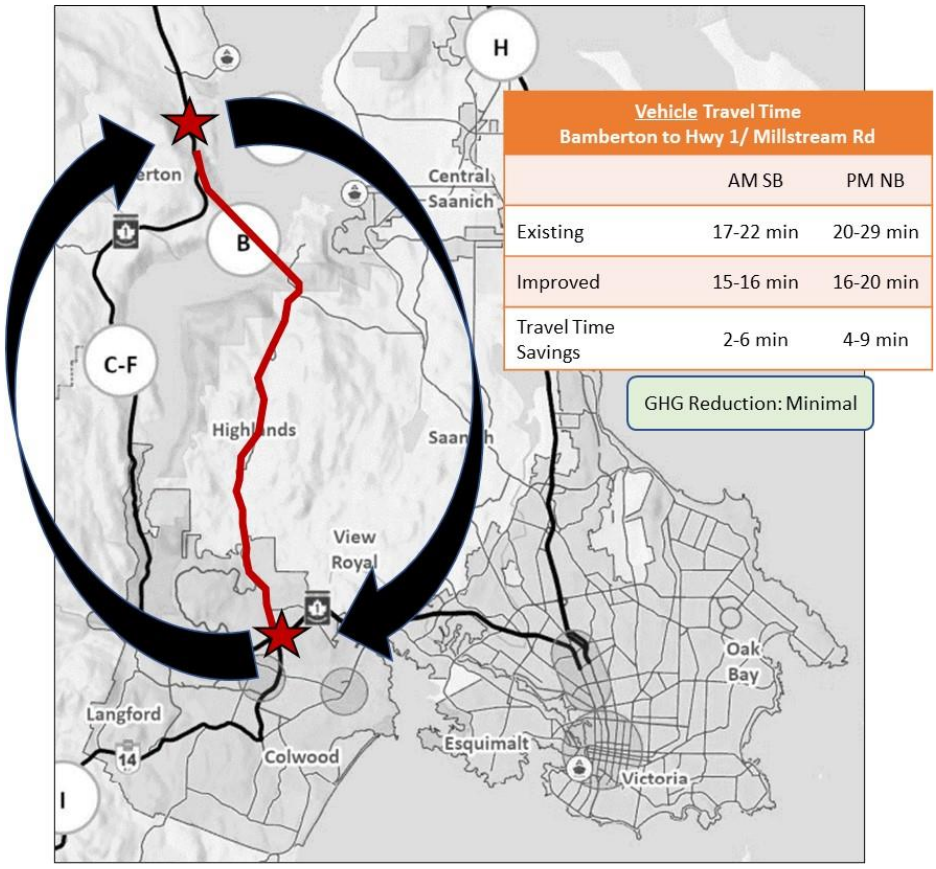


Figure 7.10 South Saanich Crossing Travel Time & GHG Savings

vi. Alignment with Challenges & Goals

The North Saanich Inlet Crossing and supporting road connections would address some of the key transportation challenges identified in the Technical Report no.1 - Transportation Snapshot but are not strongly aligned with the core goals for the SITS as summarized below in **Table 7.6.**

Table 7.6 South Saanich Crossing Alignment with Challenges and Goals

Addressing Key Challenges	
Mobility	• Does not address increasing congestion on the Highway 1 section between Langford/Colwood and Victoria/Saanich.
Reliability	• Provides an alternative route to the Malahat during incidents, closures and/or extreme weather.
Safety	• Modest reduction to collision rates and severity on the Malahat with reduced traffic volumes
Redundancy	• Alternative route between Bamberton and Langford if closures on Malahat.
Sustainable Transportation	• Pathways proposed on bridge, but steep grades along the route unlikely to result in many cyclists.
Connectivity	• Moderate connectivity improvement, although primarily parallel to existing Malahat.
Advancing SITS Goals	
Climate Action	- May reduce potential shifts to sustainable modes in long-term. - Marginal changes to vehicle-km traveled and GHGs. - Impacts on marine ecosystems would need to be considered.
Communities	- Is not supported by Official Community Plans. - Significant impacts on property (38.4 hectares), parklands (5.0 hectares) and Indigenous lands.
Safety & Reliability	+ Modest safety improvement for the Malahat with alternative route.
Health	- Limited personal health benefits other than modest safety improvement to Malahat.

C. Malahat – Goldstream Improvement Alternatives

i. Background & Descriptions

Several improvements and realignments of the Malahat have been considered to provide a continuous 4-lane connection with median barriers and widened shoulders throughout to address safety and reliability concerns. Four historical improvement strategies have been examined with different alignments and refined at a concept design level for the purpose of this Technical Report as outlined below. The extents of these improvement alternatives are illustrated in **Figure 7.11**.

i. **Malahat-Goldstream Widening & North End Improvements.** The first alternative considered widening and realignment north and south of Malahat Village and interchanges at Shawnigan Lake Road and West Shore Parkway. Between Ebedora Lane and Bamberton Road, widening and median barriers with full shoulder widths would support 80km/hr operating speeds.

   The improvement of the north and south sections of the Malahat from two and three to four lanes would be similar to works recently completed through Malahat Village and between Aspen Road and Shawnigan Lake Road. The widening would provide a consistent 4-lane cross-section, 80km/h operating speed, median barrier, and full-width shoulders from Langford to Bamberton. New grade-separations would be constructed at Shawnigan Lake Road and Westshore Parkway.

ii. **Malahat-Goldstream Double Deck & North End Improvements.** Similar to the Malahat widening opportunity previously described, the second widening and alignment alternative is replaced with a double-deck structure constructed within the existing roadway right-of-way to limit parkland impacts. In the southern section between a new grade separation at the Westshore Parkway and Tunnel Hill Campground, the widening would be combined with a stacked dual-carriageway to provide two lanes of travel in each direction through Goldstream Park. Though significant constructability challenges are anticipated, the double deck structure would avoid impacts and property acquisition through Goldstream Park. The existing, sub-standard alignment would be largely retained and the southern would have posted speeds ranging between 60km/hr to 80km/hr (unchanged from today). Between Ebedora Lane and Bamberton Road, widening and median barriers with full shoulder widths would support 80km/hr operating speeds.

iii. **Malahat-Goldstream Near West Alignment & North End Improvements.** In addition to the widening of the northern section between Ebedora Lane and Bamberton Road, the third historical 'Near West' realignment was developed through concept design and reviewed for feasibility and to identify notable technical challenges. The Near West Realignment provides a brand-new, offline highway between the south end of Goldstream Park and the south side of Malahat Village. The existing Highway would remain in place to provide access to Goldstream Park, private properties, and business south of Aspen Road.

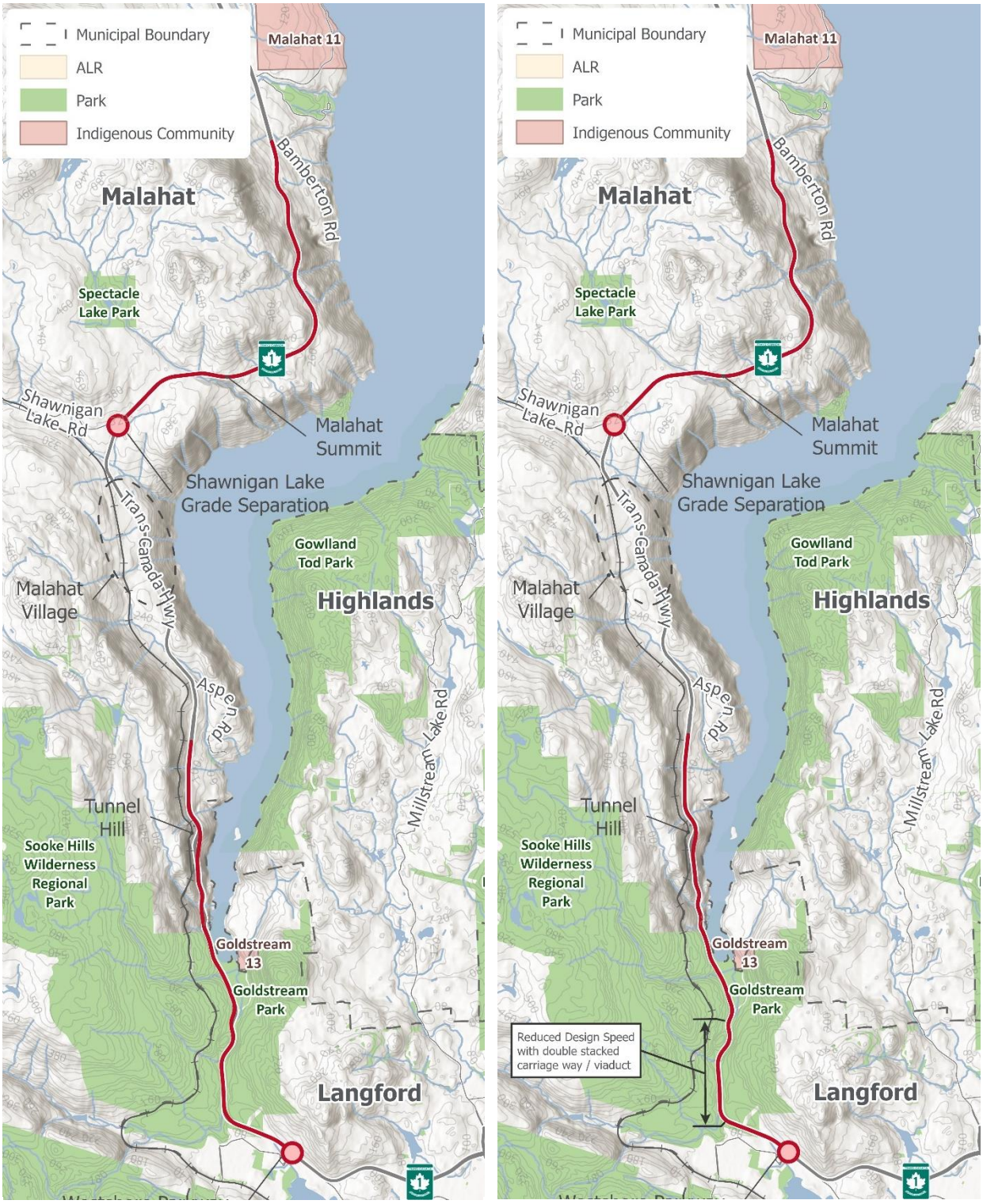
   New offline highway (the Near West Realignment) combined with widening and improvement of the existing alignment north of Malahat Village to provide a consistent 4-lane cross-section, 80km/h operating speed, median barrier, and full-width shoulders from Langford to Bamberton.

iv. **Malahat-Goldstream Niagara Main Alignment & North End Improvements.** The fourth alternative is the Niagara Main alternative. The Niagara Main realignment was designed to reduce impacts on Goldstream Park relative to widening existing alignment, utilize the footprint of the existing Niagara Main forestry road, and bypass Malahat Village via a 4-lane connection from Westshore Parkway through to Shawnigan Lake Road (over 12.5km). Steep grades along the alignment require truck climbing lanes in many locations, and the resultant high point along the bypass route is nearly 100m higher than the current Malahat Summit. North of the new Shawnigan Lake grade separation, the widening and realignment is unchanged from the three alternatives previously discussed. New offline highway (the Niagara Main Realignment) combined with widening and improvement of the existing alignment to provide a consistent 4 lane cross-section, 80km/h operating speed, median barrier, and full-width shoulders from Langford to Bamberton.

ii. Highlights

The key features for each alternative are briefly summarized in **Table 7.6** below. As noted, the north and south end features for each alternative are similar while the segments within the Goldstream Park area are significantly different. The vertical profiles for each alternative are conceptually illustrated in **Figure 7.12**.

Figure 7.11 Malahat - Goldstream Alternative Alignments, Part 1



i. Widening Existing

ii. Widening Double Deck

Figure 7.11 Malahat- Goldstream Alternative Alignments, Part 2

iii. Widening Near West

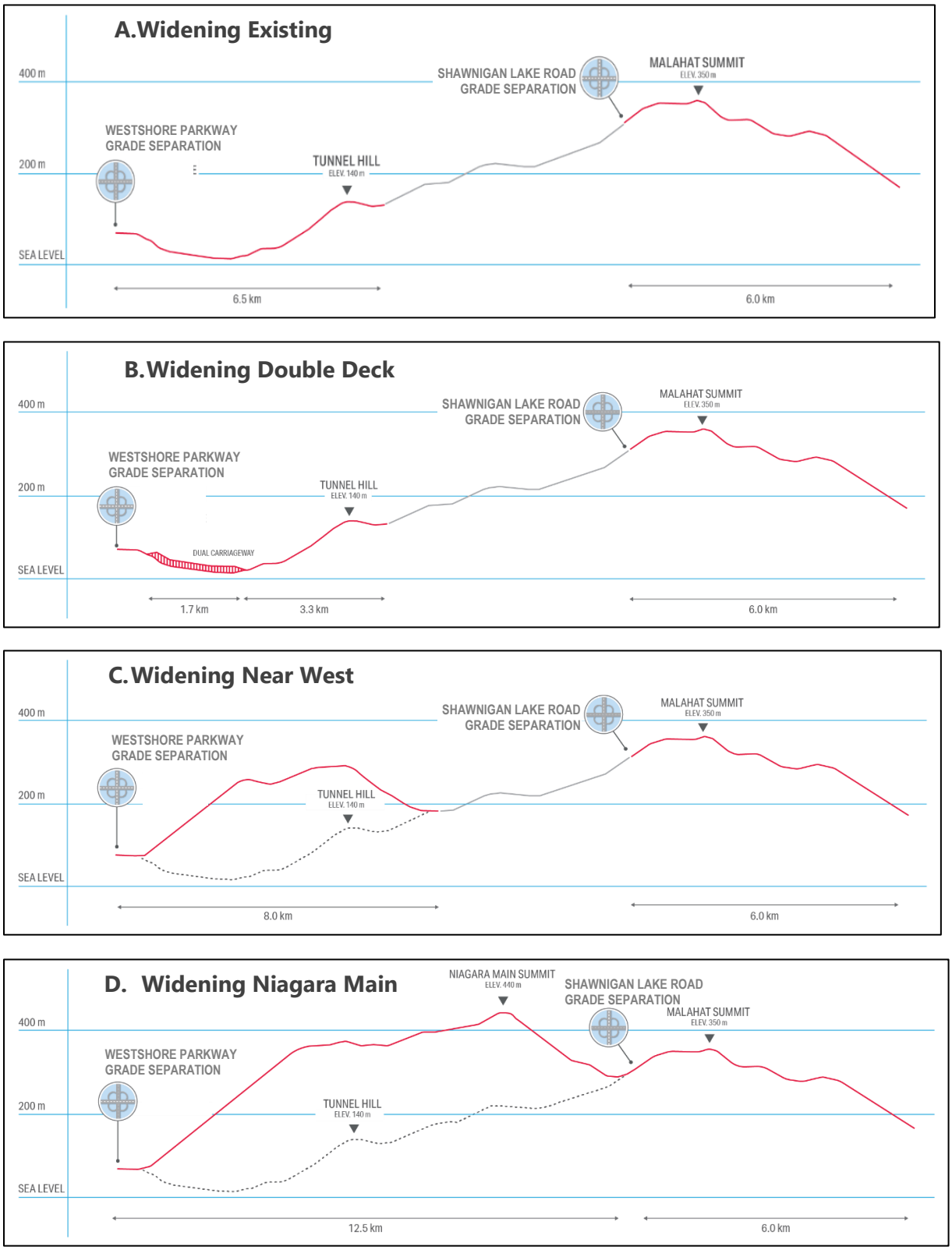
iv. Widening Niagara Main

Malahat – Goldstream Improvement Alternatives, cont..

Table 7.6 Features for Malahat – Goldstream Improvement Alternatives

Common Features
• New, full movement grade separated intersection at Shawnigan Lake Road and park-and-ride adjacent to Highway 1.
• New, full movement grade separated intersection at Westshore Parkway and Highway 1.
• 5.5 km of widening + realignment between Ebedora Lane and Bamberton Road
Additional Features by Alternative
i. **Malahat-Goldstream Widening** • 6.8 km of widening + realignment between Westshore Parkway and Tunnel Hill Campground. • Northbound truck climbing lane between Goldstream Park and Tunnel Hill, with 360m long bridge south of Tunnel Hill.
ii. **Malahat-Goldstream Double Deck** + 1.7 km of stacked dual-carriageway through Goldstream Park. + 3.3 km of widening between the north limit of Goldstream Park and Tunnel Hill Campground. + Northbound truck climbing lane between Goldstream park and Tunnel Hill. + 300m long bridge south of Tunnel Hill.
iii. **Malahat-Goldstream Near West Alignment** + 1 km of online widening + realignment between Westshore Parkway and Goldstream Park. + 7 km of new offline highway including truck climbing lanes, beginning at the south end of Goldstream Park and tying back into the existing highway near Aspen Road. + The roadway profile along the southernmost 2km of the Near West Realignment is steeper for longer than any section of the existing Malahat. + Construction of 6 new bridges at locations where ground conditions are uncertain. The most significant of these structures are the 485 m span across Goldstream River and the 280 m span across the Niagara Creek, both of which are more than 50 m high.
iv. **Malahat-Goldstream Widening Niagara Main** + 1 km of widening + realignment between Westshore Parkway and Goldstream Park + 11.5 km of new highway including truck climbing lanes, beginning at the south end of Goldstream Park and tying back into the existing highway at Shawnigan Lake Road. + The roadway grade between the south tie-in point and the intermediate summit is an uninterrupted 8% between elevation 70m and 370m. This is a substantially longer section of sustained grade than anything on the existing Malahat. + The high point along the Niagara Main Realignment is further inland and approximately 100m higher than the existing Malahat Summit, which could contribute to challenging conditions during winter months. + Construction of 4 new bridges at locations where ground conditions are uncertain. The most significant of these being the 670 m span across Goldstream River and the 625 m span across the Wrigglesworth Lake drainage path, both of which are more than 40 m high.

Figure 7.12 Malahat- Goldstream Alternative Alignment Profiles



iii. Conceptual Cost Estimates

The concept level cost estimates for the Malahat Improvements are composed of the following distinct components:

- Add median barrier and widening works north of Shawnigan Lake Road
- Notional costs for the Shawnigan Lake and West Shore Parkway grade separated intersections
- Linear improvements south of Shawnigan Lake Road

The overall summary of costs is presented in **Table 7.7**, below.

Table 7.7 Malahat & Goldstream Improvement Alternatives Class D Concept Cost Estimates (2020 $)

	A. Widen	B. Double Deck	C. Near West	D. Niagara
Capital & Contingencies	$389.8M	$492.7M	$556.4M	$673.6M
Project Delivery Costs	$171.1M	$214.7M	$242.5M	$293.4M
Total	**$560.8M**	**$707.4M**	**$798.9M**	**$967.0M**

Source: Parsons 2019; Urban Systems / McElhanney, 2020. Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Forecast vehicle travel demand across the Malahat is projected to increase by approximately 1.5% per year as summarized in **Table 7.8** below.

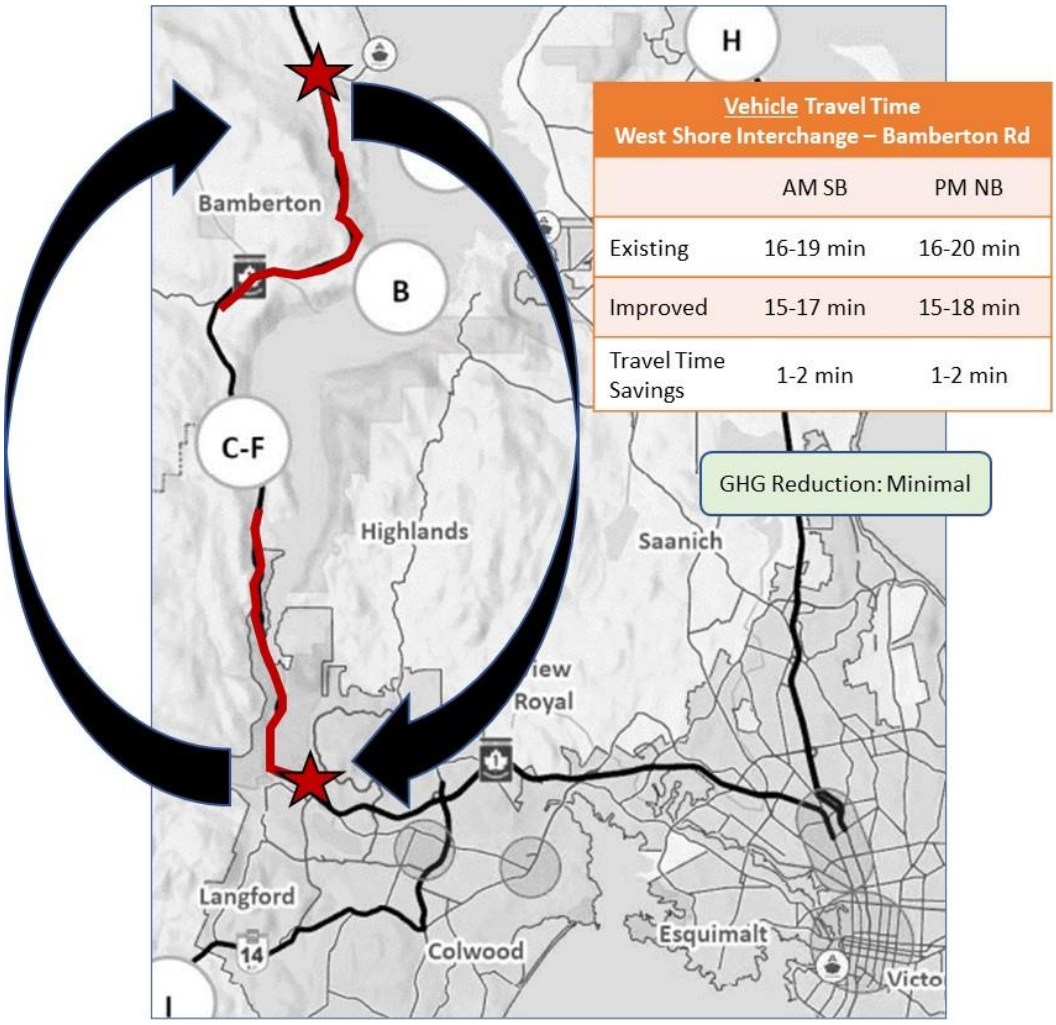
Table 7.8 Malahat Forecast Daily Travel

Existing	24,500 vehicles/day
2038	33,000 vehicles/day

v. Travel Time Savings & GHG Reductions (existing base)

The 12km widening and realignment through Goldstream Park and at the north end of the segment as well as the new full movement grade separated intersections at Shawnigan Lake Road Westshore Parkway along the highway will reduce average travel times and variability across the Malahat as summarized below in **Figure 7.13.** As indicated, travel times for the new connection would be reduced up to 2 minutes during peak periods. It is anticipated that the travel time reliability would increase in future with annual increases in traffic demands of 2.5% per year. The improved average vehicle speeds with minor increases to vehicle-km travelled would result in a modest increase to GHGs within the corridor.

Figure 7.13 Malahat – Goldstream Alternatives Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Malahat widening and provision of two new interchanges would principally address safety and reliability challenges identified in the ***Technical Report no.1 - Transportation Snapshot*** and in support of the SITS goals as summarized below in **Table 7.9.**

Table 7.9 Malahat-Goldstream Alternatives Alignment with Challenges and Goals

Addressing Key Challenges		
Mobility	•	Four lanes provide adequate capacity through the planning horizon. • Truck climbing lane to improve mobility for all travel.
Reliability	•	Improves travel time reliability as a result of reduced incidents and closures.
Safety	•	Improved safety and reduced severity of collisions with addition of median barrier, provision of full-width shoulders, and grade separations at Shawnigan Lake Road and Westshore Parkway, as well as improved alignment south of Malahat Village. • **Alternative C**: Uninterrupted steep grades would reduce the operating speeds of heavy trucks travelling uphill and increase the potential for truck runaways and general traffic speeding downhill. Both conditions would be exacerbated in poor weather conditions
Redundancy	•	No change to network redundancy.
Sustainable Transportation	•	Shawnigan Lake grade separation to include a new Park & Ride facility.
Connectivity	•	Connection between communities across Island and between southern Cowichan Valley and Greater Victoria is improved.
Advancing SITS Goals		
Climate Action	+	Improved and more reliable travel times will support increased public transportation services and shifts to public transportation.
	-	**Alternative i:** Impacts Goldstream Park lands at the northern edge of the park. Significant rock cuts up to 40 m in height and approximately 50,000 m^3 total rock excavation in the park.
	-	**Alternative ii**: Much of the widening is expected to be within the 30m Riparian Setback of Goldstream River.
	-	**Alternative iii & iv**: Geotechnical conditions, environmental constraints, and archaeological areas of importance along the realignment are not known.
	-	Modest increase in GHGs with increased vehicle speeds and forecast growth.
Communities	+	Supports growth in forecast traffic volumes.
	+	Supports improved access for Shawnigan Lake area and public transportation connections.
	-	**Alternative i:** Significant impacts on parkland & property (24.2 hectares).
	-	**Alternative ii:** Significant impacts on private property (18.9 hectares).
	-	**Alternative iii:** Impacts to private property and parkland (55 hectares).
	-	**Alternative iv:** Impacts to private property and parkland (76.5 hectares). Provides a highway traffic bypass route around Malahat Village
Safety & Reliability	+	Reduces collision rates and severity along corridor.
Health	-	Limited personal health benefits other than modest safety benefit to Malahat.

D. Highway 17 Corridor Improvements (Pat Bay Highway)

i. Background

The Highway 17 corridor is the northeastern gateway to the Capital Region and is also a critical north-south link for residents and businesses located on the Saanich Peninsula, including the Swartz Bay Ferry and Victoria International Airport, and adjacent to the Highway that travel the corridor daily by car and on public transportation. The 2014 ***Highway 17 Planning Study*** identified initial intersection operational and safety as well as transit priority treatments as previously described in Section 3.0. In the long-term potential for grade-separated intersections with access management on the corridor was also outlined in the Study. The following discussion highlights the initial and long-term potential intersection and highway improvement opportunities.

ii. Highlights

The long-term improvement strategy included grade-separated interchanges of major intersections with arterial streets across Highway 17 between Swartz Bay and the Royal Oak Interchange, transit queue jump lanes at key intersections, closure of minor streets and provision of service road connections to support property access closures.

Features:

Improvements along the Highway 17 have been advanced in steps designed to support the recommendations of the Planning Study. As presented, the long-term changes toward grade-separation of the corridor can be implemented incrementally in partnership with Indigenous communities, municipalities, and other stakeholders. The following discussion highlights the ultimate configuration as illustrated in **Figure 7.14**.

- 6 grade-separated interchanges located at Claremont Avenue / Haliburton Road, Sayward Road, Keating Cross Road, Island View Road, Mount Newton Cross Road and Beacon Avenue.
- Access management along Highway 17, including the closure of 11 minor road connections and removal of several direct driveway accesses.
- 24.3 km of bus-on-shoulder lanes from McKenzie Avenue to Wain Road.

Figure 7.14
Highway 17 Ultimate Corridor Improvements

Highway 17 Corridor Improvements (Pat Bay Highway), cont.

The specific improvements for the initial and ultimate timeframes across the corridor are described further below in **Table 7.10**.

Table 7.10 Highway 17 Improvement Opportunities

Locations	Improvement Opportunities	
	Initial	**Ultimate**
Claremont Ave / Haliburton Rd	• Added turn lanes and extended turn lane storage • NB/SB bus queue jumper	• Haliburton Overpass & Claremont Right-in/right-out OR • Claremont Overpass & Haliburton Right-in/right-out
Sayward Rd	• Extended turn lanes, potential turn restrictions/diverters • NB/SB bus queue jumper	• Brookleigh / Alderly overpass and right-in / right-out at Sayward
Keating X Rd	• Flyover interchange with south connections	
Island View Rd	• Additional turn lanes, acceleration lanes and NB/SB bus queue jump lanes	• Diamond interchange
Mt Newton X Rd	• NB/SB bus queue jump lanes	• Diamond or partial interchange
Beacon Ave	• Additional turn lanes, extended turn lane storage, acceleration lanes • NB/SB bus queue jump lanes	• To be updated with recent development in vicinity of intersection
Public Transportation Treatments Throughout	• Rapid transit stations with universal accessible features and amenities for customers • Bus queue jumpers at signalized intersections • Inter-Modal Nodes with park-and-ride, pick-up and drop off areas, active transportation facilities, electric vehicle charging • Bus-on-shoulder lanes	

iii. Conceptual Cost Estimates

The conceptual cost estimates for both interim and ultimate Highway 17 corridor improvement opportunities are highlighted in **Table 7.11** below.

Table 7.11 Highway 17 Opportunities Class D Concept Cost Estimate (2020 $)

	INITIAL Intersection Improvements & Bus Queue Jumpers	ULTIMATE Bus-on-Shoulder & Grade-separated Interchanges
Capital & Contingencies	$22M	$308.3M
Project Delivery Costs	$14.3M	$133.5
Total	**$36.3M**	**$441.8M**

Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design. Source: Urban Systems, 2020.

iv. Travel Projections

At the north end of the corridor, Highway 17 supports approximately 39,400 vehicles per day which increases to approximately 57,500 vehicles per day at the south end. The maximum public transportation ridership at the south end serves almost 8,600 passenger trips per day. **Table 7.12** below highlights the existing and projected traffic and public transportation ridership on the Highway 17 corridor based on forecast land use changes and east-west demand patterns in the CRD which are projected to increase by 1% per year across the Peninsula.

Table 7.12 Forecast Daily Travel (Highway 17)

	Daily Trips
Existing	8,600 transit passengers / day 39,400- 57,500 vehicles/day
2038	10,300 transit passengers / day 47,100-68,800 vehicles/day

v. Travel Time Savings & GHG Reductions (existing base)

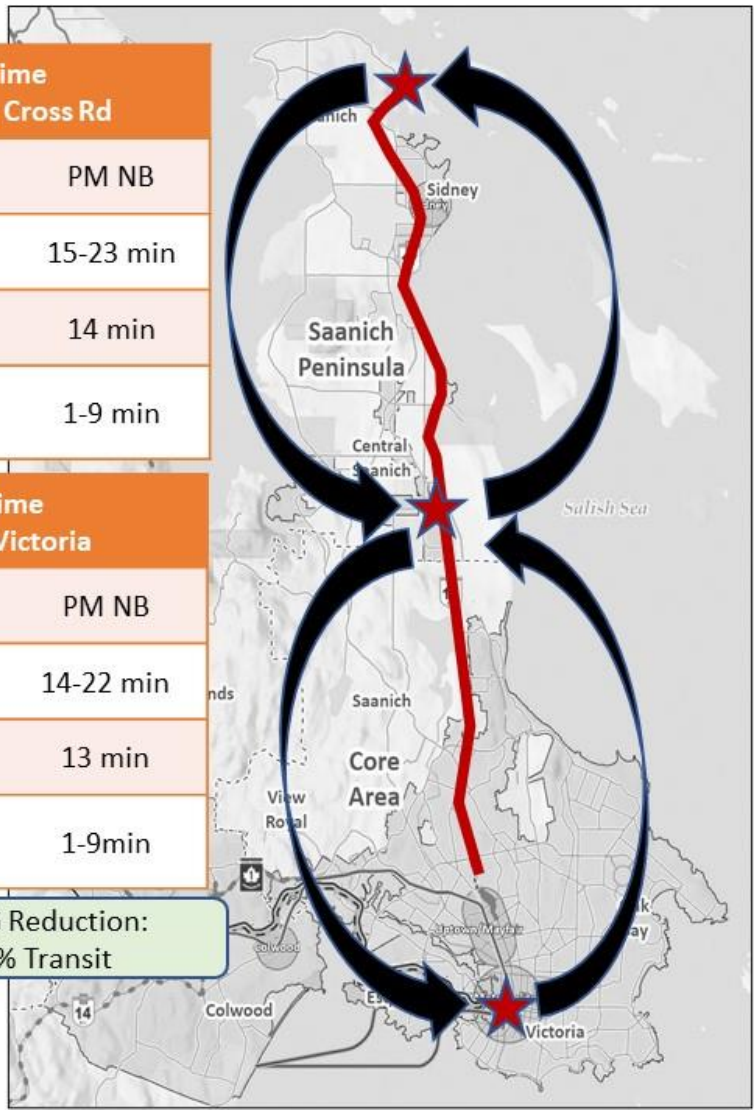
Improvement opportunities leading toward grade-separated interchanges along Highway 17 will improve average travel times and reliability between Swartz Bay and Victoria by up to 9 minutes per trip during peak periods if implemented today. **Figure 7.15** illustrates the comparison between existing and improved travel times. It should be noted that the average and range of travel times would increase over time without changes to the Highway 17 corridor. Consistent with the public transportation analysis described in Section 3, the reduction in vehicle travel associated with rapid bus through this section would result in an estimated reduction in GHGs of approximately 3% for this segment of the corridor.

Figure 7.15 Highway 17 Corridor Improvements Travel Time & GHG Savings

Vehicle Travel Time Swartz Bay - Keating Cross Rd		
	AM SB	PM NB
Existing	12-20 min	15-23 min
Improved	11 min	14 min
Travel Time Savings	4-9 min	1-9 min

Vehicle Travel Time Keating Cross Rd – Victoria		
	AM SB	PM NB
Existing	12-19 min	14-22 min
Improved	11 min	13 min
Travel Time Savings	1-8 min	1-9min

GHG Reduction:
3% Transit



Highway 17 Corridor Improvements (Pat Bay Highway), cont.

vi. Alignment with Challenges & Goals

The Highway 17 corridor improvements will address several key challenges identified today and in future within the ***Technical Report no.1 - Transportation Snapshot*** and supports key goals for the SITS in several ways as summarized below in **Table 7.13**.

Table 7.13 Highway 17 Corridor Improvement Alignment with Challenges and Goals

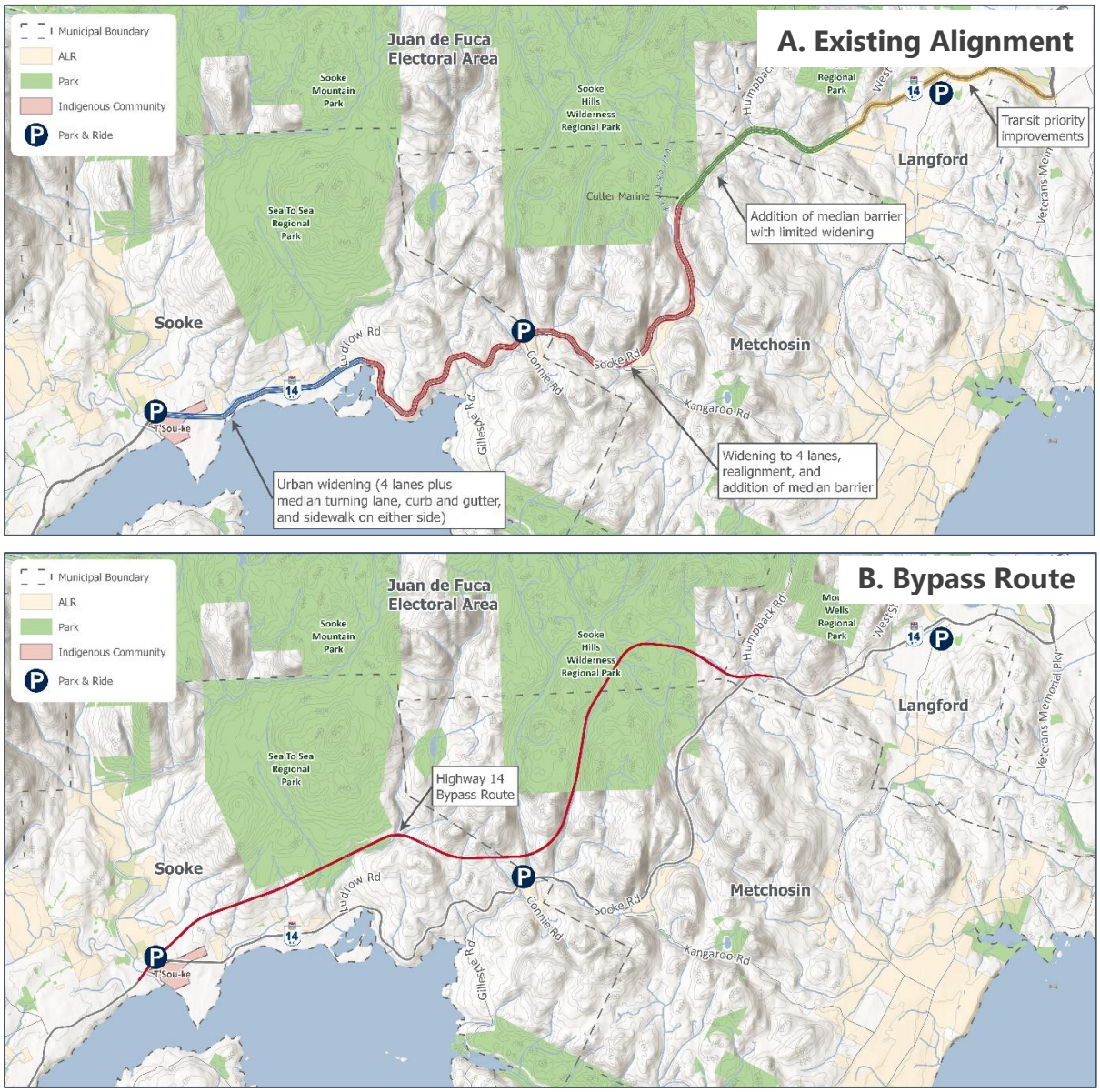
Addressing Key Challenges	
Mobility	• Four lane highway and grade-separated interchanges grade provides sufficient capacity for long-term.
Reliability	• Intersection improvements to address safety and support transit queue jumpers enhances corridor reliability. Grade separate interchanges improves consistency of travel time along corridor.
Safety	• Improved safety at signalized intersections with interim improvements. Grade-separated interchanges further improves corridor safety.
Redundancy	• No change to network redundancy.
Sustainable Transportation	• Transit priority improvements (along with support infrastructure, policies & programs) reduces travel times and supports increased ridership as well as first mile and last mile bike and walk trips. • The provision of bus-on-shoulder precludes accommodation of cyclists. Thus the auxiliary north-south facilities – most notably the Lochside Trail – may need to be improved.
Connectivity	• Minor improvements to connectivity between gateways and designated urban nodes on the Peninsula and Victoria.
Advancing SITS Goals	
Climate Action	+ Encourages and supports public transportation ridership growth. + Reduction in vehicle-km traveled and GHGs. – ALR impacts with provision of interchanges and alterations to accesses and minor streets.
Communities	+ Serves key gateways such as the Swartz Bay Ferry Terminal and Victoria International Airport and urban centres of Victoria and Uptown. + Supported by area Indigenous communities and municipalities. – Limited land use potential in the immediate area of stations, requires intermodal connections by public transportation, driving and cycling. – Managing access along the entire corridor will likely require the reconfiguration of minor cross streets, construction of new frontage or backage roads. – Indigenous and private property impacts.
Safety & Reliability	+ Can be implemented incrementally in the most critical areas from south to north. + Managing access to minor streets and driveways along corridor will reduce collision rates and severity.
Health	+ Encourages more walk and bike travel to connect with high capacity public transportation.

E. Highway 14 Corridor Improvements

i. Background

Highway 14 is the only direct connection between Sooke / Port Renfrew and other parts of the Greater Victoria area for public transportation, commercial vehicles and general-purpose traffic. The Ministry has been working with area Indigenous communities, municipal agencies and other stakeholders on the widening of Highway 14 to address safety and reliability concerns. Coupled with the highway improvements, Inter-Modal Nodes that include park-and-rides in addition to transit priority treatments at signalized intersections are important to the success of public transportation for growing communities. **Figure 7.16** below illustrates the two Highway 14 improvement opportunities considered.

Figure 7.16 Highway 14 Improvement Opportunities



i. **Highway 14 Widening & Realignment.** Widening and realigning the existing highway to provide 2 lanes of travel in each direction with full width shoulders, achieving a design speed of 60km/h from Westshore Parkway to Ludlow Road and 50km/h west of Ludlow Road.

ii. **Highway 14 Widening Bypass Route.** A 4-lane, 80km/h bypass route between Sooke River and Humpback Road that provides median barrier and full-width shoulders throughout. This alignment is 2 km shorter than the current Highway 14 alignment.

ii. Highlights

The key features for each alternative are briefly summarized in **Table 7.14** below.

Table 7.14 Features for Highway 14 Improvement Alternatives

Core Features by Alternative
A. Highway 14 Widening & Realignment • 3.8 km of urban widening (4 lanes + 1 median lane including curb and sidewalk) from Sooke to the Galloping Goose Regional Trail crossing, as per the 2011 MOU between the BC Ministry of Transportation and Infrastructure and the District of Sooke. • 12.2 km of rural widening with median barrier from the Galloping Goose Regional Trail crossing to Westshore Parkway. In sections where Highway 14 is already 4 lanes wide, the scope includes widening the road further to accommodate median barrier. • Replacement of the existing bridge at Veitch Creek. • Inter-Modal Nodes expanded and provided for connections to public transportation through park-and-rides, active transportation facilities, full width shoulders and electric vehicle charging stations for public transportation passengers.
B. Highway 14 Widening Bypass Route • Approximately one-third (4.6 km) of the bypass route is located within Regional Park boundaries. • The terrain along the bypass route is challenging, and would require retaining walls approaching 20 m in height, rock cuts up to 50 m, and large embankments > 25 m. • The route involves the crossing of nearly 15 watercourses (some of which are unnamed). • 7 bridge crossings have been estimated based on a review of the general topography location of watercourses. However the location and extent of each bridge would largely depend on the ground conditions and hydraulic constraints near each crossing. • Geotechnical conditions, environmental constraints, and archaeological areas of importance along the bypass route are not known. • The west connection to Highway 14 would require major reconfiguration of the Sooke River Road intersection.

iii. Conceptual Cost Estimates

The concept level costs for the Highway 14 alternatives are summarized in **Table 7.15** below.

Table 7.15 Highway 14 Alternatives Class D Concept Cost Estimates (2020 $)

	A. Widen Existing Alignment	B. Bypass Route
Capital & Contingencies	$293.1M	$641.5M
Project Delivery Costs	$126.8M	$278.0M
Total	**$419.9M**	**$919.5M**

Source: McElhanney 2018; Urban Systems, 2020. Costs are concept only for capital construction and do not include property, First Nations engagement. utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

Forecast vehicle travel demand along Highway 14 is projected to increase by approximately 2.3% per year as summarized in **Table 7.16** below.

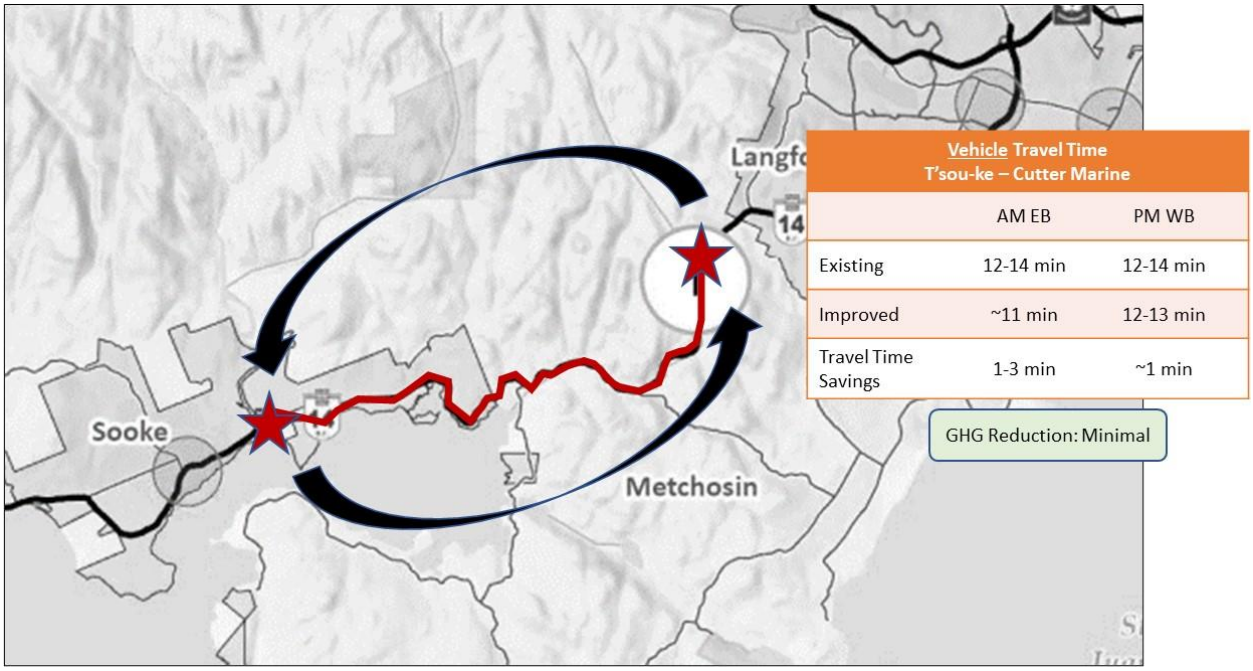
Table 7.16 Forecast Daily Travel (Highway 14)

	Daily Trips
Existing	2,600 transit passengers / day 16,070 vehicles/day
2038	4,000 transit passengers / day 24,198 vehicles/day

v. Travel Time Savings & GHG Reductions

The widening and realignment would address mobility and reliability challenges. **Figure 7.17** highlights the travel time savings compared to existing conditions through this segment during peak periods. Considering the limited change in vehicle-km, there are no reductions to GHGs expected. Emphasis has been placed on the Highway 14 widening option as the impacts and costs of the bypass option are significant.

Figure 7.17 Highway 14 Travel Time & GHG Savings



vi. Alignment with Challenges & Goals

The Highway 14 widening and realignment near existing corridor will address key safety issues and long-term mobility while supporting foundational goals for the SITS as summarized below in **Table 7.17**.

Highway 14 Corridor Improvements, cont.

Table 7.17 Highway 14 Opportunities - Alignment with Challenges and Goals

Addressing Key Challenges	
Mobility	• 4-lane highway corridor supports long-term travel demands between Sooke and other areas of region.
Reliability	• Median barriers and widening will reduce collision severity and improve corridor reliability. • In long-term, additional capacity reduced variability of travel times for public transportation, commercial vehicles and traffic.
Safety	• Widening, median barriers and shoulder widenings improves safety of highway.
Redundancy	• Alternative A – No change to network redundancy. • Alternative B – Provides alternative route for approximately 12km.
Sustainable Transportation	• New park-and-rides, transit priority treatments and provisions for intermodal facilities improves sustainable travel choices.
Connectivity	• Improves overall connectivity to between Sooke and rest of South Island area.
Advancing SITS Goals	
Climate Action	+ Improved public transportation reliability and supports forecast ridership growth. – **Alternative A:** Rock cuts approaching 15 m high where Highway 14 runs alongside Veitch Creek. Through this 1.2km section, significant rock blasting will likely be within the existing riparian setbacks. – **Alternative B**: Approximately one-third (4.6 km) of the bypass route is located within Regional Park boundaries. The route involves the crossing of nearly 15 watercourses.
Communities	+ Supports planned growth in Sooke as a designated urban centre. – **Alternative A:** Significant impact on private property and driveway connections. Approximately 33 Hectares of property acquisition required, primarily from private property, though minor impact to ALR and parkland is also anticipated. – **Alternative B**: The west connection to Highway 14 would require major reconfiguration of the Sooke River Road intersection. – **Alternative B:** Significant impacts on private property (18.9 hectares).
Safety & Reliability	+ Supports growth in forecast traffic volumes. + Reduces collision rates and severity along corridor.
Health	– Limited personal health benefits other than modest safety improvement.

II. Saanich Inlet Marine Opportunities (Cowichan Bay OR Mill Bay TO / FROM Brentwood Bay OR Pat Bay Ferry)

i. Background

Today, the Mill Bay – Brentwood Bay ferry service supports vehicle and passenger travel across the Saanich Inlet between southern areas of Cowichan Valley to the west side of the Saanich Peninsula. The Mill Bay Ferry service has been in operation for almost 100 years serving freight and later transitioned to accommodate vehicles and passengers. The Mill Bay Ferry vessel can accommodate approximately 16 vehicles and 140 passengers across the Saanich Inlet. In 2001, the Mill Bay Ferry underwent upgrades along with the Terminal costing slightly less than $4M. The ferry crosses the Inlet 18 times each day between 7:30 AM and 6:30 PM and serves approximately 300 passengers per day.

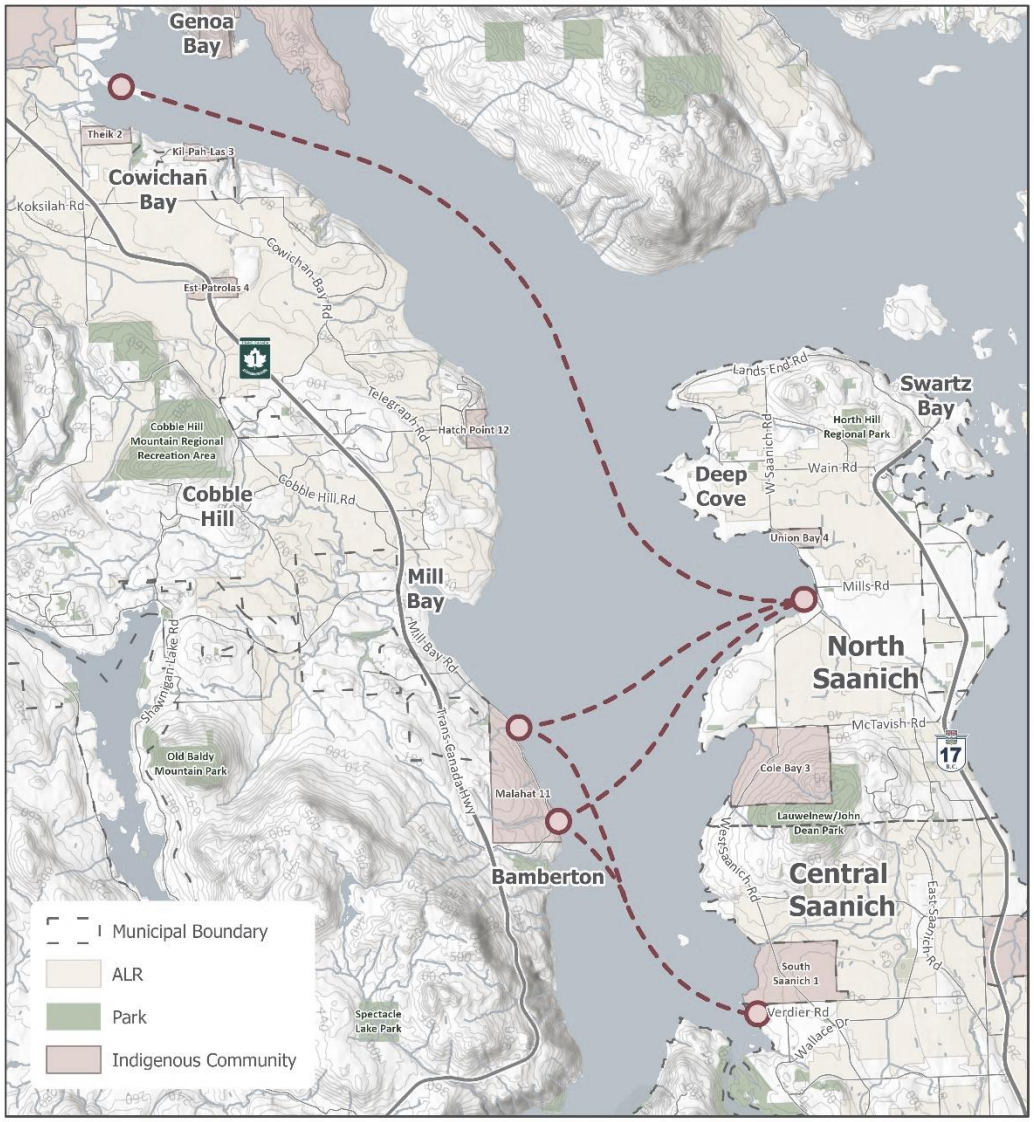
Opportunities for expanding the capacity of the existing service or providing a passenger-only service has been in discussion for many years. These interests have generally been in the context of providing an alternative route to the Malahat, particularly when major incidents occur and the highway is closed for periods of time. At a minimum, expanded capacity of the service would require upgrades to the dock and onshore facilities for additional storage and/or queueing at both terminals as well as vessel replacement. Alternative locations for both ferry terminals on the west and east sides of the Inlet have been explored. On the west side, alternative locations for the Mill Bay Ferry Terminal could either include northern side of the Malahat First Nation's lands (rather than in the south side) or in Cowichan Bay. On the east side of the Inlet, a terminal at Pat Bay Park (existing Canadian Coast Guard docks) may be considered as an option to Brentwood Bay.

The SITS identified the improvements and associated costs to upgrade the existing terminals and replace the Mill Bay Ferry to accommodate larger vehicle and passenger alternatives. Since the extent of works on the dock and onshore sides are significant at the existing locations, the conceptual estimates or allocations are also considered reasonable to provide ranges for screening purpose at other candidate terminal locations. These investments are compared with projected ridership forecasts for passenger or vehicle-passenger ferry service alternatives to consider whether they should be advanced through to feasibility level studies.

ii. Highlights

As noted, the primary marine options across the Saanich Inlet considered within this Technical Report include expanding capacity of the existing service between Mill Bay and Brentwood Bay Terminals with a larger vessel for more vehicles or a larger passenger ferry. Depending on demands and order-of-magnitude costs for terminal and vessel upgrades, optional or additional terminal locations and service connections may be considered for Pat Bay and Cowichan Bay as illustrated below in **Figure 7.18**. For the purpose of this pre-feasibility assessment, terminal improvement concepts, vessel replacement, costs and demand patterns have been centered on the current service connections.

Figure 7.18 Saanich Inlet Crossing Opportunities



Features

Increasing vehicle capacity of the crossing or shifting to a passenger only service includes changes to three principle elements: onshore facilities and docking/moorage at each terminal as illustrated below, as well as new ferry vessels. Existing terminal locations are shown in **Figure 7.19**. Terminal improvements would need to include park and ride facilities to passengers to access the terminal by vehicle, as well as modifications to existing public transportation routes to provide access to these locations.

Figure 7.19 Existing Ferry Terminals

Mill Bay Ferry Terminal

Brentwood Bay Ferry Terminal

- ***Vehicle – Passenger Ferry***. Expanding the capacity of the existing vehicle ferry services would include the provision of a new Intermediate-Class Ferry, with an average capacity ranging between 100 to 130 vehicles and 400 to 600 passengers depending on the actual ferry type. Based on the ridership estimates provided later in this section, the lower capacity alternative, similar to what is provided to Bowen Island and Salt Spring Island, would be sufficient. The estimated cost for a new Intermediate-Class Ferry would be approximately $68M.

  Beyond the vessel, infrastructure changes would be needed for both onshore and foreshore areas around each terminal. In general, infrastructure requirements would include a larger upland vehicle queuing area, landside passenger loading area (pedestrian access via transfer span), vehicle park-and-ride, as well as berthing and mooring systems.

  Existing Brentwood terminal is located between two small craft harbors and proposed new ferry is larger (wider and deeper) requiring addition space for berth and additional water depth (~ 8 to 10' larger). The fixed pier will need to extend further out to gain the required space for the berth and to get to a deeper depth for the vessel draft. Dredging (if depths are not available for new deeper vessel) if required would introduce potential for long term maintenance costs. Survey to confirm depths and location of pier would be required. Further provisions for additional vehicle storage, queuing and park-and-ride space would also be required onshore to support larger boarding and disembarking areas at the terminal that would either impact lands or foreshore areas. These requirements would be similar for the Mill Bay Terminal with potential onshore impacts on Malahat First Nation's lands.

It is noted that alternative terminal locations such as at the at Pat Bay and/or Cowichan Bay as previously illustrated would have all of the same improvement requirements and the routes would not be significantly shorter. In fact, it is anticipated that the improvements at the existing and other possible locations for larger onshore areas to support the expanded vehicle and/or passenger ferry service would require new or upgraded roadways and have property and community impacts that may have less support in new locations.

- ***Passenger Ferry***. The provision of a passenger ferry services would also include modifications to onshore and foreshore infrastructure as well as a new vessel.

  In general, the vessel and supporting infrastructure tend to be less costly and provide higher people-carrying capacity than vehicle ferries. However, a passenger-only service has different physical requirements to a vehicle ferry for loading and unloading. Whereas car ferries tend to be loaded from the front/rear of the vessel (bow loading), passenger-only vessels are more often loaded from the side of the vessel. As such, a car-ferry only dock has different infrastructure requirements from a passenger-only ferry or a combined passenger and car ferry.

  Passenger-only vessels for this crossing could easily be supported with a capacity of up to 300 or so passengers based on forecast demands described later in this section of the Technical Report. As per the ***Westshore Express Passenger Ferry Pre-Feasibility Study***, a Damen Fast Ferry would support the maximum passenger load requirement for a cost of approximately $10M. Although the maximum speeds for the catamaran fast ferry would likely not be achieved with the short crossing distance, these passenger ferries have a shallower draft than vehicle or other ferries.

  If a new design vessel is selected for the passenger ferry operation (presumably with side-loading), the ferry docks are likely to require substantial modifications to the berthing structures and fendering systems to adequately accommodate the new ferry vessel hull geometry and passenger loading system(s) at each terminal. These infrastructure requirements would include the addition of a dedicated side loaded ferry dock and access trestle to the passenger ferry at each destination and modification of the existing ferry pier at the of the Brentwood terminal to accommodate the new ferry side loading ferry docks access pier, and removal or modifications to the existing marina dock to the east of the existing terminal to accommodate the new ferry dock infrastructure and ferry maneuvering.

iii. Conceptual Cost Estimates

The concept cost allocations for the onshore and foreshore improvements are summarized in **Table 7.18** below.

Table 7.18 Mill Bay – Brentwood Bay Ferry Improvement Cost Allocations (2020 $)

	Option 1: Vehicle Ferry	Option 2: Passenger Ferry
Vessel Cost	$68M	$10M
Capital & Contingencies	$37.8M	$14.1M
Project Delivery Costs	$16.4M	$6.1M
Total	**$122.2M**	**$30.2M**

Source: Urban Systems / Mott McDonald, 2020. Costs are concept only for capital construction and do not include property, First Nations engagement, utilities, and other mitigation of impacts. These costs are to be used for comparison purposes only and should not be used for capital planning and budgeting until future stages of design.

iv. Travel Projections

The forecast demands for a vehicle & passenger ferry were estimated by considering a geographic catchment area approach as presented in Appendix A. As summarized in **Table 7.19** below, the forecast 2038 ridership with larger capacity vessels would reach approximately 600 vehicles per day and over 950 passengers per day assuming similar crossing frequencies as what exists today. Although these forecasts suggest that the capacity of the existing Mill Bay Ferry could be insufficient in future, the increased demands would divert less than 1% of traffic from the Malahat.

Table 7.19 Mill Bay – Brentwood Bay Ferry Forecast Daily Travel

	Daily Travel
Existing	300 vehicles/day 590 passengers/day
2038	380-610 vehicles/day 690-960 passengers/day

v. Travel Time Savings & GHG Reductions (existing base)

The travel time savings benefits are limited to a very narrow catchment area around Mill Bay and Brentwood Bay areas for those additional trips diverted from the Malahat Highway. The limited diversion in vehicle travel and reduction in vehicle-kms would have marginal impact on reducing GHGs.

vi. Alignment with Challenges & Goals

The Mill Bay – Brentwood Bay Ferry alternatives would address some of the key transportation challenges identified in the ***Technical Report no.1 - Transportation Snapshot*** but are not strongly aligned with the core goals for the SITS as summarized below in **Table 7.20**.

Table 7.20 Mill Bay – Brentwood Bay Ferry Alignment with Challenges and Goals

Addressing Key Challenges	
Mobility	• Limited benefit as the diversion from the Malahat is modest and the travel time reduction is limited to a small catchment area.
Reliability	• Provides an alternative route to the Malahat during incidents, closures and/or extreme weather.
Safety	• Limited benefit as highway traffic will remain largely unchanged.
Redundancy	• An alternative route between the Saanich Peninsula and Cowichan Valley to increase capacity for alternative connections.
Sustainable Transportation	• Potential for improved connections for pedestrians and cyclists with connection to North Saanich Peninsula. • It may be necessary to provide a day-time parking area at each terminal where availability for such may be difficult to secure. • Integration of a passenger-only ferry into the regional transportation network would require major changes to public transportation routing and service.
Connectivity	• Improved connectivity by way of more direct routing, with particular benefit for the Saanich Peninsula.
Advancing SITS Goals	
Climate Action	– Marginal changes to vehicle-km traveled and GHGs. – Impacts on marine ecosystems would need to be considered.
Communities	+ Improves access to between South Island Gateways such as Swartz Bay Ferry, Victoria International Airport and the Malahat, particularly when associated with a more northerly Cowichan Bay – Patricia Bay alignment. – Requires property through Malahat Nation lands or relocation of terminal further north. – Relocation to the north may require the provision of a new connecting road and increase the crossing distance and time. – Location and impacts of terminal in Cowichan Bay to be determined.
Safety & Reliability	– Marginal safety improvement for the Malahat with alternative route.
Health	+ Provides alternative route to Malahat in case of closures and would be attractive to recreational use.

7.4 Summary

Highway corridor opportunities were identified through many historical studies and refreshed in terms of design concepts, costs, impacts as well as to assess alignment with current challenges, climate change commitments as well as overall goals for the South Island Transportation Strategy. As summarized in **Table 7.21**, the relative costs, benefits and impacts of each opportunity have been considered.

Once again, it should be noted that some of the opportunities are multiple options – such as the Malahat related improvements – while others are mutually exclusive to the respective corridors. In many cases, highway improvements could be implemented incrementally and should be advanced in combination with other projects for public transportation and active transportation in the immediate areas.

The following discussion highlights the key summary outcomes for each of the highway corridor opportunities considered in this Technical Report.

- **Relative Cost**. The conceptual cost estimates were prepared for this Technical Report and referenced from other technical reports. The highest cost highway corridor opportunities are for the Saanich Inlet Crossings which range from $2.25B to $2.74B for the north and south crossing respectively. All Malahat options range in cost anywhere from $560M for widening in the north and south sections to $967M for a realigned highway to the Niagara Main alignment plus widening and improvements to the north. Highway 17 improvement opportunities range in costs of $36M for transit priority improvements at intersections on Highway 17 and $442M for grade-separated interchanges. Highway 14 improvements range in cost from between $420M and $920M. Unlike most of the Malahat and bridge crossing alternatives, these improvements could be implemented incrementally over time and funding partnerships are available. They should also be implemented with appropriate public transportation facilities and treatments for active transportation, especially at Inter-Modal Nodes. Increasing the capacity of the Brentwood Bay – Mill Bay Ferry service would cost anywhere from $30M to $122M for terminal marine upgrades, groundside improvements, and vessel replacement.

- **Daily Public Transportation Ridership and Traffic Projections**. The projected daily public transportation ridership and traffic forecasts for 2038 highlighted with this Technical Report are reflective of service levels, facilities provided and the travel markets served. The specific demands will also be influenced by the incentives to use public transportation and the disincentives to drive. The ridership forecasts are not the same as target mode shares which are the result of a system of transportation investments as well as choices. In this regard, combining public transportation investments, intermodal connections, land use patterns and transportation incentives are essential to improve on the ridership forecasts contained in this Technical Report.

  As noted in **Table 7.21,** the forecast daily traffic volumes and public transportation ridership for each corridor can vary significantly. The Saanich Inlet Crossings are projected to attract up to 10,000 to 11,000 vehicles per day from the Malahat, which would be left with volumes similar to today. As noted in the Technical Report, most of the traffic utilizing the new crossing would be destined for Saanich and Victoria, thus adding to traffic utilizing Highway 17.

Table 7.21 Summary of Highway and Marine Corridor Opportunities

Candidate Initiatives		Class D Cost Estimate (Capital)	Projected 2038 Daily Vehicle (vpd) and Passenger (ppd) Travel	Travel Time Savings per trip (minutes)	% GHG / VKT Reduction by trip
I.	A. North Saanich Inlet Crossing	**$2.25B**	10,000 vpd	15 min	<1%
	B. South Saanich Inlet Crossing	**$2.74B**	11,000 vpd	<10 min	<1%
	C. Malahat – Goldstream				
	i. Widening	**$560M**	500 ppd 33,000 vpd	<2 min	<1%
	ii. Malahat Double Deck	**$707M**	500 ppd 33,000 vpd	<2 min	<1%
	iii. Malahat Near West	**$799M**	500 ppd 33,000 vpd	<2 min	<1%
	iv. Malahat Niagara Main	**$967M**	500 ppd 33,000 vpd	<2 min	<1%
	E. Highway 17	**$36 to $442M**	10,300 ppd 68,800 vpd	<10 min	3% (transit)
	F. Highway 14 (online route)	**$420M**	4,000 ppd 24,200 vpd	<3 min	<1%
II.	Marine Opportunities	**$30M to $122M**	960 ppd 610 vpd	Nil	<1%

- **Alignment with Key Challenges**. The key transportation challenges – mobility, safety, network redundancy, reliability, sustainable transportation, and connectivity – were presented for different areas of South Vancouver Island in the ***Technical Report no.1 - Transportation Snapshot***. In general, the Malahat and Highway 14 and 17 improvements would address the mobility, safety and reliability challenges that have been identified for the long-term. While the Saanich Inlet crossings would provide some medium-term relief to the Malahat, it would add to and accelerate the need for improvements along Highway 17. As noted, upgrades to the Mill Bay – Brentwood Bay Ferry or a Cowichan Bay – Patricia Bay ferry service would only nominally address key challenges by providing a transportation alternative and some additional redundancy in the transportation system for the Malahat.

- **Alignment with Climate Change**. Most highway improvement alternatives will reduce delays which in turn reduces GHG emissions. In the long-term however, capacity increases will contribute toward higher travel demands. In the case of Highway 14 and 17, public transportation based improvements can be incorporated to support rapid and commuter public transportation services and in turn contribute toward some reductions in GHGs. Although improvements on the Malahat would address some of the safety and reliability issues, they would only have a minor reduction of GHGs with improved mobility.

- **SITS Goals**. **Section 1** of this Technical Report highlights the goals for the South Vancouver Island transportation system – sustainable travel options, strong community connections, improve safety & reliability, and support active transportation. Corridor improvement opportunities along Highway 14 and 17 as well as the Malahat would enhance community connections and address safety and reliability for all travel. They would also be designed to support public transportation services and active transportation modes through these investments either alongside the highway facilities and for crossings to connect local and regional systems.

8. Summary

The ***South Island Transportation Strategy*** is a comprehensive assessment of the transportation challenges and possible opportunities for the South Island. This is the second Technical Report prepared as part of the Strategy. This Technical Report identifies, develops, assesses, and compares all transportation opportunities for the South Island to serve and shape regional and inter-regional travel.

The South Island is home to approximately 412,500 people between the 14 municipalities, the traditional territories of 16 First Nations, and two Regional Districts. The area extends as far west as Sooke and as far north as Duncan. The population is expected to increase by approximately 23.6% by 2038 (or an additional 97,000 people), bringing the population to over half a million people. The majority of this growth (80%) will be focused in urban areas such as Victoria, Saanich, Langford, Colwood, and Sooke.

There are over 1.1 million trips completed each day in the South Island. This includes approximately 83,000 person trips per day from areas outside the South Island, primarily across the Malahat and through the Swartz Bay Ferry Terminal. These travel demands are projected to increase by approximately 23.6% over the next 20 years consistent with population growth. Currently, the majority of travel in the region is by car, which includes approximately 56% of all trips as auto driver and 15.5% as auto passenger. Another 7.5% of trips are by public transit, 5% by bicycle, 14.2% by walking and 1.8% by other modes.

There are regional and inter-regional transportation challenges facing the South Island that have been identified through the technical work for this Strategy. The primary issues are generally captured in the following five key areas:

- ***Safety*** along key corridors;
- ***Mobility and reliability*** in terms of the increasing delays and variability in travel times from one day to the next;
- Attractiveness of ***sustainable transportation choices*** and modal integration to support walking, cycling and public transportation;
- ***Network connectivity and redundancy*** that is impacted by closures and/or incidents on a daily and/or weekly basis; and
- Overall ***community connectivity*** through enhanced mobility.

The Strategy aims to address these issues and to support other aspirations for healthy, vibrant communities and sustainable transportation choices. In this regard, four goals have been established for the Strategy:

1. Ensure sustainable options for a variety of travel modes
2. Strengthen connections between travel modes and improve connections between communities
3. Improve the safety and reliability of the transportation network
4. Support and encourage active transportation options

In an effort to support a move toward these goals, this second Technical Report examined all transportation opportunities for all modes to serve and shape regional and inter-regional travel including: public transportation, active transportation, mobility hubs, inter-modal hubs and nodes, Transportation Demand Management (TDM), and highway and marine corridors. The Strategy recognizes the need for a holistic and integrated approach that includes infrastructure improvements as well as a range of support services, programs, and policies to support and move toward the overall goals of the Strategy.

The COVID-19 pandemic has emphasized the need to be responsive and adaptable to changing situations that can affect all aspects of day-to-day life. While it is still unknown what the lasting effects of the pandemic may be, the core values that make up the long-term strategy for sustainable growth and a healthy economy remain unchanged. The current situation shows the need for a resilient and sustainable transportation system that can aid in our immediate recovery.

This summary section highlights the primary outcomes from the assessment of opportunities for those integrated land use and transportation policies, services, programs and facilities that will contribute toward Indigenous, local, regional and provincial aspirations.

a. Public Transportation Opportunities

Public transportation serves a key role supporting regional and inter-regional travel in the South Island. It is fundamental to achieving the goals on climate action, strengthening connections between communities, and providing affordable and sustainable transportation choices. The ***Victoria Region Transit Future Plan*** (BC Transit) identified a target to increase public transportation mode share from 7.5% today to 15% by 2038 (from 82,500 to 155,500 trips per day).

Public transportation opportunities examined are all in alignment with the general goals for the Strategy. These facilities and services range in cost from approximately $36 million for bus queue jumpers along Highway 17 through to almost $1.2 billion for LRT. Transit priority corridors with dedicated lanes for rapid bus services between Westshore and Downtown as well as between the Saanich Peninsula and Downtown will provide significant capacity and address travel time reliability issues. These dedicated transit priority facilities ultimately address key east-west and north-south mobility challenges and increase the people-carrying capacity of the existing transportation system.

To achieve the regional targets for public transportation, the capacity of dedicated rapid bus will be exceeded on the Douglas Street corridor in future between Uptown and Downtown Victoria. Opportunities such as the Island Rail Corridor (IRC) commuter rail service and a Westshore Ferry service would create an alternative and supplemental public transportation service that adds capacity to the network and provides a direct connection between the Westshore and Downtown Victoria.

Additionally, a potential long-term implementation of Light Rail Transit between Westshore and Downtown would replace the rapid bus service on the Douglas Street corridor and would provide increased capacity and travel time reliability.

b. Active Transportation Opportunities

Communities in the South Island have made considerable progress toward supporting active transportation. Today, approximately 5% of all daily travel within the Capital Region is by bicycle. The CRD ***Regional Transportation Plan*** (RTP) recognizes that there is a strong foundation for increasing the share of cycling trips in the region and set a 15% cycling mode share target by 2038, increasing the number of trips from 55,600 to almost 200,000 cycling trips per day. Attractive cycling facilities also improve intermodal connections with public transportation and walking facilities between major regional destinations and gateways in the South Island.

Building from ***BC's Active Transportation Strategy, Move. Commute. Connect.***, the opportunities to work with local partners to advance key pathways are significant and connected to local and regional strategies for active transportation. In some cases, the province can lead and leverage investments on inter-regional travel in the South Island. In other cases, local and regional governments are in the best position to lead on advancing shared goals of Indigenous communities and local, regional and provincial governments.

The key investment opportunities identified and explored in this Technical Report focus on supporting active transportation for regional and inter-regional travel, particularly to, from, and within designated mobility hubs, intermodal nodes, and gateways to and from the area. This also includes opportunities to address comfort and safety of active transportation by providing all ages and abilities (AAA) facilities along regional corridors and crossing provincial facilities.

Active transportation opportunities range from developing incentives to make active transportation safe, easy and convenient transportation options through to infrastructure improvements and supportive plans and policies. The costs for advancing active transportation incentives, infrastructure and support programs and policies are relatively low in comparison to investment opportunities in roads and public transportation. The highest cost areas include those investing in active transportation networks and support facilities. Consideration may be given toward directing additional funding resources through a multi-year program of cost-sharing with municipalities and Regional Districts on implementation of AAA cycling facilities in and around mobility hubs, intermodal nodes and gateways across the South Island to promote active transportation. Additionally, funding allocations may also include opportunities for implementing and maintaining attractive cycling infrastructure along and across provincial highways in the South Island.

c. Mobility Hubs, Intermodal Nodes & Gateway Opportunities

The South Island is made up of varying types of settings that include urban, suburban and rural areas. The CRD ***Regional Transportation Plan*** identifies the principle of mobility hubs as the places where people have access to housing, employment, services and amenities. These are also the places where travelers have transportation choice in local and regional growth areas and Downtown Victoria. Beyond these regionally significant mobility hubs, there are also intermodal nodes within the region as well as gateways that are integral to the South Island transportation system. Intermodal nodes principally support access to attractive, direct public transportation services in various areas and are typically 'intercepting' points for longer distance trips such as park-and-rides or public transportation exchanges, while gateways serve inter-regional, provincial, national, and international travel through connections such as airports and ferry terminals.

The transportation opportunities for each of these areas include, but are not limited to: AAA cycling facilities, secure bicycle parking, accessible pedestrian facilities, enhanced public transportation stations and stops, pick-up and drop-off areas, carshare and ride hailing facilities, electric vehicle charging stations, and transportation demand management strategies within and surrounding these areas. These strategies are largely about influencing travel choices at the busiest generators of regional and inter-regional travel.

Better integration between communities and employment and industry centres will enable more people to access services, participate in economic opportunities and support resource sectors in the South Island. The costs of these opportunities are relatively low compared to highway and public transportation infrastructure. They are part of an integrated strategy to provide attractive options for people to bike, walk, and use public transportation across municipalities and the region.

d. Transportation Demand Management Opportunities

Transportation Demand Management (TDM) is a term used to capture overarching policies and programs that can be used to reduce travel demands as well as to support and advance shifts toward sustainable modes of transportation. In an effort to achieve the desired mode share targets in the South Island toward significantly more public transportation and active transportation, providing attractive services and facilities are not enough. TDM related policies and programs are needed to provide added incentives and support sustainable modes, and in some cases disincentivize single-occupant vehicle (SOV) trips.

TDM opportunities include incentives or policies that aim to facilitate increased active transportation and public transportation use, while also supporting intermodal infrastructure investments. Candidate TDM incentives include flexible work arrangements, public transportation fare incentives, ridematching, parking for priority modes, ridesharing / carsharing / bikeshare / ride-hailing, guaranteed ride home programs, fuel-efficient vehicle and e-bicycle incentive programs, EV charging incentives, bicycle locker program and transit oriented development approaches.

These strategies can often be applied broadly at reduced cost as compared to many of the public transportation or highway investment opportunities given consideration, but require partnership and buy-in from organizations representing significant trip generators in the region (i.e., large employers, institutions) as well as from transportation service providers.

e. Highway + Marine Corridor Opportunities

Regional roadways and provincial highways serve to provide important connections to Urban Centres and Intermodal Nodes. They also function as Gateways that provide connections to other areas of the Island, province, nationally and internationally for passenger and commercial vehicles, as well as public transportation. Today, approximately 71.5% of daily travel in the Capital Region is by car (drivers and passengers). With planned growth and limited change to mode share, daily car travel could increase from 790,000 to 930,000 trips per day by 2038, or grow by approximately 23.6%.

Importantly, these corridors also support regional and inter-regional public transportation service. The identified highway corridor improvement opportunities generally offer benefit to regional public transportation t, as well as opportunities to enhance active transportation connections.

Highway corridor opportunities were identified through many historical studies and refreshed in terms of design concepts, costs, impacts as well as to assess alignment with current challenges, climate change commitments and overall goals for the Strategy. Some of the opportunities have multiple options, such as the Malahat improvements, while others are mutually exclusive to the respective corridors. In many cases, highway improvements could be implemented incrementally and advanced in combination with other public transportation and active transportation projects in the immediate areas to provide broad transportation benefit.

Overall, the improvement possibilities include highway-based improvements (Highway 17 and 14), various improvement opportunities for the Malahat, and crossing opportunities, including crossings of North Saanich Inlet and Highland Inlet, as well as the Mill Bay – Brentwood Bay and Cowichan Bay – Patricia Bay ferry options.

The relative costs of the highway corridor improvements could range from approximately $36 million for public transportation priority improvements at intersections along Highway 17 to $442 million for grade-separated interchanges, $420 million to $920 million for Highway 14 improvements, to over $2.25-2.74 billion for crossings of the Saanich Inlet. The costs for the Malahat options range from between $560 million and $707 million for widening in the north and south sections, to between $799 million and $967 million for a realigned highway to the west along with widening and improvements to the north. For the Malahat options only the widenings could be implemented incrementally with costs and construction spread out over several years.

Beyond the costs and potential impacts of highway corridor improvements and alternative routes, some of the opportunities examined would not be in alignment with overarching goals for the Strategy, would not support climate change efforts, and would not address some of the key mobility, reliability and safety issues identified in the Strategy. For example, while the Saanich Inlet crossing opportunities would address some of the safety and reliability challenges for the Malahat corridor, they would also create new challenges for Highway 17 and not be consistent with many of the goals and objectives for the SITS as well as commitments to climate change. Other corridor improvements on Highway 1/Malahat, 14, 17 were found to address some of the core challenges identified through the Strategy and support key goals around safety and reliability, as well as provide regional economic benefit by strengthening community connections and enhancing goods movement opportunities.

Summary

Implementation of any integrated transportation opportunities examined within this Technical Report will require multi-agency commitment and action. In some cases, Indigenous communities, local, regional and provincial agencies may independently advance specific opportunities described in the Strategy through a coordinated approach around priorities and timing. In most cases, partnerships will be required to advance many of the opportunities described in this Technical Report.

The successful implementation of the Strategy also requires an integrated approach. Rather than simply tackling one mode or improvement strategy in isolation, achieving these goals requires a multi-faceted, and multi-agency approach to planning communities and investing in transportation. For example, investments in rapid transit alternatives and active transportation relies on strong land use plans and policies around mobility hubs in the region as well as TDM strategies.

Further, creating vibrant and healthy regional centres requires investments in safe, comfortable and accessible transportation systems.

An integrated transportation strategy represents one aspect of a holistic approach to sustainable development, a healthy and competitive economy, climate action, and more equity for everyone that lives in this region and across the province.

In this regard, moving toward the goals of the Strategy requires commitment and coordination from all levels of government to advance and invest in all areas together. With strategic support for many of the public transportation, active transportation, hubs and nodes, TDM strategies and highway opportunities identified in this Technical Report, agencies may work together to implement the measures identified in this Technical Report and move toward the targets and goals for the region.

Appendix A.

Ridership Forecasts, McElhanney