Committee of the Whole Report
For the Meeting of May 24, 2018

To:	Committee of the Whole	**Date:**	May 18, 2018
From:	Fraser Work, Director of Engineering and Public Works		
Subject:	Bicycle Network - Phase 1 Design and Implementation Update		

RECOMMENDATION

That Council:

1. Approve the 60% design for Wharf Street AAA cycle track, and direct staff to proceed to detailed design and construction tender.
2. Approve the 60% design for Humboldt Street AAA cycle track, and direct staff to proceed to detailed design and construction tender.
3. Direct staff to accelerate the Vancouver Street AAA cycle track project as a priority (between Park Avenue and Bay Street), in place of the 2016 Cook Street project, and engage with stakeholders on the design as outlined in this report.

EXECUTIVE SUMMARY

The implementation of an All Ages and Abilities (AAA) cycling network is an important component of the City's transportation and mobility goals which aim to improve cycling safety, promote more sustainable travel modes across the community, and is also a key strategic priority of Council. Improved cycling infrastructure is safer for all ages, and seeks to attract more cyclist commuters and travellers, and also represents an important strategy to reduce vulnerable road accidents and injury, and pathways for reductions in transportation greenhouse gases (GHGs), traffic congestion, parking demand, and an associated increase in the affordability and vitality of our City.

Overall, the AAA cycling program aims to achieve a higher standard of cycling safety, while improving streets to better balance the needs of all road users via a "complete street" design lens. These designs enhance pedestrian realm improvements, while still ensuring that motor vehicle traffic, including transit and logistics operators, can efficiently move in, out and throughout the City.

The AAA implementation program has commenced in the downtown (phase 1), to allow the highest numbers of cyclists remain safe and separated from high volume/speed downtown vehicle traffic. Future AAA implementation phases over the next 4 years will connect the downtown AAA network to key village centres and othe municipalities. Downtown AAA facility construction is complex, time consuming and costly, as it requires careful balance and trade-offs within the limited right-of-way, and must consider safety, traffic performance, parking, surrounding utility and infrastructure needs, and requires detailed and meaningful stakeholder engagement to reach the best designs.

The first AAA facility was completed along Pandora Avenue in May 2017 and the second project along Fort Street is scheduled to open on May 27th, 2018.

Additional detailed technical analysis of numerous design elements and their associated trade-offs have been progressed in the recent months. Lessons learned from Pandora and Fort cycle tracks also continue to inform the daily project activities, including design, scheduling and construction planning.

Since the most recent Council direction (December 2017), staff has advanced the remaining phase 1 projects through processes of engagement and detailed design. Staff have engaged a wider range of stakeholders to ensure issues and perspectives were tabled earlier in the process to help inform design options and decisions.

Wharf Street is now at 60% design maturity, and is recommended for detailed design and construction. The approved Wharf Street concept includes a two way cycling facility along the west side of the street, which connects the Johnson Street Bridge and Pandora Avenue cycle tracks to the Government Street intersection, and the Inner Harbour zone.

Wharf Street is constrained by limited right of way, and represents a key motor vehicle and pedestrian/tourist realm that connects old town to the Inner Harbour. Implementation of a AAA cycle track along this route will increase the safety along this popular cycling route, and has to be balanced to maintain vehicle traffic flow and efficiency. Traffic performance can be maintained through retention of the left turn lanes and reduced crossing frequencies. Space for heavy foot-traffic includes redesign and addition of signals at Yates Street and Bastion Square and at Government Street to organize and improve crossings and safety for pedestrians. The safeguarding of traffic performance with pedestrian amenities and cycling facilities necessitates the removal of 21 parking stalls, mainly between Yates and Government. Other street operations will be unaffected by the design.

The Wharf Street design represents an important opportunity for the City to improve a “complete streets” design standard along the Inner Harbour, and aligns with the public’s desire for efficient traffic flow, and improved pedestrian and cycling services. These changes are also supported by a strong public desire for significantly improved streetscape and public realm that will complement the City’s inner harbour master-planning process.

Humboldt Street AAA cycle track is also at the 60% phase, and is recommended for detailed design and construction tendering. The Humboldt street design connects to Wharf at Government and extends to Vancouver Street. The westerly portion of the design continues a two way protected bike facility on the south side of the street, which transitions to a shared street design in the 700 block, enabled by reduced traffic speeds and volumes. This design is most notably different from current conditions due to the proposed closure of Humboldt Street to vehicles at the Douglas / Humboldt / Burdett five-point intersection. The closure at this location represents an opportunity to significantly improve zone safety for all road users, while still maintaining access and service routes for bus, logistics and other vehicles via Penwell Street. The easterly portions of the design add additional parking capacity (9 new stalls) and can be achieved with relatively minor construction plans.

Cook Street designs have been progressed alongside public engagement activities. Cook Street represents the most complicated corridor in this phase, due to high traffic volumes and cyclist safety requirements, pedestrian realm right-of-way limitations and cost considerations. The early 2016 concepts for Cook Street were approved based primarily on Cook Street’s direct connections to

urban village centres, and gentle topography, which is already attractive to the cyclists using this street, even without cycling infrastructure. In 2016, Cook Street was prioritized over Vancouver Street, mainly due to the more direct connections.

Further analysis of Cook Street has revealed significant trade-offs required to maintain traffic performance and cycling safety, at intersections, and especially for vehicle turning movements during peak times. Staff's detailed analysis and modelling indicates that traffic impacts from cycle track designs can be mitigated by increasing the dedicated vehicle space, but these changes impose additional costs. Cycling safety (physical separation and dedicated intersection phases) remains challenging to balance with the desired traffic flow, road-space and geometry for transit and other users. Several iterations of design and road cross sections for different blocks were assessed to determine how to best balance traffic flow and cycling safety, which comes at the cost of pedestrian realm reductions, tree removals and utility and infrastructure conflicts. All of these impacts pose increasing costs to the project.

As compromises became more severe, staff were directed to reassess the Vancouver Street option to determine if trade-offs would be less impactful and more affordable, even with the loss of the directness when compared to the Cook Street alignment. Parking removals along Vancouver Street to accommodate a AAA bike facility have been a concern, but can be mitigated along certain blocks with shared road concepts where vehicle volumes and speeds are lower. Overall, along the corridor, the parking impacts are estimated at a net gain of over 30 stalls.

Staff concluded through additional analysis that Vancouver Street represents a more reasonable compromise between safety, cost and traffic performance, when compared to the Cook Street option sets. Staff recommend now progressing all Vancouver Street designs, including the necessary engagement process to ensure that public considerations are well understood in order to reach detailed design and construction planning for a Vancouver Street AAA facility that extends from Beacon Hill Park (and Dallas Road) to Bay Street.

PURPOSE

The purpose of this report is to seek Council direction related to the next phase of the City's Bicycle Master Plan implementation plan, Phase 1 corridors. This report also aims to outline consultation findings, and identify outstanding issues for Council to consider.

BACKGROUND

In 2015 the City of Victoria initiated the All Ages and Abilities (AAA) cycling network portion of the Bicycle Master Plan. The intent of the AAA network is to build a purpose-built, safe cycling network, attractive and comfortable for the whole community.

The network is part of the City's broader sustainable multi-modal transportation and mobility goals to simultaneously reduce motor vehicle traffic congestion, reduce accidents with vulnerable road users, reduce transportation greenhouse gases, while increasing household affordability and community health and well being.

Figure 1: Downtown Phase 1 AAA Network (black lines)

The City's AAA infrastructure includes protected bike lanes on busy streets, shared use bikeways on quieter streets, as well as off-street pathways.

The Pandora Avenue AAA facility was completed in May 2017, and was the first downtown AAA corridor to be constructed. Fort Street between Wharf Street and Cook Street, the City's second downtown AAA corridor, will be open for use May 27, 2017.

In early 2017, engagement and design work commenced on Wharf, Humboldt and Cook Street, the final Phase 1 downtown corridors. In 2017, the City introduced an amended, phased corridor design process, depicted below with additional opportunities to engage with the public, key stakeholders, property owners and agency partners.

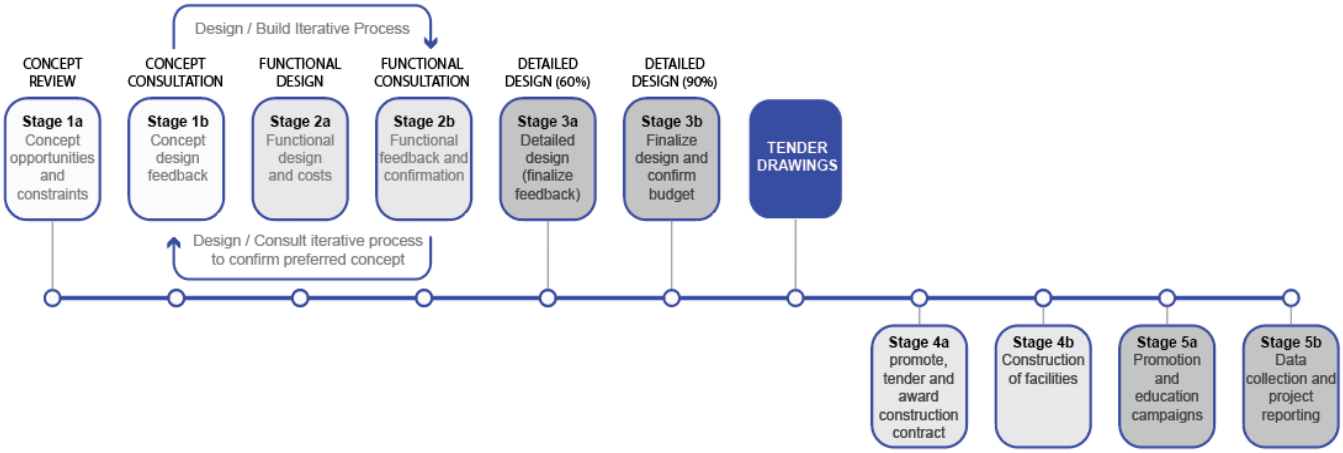

Figure 1. AAA Project Phasing.

By July 2017, the City commenced design and early engagement activities with corridor stakeholders for Wharf Street , Humboldt Street, and Cook Street. Design concepts and updated project budget estimates were presented to Council in December 2017, which reflected initial feedback from stakeholders and forecasted costs. Council passed the following motions:

"That Council direct staff to:

1. Amend the draft 2018 financial plan to increase the budget for the Wharf, Humboldt, and Cook Street Phase 1 corridors by $3.0 million with funding from:
    a. The Gas Tax Reserve, $2.3 million remaining in 2018 and $625,000 from 2019 allocation
    b. $75,000 from the 2017 Engineering and Public Works budget remaining due to vacancies
2. Implement Phase 1 AAA corridors with the required internal and external resources to support program requirements for one year, to include the following:
    a. Cycle Network Engagement Support;
    b. Transportation Design Support;
    c. Construction Ambassador Support;
    d. Road User Education and Safety Programs funds; and
    e. Performance Monitoring and Data Collection equipment
3. Report back to Council in Q2 2018 with a proposed funding strategy for the remainder of Phase 2-4 Bike Master Plan implementation of the priority AAA network, to be completed by 2022.

4. Report back to Council at the 60% design phase for all remaining Phase 1 corridors, with updated financial estimates, engagement summaries and design responses."

Staff have progressed public consultation for Wharf Street, Humboldt Street and Cook Street throughout 2017 and early 2018. The results of this engagement, further design, analysis, and modelling are described in this report.

ISSUES & ANALYSIS

Consistent with all City capital project planning, underground utility infrastructure upgrades are integrated with the Phase 1 AAA bike network projects in the downtown core, to reduce public disruption durations, maximize efficiencies, and minimize costs. Phase 1 projects are challenged by the complexities of working in the downtown, addressing aging infrastructure, unknown underground asset condition, busy public realm, mobility, logistics and business needs.

Wharf Street

Route Selection:

In December 2016, Wharf Street was approved by Council as a part of the Phase 1 implementation based primarily on opportunities to improve cycling safety, integrate with planned streetscape revitalization, and provide another safe, direct connection to the new Johnson Street Bridge infrastructure (Figure 3).

Figure 3. Phase 1 Corridors. Wharf Street Segment (blue).

Existing Conditions:

Wharf Street is a 0.7km long corridor, between Pandora Avenue and Government Street/Humboldt Street. The majority of Wharf Street road space is currently allocated to vehicle traffic.

There is no existing cycling infrastructure on Wharf Street, and pedestrian space, is limited (Figure 4).

The corridor is highly utilized by cyclists (more than 200 riders per hour during peak periods[1]). The street poses attractive opportunities for improved management of pedestrian, cycling and traffic safety, and performance, despite the lack of dedicated facilities.

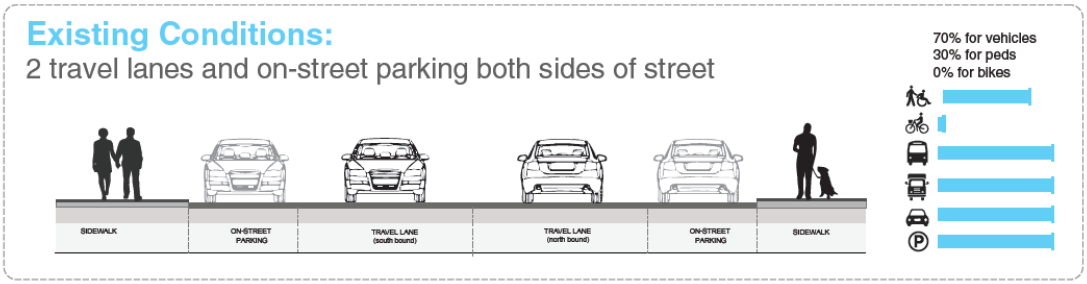

Figure 2. Exisiting conditions on Wharf Street

[1] City of Victoria, 2017 bicycle count data

Design Evolution (2016 – 2018):

The approved AAA concept for Wharf Street is a two-way protected bicycle lane on the west (waterfront) side of the street. The two-way protected bike lane on the west side of the street minimizes impacts to parking, project complexity and cost, while maintaining existing traffic performance (referred to herein as "Vehicle Levels of Service").

One-way protected bike lanes on both sides of the street would eliminate all on-street parking, while a two-way facility on the east side of the street would have increased conflict points between cyclists and other road users, triggering additional interventions, increased costs, and reducing traffic performance. The two-way, west-side cycling alignment (Figure 2, below) provides the best balance of safety for all users, costs, and traffic performance.

The west side alignment minimizes the number of intersection design treatments, and associated project costs and delays to traffic, by placing the cycling facilities away from these potential conflict areas. From a tourism and place-making perspective, a facility on the west side offers nmore attractive waterfront cycling experience, and opportunities to achieve multiple objectives in the Official Community Plan, including Land Management and Development, Transportation and Mobility, Placemaking, Parks and Recreation, Environment, Infrastructure, Climate and Energy, and Community Well-being.

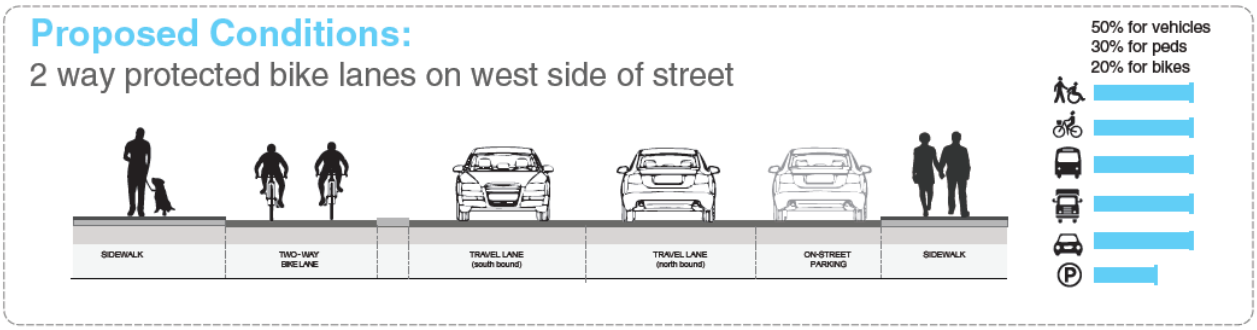

Figure 3. Proposed conditions for Wharf Street, 2 way protected facility on West side

Design Challenges

Each corridor has specific challenges unique to the zone, in addition to the common issues that must be overcome in all the infrastructure projects in the downtown. In particular, Wharf Street cycle track design must treat the following key challenges:

- **Safety:** Safely accommodate and integrate cycling along a high volume pedestrian zone
- **Motor Vehicle Flow**: Integrate facilities to manage traffic flow in challenging traffic zones, specifically through the Johnson Street Bridgehead, at Yates Street, at the Bastion Square mid-block crosswalk, at Fort Street, and at the Government/Humboldt intersection. Develop solutions to address steep drive-ways to properties on the west side of the street.
- **Street Loading/Operations**: Meet dimensional requirements for frequent transit and commercial truck route designation and loading/unloading
- **Connectivity:** Safely integrated with the new cyclng connections on the Johnson Street Bridge, Pandora Avenue and Fort Street AAA routes
- **Pedestrian Realm:** Improving pedestrian crossing safety and increasing space for pedestrians. Mitigate impacts to street trees and enhance streetscape/public realm.

Engagement Approach:

There were three phases of engagement completed for the Wharf Street design between July 2017, and March 2018. A detailed summary of engagement activities and feedback are found in Appendix A. Engagement can be summarized as follows:

- **Phase 1:** early discussions and sessions with several key property owners, employers and stakeholders along the corridor.
- **Phase 2:** door to door notification, formal consultation events, newspaper ads, walking tours, digital website communications, and on-line surveys.
- **Phase 3:** additional door to door engagement, public events and follow up one-on-one stakeholder meetings for detailed assessments and commentary.

Overall Engagement Summary (2017/18)

Overall, the public and business stakeholder feedback can be grouped in the following key themes:

- **Safety**: Desire for improved safety for all road users, including cyclists and pedestrians
- **Motor Vehicle Flow/Access:** Desire to improve intersection traffic operations, maintain existing vehicle access and traffic flow
- **Cycling Infrastructure Improvements:** Desire for quality AAA infrastructure along this route
- **Minimize Parking Loss**: Desire to retain as much on-street parking as possible
- **Street Loading/Operations**: Desire to accommodate existing commercial, public transit and tourism related transportation needs
- **Pedestrian Realm**: Desire for enhanced pedestrian connectivity expanded sidewalk space, improved quality and aesthetics (including accessibility enhancements, crossings, street furniture, recycling and garbage containers, etc.).

Wharf Design Status - May 2018:

The Wharf Street design is now at 60% detailed design (Appendix B).

The project proposes a complete streets revitalization of Wharf Street - a re-imaginging of the streetscape in line with the policies and goals in the Offical Community Plan and Downtown Core Area Plan. The result will be one that promotes a more walkable, multi-modal street to enhance tourism and economic vitality, while supporting a more evenly balanced movement of people, goods and services.

The proposed design will significantly improve cycling safety and the pedestrian experience, while supporting transit and commercial operations, and maintaining current vehicle Level of Service. A detailed overview of parking and loading details are found in found in Annex A.

Pandora Avenue/Johnson Street Bridgehead

Establishing connections from Pandora Avenue protected bike lanes and the Johnson Street Bridge Multi-Use Deck are key design challenges to address. The proposed design links Wharf street (Figure 3 below) to these routes.

Supporting motor vehicle throughput in the area requires retention of the dedicated eastbound right turn lane off the Johnson Street Bridge. The design provides adequate space to safely

accommodate all vehicle movements, including transit operations. To improve safety and visbility of vulnerable road users, the bike lanes and pedestrian crossing will be grade-raised at this location, with appropriate signage and markings to clearly delineate road space and the desired cycling movements.

Figure 3: Johnson Street Bridge Connections – Pandora to Johnson

Yates Street

To address potential conflicts between cyclists, transit riders and hotel guests, the existing transit zone north of the Wharf/Yates intersection, and the Regent Hotel Loading zone south of the Wharf/Yates intersection require specific design treatments (Figure 4). The design includes grade-raised segments to slow down cyclists in these areas.

Figure 4: Yates Street – new pedestrian controlled traffic signal

Pedestrians crossing Wharf Street at the marked crosswalk are currently required to cross four travel lanes, and require Wharf Street drivers to yield/stop prior to crossing. In addition, westbound left turn vehicles accessing Wharf Street from Yates Street can experience significant delays waiting for a gap in traffic on Wharf Street. A new pedestrian controlled traffic signal will improve overall pedestrian safety and traffic flow at this location.

Parking

While retention of parking is a key design priority, some parking loss was required to maintain traffic flow, dedicated left turn lanes where required, appropriate travel lane width, functional parking space dimensions, as well as physically separated space for cycling facilities.

The parking loss on Wharf Street is estimated at 21 of 45 on-street stalls, primarily in the 1200 block (Figure 5), less than originally estimated in 2016 during the network development process. Minimizing the width of the bike facility in some locations and limiting the extent of sidewalk enhancements helps retain the maximum number of on-street parking stalls.

Bastion Square

Moving the crosswalk in front of Bastion Square and adding new overhead flashing lights will significantly improve pedestrian sightlines and visibility, reduces crossing distance (Figure 5), and repatriates curb space for parking. Commercial loading and taxi zones will remain in place to meet business needs.

Figure 5: Bastion Square pedestrian crossing and replacement of on-street parking on 1200 block with bike lane

To meet required commercial and transit movements and safely connect Wharf Street cyclists to the protected bike lanes on Fort Street, the southbound left hand turn lane is retained, and new bike signals will be installed to direct cyclists (Figure 6 below).

Visibility and user awareness at steep driveways on the western side of the corridor (at Ship Point, and at the Fort/Wharf intersection) is improved through the use of vehicle-activated signs with flashing lights, to warn users of on-coming traffic.

Figure 6: Fort Street design treatments and turn lanes

Wharf/Government Intersection

To enhance and safely organize pedestrian, cyclist and vehicle movements in this tourism and pedestrian hub, the most significant traffic flow, place-making and pedestrian enhancements are proposed at the intersection of Wharf Street, Government Street and Humboldt Street (Figure 7, below). Currently, cycling safety and comfort at this intersection, along with connectivity to other parts of the city, can be challenging for new riders in this location.

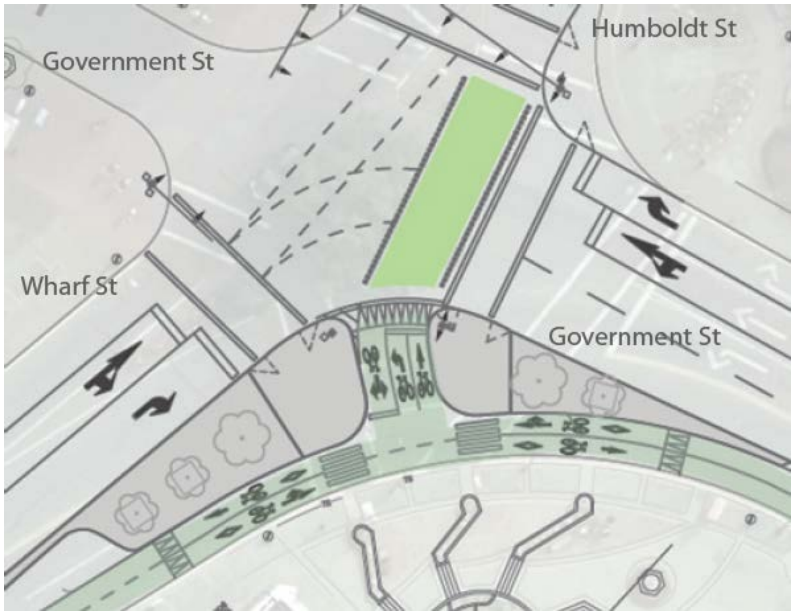

Figure 7: Intersection re-design at Wharf, Government and Humboldt

Currently, intersection design precludes a number of vehicle and cyclist movements, impacting full accessibility for road users. In addition, the current configuration has insufficient and/or isolated pedestrian queuing areas at the intersection – crowding/congestion on sidewalks occurs regularly during peak seasons.

Reconfiguring the intersection to a standard, right-angle configuration will provide additional route options for people accessing and circulating in this area of downtown, shorten and regularize pedestrian crossing movements at the intersection, increase pedestrian queuing areas, and allow the proposed Wharf Street cycling infrastructure to connect to Humboldt Street.

The changes will also provide space for new amenities like seating and bike racks, and potential space for public art. Additional space has also been designed for Vehicle For Hire services, such as pedi-cabs, to facilitate safe pick up and drop off.

The City will be removing two trees from the existing traffic island but the new design includes five new trees in the proposed plaza space. City staff are working with Victoria Police on options for special event traffic management, utilizing removable bollards at this intersection.

Figure 8: New transit stop area and on-street parking on the Government Street, including future bike lane alignment concept along Government Street into James Bay.

The two-way bike facility will end on the 700 block of Government Street, just south of the intersection of Government, Wharf and Humboldt. A new transit stop will be introduced to support current and future transit service and the bike lanes will transition formally at the mid-block crossing in front of the Empress Hotel (Figure 8).

Annex C includes additional “before and after” renderings for select locations on Wharf Street for further information.

Humboldt Street

Route Selection:

The Humboldt Street AAA bike facility was approved by Council in May 2016 as a part of Phase 1 due to its southern downtown east-west connection, gentle topography, and access to variety of commercial, institutional and residential destinations (Figure 9).

Figure 9. Phase 1 Corridors. Humboldt Street in blue.

Existing Conditions:

The Humboldt Street corridor is 1.2km and connects Wharf Street/Government Street to Cook Street. There are two general types of existing conditions along this route:

- 600 block Humboldt Street: Two travel lanes and parking on both sides of the street (adjacent to the Empress Hotel – Figure 10)
- 700 – 900 block Humboldt Street, and 1000 block Pakington Street: Two travel lanes and variable on-street parking (both sides – Figure 11).

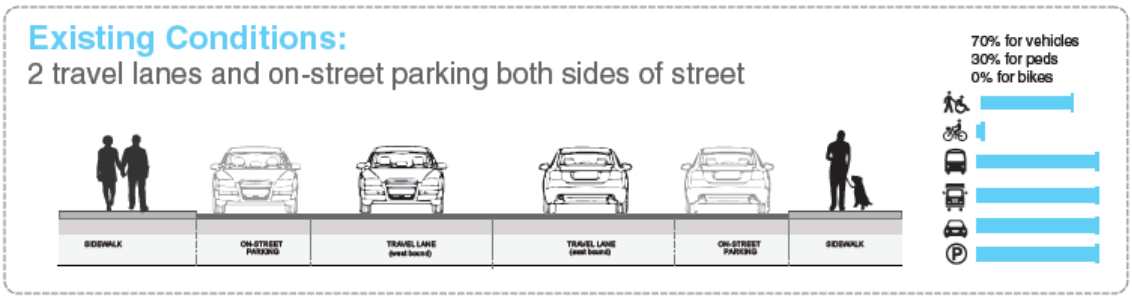

Figure 10: Existing conditions in the 600 block

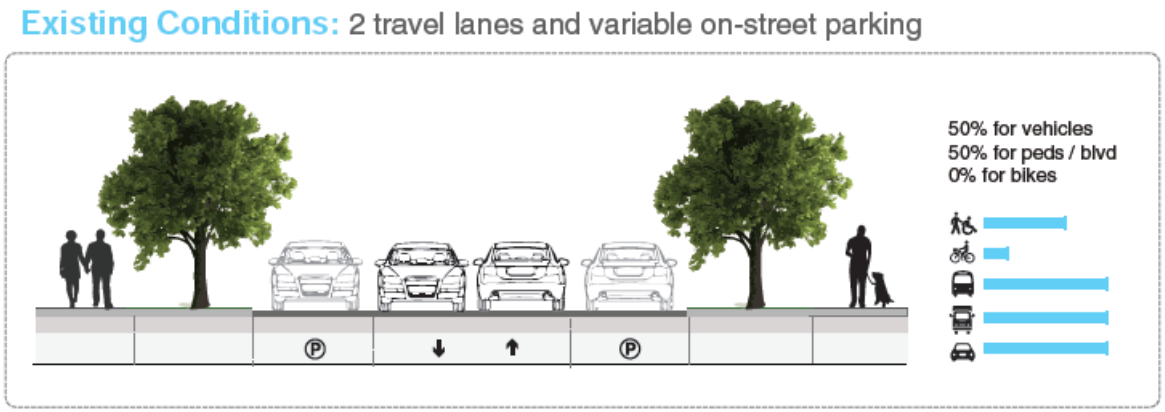

Figure 11: Existing conditions in the 700 – 900 blocks, 1000 block Pakington

There is no cycling infrastructure on Humboldt Street. Recent data collection show that 35 cyclists per hour share the road with vehicles during peak periods.

The low vehicle speeds and potential for reduced volumes means that the easterly component of the Humboldt corridor is suitable for AAA status as a shared street, and does not require physical separation or protection.

The remainder of the corridor presents an attractive opportunity to increase cycling safety with minimum impacts to the current streetscape, thereby minimizing costs, while improving convenience, the pedestrian environment, and the public realm.

Design Evolution (2016 – 2018):

The approved concepts for Humboldt Street include a two-way protected bicycle lane on south side of Humboldt between Government Street and Douglas Street and a shared road treatment between Douglas Street and Vancouver Street and on Pakington Street between Vancouver Street and Cook Street.(Figures 12 and 13 below).

A two-way protected bike lane on the south side of Humboldt Street between Government Street and Douglas Street provides a seamless connection to the Wharf Street facility.

Alignment on the south side was primarily chosen to minimize complex intersection design challenges, and to minimize on-street parking impacts. The shared-road treatment east of Douglas Street was chosen to minimize parking impacts.

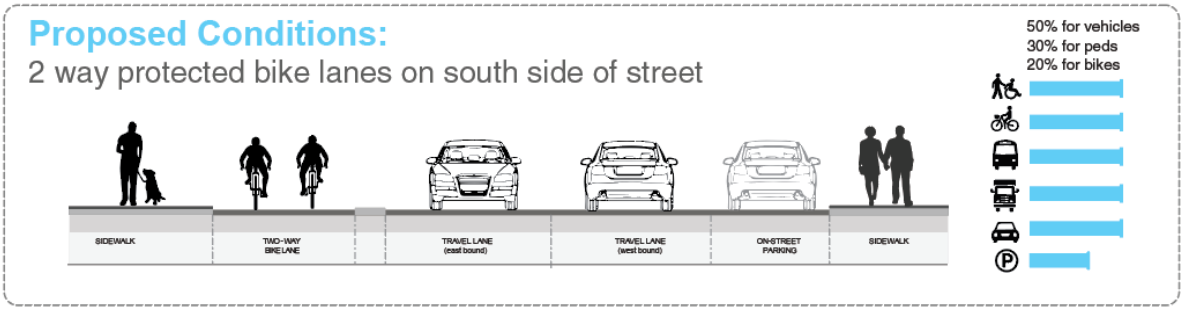

Figure 12: Proposed two-way protected bike lanes (600 block)

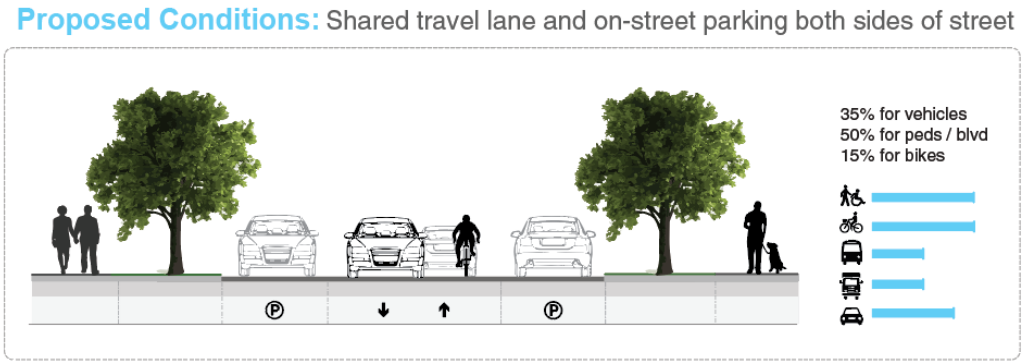

Figure 13: Proposed shared travel road in the 700 – 900 blocks

City staff also re-examined alternative alignments for Humboldt Street. These included protected lanes on the 700 to 900 blocks as well as the two-way facility on the north side in the 600 block . Both alternatives were dismissed, as they had significant impacts to on-street parking.

Design Challenges

The Humboldt Street design must address the following key challenges:

- **Safety**: Controlling traffic volumes and motor vehicle speed to achieve safety standards for shared roadways
- **Motor Vehicle Flow:** Reducing vehicle wait time at the Douglas/Humboldt intersection, and ensuring adjacent streets can accommodate any additional motor vehicle traffic volumes.
- **Street Loading/Operations**: Maintaining on-street parking in the 600 block and facilitate commercial loading requirements at the Victoria Conference Centre/Empress Hotel. Re-locate existing Tour Bus loading zones on the 600 block of Humboldt Street, and mitigating impacts to existing horsedrawn carriage routing on Humboldt Street .
- **Pedestrian Realm:** Establish new pedestrian plazas and enhance the public realm

Engagement Approach:

There were three phases of engagement completed for the Humboldt Street design between July 2017 and March 2018. A detailed summary of engagement activities and feedback are found in Appendix A. Engagement can be summarized as follows:

- **Phase 1:** early discussions and sessions with several key property owners, employers and stakeholders along the corridor.
- **Phase 2:** door to door notification, formal consultation events, newspaper ads, walking tours, digital website communications, and on-line surveys.
- **Phase 3:** additional door to door engagement, public events and follow up one-on-one stakeholder meetings for detailed assessments and commentary.

Overall Engagement Summary (2017/18)

Overall, the public and business stakeholders feedback can be grouped in the following key themes:

- **Safety**: Desire for improved safety for all road users, including cyclists and pedestrians

- **Motor Vehicle Access and Flow:** Desire to improve vehicle access to the downtown core from areas east of downtown
- **Street Network Improvements**: Desire for improved user safety and simplified operations at the Douglas/Humboldt intersection
- **Minimize Parking Loss**: Desire to retain as much on-street parking as possible
- **Street Loading/Operations**: Desire to accommodate existing commercial, public transit and tourism related transportation needs
- **Pedestrian Realm**: Desire for enhanced quality of connectivity to destinations on the corridor

Design Status - May 2018:

The Humboldt Street design is now at 60% detailed design (Appendix C).

The proposed design will improve safety for all users, provide a more direct vehicle connection to areas east of downtown, improve traffic operations at the Douglas/Humboldt intersection, increase the amount of on-street parking on the corridor, enhance the pedestrian experience, and support commercial, public transit and tourist-related operations.

As shown in Figure 14 below, the proposed bike lanes in the 600 block of Humboldt Street are on the south side of the street. They will be protected by a combination of concrete medians, pavement markings and bollards.

Parking and loading areas are retained on the north side of the street. Victoria Conference Centre and Empress Hotel loading bay access for all existing truck turning movements will be accommodated.

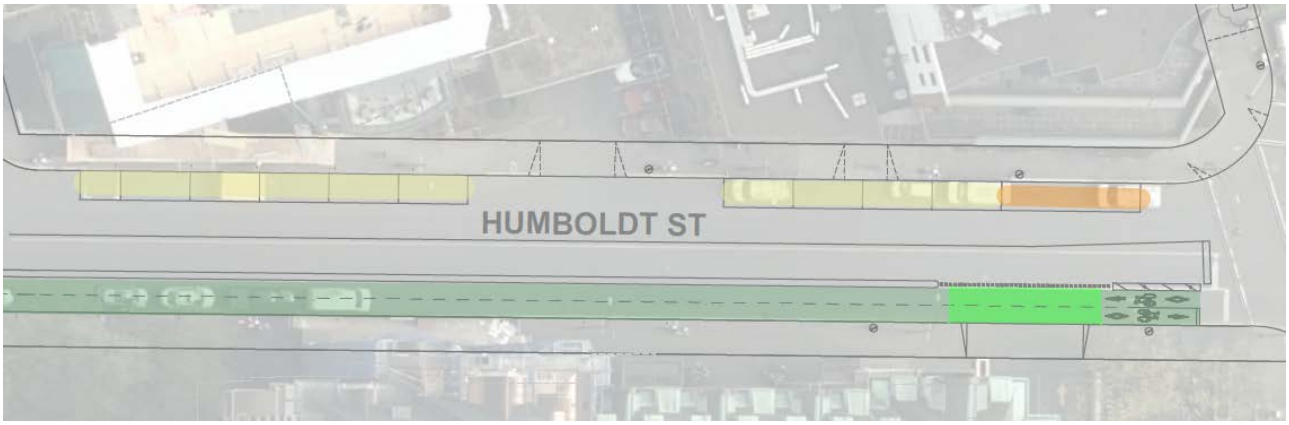

Figure 14: Two-way protected bike lane along the 600 block with on-street parking (yellow) and loading areas (orange).

A net gain of nine parking stalls can be realized between Government Street and Vancouver Street. Parking loss on the south side of the 600 block of Humboldt Street is compensated through parking gains in the 700 through 900 blocks of Humboldt Street. Parking regulations can also be modified to to accommodate user's needs on a block-by-block basis.

Annex B provides a further summary of proposed parking and loading on Humboldt Street.

Alternative tour bus loading areas will be established, either on Government Street or on Belleville Street, to address the challenge of passenger loading and tour bus-related operations.

To safely achieve a shared AAA route, interventions are required to reduce vehicle traffic volumes east of Douglas Street (Figure 15). This is achieved by reconfiguring the Douglas/Humboldt intersection , closing the Humboldt Street approach east of Douglas Street, and converting the existing five-way intersection to a standard four-way intersection.

The proposed design treatment will improve pedestrian safety, by shortening crossing distances, and reducing vehicle delay, through the elimination of a dedicated signal phase for the leg of Humboldt Street east of Douglas Street.

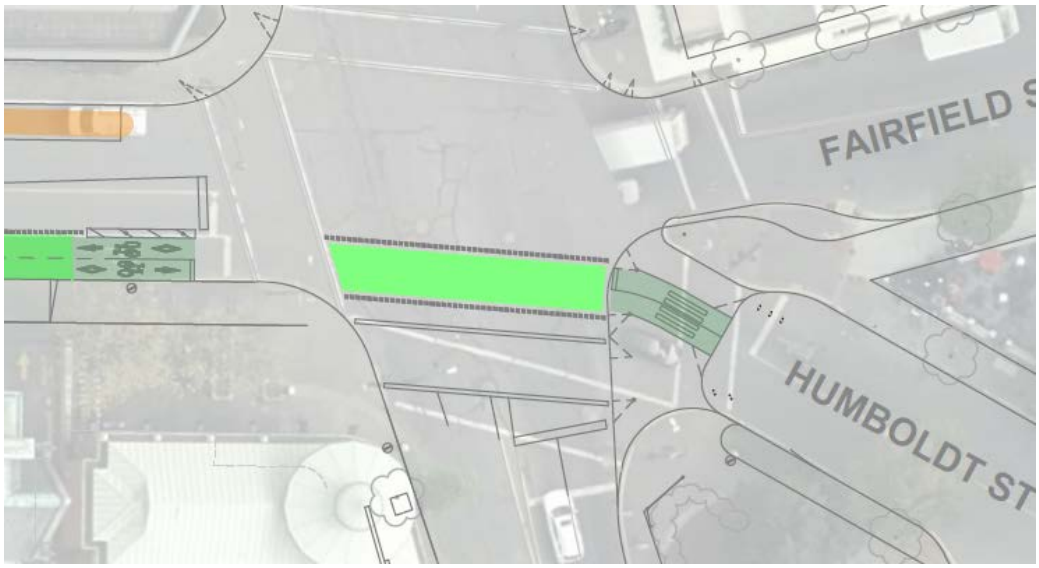

Figure 15: Proposed 4 way intersection and 700 block closure

Motorists will use Burdett Avenue/Fairfield Road to continue east towards the Fairfield/Gonzales neighbourhood, rather than driving on Humboldt Street to Vancouver Street, and then re-routing to either Southgate Street or Fairfield Road. Capacity on Burdett Avenue and Fairfield Road exists to facilitate these additional volumes.

New plaza space east of Douglas Street will offer opportunities for temporary placemaking such as art installations or moveable furniture - permanent design features can be established in conjunction with redevelopment of the adjacent Apex site.

Cyclists, pedestrians and emergency vehicles will be able to transit through the proposed plaza space. The current Vehicles for Hire Bylaw allows use of Humboldt Street by horsedrawn carriages. Staff will continue to work with these stakeholders to explore potential design treatments that allow horsedrawn carriage access through the plaza, as well as alternative route options.

The existing bus zone in the 700 block of Humboldt Street will be converted to on-street parking. Staff will continue to work with BC Transit on special event routing and cueing areas for times where there are major festivals and events in the downtown core. Vehicle access to the 700 block Humboldt Street will be maintained via Penwell Street and Blanshard Street.

Minimal design interventions and modifications to the streetscape for the remainder of the Humboldt corridor, designed to reduce non-local vehicle volumes, will ensure AAA safety standards for cyclists. Shared AAA road treatments in the 700, 800, and 900 blocks of Humboldt Street will employ a combination of paint markings, traffic calming and traffic diversion to

encourage cycling. Advisory bike lane markings will be piloted in the 800 block (Figure 16), in conjunction with speed tables, and a raised pedestrian crossing (Figure 17).

Figure 16: Advisory bike lanes - the treatment, applied to the full length of the block, is intended to help motorists and cyclists safely position themselves in the roadway.

Figure 17: New raised pedestrian crossing to improve safety and visibility on the 800 block Humboldt Street

Figure 18: Proposed traffic calming and crosswalk enhancements at Humboldt and Vancouver

Minimizing parking loss and maintaining community transit service are key objectives. The proposed design maintains existing transit service on the 900 block Humboldt Street and adds on-street parking to the north side of the street. The additional parking will reduce available road space for traffic, and reduce vehicle speeds and volumes.

At Vancouver Street, slower vehicle speeds, particularly for southbound traffic, will create a safer environment for pedestrians and cyclists using Humboldt Street and Pakington Street. Traffic circles and new pedestrian crossings improve conspicuity and safety for pedestrians, while maintaining residential and commercial access to property (Figure 18). There are no additional changes are proposed to Pakington street as a part of the Humboldt Project.

Cook Street (Pandora Avenue to Pakington Street)

Route Selection:

In 2016, Council approved the AAA network and Phase 1 implementation for Cook Street, between Pakington Street and Pandora Avenue (figure 19).

Southerly portions of Cook Street (through the Cook Street Village) were to be completed in later phases, once concepts and the alignment through Cook Street Village was defined through additional engagement and piloting of cycle track design treatments.

As a part of the network development process in 2015/2016, Vancouver Street, Cook Street and Linden Avenue were reviewed as candidates for potential north-south AAA routes.

Figure 19. Phase 1 Corridors. Cook Street in blue.

Linden Avenue was eliminated from the roster due to its topography and lack of corridor connectivity beyond Fort Street.

The Cook Street corridor was recommended in 2016 primarily due to its gentle topography and its direct connections to important destinations including Dallas Road, Beacon Hill Park, Cook Street Village, and North Park Village.

Existing Conditions:

Cook Street, between Pandora Avenue and Pakington Street is 1.1km long, connecting the edge of North Park Village to the edge of Cook Street Village. There is no existing cycling infrastructure on Cook Street with modest ridership levels (more than 50 riders per hour during peak period travel).

Approximately 50% of the right-of-way is dedicated for vehicle movement - the remainder is treed boulevard space and sidewalks (Figure 20). This segment of Cook Street is an attractive opportunity for increasing ridership, by making Cook Street a safer and more convenient north-south cycling connector.

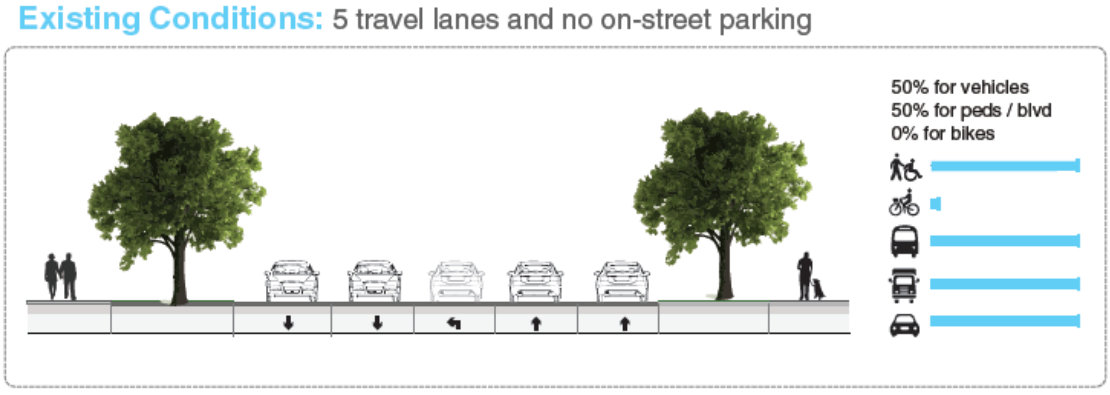

Figure 20: Current conditions on Cook Street, Pandora to Pakington

Cook Street is a secondary arterial, servicing a combined 1550 vehicles per hour in peak times, and 1400 vehicles per hour during off-peak periods.

Design Evolution (2016 – 2018):

The initial design concept for Cook Street includes one-way protected bike lanes on each side of the street (shown below in Figure 21). The current five-lane cross-section was planned to be reduced to three travel lanes with modifications to road width at various intersections to accommodate vehicle turning movements (see Appendix D).

Retaining mature street trees and leaving the existing curbs largely untouched were key objectives of the project concept.

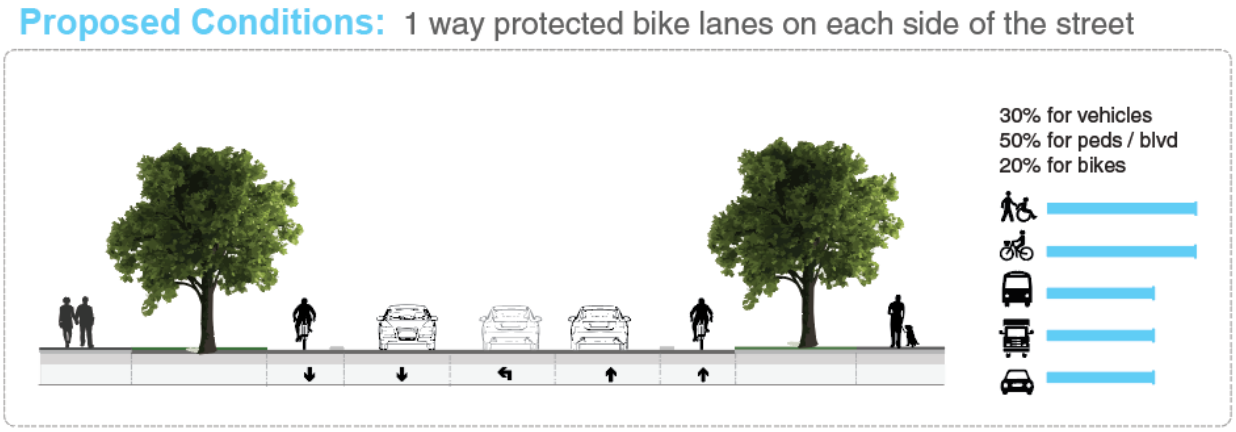

Figure 21: 2016 proposed concept for Cook between Pandora and Pakington

Design Challenges:

The design challenges for Cook Street include the following key considerations:

- **Safety:** Improve safety for cyclists on this busy, arterial corridor.
- **Motor Vehicle Flow**: Accommodate vehicle traffic flow and performance carefully, particularly between Fort Street and Pandora Avenue, balancing peak vehicle volumes, turning movements, and intersection timings/delay.
- **Street Loading/Operations**: Retain as much on-street parking and loading zones as possible near commercial areas, and meet dimensional requirements for commercial truck traffic.
- **Public Realm:** Avoid impacts to trees.
- **Cost Control:** Minimize impacts to sidewalk and boulevard infrastructure, underground utilities, and intersection alignments.

Engagement Approach:

There were two phases of engagement completed for the Wharf Street design between July 2017, and March 2018. A detailed summary of engagement activities and feedback are found in Appendix A. Engagement can be summarized as follows:

- **Phase 1:** early discussions and sessions with several key property owners, employers and stakeholders along the corridor.
- **Phase 2: (**late 2017 and early 2018) door to door notification, formal consultation events,

newspaper ads, walking tours, digital website communications, and on-line surveys.

Overall Engagement Summary (2017/18)

Overall, the public and business stakeholder feedback can be grouped in the following key themes:

- **Safety**: Desire for improved safety for all road users, including cyclists and pedestrians
- **Motor Vehicle Flow:** Desire to maintain traffic flow, avoid increased delays (particularly during peak periods) and avoid short-cutting on adjacent roadways
- **Cycling Infrastructure Improvements:** Desire for quality AAA infrastructure
- **Minimize Parking Loss**: Desire to retain on-street parking
- **Tree protection**: Desire to maintain mature boulevard trees
- **Street Loading/Operations**: Desire to accommodate existing commercial needs
- **Public Realm**: Desire to maintain wide boulevards/generous separation between pedestrians and motor vehicle traffic

Design Status - May 2018:

The City's overarching objective to improve safety for cyclists and pedestrians on Cook Street is balanced with the requirement to properly manage traffic volumes and residential and commercial property access. Introducing protected bike lanes on Cook Street would provide a significant safety improvement for cyclists, but must carefully managed with other critical transportation design requirements and public realm features.

Initial design for Cook Street was completed as a part of network development in 2015/2016. The design was based on the available physical space within the current road right-of-way, initial traffic volume data and a cursory analysis of required signal modifications. Concept drawings presented to the public in Fall 2017 were based on the 2015/2016 work and solicited community feedback on the proposed three-lane design with two types of treatments at high volume intersections, described below.

Protected intersections: Introducing dedicated phases for cyclists and pedestrians to travel without vehicle conflicts. Where applicable, vehicles turning right must wait for right turn signal. The protected condition is essential to retain safety and AAA standards, and prioritizes protection for vulnerable road users.

Yield intersections: Right-turning vehicles are required to yield to cyclists who are travelling straight through. The yield condition provides increased convenience to motorists but does not provide an AAA condition for cyclists and pedestrians. Yield conditions can be considered for one-way bike lanes but are not options for two-way facilities.

Three Lane Option Assessment

Cook Street serves high volumes of motor vehicle traffic and is an important inter-municipal transportation corridor.

When re-allocating a streetscape, the City uses technical design and traffic flow modelling standards, considers user-specific needs (eg: BC Transit design guidelines) and the local context. Traffic flow models and intersection design takes into account vehicle volumes, spacing and turning patterns at different times of day. On a practical level, the City wants to ensure that roads operate safely and efficiently, minimizing periods of significant congestion.

The current vehicle Level of Service on Cook Street between Pandora Avenue and Pakington Street is “Level C” – road users typically experience stable traffic flow. This Level of Service is often the target for major streets in an urban city environment, and a level of performance we would like to maintain along this corridor.

Similar to the design evolution used with the Fort, Wharf and Humboldt Street projects, City staff used the 2015/2016 concept as the basis for further technical assessment.

The 2017 and 2018 work included review of updated 24 hour traffic volumes combined with signal timing and sequencing requirements, underground utility locations, tree health data, and lane geometries / dimensional requirements to accommodate commercial and transit needs.

South of Fort Street, bike lanes can be accommodated without significant changes to existing traffic signal timings. However, to accommodate the proposed intersection modifications under the original concept, an additional 5 - 10 seconds for each cycle phase would be required at the intersections of Pandora Avenue, Johnson Street, Yates Street and Fort Street to maintain existing traffic conditions.

Staff determined that a reduction in travel lanes would not drastically impact the overall vehicle Level of Service, but intersection delays could impose significant traffic queues at select times of day. These delays would impact the vehicle and transit travel times, and potentially cause measurable congestion in the busiest part of the corridor (between Pandora Avenue and Fort Street).

The detailed analysis of a three-lane cross section determined that implementing fully protected intersections would result in unacceptable levels of congestion. These delays would result in motorists choosing parallel routes, including short-cutting through neightbourhoods on local streets, which raises further safety concerns. To properly mitigate these impacts, traffic calming interventions on these parallel roads would be required, adding time and cost to the project.

There are currently 17 on-street parking stalls on Cook (primarily south of Fairfield) and 9 loading zones of various types. The design requires the loss of an estimated eight parking stalls and one passenger loading zone, but retains existing commercial loading zones. There is one mature tree that would also likely have to be removed at Yates Street to facilitate required intersection modifications.

Four-Lane Option Assessment

After review and analysis of all options and trade-offs associated with the three-lane concept, a four-lane design for Cook Street was developed and assessed in early 2018.

This modified design concept maintains two general purpose travel lanes in either direction between Rockland Avenue and Pandora Avenue by removing existing curb and gutter and widening the roadway. Appendix E provides a high level design concept of the four-lane cross section with vehicle lane dimensions.

This design would have less impact on vehicle flow/delays when compared to the three-lane option. Traffic function would be improved for some turning movements, with modest delays for motorists introduced at peak travel time for others. The overall vehicle Level of Service would not change in this configuration, when compared to current conditions.

To address potential cyclist/transit conflicts, bike lanes would need to be detoured around bus zones. Cyclists would be required to yield to pedestrians crossing to and from the bus zones.

There would be significant cost impacts in applying these design treatments to all affected bus zones.

The physical space requirements for this four lane cross section, turning lanes, bike lanes and new curbs would result in a significant impact to an estimated 20 mature trees.

The four lane concept also impacts numerous underground utility installations . The resulting relocation of utilities would be costly and would significantly extend project construction timelines.

On-street parking adjacent to commercial uses would be retained but the majority of on-street parking in the southern portion of the corridor (currently restricted to daytime hours Monday to Friday) would be removed (~16 stalls).

Under the 4 lane option, vehicle performance would be retained, but at the compromise to reduced pedestrian realm, increased capital costs, project timelines, tree impacts and other undesirable trade-offs.

Comparison of 3 Lane and 4 Lane Options:

The three-lane and four-lane design concepts on Cook street are summarized below in Table 1 below.

Table 1. Cook Street Design Options Summary Evaluation.

Design Theme	3 lane concept	4 lane concept
Safety – Pedestrians and Cyclists	High	High
Parking/Loading	Loss of 8 stalls	Loss of 16 stalls
Street trees	Loss of 1 tree	Loss of 20 trees
Vehicle Level of Service	Average Level of Service C with significant impacts to peak period travel; requires additional treatments on adjacent streets	Average Level of Service C with some impacts to peak period travel
Transit stop design	Traditional bike / bus pull out	Opportunity for separated bike / bus zones
Utility relocation	1 hydro pole relocation	11 hydro pole relocations
Cost magnitude	$$$	$$$$$$
Construction impacts	Moderate (entire corridor)	Very high (entire corridor)
Pedestrian environment improvement potential	High	Low

Neither three or four-lane design option meets the City's objectives to provide a high quality, functioning and attractive streetscape that supports a reasonable balance of affordable, efficient and safe movement of people, goods and services.

Vancouver Street (Pandora Avenue to Southgate Street)

Given multiple trade-offs and impacts for Cook Street design options , staff were directed to re-visit/assess the use of Vancouver Street as an alternative north / south AAA corridor. The Vancouver Street design option including trade-offs and opportunities is presented below.

Existing Conditions:

Vancouver Street between Pandora Avenue to Southgate Street is 1.2km long, with no current cycling infrastructure, two general purpose travel lanes, and variable parking and loading configurations along each block (Figure 22).

Vancouver Street between Pandora Avenue and Fort Street is currently rated as having Level of Service "D" – which is an appropriate level of service for this type of street in a downtown setting, which can be maintained even with the addition of proposed cycling facilities.

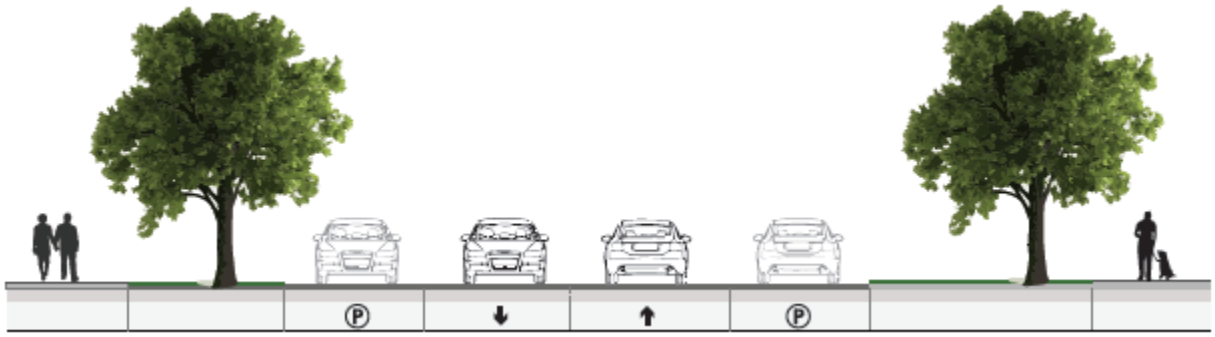

Figure 22: Vancouver Street corridor – existing conditions

Design Challenges

The design challenges for Vancouver Street include the following key considerations:

- **Safety:** Safety for pedestrians and cyclists
- **Connectivity:** providing acceptable connections to destinations/areas of demand
- **Motor Vehicle Flow**: Accommodate vehicle traffic flow and performance carefully, particularly between Fort Street and Pandora Avenue, balancing peak vehicle volumes, turning movements, and intersection timings/delay
- **Street Loading/Operations**: Retain as much on-street parking and loading zones as possible near commercial areas, and meet dimensional requirements for commercial truck traffic
- **Public Realm:** Avoid or minimize impacts to trees, provide an attractive corridor for use

The preliminary analysis for Vancouver Street indicates that a number of the design challenges can be met without undesirable impacts to traffic, cost, public realm, pedestrian or cyclist safety.

Design Status - May 2018:

The proposed design for Vancouver Street is based the concept developed in 2015/2016 and included as Appendix F. The design consists of:

- protected bike lanes on both sides of the road between Pandora Avenue and Fort Street

- shared-road conditions between Fort Street and Southgate Street.

Similar to the Humboldt Street corridor design, achieving a shared road AAA route requires strategic interventions to reduce vehicle traffic volumes and speeds.

Pandora Avenue to Fort Street:

Protected bike lanes would be installed in the boulevard between the existing trees and parked vehicles between Pandora Avenue and Fort Street. At signalized intersections, a protected traffic signal phase would give cyclists and pedestrians dedicated time to cross.

Across the complete corridor, the proposed design does not change vehicle Level of Service (flow/efficiency). There would be minor impacts for specific vehicle turning movements at select times of the day; however these can be mitigated to acceptable levels through optimised signal timings/phasing.

Staff's preliminary assessment suggests that curb realignment between Pandora Avneue and Fort Street would result in the loss of two boulevard trees. The shared road condition south of Meares Street would not result in tree impacts, however detailed analysis by arborist is still required to confirm impacts as designs mature.

Fort Street to Southgate Street

To achieve AAA design objectives South of Fort Street, the design would introduce traffic diversion to reduce vehicle volumes and speed to AAA acceptable standards. Right in/right out on Vancouver Street at Meares Street and at Southgate Street would be required. The 900 block of Meares Street would be converted to a two-way street to accommodate the right in/right out condition at Meares/Vancouver.

To further encourage reduced speeds, on-street parking, speed tables and paint markings would be introduced. Increased separation between the sidewalk and vehicle travel lanes would provide modest improvements for pedestrians between Pandora Avenue and Fort Street

Design Details - Vancouver Street

There are 87 on-street parking stalls, an additional 39 parking stalls available for evening use (day time restrictions, Monday to Friday), and nine loading zones between Pandora Avenue and Southgate Street. Initial design investigations for Vancouver Street indicate some on-street parking would be impacted, most notably in between Fort Street and Pandora Avenue, but a overall net increase of 35 stalls could be achieved by redesign of parking operations and geometries.

The parking considerations are as follows:

Table 2. Vancouver Street Parking Comparison.

Vancouver Street with protected intersections and shared use design South of Meares Street	Current	Proposed	Change
On-street parking (not restricted for daytime use)	87	122	+35

Commercial loading zone	3	4	+1
Passenger loading zone	6	6	0
Hotel loading zone	0	0	0
Taxi zone	0	TBD	TBD

Staff have assessed that there would not be any significant underground utility conflicts on Vancouver.

The Vehicles for Hire bylaw allows use by Horsedrawn carriages on Cook Street and Vancouver Street. With proposed AAA infrastructure, there may be a requirement to alter approved carriage routes to safely accommodate all users. Staff will work with these stakeholders to explore potential design treatments and alternative routes. This will be the subject of a future staff report.

Based on the scope design, construction on Vancouver Street could be completed in approximately 6 months.

OPTIONS & IMPACTS

A) Wharf Street

The AAA design for Wharf Street is now at 60%. The City has completed an iterative design process with multiple phases of consultation with key stakeholders, the public, and agency partners. The recommended design addresses acute safety challenges on the corridor and provides transportation solutions that will fundamentally re-imagine the Wharf street corridor. The design will help to achieve goals in the Official Community Plan and Downtown Core Area Plan while meeting functional needs for tourism, transit, commercial and general purpose traffic.

1. Approve the 60% design for Wharf Street AAA cycle track, and direct staff to proceed to detailed design and construction tender. **(Recommended)**

The City is now in a position to proceed with finalizing design details consistent with approved budgets and design objectives, development of tender drawings and initiating a procurement process. With approval from Council, the City will alert the construction industry of the upcoming tender opportunity. Following a successful procurement process, construction could begin after the major tourism season (timelines supported by corridor stakeholders) in early October 2018. Based on the current project scope for Wharf Street, and the current construction climate, an eight month construction timeline is estimated for this project.

2. Direct staff to complete further public engagement on potential design modifications or revised scope of project. **(Not Recommended)**

Staff could continue public engagement and consultation on the 60% designs, and develop modifications to design and/or scope for consideration by Council at a future date. This option would require additional time and add to project costs. This is not recommended, as numerous viable AAA designs for Wharf Street have already been explored. The proposed design and project scope provides the best balance of needs for all road users.

3. Direct staff to defer the Wharf Street project at this time. **(Not Recommended)**

Under this option, staff would not be able to complete the network connections critical to the overall functionality of the cycling master plan.

B) Humboldt Street

The AAA design for Humboldt Street is now at 60%. The project would introduce a protected bike lane connection to Wharf Street, and a major intersection re-configuration at the Douglas/Humboldt intersection. The proposed design will improve safety for all users, provide a more direct vehicle connection to areas east of downtown, improve traffic operations at Douglas/Humboldt, increase the amount of on-street parking on the corridor, enhance the overall pedestrian experience, and support commercial, public transit and tourist-related operations.

1. Approve the 60% design for Humboldt Street AAA cycle track, and direct staff to proceed to detailed design and construction tender. **(Recommended)**

The City is now in a position to proceed with finalizing design details consistent with approved budgets and design objectives, development of tender drawings and initiating a procurement process. The City will alert the construction industry of the upcoming tender opportunity. Based on the current project scope for Humboldt Street, and the current construction climate, a six month construction timeline is estimated for this project, with the majority of effort focused at the Douglas/Humboldt intersection. There is potential to bundle the Humboldt Street and Wharf Street projects in a joint tender, to potentially attract more competitive bids from the construction industry, and streamline construction timelines.

2. Direct staff to complete further public engagement on potential design modifications or revised scope of project. **(Not Recommended)**

As directed, Staff could continue public engagement and consultation on the 60% designs, and develop modifications to design and/or scope for consideration by Council at a future date. This would require additional time, and add project costs. This is not recommended, as the proposed design already achieves the best balance for safety, vehicle flow, and streetscape improvements, without comprising on-street parking.

3. Direct staff to defer this project at this time. **(Not Recommended)**

Under this option, staff would not be able to complete the network connections critical to the overall functionality of the cycling master plan.

C) Cook Street

1. Direct staff to complete detailed design for the three-lane option on Cook Street, Pandora to Pakington, and report back to Council at 60% stage. **(Not Recommended)**

The city is not recommending pursuing the three-lane design for Cook Street, as it does not adequately balance the needs of all road users. The impacts to traffic flow and congestion at peak periods would result would result in delay and could encourage road users to cut through neighbourhoods that would require further interventions.

2. Direct staff to engage stakeholders on the four-lane design option for Cook Street, Pandora to Pakington, and report back to Council at 60% stage. **(Not Recommended)**

The city is not recommending pursuing the four-lane design for Cook Street, as it does not affordably balance the needs of all road users. The additional costs public realm, curb and sidewalk rebuilds and re-locating underground utilities will require expenditures beyond the approved project budget. In addition, the removal of mature and healthy street trees does not meet the goals and objectives of the City's Urban Forest Master Plan, Official Community Plan or Local Area Plans.

3. Direct staff to defer this project at this time. **(Recommended)**

Under this option, staff would not continue with the project. The city would retain data and technical information to inform mobility and land use planning and investment in the future.

D) Vancouver Street

1. Direct staff to embark on the established, multi-phased engagement process for AAA infrastructure design on Vancouver Street (Pandora to Southgate), and report back to Council with 60% design by September 2018. **(Not Recommended)**

The City would share designs for Vancouver Street AAA infrastructure with new and existing stakeholders. Engagement activities would follow the same iterative design process to engage property owners, businesses, commuters, and agency partners. The benefits of this approach includes opportunities for wider community involvement, and multiple chances to review designs and get involved in the process.

2. Direct staff to accelerate the Vancouver Street AAA cycle track project as a priority (between Park Avenue and Bay Street), in place of the 2016 Cook Street project, and engage with stakeholders on the design as outlined in this report. **(Recommended)**

This option incorporates planned 2019 infrastructure investments for the AAA network. With this direction from Council, staff would combine design and consultation scope and activities to include improvements along the extent of Vancouver Street. This would include:

- Shared AAA improvements from Park Boulevard to Southgate Street
- Protected AAA bike lanes from Pandora Avenue to Caledonia Avenue
- Shared AAA improvements from Caledonia Avenue to Bay Street, including crossing upgrades at Vancouver/Bay

These activities would require additional time for design and consultation with new and existing stakeholders. Under this option, staff would report back to Council in the fall of 2018. Without additional resources, 60% design drawings would not be completed until December 2018, with construction of all identified segments in 2019.

3. Direct staff to commence an expedited engagement process for AAA infrastructure on Vancouver Street (Pandora Avenue to Southgate Street) and report back to Council with 60% design by July 2018. **(Not Recommended)**

City staff would undertake an expedited consultation process with select corridor stakeholders, and report back to Council with a 60% design in July 2018. There may be an option to involve active community groups who are interested in this project and want to support the Vancouver street corridor as an investment priority. The risks of an expedited consultation process is that only select stakeholders could be consulted during this period, potentially limiting opportunities for more fulsome participation, and departing from the City's engagement framework.

4. Direct staff to proceed with completing detailed design for Vancouver and initiating procurement process without further engagement and consultation. **(Not Recommended)**

This would accelerate project construction, as detailed design work could commence following selection of a consulting engineer. However, proceeding with detailed design for this type of project without consultation/engagement would depart from the City's engagement framework.

Accessibility Impact Statement

As a part of the early engagement phase the Wharf, Humboldt and Cook Street corridors, staff met with representatives of the Victoria Disability Resource Centre. There were a number of suggestions provided to support enhanced accessibility, through streetscape improvements and retrofits associated with the AAA projects. Similar to the process employed for the Fort Street project, staff will meet with the Accessibility Working Group to review proposed treatment options for various public realm elements upon approval of the 60% designs.

Impacts to Financial Plan

The proposed Wharf, Humboldt and Vancouver AAA facilities are intended to be completed within the allocated budgets identified in the 2018 financial plan. The Vancouver project (Pandora to Packington) is anticipated to fit within the 2018 budgetary scope of the forecasted Cook Street project. Implementation of the Wharf and Humboldt corridors the .

2015 – 2018 Strategic Plan

Objective 9 - Complete a Multi-modal and Active Transportation Network.
The 2015 to 2018 Strategic Plan identifies a desired outcome for Victoria to be a national leader for cycling infrastructure and "complete streets" planning, with completed all-ages and abilities cycling network connecting all neighbourhoods and village centres.

Official Community Plan Consistency Statement

The AAA Bicycle Network program supports actions in the Official Community Plan under the following thematic goals:

- Goal 6: Land Management and Development (goals 6A, 6B, and 6C)
- Goal 7: Transportation and Mobility (7A, 7B and 7C)
- Goal 8: Placemaking – Urban Design and Heritage (8A)
- Goal 9: Parks and Recreation (9A)
- Goal 10: Environment (10A)
- Goal 11: Infrastructure (11A)
- Goal 12: Climate and Energy (12A, 12C, and 12E)
- Goal 15: Community Well-being (15F and 15G)

CONCLUSION

Staff are recommending progressing Wharf and Humboldt cycling projects to final design and construction tendering. The planned Cook Street project would present significant trade-offs between project safety standards, vehicle traffic impacts, pedestrian realm and costs. Staff are now recommending progressing the Vancouver Street alternative alignment, as it represents a more balanced, affordable, less impactful option, albeit with a degraded overall connectivity standard that does not directly link urban village centres. Staff are seeking Council direction to move forward with

these projects to maintain overall pace as directed by Council in 2017, for Phase 1 completion as early in 2019 as possible.

Respectfully submitted,

Brad Dellebuur, Assistant
Director Engineering

Fraser Work, Director
Engineering and Public Works

Sarah Webb Manager
Sustainable Transportation
Planning and Development

Report accepted and recommended by the City Manager:

Date: May 18, 2018

List of Attachments:

Appendix A – Wharf, Humboldt, Cook Engagement Summary with Appendices
Appendix B – Wharf Street Design
Appendix C – Humboldt Street Design
Appendix D – Cook Street Three-Lane Design
Appendix E – Cook Street Four-Lane Design
Appendix F – Vancouver Street Design

Annex A – Wharf Parking & Loading Details
Annex B – Humboldt Parking & Loading Details
Annex C – Before & After Images - Wharf