Downtown Nanaimo Mobility Hub Project

July 27, 2021 | Final Report

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Your Challenge.
Our Passion.

Our File: 2121-00433-00

July 27, 2021

City of Nanaimo
411 Dunsmuir Street
Nanaimo BC

Attention: Jamie Rose, AScT, Manager of Transportation

Downtown Nanaimo Mobility Hub Project:
FINAL REPORT

I am pleased to submit our revised final report for the Downtown Nanaimo Mobility Hub Project. This report details the project process, findings and decisions made.

This report captures project outcomes approximately to end March 2021. Some projects identified in this report have since advanced or other influencing factors have led to priorities shifting.

I thank you for trusting us with this project to reshape Downtown Nanaimo and look forward to seeing the identified projects “in the ground”, as was the call from the community through our engagement sessions.

Sincerely,
McElhanney Ltd.

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1. Introduction

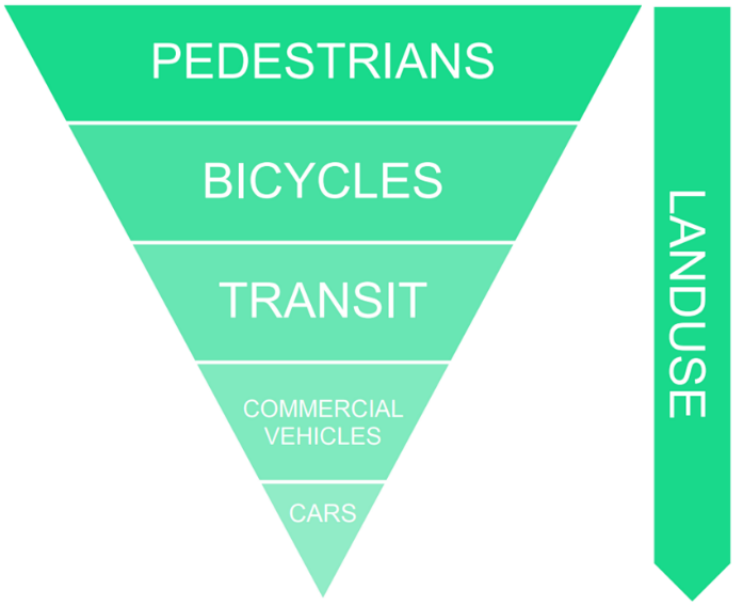
The culture of cycling and active transportation and infrastructure to support that in the City of Nanaimo (the City) has grown by leaps and bounds, particularly over the last four years since the adoption of Nanaimo's multi-modal Transportation Master Plan (TMP). The Downtown Nanaimo Mobility Hub (DNMH) Project combines planning, policy, and infrastructure in a holistic way that will help the City achieve their sustainable vision.

The dense urban area of downtown Nanaimo is a great place to promote multi-modal transportation and encourage people to walk, cycle, and use transit by prioritizing sustainable mobility. Despite the scarcity of cycling and transit infrastructure, Downtown Nanaimo has the highest proportion of sustainable transportation trips in the City. Its pedestrian environment is enhanced by the dense street network and interesting streetscapes but could be improved with additional pedestrian network connections and pedestrian-oriented intersections. To boost the attractiveness of cycling, it is critical to provide cycling infrastructure for all ages and abilities (AAA).

While enhancing sustainable modes, the provision of functioning roadways is still required for the movement of goods, commerce, and private vehicles. As many people will continue to use a car, it is important to provide economically attractive, safe, and convenient mode choices.

Consistent with the TMP, the modal hierarchy for the City is shown in *Figure 1*.

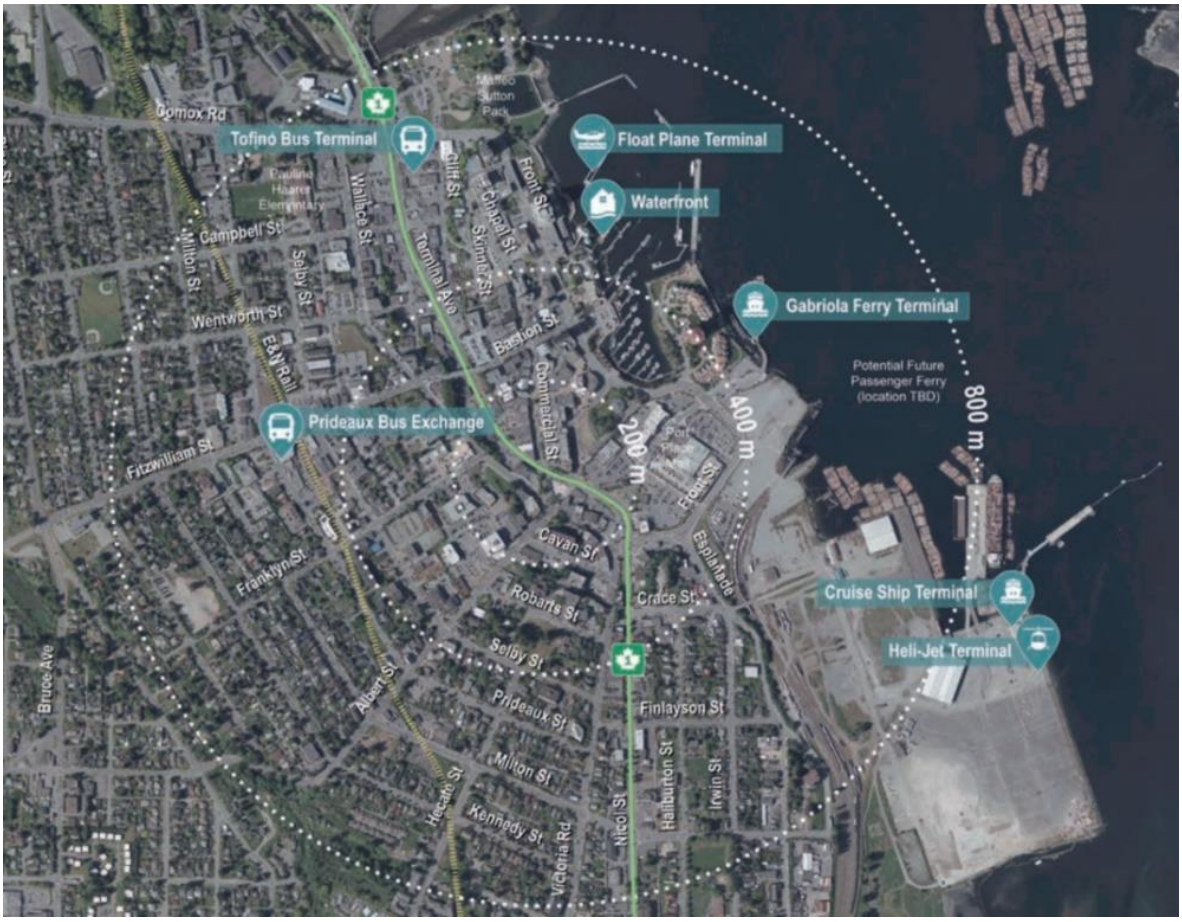
Figure 1: Modal Hierarchy



1.1. STUDY AREA

Downtown Nanaimo is approximately centered on the intersection of Terminal Avenue and Commercial Street. The project area is shown in *Figure 2* as an 800m radius from this intersection.

Figure 2: Study Area



1.2. BACKGROUND

In early 2019, the City initiated the Downtown Mobility Hub Project with the intent to advance a number of key ideas that emerged in previous studies to improve the mobility in the downtown – the heart of Nanaimo's transportation network. Focal points for the project include:

1. Improving key intersections for all modes, especially pedestrians
2. Identifying short-term bicycle network improvements
3. Confirming a permanent transit exchange location
4. Preparing a downtown parking strategy

To achieve the above, the first stage of the project sought to confirm priority issues and opportunities through review of previous initiatives, data collection, technical analysis, and public input. Subsequent phases sought to identify priority projects that could be built within five years of competing the study and had public and stakeholder support.

Each of the focal points of the project are detailed in this report, together with specific infrastructure projects that the City can implement within the required timeline. Many of the identified projects are interrelated. An overall network operational performance analysis was also done to review the current traffic operations at key intersections within the downtown core, the proposed intersection improvement options developed as part of this project, as well as other road network scenarios. Full details of those analysis scenarios are provided in *Appendix A*.

2. Key Intersection Improvements

Consistent with the modal hierarchy, four intersections in the downtown have previously been identified for improvements to address both pedestrian safety and other concerns. The four intersections include:

1. Commercial / Wallace / Albert / Victoria Intersection
2. Bastion / Commercial Intersection
3. Wallace / Bastion / Fraser Intersection
4. Front / Church Intersection

Each of these intersections is discussed in this section, including the traffic analysis done for the different improvement options, as well as the pedestrian improvements proposed at each location.

2.1. COMMERCIAL / WALLACE / ALBERT / VICTORIA INTERSECTION

The existing 4-leg intersection has three legs that are stop controlled and the fourth Commercial Street leg is uncontrolled. As a result, the intersection is challenging for all users, in particular pedestrians as they try to navigate the stop-controlled legs while watching for traffic on the uncontrolled leg. Of all the feedback from residents the City receives, this intersection received the most comments.

2.1.1. Site Characteristics

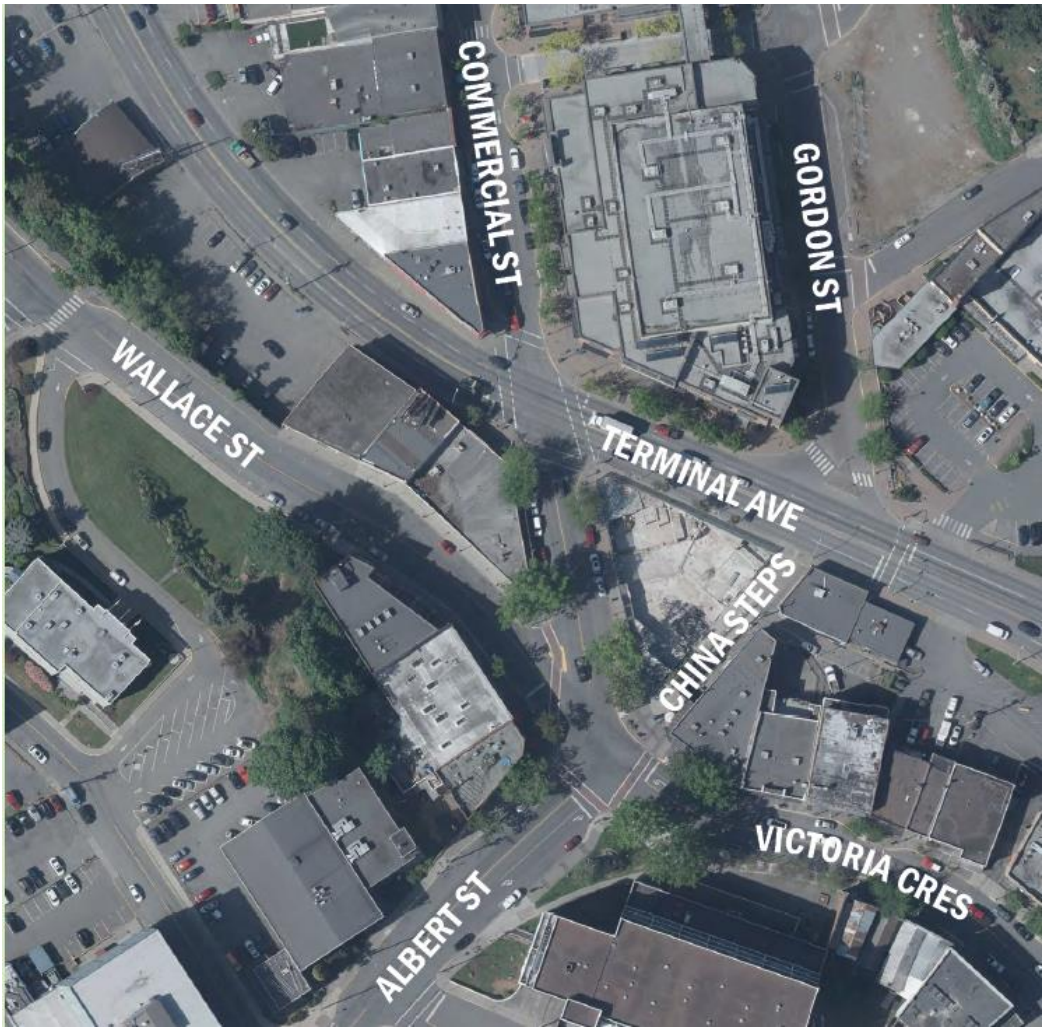
2.1.1.1. Context

Wallace, Albert and Commercial Streets and Victoria Crescent are all Major Collector streets in Nanaimo's TMP. It is understood that the Commercial Street leg is uncontrolled because at the time of implementation there was a concern from the Ministry of Transportation and Infrastructure (MoTI) that a stop control on this leg might cause a queue that backs up to the Terminal Avenue intersection and thereby impact highway traffic operations and safety. The intersection location and surrounding land use is shown in *Figure 3*. The existing lane configuration, pedestrian crossings and sidewalks are also shown. As seen, there is no marked crosswalk on the Commercial Street leg of the intersection.

Wallace and Albert Streets and Victoria Crescent are transit routes, and Wallace and Albert Streets are identified as corridors with future bike lanes, concepts for which are included in the scope of the DNMH project.

A pedestrian corridor through the China steps connects between the Commercial Street and Victoria Crescent legs of the intersection.

Figure 3: Commercial / Wallace / Albert / Victoria Intersection



2.1.1.2. Traffic Volumes

A seven (7) hour traffic count was conducted on April 4, 2019 and recorded movement volumes, vehicle classification, pedestrians and cyclists. Based on these, the 2021 horizon traffic volumes are shown in *Figure 4* (red highlighted intersection data). The intersection also has a high volume of pedestrian traffic as shown in *Table 1*. Of the improvement options considered at this location, the safety of these vulnerable users is a key consideration.

Figure 4: Intersection Turn Movement Volumes (2021)

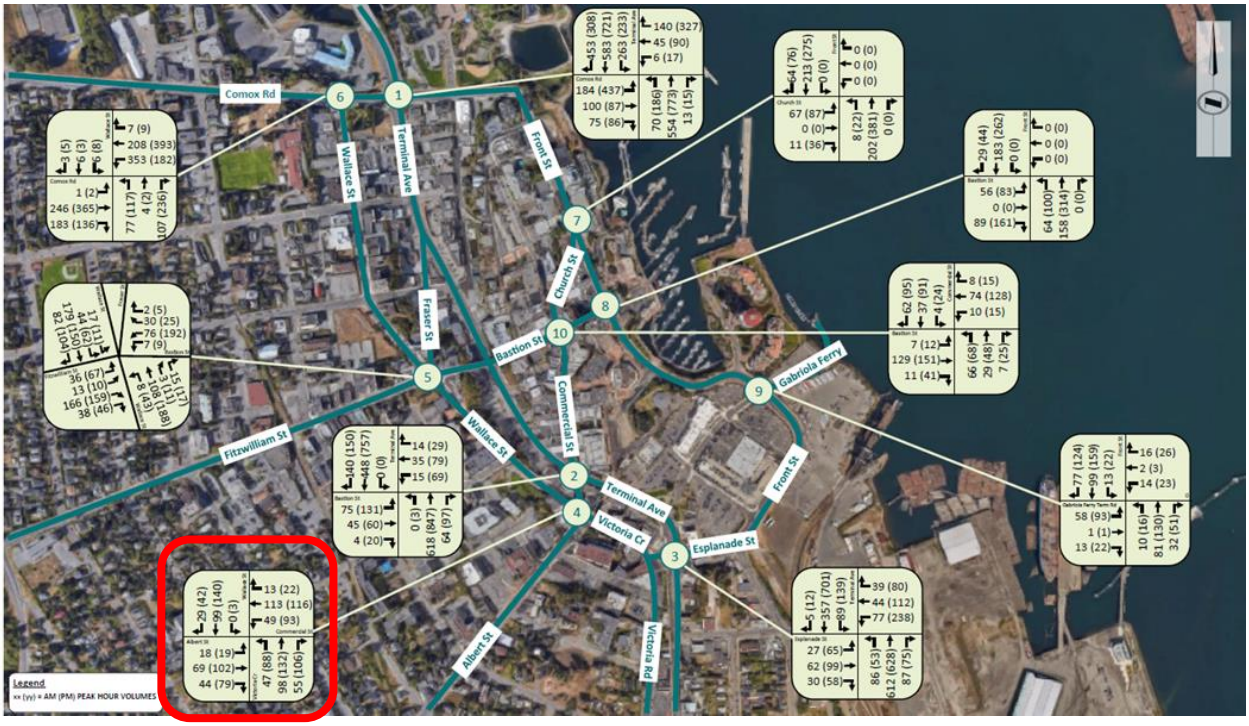


Table 1: Intersection Pedestrian Volumes

Entire Survey Period: 7 Hours

Crosswalks			
N	S	W	E
87	376	185	602
12	54	26	86

Survey Period: 2 Hours (AM Peak)

Crosswalks			
N	S	W	E
9	38	18	52
5	19	9	26

Survey Period: 2 Hours (MD Peak)

Crosswalks			
N	S	W	E
27	132	87	251
14	66	44	126

Survey Period: 3 Hours (PM Peak)

Crosswalks			
N	S	W	E
51	206	80	299
17	69	27	100

2.1.1.3. Safety

Collision history at the intersection was not provided, however, the Insurance Corporation of British Columbia (ICBC) make available on its website (https://www.icbc.com/about-icbc/newsroom/Pages/Statistics.aspx) aggregated collision data. The collision data for the Wallace / Albert / Commercial Streets intersection was reviewed for the five-year period from 2013 to 2017. Over this period a total of 21 collisions were recorded of which six were classified as 'casualty' and 15 as 'property damage only' (PDO). None of the collisions involved pedestrians or cyclists.

2.1.1.4. Public Input

From the public engagement events held in spring 2019 (more information provided in Section 9), this intersection was identified as the highest priority intersection requiring improvements due to the confusing stop procedure and insufficient pedestrian accommodation.

2.1.2. Intersection Improvement Options

Various improvement options were considered at this intersection, including signalization, a 4-way stop control, a roundabout, of the closure of the Commercial Street leg. Since signalization is a more costly option and was likely to result in queuing back to the Terminal Avenue intersection, and a roundabout that is required to accommodate truck movements will have property impacts, only the 4-way stop and closure options were assessed further.

2.1.2.1. 4-Way Stop Option

A 4-way stop controlled intersection includes pedestrian crosswalks on all intersection legs. The concept layout of the intersection is shown in *Figure 5*. Given the skew and offset of the existing intersection layout, the objective of the concept layout is to:

- Achieve a more conventional intersection layout and operation
- Reduce pedestrian crossing distances
- Reduce the overall intersection size to better align opposing travel directions and thereby improve sight lines on all approach legs of the intersection
- Improve transit operations and turning movements
- Quick to install and at low cost (signage, pavement markings)
- Improvement can be staged using only temporary infrastructure, allowing the City to monitor the public's response and if the objectives are achieved
- The temporary layout allows for the planned future inclusion of separated bike lanes on both the Albert Street and Wallace Street corridors

A consequence of achieving the listed improvement objectives is that the design vehicle for the intersection is reduced to a Medium Single-Unit (MSU) Truck for some turn movements, while still allowing for a larger Heavy Single Unit (HSU) Truck for the Albert Street to/from Victoria Crescent turn movement to accommodate a bus movement. To assess the potential impact of this restriction, the Articulated Vehicle traffic count at this intersection was examined. The number of these trucks using the

intersection during the 7-hour count period is shown in *Table 2*. As shown, the number of vehicles impacted by this turn restriction is low, with turn volumes not exceeding one vehicle over the survey period. It is therefore suggested City staff observe the intersection to establish if these vehicles consistently use the intersection or were these counted trucks only random arrivals. If the former, discussions with the operator to reroute those trucks is proposed. Should the City choose to accept this restriction and proceed with implementing this layout, turn restriction signage is required.

Figure 5: 4-Way Stop Intersection Improvement Concept

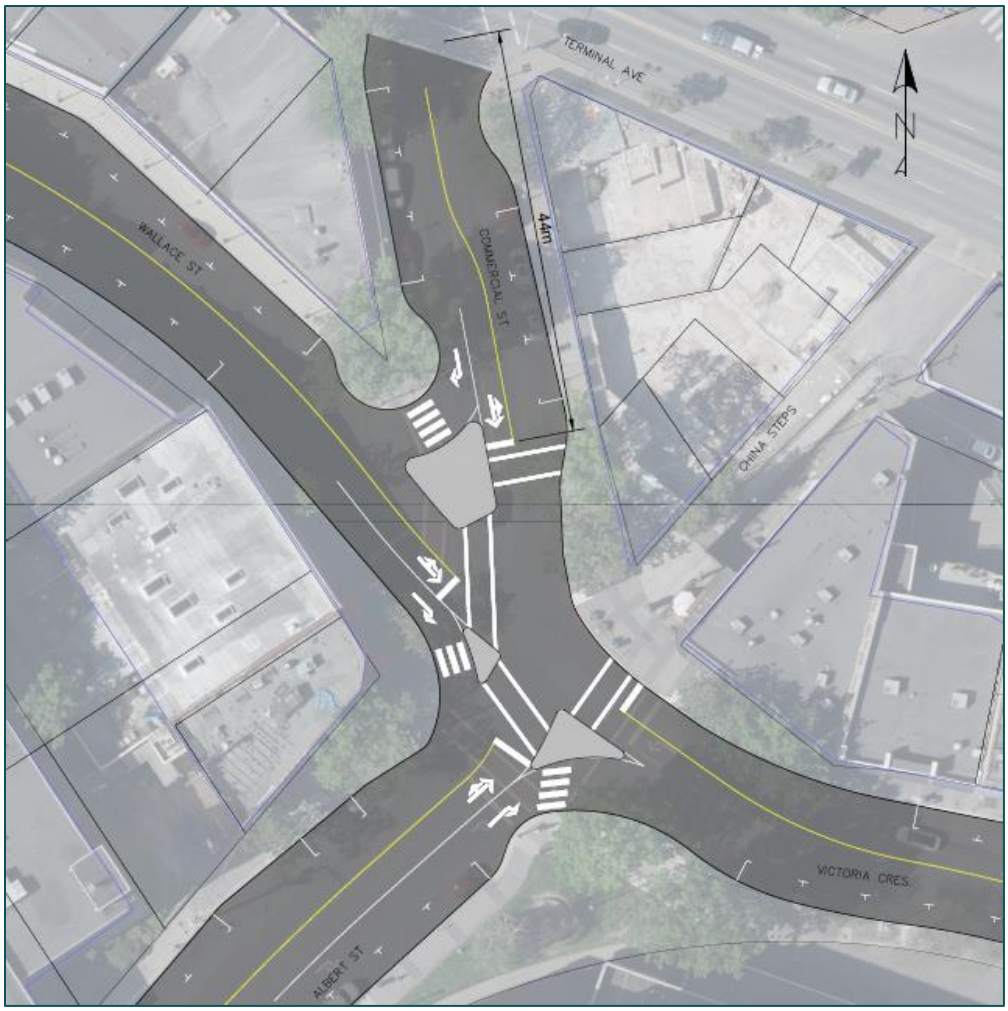


Table 2: Intersection Articulated Vehicles Volumes

Period Hourly Averages — ***Wallace Street @ Albert Street***
Articulated Trucks — ***Thursday, April 4, 2019***

Entire Survey Period — **7 Hours**

	Albert St NORTH Approach				Albert St SOUTH Approach				Wallace St WEST Approach				Wallace St EAST Approach				Total				
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Volume	N	S	W	E
Total	0	0	1	**1**	1	0	0	**1**	0	2	1	**3**	0	0	1	**1**	6	0	0	0	0
Avg Hr	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	0	0

AM Peak Period — **2 Hours**

	Albert St NORTH Approach				Albert St SOUTH Approach				Wallace St WEST Approach				Wallace St EAST Approach				Total				
Totals	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Volume	N	S	W	E
Period	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	1	**1**	1	0	0	0	0
Avg Hr	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	1	**1**	1	0	0	0	0

MD Peak Period — **2 Hours**

	Albert St NORTH Approach				Albert St SOUTH Approach				Wallace St WEST Approach				Wallace St EAST Approach				Total				
Totals	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Volume	N	S	W	E
Total	0	0	1	**1**	1	0	0	**1**	0	1	1	**2**	0	0	0	**0**	4	0	0	0	0
Avg Hr	0	0	1	**1**	1	0	0	**1**	0	1	1	**1**	0	0	0	**0**	2	0	0	0	0

PM Peak Period — **3 Hours**

	Albert St NORTH Approach				Albert St SOUTH Approach				Wallace St WEST Approach				Wallace St EAST Approach				Total				
Totals	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Volume	N	S	W	E
Total	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	0	0	0	**0**	1	0	0	0	0
Avg Hr	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	0	0

Traffic Analysis

Traffic analysis of the 4-way stop control option was completed to understand its operational performance (level of service and delay) for the 2021 horizon year. The operating conditions during the peak hours at the study intersections were evaluated using the Synchro / SimTraffic 10 software package, which is based on the methodology outlined in the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

For unsignalized intersections, the Level of Service (LOS) is based on the computed delays on each of the critical movements. LOS 'A' represents minimal delays for minor street traffic movements, and LOS 'F' represents a scenario with an insufficient number of gaps on the major street for minor street motorists to complete their movements without significant delays.

For signalized intersections, the methodology considers intersection geometry, traffic volumes, signal phasing/timing plans, and pedestrian and cyclist volumes. The average delay for each lane group is calculated, as well as the delay for the overall intersection. The operating conditions can also be expressed in terms of volume-to-capacity (v/c) ratio. A v/c ratio of 0.90 is the threshold beyond which geometric or signal timing improvements should be considered. The signalized and unsignalized LOS criteria as summarized in HCM are shown in *Table 3*.

Table 3: Level of Service Criteria

Level of Service (LOS)	Average Delay for Unsignalized Intersection Movements	Average Delay for Signalized Intersection Movements
A	0 – 10 seconds per vehicle	0 – 10 seconds per vehicle
B	> 10 – 15 seconds per vehicle	> 10 – 20 seconds per vehicle
C	> 15 – 25 seconds per vehicle	> 20 – 35 seconds per vehicle
D	> 25 – 35 seconds per vehicle	> 35 – 55 seconds per vehicle
E	> 35 – 50 seconds per vehicle	> 55 – 80 seconds per vehicle
F	> 50 seconds per vehicle	> 80 seconds per vehicle

A summary of the analysis is shown in *Table 4*, noting that the Wallace Street corridor has been designated as the north/south roadway and Albert/Commercial Streets as the east/west.

Table 4: Wallace / Commercial / Albert Streets Traffic Analysis Summary (2021)

Future 2021 Horizon Conditions on Quick Wins Concept Network											
Intersection / Movement			AM Peak Hour				PM Peak Hour				
			Delay (s)	LOS	v/c Ratio	95% Queue (m)	Delay (s)	LOS	v/c Ratio	95% Queue (m)	
Quick Wins Scenario	EB	Left/Through	9	A	0.14	-	11	B	0.22	-	Synchro Analysis
		Right	6	A	0.04	-	7	A	0.08	-	
Wallace Street / Albert Street / Victoria Crescent / Commercial Street	WB	Left/Through	10	A	0.24	-	12	B	0.36	-	
		Right	6	A	0.01	-	6	A	0.02	-	
	NB	Left/Through/Right	10	A	0.29	-	13	B	0.51	-	
(Four-Way Stop Controlled)	SB	Left/Through	9	A	0.15	-	10	B	0.24	-	
		Right	6	A	0.03	-	6	A	0.04	-	
Intersection Summary			**9**	**A**	-	-	**11**	**B**	-	-	
Quick Wins Scenario	EB	Left/Through	6	A	-	22	9	A	-	27	SimTraffic Analysis
		Right	1	A	-	5	2	A	-	10	
Wallace Street / Albert Street / Victoria Crescent / Commercial Street	WB	Left/Through	6	A	-	24	9	A	-	31	
		Right	2	A	-	3	2	A	-	7	
	NB	Left/Through/Right	6	A	-	26	15	B	-	57	
(Four-Way Stop Controlled)	SB	Left/Through	5	A	-	17	10	A	-	26	
		Right	3	A	-	7	4	A	-	12	
Intersection Summary			**5**	**A**	-	-	**10**	**A**	-	-	

The traffic analysis results based on the concept design and 2021 horizon volumes are summarized as follows, assuming yield control for channelized right turns

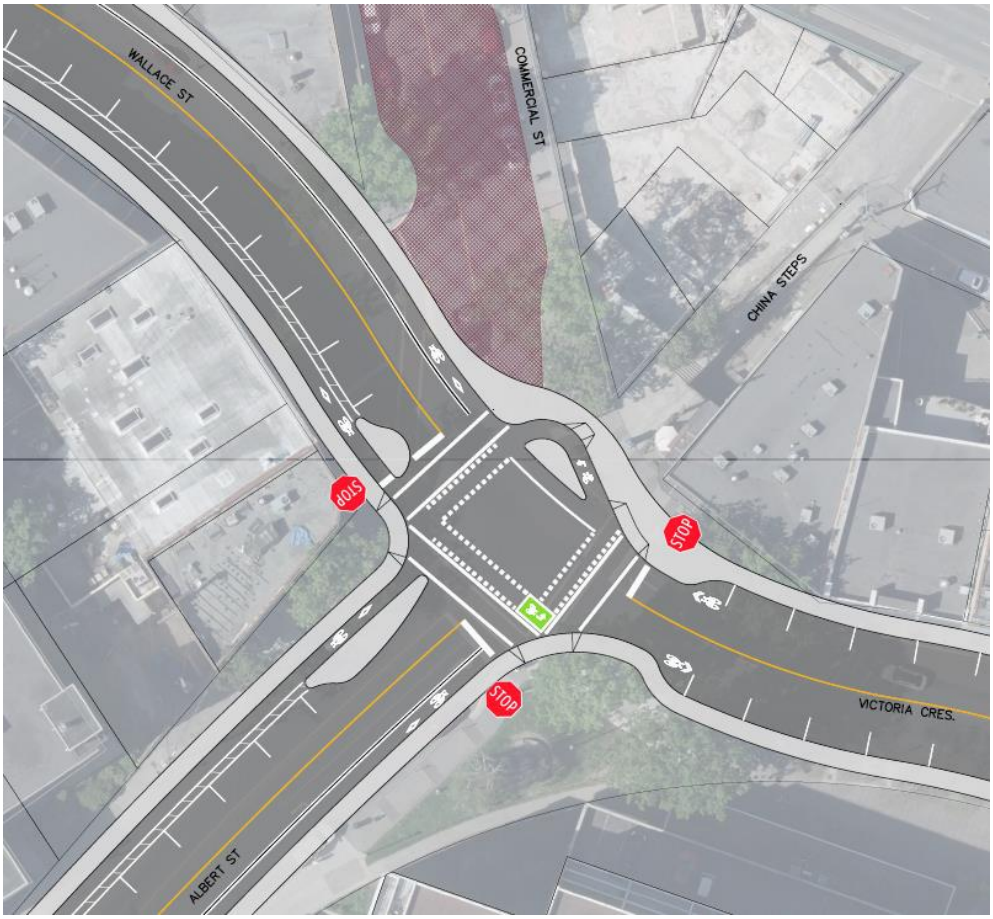
- The peak hour 95th percentile traffic queue can be expected to extend up to 31 m for the westbound approach (Commercial Street). There is approximately 44 m of queueing distance available for this westbound approach from Terminal Avenue, therefore traffic back-up to the intersection is not expected

- Based on both the Synchro and SimTraffic analysis of the intersection, all movements and the overall intersection is expected to operate with LOS B or higher during both peak periods, well within the desired LOS D.

2.1.2.2. Commercial Street Closure Option

The second option for this intersection was the closure of the Commercial Street leg between Terminal Avenue and Wallace Street, thereby creating a 3-leg intersection. The concept layout of the intersection is shown in *Figure 6*.

Figure 6: 3-Way Stop Intersection Improvement Concept



Traffic Analysis

Traffic analysis was done to determine the operational performance of the local road network due to the rerouting of traffic due to this closure (horizon year 2021). In the analysis, the existing turn restrictions remain at the Commercial Street / Terminal Avenue intersection.

The key intersections likely impacted by this closure are listed below, and numbered according to *Figure 7*:

1. Comox Road / Terminal Avenue
2. Commercial Street / Terminal Avenue
3. Esplanade Street / Terminal Avenue
4. Wallace Street / Albert Street / Victoria Crescent / Commercial Street
5. Wallace Street / Bastion Street / Fitzwilliam Street / Fraser Street

While other area intersections may also experience minor changes in traffic volumes for select movements, overall the impacts are expected to be negligible outside of the intersections listed above.

Figure 7: Closure of Commercial Street Leg - Impacted Intersections 1 to 5

The operating conditions during the peak hours at the study intersections were again evaluated using the Synchro / SimTraffic 10 software package.

The results of the capacity analysis are provided in *Table 5* for each movement as well as for each intersection overall during the AM and PM peak hours. For analysis purposes, the Wallace Street and Terminal Avenue corridors were designated as north/south roadways, and the cross-streets as east/west.

Table 5: Network Operating Conditions: 3-Leg Intersection (2021)

	Impacted Intersections	AM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
1	Comox Road / Terminal Avenue	D	C		D	C	A	D	D	A		D	A	C
2	Terminal Avenue / Commercial Street		A			A					B		B	A
3	Esplanade Street / Terminal Avenue	B	B		A	A		D	D	A	D	C		B
4	Wallace Street / Albert Street / Victoria Crescent	A	A			A	A	A		A				A
5	Wallace Street / Bastion Street / Fitzwilliam Street / Fraser Street	C	C		C	B		C	B			C		C

	Impacted Intersections	PM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
1	Comox Road / Terminal Avenue	E	E		E	D	B	F	E	A		D	D	D
2	Terminal Avenue / Commercial Street		A			A					C		C	A
3	Esplanade Street / Terminal Avenue	C	C		B	A		C	B	A	D	B		B
4	Wallace Street / Albert Street / Victoria Crescent	B	B			B	B	A		A				B
5	Wallace Street / Bastion Street / Fitzwilliam Street / Fraser Street	D	C		D	C		D	B			C		C

As seen in the table, the analysis results indicate that all individual movements at all study intersections are expected to operate with adequate levels of service during both peak hours, with the exception of the intersection of Comox Road / Terminal Avenue. At this intersection, a failing level of service is expected for the eastbound left turn movement at the 2021 horizon during the PM peak hour, with overall intersection performance at LOS D. Comparing this to the 2021 horizon operating conditions for the existing road network, the eastbound left turn is also expected to operate at LOS F. In part, this may be attributed to the signal timings and coordination along the corridor. Operations can be improved through removal of coordination and adjustment of the intersection signal timings.

Overall, all intersections are expected to operate well in the near term during both peak periods with the closure of Commercial Street between Wallace Street and Terminal Avenue, and no capacity issues are expected at the study intersections.

2.1.3. Pedestrian Improvements

Options to either close Commercial Street or convert the intersection to an all-way stop control have significant pedestrian benefits:

- An all-way stop control would increase safety and minimize delays for pedestrians, particularly pedestrians wishing to cross the Commercial Street leg of the intersection. It will also improve vehicle operation predictability for all users being an all-way stops (first come, first serve), versus the uncertainty and subsequent impatience caused with the third leg uncontrolled.
- The closure of the fourth leg reduces pedestrian exposure to vehicles and is an opportunity to create a pedestrian plaza on the closed section of Commercial Street.
- Curb extensions and other changes to the intersection geometry would improve the visibility of pedestrians at the intersection and reduce pedestrian crossing distances.

2.1.4. Recommendation

Based on the traffic analysis and the benefits associated with the proposed road closure, including improved safety and operational issues for pedestrians, cyclists, and vehicles, and the alleviation of the existing geometric challenges, it is recommended that the City proceed with the temporary closure of Commercial Street between Wallace Street and Terminal Avenue. During the closure period, public feedback should be gathered on the resultant safety and operational improvements at the intersection, and network traffic operational performance should be monitored. This will advise if there are any unintended consequences arising from this closure. Following the monitoring period, the City should consider the permanent closure of this section of Commercial Street, or re-evaluate the all-way stop option.

Prior to advancing with any changes, the City should engage with MoTI to obtain their support for this approach.

2.2. COMMERCIAL STREET / BASTION STREET INTERSECTION

The second of the four priority intersection to improve pedestrian and operational safety is the Commercial Street / Bastion Street intersection. Another key driver for this intersection improvement is that the existing traffic signal infrastructure is nearing the end of its expected life and therefore the City will need to replace the existing signal or make a change to the intersection operation and controls.

2.2.1. Site Characteristics

2.2.1.1. Context

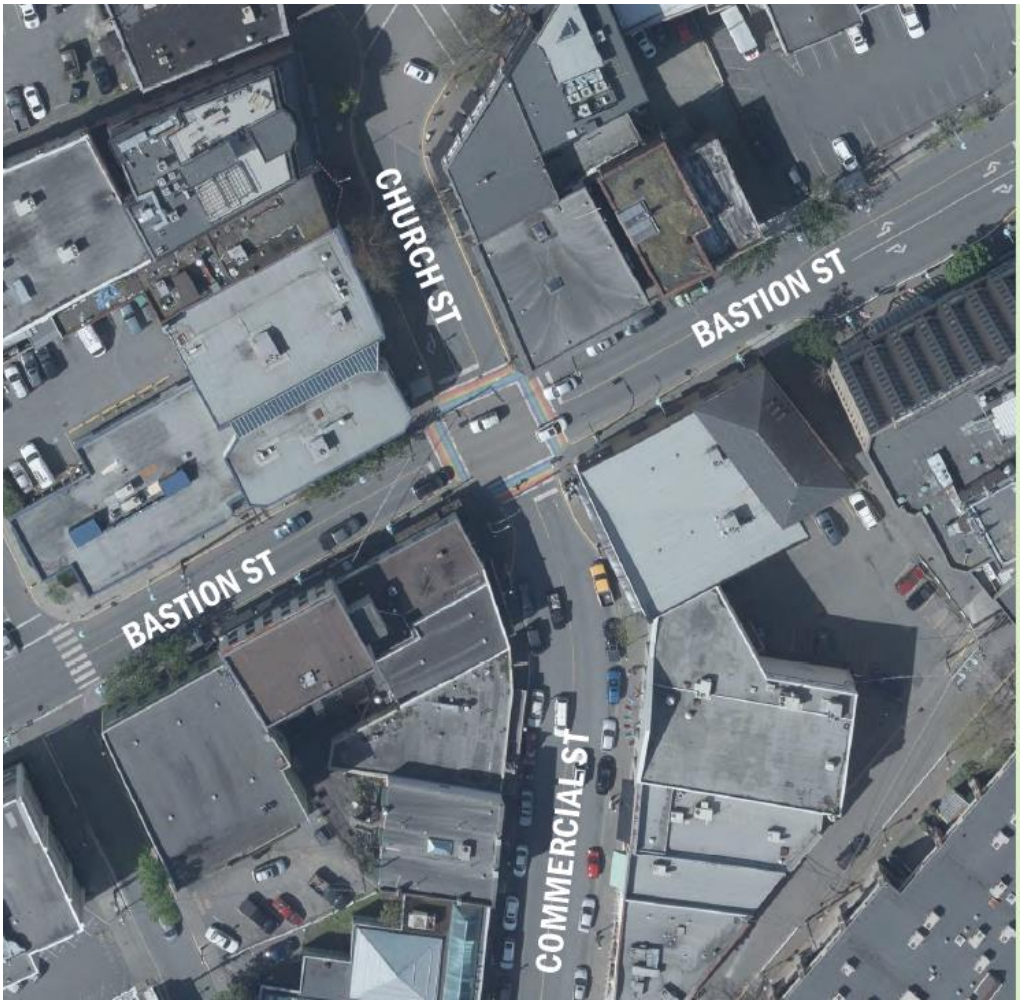
The intersection location is shown in *Figure 8*. Both Commercial Street and Bastion Street are classified as Major Collector streets in Nanaimo's TMP, and are 'Signed Routes' in the long-term cycling network, however currently have no dedicated cycling infrastructure. The properties surrounding the intersection are a mixture of retail, commercial and service land uses and is fully developed. The intensity of development is a medium density with historical and culturally significant buildings in the area. This area of downtown Nanaimo is frequented by tourists and travelers, with hotels in the area and the waterfront approximately 150 meters east of the intersection.

2.2.1.2. Infrastructure

Bastion Street is a two-lane roadway with no turn bays or channelization at the intersection. There is parking on the north side of Bastion Street, east of the intersection. Commercial Street is also two-lanes, with a right turn lane on the southbound approach to the intersection. There are no other turn lanes or channelization provided.

There are sidewalks with varying widths on all approaches, and crosswalks on all four intersection legs.

Figure 8: Commercial Street & Bastion Street Intersection



2.2.1.3. Traffic Volumes

A seven (7) hour traffic count was conducted on April 12, 2018 and recorded movement volumes, vehicle classification, pedestrians and cyclists. The existing (2021) and future forecast (2041) traffic volumes are shown in *Figure 9* and *Figure 10.*

The Bastion Street / Commercial Street intersection is one of the busiest pedestrian areas in Nanaimo. In the seven (7) hour count 1,715 pedestrian movements were recorded and 3,581 vehicle movements. Pedestrian movements therefore account for approximately 1/3 of the total intersection activity.

Figure 9: Intersection Turn Movement Volumes (2021)

Figure 10: Intersection Turn Movement Volumes (2041)

2.2.1.4. Safety

Collision history at the intersection was not provided, however, ICBC make available on its website aggregated collision data. The collision data for this intersection was reviewed for the five-year period from 2013 to 2017. Over this period a total of 10 collisions were recorded of which three were classified as ‘casualty’ and seven as ‘property damage only’ (PDO). None of the collisions involved pedestrians or cyclists.

2.2.1.5. Public Input

From the public engagement events held in spring 2019, public input suggests that changes to this intersection are a lower priority and that the existing configuration and operation works relatively well. If changes are considered, input suggests that there is interest in improvements which prioritize pedestrians.

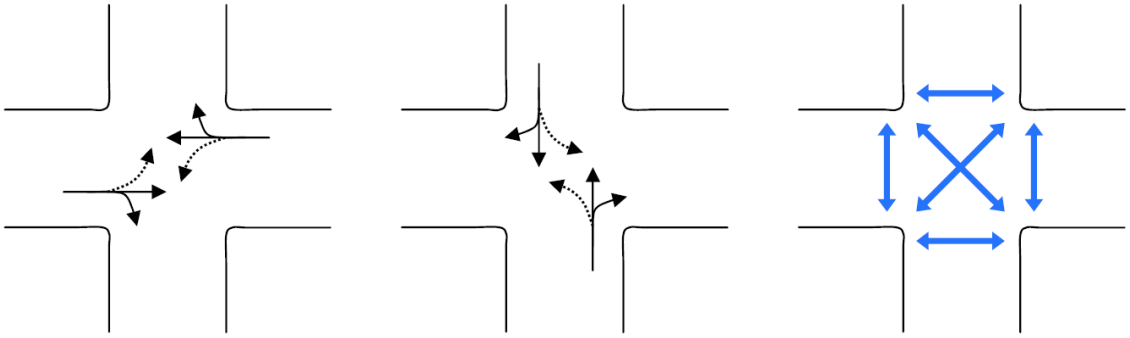
2.2.2. Intersection Improvement Options

Due to the existing traffic signal nearing the end of its expected life there is an opportunity for the City to make infrastructure or operational changes to the intersection to benefit downtown multimodal mobility. The following options were considered:

1. 4-Way Stop Control with crosswalks on all intersection legs
2. 2-Way Stop with stop signs on Commercial Street and free flow on Bastion Street - this arrangement is proposed as Bastion Street is a continuous corridor providing access from Front Street to Fitzwilliam Street over the Bastion Street bridge crossing Highway 1
3. Signalized with a pedestrian scramble phase
4. Retain the signalized intersection by replacing the existing signal infrastructure

Before analyzing and comparing options, further research was done on Option 3, the pedestrian scramble. Pedestrian scramble crossings (also called “exclusive pedestrian phase”) have been used in a number of Canadian cities to enhance the safety and mobility of pedestrians at signalized intersections. A dedicated phase for pedestrians allows them to cross in any direction, including diagonally, without coming into conflict with turning vehicles which are restricted from turning right for this phase. A scramble phase is generally displayed as a red signal in all directions for vehicles in conjunction with the “Walk” display in all directions for pedestrians. *Figure 11* shows the typical signal phasing for an intersection with a pedestrian scramble phase.

Figure 11: Scramble Crossing Signal Phases



Reviewing relevant design guidelines and literature, there are no published warrants or methodologies for determining where and when pedestrian scrambles can or should be implemented. General guidance is provided on the advantages, disadvantages, preferences, and other considerations of scramble crossings. Below is a summary of the information found through a literature and reference review.

Scramble crossings are a preferred intersection treatment where the following conditions exist:

- There are high pedestrian volumes for most of the day (relative to local context)
- There are high turning vehicle volumes (>35% of total vehicular approach volume)
- High concentration of pedestrian-vehicle collisions (> three left-turn and right-turn collisions where pedestrians had the right-of-way over a three-year period)
- There is a desire by at least 15% of pedestrians to cross diagonally
- Unusual intersection geometry (five or more legs) that preclude normal pedestrian crossing operation
- Larger intersections with more than one lane on approaches and therefore longer pedestrian crossing distances and multiple potential conflicts

Advantages of scramble crossings:

- Improvements to safety by reducing conflict, particularly conflicts from ‘right-turn-on-red’
- Promotion of pedestrian priority
- Where pedestrian volumes are high, relief of pedestrian congestion on more traditional orthogonal crossings
- Reduction of walking distances and times for diagonal crossings versus crossing two legs consecutively
- Scramble crossings are beneficial only when both pedestrian and vehicular volumes are relatively high, and the intersection is characterized by significant delay for both modes of travel

Disadvantages of scramble crossings:

- In congestion free intersections a scramble crossing generally increases the intersection delay
- Where pedestrian delay is increased, pedestrian illegal crossings will increase, especially for intersections both with short crossing distances and lower traffic volumes

Other considerations:

- Accessibility and accessible pedestrian signals (APS) operation
- A public education program on how to use the intersection might be needed for both drivers and pedestrians
- Tourists or those unaccustomed to the intersection will rely on additional signage and pavement markings to guide them
- Signal infrastructure will need to be able to accommodate a scramble phase
- Timing and phase length of the scramble influences the perceived operation and delay for all users

2.2.3. Traffic Analysis

Traffic analysis of the four options was completed to understand the operational performance (level of service and delay) of each. The analysis was done for the 2041 horizon year. A summary of the analysis is shown in *Table 6*. It should be noted that the macroscopic analysis methodology employed by Synchro software does not fully account for pedestrian impacts at uncontrolled crossings, in particular their increased exposure to vehicle conflicts when crossing on the uncontrolled legs.

Table 6: Commercial Street / Bastion Street Traffic Analysis Results

Future 2041 Horizon Conditions										
Intersection / Movement			**AM Peak Hour**				**PM Peak Hour**			
			Delay (s)	**LOS**	**v/c Ratio**	**95% Queue (m)**	**Delay (s)**	**LOS**	**v/c Ratio**	**95% Queue (m)**
Option 1: 4-Way Stop	EB	Left/Through/Right	9	A	0.25	-	12	B	0.39	-
	WB	Left/Through/Right	9	A	0.16	-	12	B	0.32	-
	NB	Left/Through/Right	9	A	0.18	-	11	B	0.29	-
	SB	Left/Through	8	A	0.08	-	10	B	0.25	-
		Right	7	A	0.10	-	8	A	0.18	-
	Intersection Summary		**9**	**A**	-	-	**11**	**B**	-	-
Option 2: 2-Way Stop on Commercial Street	EB	Left/Through/Right	0	A	0.01	0	0	A	0.01	0
	WB	Left/Through/Right	1	A	0.01	0	1	A	0.02	0
	NB	Left/Through/Right	22	C	0.37	13	53	F	0.74	41
	SB	Left/Through	12	B	0.12	3	18	C	0.42	17
		Right	12	B	0.12	3	18	C	0.42	17
	Intersection Summary		**8**	**A**	-	-	**16**	**C**	-	-

Option 3: Signalized with Pedestrian Scramble	EB	Left/Through/Right	20	C	0.37	34	22	C	0.52	46
	WB	Left/Through/Right	18	B	0.26	22	22	C	0.44	37
	NB	Left/Through/Right	20	C	0.33	25	21	C	0.45	33
	SB	Left/Through	18	B	0.10	12	20	B	0.30	28
		Right	6	A	0.18	8	6	A	0.26	11
	Intersection Summary		**18**	**B**	**-**	**-**	**19**	**B**	**-**	**-**
Option 4: Status Quo (Signalized with Two-Phase Operation)	EB	Left/Through/Right		B				B		
	WB	Left/Through/Right		A				B		
	NB	Left/Through/Right		B				B		
	SB	Left/Through		A				B		
		Right		A				A		
	Intersection Summary			**A**				**B**		

The analysis results are summarized as follows:

- Option 1, Option 3 and Option 4 are expected to operate well with no operational issues noted during either peak hour at the 2041 horizon
- For Option 3, with the introduction of the scramble phase, it is expected that pedestrians will experience maximum peak hour delays of 48 seconds
- For Option 2, the shared northbound through / left / right movement on Commercial Street is expected to experience LOS F in the PM peak hour, however the delays for the northbound approach are not extensive (53 seconds) and the overall intersection is still expected to operate acceptably with LOS C

2.2.4. Summary of Findings

The findings when comparing the intersection improvement options are summarized in *Table 7*.

Table 7: Comparison of Intersection Improvement Options

	Strengths	Weaknesses
Option 1 4-Way Stop	• *Pedestrians have right of way* • *High level of service (A/B) for traffic* • *Low cost of implementation and operation* • *Easy of implementation as a temporary measure*	• *Potential for excessive vehicle delay when large numbers of pedestrians are present and cross with random arrival times versus platoons* • *Inconvenient for cyclists*

Option 2 2-Way Stop	• *Less delay for vehicles on Bastion Street* • *Northbound leg has an F level of service* • *Low cost implementation and operation* • *Pedestrians have right of way and therefore no delay when crossing Commercial Street*	• *Requires vehicles to yield to pedestrians crossing Bastion Street* • *Higher vehicle speeds entering the intersection* • *Potential for more severe collisions* • *Greater exposure of pedestrians to vehicle conflicts when crossing Bastion Street*
Option 3 Signalized with Pedestrian Scramble	• *No conflicting vehicle / pedestrian movements enhances safety* • *Shorter crossing distance for pedestrians crossing diagonally, although minor due to the overall size of the intersection*	• *Longer delay for pedestrians and vehicles* • *Restrictions on pedestrian movements encourage illegal crossings especially due to the size of the intersection* • *Higher cost of implementation and operation due to additional pedestrian signal heads and possible controller upgrade* • *Unusual operation for locals and tourists*
Option 4 Status Quo (Signalized with Two-Phase Operation)	• *Simple operation* • *High level of service for vehicles and pedestrians*	• *Higher cost of implementation and operation due to age of existing signals* • *Does not demonstrate a change*

2.2.5. Pedestrian Improvements

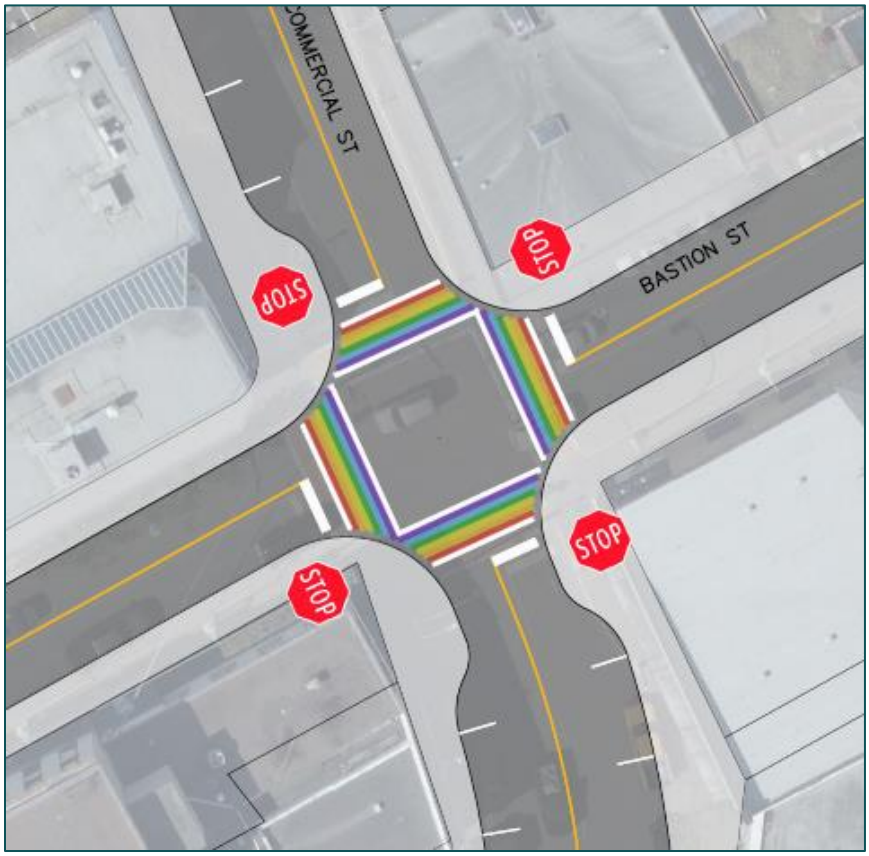
Of the options presented, each have pedestrian advantages and disadvantaged as described in *Table 7*. In addition, curb extensions are proposed on some/all corners which would benefit pedestrians by increasing the sidewalk width and waiting area on the corners, and reducing crossing distances. Opportunities to widen the sidewalks on Bastion Street in particular, and the removal of sidewalk clutter will further improve the pedestrian realm.

2.2.6. Recommendation

Based on the intersection context, volumes, operations and analysis, Option 1, the 4-Way Stop control option is recommended to be implemented at the intersection of Commercial Street / Bastion Street as a temporary measure for a trial period. A concept plan is shown in *Figure 12*. During that time, the behaviour and operation of pedestrians and drivers should be monitored and recorded as well as

monitoring public feedback. It is recommended that the trial period be carried out prior to the decommissioning of the existing signal so that in the event operational or safety concerns arise, the signal can be reactivated, and the other options considered further.

Figure 12: Commercial / Bastion Streets Intersection Concept



2.3. FITZSIMMONS / WALLACE / FRASER INTERSECTION

The third of the four priority intersection to improve pedestrian and operational safety is the Fitzsimmons / Wallace / Fraser Streets intersection. The existing intersection has five legs, one of which, Fraser Street, is a one-way with motorists only able to exit the intersection. This configuration makes it challenging for pedestrians who are required to cross both Bastion Street and Fraser Street with separate signal phases, lengthening their crossing distance and exposing them to more vehicle conflict potential having to cross two roads. Delays for all modes are longer due to the need for an additional signal phase to accommodate safe movements through the intersection.

2.3.1. Site Characteristics

2.3.1.1. Context

Fitzsimmons, Bastion and Wallace Streets are all Major Collector streets in Nanaimo's TMP. The intersection location and surrounding land use is shown in *Figure 13*. The existing lane configuration, pedestrian crossings and sidewalks are also shown. As seen, there is no marked crosswalk on the

Commercial Street leg of the intersection. Fraser Street is a one-way between Wallace Street and Wentworth Street with a width of approximately 11m. A temporary concrete barrier has been placed at the Wentworth intersection to enforce the one-way.

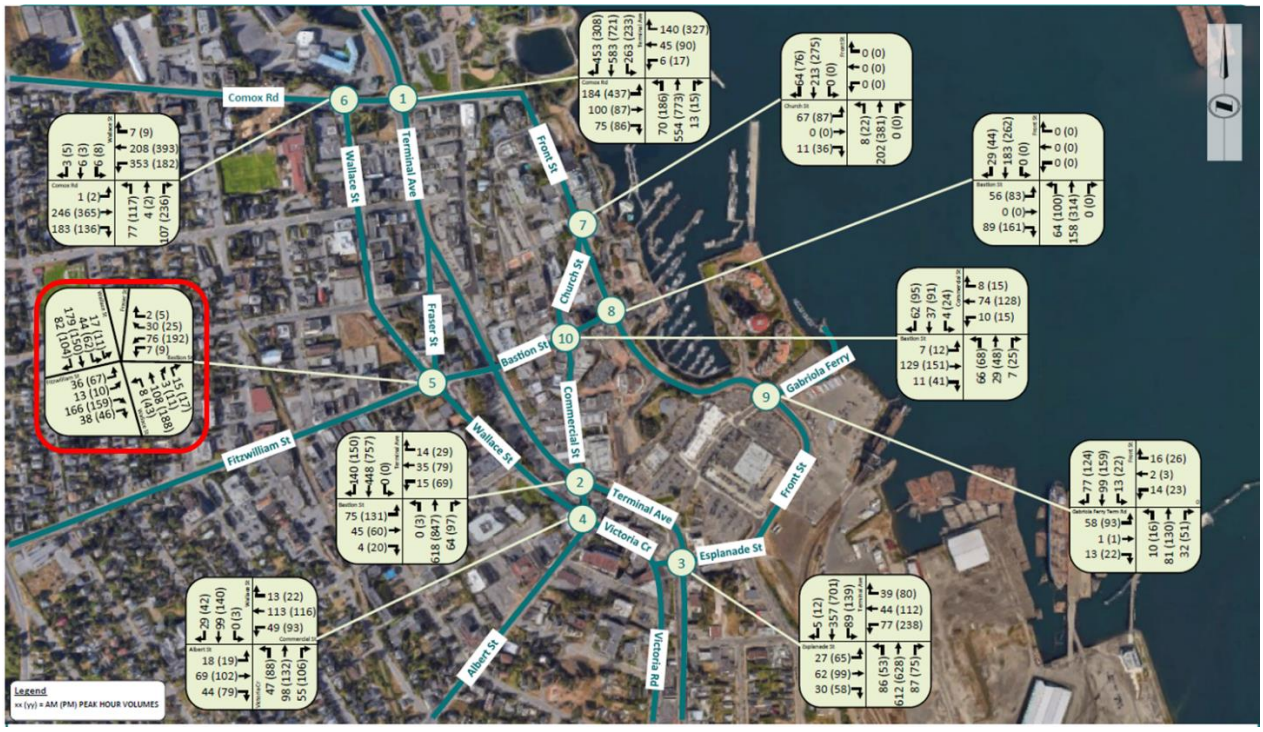
Fitzsimmons, Bastion and Wallace Streets are transit routes, and Wallace Street is identified as a corridor with future bike lanes, concepts for which are included in the scope of the DNMH project. Just east of the intersection on Fitzsimmons Street is the Old City Quarter, a tourist destination that draws pedestrian traffic through the intersection.

Figure 13: Fitzsimmons / Wallace / Fraser Streets Intersection

Traffic Volumes

A seven (7) hour traffic count was conducted on April 4, 2019 and recorded movement volumes, vehicle classification, pedestrians and cyclists. Based on these, the 2021 horizon traffic volumes are shown in *Figure 14* (red highlighted intersection data). In the morning peak hour, a maximum of 17 vehicles turned left into Fraser Street from Wallace Street, so essentially doing a U-turn to access Fraser Street. In the PM peak hour, a maximum of 11 vehicles did the same turn movement.

Figure 14: Intersection Turn Movement Volumes (2021)



2.3.1.2. Safety

Collision history at the intersection was not provided, however, the Insurance Corporation of British Columbia (ICBC) make available on its website (https://www.icbc.com/about-icbc/newsroom/Pages/Statistics.aspx) aggregated collision data. The collision data for the Fitzsimmons / Wallace / Bastion Streets intersection was reviewed for the five-year period from 2015 to 2019. Over this period a total of 25 collisions were recorded of which 15 were classified as 'casualty' and 10 as 'property damage only' (PDO). Of these, one involved a pedestrian and three involved cyclists.

2.3.1.3. Public Input

From the public engagement events held in spring 2019, this intersection was said to be confusing and unfriendly to pedestrians, and that improvements would help better connect the Old City Quarter to Commercial Street.

2.3.2. Intersection Improvement Option

Only one option was considered for this intersection – the closure of the Fraser Street leg. The concept layout is shown in *Figure 15*. The approach includes:

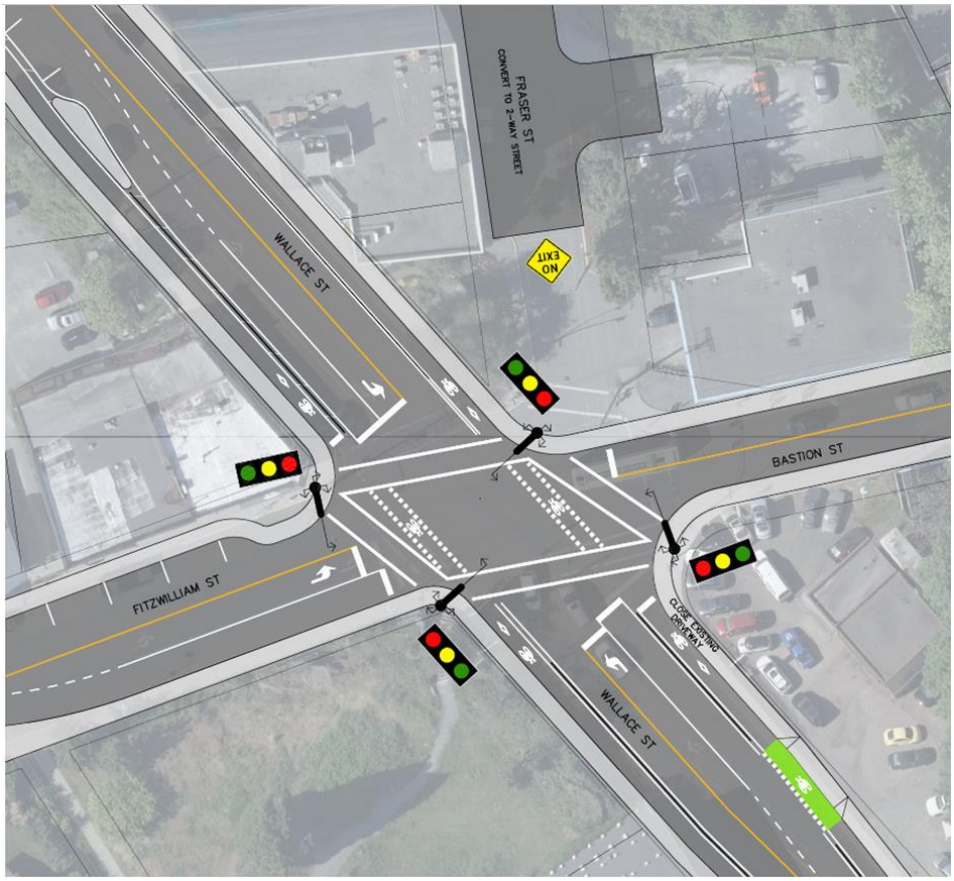
- Improved pedestrian crossings and overall intersection operation
- Converting Fraser St to two-ways with a turnaround at the top of the street and removal of the concrete barrier at Wentworth Street
- Emergency service access would need to be addressed

- Revise the existing traffic signals to only two phases
- Development of a new public open space in the closed portion of Fraser Street

Before implementing this change, further discussions need to be had with the local emergency services.

The closure of this leg will improve overall traffic operations in the area since those vehicles currently turning left from Wallace Street into Fraser Street, essentially making a U-turn, will now divert to Wentworth Street giving them a more direct route to their destination.

Figure 15: Intersection Improvement Concept



Traffic analysis of the existing intersection configuration was completed to understand its operational performance (level of service and delay) for the 2021 horizon year. The operating conditions during the peak hours at the study intersections were evaluated using the Synchro / SimTraffic 10 software package, which is based on the methodology outlined in the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

A summary of the analysis is shown in *Table 8*, noting that the Wallace Street corridor has been designated as the north/south roadway and Fitzsimmons / Bastion Streets as the east/west. In the table, the through (T) movement and right turn movement are combined as they share a lane.

Table 8: Fitzsimmons / Wallace / Fraser Streets Traffic Analysis Summary (2021)

Future 2021 Horizon Conditions on Existing Network														
Intersection ID	Intersection	AM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
5	Wallace Street / Bastion Street / Fitzwilliam Street / Fraser Street	C	C		C	B		C	B			C		B
Intersection ID	Intersection	PM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
5	Wallace Street / Bastion Street / Fitzwilliam Street / Fraser Street	D	C		D	C		D	B			C		C

Based on both the Synchro and SimTraffic analysis of the intersection, all movements and the overall intersection is expected to operate with LOS D or higher during both peak periods, within the desired LOS D. With the removal of the fifth leg of the intersection and having only two versus the current three signal phases, overall intersection performance is expected to improve.

2.3.3. Pedestrian Improvements

The proposed closure of the Fraser Street leg of the intersection would reduce delays and crossing distances for pedestrians on the northeast corner, as well as reduce the potential for pedestrian conflicts with motorists turning into Fraser Street. It also improves the pedestrian connectivity between the Old City Quarter and the downtown core.

2.4. FRONT STREET / CHURCH STREET INTERSECTION

The fourth of the four priority intersection to improve pedestrian and operational safety is the Front / Church Streets intersection. The existing T-intersection is spatially very large with a free-flow right turn slip lane that reduces pedestrian safety and severs the adjacent Dallas Square Park.

2.4.1. Site Characteristics

2.4.1.1. Context

The intersection location and surrounding land use is shown in *Figure 16*. The existing lane configuration, pedestrian crossings and sidewalks are also shown. As seen, there is no marked crosswalk on the slip lane and no curb let downs. The slip lane section is paved, similar to the adjacent Dalla Square Plaza, giving the incorrect perception of the slip lane being a pedestrian space. Traffic volumes at this intersection are low, therefore a slip lane is not warranted.

A future cycling corridor is planned on Front Street which proposal would compliment improvements at this intersection. With the waterfront area located on the east side of Front Street, the Church Street intersection provides a direct network connection.

Figure 16: Front Street and Church Street Intersection

Traffic Volumes

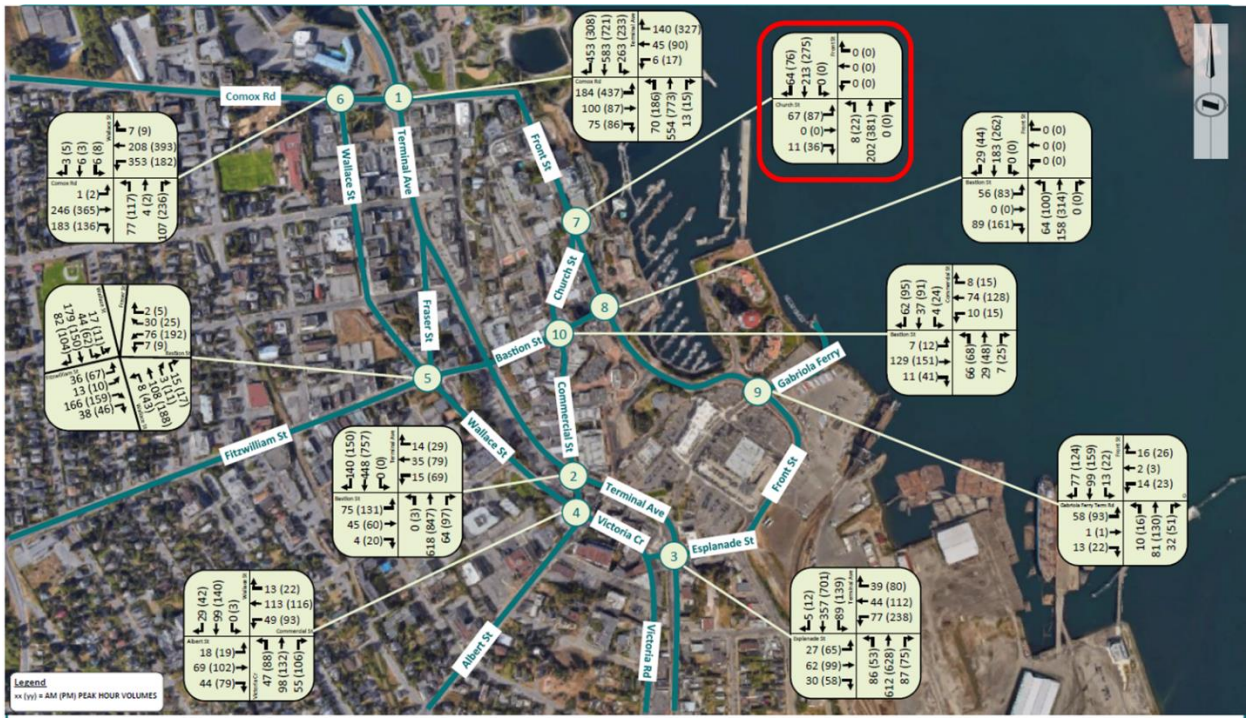
A seven (7) hour traffic count was conducted on April 4, 2019 and recorded movement volumes, vehicle classification, pedestrians and cyclists. Based on these, the 2021 horizon traffic volumes are shown in *Figure 17* (red highlighted intersection data). Between 65 and 75 vehicles use the slip lane in the morning and afternoon peak hours.

When considering improvements at this intersection, it is preferred to look at the two adjacent intersections since the three likely influence each other. The other two intersections are the Front Street / Bastion Street intersection (intersection #8), and the Church Street / Bastion Street intersection (intersection #10). Examining all their respective right-turn movements and considering the local land use suggests that the slip lane is encouraging motorists to rather turn right here than at Bastion Street on Front Street. This is evidenced by the high number of right turn movements at the Church / Bastion intersection (62 vehicles in the morning peak and 95 in the afternoon peak), which volumes are more than double those at the Front / Bastion intersection.

By closing the Church Street slip lane there will likely be a better balance of vehicles movements, where motorists choose to turn right at Bastion Street and proceed through the Church Street intersection to continue on Bastion. A reduction in traffic on Church Street is preferred due to its pedestrian orientation,

and the conversion of the Bastion / Church intersection from a signal to an all-way stop control will further encourage this rerouting versus the previous right-turn-on-red allowance from Church Street into Bastion Street.

Figure 17: Intersection Turn Movement Volumes (2021)



2.4.1.2. Safety

Collision history at the intersection was not provided, however, the Insurance Corporation of British Columbia (ICBC) make available on its website (https://www.icbc.com/about-icbc/newsroom/Pages/Statistics.aspx) aggregated collision data. The collision data for the Church / Front Streets intersection was reviewed for the five-year period from 2015 to 2019. Over this period a total of 9 collisions were recorded of which two were classified as 'casualty' and seven as 'property damage only' (PDO). None of the collisions involved pedestrians or cyclists.

2.4.1.3. Public Input

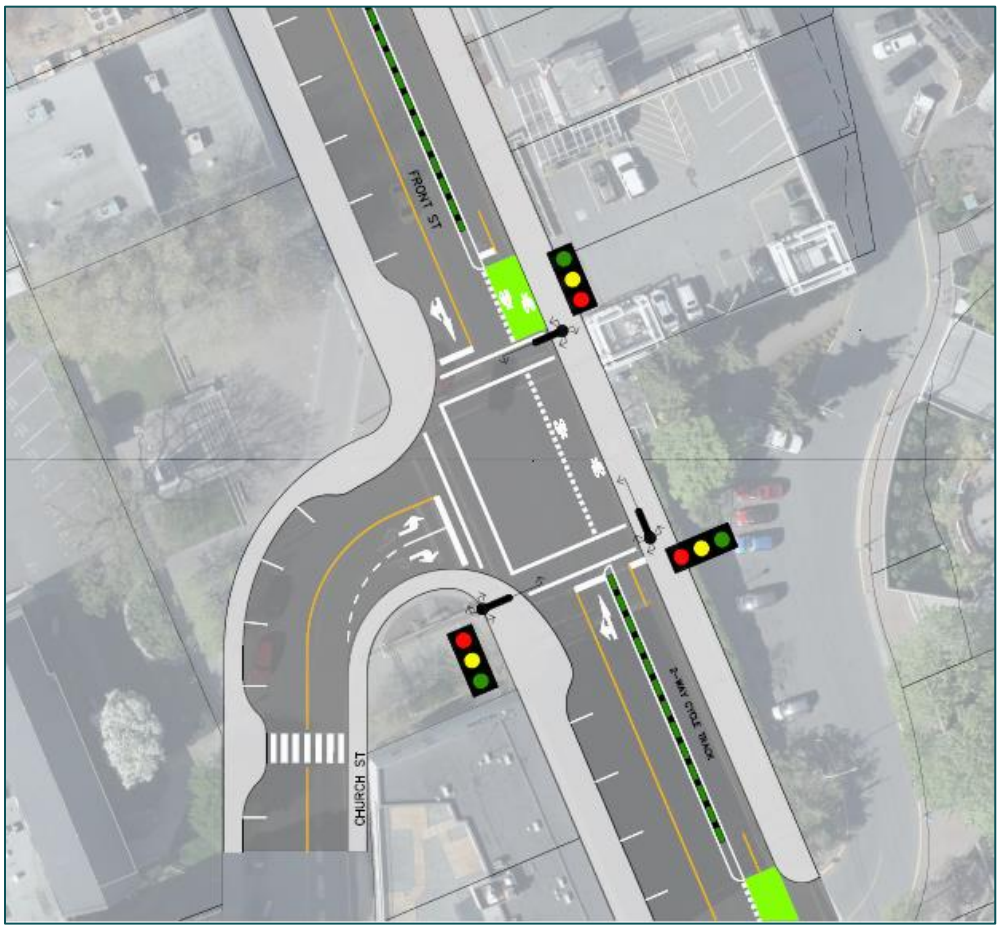
From the public engagement events held in spring 2019, improving this intersection to increase the size of Dallas Square Park was seen as beneficial, and adding other amenities like seating or small play elements was proposed. Improved safety for pedestrians and cyclists was supported, however there were concerns expressed about traffic backups if the slip lane were removed.

2.4.2. Intersection Improvement Options

Only one option was considered for this intersection – the closure of the slip lane. The concept layout is shown in *Figure 18*. Other features associated with this closure include:

- Expansion of Dallas Square Park into the recovered open space, creating opportunities for an enhanced plaza
- Enhance the intersection to include curb extensions at Front and Church Streets to minimize pedestrian crossings distances

Figure 18: Front and Church Streets Intersection Improvement Concept



Traffic Analysis

Traffic analysis of the existing intersection configuration was completed to understand its operational performance (level of service and delay) for the 2021 horizon year. The operating conditions during the peak hours at the study intersections were evaluated using the Synchro / SimTraffic 10 software package, which is based on the methodology outlined in the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

A summary of the analysis is shown in *Table 9*, noting that the Front Street corridor has been designated as the north/south roadway and Bastion and Church Streets as the east/west.

Table 9: Traffic Analysis Summary for Three Adjacent Intersections (2021)

Future 2021 Horizon Conditions on Existing Network													
Intersection ID	Intersection	AM Peak Hour Level of Service											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
7	Front Street / Church Street		A			A		C		B				A
8	Front Street / Bastion Street	A	A			A		C		A				A
10	Commercial Street / Bastion Street		A			A	A		B			B		A
Intersection ID	Intersection	PM Peak Hour Level of Service											
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
7	Front Street / Church Street		A			A		C		A				A
8	Front Street / Bastion Street	A	A			A		C		A				A
10	Commercial Street / Bastion Street		B			B	A		B			B		A

Based on both the Synchro and SimTraffic analysis of the relevant intersections, all movements and the overall intersections are expected to operate with LOS C or higher during both peak periods. Overall intersection performance is LOS A, well within the desired LOS D. With the removal of the slip lane, there is sufficient capacity to accommodate any traffic rerouting that might occur.

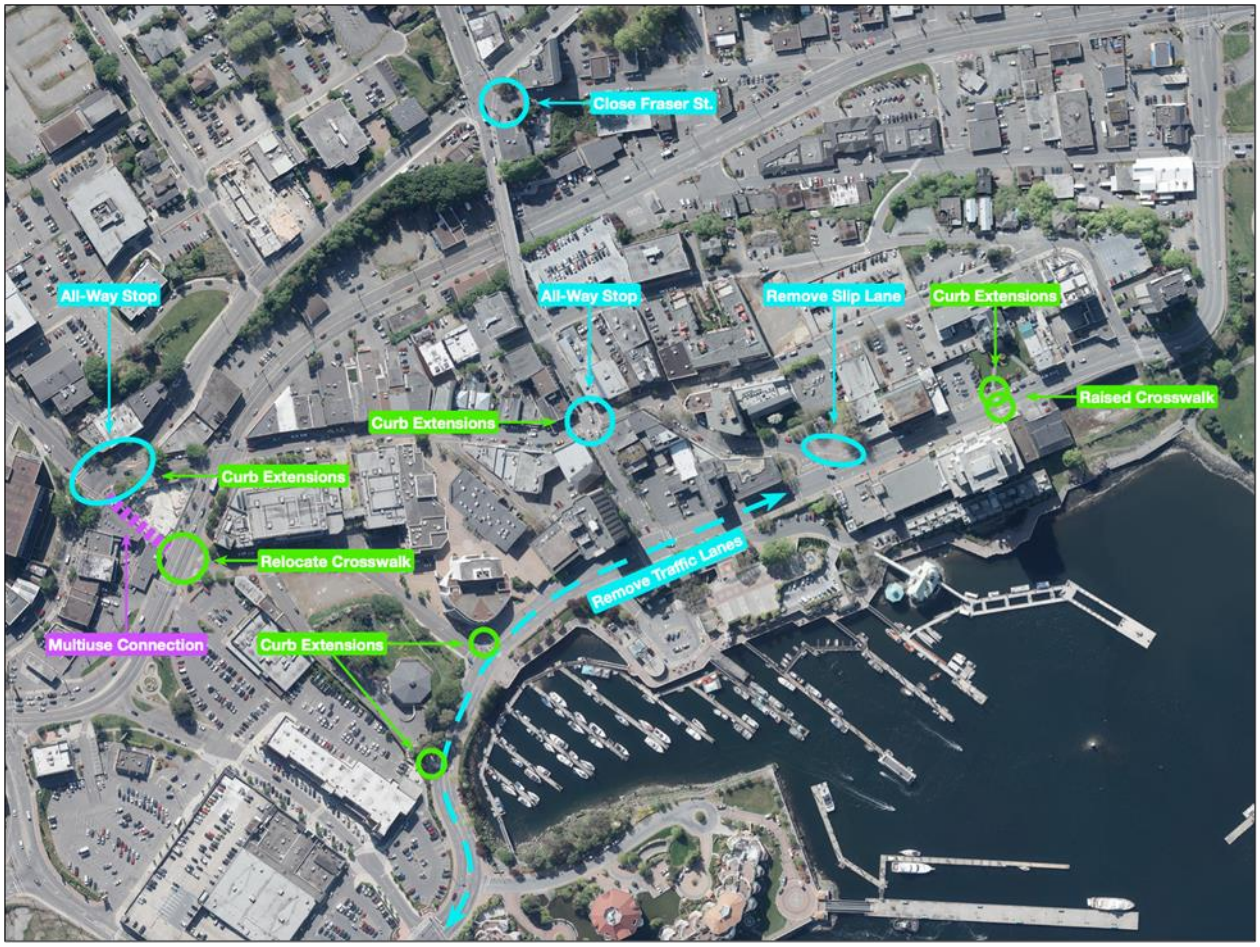
2.4.3. Pedestrian Improvements

The proposed removal of the right turn slip lane from southbound Front Street to Church Street would eliminate the risk to pedestrians crossing this slip lane on Church Street where there is currently no marked crossing. The opportunity to improve the overall public realm in this location will also benefit pedestrians, with an opportunity for additional benches and other amenities.

3. Pedestrian Network

Several pedestrian facility improvements are described in *Section 2* and later in *Section 4.4.1.1* (Cycling). These are shown collectively in *Figure 19*.

Figure 19: Pedestrian Facility Improvements Achieved with Intersection and Cycling Facility Improvements



In addition to these, locations identified where further pedestrian facility improvements should be considered are shown in *Figure 20*. The majority of there were identified during the Phase 1 engagement events detailed in *Section 7* (Engagement).

In general, at the engagement sessions there was strong support expressed for improvements to pedestrian facilities to make them more continuous, safer, and comfortable, and all improvements should accommodate users of all abilities, including tactile surfaces. Improved wayfinding to direct pedestrians and cyclists to key locations of interest in the downtown was also supported.

Figure 20: Identified Locations for Improved Pedestrian Facilities in the Study Area

4. Cycling

4.1. INTRODUCTION

The downtown is an important hub in the City's bicycle network, where several bicycle routes converge and interface with transit, ferries and other transportation services, and where there are numerous commercial, residential, community and recreational destinations. At present, bicycle facilities in the downtown are lacking, and generally consist of only signed routes. The City wishes to enhance and expand the bicycle network to improve safety and connectivity for cyclists and encourage more people to cycle to and within the downtown. In particular, the City wishes to develop protected and separated bicycle facilities that would appeal to cyclists of all ages and abilities (AAA).

This objective is supported by feedback documented in a series of community engagement events undertaken as part of this project. Enhancing cyclist safety was a top priority for respondents, as was improving connections between bicycle routes (existing and future routes). Other priorities are improving signage and wayfinding for cyclists, and increasing the amount of bicycle parking, particularly secure parking.

This report section responds to the City's objectives and the community's desires by presenting a long-term bicycle network incorporating protected and separated facilities. Short-term implementation priorities are presented, with conceptual designs and cross-sections for protected bicycle facilities on several routes. Of these, a short-term opportunity project is also identified for implementation.

The cross-sections and concept designs presented in this section are based on the following design guides:

- *British Columbia Active Transportation Design Guide, Ministry of Transportation and Infrastructure (MoTI), 2019*
- *Geometric Design Guide for Canadian Roads, 6th edition, Transportation Association of Canada (TAC), 2017*
- *Urban Bikeway Design Guide, 2nd edition, National Association of City Transportation Officials (NACTO), 2014*

4.2. DOWNTOWN BICYCLE NETWORK

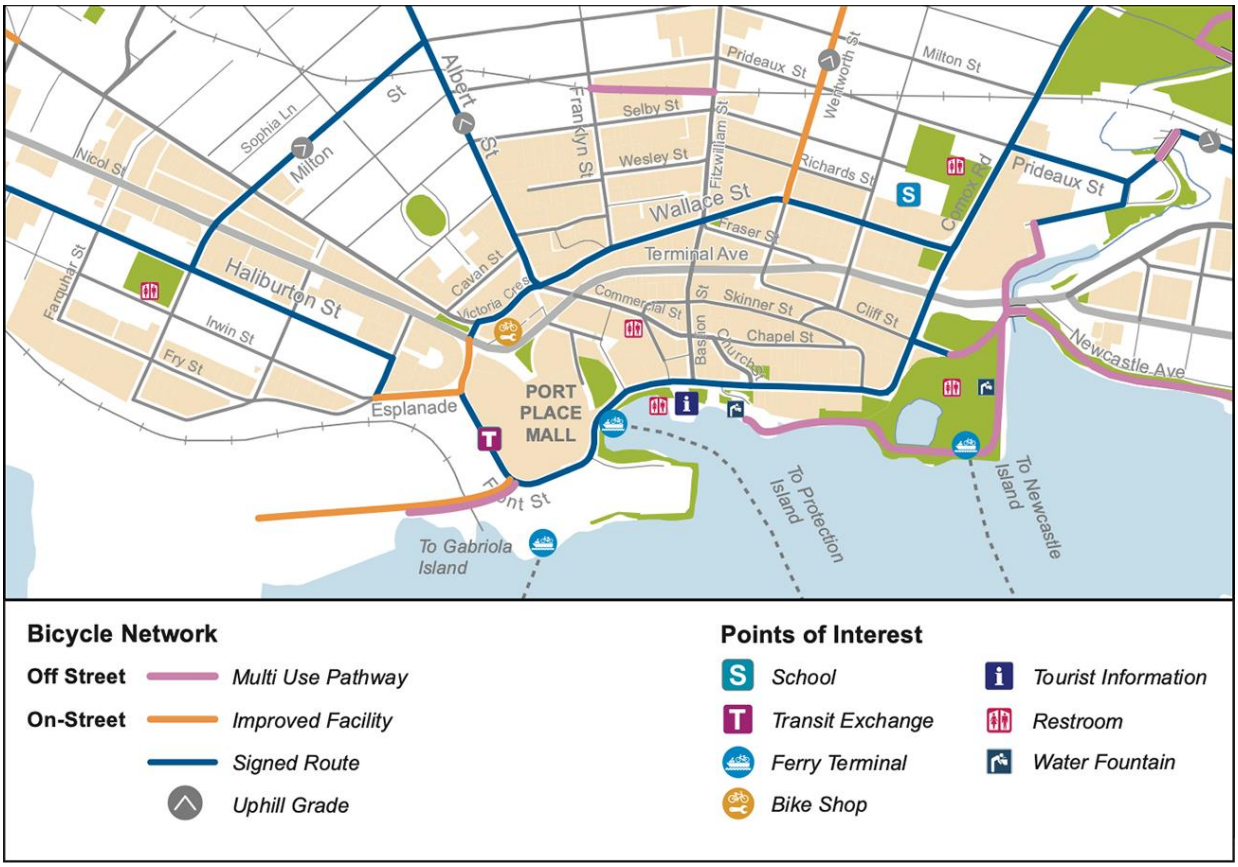
This section proposes an enhanced bicycle network for the downtown incorporating protected and separated facilities. The long-term, ultimate network is described, as well as short-term implementation priorities.

4.2.1. Existing Bicycle Network

The existing downtown bicycle network is illustrated in *Figure 21* (which is extracted from the City's 2018 Bicycle Route Map).

Currently the only protected and separated AAA bicycle facilities in the downtown are the Waterfront Walkway (excluding the section where cyclists dismount and walk their bicycles) and the existing section of the E&N Trail between Fitzwilliam and Franklyn Streets, which have been added to *Figure 21*. The bicycle lanes recently implemented on Esplanade Street and on the Wellcox access road have also been added to *Figure 21*. The "improved facility" on Wentworth Street refers to shared wide travel lanes.

Figure 21: Existing Downtown Bicycle Network



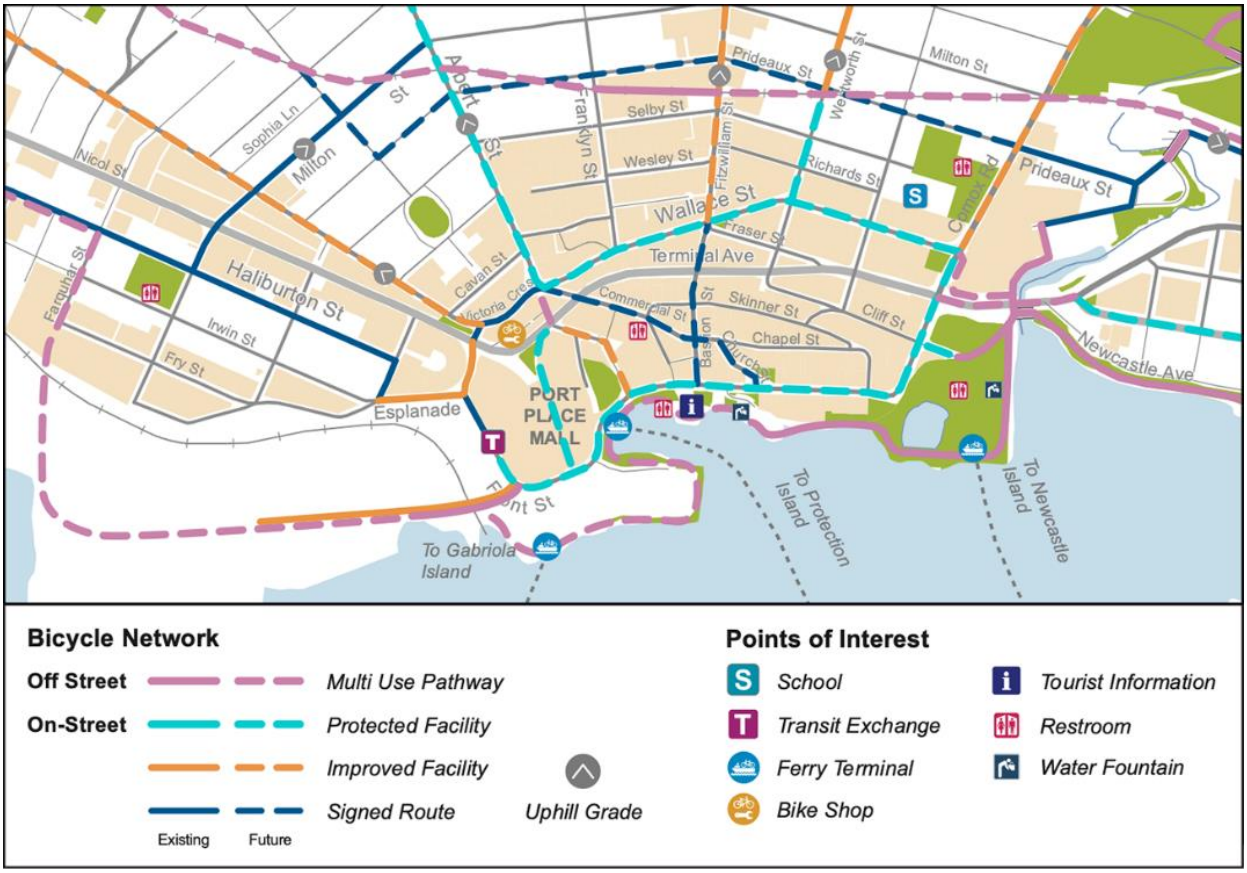
4.2.2. Long-Term Bicycle Network

The proposed long-term bicycle network in the downtown is illustrated in *Figure 22*. The proposed network is based on the bicycle network illustrated in the *2014 Master Transportation Plan*, with the following new and enhanced features:

- High-quality facilities are identified in the long-term network as "protected facilities" rather than as cycle tracks, so as not to exclude other types of protected and separated facilities (such as protected bicycle lanes and pathways)

- Protected facilities are added on Wallace Street and on Wentworth Street connecting to the future E&N Trail
- A “downtown loop” of protected facilities provides safe access for cyclists throughout the downtown. The south end of the loop connects through Port Place and would be implemented in conjunction with redevelopment of this commercial property. A “spur” facility connects to the new transit exchange on the south side of Port Place
- “Improved facilities” include buffered bicycle lanes, conventional bicycle lanes, shared wide travel lanes and low-speed shared space roads
- A new “improved” connection via Gordon Street and Museum Way connects the Albert Street protected facility to the Front Street facility and the waterfront walkway
- A new pathway connection makes use of the China Steps between Albert Street and the existing pedestrian crossing on Terminal Avenue (which would likely be shift north to align with the China Steps and Gordon Street)
- Another new pathway connection has been added north of the Wallace/Comox intersection connecting to the existing pathway along the south side of the Millstone River. This new pathway could likely be constructed within the road and highway rights-of-way (which would likely require some retaining walls)
- Although the potential E&N alignment is shown on *Figure 22* along the railway right-of-way, the actual alignment might be on-street or in lanes in some sections

Figure 22: Long-Term Downtown Bicycle Network



Of the long-term network, a short-term bicycle network is proposed in the downtown. The objectives for the short-term are:

- Implement routes and facilities within 5 years
- Provide continuous “all ages and abilities” bicycle connections to and through the downtown
- Minimize capital costs. This means, for example, that bicycle facilities would be implemented within existing roadways so as to avoid or minimize the need for road widening, and temporary devices would be used to defer construction costs and permit adjustments to geometry before construction of permanent facilities

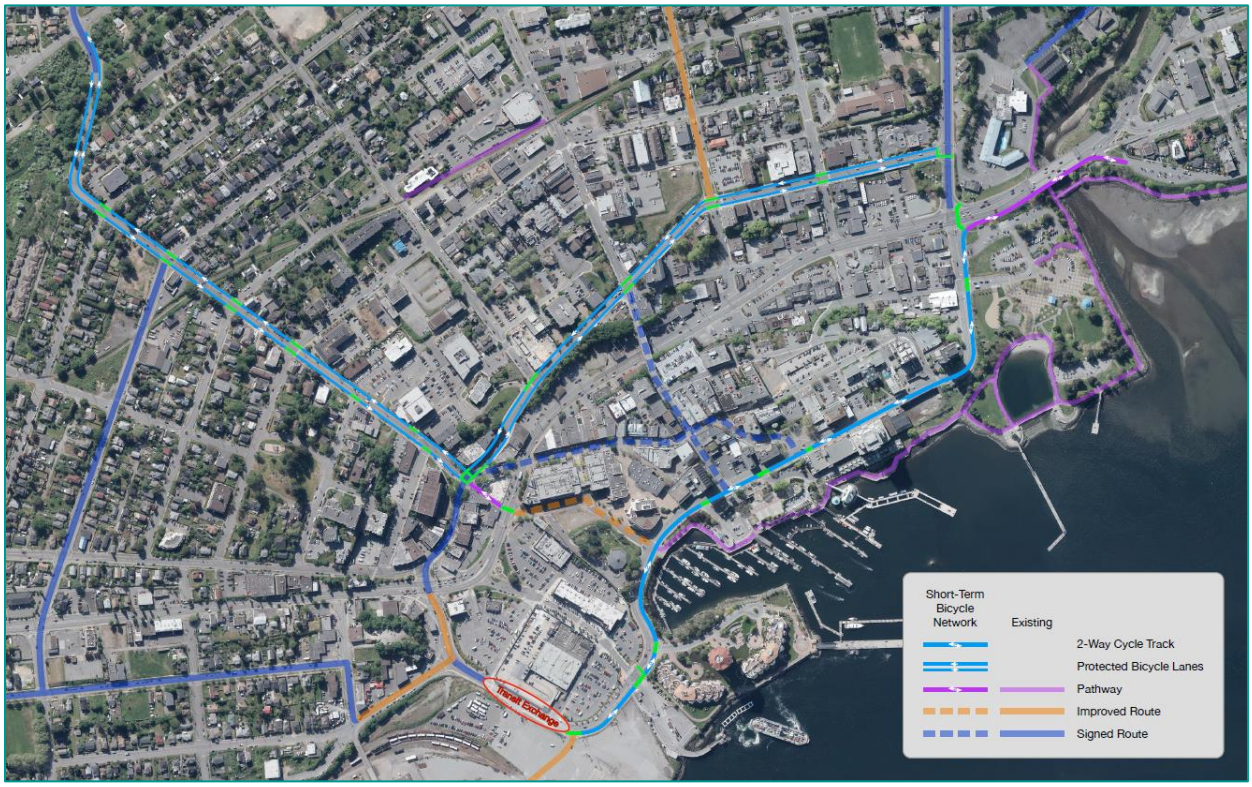
Priority facilities for short-term implementation include the following, and are illustrated in *Figure 23*:

- A protected bicycle facility on Albert Street (extending to the China Steps)
- Upgrading of the China Steps to incorporate a ramp for cyclists and persons with varied abilities
- A protected facility on Front Street from Maffeo Sutton Park to the transit exchange
- Protected and enhanced bicycle and pedestrian facilities on the Pearson Bridge across the Millstone River

- A low-speed shared space facility on Gordon Street and Museum Way to connect the protected facilities on Albert Street and Front Street and the waterfront walkway
- A protected facility on Wallace Street
- New signed bicycle routes on Commercial, Church and Bastion Streets

A protected facility through Port Place is not included in the short-term network as it is located on private property.

Figure 23: Short-Term Downtown Bicycle Network



4.3. PROTECTED BICYCLE FACILITIES

A key feature of the downtown bicycle network is protected bicycle facilities on several routes. Protected bicycle facilities increase cyclist comfort and safety by separating and protecting cyclists from motor vehicle traffic. Protected facilities are attractive to cyclists of all ages and abilities, and consequently are often referred to as “AAA” bicycle facilities.

4.3.1. Types of Facilities

There are three types of protected and separated bicycle facilities:

- Uni-directional protected bicycle lanes on each side of the road (*Figure 24* and *Figure 25*). Cyclists are physically protected or separated from motor vehicle traffic or parked cars by some

type of barrier, which can be as simple as flexible plastic pylons, or as substantial as a raised concrete curb.

- A bi-directional cycle track on one side of the road (*Figure 26* and *Figure 27*). Cycle tracks are similar to protected bicycle lanes, but are designed for two-way bicycle use and are therefore wider than a uni-directional facility.
- A multi-use pathway (*Figure 28*) shared by cyclists, pedestrians and other non- motorized modes of transportation, including persons using wheelchairs and other mobility aids. Pathways are separated from roadways, although they may be located parallel to a roadway.

Figure 24: Uni-Directional Protected Bicycle Lanes, New Westminster

Figure 25: Uni-Directional Protected Bicycle Lanes, Vancouver

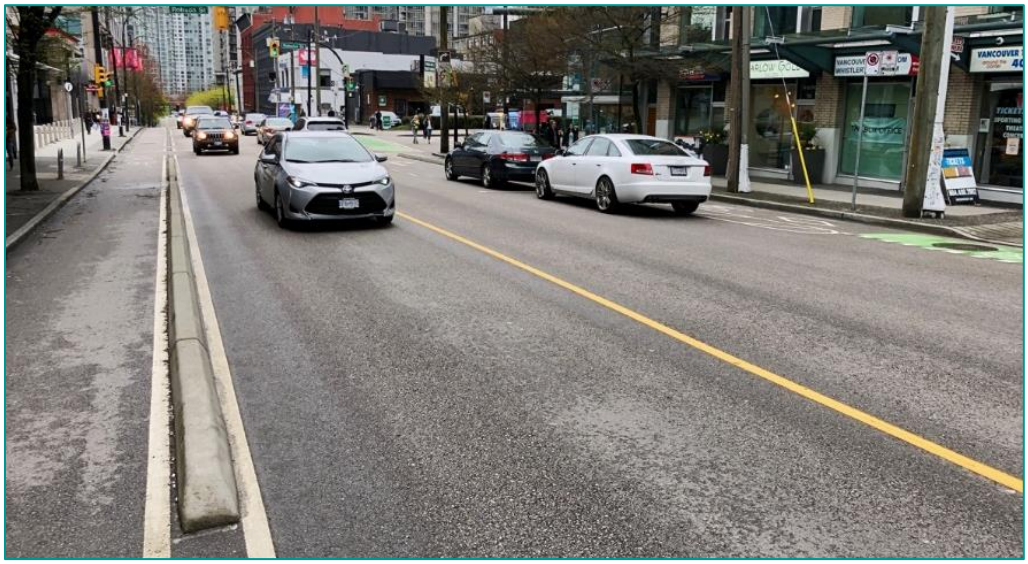


Figure 26: Bi-Directional Cycle Track, Victoria

Figure 27: Bi-Directional Cycle Track, Seattle

Figure 28: Multiuse Pathway, North Vancouver

4.3.2. Facility Selection

Selecting the appropriate type of facility on a particular road is a function of a number of factors, including road classification, number of intersections and driveways, one-way or two-way traffic flow, number of turning vehicles, signalization, grades, pavement width and right-of-way width, adjacent land uses, connections to intersecting bicycle facilities and the available budget.

It is important to recognize that protected facilities may not be appropriate in every situation. The challenge in developing the bicycle network is to determine what conditions each type of protected facility is best suited to, and how can they be implemented on roads in the downtown. Protected bicycle lanes and cycle tracks have their place, and each can be the optimum configuration in the right circumstances. But in most cases they also mean that something has to be removed from the road to make room for the protected bicycle facility, such as removing a lane of traffic, turn lanes or parking, and it is important to consider whether the benefits of the protected facility outweigh the impacts of removing other transportation facilities. In some cases, depending on the frequency of intersections and driveways, a protected facility might not be able to offer much protection on a particular road, and other options such as conventional bicycle lanes or even a different route should be considered instead. Lastly, but no less important is that the cost of protected facilities is considerably higher than the cost of conventional or buffered bicycle lanes, and it is important to consider the relative “return on investment” that each type of facility offers on a specific route in order to determine which is the optimum choice.

In general, the preferred type of on-street facility is uni-directional bicycle lanes. Cyclists are positioned at the sides of the roadway where motorists expect to encounter them, and cyclists travelling in the opposite direction are on the opposite side of the road as expected. On the other hand, bi-directional cycle tracks position cyclists where motorists might not see them or expect to encounter them. Cyclists travelling in

one direction are travelling on the “wrong” side of the road where motorists might not expect to encounter them, and as a result are less likely to see and yield to these cyclists. The experience in some communities suggests that the rate of conflicts and collisions between cyclists and motor vehicles is higher in cycle tracks than with uni-directional bicycle lanes or even no bicycle facilities.

Safety concerns associated with protected bicycle facilities – particularly two-way cycle tracks – can be mitigated with additional design features such as restricting turns or closing some driveways or side streets to reduce potential conflicts, elevating crossings to slow turning vehicles, signalizing intersections and adding bicycle-only phases, and increasing illumination of intersections and approaches.

Although uni-directional bicycle lanes are preferred to cycle tracks, in some cases it may not be possible or desirable to implement uni-directional bicycle lanes, and a bi-directional cycle track can be considered instead. Examples of situations where a cycle track might be preferred include:

- A one-way road. It is preferable to locate a cycle track on the right side of a one-way road, so that right-turning motorists can clearly see cyclists approaching in the opposite direction
- A road with few intersections and driveways on one side. Implementing a cycle track on this side of the road would reduce potential conflicts with turning vehicles as compared with a uni-directional bicycle lane on the other side of the road
- A road where the pavement width is wide enough to implement a cycle track, but not wide enough to implement uni-directional bicycle lanes
- A short segment of on-street bicycle route that connects to a multiuse pathway at one or both ends.

4.4. DOWNTOWN NANAIMO BICYCLE FACILITIES

Given the above considerations, the following types of protected bicycle facilities are proposed on routes identified in the Short-Term Bicycle Network (Figure 23). Where possible, “interim” facilities are proposed that can be constructed within existing roadways to facilitate short-term implementation. Although they may not meet the desired dimensions indicated in the City’s draft Complete Streets Design Guidelines, these “interim” facilities do meet current published design guidelines and are of similar dimensions to facilities in other communities. In the future, redevelopment of properties adjacent to roads with “interim” facilities would provide an opportunity for the road to be reconstructed to the full Complete Streets standard with full-size bicycle facilities.

4.4.1. Front Street

The preferred facility on Front Street is a bi-directional cycle track. There are few driveways on the east (water) side of Front Street and of the three intersections all are T-intersections with Front Street forming the T. As a result, this side of the road would be suitable for a cycle track. In contrast, implementing protected bicycle lanes on Front Street would increase the potential for conflicts with turning vehicles at the numerous intersections and driveways on the west side of the road.

The pavement width on Front Street varies from 13.0 m to 16.5 m. A cycle track can be implemented in this width with one traffic lane in each direction and parking on the west side of the road, as summarized in *Table 10* and described below. Cross-sections for 13.0 m and 14.5 m pavement widths are illustrated in *Figure 29* and *Figure 30*.

- The 3.6 m traffic lane width is based on the City's draft Complete Streets Design Guidelines for a collector road
- Traffic lanes are reduced to 3.4 m in the vicinity of the law courts (35 Front Street) where the pavement width is narrowest (13.0 m)
- A barrier 0.9 m or wider can incorporate planters to enhance the appearance of the cycle track and the downtown street environment
- In the vicinity of the ferry terminal the barrier between the cycle track and the northbound traffic lane would be 2.9 m wide. The barrier zone could alternatively be configured with a 2.4 m parking lane and a 0.9 m buffer, which would provide up to 4.5 m of maneuvering width for cyclists. Or it could be reallocated to a 3.0 m left turn or right turn lane, reducing the barrier to 0.3 m.

A concept sketch of the cycle track from the Gabriola Ferry Terminal to Cliff Street is shown in *Figure 31*, and a concept design of the corridor is provided in *Appendix B*.

Parking is currently permitted on the east side of Front Street between Church and Chapel Streets. Implementing a cycle track on the east side of the road would eliminate the 12 parking spaces in this section. This loss of parking would be offset by up to 25 new parking spaces created on the west side of Front Street south of Church Street. This a highlighted in *Figure 31*.

Table 10: Front Street Cross-Sections and Pavement Widths

Location	Parking/ Loading	Traffic Lane Southbound	Traffic Lane Northbound	Barrier	Cycle Track	Total Pavement Width
Chapel St.	2.4 m	3.6 m	3.6 m	1.4 m	4.0 m	15.0m
Law courts	2.4 m	3.4 m	3.4 m	0.3 m	3.5 m	13.0 m
Church St.	2.4 m	3.6 m	3.6 m	0.9 m	3.5 m	14.0 m
Museum Way	2.4 m	3.6 m	3.6 m	0.9 m	4.0 m	14.5 m
Ferry terminal	2.4 m	3.6 m	3.6 m	2.9 m 2.4+0.9 m[1] 3.0+0.3 m[2]	4.0 m 3.6 m 3.6 m	16.5 m
				[1] 2.4 m parking + 0.9 m buffer [2] 3.0 m left or right turn lane + 0.3 m barrier		

Figure 29: Front Street Cycle Track, Typical Cross-Section For 13.0 M Pavement Width

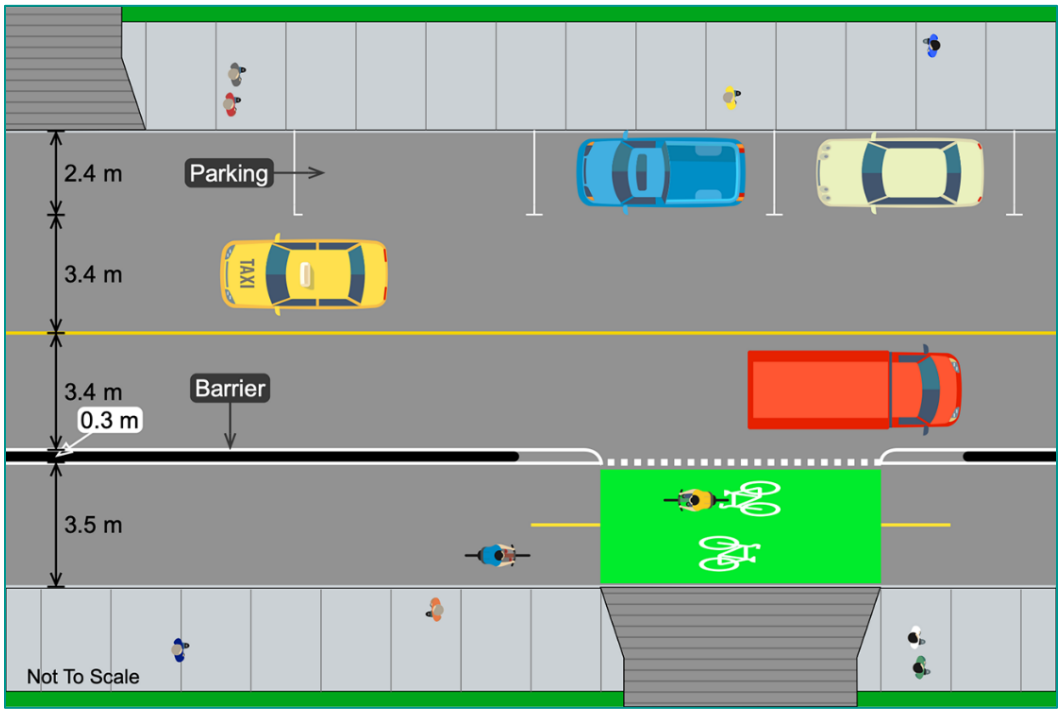


Figure 30: Front Street Cycle Track, Typical Cross-Section For 14.5 M Pavement Width

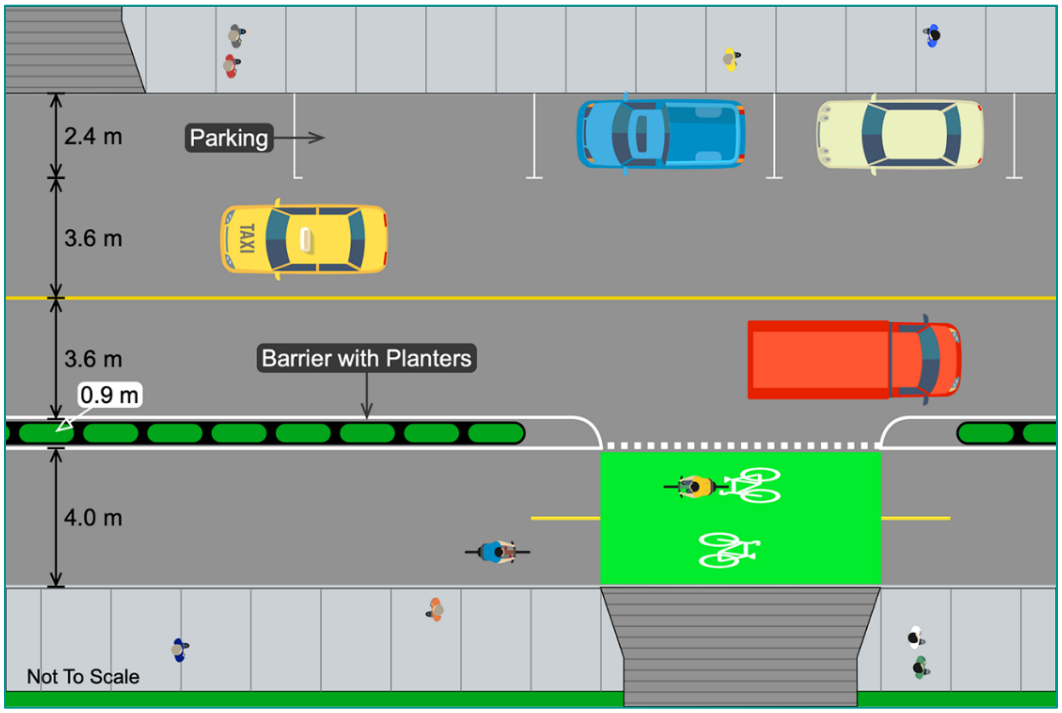
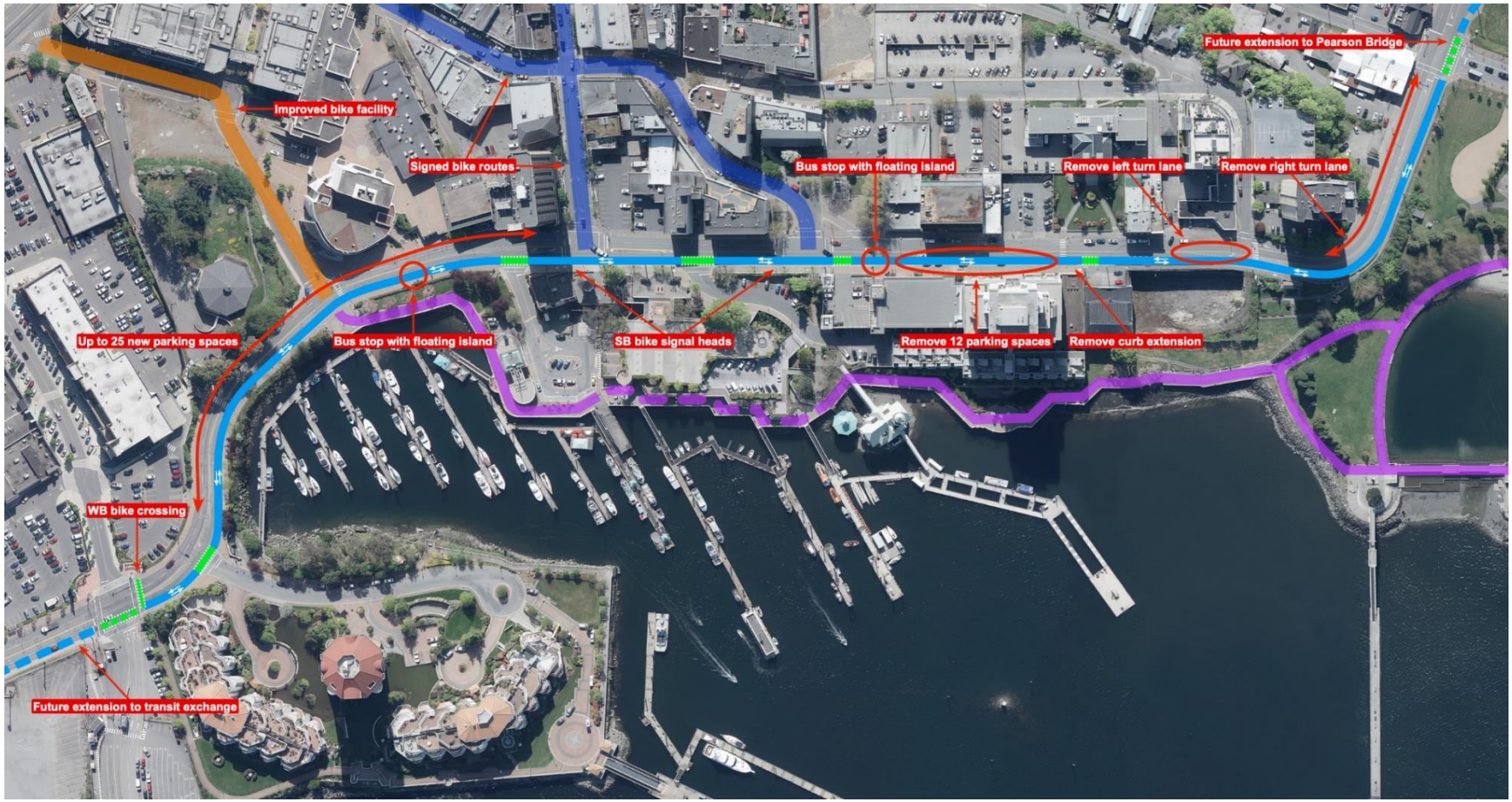


Figure 31: Proposed Front Street Cycle Track – Concept Sketch Only



The impact to traffic operations on Front Street to accommodate the proposed cycle track was analyzed. *Table 11* shows the results at the affected intersections for the 2041 horizon year assuming a two-lane cross-section for the roadway (dropping one through lane in each direction) and with retention of any additional turn lanes currently in place at intersections. As seen in the 'Impacts Summary' in the far right column of the table, there is negligible to no change in the existing versus future operational performance in 2041. This due to the overall low traffic volumes on the corridor.

It is proposed that the City move this option forward as a "quick-win" and determine the local impacts and details in a next design stage, including engagement with those along the cycle track corridor.

Table 11: Front Street Traffic Operational Performance - Including Cycle Track

Future 2041 Horizon Conditions on Modified Front Street Network (Two-Lane Cross-Section)														
Intersection ID	Intersection	AM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
7	Front Street / Church Street		A			A		C		B				A
8	Front Street / Bastion Street	A	A			A		C		A				A
9	Front Street / Gabriola Ferry Terminal Road		B			B			B			A	A	B

Intersection ID	Intersection	PM Peak Hour Level of Service												
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Overall
7	Front Street / Church Street		A			A		C		A				A
8	Front Street / Bastion Street	A	A			A		C		A				B
9	Front Street / Gabriola Ferry Terminal Road		B			C			B			A	A	B

Impacts summary:
No change
No change
No change
No change
Overall intersection from A to B
SBT reduces from B to C

4.4.1.1. Pedestrian Improvements

The proposed reduction to one traffic lane in each direction on Front Street, the two-way cycle track on the east (water) side, and parking on the west side provides opportunities to improve pedestrian facilities. These are listed below and are shown on *Figure 19*.

- The existing crosswalk between Church and Chapel Streets (at 30 Front Street) would be converted to a raised crosswalk with curb extensions on both sides of the road. This would increase pedestrian visibility and safety at the crosswalk, as well as discourage speeding along this section of Front Street.
- Curb extensions would be added on the west side of the road at the crosswalks at Museum Way and between Museum Way and Promenade Drive. These curb extensions would increase pedestrian visibility at the crosswalks and reduce crossing distances.
- Reducing the number of traffic lanes that pedestrians must cross on Front Street reduces pedestrians' exposure to traffic and reduces the "barrier" effect of Front Street to walking.

4.4.2. Albert Street

There are three distinct sections of Albert Street and Fourth Street between downtown Nanaimo and Harewood Road, each necessitating a different treatment.

4.4.2.1. Wallace Street/Victoria Crescent to Machleary Street

Protected bicycle lanes are preferred to minimize potential conflicts at the numerous intersections and driveways along this section of Albert Street. The road is 13.1 m to 13.2 m wide, which is sufficient to

implement “interim” protected bicycle lanes on both sides of the road and retain parking on the one side of the road as illustrated in *Figure 32* and described below:

- Parking is retained on the uphill (westbound) side of Albert Street to provide additional manoeuvring and passing room for uphill cyclists, and to avoid obstructing motorists’ views of downhill cyclists
- The 0.6 m to 0.7 m buffer zone on the uphill (westbound) side minimizes the potential for open vehicle doors to extend into the bicycle lane and hit cyclists. Combined with the 1.5 m width of the bicycle lane this provides a total of 2.1 m to 2.2 m of width for uphill cyclists
- The width of the parking lane should not be reduced from the indicated 2.4 m so as to avoid larger parked vehicles intruding into the buffer zone and open vehicle doors extending into the bicycle lane
- The downhill (eastbound) bicycle lane is 1.7 m wide
- Removing parking from the south side of the road would reduce the parking capacity on Albert Street by approximately 40 vehicles.

Albert Street is a transit route. The preferred bus stop configuration with protected bicycle lanes incorporates a “floating” island between the bicycle lane and traffic lane, as illustrated in *Figure 33* and *Figure 34*. The bicycle lane is raised at the bus stop island to provide a continuous surface for pedestrians to cross, and crosswalks are marked where pedestrians cross to and from the front and back doors of the bus. Green paint can optionally be used to highlight the bicycle lane, and a yellow tactile strip is placed on the sidewalk to alert persons with visual impairments to the presence of the bicycle lane. A minimum 1.0 m width is desirable for the bus stop island, and in constrained conditions the bicycle lane can be reduced to 1.2 m wide as shown in *Figure 33* (the reduced width of the bicycle lane also helps to encourage cyclists to slow through the bus stop zone).

Figure 32: Albert Street (Wallace To Machleary) Protected Bicycle Lanes, Typical Cross-Section

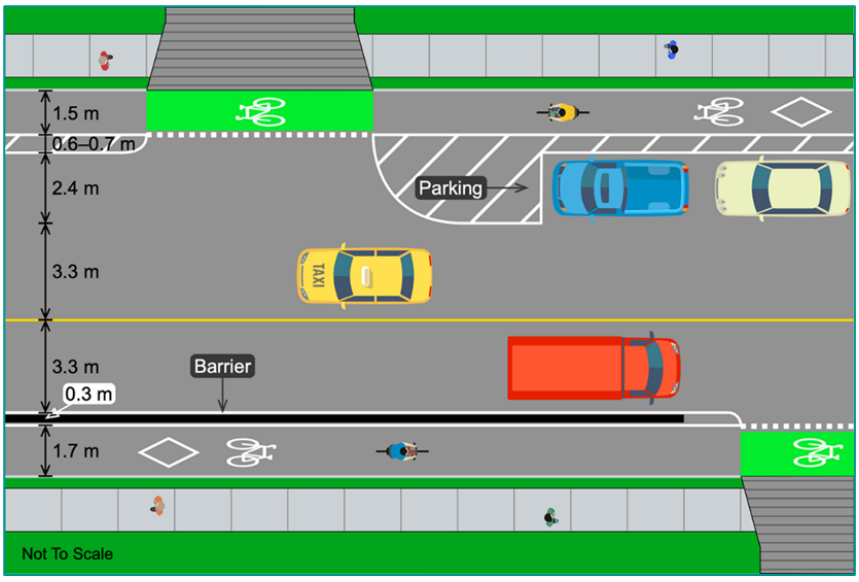


Figure 33: Albert Street (Wallace To Machleary) Protected Bicycle Lanes with Eastbound Far Side Bus Stop

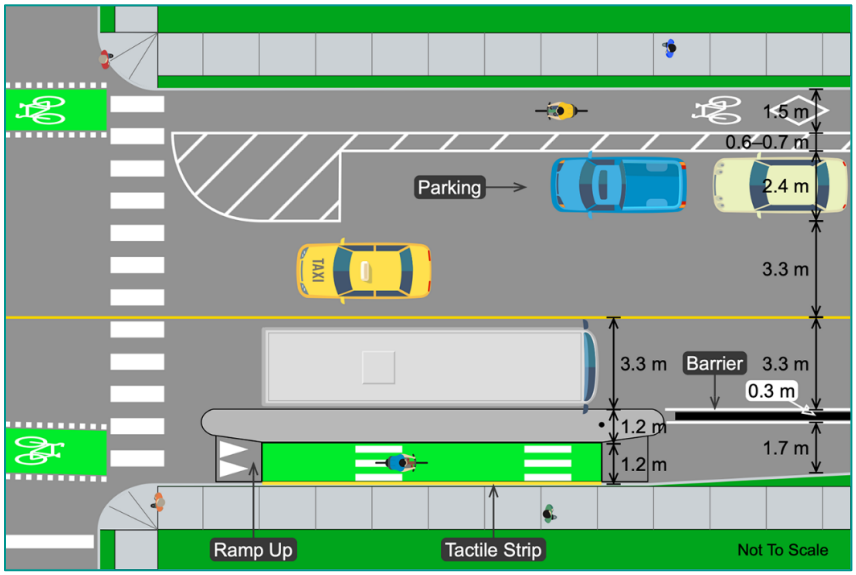
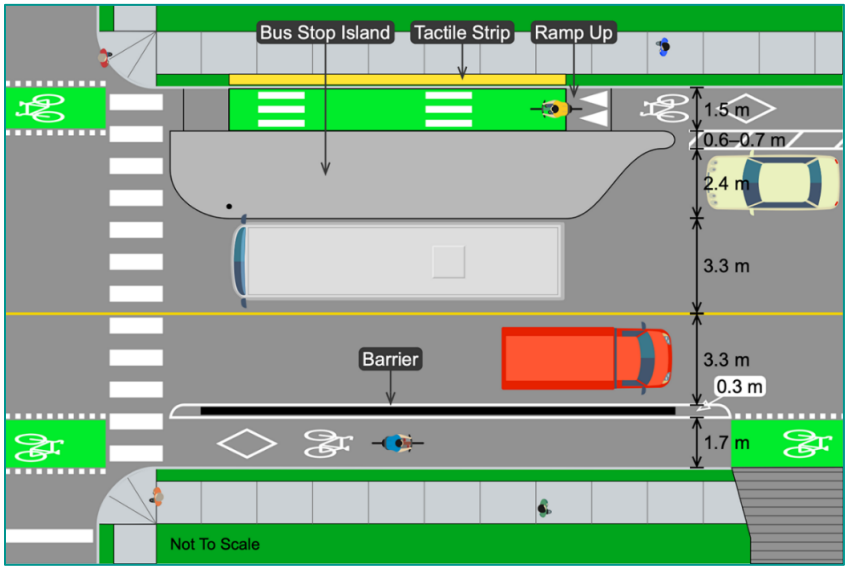


Figure 34: Albert Street (Wallace To Machleary) Protected Bicycle Lanes with Westbound Nearside Bus Stop



4.4.2.2. Machleary Street to Pine Street (S-curve)

Protected bicycle lanes would be continued through the S-curve. This would require widening on both the north (high) and south (low) sides of the road. The widening on the north side would require a retaining wall and removal of trees (which would be replaced elsewhere), and extension of the culvert at Cat Stream. The widening on the south side would require a retaining wall and structural fill. This “ultimate” stage is illustrated in *Figure 35.*

The City could undertake all road widening at once, or could stage the widening, beginning on the north side and widening to an “interim” condition. *Table 12* summarizes the “interim” cross-section that could be achieved with widening on the north side only, as well as the “ultimate” cross-section based on the City’s draft Complete Streets Design Guidelines for a collector road. The interim cross-section incorporates a slightly wider bicycle lane uphill to allow for passing (downhill cyclists also have the benefit of an additional 0.5 m width to provide clearance from the retaining wall).

Table 12: Albert Street and Fourth Street Widening Options and Cross-Sections

Albert Street S-Curve Machleary St–Pine St		Fourth Street Pine St–Harewood Rd
Interim	**Ultimate**	**Ultimate**
North side • 0.5 m clearance to retaining wall • 1.5 m WB bicycle lane • 0.3 m barrier or buffer • 3.4 m WB traffic • 3.4 m EB traffic • 0.3 m barrier or buffer • 1.7 m EB bicycle lane • 1.8 m sidewalk South side	North side • 0.5 m clearance to retaining wall • 2.2 m WB bicycle lane • 0.3 m barrier or buffer • 3.6 m WB traffic • 3.6 m EB traffic • 0.3 m barrier or buffer • 2.2 m EB bicycle lane • 2.0 m sidewalk South side	North side • 2.2 m WB bicycle lane • 0.3 m barrier or buffer • 3.6 m WB traffic • 3.6 m EB traffic • 0.3 m barrier or buffer • 2.2 m EB bicycle lane • 2.0 m sidewalk South side
12.9 m total	**14.7 m total**	**14.2 m total**

If widening of the culvert at Cat Stream is not possible in the interim but it is still desirable to widen the remainder of the S-curve to an “interim” condition, an option would be to terminate one or both of the protected bicycle facilities at the east side of the culvert, and provide a wide travel lane across Cat Stream to accommodate cyclists. If there are no protected bicycle facilities on Fourth Street to the west of Pine Street in the interim (Fourth Street is discussed in the following paragraph), then a feasible configuration would be to begin the eastbound bicycle lane east of the culvert, and continue the westbound bicycle lane to Pine Street (provided there is sufficient cross-section width). This “interim” condition is illustrated in *Figure 36*.

Figure 35: Albert Street (Machleary To Pine) Ultimate Condition

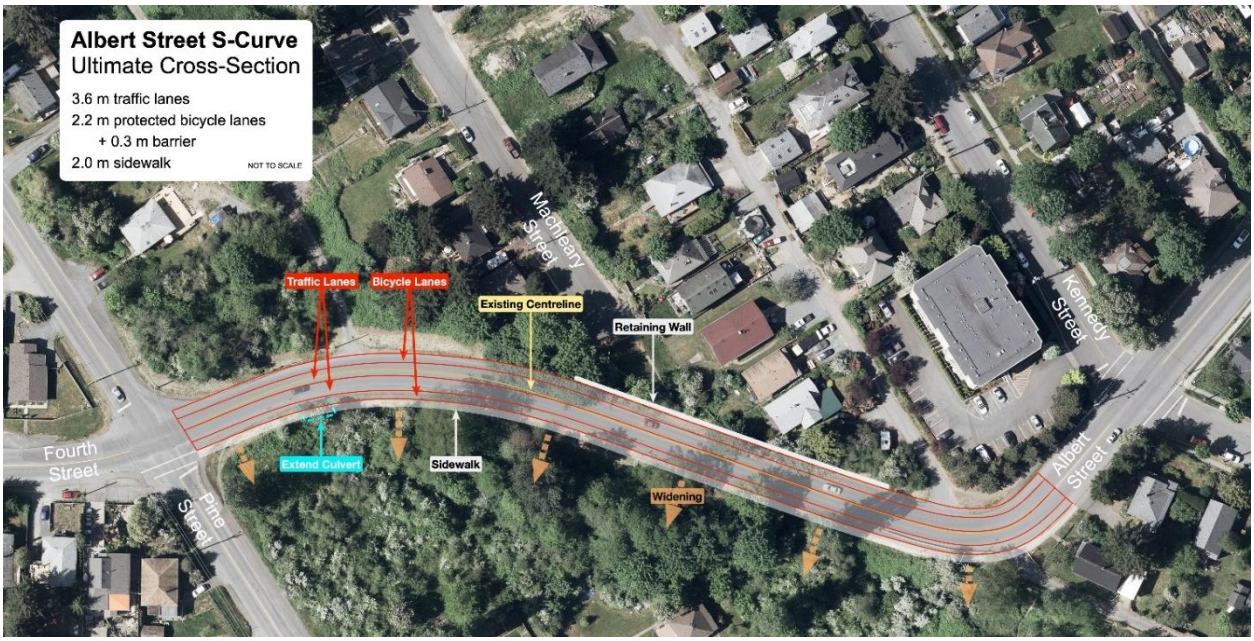
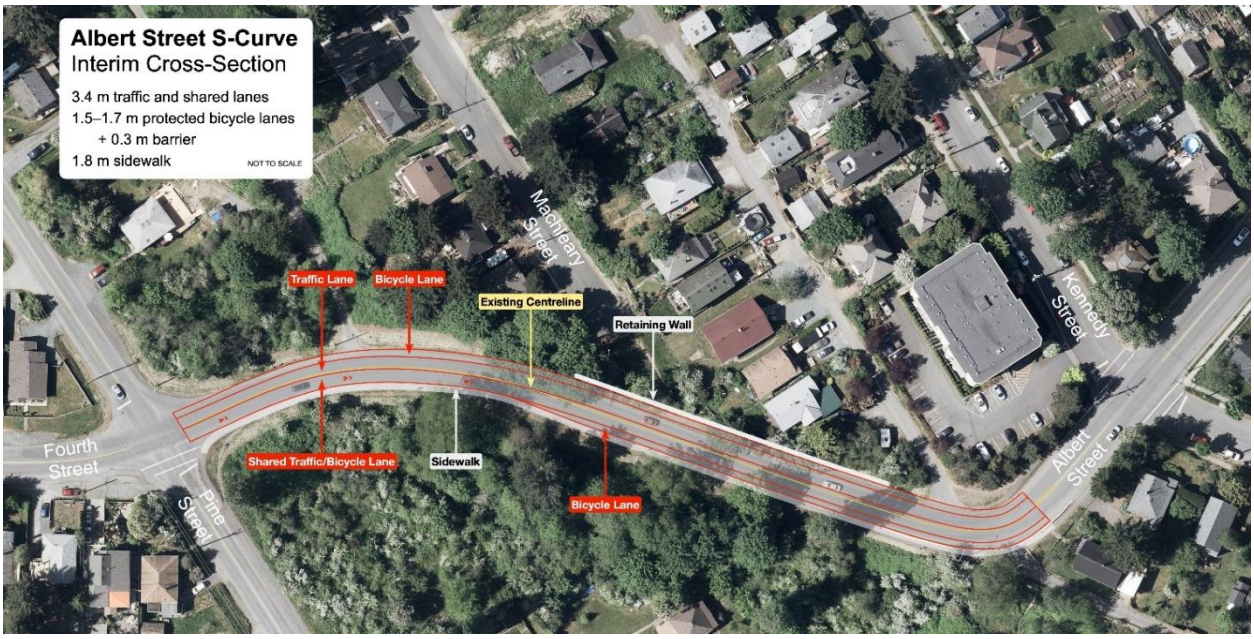


Figure 36: Albert Street (Machleary To Pine) Interim Condition



4.4.2.3. Pine Street to Harewood Road

The existing pavement on this section of Fourth Street is less than 9 m wide, which is significantly less than the minimum 10.5 m width necessary to implement “interim” protected bicycle facilities. This means that road widening would be necessary. There does not appear to be a viable “interim” widening option, and therefore the proposed cross-section in *Table 12* reflects the “ultimate” dimensions indicated in the City’s draft Complete Streets Design Guidelines for a collector road.

4.4.3. Wallace Street

Protected bicycle lanes are preferred on Wallace Street. The pavement width varies from 12.0 m to 15.0 m. Uni-directional protected bicycle lanes can be implemented in sections that are 13.2 m or wider, retaining parking on one side of the road, as shown in *Figure 37*. This includes the section of Wallace Street north of Fitzwilliam/Bastion Streets and the section south of Franklyn Street. The section between Fitzwilliam and Franklyn Streets is 12.0 m wide, which means that in order to implement protected bicycle lanes, the metered parking on the west side of the road in front of two office buildings would be eliminated, as shown in *Figure 38*. (there is currently no parking on the east side of the road). In total, removing parking to implement protected bicycle lanes would reduce the parking capacity on Wallace Street by approximately 45 vehicles, and would require relocating the loading zone on the east side of the street north of Bastion Street.

Figure 37: Wallace Street Protected Bicycle Lanes, Typical Cross-Section North of Fitzwilliam

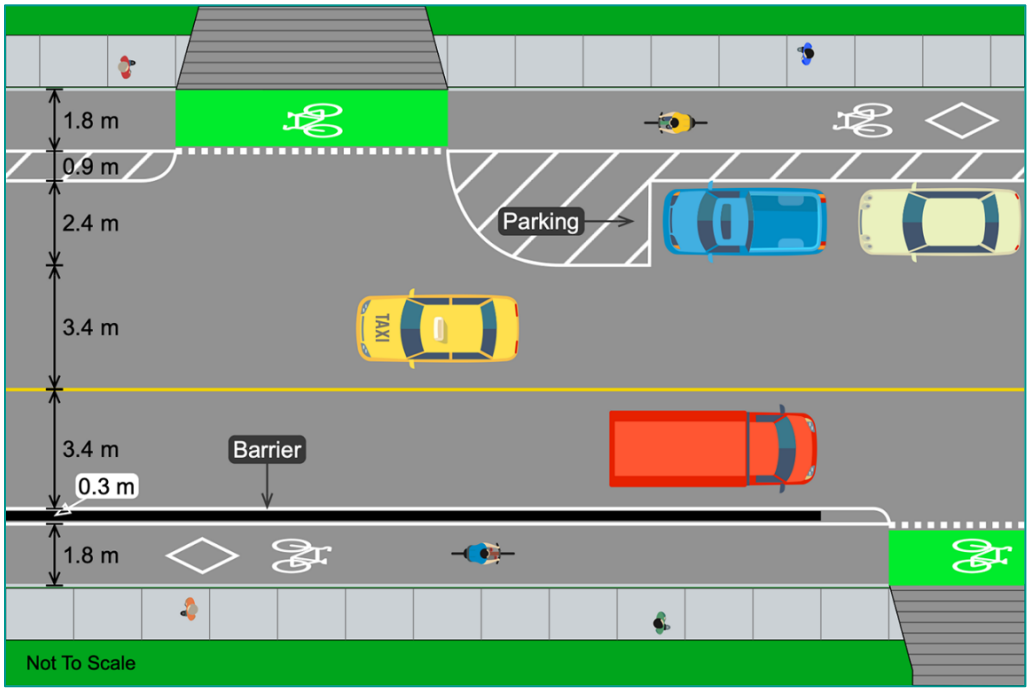
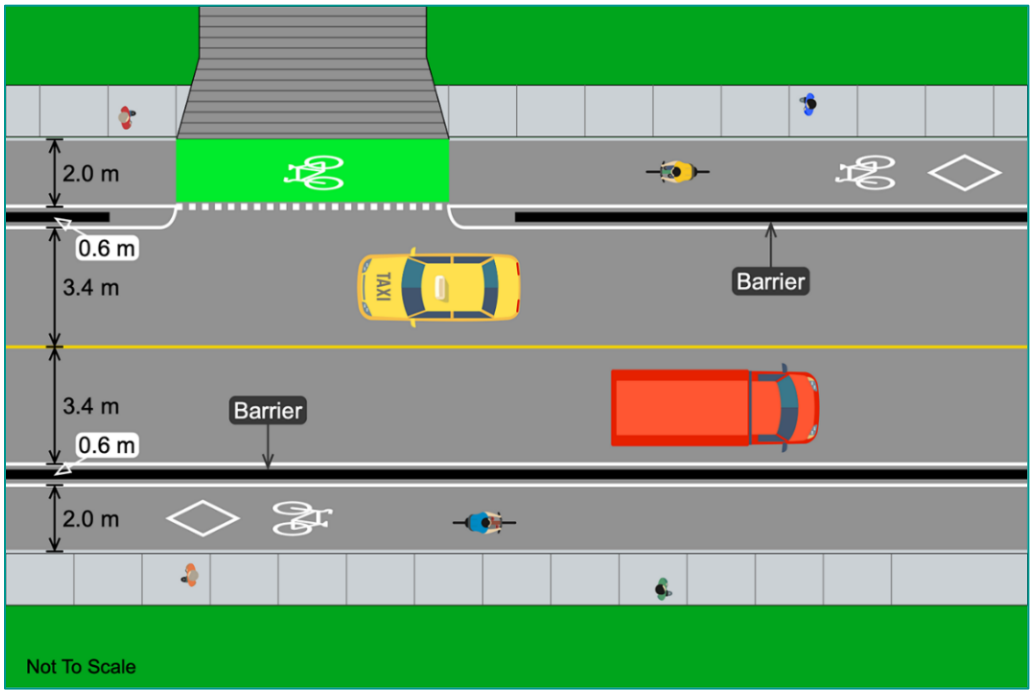


Figure 38: Wallace Street Protected Bicycle Lanes, Typical Cross-Section Fitzwilliam–Franklyn



4.4.4. Pearson Bridge

The Pearson Bridge on Terminal Avenue (Highway 1) spans the Millstone River between Comox Road and Stewart Avenue. The bridge is a single structure with six traffic lanes (three in each direction), sidewalks and a median. The sidewalks are 2.1 m wide, and although they are raised above the roadway there are no railings to prevent pedestrians from falling into the road, and there is no additional protection from adjacent traffic. There are no bicycle facilities on the bridge. This bridge crossing has a parallel pedestrian bridge crossing of the Millstone River located just to the east and part of the Harbourfront Walkway.

Two options for accommodating cyclists on the bridge and improving conditions for pedestrians are described below and are illustrated in *Figure 39*. Both options would eliminate one northbound traffic lane, and as a result will require discussion with and approval from the Ministry of Transportation and Infrastructure:

- **Option 1 – Shared pathway (east side):** This option involves widening the sidewalk on the east side of the bridge to create a 6.5 m wide multiuse pathway shared by cyclists and pedestrians, with a barrier for protection from traffic and to prevent pedestrians and cyclists from falling into the road. The 1.5 m wide median would be retained but would be shifted 0.8 m to the west. The inside traffic lanes would be reduced to 3.3 m wide in accordance with the City's draft Complete Streets Design Guidelines.
- **Option 2 – Protected bicycle lanes (both sides):** This option accommodates cyclists with uni-directional protected bicycle lanes on both sides of the bridge. The sidewalks remain 2.1m wide,

and pedestrians are buffered from traffic by the protected bicycle lanes. The median is replaced by a 0.4 m wide directional dividing buffer.

Figure 39: Pearson Bridge Cross-Section Options

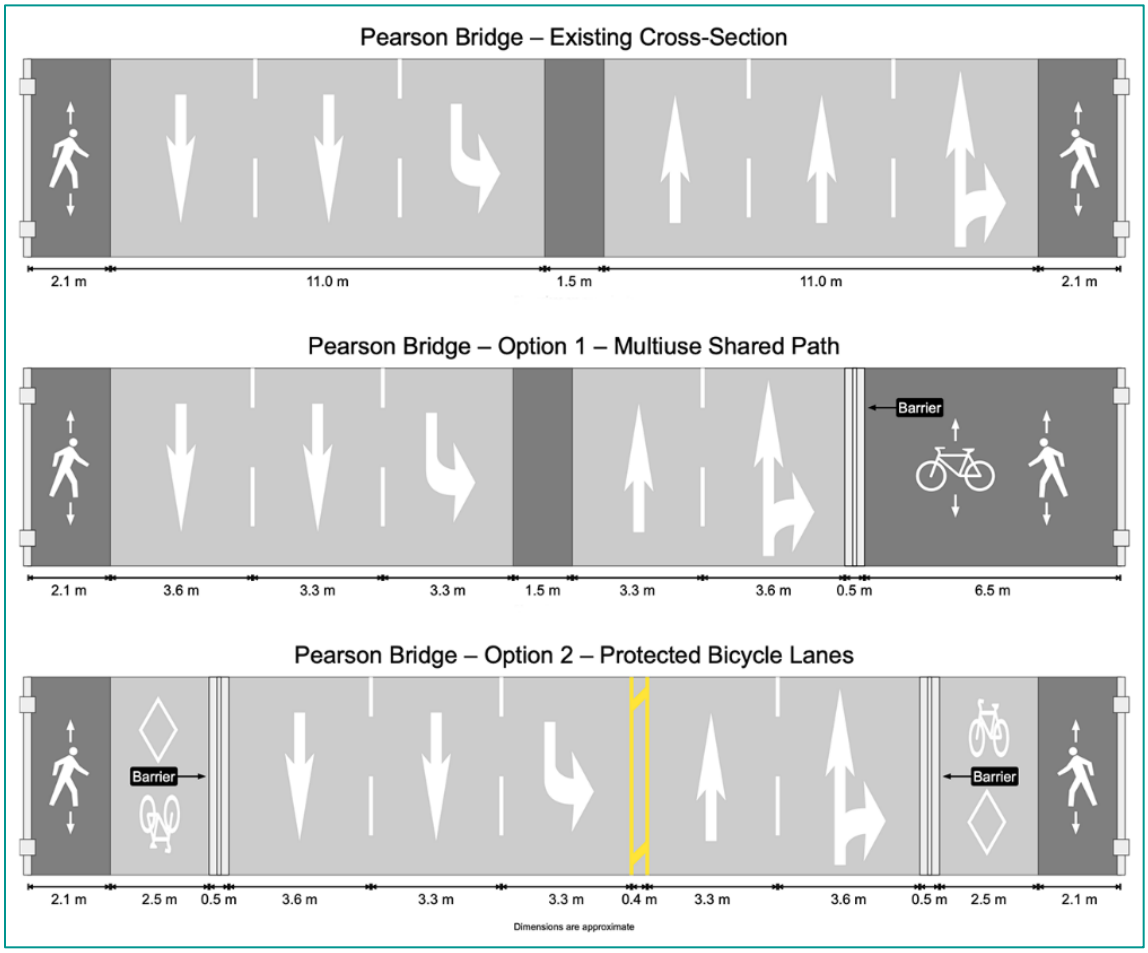


Figure 40 and *Figure 41* illustrate connections from the Pearson Bridge to the proposed bi-directional cycle track on Front Street, proposed protected bicycle lanes on Wallace Street, and a future protected bicycle facility on Stewart Avenue, as well as to the multiuse pathways and pedestrian walkways in Maffeo Sutton Park and along the waterfront and the Millstone River. The existing northbound right turn to Newcastle Avenue could be retained as illustrated in *Figure 40* and *Figure 41* or it could be closed with traffic access redirected via Dawes Street.

Figure 40: Pearson Bridge Connections with Option 1 Shared Multiuse Pathway

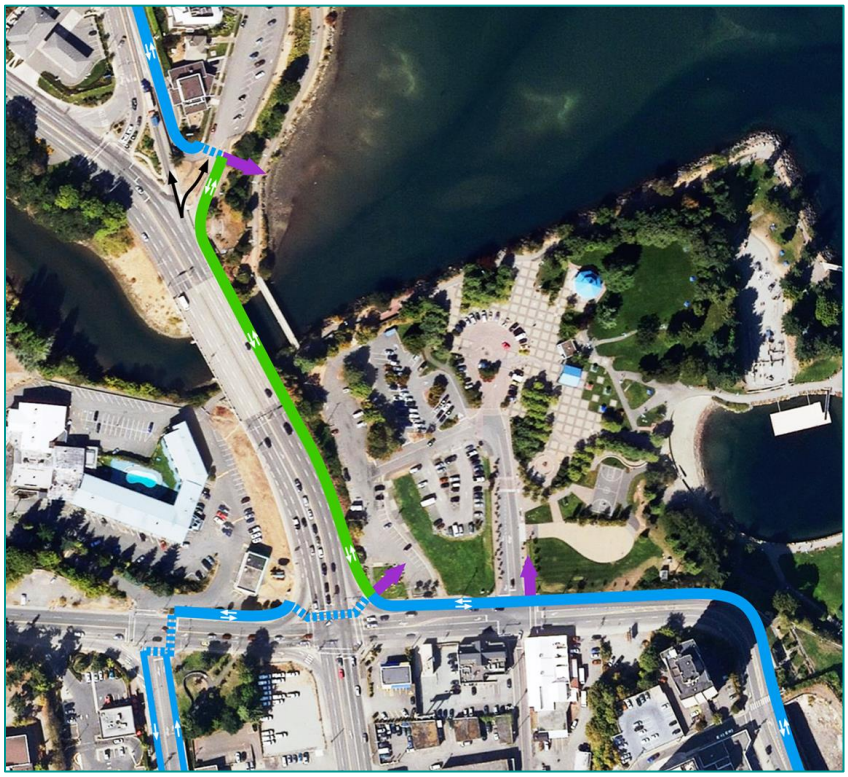


Figure 41: Pearson Bridge Connections with Option 2 Protected Bicycle Lanes

5. Downtown Transit Exchange

5.1. BACKGROUND

The Downtown Nanaimo Transit Exchange was located on Prideaux Street, south of Fitzwilliam Street. This location was considered temporary with the long-term goal of locating the permanent exchange in a more central downtown location. As part of the DNMH project, determining the permanent location was required. During the project, the exchange was temporarily relocated to Front Street due to the closure for maintenance of the Bastion Street bridge over Terminal Avenue.

5.1.1. Previous Studies

The Regional District of Nanaimo (RDN) commissioned two previous studies to determine the preferred location of the downtown transit exchange:

1. Cliff Street Transit Exchange – Operational Feasibility Assessment, February 2018
2. Downtown Nanaimo Transit Exchange Study, August 2018

The assessment and evaluation contained in these reports is summarize below.

5.1.2. Cliff Street Transit Exchange

The study titled *Cliff Street Transit Exchange – Operational Feasibility Assessment* evaluated the option to locate a transit exchange on private property at 30 Cliff Street. A functional overview of the exchange was completed to understand the bus bay allocation, bus routing, and whether the exchange should be a terminus or serve as a mid-point operation exchange.

A preliminary functional plan of the exchange was developed to layout bus bays, driver facilities, customer parking and drop off zones, and other infrastructure needs. This location was proposed to be a joint operation between the RDN and the Tofino Bus Company with two bus bays dedicated to Tofino Bus operations.

The Cliff Street location was analyzed and evaluated using the following criteria:

- Operational Turning Movements
- Layover Capacity
- Overall Trip Time
- Garage Travel Time
- Passenger Capacity
- Passenger Accessibility
- System Security
- Ridership Impacts

- Linkages to Other Modes of Transportation
- Catalyst for Area Redevelopment & Revitalization
- Alignment with Land Use / Transportation Plans

The multi-criteria evaluation compared the Cliff Street location to the existing Prideaux Street exchange to provide context for the evaluation. The conclusion of the evaluation was that the Cliff Street location is not recommended as an exchange location. The largest factor in rejecting this site is its limited capacity. The long-term transit plans recommend that the exchange provide 12 bus bays while this site can only accommodate eight, with two of the bays dedicated to Tofino Bus.

The report referenced potential alternate arrangements that could be considered to better enable the Cliff Street site to serve as a short to medium term exchange location. Alternate arrangements are listed below however no further analysis was provided.

- To increase layover capacity with additional bus bays:
  - Use of a Tofino Bus bay as a contingency location
  - Repurpose a lane on Comox Road for transit use
  - Long term plans for Rapid Transit on Terminal Avenue could open opportunities
- To increase layover capacity through service design:
  - On-street bus layover would be on Comox Road, passenger boarding and transfers at the transit exchange
  - Passenger boarding and transfers on Comox Road, with bus layovers at the transit exchange
  - Through route and/or interline as much service as possible to serve Front Street in both directions
  - Maximize layover time at the outer ends of the routes
  - Rescheduling where possible based on “clockface headways”
  - Consider redistributing Tofino Bus bays at Cliff Street to both sides of the exchange platform
- Improve pedestrian connectivity

5.1.3. Downtown Nanaimo Transit Exchange Study

The study titled the *Downtown Nanaimo Transit Exchange Study* included an evaluation of the following four sites:

1. “A&B Sound” Alternate Site – located between Wallace Street and Terminal Avenue, west of Commercial Street
2. “ACME” Alternate Site – located on the triangular shaped parcel between Wallace Street, Commercial Street and the China Steps
3. Front Street Alternate Site – located on Front Street, north of the intersection of Esplanade and Front Street

4. Comox Road Alternate Site – located on Comox Road between Terminal Avenue and Cliff Street

At the time of the study, the City was considering the following changes to the downtown transportation network:

- The closure of Commercial Street north of Terminal Avenue to vehicle traffic to create a pedestrian plaza
- The realignment of Albert Street to connect to Gordon Street, roughly parallel to China Steps. This realignment would also make it possible to consider consolidating the “A&B Sound” and “ACME” properties

While these changes were only under consideration by the City, they presented a risk to the long-term viability of locating a transit exchange at either site #1 (A&B Sound) or #2 (ACME). As a result, the sites under consideration were consolidated into two primary options for further evaluation:

- Terminal Avenue Transit Exchange (Terminal Avenue and Commercial Street), for which two configurations were developed:
    - Option A – widening Terminal Avenue
    - Option B – repurpose the outside lanes of Terminal Avenue
- Front Street Exchange (On-Street) – expansion of the existing Front Street bus bays and augmentation with longer term layover positions on Comox Road.

For each site and option, high-level concept designs were developed and Class “D” cost estimates prepared.

5.1.3.1. Option A – Widening Terminal Avenue

Key Characteristics

- Terminal Avenue - three eastbound and three westbound on-street bus bays
- Commercial Street - four on-street layover bays
- Property acquisition on southside of Terminal Avenue
- Four lanes of traffic on Terminal Avenue maintained
- Improved sidewalk connections
- Commercial Street north of Terminal Avenue closed to vehicles
- Commercial Street south of Terminal Avenue converted to one-way northbound
- Class “D” capital cost: $4.7 million

5.1.3.2. Option B - Repurpose the outside lanes of Terminal Avenue

Key Characteristics

- Terminal Avenue:
    - two westbound bays, one layover bay
    - three eastbound bays, one layover bay
- Commercial Street – three layover bays

- No property acquisitions
- Outside lanes of Terminal Avenue repurposed to transit operations
- Commercial Street north of Terminal remains open
- Commercial Street south of Terminal Avenue converted to one-way northbound
- Class “D” capital cost: $4.1 million

5.1.3.3. Front Street Exchange (On-Street)

Key Characteristics

- Two northbound bus bays
- Two southbound bus bays, two layover bays
- Comox Road used for additional layover space
- Replacement of existing pavement marking
- Queuing issues with Gabriola Ferry were unresolved
- Class “D” capital cost: $380,000

5.1.3.4. Evaluation and Recommendation

An evaluation of the sites and design options was completed using the same criteria as the Cliff Street Exchange option, and included the following additional criteria:

- Transit Operator Amenities
- Community Impacts
- Class “D” Cost Estimate
- Overall Operating Cost Implications

The evaluation showed that the Terminal Avenue Options A and B had almost identical ratings and a Terminal Avenue location was preferred over the Front Street location. The report proposed that community and stakeholder input should be sought to determine which option best suited the community.

5.1.4. Reassessment of Transit Exchange Locations

Examining the Front Street location further showed that the concept design only included limited changes to existing infrastructure and right-of-way on Front Street. This is evidenced in the cost estimate being only $380,000, versus the Terminal Exchanges estimates ranging between $4.1 and $4.7 million. As a result, applying similar scale improvements to the Front Street location was likely to significantly influence the evaluation. It was therefore deemed reasonable to further evaluate the Front Street location option for the downtown Transit Exchange, which evaluation was done as part of the DNMH project.

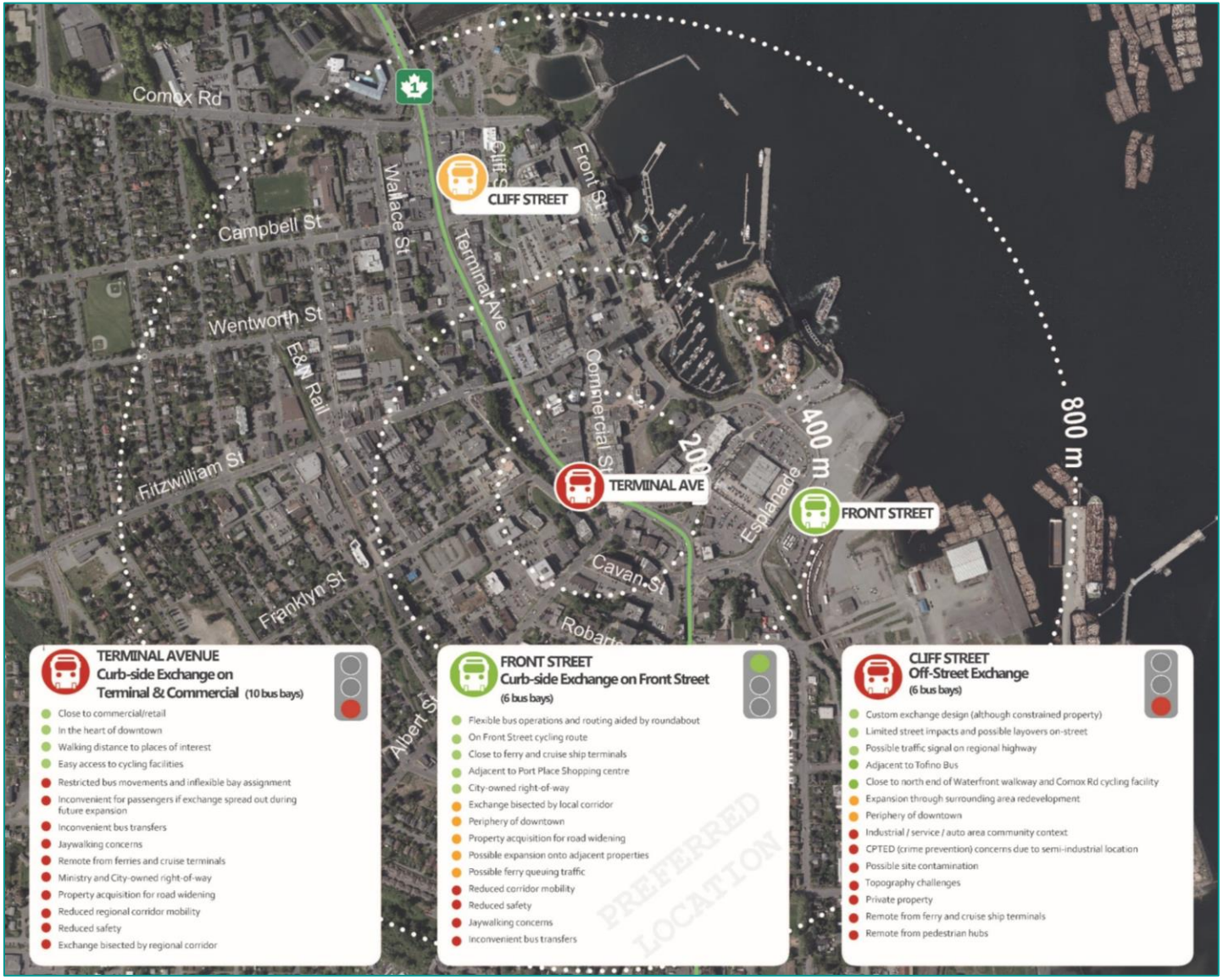
Taking the previous studies into account, and further discussion with the City and the RDN as well as more recent information influencing the location of a transit exchange, *Table 13* compares the three downtown transit exchange locations that had been previously evaluated, namely Terminal Avenue, Front Street and 30 Cliff Street. The location of each is shown in *Figure 42*, and includes a summary of the comparison in the table. Based on this evaluation, an exchange on Front Street is recommended.

Table 13: Transit Exchange Location Comparison Summary

Preliminary Evaluation Criteria	Site #1: Terminal Avenue – Options A & B (Possible curb-side exchange located on Terminal and Commercial)	Site #2: Front Street (Possible curb-side exchange located on Front Street at 1 Port Place)	Site #3: 30 Cliff Street (Possible exchange located on off-street property)
Community Context and Proximity to Places of Interest	• Medium density, mixed-use land use, primarily commercial and retail • Centrally located in the heart of downtown • Easy walking distance to places of interest	• Redevelopment of adjacent lands to mixed-use, mid-rise development • Borders Port Place shopping centre • On periphery of downtown • Close to significant passenger generators – ferry and cruise ship terminals	• Low density, industrial/service/auto land-uses • Potential future redevelopment complicated by environmental issues • On periphery of downtown • Topography makes walking access challenging
Flexibility of Bus Operations (Turning Movements & Routing)	• Restricted bus movements • Inflexible bay assignment due to significant rerouting required for bus turnaround	• Roundabout on Front Street allows for flexible bus operations and routing	• Exchange constrained to property limits • Site can be custom designed to meet operational requirements
Capacity and Future Expansion Opportunity	• Meets 10 bus bay requirement • Future expansion results in larger exchange footprint – inconvenient for passengers	• Existing curb-side allows for up to 6 bus bays • Opportunity to incorporate expanded exchange into adjacent land redevelopment	• Likely 6 bus bay limit, however site can be reconfigured • No expansion opportunity unless surrounding area is redeveloped.
Passenger Experience and Proximity to Other Travel Modes	• Inconvenient bus transfers due to bus bays located on both sides of the road, likely resulting in jay-walking • Exchange bisected by regional corridor, reducing overall passenger experience • Located on pedestrian desire lines	• Inconvenient bus transfers due to bus bays located on both sides of the road, likely resulting in jay-walking • Exchange bisected by local corridor, reducing overall passenger experience • Connects to pedestrian facilities • Located on Front St cycling route	• Exchange can be designed to maximize passenger experience • CEPTD concerns for pedestrians due to semi-industrial location • Relatively close to north end of Waterfront walkway

	• Easy access to Albert St and other cycling facilities • Relatively remote from ferries and cruise terminals	• Easy walking access to Gabriola Ferry and cruise ship terminals • Relatively remote from Nanaimo Ferry terminal	• Easy access to Comox Rd cycling facility • Adjacent to Tofino Bus • Far from ferry and cruise ship terminals
Land / Right of Way (RoW) Ownership	• Terminal Ave is Ministry RoW • Commercial Street is City owned • Road widening would require property acquisition	• Front Street is City owned • Road widening would require property acquisition • Possible option to expand onto adjacent undeveloped property through negotiation	• Private property acquisition
Traffic Operations & Safety	• Bus movements reduce corridor operations and increase risk of crashes • Terminal Avenue is a regional highway connector requiring high mobility • Increased active mode presence raises safety concerns.	• Bus movements reduce corridor operations and increase risk of crashes • Front Street provides direct access to Gabriola Ferry terminal with drivers distracted rushing to ferry • Increased active mode presence raises safety concerns	• Off-street location reduces adjacent street impacts • Possible need to have bus layovers on-street • Possible need for bus activated signal to give bus priority accessing the regional highway

Figure 42: Transit Exchange Locations and Evaluation Summary



5.1.5. Public and Stakeholder Workshop and Open Houses Feedback

A public and stakeholder workshop and open houses were held between April and June 2019. More details of these events is provided in *Section 7*. From those events, 80% of respondents to the questionnaire either agreed or strongly agreed with the permanent transit exchange being located on Front Street versus the other locations.

The feedback results were made more significant by the fact that due to the closure of the Bastion Street Bridge for roadway improvements, the RDN was obliged to temporarily relocate the transit exchange to Front Street as accessing the Prideaux Street location during this closure was problematic and not cost effective. Respondents therefore had firsthand experience of the exchange in the Front Street location and responded based on user experience versus perception only. Besides the formal feedback, the RDN has received additional user feedback favouring the exchange in this location. In addition, from an operational point of view, the RDN supports this location.

5.1.6. Consistency with Prior Planning

Over the years the City and other parties have done several planning studies, some of which are listed below. Locating the transit exchange on Front Street is consistent with these studies.

- Port Drive Waterfront Master Plan, The City of Nanaimo, 2018
- Terminal-Nicol Re-imagined, The City of Nanaimo, 2016
- Transportation Master Plan, The City of Nanaimo, 2014
- Downtown Urban Design Plan and Guidelines, The City of Nanaimo, 2008
- Transit Future Plan, Regional District of Nanaimo, 2014

5.1.7. Recommendation

Based on the evaluation work undertaken nd supported by the fact that a temporary transit exchange is currently operating successfully in the One Port Drive location on Front Street, it is recommended that the downtown transit exchange be permanently relocated to the Front Street, One Port Drive location.

5.2. DESIGN BRIEF

Following the selection of Front Street as the preferred location for the permanent Exchange, a Design Brief was prepared. *Figure 43* shows the approximate location of the future transit exchange, the site of the current temporary transit exchange and will continue to operate at this location until the new exchange is constructed.

Figure 43: Location of the Front Street Transit Exchange

5.2.1. Key Site Issues

While the Front Street location is the preferred location, there are design challenges and issues that need to be overcome. Below is a list of those issues:

- Existing alignment of Front Street pushes the road and sidewalk against the Port Place parking structure. Sidewalk width is under 1 meter. To widen the sidewalk and allow space for shelters, street furniture, and other amenities Front Street will need to be realigned. The existing right-of-way is 18.7m.
- Safety and security of transit users is a high priority.
- Port Place Shopping Centre has two accesses along this section of Front Street. A median at the south access prohibits left turns exiting. The north access allows all turn movements.
- A roundabout is proposed for Front Street at the northeast corner of the Port Place Shopping Centre. The transit exchange design should function both in the interim with no roundabout and in the future when the roundabout is constructed.
- Multi modal integration and reduction of conflict between pedestrians, cyclists, buses and vehicles is important.

5.2.2. Design Brief and Specifications

The design brief serves as draft Design Criteria identifying key elements of the exchange design that are to be incorporated throughout all the design stages. These criteria are listed below and identify draft specifications that are to be carried forward into construction.

- The overall exchange design is to comply with BC Transit Design Guidelines
- The exchange will be an in-route exchange
- Transit exchange shall have a minimum of 10 bus bays that are always operational. Layover bays will be located elsewhere by RDN. Bay sharing is allowed
- The transit exchange shall be planned and designed to be constructed in stages. Throw-away infrastructure shall be minimized
- 3.4m wide travel lanes
- A 2-way cycle track of 4.6m (3.6m travelled way plus a 1.0m barrier) is planned for the water side of Front Street. The cycle track may continue through the transit exchange
- A single stall universally accessible public washroom, with separate crew washroom, however, use of the shopping centre washrooms is an option
- Cycling amenities; bike racks, bike lockers, ebike lockers, ebike charging
- A ride-share, taxi, or kiss and ride layby facilities are not required on Front Street. These will occur outside the transit exchange area
- Safety and security are of paramount importance. Consider use of passenger alarms, designated waiting areas, help phones, emergency buttons, or closed-circuit TV, and urban design elements such as lighting to enhance safety and perceived safety
- Wayfinding elements to be incorporated
- Space should be identified for a future bike share program
- Provide direct pedestrian and cycling connections to the waterfront walkway
- Provide one or two enhanced pedestrian crossings across Front Street based on design concept
- No vending machines required
- Accessibility needs such as curb letdowns and tactile strips are to be used
- Use landscape features to channel pedestrians to crosswalks, with the intent to prevent unlawful and unsafe crossing of Front Street
- Up to four passenger shelters or canopy structures should be appropriately located
- Bus pads shall be broom brushed concrete
- If landscaping features include concrete walls seating can be included on the surface and must incorporate anti-skateboard features
- Provide the following street furniture, waste receptacles, benches, and a passenger information display
- Bus operation will be independent arrival and departure

5.3. CONCEPT DESIGN

In prior years and as part of previous studies, there have been various concept designs developed for the Front Street location. These are presented in this section as well as other concepts.

5.3.1. Previous Concepts Developed

Some of the previous design concepts developed by various other parties are presented below and were considered in moving towards a layout solution. In general, all concepts have an element of an on-street exchange on Front Street, with some making use of portions of the property south of Front Street.

Figure 44: Schematic Concept Prepared for The RDN

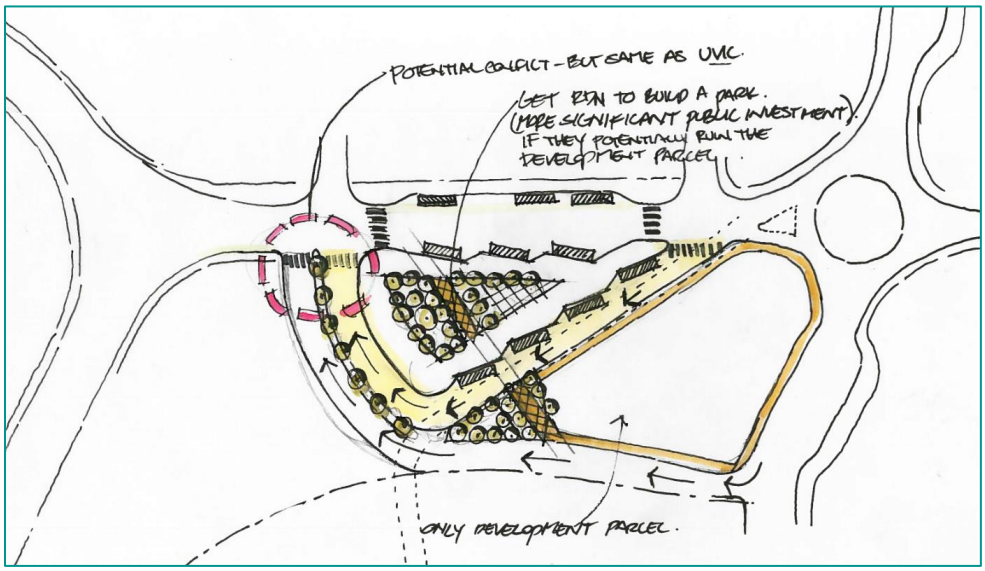


Figure 45: JE Anderson & Associates Concept, October 2016

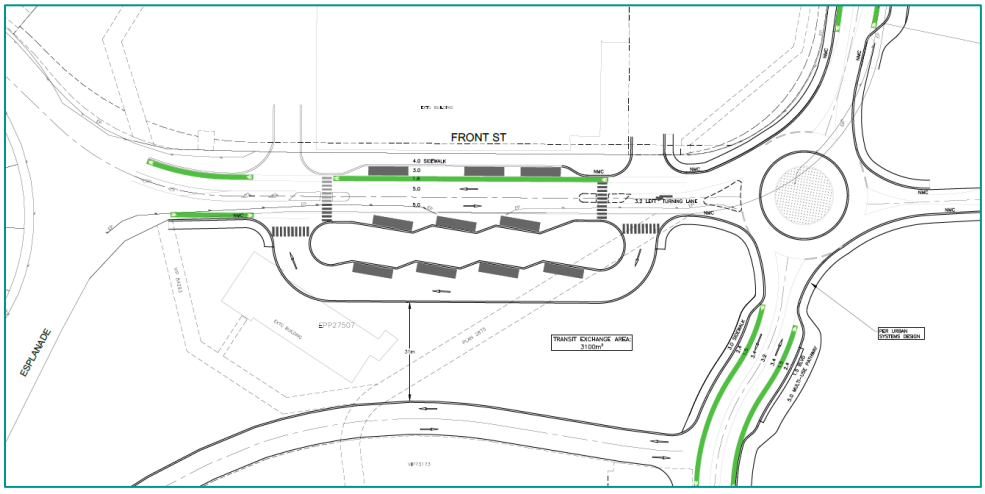


Figure 46: Urban Systems, November 2016

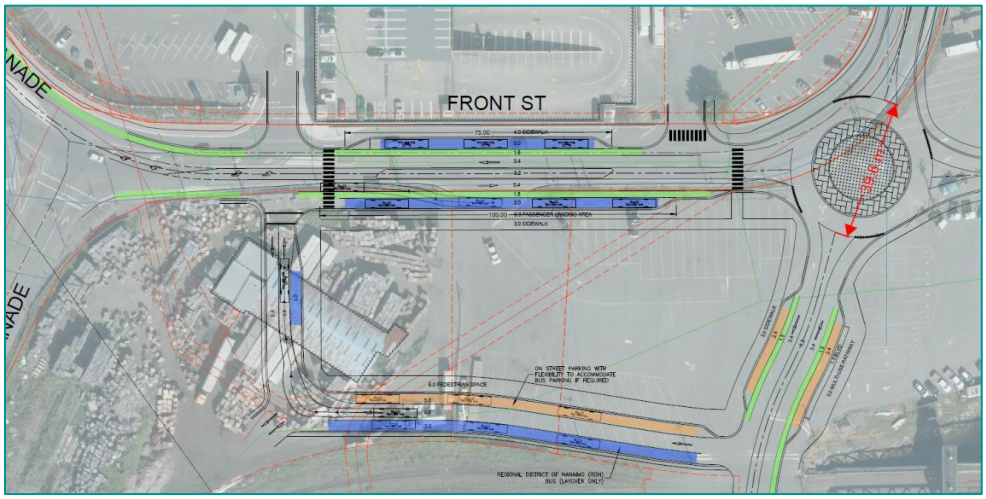


Figure 47: Port Drive Waterfront Master Plan, June 2017 –Option 1

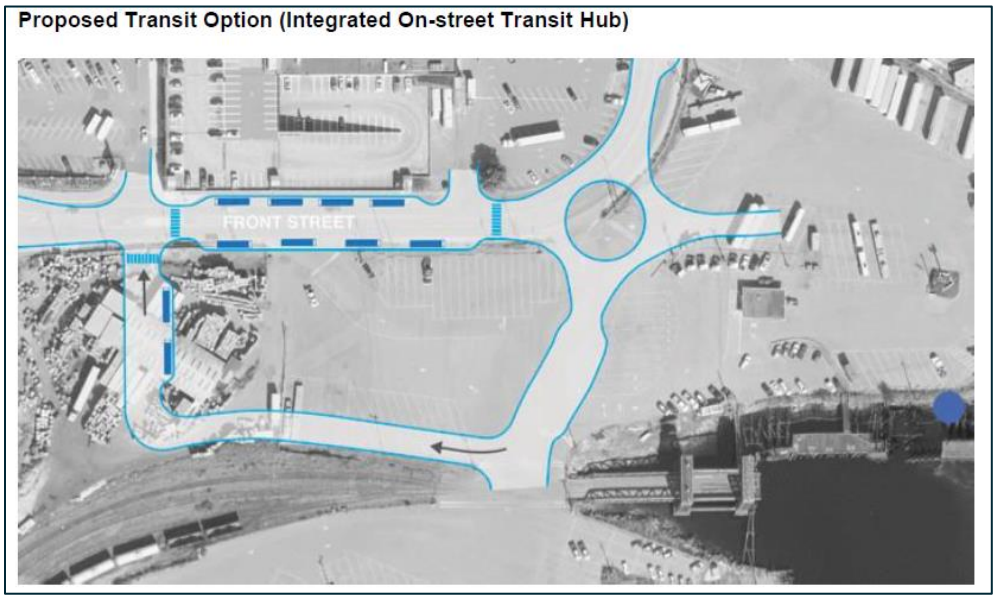


Figure 48: Port Drive Waterfront Master Plan, June 2017 –Option 2

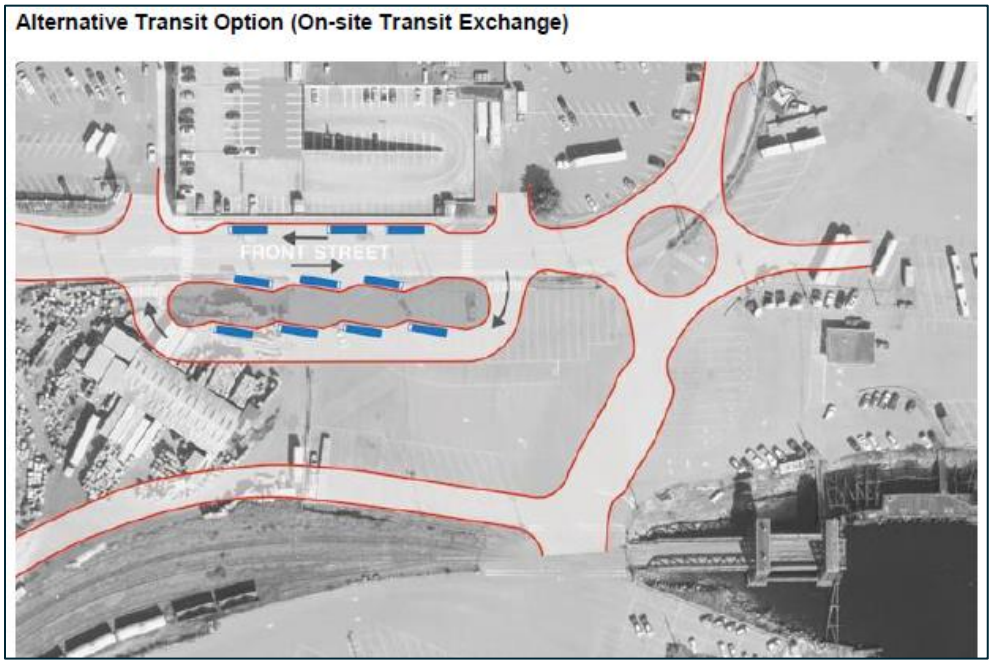
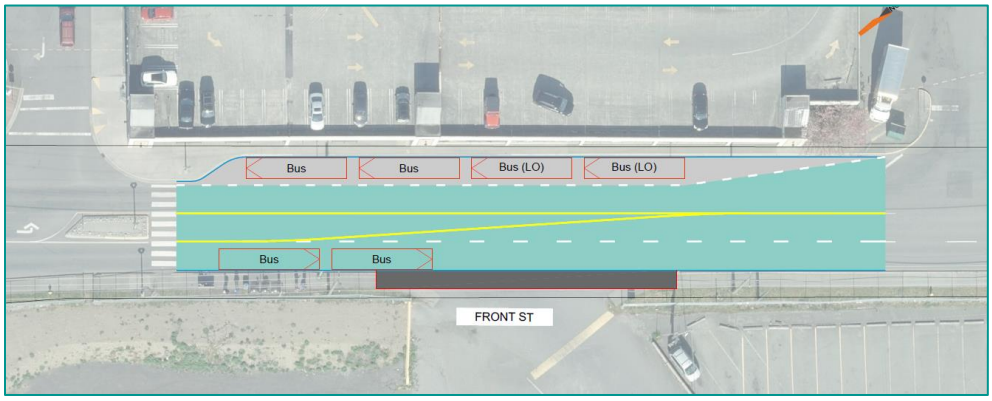


Figure 49: Watt Consulting Group, July 2018

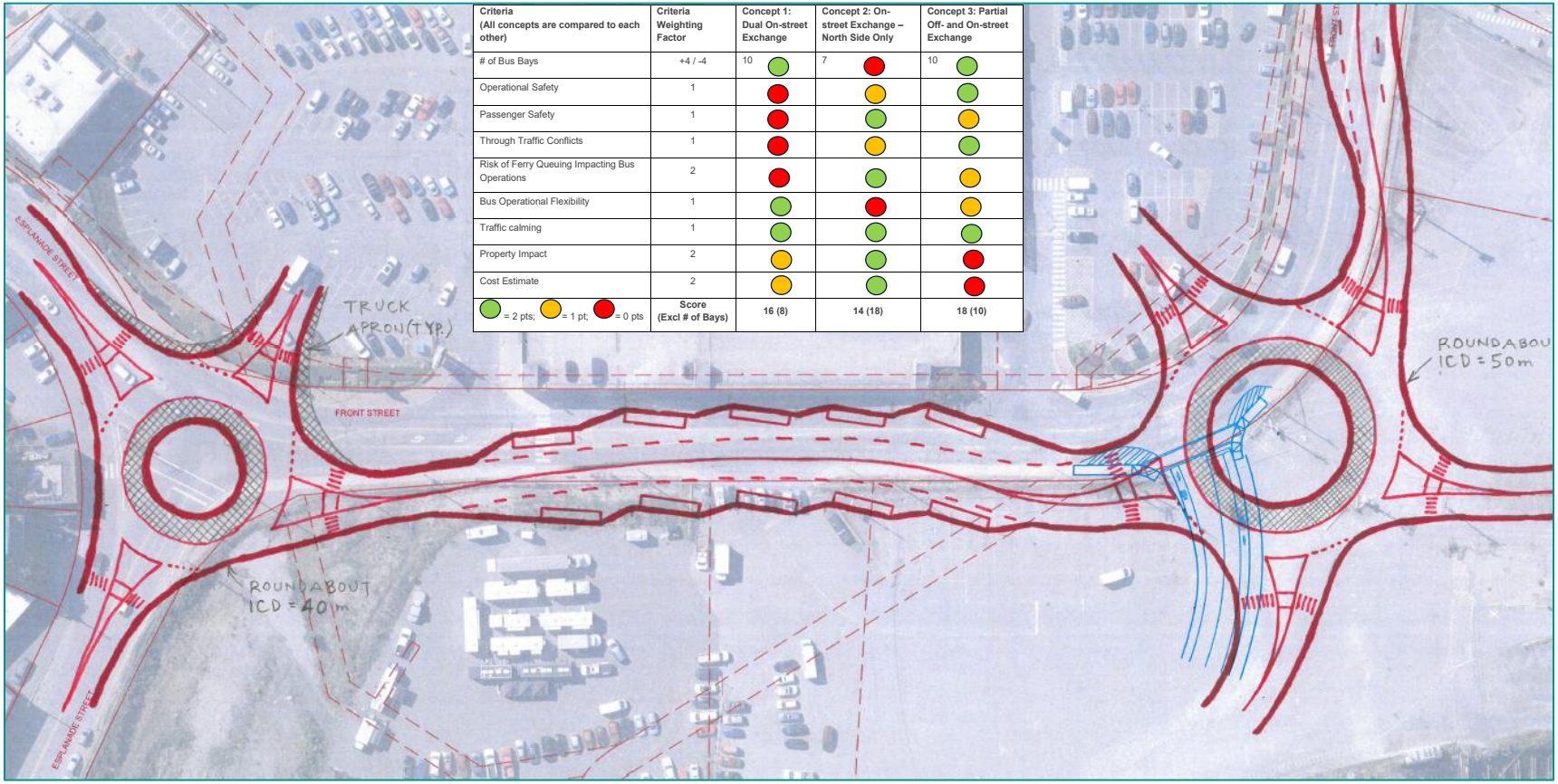


5.3.2. Additional Concept Designs

While recognizing that a short-term interim solution is required, three 'ultimate' concept option sketches were developed, with the intent to stage the preferred concept to coincide with anticipated timelines determined by the City and RDN. The three concept options are listed below:

1. Concept 1: Dual On-street Exchange (*Figure 50*)
2. Concept 2: On-street Exchange – North Side Only (*Figure 51*)
3. Concept 3: Partial Off- and On-street Exchange (*Figure 52*)

Figure 50: Concept 1: Dual On-Street Exchange



Criteria (All concepts are compared to each other)	Criteria Weighting Factor	Concept 1: Dual On-street Exchange	Concept 2: On-street Exchange – North Side Only	Concept 3: Partial Off- and On-street Exchange
# of Bus Bays	+4 / -4	10	7	10
Operational Safety	1			
Passenger Safety	1			
Through Traffic Conflicts	1			
Risk of Ferry Queuing Impacting Bus Operations	2			
Bus Operational Flexibility	1			
Traffic calming	1			
Property Impact	2			
Cost Estimate	2			
= 2 pts; = 1 pt; = 0 pts	Score (Excl # of Bays)	16 (8)	14 (18)	18 (10)

Figure 51: Concept 2: On-Street Exchange – North Side Only

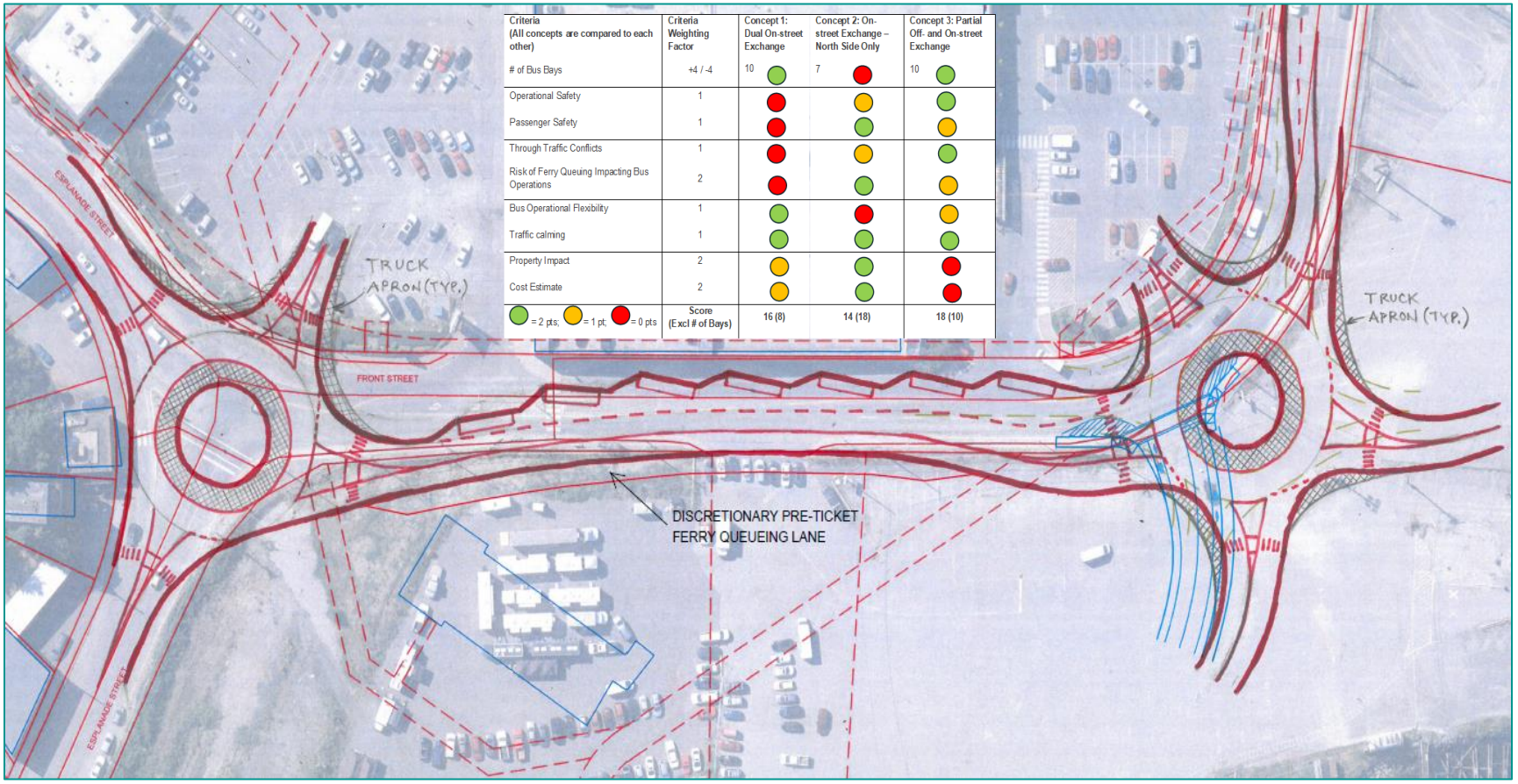
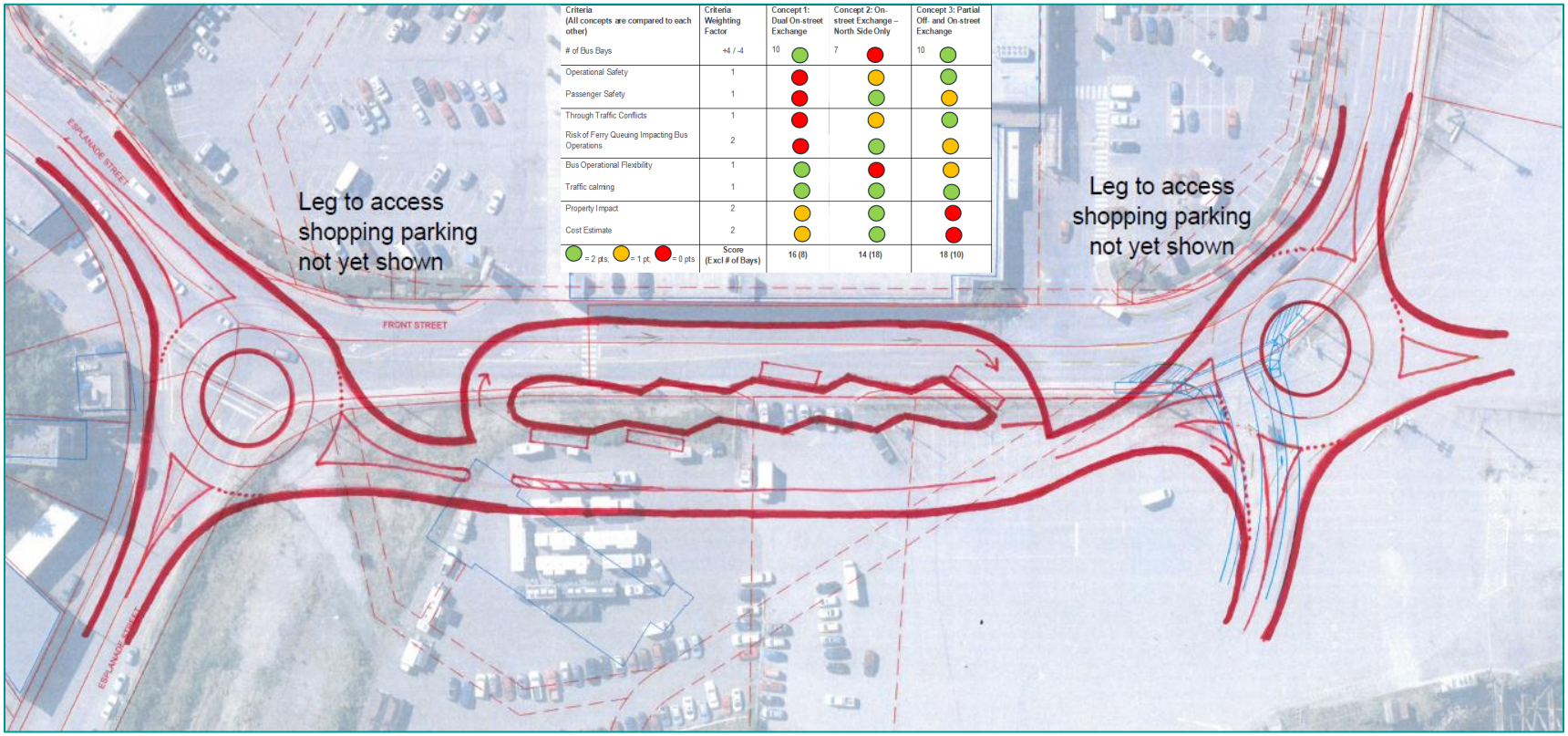


Figure 52: Concept 3: Partial Off- And On-Street Exchange



Criteria (All concepts are compared to each other)	Criteria Weighting Factor	Concept 1: Dual On-street Exchange	Concept 2: On-street Exchange – North Side Only	Concept 3: Partial Off- and On-street Exchange
# of Bus Bays	+4 / -4	10	7	10
Operational Safety	1			
Passenger Safety	1			
Through Traffic Conflicts	1			
Risk of Ferry Queuing Impacting Bus Operations	2			
Bus Operational Flexibility	1			
Traffic calming	1			
Property Impact	2			
Cost Estimate	2			
= 2 pts, = 1 pt, = 0 pts	Score (Excl # of Bays)	16 (8)	14 (18)	18 (10)

All three options have roundabouts at both ends. Besides several other advantages outlined below, the most significant design advantage is that they relocate to the roundabouts the two existing shopping centre driveways that constrain the area currently available for the exchange. The resultant longer curbside length allows greater flexibility for the exchange layout and accommodation of the required number of buses.

The three concepts aim to address five key aspects, three of which have safety considerations:

1. ***Safety of passengers, bus operators and other road users*:** Front Street is a Major Collector providing access to the waterfront and the Gabriola Ferry Terminal. Locating an on-street exchange on a road of this class is challenging in that users do not necessarily anticipate it and its associated bus and passenger operations, and especially that some ferry users will be visitors and therefore be unfamiliar with the area. As a result, Concepts 2 and 3 locate the exchange on the north side of Front Street adjacent to the shopping centre and so eliminate the need for bus passengers both arriving from the north, east and west and transferring between buses to cross Front Street. Concept 3 allows passengers to transfer between buses on a central platform, further improving safety. All three concepts also reduce the number of bus conflicts with through traffic. Note that if Concept 2 is preferred, it does not preclude repeating the on-street concept on the south side of the road as an interim staged solution until the roundabouts can be constructed.
2. ***Ferry queuing*:** Concepts 2 and 3 seek to limit the risk of ferry queues on Front Street effectively shutting down the access to the exchange.
3. ***Bus operation flexibility*:** all three Concepts include roundabouts at both ends of the exchange. This gives buses maximum operational flexibility since they can arrive and depart from all directions and easily turn around if needed for their route. It also allows maximum flexibility for where buses can hold when not in service.
4. ***Traffic calming*:** the two roundabouts serve as gateways to the exchange, bookending it in a traffic calmed environment due to traffic having to slow to navigate the roundabouts. This further improves safety with traffic traveling at reduced speeds through the exchange. It also allows the option of a raised pedestrian platform mid-block if deemed necessary depending on the option selected.
5. ***Amenities and landscaping*:** the introduction of the roundabouts and the required geometric approach and departure creates space for amenities such as shelters, driver washrooms, benches, landscaping features and other amenities outlined in the Design Brief earlier.

5.3.3. Options Comparison

Table 14 compares the three concepts against each other with the weighting applied as shown. Since 10 bus bays are required, this criterion was more heavily weighted versus the other criteria. The risk of ferry traffic queues impacting bus operation was given a higher weighting as if these queues do form, the exchange cannot operate. Property impacts and cost were also weighted higher. The safety criteria are equally important, however safety can be further improved with a midblock raised pedestrian crossing with signals and other safety features.

Table 14: Transit Exchange Option Comparison

Criteria (All concepts are compared to each other)	**Criteria Weighting Factor**	**Concept 1: Dual On-street Exchange**	**Concept 2: On-street Exchange – North Side Only**	**Concept 3: Partial Off- and On-street Exchange**
# of Bus Bays	+4 / -4	10	7	10
Operational Safety	1			
Passenger Safety	1			
Through Traffic Conflicts	1			
Risk of Ferry Queuing Impacting Bus Operations	2			
Bus Operational Flexibility	1			
Traffic calming	1			
Property Impact	2			
Cost Estimate (excl. Property)	2			
= 2 pts; = 1 pt; = 0 pts	**Score**	**16**	**14**	**18**

Based on this comparison, Concept 2 is rejected as it cannot accommodate the required number of bays. While Concept 3 ranks highest, it has the largest property impact which would significantly increase the cost. It also cannot be constructed in stages. The safety criteria for Concept 1 can be effectively managed through the use of barrier fences to control pedestrian movement, and ferry traffic queues can be directed to the new road connection to the cruise ship terminal.

Based on this evaluation, Concept Option 1, the Dual On-street Exchange is the recommended layout to advance to the next design stages.

5.3.4. Advancement of Preferred Concept Option

The preferred concept option was advanced (refer *Figure 53* to *Figure 56*) to better understand operational and property impacts to 1 Port Drive, pedestrian and bicycle facility accommodation, and likely staging scenarios given the dual roundabouts. An electrical design was also done.

Figure 53: On-Street Exchange with Dual Roundabouts

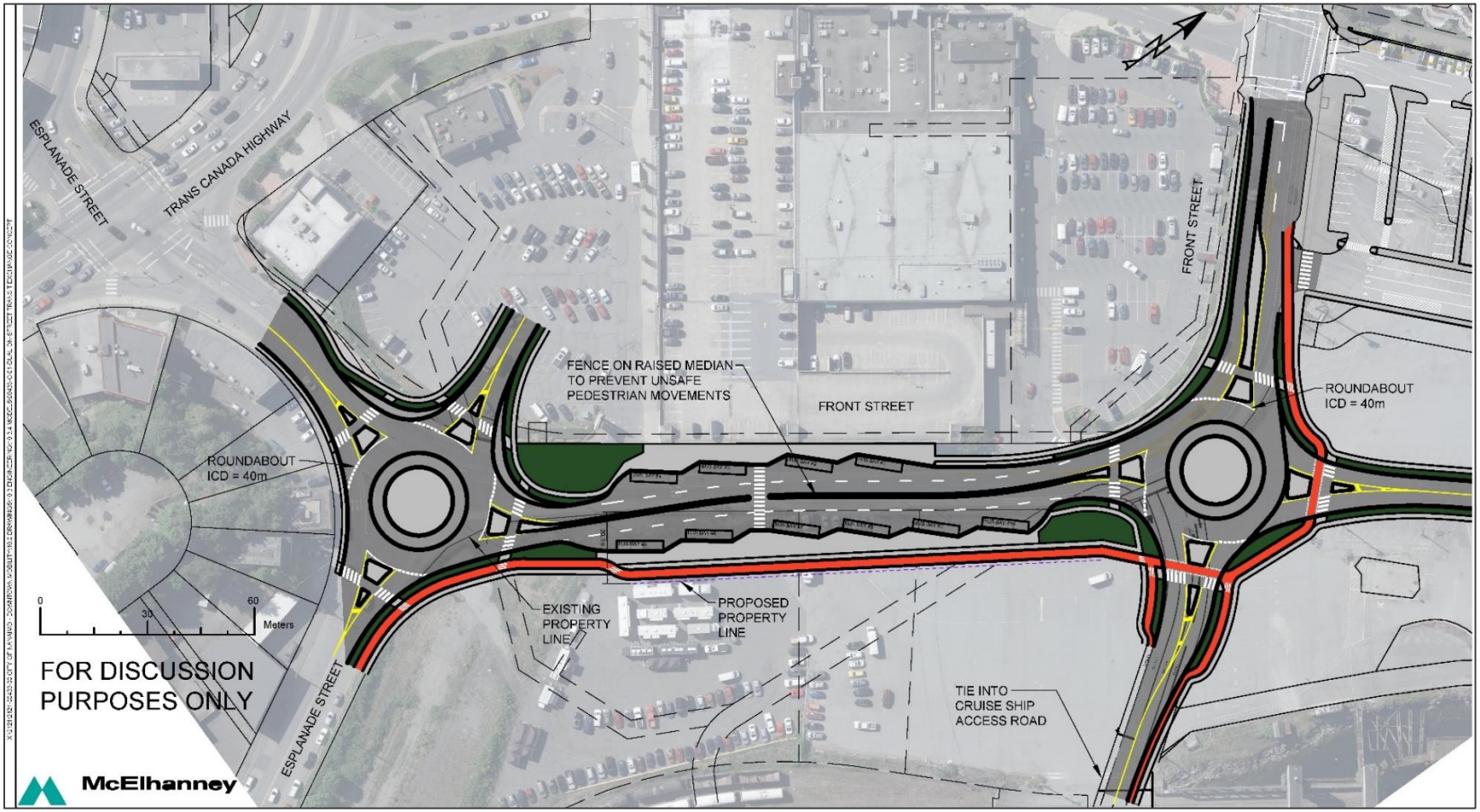


Figure 54: On-Street Exchange with Dual Roundabouts – Electrical Design

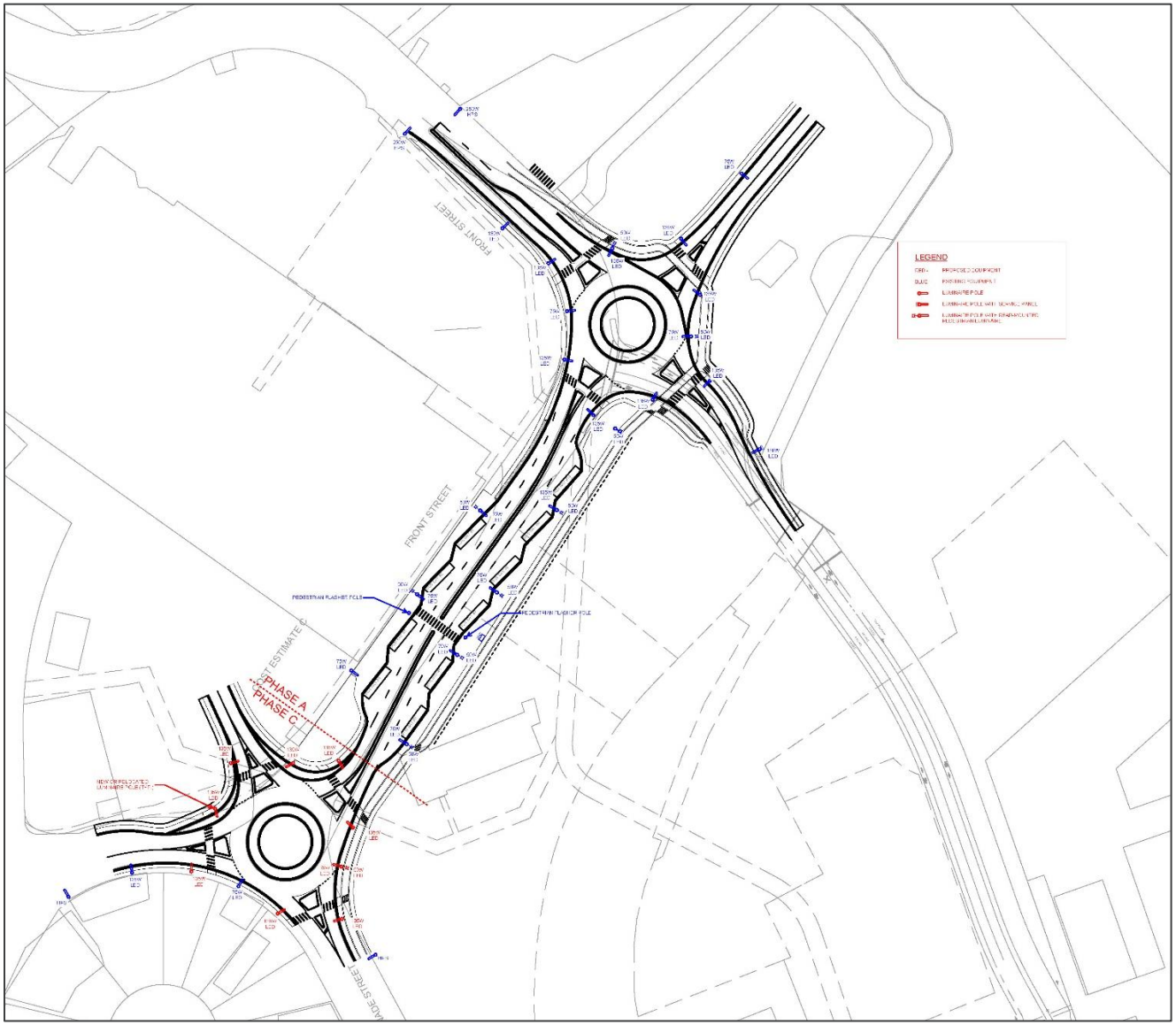


Figure 55: On-Street Exchange with Dual Roundabouts – Stage 1

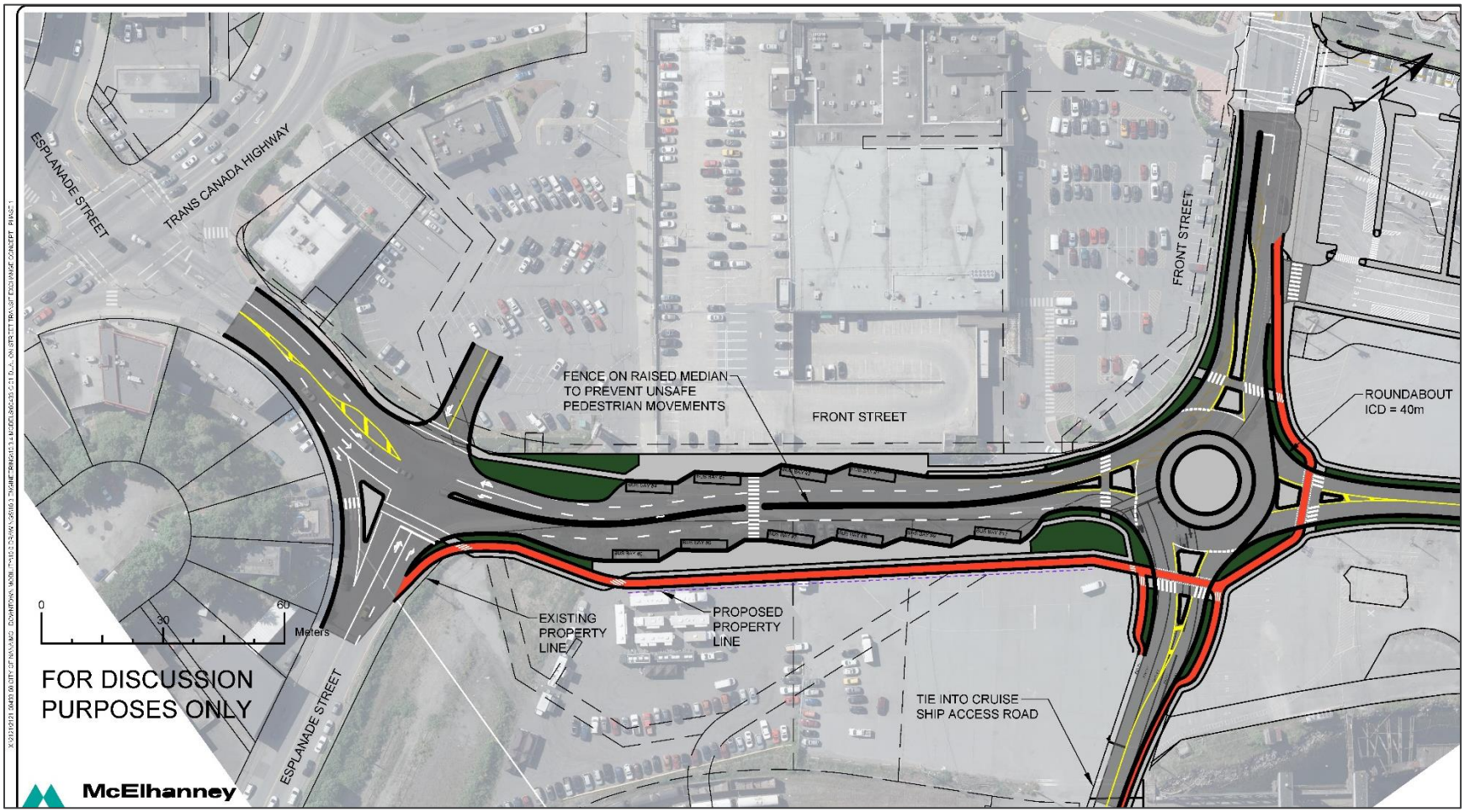
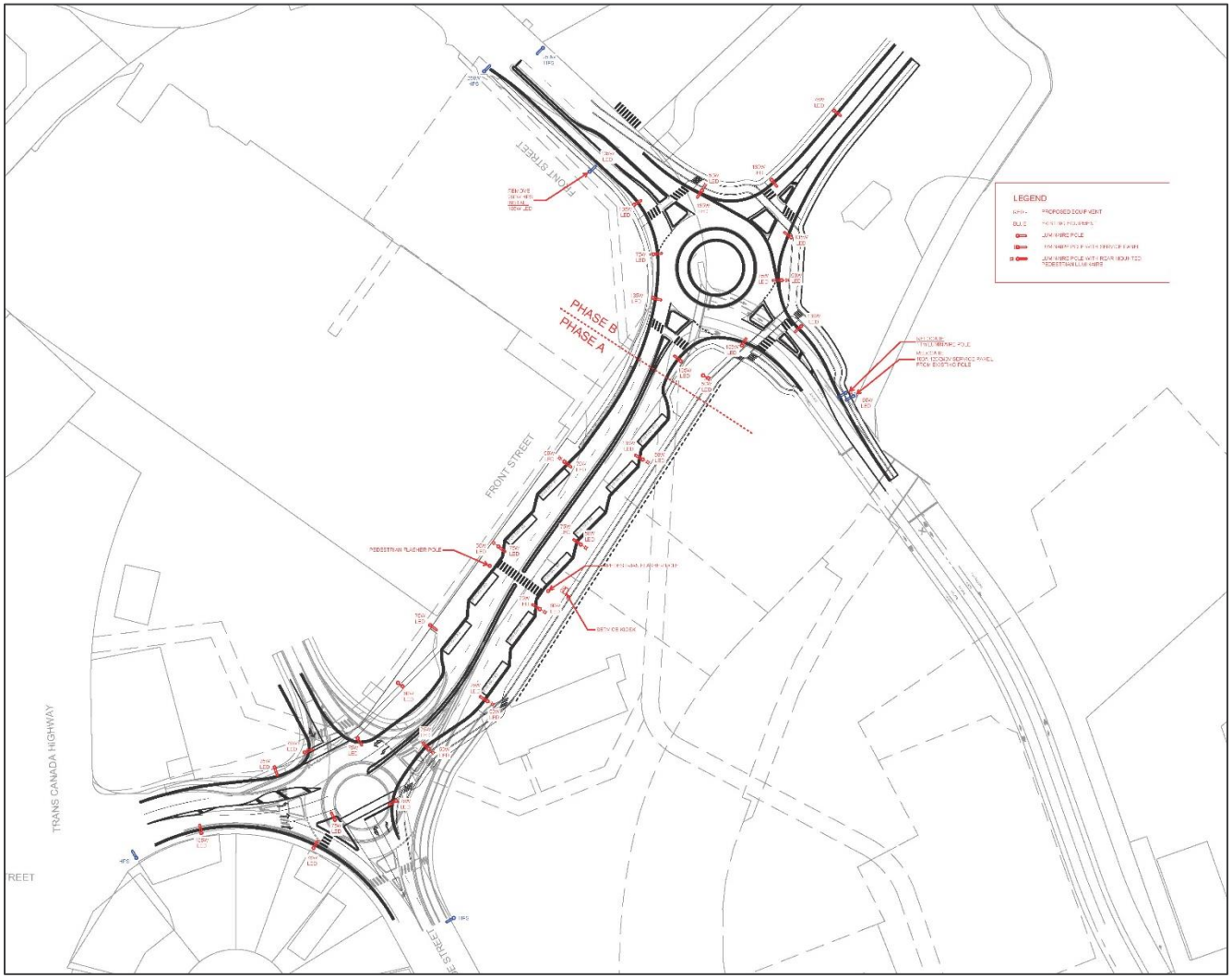


Figure 56: On-Street Exchange with Dual Roundabouts – Stage 1 Electrical Design



5.4. PARALLEL CITY INITIATIVES

One of the priorities of Council in the revitalization of the downtown is the reactivation or repurposing of key vacant sites. The 500 block of Terminal Avenue was identified as such a site due to the visibility of the large “hole in the ground” left after the fire of the Jean Burns building. The roads surrounding this location had been considered for an on-street transit exchange as part of this mobility study, however was discounted as MoTI was concerned about possible additional delays the exchange would induce on Terminal Avenue.

The 500 block of Terminal Avenue is a challenging property to redevelop due to the oddly shaped parcels, multiple owners, difficulty providing parking, and two approving authorities, however Council determined that the City may have the best chance of redeveloping this site versus private developers. As a result, three potential site redevelopment options were considered, and concept renderings prepared for each:

1. City lead redevelopment (*Figure 57*)
2. Public realm/Urban park (*Figure 58*)
3. Public realm/Transit exchange in partnership with the RDN and BCT (*Figure 59*)

Council expressed the greatest interest in Option 3, the Public realm/Transit exchange option, and directed Staff to acquire the land necessary to facilitate a project, and enter a partnership Memorandum of Understanding (MOU) with the RDN and BCT.

Figure 57: Option 1 - City Lead Redevelopment Rendering

Figure 58: Option 2 - Public Realm/Urban Park Rendering

Figure 59: Option 3 - Public Realm/Transit Exchange Rendering

A concept layout of the possible exchange was also developed (*Figure 60*). Were this transit exchange option to advance, the City required an understanding of the Front Street cross section without the exchange. This scenario is shown in *Figure 61*.

Figure 60: Concept Layout of Possible Terminal Avenue Transit Exchange

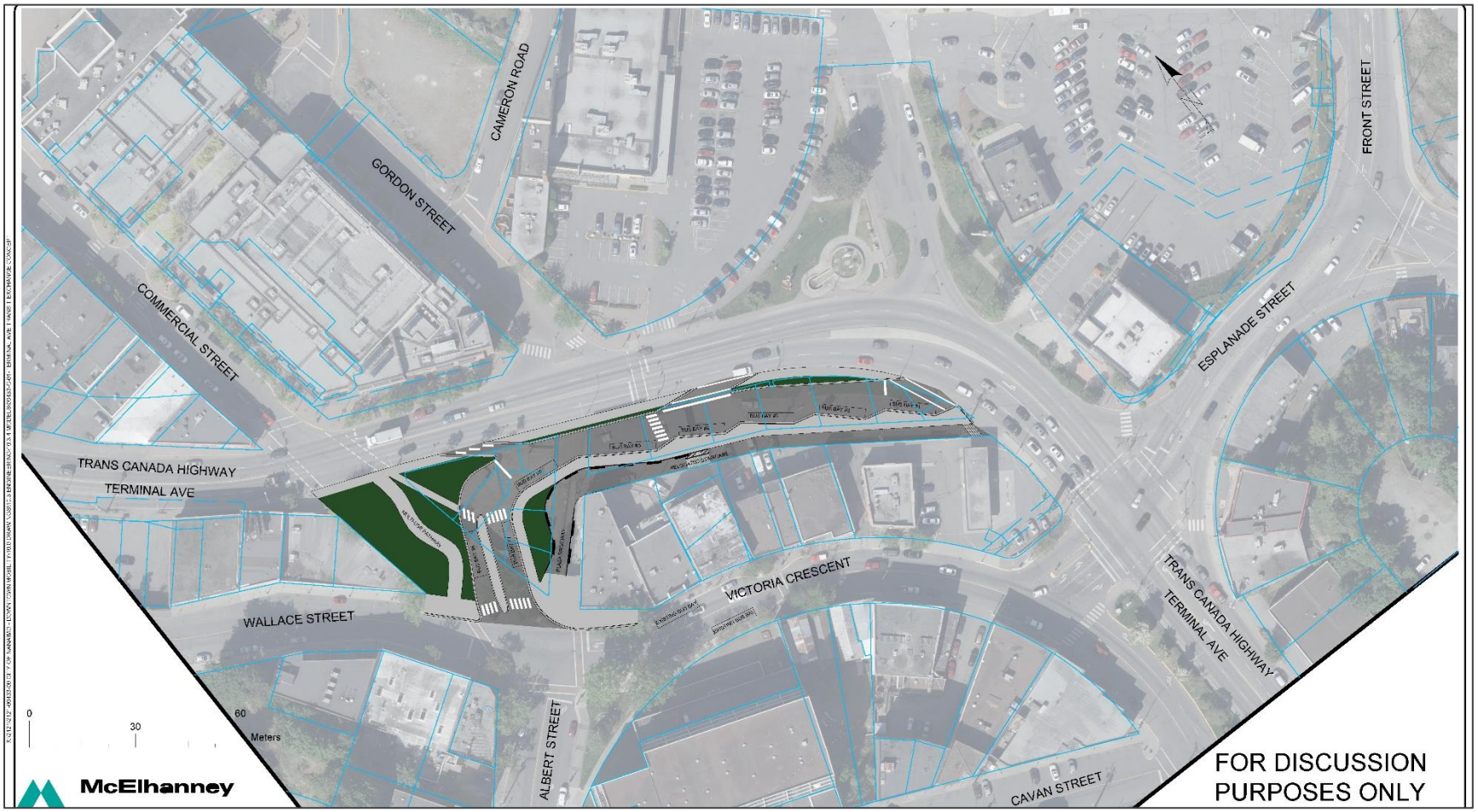
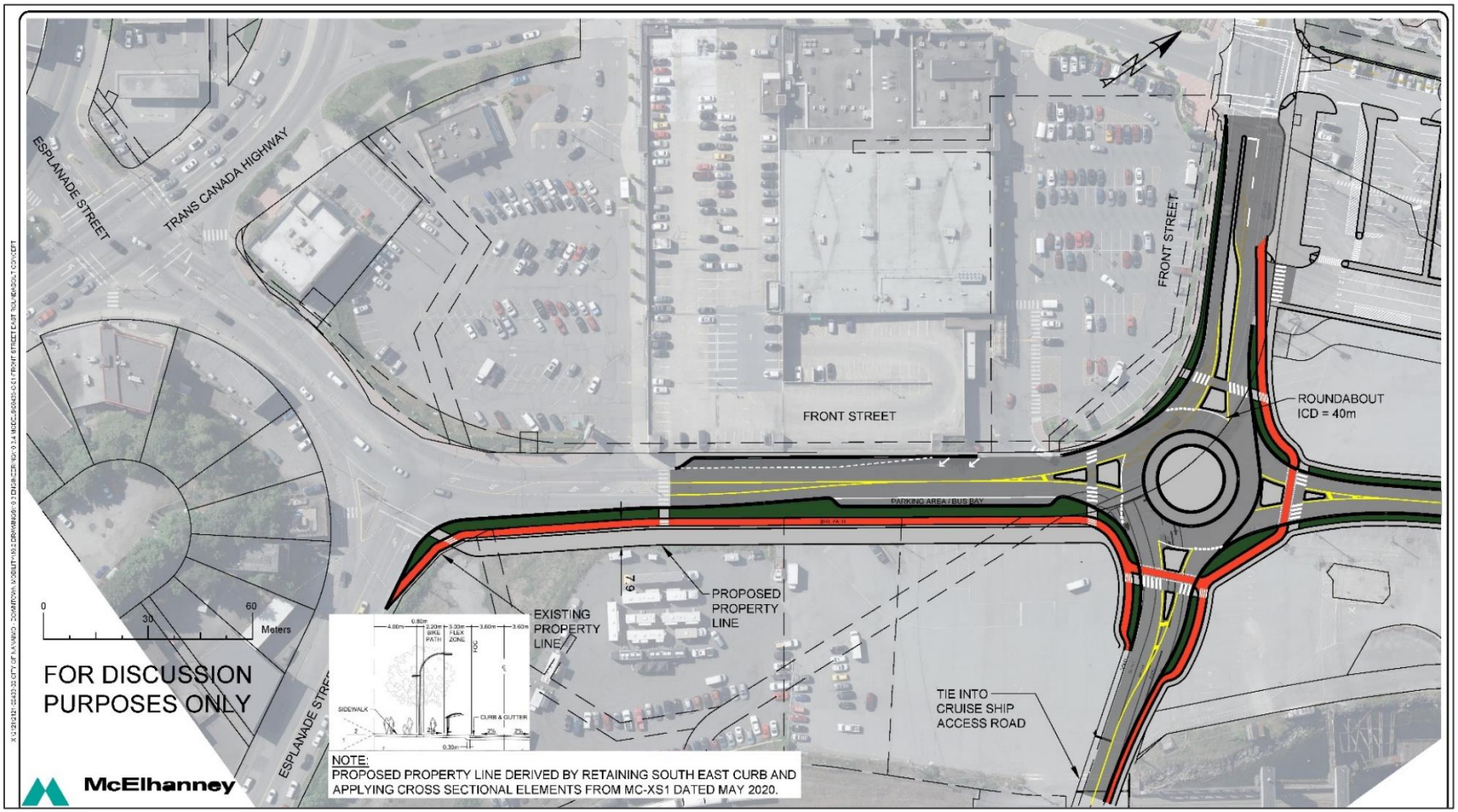


Figure 61: Front Street Concept Without Transit Exchange



6. Parking

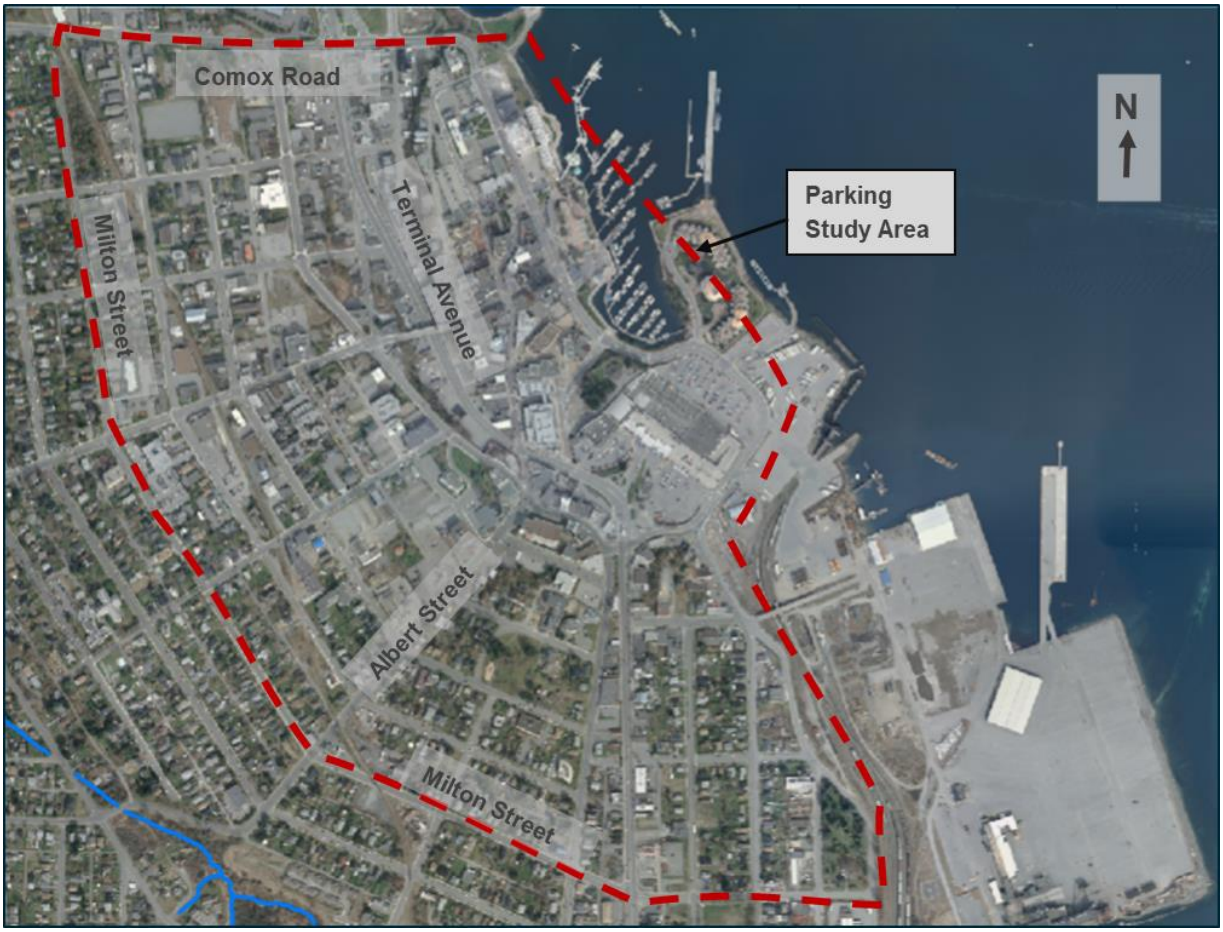
This section presents the downtown Nanaimo parking strategy. The strategy is based on:

- Parking supply and demand (on-street and off-street)
- On-street parking turnover at select locations
- Current on-street parking restrictions in place
- Engagement feedback

6.1. SCOPE

The boundary of the parking study is shown in *Figure 62* and includes Comox Road to the north, Milton Street (both sides) to the south and west, and the waterfront to the east.

Figure 62: Parking Study Area



Of the publicly and privately owned parking lots in the study area, only eight off-street parking lots or parkades were selected to be included in the study. These are listed below and are shown in *Figure 64*.

1. Wallace Wentworth Parking Lot
2. Bastion Street Parkade
3. Selby Street Parking Lot
4. Prideaux/Franklyn Parking Lot
5. Cavan/Hecate Parking Lot
6. Cavan/Victoria Road Parking Lot
7. Harbour Front Parkade
8. Port of Nanaimo Centre Parkade

6.2. PURPOSE OF OFF-STREET VS. ON-STREET PARKING

Parking can be effectively managed by identifying specific purposes for on-street and off-street parking and establishing time limits and parking fees accordingly. General best-practice management follows that on-street parking, though less expensive to construct, is considered premium if the space is located in close proximity to the driver's destination. As such these on-street spaces tend to serve shoppers for short-term use, accessible parking for people with disabilities, and service delivery vehicles where lane or convenient on-site delivery is not available. Typically, these parking spaces have a short-term time duration, including five-minute loading zones, or maximum 30 minutes to 1 hour for on-street parking in commercial areas in order to encourage turnover. Given that they are premium spaces there is always a parking fee associated.

On-street parking located further away from high-destination areas and are therefore less convenient, typically have longer time limits, such as 2 to 4 hours and have lower parking fees.

Off-street parking, including public and private parkades and surface lots, are typically used for longer-term parking needs (i.e., daily parking), but also can be used for short- and medium-term parking needs depending on the location of the parking facility relative to destinations, and occupancy rates of on-street parking. In essence, off-street parking serves as a key element with managing on-street parking issues. For example, if on-street parking has high-occupancy rates and are primarily used by shoppers, the off-street facility can provide the additional supply to meet demand if on-street parking is used by a mix of shoppers and employees. The off-street facility can then be designed to supports use by both user types through a parking pricing system or parking space prioritization system.

6.3. PARKING ANALYSIS

To advise the strategy, parking surveys were undertaken to determine supply, occupancy and turnover.

- **Supply** establishes the total number of parking stalls in the study area
- **Occupancy** is expressed as a percentage and is the number of vehicles parked at the time of the survey divided by the number of parking stalls available
- **Turnover** is the number of vehicles that use each parking stall during the survey period. Parking turnover is calculated by counting the number of vehicles observed in a given time frame and dividing by the number of parking spaces in the facility.

The methodology of data collection is expanded on below.

6.3.1.Supply

When determining parking supply, both the actual capacity and the “effective capacity” are considered. The effective capacity of the parking system is assumed to be approximately 85% of available supply for both on-street and off-street parking. As the parking occupancy rises above 85% it becomes increasingly difficult for drivers to find parking leading to circulating traffic and spillover parking on nearby streets or lots.

6.3.1.1. On-Street

The parking supply was established for both sides of all streets in the study area. Data collection included quantity of parking, location of parking, and parking restrictions through a combination of desktop review and field verification. The desktop review measured the length of curb available for parking on each block face and documenting that in a Geographic Information System (GIS). The curb length was divided by the length of a parking stall (7.0m) and the result rounded down to the nearest whole number to then determine the number of stalls. Time of day and/or duration restrictions were also recorded by reviewing Google Streetview. Images three years or older were flagged for field review. All data was then validated in the field during the occupancy survey.

6.3.1.2. Off-Street, Public

The City provided the number of parking stalls for public off-street parking lots and parkades. Surface parking lot stalls were verified with orthophoto and parkade stalls were verified during the occupancy survey.

6.3.1.3. Off-Street, Private

The owners/operators of the private parking facilities were contacted to provide data for the six large privately owned and operated lots or parkades. Data requested included:

- Number of parking stalls available including how many of any designated types if specified (i.e. accessible, visitor, motorcycle, electric vehicle, employee-only, etc.)
- Lot hours of operation
- Peak hours of occupancy during weekdays / weekends
- Peak occupancy / demand data
- Information on parking turnover rates
- Any other relevant information that is available

A summary of the owners/operator responses is shown in *Table 15*.

Table 15: Summary of Private Parking Operators Responses

Location	Address	Supply	Restrictions	Peak Periods as Identified by Owner
Pioneer Parkade	20 Anchor Way	Approx. 150 stalls	Pay parking 24/7	This location is busy weekdays/weekends
Court House	65 Chapel St	Approx. 40 stalls	Pay parking 24/7	This location is busy weekdays
Dorchester Hotel	12 Front St	Approx. 40 stalls	Pay parking 24/7	This location is busy weekdays/weekends
Nanaimo Credit Union	431 Dunsmuir St	Approx. 60 stalls	Parking Patrolled 24/7, Reserved 5am to 5pm Monday to Friday	Location is busy only during weekdays between 5am and 5pm
Selby Street	420 Selby St	Approx. 100 stalls	Pay parking 24/7	This location is busy weekdays
Port Place Mall	650 Terminal Ave	Total of 696 parking stalls • including 16 Accessible stalls • 32 tenant reserved stalls	• The parking areas are opened to the tenants, employees and customers 24/7 • The parking facility is designated and monitored as a 3-hour parking limit for customers, staff parking is restricted to single shift or daily parking	• The peak hours of occupancy are between 10 am and 4 pm weekdays and 10 am to 8 pm on weekends • Peak occupancy levels on busier days is approximately 85-90%, however owner does not generally take occupancy stats unless they are working on specific projects for their clients.

6.3.2. Occupancy

Occupancy counts were completed for all on-street parking and public parking lots in the study area. The survey was completed by walking or driving each street during the given time period and recording the number of vehicles parked on each block face. Surveys were conducted as follows:

1. April 16, 17, 23, 24 and 25, 2019 – Weekday on-street occupancy survey for the following time periods: 8:00AM to 10:00AM | 11:00AM to 1:00PM | 3:00PM to 5:00PM
2. May 7, 2019 – Parkade and parking lot weekday occupancy survey for the following time periods: 9:00AM to 11:00AM | 2:00PM to 4:00PM
3. May 11, 2019 – Weekend on-street occupancy count for the following time period: 11:00AM to 1:00PM
4. October 25, 2019 – Special event survey of the Bastion Parkade, Harbour Front Parkade, and the Port of Nanaimo Centre for the following times: Noon | 7:30PM

6.3.3. Turnover

Front Street and Albert Street were already identified for the turnover survey due to the proposed cycling improvements that will require the removal of some on-street parking. Other locations were selected based on their high parking demand. These were areas with a consistently high occupancy across multiple time periods.

License plates of vehicles parked on the identified streets were recorded at one-hour intervals for the eight-hour period between 8:00AM and 4:00PM. The survey was conducted on September 18, 19, 25, and 26, 2019.

The street sections included in the turnover study and their respective occupancy levels are shown in *Table 16.*.

Table 16: Streets Included in Turnover Survey

				Occupancy				Restrictions
Street	**From**	**To**	**Stalls**	**AM**	**MID**	**PM**	**W/END**	
Commercial Street	Terminal Avenue	Bastion Street	40	83%	95%	71%	79%	• 2-hour parking (35) • accessible stalls (2) • loading zone (3)
Church Street	Bastion Street	Front Street	17	83%	89%	50%	56%	• 2-hour parking (16) • loading zone (1)
Front Street	Church Street	Chapel Street	29	62%	72%	62%	86%	• 2-hour parking (29)
Chapel Street	Skinner Street	Church Street	36	72%	61%	42%	42%	• 2-hour parking (30) • Accessible stall (2) • Construction (4)
Wesley Street	Fitzwilliam Street	Franklyn Street	42	43%	86%	74%	60%	• 2-hour parking (39) • accessible stalls (1) • loading zone (2)
Fitzwilliam Street	Prideaux Street	Wallace Street	31	37%	80%	73%	42%	• 2-hour parking (26) • 1-hour parking (1) • accessible stalls (1) • loading zone (3)
Selby Street	Wentworth Street	Franklyn Street	62	36%	91%	86%	70%	• 2-hour parking, resident exempt (30) • 2-hour parking (29) • accessible stalls (1) • loading zone (2)
Selby Street	Franklyn Street	Albert Street	44	48%	89%	84%	32%	• 2-hour parking, resident exempt (20) • 2-hour parking (6) • accessible stalls (1) • loading zone (1) • construction (7)
Wallace Street	Franklyn Street	Albert Street	29	7%	83%	72%	76%	• 2-hour parking (27) • accessible stalls (1) • loading zone (1)
Albert Street	Wallace Street	Milton Street	58	52%	61%	66%	47%	• unrestricted (27) • 2-hour parking (29) • loading zone (1) • 1-hour parking (1)
Victoria Crescent	Albert Street	Esplanade	19	32%	58%	84%	84%	• 2-hour parking (16) • accessible stalls (1) • loading zone (2)

6.4. PUBLIC CONSULTATION

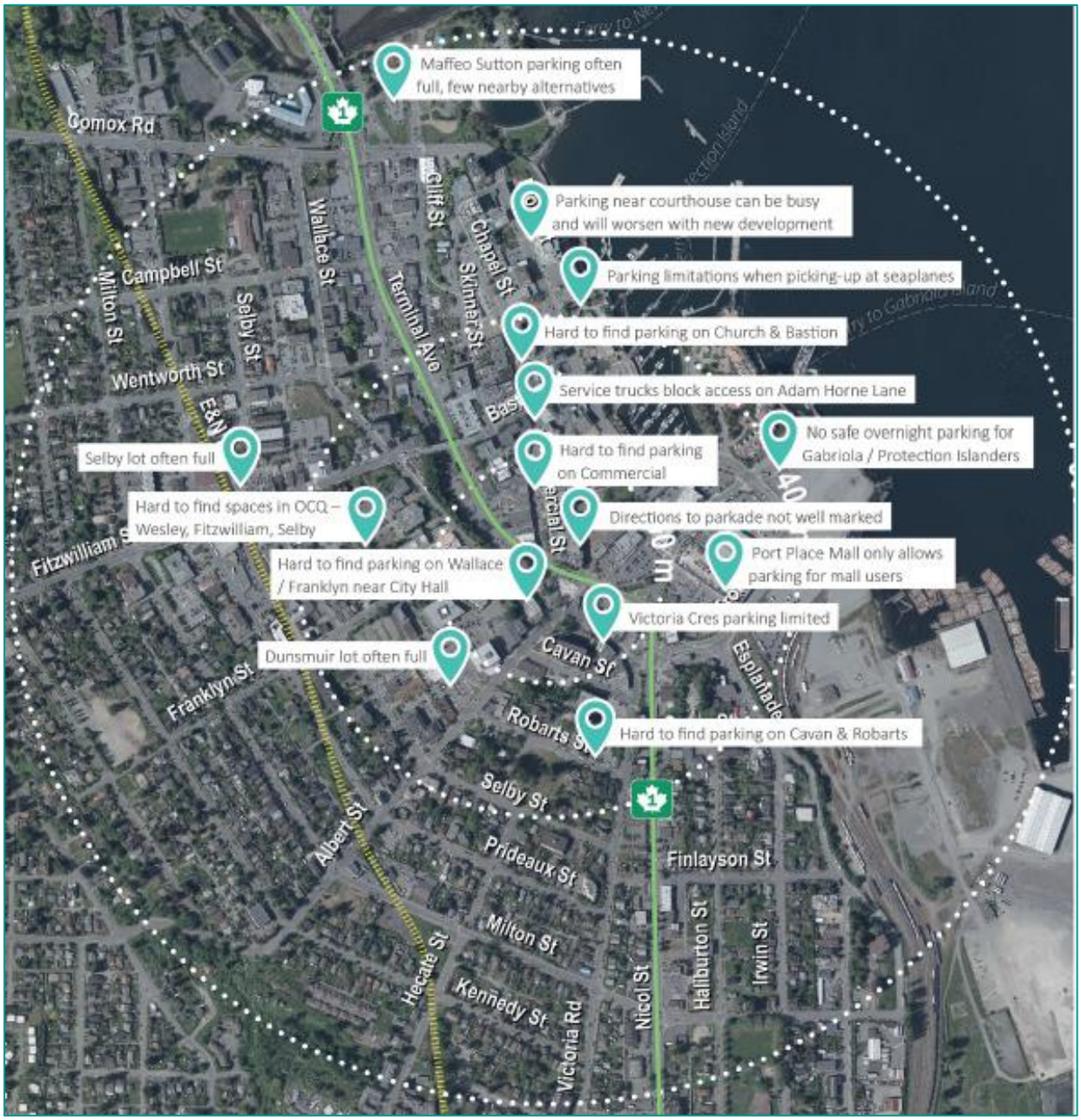
Two phases of public consultation were held in the spring and fall of 2019 as part of the DNMH project. More specifics pertaining to the extent of engagement and who participated is provided in *Section 7*. From the Phase 1 engagement, key themes regarding parking emerged and are summarized below. These provide guidance for the development of a parking strategy.

6.4.1. Key Themes for Parking

- **AMOUNT:** Most participants felt there is sufficient downtown parking, with limitations in key areas. Suggestions to convert excess parking to bike lanes, bike parking, sidewalk widening, or public realm enhancements. Some concerns from business-owners that parking limitations could impact customers.
- **COST:** Most participants felt parking is relatively inexpensive (some mixed opinions). Suggestions for free parking and/or longer free parking windows (e.g., 3 to 4 hrs) to encourage economic development, possibly balanced with programs that discourage workers from taking up retail parking.
- **WAYFINDING:** Participants felt people have difficulty finding existing parking garages and lots. Enhanced wayfinding to direct people to underutilized parking areas would improve use.
- **ALTERNATIVE OPTIONS:** Participants suggested a need for more electric charging facilities, parking for motorcycles / electric scooters, and bicycle parking to encourage alternative modes.
- **SAFETY:** Concerns about safety and break-ins or feeling unsafe, notably in parking garages.
- **SPECIAL EVENTS:** Participants suggested that strategies to increase parking for special events should be considered (rather than addition of parking), for example, signage or volunteers to direct people to parking areas, temporary parking zones, shuttles, online information, etc.
- **FUTURE DEVELOPMENT:** Potential opportunities to incorporate public parking within future private development and encourage accommodation of public parking within buildings, rather than building more stand-alone parkades or lots.
- **PARKING ON THE PERIPHERY:** Some suggestions to provide lower-cost or free parking on the periphery within walking distance of downtown.
- **OVERSIZE VEHICLE PARKING:** Some suggestions to accommodate RVs and trucks near the downtown and provide wayfinding to these areas.

Locations where workshop attendees perceived there to be parking related concerns are shown in *Figure 63*.

Figure 63: Locations of Perceived Parking Concerns as Stated by Engagement Participants



In Phase 2 of engagement, the parking occupancy and turnover survey results were presented, and the following directions emerged:

- Improve parking wayfinding and information
- Develop parking strategies for downtown events
- Community support for increased parking fees closer to downtown, and decreasing outwards
- Consider time of day parking fees to encourage visitors to downtown late afternoon / evening

6.5. FINDINGS & ANALYSIS

6.5.1. Current Parking Restrictions

There are eight types of parking restrictions in the study area. Their respective locations are shown in *Figure 64* and are listed below. The shaded areas are the off-street parking lots.

1. Unrestricted, no payment
2. Unrestricted, payment
3. 2-hour parking, no payment
4. 2-hour parking, payment
5. 2-hour parking, resident exempt
6. 1-hour parking
7. Loading Zone (5, 15 or 30 minutes)
8. Accessible

Figure 64: Location of Parking Restrictions and Parking Lots/Parkades

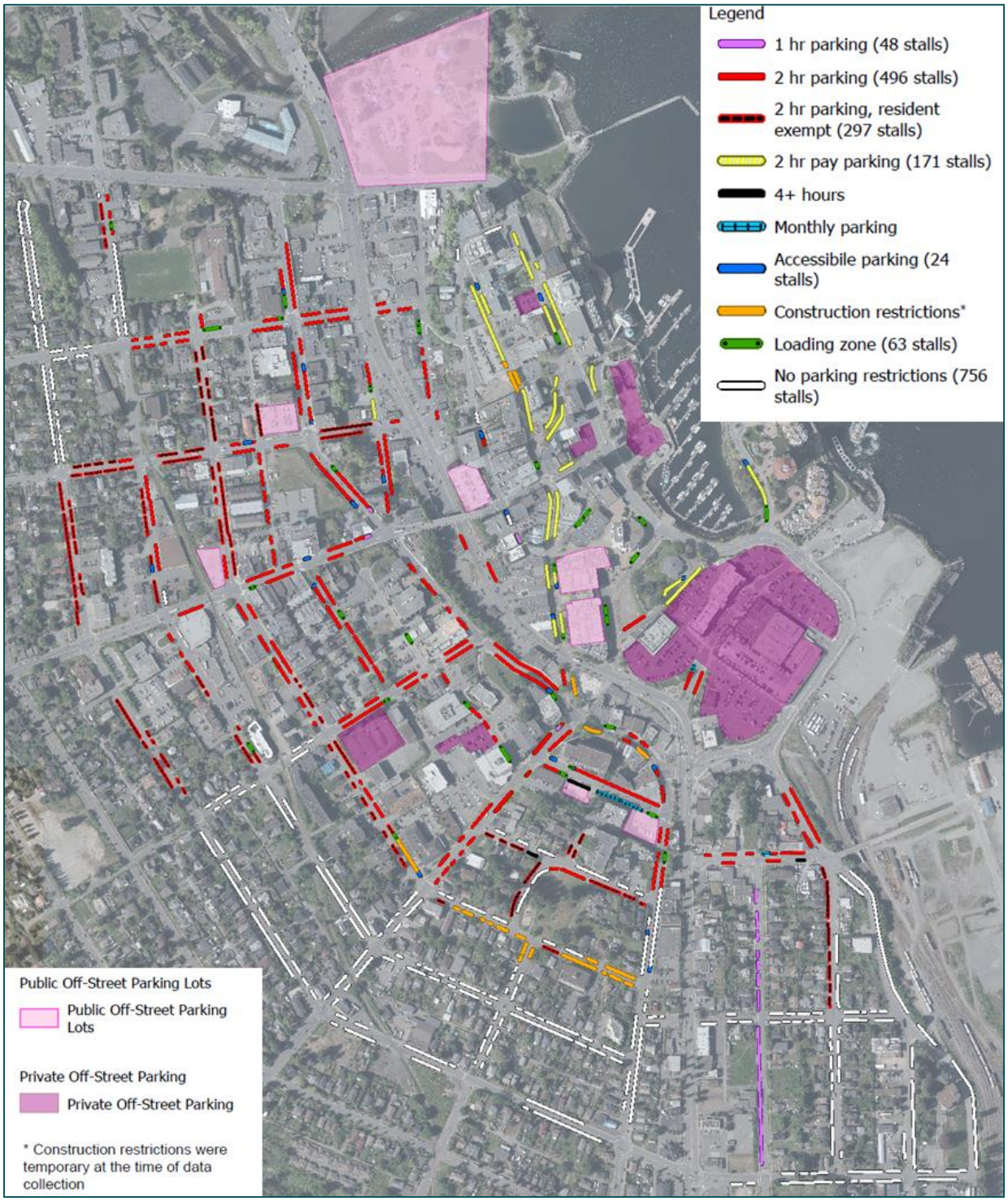


Table 17 shows a breakdown of all the on-street parking in the study area by type and if payment is required. Note that only 10% of the study area on-street parking requires payment, however this is heavily influenced by the removal of pay parking in several locations due to an increase in parking meter theft and vandalism that occurred in late 2018 and early 2019. This resulted in the City removing all the existing parking meters to prevent further theft and vandalism. Until a more permanent solution can be implemented, the affected pay parking areas were changed to 2-hour free parking.

Table 17: Parking Restrictions by Type and Quantity

Parking Type	Total	Percent of Total
Unrestricted, no payment	756	40%
Unrestricted, payment	28	1%
2 Hour, no payment	496	26%
2 hour, payment	171	9%
2 Hour, Resident Exempt	297	16%
1 Hour	48	3%
Loading Zone (5, 15, or 30 minutes)	63	3%
Accessible	24	1%
Total	**1883**	**100%**

The largest type of parking is unrestricted with no payment required (40%) followed by 2-hour parking with no payment required (26%), then 2-hour resident exempt (16%). These three constitute 82% of the downtown on-street parking supply, and all require no payment.

Only in the downtown core are parking payment machines provided.

6.5.2. On-Street Parking Current Conditions

6.5.2.1. On-Street Parking Occupancy

Table 18 presents the overall number of vehicles parked and occupancy for the surveyed time periods.

Table 18: Overall Occupancy – On-Street Parking

Period	Vehicles Parked	Percent Occupied
Morning (8am – 10am)	942	50%
Mid-day (11am – 1pm)	1168	62%
Afternoon (3pm – 5pm)	1037	55%
Weekend (11am – 1pm)	778	41%

The overall occupancy in the downtown ranges from 41% to 62%. The lowest occupancy occurs during the weekend midday period, and occupancy is generally higher on weekdays. This is not unexpected due to the land use types in the downtown and the generally reduced traffic volumes of weekends.

Table 19 presents a detailed occupancy breakdown by type of restriction and time period.

Table 19: Detailed Occupancy – On-Street Parking

		AM (8am - 10pm)		MID (11am - 1pm)		PM (3pm - 5pm)		W/End (11am - 1pm)	
Parking Type	Supply	Vehicles Parked	Occupancy (%)	Vehicles Parked	Occupancy (%)	Vehicles Parked	Occupancy (%)	Vehicles Parked	Occupancy (%)
Unrestricted, no payment	756	355	47%	353	47%	307	41%	248	33%
Unrestricted, payment	28	20	71%	19	70%	17	61%	5	18%
2 Hour, no payment	496	264	53%	436	88%	390	79%	241	49%
2 Hour, payment	171	106	62%	119	70%	85	50%	107	63%
2 Hour, Resident Exempt	297	152	51%	191	64%	191	64%	122	41%
1 Hour	48	21	44%	28	58%	29	60%	29	60%
Loading Zone (5, 15, or 30 minutes)	63	20	32%	15	24%	12	19%	22	35%
Accessible	24	4	17%	7	29%	9	38%	7	29%
Total	**1883**	**942**	**50%**	**1168**	**62%**	**1040**	**55%**	**781**	**42%**

The only category with an occupancy level over 80% is the midday, 2-hour no payment parking with an occupancy of 88%. The afternoon occupancy of the same locations is 79%. All other types have occupancies of around 70% and less for all time periods.

Most of the locations with 2-hour no payment parking and no resident exempt parking are a result of the removal of the parking meters from downtown streets. The higher occupancy on these streets may be indicative of the public preferring free parking. In discussions with the City it is understood that enforcement of the 2-hour restriction is challenging due to bylaw enforcement resources being committed to other higher priority areas of enforcement in the City.

Breakdowns of the morning, mid-day, afternoon and weekend on-street parking occupancy are shown in *Figure 65* to *Figure 68*. *Table 20* is a summary of the locations with the highest occupancy ranked by the average occupancy over all survey periods. Highlighted in the table are those streets or sections of streets with the highest levels of occupancy and when they occur. Only the top five ranked locations have occupancies exceeding 80% in two or more of the surveyed periods. Of these, Albert Street and Wentworth Street between Prideaux Street and Selby Street are located sufficiently far from the downtown that it unlikely anyone parking here is visiting the downtown core, and the majority of those parked are probably local residents. Cliff Street is in a primarily light industrial area and a 2 hr. no payment system is appropriate.

Commercial Street and Church Street are in the heart of the downtown and have 2-hour pay parking in place. These streets appear to warrant either a parking fee increase or a time period reduction. This will be further assessed when considering parking turnover.

Table 20: Highest Occupancy Locations – On-Street Parking

Street	From	To	Parking Type	Stalls Available	Morning (8am - 10am) % Occupancy	Mid-day (11am -1pm) % Occupancy	Afternoon (3pm -5pm) % Occupancy	Weekend % Occupancy	Average % Occupancy
Cliff St	Campbell St	Terminal Ave	2 Hour, no payment	11	73%	100%	82%	82%	84%
Commercial St	Bastion St	Terminal Ave	2 Hour, payment	42	79%	83%	95%	71%	82%
Albert St	Prideaux St	Selby St	Unrestricted, no payment	14	50%	93%	86%	79%	77%
Wentworth St	Prideaux St	Selby St	2 Hour, Resident Exempt	16	50%	88%	81%	88%	77%
Church St	Chapel St	Front St	2 Hour, payment	16	56%	81%	94%	56%	72%
Commercial St	Terminal Ave	Wallace St	2 Hour, no payment	7	86%	57%	71%	71%	71%
Prideaux St	Franklyn St	Albert St	Unrestricted, no payment	44	48%	75%	86%	75%	71%
Front St	Chapel St	Church St	2 Hour, payment	29	86%	62%	72%	62%	71%
Richards St	Fitzwilliam St	Campbell St	2 Hour, no payment	20	45%	65%	100%	70%	70%
Esplanade	Front St	Port Way	2 Hour, no payment	25	100%	52%	64%	60%	69%
Franklyn St	Milton St	Prideaux St	Unrestricted, no payment	12	17%	75%	92%	92%	69%
Prideaux St	Fitzwilliam St	Franklyn St	2 Hour, no payment; 2 Hour, Resident Exempt	27	37%	63%	74%	100%	69%
Promenade Dr	Front St	Cul de sac	2 Hour, payment	11	91%	73%	73%	36%	68%
Albert St	Robarts St	Wallace St	2 Hour, payment	18	67%	50%	67%	89%	68%
Selby St	Wentworth St	Albert St	2 Hour, no payment; 2 Hour, Resident Exempt	108	54%	41%	90%	85%	67%
Prideaux St	Campbell St	Comox Rd	Unrestricted, no payment; 2 Hour, Resident Exempt	36	33%	100%	83%	47%	66%
Wesley St	Fitzwilliam St	Franklyn St	2 Hour, no payment	42	60%	43%	86%	74%	65%
Campbell St	Milton St	Cliff St	2 Hour, no payment	54	26%	87%	72%	69%	63%
Robarts St	Albert St	Victoria Rd	Unrestricted, no payment; 2 Hour, Resident Exempt	48	19%	83%	81%	67%	63%
Milton St	Campbell St	Wentworth St	Unrestricted, no payment	23	17%	74%	83%	70%	61%
Wallace St	Franklyn St	Albert St	2 Hour, no payment	29	76%	7%	83%	72%	59%
Fitzwilliam St	Selby St	Wallace St	2 Hour, no payment	25	52%	32%	84%	68%	59%
Crace St	Nicol St	Esplanade	2 Hour, no payment	22	91%	36%	64%	41%	58%

LEGEND	
	90% - 100%
	80% - 89%
	70% - 79%

Figure 65: On-Street Parking Occupancy: AM

CITY OF NANAIMO
THE HARBOUR CITY

Downtown Mobility Hub Project
On-street and Off-street
Occupancy - Morning

Legend

Occupancy

- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%
- Private Off-Street Parking

Number of vehicles parked at time of count

5
12

Number of parking stalls on the block face

Project Number: 2121-00433-00
Data Collected: April/May 2019
Date: November 12, 2019

0 30 60 120 Metres

N

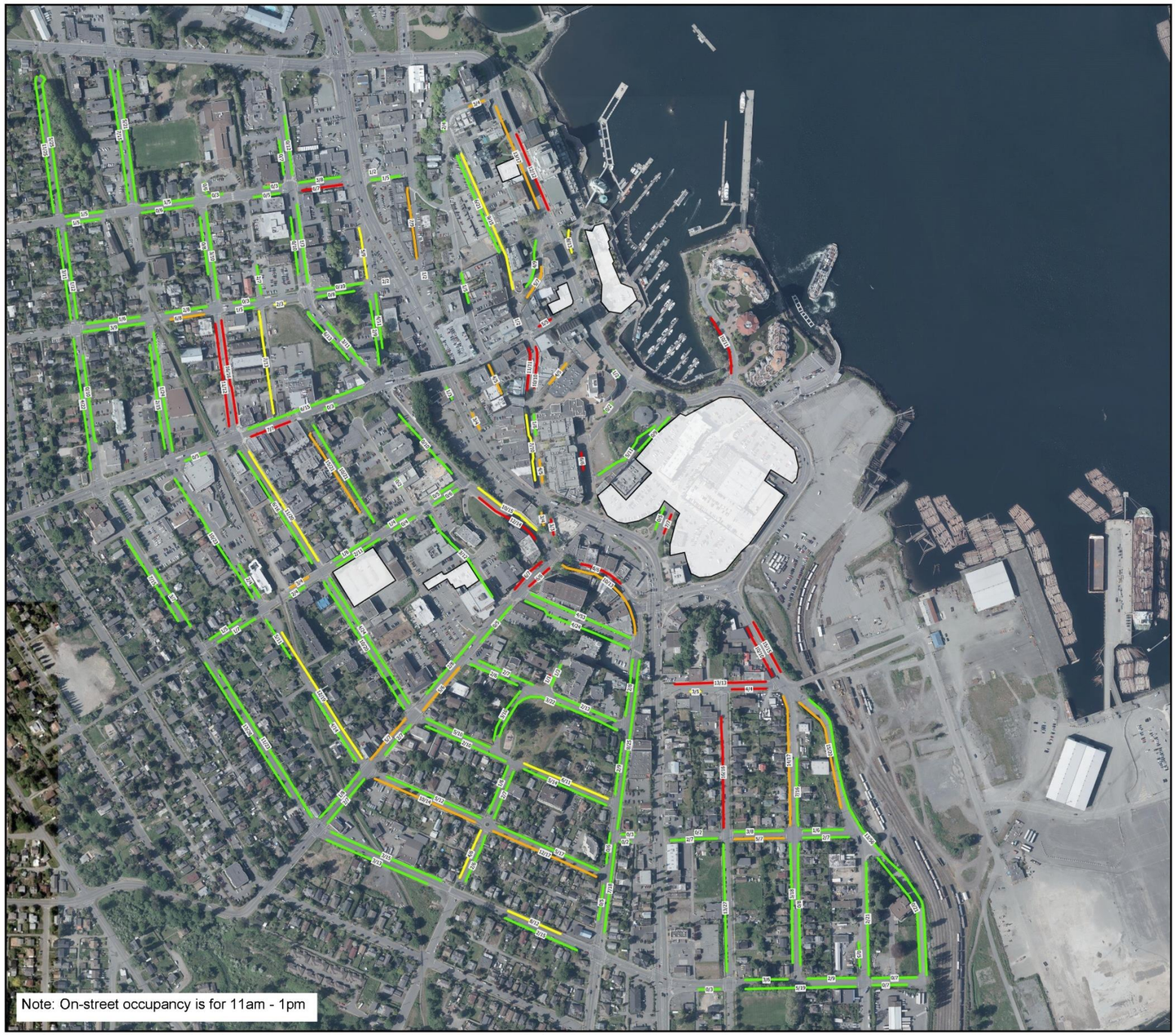
Coordinate System:
NAD 1983 UTM Zone 10N

Scale:
1:5,000

McElhanney

Figure 1

Figure 66: On-Street Parking Occupancy: Mid-Day



CITY OF NANAIMO
THE HARBOUR CITY

Downtown Mobility Hub Project
On-street and Off-street
Occupancy - Midday

Legend

Occupancy
- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%
- Private Off-Street Parking

Number of vehicles parked at time of count

5
12

Number of parking stalls on the block face

Project Number: 2121-00433-00
Data Collected: April/May 2019
Date: November 12, 2019

0 30 60 120 Metres

N

Coordinate System: NAD 1983 UTM Zone 10N

Scale: 1:5,000

McElhanney

Figure 2

Figure 67: On-Street Parking Occupancy: PM

CITY OF NANAIMO
THE HARBOUR CITY

Downtown Mobility Hub Project
On-street and Off-street
Occupancy - Afternoon

Legend

Occupancy

- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%
- Private Off-Street Parking

Number of vehicles parked at time of count

5
12

Number of parking stalls on the block face

Project Number: 2121-00433-00
Data Collected: April/May 2019
Date: November 12, 2019

0 30 60 120 Metres

N

Coordinate System:
NAD 1983 UTM Zone 10N

Scale:
1:5,000

McElhanney

Figure 3

Figure 68: On-Street Occupancy: Weekend

CITY OF NANAIMO
THE HARBOUR CITY

Downtown Mobility Hub Project
On-street and Off-street
Occupancy - Weekend

Legend

Occupancy
- 0% - 50%
- 51% - 70%
- 71% - 85%
- 86% - 100%
- Private Off-Street Parking

Number of vehicles parked at time of count

5
12

Number of parking stalls on the block face

Project Number: 2121-00433-00
Data Collected: April/May 2019
Date: November 12, 2019

0 30 60 120 Metres

N

Coordinate System: NAD 1983 UTM Zone 10N

Scale: 1:5,000

McElhanney

Figure 4

6.5.2.2. On-Street Parking Turnover

The parking survey data was collected at 1-hour intervals from 8:00AM to 4:00PM. Results for the average duration of parking in each location are shown in *Table 21*, as well as the turnover rate. The number of vehicles parked in each location by duration of stay is shown in *Table 22*, which table also shows how many vehicles remained parked for extended periods. A detailed breakdown of the surveyed data is provided in the *Appendix C*.

Table 21: Parking Turnover by Location

Location	# of stalls	Avg. Percent of Vehicles Staying Over 2 Hrs	Average Parking Duration (Hrs)	Turnover Rate (vehs/stalls/2hrs)	Turnover Rate (vehs/stalls/1hr)
Commercial Street	40	6%	1.3	3.3	2.7
Church Street	17	6%	1.3	2.5	1.9
Front Street	29	8%	1.7	2.7	2.2
Chapel Street	36	11%	1.5	1.1	0.7
Wesley Street	42	16%	1.8	1.8	1.1
Wallace Street	29	15%	1.7	1.8	1.0
Victoria Street	19	23%	1.9	1.4	1.0
Fitzwilliam Street	31	7%	1.5	2.4	1.9
Selby Street (Wentworth to Franklyn)	62	28%	2.3	1.5	0.9
Albert Street	58	29%	2.6	1.4	1.1
Selby Street (Franklyn to Albert)	44	23%	2.3	1.6	1.3

Table 22: Parking Durations by Location

Location	# of Vehicles by Duration of Stay				
	1-hour	2-hour	3-hour	4-hour	5+ hours
Commercial Street	133	26	7	1	2
Church Street	42	9	2	0	2
Front Street	78	15	3	2	5
Chapel Street	41	17	2	0	7
Wesley Street	76	31	4	5	11
Wallace Street	53	23	8	1	5
Victoria Street	26	7	5	2	5
Fitzwilliam Street	75	16	2	1	4
Selby Street (Wentworth to Franklyn)	92	36	16	10	25
Albert Street	79	16	7	5	26
Selby Street (Franklyn to Albert)	69	13	3	2	19

The turnover rate is calculated by dividing the number of vehicles observed in a given time frame, in a given location by the number of parking spaces available in that location. The rate is typically linked to the allowed parking duration, so for a location allowing two-hour parking, the turnover for a two-hour period is calculated. In commercial areas a higher turnover rate is preferred, and in residential areas a lower rate is expected. In *Table 21*, parking turnover rates for both one hour and two hours are shown given the importance of having high turnover for the parking fronting retail businesses in the downtown.

A summary of the parking turnover findings for each street is provided below.

Commercial Street

- A parking turnover in the order of three vehicles every hour or two hours
- Low number of vehicles parked for more than 2-hours

Church Street

- A parking turnover of two and above vehicles every hour or two hours
- Low number of vehicles parked for more than 2-hours

Front Street

- A parking turnover of over two vehicles every hour or two hours
- Generally low number of vehicles parked for more than 2-hours
- Five stalls (17% of total) had vehicles parked for longer than five hours, suggesting the need for increased enforcement

Chapel Street

- A parking turnover about one vehicle every hour or two hours
- Generally low number of vehicles parked for more than 2-hours
- Seven stalls (19% of total) had vehicles parked for longer than five hours, suggesting the need for increased enforcement

Wesley Street

- A parking turnover about two vehicles every two hours
- Generally low number of vehicles parked for more than 2-hours
- 11 stalls (26% of total) had vehicles parked for longer than five hours, suggesting the need for increased enforcement

Wallace Street

- A parking turnover about two vehicles every two hours
- Generally low number of vehicles parked for more than 2-hours
- 5 stalls (17% of total) had vehicles parked for longer than five hours, suggesting the need for increased enforcement

Victoria Street

- A parking turnover about two vehicles every two hours
- 5 stalls (16% of total) had vehicles parked for longer than three and five hours, suggesting the need for increased enforcement

Fitzwilliam Street

- A parking turnover of two and above vehicles every hour or two hours
- Low number of vehicles parked for more than 2-hours

Selby Street

- A parking turnover of over one vehicle every hour or two hours
- Parking is a mix of 2 hour and Resident Exempt, with some off-street parking also available

Albert Street

- A parking turnover over one vehicle every hour or two hours
- Generally low number of vehicles parked for more than 2-hours
- 26 stalls (45% of total) had vehicles parked for longer than five hours, suggesting the need for increased enforcement

6.6. ON-STREET PARKING FUTURE CONDITIONS

6.6.1. Front Street Cycle Track

Implementation of the Front Street Cycle Track will remove parking on the east side of Front Street between Church Street and Chapel Street. This section of Front Street currently has 17 parking stalls on the west side and 12 on the east side. With the addition of the two-way cycle track the 12 parking stalls on the east side will be removed. To offset the parking stall removal, 23 new stalls will be added to the west side as follows:

- 3 stalls north of Church Street
- 7 stalls between Church Street and Bastion Street
- 5 stalls between Bastion Street and Museum Way
- 8 stalls between Museum Way and Gabriola Ferry terminal Road

The total net parking stall change will be an addition of 11 parking stalls.

Table 23 shows the total existing parking occupancy on Front Street as well as the streets within one block. It is assumed any reduction in parking on sections of Front Street will likely result in parking relocating to the adjacent streets if there is parking available. The table also shows the total future occupancy on Front Street and the surrounding streets with the east side parking removed. These numbers include the additional ten parking stalls on the west side, north of Bastion Street. The 13 additional stalls south of Bastion Street are two or more blocks away and unlikely to directly offset the removed parking.

Table 23 demonstrates that after the implementation of the cycle track, the parking demand can still be accommodated on Front Street, without any spillover onto the adjacent streets.

Table 23: Front Street and Surrounding Street Occupancy - Current And Future

		Morning		Midday		Afternoon		Weekend	
	Stalls	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy
Existing (pre cycle track)									
Front Street (existing)	29	18	62%	21	72%	18	62%	25	86%
Church Street	16	13	81%	15	94%	9	56%	9	56%
Chapel Street	44	33	75%	29	66%	20	45%	20	45%
Bastion Street	5	0	0%	0	0%	0	0%	5	100%
Anchor Way	13	6	46%	8	62%	1	8%	8	62%
Total (existing)	**124**	**70**	**56%**	**73**	**59%**	**48**	**39%**	**67**	**53%**
Future (post cycle track)									
Front Street (future)	27 *	18	67%	21	78%	18	67%	25	93%
Total (future)	**122**	**70**	**57%**	**73**	**60%**	**48**	**39%**	**67**	**55%**

* 27 = 29 – 12 +10

6.6.1.1. Albert Street

Protected bicycle lanes are planned to be installed on Albert Street by removing parking on the downhill side (northbound) of the street and reallocating street space for the bicycle lanes. There are currently 31 parking stalls on the downhill side of Albert Street. The parking analysis below assesses the impact to Albert Street and the adjacent streets with this change.

Table 24 shows the total existing parking occupancy on Albert Street and the surrounding streets within one block. It is assumed any reduction in parking on Albert Street will likely result in parking relocating to the adjacent streets if there is parking available. The table also show the total future occupancy on Albert Street and the surrounding streets with the parking removed from the downhill side of the street.

Table 24 demonstrated that with the construction of the Albert Street bicycle lanes, the existing parking demand on Albert Street will likely take up both the current excess parking supply of approximately 40% and will spillover to the adjacent streets. This additional parking demand can be accommodated on these streets which all currently have supply exceeding demand even after the bike lanes are implemented.

Table 24: Albert Street and Surrounding Street Occupancy - Current and Future

		Morning		Midday		Afternoon		Weekend	
	Stalls	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy
Existing (pre cycle lanes)									
Albert Street (Wallace St to Milton St) (existing)	61	32	52%	37	61%	40	66%	29	48%
Victoria Cres (Albert St to Cavan St)	19	6	32%	11	58%	16	84%	16	84%
Cavan St (Albert St to Victoria Rd)	77	30	39%	40	52%	45	58%	8	10%
Robarts St (Albert St to Milford Cres)	13	10	77%	10	77%	9	69%	4	31%
Selby St (Franklyn St to Hecate St)	64	28	44%	49	77%	48	75%	21	33%
Prideaux St (Hecate St to the rail tracks)	59	37	63%	39	66%	37	63%	31	53%
Milton St (Franklyn St to Hecate St)	79	24	30%	18	23%	19	24%	30	38%
Total (existing)	**372**	**167**	**45%**	**204**	**55%**	**214**	**58%**	**139**	**37%**
Future (post cycle lanes)									
Albert Street (future)	30	32	107%	37	123%	40	133%	29	97%
Total (future)	**341**	**167**	**49%**	**204**	**60%**	**214**	**63%**	**139**	**41%**

6.6.1.2. Wallace Street

Protected bicycle lanes are planned to be installed on Wallace Street by removing parking on one side of the street and reallocating street space for the bicycle lanes. The parking analysis below assesses the impact to Wallace Street and the adjacent streets with this change.

Table 25 shows the total existing parking occupancy on Wallace Street from Comox Road to Fitzwilliam Street, as well as the surrounding streets within one block. It is assumed any reduction in parking on Wallace Street will likely result in parking relocating to the adjacent streets if there is parking available. The table also show the total future occupancy on this section of Wallace Street with the parking removed.

Table 25: Wallace Street and Surrounding Street Occupancy (Section 1 Comox Rd to Fitzwilliam St) - Current and Future

		Morning		Midday		Afternoon		Weekend	
	Stalls	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy
Existing (pre cycle lanes)									
Wallace Street (Comox Rd to Fitzwilliam St) (existing)	56	17	30%	42	75%	32	57%	10	18%
Campbell Street (Richards St to terminal Ave)	23	21	91%	18	78%	17	74%	9	39%
Wentworth St (Richards St to Fraser St)	21	7	33%	4	19%	5	24%	2	10%
*Wallace Wentworth Parking Lot **	*59*	*47*	*80%*	-	-	*47*	*80%*	-	-
Richards St (Campbell St to Fitzwilliam St)	20	13	65%	20	100%	14	70%	9	45%
Fraser St (Terminal Ave to Fitzwilliam St)	29	19	66%	23	79%	18	62%	11	38%
Total (existing)	**208/ 149 ***	**124**	**60%**	**107**	**72%**	**133**	**64%**	**41**	**28%**
Future (post cycle lanes)									
Wallace Street (future)	30	17	57%	42	140%	32	107%	10	33%
Total (future)	**182/ 123 ***	**124**	**68%**	**107**	**87%**	**133**	**73%**	**41**	**33%**

**Total count excluding off-street parking lot. This number is used to calculate occupancy for midday and weekend periods.*

Table 26 shows the total existing parking occupancy on Wallace Street from Fitzwilliam Street to Albert Street, as well as the surrounding streets within one block. It is again assumed any reduction in parking on Wallace Street will likely result in parking relocating to the adjacent streets if there is parking available. The table also show the total future occupancy on this section of Wallace Street with the parking removed.

Table 26: Wallace Street and Surrounding Street Occupancy (Section 2 Fitzwilliam St to Albert St) - Current and Future

		Morning		Midday		Afternoon		Weekend	
	Stalls	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy	Vehicles Parked	Occupancy
Existing (pre cycle lanes)									
Wallace Street (Fitzwilliam St to Albert St) (existing)	39	7	18%	30	77%	26	67%	22	56%
Fitzwilliam Street (Selby St to Wallace St)	18	6	33%	15	83%	12	67%	6	33%
Franklyn St (Dunsmuir St to Wallace St)	11	4	36%	7	64%	4	36%	0	0%
Albert St / Commercial St (Dunsmuir St to Terminal Ave)	20	11	55%	16	80%	16	80%	18	90%
Robson St	2	0	0%	0	0%	0	0%	0	0%
Dunsmuir St (Franklyn St to Albert St)	12	7	58%	8	67%	10	83%	3	25%
Total (existing)	**102**	**35**	**34%**	**76**	**75%**	**68**	**67%**	**49**	**48%**
Future (post cycle lanes)									
Wallace Street (future)	14	7	50%	30	214%	26	186%	22	157%
Total (future)	**77**	**35**	**45%**	**76**	**99%**	**68**	**88%**	**49**	**64%**

With the construction of the Wallace Street bicycle lanes the existing parking demand on Wallace Street will likely take up both the current excess parking supply of approximately 25% in the midday when demand is highest, and will spillover to the adjacent streets. This additional parking demand can be accommodated on these streets between Comox Road to Fitzwilliam Street which all currently have supply exceeding demand even after the bike lanes are implemented. In the midday between Fitzwilliam Street to Albert Street, parking on adjacent streets will be at capacity. Any excess demand can however still be accommodated on the section of Wallace Street between Comox Road and Fitzwilliam Street.

6.6.2. Off-Street Parking Current Conditions

6.6.2.1. Off-Street Parking Occupancy

Off-street parking occupancy data was collected during the weekday morning from 9:00AM to 11:00AM and weekday afternoon from 2:00PM – 4:00PM at eight downtown off-street parking lots or parkades. *Table 27* shows the occupancy levels for each.

Table 27: Off-Street Parking Lot Occupancy

Location	Parking Stalls	Morning Vehicles Parked (9am – 11am)	Morning Percent Occupied	Afternoon Vehicles Parked (2pm – 4pm)	Afternoon Percent Occupied
Wallace Wentworth Parking Lot	59	47	80%	49	83%
Bastion Parkade	292	182	62%	189	65%
Selby Street Parking Lot	27	5	19%	9	33%
Prideaux /Franklyn Parking Lot	40	40	100%	40	100%
Cavan/Hecate	26	26	100%	0	0%
Cavan/Victoria Road	34	27	79%	28	82%
Harbour Front Parkade	296	199	67%	245	83%
Port of Nanaimo Center	302	88	29%	132	44%
Total	**1076**	**614**	**57%**	**692**	**64%**

Occupancy level during the afternoon survey was, on average, 7% higher than the morning survey. An occupancy below 85% (the practical capacity) is indicative of an adequate supply of off-street parking to satisfy typical demands.

The two parkades in the core of the downtown, Bastion and Harbour Front, have excess capacity in the morning (approx. 65%), and only the Harbour Front is reaching practical capacity (85%) in the afternoon when the Bastion is at only 65% capacity. This demonstrates an excess supply of parkade parking in the downtown core.

The Prideaux / Franklyn parking lot was at capacity for both survey periods. Spillover parking from this lot can go to the Selby Street parking lot located 150 meters to the north, however that lot is underutilized and has the lowest occupancy, especially given its size. This is because the Prideaux / Franklyn lot is free parking while the Selby Street lot requires payment. After the survey was completed the Transit Exchange adjacent to the Prideaux / Franklyn has relocated to Front Street, likely reducing the off-street and on-street demand for parking in the area.

6.7. SPECIAL EVENTS

On Friday, October 25, 2019 an occupancy survey was conducted for three downtown parkades during two events held at the Port Theatre. The Port of Nanaimo Centre, Harbour Front Parkade and Bastion Parkade were surveyed, accounting for 890 or 83% of the City's off-street parking inventory. A weekday was selected for the survey as it would include the background parking in addition to the event parking giving a 'worst-case scenario'.

Table 28 shows a breakdown of the parking supply at the three parkades into regular stalls, accessible stalls, electric vehicle charging stalls and reserved stalls. The reserved stalls are for various commercial businesses and operations in the downtown such as Casino Nanaimo, Harbour Air, Coastal Community, and Modo.

Table 28: Parkade Parking Supply Breakdown

Location	Regular Stalls	Accessible Stalls	Charging Stalls	Reserved Stalls	Total
Bastion Parkade	284	7	0	1	292
Harbour Front Parkade	267	15	3	11	296
Port of Nanaimo Center	178	8	1	115	302
Total	**729**	**30**	**4**	**127**	**890**

Table 29, Table 30 ***and*** *Table 31* present the results of the occupancy survey for the Bastion Parkade, Harbour Front Parkade and Port of Nanaimo Centre Parkades, respectively.

Table 29: Bastion Parkade Occupancy During Special Events

Bastion Parkade	Total Stalls	Stalls Occupied Noon	Occupancy (%) Noon	Stalls Occupied 7:30PM	Occupancy (%) 7:30PM
Regular Stalls	284	260	92%	94	33%
Accessible Stalls	7	2	29%	2	29%
Charging Stalls	0	-	-	-	-
Reserved Stalls	1	0	0%	0	0%
Total	**292**	**262**	**90%**	**96**	**33%**

Table 30: Harbour Front Parkade During Special Events

Harbour Front	Total Stalls	Stalls Occupied - Noon	Occupancy Rate (%) - Noon	Stalls Occupied – 7:30PM	Occupancy Rate (%) – 7:30PM
Regular Stalls	267	248	93%	267	100%
Accessible Stalls	15	13	87%	12	80%
Charging Stalls	3	2	67%	0	0%
Reserved Stalls	11	8	73%	1	9%
Total	**296**	**250**	**83%**	**280**	**95%**

Table 31: Port of Nanaimo Parkade During Special Events

Port of Nanaimo Center	Total Stalls	Stalls Occupied - Noon	Occupancy Rate (%) - Noon	Stalls Occupied – 7:30PM	Occupancy Rate (%) – 7:30PM
Regular Stalls	178	166	93%	43	24%
Accessible Stalls	8	3	38%	3	29%
Charging Stalls	1	1	100%	1	100%
Reserved Stalls	115	80	70%	53	46%
Total	**302**	**250**	**83%**	**100**	**33%**

The noon survey for all three parkades showed occupancy levels ranging from 83% to 90% with the occupancy of regular stalls at 92% to 93%. This exceeds the parkades effective capacity of 85%, the occupancy at which it becomes difficult to find available parking stalls resulting in vehicles circulating through the parkade.

The 7:30PM occupancy was low for the Bastion Parkade (33%) and the Port of Nanaimo Center Parkade (33%) while the Harbour Front Parkade was effectively full at 95%. The Port of Nanaimo Centre and Harbour Front parkades are directly adjacent to each other with an underground connection beneath Museum Way. It was observed in the Harbour Front parkade that many vehicles were circulating in search of available parking but were unaware of the large number of available stalls in the Port of Nanaimo Centre parkade.

It is evident that during large events, signage or wayfinding would assist in directing drivers to available parking in nearby facilities.

6.8. PARKING FEES

Parking fees are typically set relative to parking demand which varies over time and varies by location to the trip destination. Ideally, parking fees should be set to target a vacancy rate of 15% (conversely an occupancy rate of 85%). This translates into one vacant parking space for every seven parking spaces. This target rate generally ensures that one space will generally be available within one or two-blocks from any point of a driver's ultimate destination. Thus, if parking rates are set too low, overcrowding in a particular area and cruising in search of parking will result. If parking rates are too high, parking spaces will remain vacant and a valuable resource is underutilized. Parking fees should also be set relative to whether the space is considered "premium", that is, it is located immediately adjacent to a high-demand destination, and it is during a high-demand period of the day.

When parking occupancy is under 85% the price should be free, and where demand and turnover rates are high, parking fees should be appropriately set relatively to the demand on that commodity. This results in two benefits:

1. It supports even higher turnover rates in areas where there is high demand, and results in lowering occupancy rates that move toward a targeted 85%; and

2. It encourages longer-term parkers to park further away from their destination.[1]

Ultimately the goal of parking pricing is to manage parking demand more efficiently.

A further level of parking management would be to establish variable fees throughout the day that are reflective of maximum parking durations. This is referred to as progressive pricing[2] and involves increasing the hourly parking rate for parking spaces for successive time periods. In which case, the longer one parks, the higher the unit rate they are charged. Many economists would argue that if parking rates are set to reflect market value and achieve the targeted occupancy rate of 85%, that specifying time limits are not necessary. However, given the incremental challenges of determining the "right rate" without the benefit of real-time data collection to determine occupancy and turnover rates throughout the day, a combination of time limits and parking fees relative to demand is recommended as the best approach for managing parking.

6.8.1. Existing fees

The City's existing on-street parking meter rate is $1.25 per hour for all on-street parking meters throughout the City between the hours of 8:00AM and 5:00PM, except statutory holidays.

6.8.1.1. *Off-street Parking Facilities*

Rates for off-street parking facilities are provided in *Table 32.* With the exception of the Prideaux Street facility which provides free parking, all public parking facilities within the study area have the same rates. It should also be noted that Prideaux Street has a 100% occupancy rate throughout the day.

[1] Shoup, Donald, "The High Cost of Free Parking" (2011), p. 299.
[2] San Francisco Transportation Authority, "Off-street Parking Management and Pricing Study, (September 22, 2009), p. 31.

Table 32: Parking Rates for Off-street Parking Facilities

PARKING RATES FOR OFF-STREET FACILITIES

	Port of Nanaimo Centre Parkade	Harbourfront Parkade	Bastion Street Parkade	Cavan St. & Wallace/Wentworth	Prideaux Street	Maffeo Sutton	Brechin Boat Ramp
	24 hours Mon-Sun	24 hours Mon-Sun	24 hours Mon-Sun	0800-1700 Mon-Fri	0800-1700 Mon-Fri	0800-1700 Mon-Fri	24 hours Mon-Sun
1 hr					Free	Free	$1.00
2 hr	$0.75	$0.75	$0.75	$0.75	Free	Free	$2.00
3 hr	$1.75	$1.75	$1.75	$1.75	Free	Free	$3.00
4 hr	$2.75	$2.75	$2.75	$2.75	Free	$2.00	$4.00
5 hr	$3.75	$3.75	$3.75	$3.75	Free	$3.00	$5.00
6 hr	$4.75	$4.75	$4.75	$4.75	Free	$4.00	$6.00
7 hr	$5.75	$5.75	$5.75	$5.75	Free	$5.00	$6.00
8 hr	$6.75	$6.75	$6.75	$6.75	Free	$6.00	$6.00
9 hr	$7.00	$7.00	$7.00	$7.00	Free	$7.00	$6.00
10 hr	$7.00	$7.00	$7.00	$7.00	Free	$7.00	$6.00
11 hr	$7.00	$7.00	$7.00	$7.00	Free	$7.00	$6.00
12 hr	$7.00	$7.00	$7.00	$7.00	Free	$7.00	$6.00
13 -24 hr	$9.00	$9.00	$9.00	$9.00	Free	$9.00	$6.00

Source: City of Nanaimo Traffic and Highways Regulation Bylaw 5000 (Consolidated Version), Schedule "A", Page 2

6.9. COMPARISON WITH OTHER SIMILAR COMMUNITIES

The parking situation of other cities in BC of similar context were assessed to both compare parking rates and to determine if the parking related issues being experienced by the City of Nanaimo were similar, or if the City was an anomaly.

6.9.1.Municipal Scan – On-Street Parking Rates

A review of other downtown on-street parking rates was done to determine bench-marking practices of relatively similar municipalities in B.C. The cities reviewed included Kelowna, Penticton, Kamloops and Victoria.

6.9.1.1. Kelowna

Kelowna establishes rates by time of year (off-season and summer season), and parking area (downtown cores and adjacent downtown core), and day of week and time of day (*Table 33*).

Table 33: City of Kelowna – On-Street Parking Rates

Day	Time	Downtown Core		Adjacent Downtown	
		Summer Season Rate (May 15 – Sept 15)	**Off-Season Rate**	**Summer Season Rate**	**Off-Season Rate**
Monday - Friday	9am-6pm (3 hours maximum)	$1.75 per hour (0-2 hours) $3.50 per hour (2-3 hours)	$1.50 per hour (0-2 hours) $3.00 per hour (2-3 hours)	$1.50 per hour (0-2 hours) $3.00 per hour (2-3 hours)	1.25 per hour (0-2 hours) $2.50 per hour (2-3 hours)
	6 pm-9pm (no time limit)	$1.50 per hour	$1.25 per hour	No charge	No charge
Saturday	9am-6pm (3 hours maximum)	$1.50 per hour	$1.25 per hour	$1.25 per hour	$1.25 per hour
	6 pm-9pm (no time limit	$1.50 per hour	$1.25 per hour	No charge	No charge

The City has a number of off-street parking lots to support short-term and long-term parking in the downtown area. Short-term off-street lots offer hourly parking only and may be subject to a time limit. Long-term off-street lots offer hourly, daily, and monthly parking.

Pay parking is generally in effect Monday through Friday in the downtown area. There is no-charge for parking in the evening or on weekends and holidays, except during special events. The parking rate for short-term lots is $1.25 per hour and for long-term lots, $1 per hour, $6 per day and $7 per event.

6.9.1.2. City of Penticton

Parking rates for both on-street parking and City-owned lots is $2.00 per hour.

6.9.1.3. City of Kamloops

Downtown on-street pay parking is in effect Monday to Saturday, 9:00AM to 6:00PM with a 3-hour maximum. Rates are $1.25 per hour for the first and second hours, and $2.50 per hour for the third hour.

The City operates two downtown parkades. Pay parking is in effect Monday to Friday, 6:00AM to 6:00PM. Parking rates are $1.00 per hour up to a maximum $5.00 per day. Parkade parking is free on weekends, statutory holidays, and after 6:00PM on weekdays.

6.9.1.4. City of Victoria

The City of Victoria limits all parking in the downtown core to a maximum 90 minutes Monday to Saturday, 9AM to 6PM. Parking rates for these areas are $3.00 per hour. For areas immediately adjacent the downtown core, time limits increase from a maximum of 2 hours for on-street parking spaces closer to the downtown core up to a maximum 4 hours for areas further away. Parking rates also decrease as locations move further away from the downtown core; $2.50 per hour for areas immediately adjacent the downtown core, and $2.00 per hour in areas with a 3 hour time limit but with variable parking rates depending on location (*Table 34).*

On-street parking is free after 6PM, Monday to Sunday, and free all day on statutory holidays.

The City also operates five public parkades within the downtown core with parking rates in effect Monday to Saturday, 8AM to 6PM. Parking rates are free the first hour, and $2.00 per hour for the second and third hour, and $3.00 per hour for the fourth hour and up. Vehicle day rates are $14.50. This pricing policy is essentially designed to encourage parkers to use the City parkades for short-term parking for shoppers and visitors within the downtown core. City parkades also provide electric vehicle charging stations, electric bike charging stations, and free-covered bike parking.

Table 34: City of Victoria – On-Street Parking Rates

Day	Time Limit	Downtown Core	Adjacent Downtown Core
Monday - Saturday	90 min.	$3.00 per hour	n/a
	2 hours	n/a	$2.50 per hour
	3 hours	n/a	$2.00 per hour
	4 hours	n/a	$2.50 per hour
Sunday	4 hours	$2.00 per hour	$1.00 per hour

6.9.2. Summary of Municipal Scan Findings – Parking Rates

From the review, several consistent patterns emerge, including:

- On-street parking is charged at a higher rate than at public parkades
- Parking is free after 6PM, and either free or at significantly reduced rates on Sundays and statutory holidays
- Parking fees are generally structured to support short-term, on-street parking in a downtown core
- Progressive parking is generally applied – parking for shorter-term is more expensive than longer term

6.9.3. Municipal Scan – Parking Related Issues

To determine if the parking related issues being experienced by the City are similar to other similar BC cities, two comparison cities identified were Penticton and Kelowna. Both cities have re-examined their parking management in recent years.

6.9.4. The City of Penticton

The City of Penticton recently updated their Official Community Plan (OCP) and identified several policies that are parking related, which include:

- Support the expansion of car share opportunities by encouraging their provision in multifamily developments and by allocating dedicated public parking stalls in suitable areas.
- Create a balanced parking strategy assessing costs and benefits that support businesses while also encouraging active modes of transportation such as walking, biking and transit.
- Ensure new residential developments provide an appropriate amount of parking for residents and their guests.

Their ongoing Integrated Infrastructure Plan project seeks to identify Transportation Demand Management (TDM) measures, specifically including considerations for alternate parking management options in the downtown core and/or installation of additional paid parking to encourage residents to choose transit over driving.

As part of their Downtown Parking Review done in 2017 the City conducted a review of the needs for parking downtown. Through that review the City identified a public perception that there is a shortage of parking in their downtown, however this was not supported by the study findings. Surveys showed that there were 3,900 parking spaces downtown, and utilization averaged 47% over the year.

6.9.5. The City of Kelowna

The City of Kelowna developed a Downtown Area Parking Plan in 2018. As part of that study they found that there is a disconnect between visitor perceptions of parking availability and typical occupancy, with surveys showing there is more parking available than what is perceived. Respondents to an engagement survey were evenly split in their support for implementing new, variable parking rates, with rates potentially varying by time or location to help make it easier to find parking. Also, downtown parkades are not as popular as open-air parking lots or on-street parking due to security concerns and because parking availability in the parkades was unknown. To address the reluctance to use parkades, increased security monitoring was proposed, as well as providing real-time parking availability information.

Variable rate parking was recommended to target an 85% occupancy rate by annually increasing or decreasing parking rates depending on use, with rates varying based on time of day and location.

Other measures recommended include:

- Relax on-street time restrictions but offer the purchase of additional parking time at a higher price.
- Increase the price difference between on-street and surface lot / parkade parking to encourage lot and parkade use.
- Improve real-time parking information to ensure availability, rates, and time restrictions are easily accessible to users.
- Enable the use of a variety of options for parking payments, including options for purchasing shorter time periods.

6.9.6. Summary of Municipal Scan Findings – Parking Related Issues

As seen for both the Cities of Penticton and Kelowna, the parking related experiences and issues are very similar to those in the City of Nanaimo, and the measures they have taken and other recommended strategies also align with those being considered by the City.

6.10. DOWNTOWN NANAIMO PARKING STRATEGY

To develop the Parking Strategy and recommend specific measures to achieve the strategy, the findings of the parking analysis and other reviewed information was consolidated.

6.10.1. Summary of Study Findings

Based on the extensive surveys and analysis conducted, it is concluded that the City has adequate parking supply to meet demand. It is evident that the community's perception of a shortage of parking is influenced by them not being directed to where parking is available, versus their being an actual supply shortage. In the retail sector of the downtown core (i.e., Commercial Street) where parking turnover is required by the businesses, the analysis shows that there is both sufficient parking and reasonable turnover for the area, however shortening the time allowance from two to one hour would further achieve this. Those wanting to park longer than one hour would be better served by using one of the easily accessed lots or parkades. Improved wayfinding and providing occupancy information to drivers would encourage and support this shift in behaviour.

Parking surrounding the downtown has pockets of high utilization, however in most locations parking turnover is reasonable for the locations. It is evident that the recent removal of metered parking has in all likelihood increased the length of time some park, requiring increased bylaw enforcement to discourage those from parking for extended periods in two-hour zones.

Survey data showed that during special events there appears to be a sufficient supply of parking, however without wayfinding to direct drivers to available parking there is a perception that the parking supply is inadequate.

The implementation of cycling lanes on Front Street, Albert Street and Wallace Street will remove parking in some city blocks, however either the addition of new parking such as on Front Street or the excess supply available on adjacent streets is sufficient to offset any lost parking. These cycling facilities are strategic actions by the City to reduce the public's reliance on the single occupant vehicle by increasing the use of active modes (walking, cycling, transit). As use of these modes increases, so parking demand will reduce. Although well entrenched transportation habits take time to change, other cities have shown that when safe, AAA facilities like those planned in Nanaimo are constructed, a shift towards more sustainable modes does occur. To further encourage this, secure bicycle parking and other end of trip facilities will need to be provided.

During the public engagement sessions the following directions emerged:

- Improve parking wayfinding and real time information
- Develop parking strategies for downtown events
- Increased parking fees closer to downtown, and decreasing outwards
- Consider time of day parking fees to encourage visitors to downtown late afternoon / evening

A review of similar cities shows that the parking related issues being experienced in the City are typical, and measures to better manage parking supply and reduce demand are preferred, versus increasing supply.

6.10.2. Proposed Parking Zones

Given the parking study findings, a parking zone system is recommended for the downtown core and immediately adjacent areas. The approximate boundaries of these zones are proposed in *Table 35*. Specific boundaries of these parking zones will require further review relative to existing and future land uses, and high destination areas.

Table 35: Recommended Parking Zones

Zone	Area	Parking Purposes	Time Limits	Parking Rates
A	Downtown commercial core	Shopping, commercial and government services – short-term, convenience parking	1 hour maximum	$1.50 per hour
B	Adjacent downtown core	Multiple trip destinations (i.e. shopping and eating)	2 hour maximum (For longer than 2 hours, promote parking lot use)	$1.25 per hour
C	Residential areas adjacent downtown core	Resident priority, mitigate potential spillover impacts from shoppers and employees parking on-street	Residential Permit Parking	TBD
Parkades and Surface Lots	1. Wallace Wentworth Parking Lot 2. Bastion Street Parkade 3. Selby Street Parking Lot 4. Cavan/Hecate Parking Lot 5. Cavan/Victoria Road Parking Lot 6. Harbour Front Parkade 7. Port of Nanaimo Centre Parkade	Employees, longer-term visitors, and shoppers		$1.00 per hour, daily rate $7.00

6.10.3. Recommended Parking Measures

Table 36 provides a list of recommended measures generally consistent with the strategy that was discussed with and supported by the community. It is suggested the City prepare a program to implement these measures, and based on that program determine the appropriate time to undertake future parking studies to assess the impact of these measures.

Table 36: Summary of Recommended Measures

Subject	Recommended Measure	Implementation Time-frame	Method of Implementation
Wayfinding	Locate signage prominently on perimeter approaches to the downtown and continuous to the various lots. This will also address issues with special event parking.	Short-term	Identify key locations for erecting directional signage to parkades in the downtown, and install.
Real time parking information	Parking information should include the number of stalls available together with the wayfinding signs. Information should also be available online in an open data format to allow drivers to plan their trip.	Medium-term	Complete as part of retrofit program on existing parking facilities.
Improved lighting and security	Security can be improved both operationally (i.e. security guards, enforcement) and with infrastructure by applying Crime Prevention Through Environmental Design (CPTED), in particular increased lighting. Encouraging higher use of the parkades will also indirectly improve security with passive surveillance by other users.	Short-term	Complete as part of retrofit program on existing parking facilities. For new facilities, requiring Development Permit approvals add Development Permit Guidelines to address.
Maximum parking time - Commercial and Church Streets	The high demand for parking and the urban context of Commercial Street and Church Street are compatible with a 1-hour maximum time versus the current 2 hours. Both streets are well served by nearby parkades for longer stay parking.	Short-term	
Reinstate pay parking	Streets where parking meters were removed should be reinstated with pay point machines requiring number plate entry, including a mobile payment option.	Short-term	
Free parking on evenings after 5PM and on weekends	From the engagement events it was evident that free parking after 5PM and on weekends is not generally well known. Clear signage in the downtown promoting this is recommended, as well as promotion on the City's website.	Short-term	Develop a marketing campaign specifically targeted to increasing awareness. Identify key locations for installing directional signage to parkades in the downtown.
Residential developments to provide adequate parking	New residential developments in the downtown must be required to adhere to *Bylaw 7266, A Bylaw to Regulate Development Off-Street Parking and Loading Within the City of Nanaimo* in order to secure on-street parking for their intended purposes. Allowance for a variance on this bylaw should be considered later when a shift in modes is evident.	Short-term	Consider implementing parking in-lieu provisions provided for under *Local Government Act* to help facilitate mode shifts by requiring developers requesting variances to provide in-lieu of parking Transportation Demand Management (TDM). Amend Bylaw 7266 to implement.

Enforcement	Increase parking enforcement to limit the number of vehicles parking in locations longer than the allowed time period.	Short-term	Consider increasing parking fines from current $35 to provide greater incentive for compliance, and make enforcement revenue neutral.
Parking zones	The City should consider a more structured approach to clearly identify zones for each type of parking. This will allow overall consistency across the City and also help the local community better anticipate where they can park based on their own circumstances.	Medium-term	Review potential parking zones, as proposed.
Special event parking areas	Identifying temporary special event parking areas should be considered, and if not in walking distance to the downtown core, then a shuttle service should be provided.	Medium-term	
Variety of payment options	Further enable the use of a variety of options for parking payments, including options for purchasing varying time periods.	Medium-term	Implement pay point systems for all on-street parking going forward.
Parking location price differentials	Increase the price difference between on-street and surface lot / parkade parking to encourage lot and parkade use.	Medium-term	Review and amend Traffic and Highways Regulation Bylaw No 5000.
Bike Parking	To facilitate implementation of the new cycling lanes on Front Street, Albert Street and Wallace Street review and amend Off-street Parking Bylaw No. 7266 to mandate location requirements of long-term and short-term bike parking spaces including: short-term bike parking to be within 15 metres of a building entrance and with weather protection required; and long-term bike parking located within parkades to be located no lower than parking level 1 for safety and convenience. As active mode shares improve, consider further reviewing bike parking space requirements and bike parking space design standards, including provisions for non-standard bikes (i.e. cargo bikes).	Short-term	Review and amend Off-street Parking Bylaw No. 7266.
Electric vehicles	Prepare a strategy to provide both on-street and off-street EV charging stations.	Medium-term	

7. Engagement

Engagement for the Downtown Nanaimo Mobility Hub project included two phases:

- **PHASE 1** focused on building an understanding of participants' perceptions of mobility in the downtown hub, identifying the ideas and issues that are most important to help prioritize projects to build in the coming years.
- **PHASE 2** tabled a number of emerging transportation improvement options for consideration, to gain feedback on preferred directions, and identify refinements or alternative options.

7.1. ENGAGEMENT OBJECTIVES

The objectives of the engagement process were as follows:

- Raise awareness about the project and invite participation from a broad cross-section of the community
- Build on previous initiatives and communicate that the DNMH project was focused on advancing the ideas heard to date towards implementation
- Confirm the issues, opportunities, and visions that have been collected so far, and identify gaps or new issues that also need to be addressed
- Introduce viable options for downtown mobility network enhancements and determine which options may or may not have community support or how an option could be improved so it would have community support
- Consider potentially competing community values and develop a process for fairly evaluating options
- Undertake an inclusive, transparent engagement process that addresses emerging issues and helps develop supported outcomes
- Continue building relationships with partners, stakeholders, and the public to advance projects into implementation

To achieve these objectives, the following outreach tools were employed to inform stakeholders and community members about this project:

- **Project Website:** Development of a project page (nanaimo.ca/goto/downtownmobility)
- **Facebook:** Posts on the City's Facebook page and Twitter feed

- **Community Group Emails & Phone Calls:** Targeted emails and calls to approximately 30 local community groups, businesses, and individuals, with requests for participation and support to build public awareness
- **Downtown Businesses Letter:** Distribution of a letter to businesses in the project area to inform them of the project and opportunities to participate
- **Public Emails:** Creation of a project email list for notifying interested participants of upcoming engagement opportunities
- **Project Sandwich Boards:** Sandwich boards placed in strategic locations around the downtown.
- **Project Cards:** Small cards with project website details handed out at public events
- **Pop-up Events:** Booths at key events or locations around the downtown to encourage people to talk about the project

7.2. PHASE I ENGAGEMENT

7.2.1.Phase I Engagement Activities

7.2.1.1. Pop-up Event Series

Pop-up booths were placed in various locations (details below) to build awareness about the project and discuss downtown mobility with interested participants. The pop-up booth featured large scale display / activity boards, handouts, and questionnaires. In addition, the team participated in the 2019 Jane's Walk along Nanaimo's waterfront to introduce the mobility hub project to approximately 70 walk participants.

Earth Day Event

DATE	Saturday, April 27 @ 10:00 am - 3:00 pm
LOCATION	John Barsby Community School 550 Seventh St., Nanaimo

Port Place Mall Pop-up

DATE	Tuesday, April 30 @ 11:00 am - 2:00 pm
LOCATION	Port Place Shopping Centre 650 Terminal Ave., Nanaimo

Maffeo Sutton Park Pop-up

DATE	Saturday, May 4 @ 10:00 am - 2:00 pm
LOCATION	Maffeo Sutton Park 100 Comox Rd., Nanaimo

Jane's Walk Nanaimo

DATE	Saturday, May 4 @ 11:45 am - 12:45 pm
LOCATION	Nanaimo Waterfront

Active for Life Expo

DATE	Saturday, May 25 @ 10:00 am - 2:00 pm
LOCATION	Maffeo Sutton Park 100 Comox Rd., Nanaimo

7.2.1.2. Stakeholder Workshop

A stakeholder workshop was held (details below) with local business owners and stakeholders to share background of the project and undertake an interactive discussion on mobility in the downtown. The workshop included a presentation, small group discussions, and group reporting on key findings and themes.

DATE	Thursday, May 16 @ 5:00 pm - 7:00 pm
LOCATION	Coast Bastion Hotel, Benson Room 11 Bastion St., Nanaimo

7.2.1.3. Questionnaire

A questionnaire was developed and made available at all events and on the City's project site (details below). It presented a number of issues and opportunities being explored on the project. The goal was to confirm the ideas and issues that are most important to help prioritize locations to be explored further and to identify gaps or ideas that may be missing.

DATE	Friday, April 26 through Friday, June 14, 2019
LOCATION	Online @ nanaimo.ca/goto/downtownmobility In Paper @ Pop-up Events & City Hall

7.2.1.4. Written, Phone, or In-Person Submissions

In addition to the above, some participants chose to provide input through the project email, other written submissions, by phone, or in person (details below).

DATE	April through June, 2019
LOCATION	Via Email @ downtownmobility@nanaimo.ca By Phone or In Person @ City of Nanaimo

7.2.2. Summary of Key Themes

During Phase 1, questions about five mobility topics – pedestrian network, bicycle network, transit, key intersections, and parking – were asked to gather community input and identify priorities.

The following summary of key themes outlines frequent comments gathered from participants. Input ranged from general directions that could be applied throughout the project area to mobility enhancement ideas at specific locations.

This information provided guidance to the project team for determining which ideas to advance into concepts, which concepts were then reviewed and refined with the community during Phase 2.

7.2.2.1. Pedestrian

Pedestrian safety: Participants expressed concerns about pedestrian safety in the downtown mobility hub. Safety issues are barriers that limit walkablility. Several general measures were suggested to enhance pedestrian safety in the downtown overall:

- Reduced speed limits / narrower streets
- Enhanced accessibility for all ages and abilities
- Safer, pedestrian-oriented intersections
- Enhanced lighting
- Better separation between pedestrians and vehicles (e.g., trees and boulevards)
- Elimination of right turns on red lights
- Separation between pedestrians and cyclists
- Better pedestrian crossing indicators (e.g., flashing lights)
- Wider sidewalks, removal of impediments (e.g., hydro
- Elimination of slip lanes, reduced turning radii to slow vehicles

Wayfinding / signage: Input suggests a lack of wayfinding and signage in the downtown mobility hub. More pedestrian-orientated wayfinding would enhance the pedestrian experience.

Improved walkability: The current downtown transportation network is often perceived as unaccommodating and inconvenient for pedestrians. Input suggests that community members support measures to enhance the pedestrian experience and encourage pedestrian mobility, such as:

- More crosswalks at intersections and frequent mid-block crossings
- Pedestrian scrambles
- Closure of Commercial St / Church St / Victoria Crescent to vehicular traffic

- Weather protection (e.g., awnings)
- Longer / more frequent pedestrian crossing times
- Removal of pedestrian-activation buttons
- Attractive streetscapes (e.g., frequent street trees)

7.2.2.2. Cycling

Secure Bicycle Parking & Storage: Secure bicycle parking / storage facilities (including bike lockers, safe lock-up points, rental lockers, e-bike charging stations, etc.) are an important component of a successful bicycle network that encourages people to bike more often. A person needs a safe place to store their bike when visiting downtown. Key locations for lock-up included ferry terminals, waterfront, shopping areas, and connection points for Island residents (i.e., from Protection or Gabriola Island). In addition, bike share programs could support more people choosing to cycle.

Wayfinding / Signage: Improved and additional bicycle route signage would enhance the overall cycling experience and decrease bicycle / vehicle / pedestrian conflicts.

Cyclist Safety: Enhancing cyclist safety is a top priority. Suggestions for safety improvements included dedicated and protected cycle lanes or tracks, vehicle and/or parking lane reductions (e.g., Front St, Albert St), removal of slip lanes, lighting, cyclist traffic signals, and painted lanes. Public input suggests that protected bicycle routes are likely preferred over shared / painted road lanes.

Connectivity: Connecting existing and future bike routes is a critical step towards providing a bicycle network that better serves the community. Feedback indicated support for the four priorities identified to date: Wallace Street, Front Street, Gordon Street / Museum Way, and Albert Street. Additional priority connections suggested included: improved E&N Trail over the Millstream to downtown / waterfront walkway; extension of E&N Trail south; Victoria Crescent area; improved Baston Street / Bridge cycling accommodation; a bike route along the waterfront / Mafeo Sutton Park; bike accommodation on Terminal Avenue; safe, protected routes to schools (e.g., Ecole Pauline Haarer); and better capacity for buses to carry bikes.

Enforcement: Some participants noted that cyclists using the road network do not follow rules of the road and more education / enforcement is needed for both motorists and cyclists. Some concerns that increased cycling activity will impact other modes of travel.

7.2.2.3. Transit

Location: General community support for a transit exchange on Front Street. Some concerns that it is a too far from the downtown core (i.e., Commercial / Terminal area). Mixed opinions on if it should be an on-street or off-street exchange. Desire to ensure expansion can be accommodated and to consider incorporation of other transportation links (e.g., Tofino Bus and Island Link).

Connectivity: Connecting the transit exchange to other modes of transportation and destinations is considered vital to creating a successful public transportation network. In particular, input suggests a strong desire to add / improve / time buses to efficiently link the transit exchange to/from the Duke Point

and Departure Bay ferry terminals and to provide walkable routes to the seaplane terminal, future fast ferry, Gabriola ferry, Helijet, and other downtown transportation connections. Desire for bus routes to destinations like VIU, Old City Quarter, and the north end to have efficient transfers and greater frequency.

Public Amenities: Public amenities such as washrooms, bike lockers, shelters, and benches are important assets that should be provided at a transit exchange to enhance the overall user experience. In addition, improved signage that indicates wayfinding, schedules, and real-time information could be considered.

Safety & Accessibility: The environment around the transit exchange needs to feel safe with full accessibility, good sightlines, lighting, security presence, and a well-maintained, attractive, and comfortable environment. In addition, the circulation design must be fluid and reduce potential conflicts between pedestrians crossing the street to get to buses and motorists on Front St, at Port Place Mall, going to/from Gabriola ferry, etc.

Quality, Integrated Design: Desire for integration with future development so the bus exchange is not a large parking lot on the waterfront, but a vibrant, pedestrian-oriented transit hub.

7.2.2.4. Key Intersections

Albert St / Wallace St / Commercial St: Consistently identified as the highest priority intersections due to the confusing stop procedure and insufficient pedestrian accommodation. Consensus that actions are needed to address safety. Public ideas included closure of Commercial Street (Terminal to Wallace), four-way stop, lights, realignment, or a roundabout.

Victoria Cres / Nicol St / Esplanade: Input suggests this is a higher priority intersection for improvements to enhance pedestrian comfort and reduce a confusing traffic confluence. Public suggestions included converting Victoria Crescent to one-way or pedestrian only, considering a roundabout, incorporating cycle routes, and reducing vehicle dominance.

Front St / Church St: This intersection is considered a lost opportunity due to the amount of space dedicated to a low-volume road element. There is support for improvements that would convert road area to public space, expanding space around Dallas Square Park.

Bastion St / Wallace St / Fraser St: While the five-way intersection can be confusing, this intersection was a lower public priority than others. Ideas for changing traffic flow on Fraser (e.g., partial closure, conversion to one-way) were identified.

Bastion St / Commercial Street: Public input suggests that changes to this intersection are a lower priority. If changes are considered, input suggests that there is interest in improvements that prioritize pedestrians such as a pedestrian scramble or four-way stop procedure.

Intersection Enhancements: A number of suggestions were identified for improving pedestrian comfort at intersections including audible crossings, improved accessibility considerations (smooth, gentle let-downs,

textured pavement, easy to use buttons), addition of pedestrian scrambles, removal of pedestrian buttons (e.g., downtown Vancouver), wider sidewalks / waiting areas, and beautification.

7.2.2.5. Parking

Amount: Most participants felt there is sufficient downtown parking, with limitations in key areas. Suggestions to convert excess parking to bike lanes, bike parking, sidewalk widening, or public realm enhancements. Some concerns from business-owners that parking limitations could impact customers.

Cost: Most participants felt parking is relatively inexpensive (some mixed opinions). Suggestions for free parking and/or longer free parking windows (e.g., 3 to 4 hours) to encourage economic development, possibly balanced with programs that discourage workers from taking up retail parking.

Wayfinding: Participants felt people have difficulty finding existing parking garages and lots. Enhanced wayfinding to direct people to underutilized parking areas would improve use.

Alternative Options: Participants suggested a need for more electric charging facilities, parking for motorcycles / electric scooters, and bicycle parking to encourage alternative modes.

Safety: Concerns about safety and break-ins or feeling unsafe, notably in parking garages.

Special Events: Participants suggested that strategies to increase parking for special events should be considered (rather than addition of parking), for example, signage or volunteers to direct people to parking areas, temporary parking zones, shuttles, online information, etc.

Future Development: Potential opportunities to incorporate public parking within future private development and encourage accommodation of public parking within buildings, rather than building more stand-alone parkades or lots.

Parking on the Periphery: Some suggestions to provide lower-cost or free parking on the periphery within walking distance of downtown.

Oversize Vehicle Parking: Some suggestions to accommodate RVs and trucks near the downtown and provide wayfinding to these areas.

7.3. PHASE 2 ENGAGEMENT

The second phase of engagement was focused on sharing initial concepts for short-term priority improvements and obtaining participant feedback on level of support or opposition and suggestions for improvements. The information obtained during this phase was used to confirm short-term priority projects and identify potential changes to be considered as concepts are advanced through detailed design.

7.3.1. Identified Short-Term Projects

The concepts brought forward for the Phase 2 engagement were identified as short-term priorities for the following reasons:

- Identified in previous planning initiatives
- General public support
- Provide visible change to the downtown, acting as a catalyst to support sustained improvements
- Align with long-term planning, ensuring that investments made now avoid "redoing" projects at a later time
- Anticipated to be achieved in a 5-year time frame, meaning they are free of complex jurisdictional or private property challenges, they support initiatives already underway, and/or they do not require significant physical changes
- Support larger-scale initiatives that will continue to move forward

Figure 69 provides an overview of the short-term priorities identified.

Figure 69: Short-Term Priority Projects

7.3.2. Phase 2 Engagement Activities

7.3.2.1. Pop-up Event Series

As with Phase 1, pop-up booths were placed in various locations (details below) around the City to continue to build awareness about the project and discuss downtown mobility with interested participants.

Woodgrove Mall Pop-up

DATE	Saturday, November 16 @ 10:00 am - 2:00 pm
LOCATION	Woodgrove Mall 6631 Island Hwy North, Nanaimo

Nanaimo Aquatic Centre Pop-up

DATE	Monday, November 18 @ 4:00 pm - 7:00 pm
LOCATION	Nanaimo Aquatic Centre 741 Third St., Nanaimo

Vancouver Island Regional Library Pop-up

DATE	Tuesday, November 19 @ 11:00 am - 2:00 pm
LOCATION	Vancouver Island Regional Library Nanaimo Harbourfront 90 Commercial St., Nanaimo

Vancouver Island University Pop-up

DATE	Thursday, November 21 @ 11:00 am - 2:00 pm
LOCATION	VIU Upper Cafeteria 900 Fifth St., Nanaimo

7.3.2.2. Public Event

At the public event (details below) the study findings were presented, and an overview provided of short-term ideas. In addition to a presentation, small group and one-on-one discussions were held with participants to answer questions and hear feedback.

DATE	Wednesday, November 20 @ 5:00 pm - 7:30 pm
LOCATION	Coast Bastion Hotel, Ballroom 11 Bastion St., Nanaimo

7.3.2.3. Feedback Form

A feedback form (details below) presented the initial concept ideas and requested public feedback on level of support and comments, questions, or concerns for each concept. The goal was to understand general support and uncover ideas or information to be explored during next steps when concepts are advanced and refined.

DATE	Saturday, November 16- Monday, December 9, 2019
LOCATION	Online @ nanaimo.ca/goto/downtownmobility In Paper @ Pop-up Events, Public Event & City Hall

7.3.2.4. Written, Phone, or In-Person Submissions

Some participants provided input through the project email, other written submissions, by phone, or in person (details below).

DATE	November through December, 2019
LOCATION	Via Email @ downtownmobility@nanaimo.ca By Phone or In Person @ City of Nanaimo

7.3.3. Community Feedback Results

The following summary outlines the numerical findings for each question posed on the community feedback forms submitted at events, online, or by mail / drop-of, and summarizes themes from written and verbal comments recorded at the public workshop, pop-ups, through the feedback form, or through other means.

An overall engagement report is provided in *Appendix D,* which report also includes all comments recorded.

WHO PARTICIPATED?

1,326
Views to the project website on nanaimo.ca/goto/downtownmobility

~115
Participants at Pop-up Events between November 16-21, 2019

78
Participants in the Stakeholder Workshop on November 20, 2019

124
Feedback Form Submissions

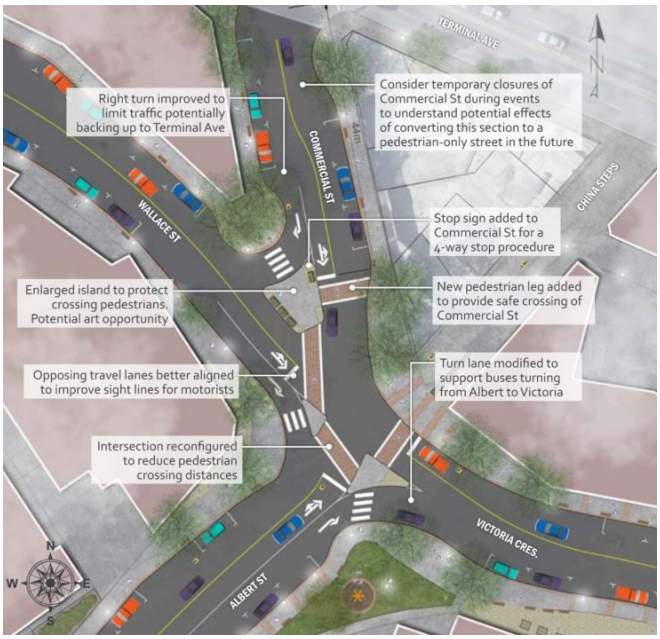
Numerous
Phone calls or email submissions

7.3.3.1. Victoria/Wallace/Albert Intersection

Proposed Near-Term Approach

The concept recommends near-term improvements to address existing issues at this intersection, while continuing to plan for the larger area.

1. Change to four-way stop procedure
2. Monitor queuing to confirm traffic does not back up to Terminal Avenue
3. Monitor large truck operations to confirm truck movements are not impacted
4. Consider temporary closures of Commercial St between Terminal Ave and Wallace St (e.g., for community events) to understand potential effects of a pedestrian-only street
5. Based on feedback, monitoring, and long-term planning, continue transition of the larger area towards a visionary future, and re-engage public at that time



What is your general level of support for building near-term, low-cost measures to address key issues at the Victoria / Wallace / Albert intersection now, while continuing to plan for long-term improvements to the surrounding area?

Most Frequently Expressed Comments:

- General agreement this intersection is a high priority; mixed feedback on design
- Support for closing Commercial Street between Terminal Street and Albert Street to create a pedestrian-only plaza and reduce confusion
- Concerns 4-way stop will not improve pedestrian safety; suggestions for traffic lights or roundabout
- Install temporary islands / medians over time and continue to monitor feedback Improve night visibility for pedestrians and cyclists
- Cycling routes through intersection are required
- Further consideration for visually impaired
- Design promotes vehicular use (too many slip lanes) and not enough improvement for pedestrians; consider eliminating some turning movements to improve pedestrian safety
- Need to better discourage illegal turns

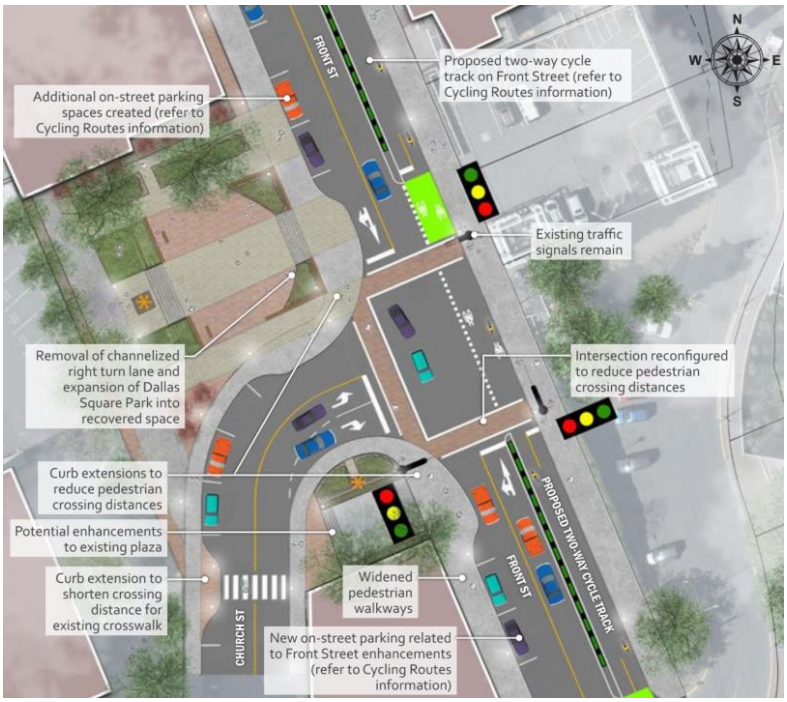
- Suggestions to save for longer-term changes that could make more substantial improvements

7.3.3.2. Front/Church Intersection

Proposed Near-Term Approach

The concept recommends removing the channelized right turn lane from Front to Church to increase public open space.

1. Remove the channelized right turn lane
2. Expand Dallas Square Park into the recovered open space, creating opportunities for an enhanced plaza
3. Enhance the intersection to include curb extensions at Front and Church Streets to minimize pedestrian crossings distances



What is your general level of support for building near-term, low-cost measures to address key issues at the Victoria / Wallace / Albert intersection now, while continuing to plan for long-term improvements to the surrounding area?

Most Frequently Expressed Comments:

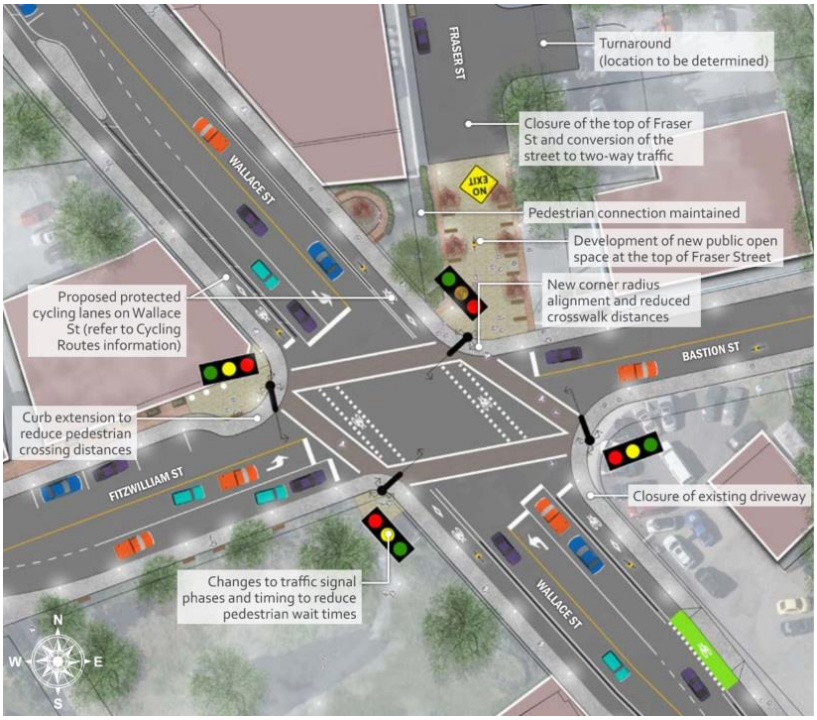
- Increasing the size of Dallas Square Park is beneficial to the public; consider adding amenities like seating or small play elements to make it more usable throughout the year
- Seen as overall safety improvement for pedestrians and cyclists
- Consider reducing vehicular lanes on Church Street (e.g., remove separate right / left turn lanes at intersection, consider making Church one-way)
- Consider reducing speed limit to increase safety
- Concerns about removal of slip lane and reduced vehicle lanes on Front Street causing traffic to back up / frustrate people visiting downtown
- Increase visibility and safety through lighting and clearer signage
- Add a placemaking feature

7.3.3.3. Bastion/Wallace/Fraser Intersection

Proposed Approach

The concept seeks to streamline traffic movements, improve pedestrian experience, and add open space.

1. Pursue closure of the Fraser St leg of the intersection to improve pedestrian crossings and intersection operation
2. Convert Fraser St to two-ways with a turnaround at the top of the street. Emergency service access would need to be addressed
3. Update the existing traffic signals to only two phases (decreasing pedestrian wait times)
4. Develop new public open space in the closed portion of Fraser St



5. Enhance the intersection to include curb extensions where possible to reduce pedestrian crossing distances

What is your general level of support for closing the Fraser St leg of the intersection, making improvements to pedestrian walkability, and adding public open space at the Wallace / Baston intersection?

Most Frequently Expressed Comments:

- Present conditions are confusing and unfriendly
- Closing of Fraser Street is a good idea; feeling that improvements at this intersection will better connect Old City Quarter and Commercial Street
- Adding public open space at the end of Fraser Street will benefit the downtown
- Concerns over emergency access to Fraser Street
- Ensure the proposed public space is graded with accessibility concerns in mind
- Some feel the intersection functions fine as it is currently

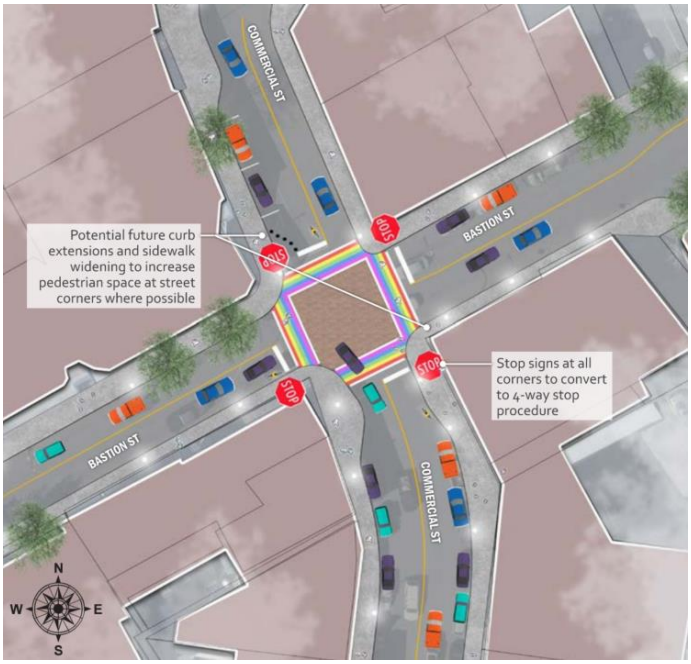
- Increased street lighting and brightness would help visibility and safety
- Increase tree planting and noise screening for proposed public space
- Ensure pedestrian traffic controls are accessible
- Concerns over functionality of proposed turnaround at top of Fraser Street

7.3.3.4. Bastion/Commercial Intersection

Proposed Approach

While the existing intersection operates reasonably well, the traffic signals will need to be replaced soon. This provides an opportunity to consider changes to benefit downtown walkability. Four intersection options were considered, and a four-way stop is recommended.

1. Implement a four-way stop for a trial period, and monitor pedestrian and vehicle behaviours, as well as public feedback, about the change
2. If the trial period is favorable, proceed with full updates including removal of the traffic signals and street enhancements
3. If not, reconsider other options



What is your general level of support for testing a four-way stop procedure at the Baston / Commercial intersection?

Most Frequently Expressed Comments:

- Currently already one of the safer intersections for pedestrians downtown
- Mixed feedback on 4-way stop: support due to improving pedestrian flow; primary concerns about confusion and potential safety concerns, notably for pedestrians due to uncertainty about right-of-way
- Consider more changes for pedestrian safety (e.g., curb extensions, pedestrian lights, etc.)

- Consider keeping traffic signal operation as is
- Support for piloting changes and reviewing before permanent changes made
- Suggestion to close Commercial Street to vehicular traffic or make it one-way
- Some concern about traffic backing up at a 4-way stop when pedestrian traffic is heavy

7.3.3.5. Front Street Cycle Track

Proposed Approach

- A protected two-way cycle track along the east (water) side of Front St
- The east side of the road is recommended because it has fewer driveways and intersections, better cycling connections, and impacts to the fewest number of parking stalls
- The cycle track would be built in existing roadway by changing the four-lane section of Front St to two lanes
- Approximately 12 existing on-street parking spaces would be need to be removed
- Approximately 25 new on-street parking spaces would be created

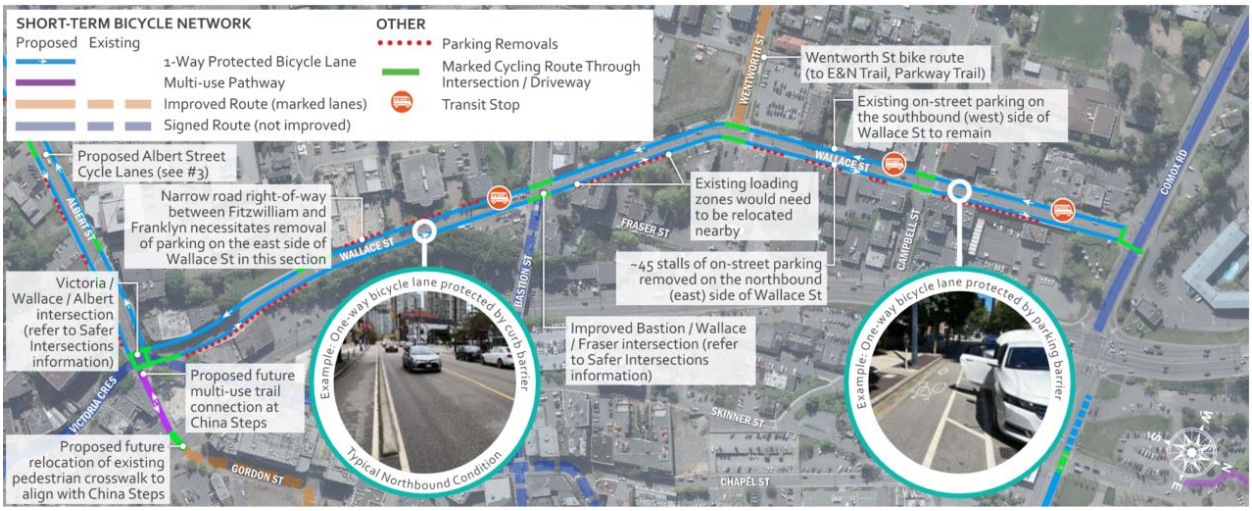
What is your general level of support for the concept for a Front Street Cycle Track?

Most Frequently Expressed Comments:

- Strong support for increased bike safety for all
- Concerns there is too much vehicular traffic to accommodate bike lanes and changes will slow traffic (i.e., removal of right turn lanes)

- Consider the west side of Front Street for Cycle Track – better connection to downtown, less interference with bus / pedestrian traffic
- Concerns over cycle lanes ending abruptly – should connect to transit exchange
- Concerns over buses unloading into bike lanes
- Concerns over impacts to businesses, access to Service Canada, access to residences
- Concerns about lack of parking, accessibility and safe loading areas at Pacifca
- Desire for cycling lef turn onto Baston Street
- Concerns about loss of drop-of / pick-up spaces in front of Port Theatre
- Desire for changes to incorporate pedestrian enhancements (e.g., sidewalk widening)

7.3.3.6. Wallace Street



Proposed Approach

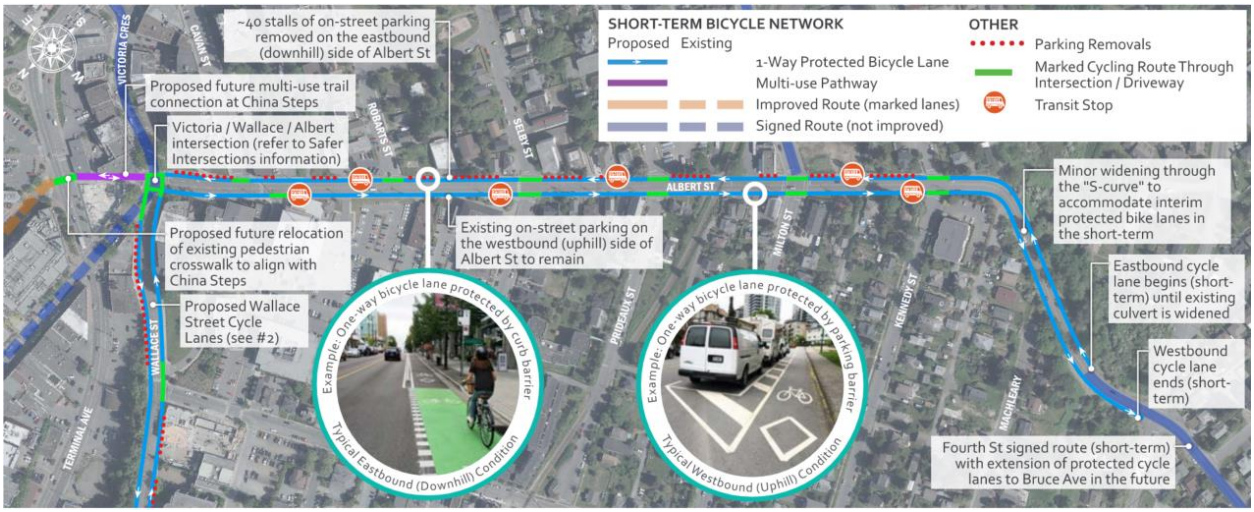
- Protected one-way cycle lanes on each side of Wallace St providing a primary north-south bicycle route west of Terminal Ave
- The cycle lanes would be built in the existing roadway
- Removal of some on-street parking would be required (approximately 45 stalls)

What is your general level of support for the concept for a Wallace Street Cycling Route?

Most Frequently Expressed Comments:

- Wallace Street is currently unsafe for cyclists because of vehicular traffic
- Protected cycling lanes along Wallace Street are generally supported; provides good, relatively well-graded access
- Consider how to connect to Pauline Haarer school to support kids biking to school
- Connections to E&N Trail and Front Street desired
- Concerns for cycling safety in parking-separated areas due to parked vehicles opening door
- Concerns over the removal of street parking
- Concerns about loss of loading stalls affecting businesses / restaurants
- Some comments that bike lanes are not required
- Desire to have more transit stops along route
- Secure and safe bike parking and storage needed in the area

7.3.3.7. Albert Street



Proposed Approach

- Protected one-way cycle lanes on each side of Albert St providing a direct connection between downtown and Vancouver Island University
- The cycle lanes would be built in the existing roadway
- Removal of some on-street parking would be required (approximately 40 stalls)

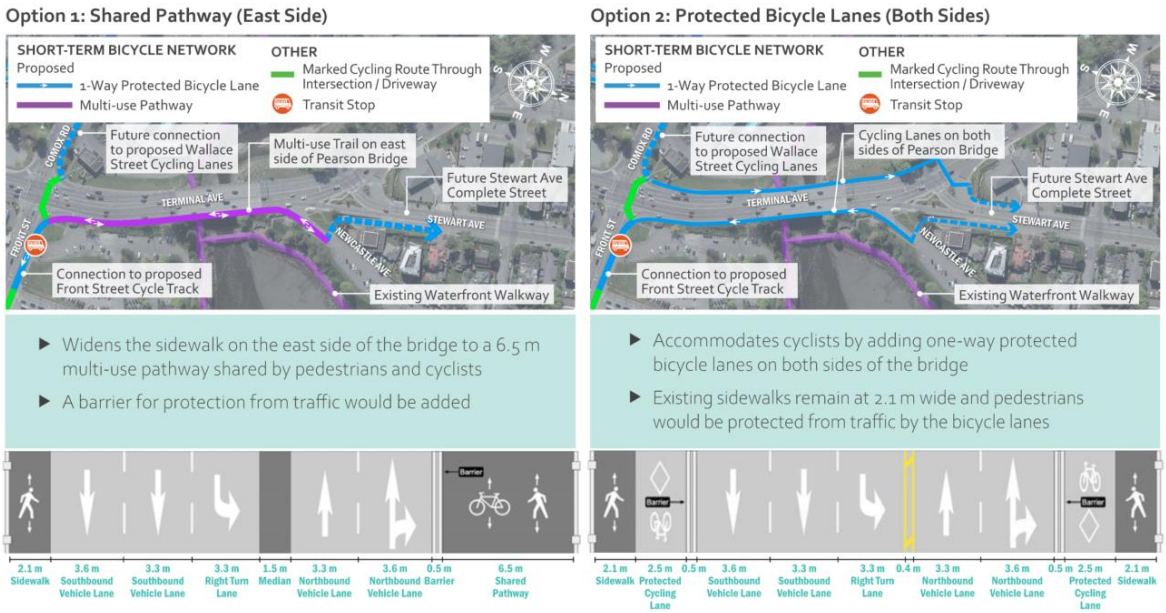
What is your general level of support for the concept for an Albert Street Cycling Route?

Most Frequently Expressed Comments:

- Albert Street connection from downtown to VIU is generally supported; consider including changes on Fourth as well to address safety issues out to VIU
- Concerns over safety of intersections, particularly how cyclists will be accommodated in the Victoria / Wallace / Albert intersection
- Concerns that Albert Street is too steep for all cyclists
- Concerns about loss of approximately 45 stalls (and cumulative losses on Albert and Wallace)
- Concerns about winter maintenance of cycling lanes
- Barriers very important on this route due to steepness of grade; suggestions for additional traffic calming
- Concerns about on-street parking removal impacting businesses
- Also look to increase accessibility for people with mobility needs (e.g., seniors, strollers, etc.)
- Concerns about safety on the 'S' curve, both for cyclists and for pedestrians

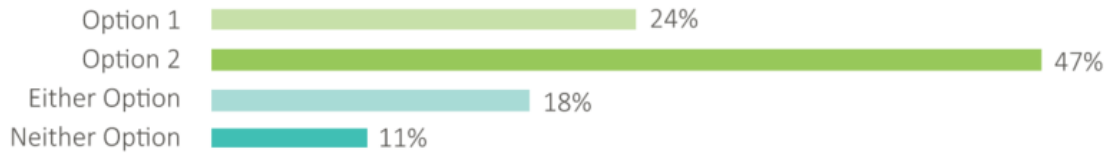
7.3.3.8. Pearson Bridge

Two initial concepts explored the addition of a cycling facility on Pearson Bridge. The outer-most northbound traffic lane that diverts onto Stewart Avenue is not required for traffic operations and therefore provides space that could be reallocated to active transportation.



What is your general level of support for the concept for a Pearson Bridge Cycling Route?

Do you have a preference for the type of connection on Pearson Bridge?



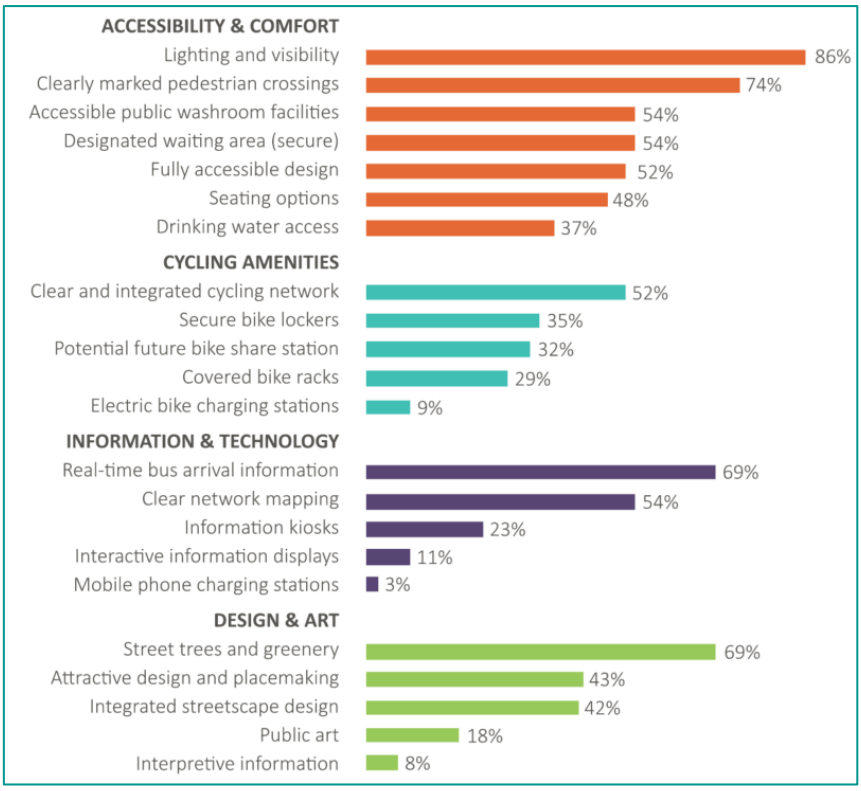
Most Frequently Expressed Comments:

- Concerns that shared pathways can be unsafe for pedestrians and cyclists (i.e., collisions)
- Concerns about connections to Stewart Avenue
- Preference for investing in seawall cycling route
- Suggestion for closure of Newcastle Avenue to vehicles
- Concern about cleaning and maintenance of cycling lanes

7.3.3.9. Transit Exchange

Front Street was confirmed as the preferred long-term location for the Downtown Transit Exchange.

The next step will be developing a concept for the future exchange. Some of the types of design elements that may be considered during the concept development are shown alongside, and other bus circulation requirements will also be taken into account.



Most Frequently Expressed Comments:

- Support for Front Street location; some concerns about proximity to / use of space at the waterfront
- Priority for security / improved feeling of safety at night; strong support for increasing lighting, considering security guard presence
- Support for elements that make the space attractive: public art, trees, nice shelters, etc.
- Access to washroom facilities desired
- Universal accessibility and pedestrian protection from traffic is essential (not optional)
- Consider reducing vehicular speed on Front Street
- Covered and weather protected bus shelters
- Logical pedestrian connections will reduce jaywalking at transit exchange
- Place to purchase tickets or passes

7.3.3.10. Parking

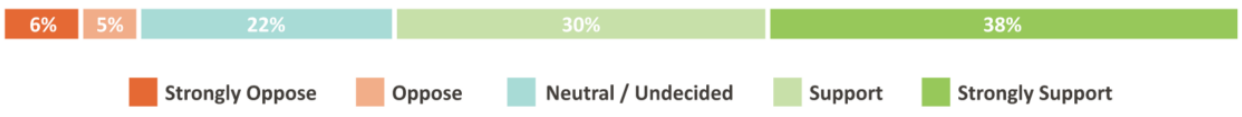
The Parking Occupancy Study for public parking in the downtown was completed to assess how many of downtown's public parking stalls are in use at different times. Key findings:

- On-Street Parking Occupancy ranged from 40% (weekend) to 60% (weekday afternoon)
- Off-Street Public Parking Occupancy ranged from 65% (weekends) to 55% (weekdays)
- The Transportation Master Plan recommends setting occupancy targets for downtown at 85% occupancy during peak times
- Parking counts show that downtown parking supply substantially exceeds demand at most times, except during special events
- Public input suggests that better wayfinding that helps people find available parking is needed
- While opinions vary, most people find the supply and cost of downtown parking acceptable

Based on parking study findings, three key emerging directions are being considered for a downtown parking strategy. These are presented below.

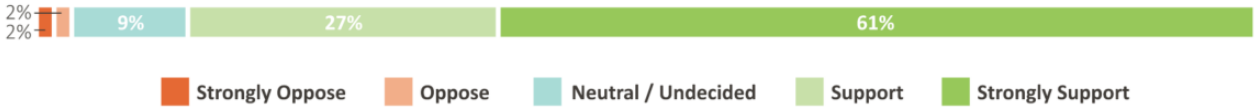
#1 Improve Parking & Wayfinding Information

- Digital signs providing real-time information on spaces available
- Better signage to guide people to lots and parkades
- Collaboration with the technology sector to increase online info (e.g., parking apps)



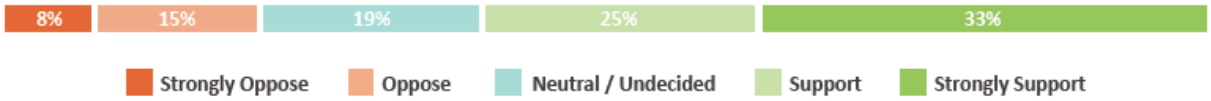
#2 Develop Parking Strategies for Downtown Events

- Online info, temporary signs, volunteers directing motorists
- Off-site parking with shuttles to events Increased / free / low-cost transit during events
- Secure and convenient bike parking at special events



#3 Manage Parking Fees to Balance Demand And Availability

- Increased paid parking for high-demand locations and times; lower rates or fewer restrictions in lower-demand areas or lower-use times
- More parking / special rates for electric vehicles, motorcycles, bikes
- Expansion of "pay-by-plate" method of payment



Most Frequently Expressed Comments:

- Prioritize sustainable transit options
- Do not prioritize parking
- Consider increased parking fees in the downtown core, with reduced fees further away
- Concerns about cumulative loss of parking spaces (related to development, bicycle lanes, etc.)
- Consider more frequent road closures for events with a goal to transition to future pedestrian-only streets
- Must consider delivery requirements for businesses
- Consider opportunities to incorporate parking into future development construction
- Improve security at existing parking garages
- Consider shorter-term parking (e.g., one-hour) in business areas
- Clarify when people need to pay for parking (not always clear)
- Consider adding parkades within walking distance to downtown
- Increase accessible parking for people with mobility limitations
- Add more EV spaces, but don't reduce parking fees for EVs (still take up space so should pay)
- There is currently not enough parking to supply the demand downtown
- Smartphone app for parking meters