EXECUTIVE SUMMARY
“Four years from now, after one term of this council that has this vision, things will look very different. We’ll have the ability for eight-year-olds to get on a bicycle in whatever neighbourhood and get to whatever neighbourhood they need by themselves. There will be more affordable housing. The thought that makes me happiest is that finally, we’re taking action together.”

-Mayor Lisa Helps, Magaphone Magazine, June 15, 2015
The City of Victoria is a livable, prosperous and vibrant community of approximately 80,000 residents located on the southern tip of Vancouver Island. With a mild climate year-round, relatively gentle topography, and a compact urban area with unique neighbourhoods, Victoria is an ideal community for cycling. The entire city is less than 20 square kilometers in area, making cycling a convenient and practical transportation choice for all trips within the city. In fact, cycling accounts for 11%1 of commute trips to work - the highest bicycle commute mode share of any major city in Canada - and 4%2 of all trips within the city. As a result, the City of Victoria has been recognized across Canada as a city for cycling. However, Victoria’s cycling mode share is relatively low compared to many world-leading cycling cities of similar size, which presents a significant opportunity for the city.

The City of Victoria has always been supportive of cycling; however, the City's current Council has made an unprecedented commitment to build a multi-modal and active transportation network that is safe and comfortable for people of all ages and abilities. To reinforce their commitment, Council has approved the largest financial investment in cycling infrastructure in the City’s history. In addition, Council recently adopted the City’s Strategic Plan 2015 - 2018 which states that “by 2018, Victoria will be a national leader for cycling infrastructure and complete streets planning, with a completed all-ages and abilities cycling network connecting all neighbourhoods and village centres.”

#Biketoria is the project that is bringing this bold commitment to life. This report summarizes the #Biketoria project and identifies the recommended bicycle network along with concept plans for 8 priority cycling corridors. By building a complete All Ages and Abilities (AAA) cycling network that connects major destinations throughout the City, Victoria can be one of the world’s most active, healthy, and happy small cities.

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1 National Household Survey, Statistics Canada, 2011
2 Origin-Destination Household Travel Survey, Capital Regional District, 2011
STUDY PURPOSE
The specific objectives of the #BIKETORIA project were to:

- Analyze public input received during the 2014 Bicycle Network Update consultations;
- Review and enhance the 2014 recommended bicycle network;
- Develop detailed conceptual design for 6-8 priority corridors;
- Provide order-of-magnitude costing for the priority corridors and completion of the entire proposed network;
- Consult with a Technical Advisory Committee (both staff and members of the public) to support the process of reviewing the network and conceptual designs;
- Conduct a focused public engagement process to collect input on gaps or deficiencies in the existing cycling engagement; and
- Prepare and present an interim and final report to Council, including an implementation plan to develop priority corridors.

A national leader in cycling infrastructure by building an All-Ages and Abilities (AAA) cycling network by 2018.
City of Victoria Strategic Plan 2015-2018
Building on previous consultation processes undertaken by the City, a comprehensive Public Communications and Engagement Strategy (the Strategy) was developed to provide an inclusive and accessible approach to building awareness and excitement about the proposed bicycle network. The engagement process was designed to ensure residents’ needs and ideas were incorporated into the location and design of each corridor in the proposed 2018 AAA bicycle network. The Strategy emphasized the need to include non-cyclists and diverse voices who may not otherwise participate in community planning processes. This was achieved by expanding the conversation beyond active mobility and cycling, and by holding events in existing community hubs such as cafes, street corners, parks, and a public library.

The Strategy was implemented to advance the engagement process from a broad overview of cycling in Victoria, to a network level, and then finally to the design of each corridor. Feedback was collected and used to anticipate challenges, identify solutions, and refine the designs of each corridor iteratively throughout the process. Specific activities and tactics for public communications and engagement are described below:

### NETWORK PLANNING

**#Biketoria Summit and Engagement Labs.** On November 1 and 2, 2015, over 400 residents, stakeholders and community leaders came to learn about the preliminary 2018 AAA bicycle network. This included a Pop-Up Bike Lane on Cook Street and Dallas Road, a #Biketoria summit public lecture at the Victoria Conference Centre, and Engagement Labs at the Central Library and at the corner of Wharf Street and Government Street.

**#Biketoria Survey.** A survey was developed to supplement engagement events and provide an accessible method for people to share their ideas or concerns about the 2018 AAA bicycle network. The survey was available online between October 27 – November 2015, with hardcopies available at engagement events. In total, more than 1,700 survey responses were submitted.
CONCEPT DEVELOPMENT

**#Biketoria Neighbourhood Salons.** Between December 1 and 3 2015, the #Biketoria team hosted three Neighbourhood Salons in three different areas of the city. The Salons were held in popular and accessible community hubs, and organized as informal open house events. The purpose of the Salons was to present information and collect feedback on the recommended network and priority corridors, as well as the preliminary concepts for each corridor.

CONCEPT REFINEMENT

**Targeted Business & Neighbourhood Engagement.** Between January and March 2016, the City of Victoria and the #Biketoria team held meetings with interested businesses and neighbourhood groups for additional targeted engagement. Over 10 meetings were held. The purpose of these meetings was to provide more detailed information on specific portions of the proposed network, and to discuss impacts and mitigation strategies. By meeting directly with impacted parties who could be impacted by the implementation of the 2018 bicycle network, the team was able to gain a deeper understanding of stakeholder concerns, such as vehicle parking and vehicle movement, project process, and financial impacts on businesses, among others. Based on this input, concepts were refined and updated to mitigate issues and concerns.

ON-GOING COMMUNICATIONS AND ENGAGEMENT

**Technical Advisory Committee.** A Technical Advisory Committee (TAC) was established for the project and met four times during the process to evaluate ongoing development of the network and to provide guidance from diverse perspectives.

The TAC included representation from a number of groups, including: the business community, cycling community, placemaking, urban design / architecture, healthy communities, all ages and abilities, accessibility, students, safety, equitable representation by gender, sustainable transportation, and the City of Victoria.

**Social Media.** Social media was critical to promoting the #Biketoria campaigns and engagement events. The City of Victoria’s existing social media channels (Facebook, Twitter, Instagram) were used throughout the process to share updates about the project, raise awareness of the engagement events and track online feedback.

**Print Media.** The #Biketoria team actively reached out to local media sources at important project milestones to ensure that information about the network and engagement opportunities were widely available.
Through the engagement process, we heard from a wide cross-section of Victoria residents. We received balanced input by gender and age, and also heard from many non-regular cyclists. While many survey respondents are active cyclists, nearly a third (29%) of survey respondents are not regular bicycle users, and travel by bicycle less 1-3 times per month or less, including 21% who never ride a bicycle or only occasionally ride a bicycle.

In addition to surveys, attendees of the #Biketoria engagement event were asked to write what excited/concerned them about the AAA network on postcards. Various themes were developed to help illustrate what we heard, as shown on the following page.

The statistics below provide a high-level summary of the key themes that emerged through the process.

**Over 2,500** people participated in the #Biketoria engagement process by attending events, writing emails, interacting on social media, or completing surveys.

78% of survey respondents agree the proposed AAA network connects them to the places they want to go.

70% of survey respondents agree that they will cycle more once the AAA network is built.

71% of survey respondents agree the AAA network comes close enough to their home.

19% of survey respondents live outside of Victoria.

65% of engagement event participants do not normally get around by bicycle.

73% of engagement event participants feel their input was valued and will help shape #Biketoria.

**Safety matters!** Infrastructure improvements that will make cycling safer was the most common reason that survey respondents gave for being excited about the AAA network.

**Congestion is a concern.** Potential traffic impacts and loss of parking were the most common reasons that survey respondents gave for being concerned about the AAA network.

**Quality counts.** Engagement participants stressed the importance of including high quality design and landscaping improvements. Survey participants wanted to see broader streetscape enhancements included as part of this process.

### 4a. How often do you currently bike?
Responses: 1,903

- **Everyday** (453 responses)
- **1-2 times/week** (258 responses)
- **Occasionally** (266 responses)
- **3-6 times/week** (651 responses)
- **1-3 times/mo.** (151 responses)
- **Never** (124 responses)

In addition to surveys, attendees of the #Biketoria engagement event were asked to write what excited/concerned them about the AAA network on postcards. Various themes were developed to help illustrate what we heard, as shown on the following page.
I’m most excited for...

- Safe: 596
  - More bikes: 289
  - Kids children: 105
  - Commute: 67
  - Downtown: 53
  - Accessibility: 70

I’m most concerned about...

- Safe: 121
  - Cost / money: 122
  - Traffic / Congestion: 219
  - Car v. bike conflicts: 187
  - Bus / transit impacts: 76
  - Cook St.: 34
  - Other municipalities: 52
  - Parking: 60
  - Construction: 46
NETWORK PRINCIPLES AND ANALYSIS

Several guiding principles, as follows, were developed for this project in order to assess and recommend enhancements to the 2014 bicycle network and identify and design the priority corridors.

Based on the guiding principles, a series of comprehensive analyses were conducted using Geographic Information Systems (GIS) to better understand the various factors that influence the cycling network. These analyses were conducted to inform the bicycle network planning process and the identification of priority corridors by helping to understand where the current bicycle network falls short and where potential future network improvements could be targeted.

#COMFORTABLE | A network that is safe and comfortable for people of All Ages and Abilities.

#COMPLETE | A connected minimum grid network that ensures all residents have access to AAA facilities within a short cycling distance.

#CONVENIENT | A convenient network that connects all major destinations in the City.

#DEMAND | Corridors that provide the greatest potential for increased ridership, current and budding economic development opportunities, and additional benefits for residents and visitors to the City will be prioritized.

#DOABLE | A key component of this project is to identify corridors that can be built by 2018. In order to achieve this schedule, corridors have been identified based on the feasibility of building the facilities, including considerations such as curb-to-curb width or within the existing road right-of-way, current and future transit, known future development, planned road reconstruction, and other issues.
Neighbourhood bikeways refer to shared bicycle routes that are typically located on local streets with lower traffic volumes and speeds and that have been optimized to varying degrees to prioritize bicycle traffic. In cases where traffic volumes and speeds are relatively low, cyclists and motorists are able to comfortably share the road.

Off-street pathways are physically separated from motor vehicles and provide sufficient width and supporting facilities to be used by cyclists and/or pedestrians, and other non-motorized users.

The proposed All Ages and Abilities bicycle network for the City of Victoria is made up of three types of facilities: protected bicycle lanes, neighbourhood bikeways, and off-street pathways. A description of each facility type is provided below.

Protected bicycle lanes are exclusive bicycle facilities that are physically separated from motor vehicle travel lanes and the sidewalk, but are located on-street within the road right-of-way. Protected bicycle lanes combine the comfort and experience of an off-street pathway with the benefits of route directness and access to destinations provided by on-street infrastructure. In many cases, protected bicycle lanes are separated by landscaping or curbs from the sidewalk or by on-street parking. Protected bicycle lanes can be one-way or two-way with appropriate intersection and traffic light upgrades.
Neighbourhood Connections | The final component of the network consists of routes that would connect people from their homes and smaller locations to the hub and spokes. This component of the network fills in gaps in the network and ensures connections are provided to all destinations within the City.

The Hub | The network framework centres on providing a dense network of bicycle facilities within the ‘hub’ of the city. This area includes the Downtown and surrounding portions of Rock Bay, North Park, Harris Green, and Fairfield.

Spokes to the Neighbourhoods | Expanding out from the ‘hub’, the ‘spokes’ in this network would be high quality All Ages and Abilities facilities that would connect the Downtown and surrounding neighbourhoods to and from each of the neighbourhoods across the city, as well as ensuring regional connections beyond the City of Victoria.
Based on this ‘Hub and Spoke” framework as well as the network principles and analysis, a long-term recommended bicycle network was developed. In addition to the long-term network, the network has been further grouped into Primary and Secondary routes to reflect the “Hub and Spoke” framework.

This includes a Primary Network of All Ages and Abilities corridors that provide direct connections to and from the downtown and all neighbourhoods within the city. The Primary Network ensures greater connectivity throughout the city and these routes should be priorities for completion. The supporting Secondary Network that provides access to other destinations throughout the city. In addition, the secondary supporting network directs the long term development of cycling facilities on these routes.

The Primary Network would place most residents within 400 metres of a Primary bicycle route in “hub”, and within 800 metres of Primary bicycle route everywhere else in the city.
PROPOSED PRIMARY AND SECONDARY NETWORK

- Schools
- Public Facilities, Institutions, Parks and Open Space
- Municipal Boundaries
- Primary & Secondary Network

Areas of interest:
- Oak Bay
- Saanich
- Esquimalt
- Ross Bay Cemetery
- Beacon Hill Park
- Topaz Park
- Upper Harbour
- Inner Harbour
- Victoria Harbour
- Clover Point
- McNeill Bay

Map features:
- Various streets and roads
- Larger roads highlighted in purple
- Distance scale: 0 to 2 km

Locations:
- Southgate St
- Fort St
- Wilson St
- Begbie St
- Bay St
- Caledonia Ave
- Hillside Ave
- Tolmie Ave
- Finlayson St
- St Charles St
- Yates St
- Oak Bay Ave
- Douglas St
- Governor St
- Pandora Ave
- Catherine St
- Store St
- Rockland Ave
- Superior St
- Leighton Rd
- Broughton St
- Gorge Rd E
- Kimta Rd
- Langley St
- Johnson St
- Fairfield Rd
- Doncaster Dr
- Haultain St
- Oswego St
- Menzies St
- Esquimalt Rd
- Memorial Cres
- Foul Bay Rd
- Toronto St
- Niagara St
- Richardson St
- North Dairy Rd
- Craigflower Rd
- Jutland Rd
- Fernwood Rd
- Harford St
- Superior St E
- Burnside Rd E
- Richmond Rd
- Ross St
- View St
- Simcoe St
- Skene St
- Blanshard St
- Bridge St
- Belleville St
- Hereward Rd
- Pine St
- Moss St
- Vancouver St
- Hollywood Cres
- Richmond Ave
- Cook St
- Quadra St
- Shelbourne St
- Cedar Hill Rd
- Dallas Rd
- Dominion Rd
- Tyee Rd
- 10th Ave E
- River Rd
- Chicago St
- Vancouver Rd
- Moss St
- Holborn Rd
- Hollywood Cres
- Ontario Cres
- Crescent Rd
- Vancouver Rd
- Shelbourne St
The #Biketoria project further identified a network of bicycle facilities to be implemented by 2018. This network, referred to as the 2018 Cycling Network, connects all areas of the City with a connected grid of cycling facilities. The 2018 Cycling Network is comprised of two types of facilities that are considered to be comfortable for people of all ages and abilities: protected bicycle lanes on major roads and neighbourhood bikeways on local streets. The total network includes 8 corridors that make up over 25 km of facilities, extending to and through all of Victoria’s neighbourhoods.

A comprehensive multi-modal concept evaluation was conducted for each 2018 AAA Cycling Network corridor to understand the benefits and challenges of each option considered for each corridor. This concept evaluation was conducted for each corridor using a multi-criteria evaluation framework that included the following criteria:

1. **Network Connectivity.** Degree to which the concept improves connections to existing bicycle facilities.
2. **Safety.** Degree to which the concept improves connections to existing bicycle facilities.
3. **Bicycle Comfort.** Degree to which the concept improves the comfort for people riding bicycles.
4. **Pedestrian Comfort.** Degree to which the concept improves the pedestrian environment (e.g. crossings and sidewalk conditions).
5. **Public Input:** Public support for concept.
6. **Motor Vehicle:** Degree to which the concept impacts traffic operations relative to the intended road network classification and function of the street and provides access opportunities.
7. **Transit Reliability and Comfort:** Degree to which the concept provides smooth travel for vehicles and access opportunities.
8. **Streetscape:** Degree to which the concept supports complete streets.
9. Land Use Integration: Degree to which the concept improves the urban realm as well as integrating with other land use planning initiatives.

10. Impacts to Parking / Loading / Access: Degree to which the concept impacts on-street parking.

11. Ease of Implementation: Degree to which the concept has implementation challenges, such as property impacts, utility impacts, legislative changes, curb work, etc.

12. Relative Cost: Order-of-magnitude relative cost of each concept.

Based on this multiple account evaluation, a preferred concept was identified for each corridor. Each of the 2018 AAA Cycling Network corridors are described in further detailed below.
FORT STREET

Fort Street is an important part of the hub of the network downtown and is a key east-west connection to and from the Downtown core. Fort Street is a busy retail street that would benefit from enhanced cycling facilities. Key destinations along this east-west route are the waterfront, downtown and Fort Street commercial businesses, Central Middle School, Greater Victoria Art Gallery, and Stadacona Centre.

The recommended bicycle facilities on Fort Street include:

- Between Wharf Street and Yates Street: Two-Way Protected Bicycle Lane.
- Between Yates Street and Oak Bay Avenue: One-Way Protected Bicycle Lane.

In order to implement protected bicycle lanes along Fort Street, it is recommended that additional targeted consultation and information be shared with all business owners along Fort Street. This process should focus especially on any vehicle parking and loading concerns. As well, some business owners on this corridor have voiced support for the implementation of additional mid-block crosswalks, which could be considered as part of implementation.

“Fort previously introduced bike lanes and this was tremendously beneficial. More upgrades are doable, realistic, and would get high volumes.”

~ Survey respondent, 2015
HARBOUR EDGE

The Harbour Edge corridor connects the Galloping Goose Regional Trail to Downtown and beyond to the David Foster Harbour Pathway, which is being developed, and beyond to Ogden Point and the cruise ship terminal. This corridor provides access to Downtown and waterfront businesses, the Empress Hotel, Royal British Columbia Museum, the Legislature and Fisherman’s Wharf. This waterfront route will provide new opportunities for residents and tourists to enjoy the inner harbour and also has important economic development potential.

The recommended bicycle facility along Harbour Edge is a two-way protected bicycle lane that follows that waterfront side of the corridor.

There are a number of implementation considerations for this corridor. While Harbour Road provides an important connection between the new Johnson Street Bridge and the Galloping Goose Regional Trail, this corridor has several industrial developments, and it is recommended that further consultation with industrial land owners occurs to ensure safe access to their properties. In addition, with the implementation of this route, it is recommended that the City:

- Meet with all business owners along the corridor to consult regarding any proposed vehicle parking removal;
- Meet with Belleville Terminal owners and operators regarding vehicle access to the ferry terminals;
- Explore an additional All Ages and Abilities cycling connection to Capital Park and the approved protected bicycle lane;
- Consult an ongoing basis with the James Bay Neighbourhood Association to ensure the facility meets community interests;
- Meet with pedi-cab and taxi operators regarding waiting areas on Government Street; and
- Ensure connection/signage to the David Foster Harbour Pathway as it is developed.

“Wharf! Great opportunity for a safe, fun experience for tourists with buffered two-way lanes on Wharf. Need to make sure two-way Wharf bike lane easily connects to Johnson St Bridge”
~ Survey respondent, 2015
GOVERNMENT STREET / GORGE ROAD

Government Street / Gorge Road is a key north-south corridor with a range of characteristics. Through the Downtown it includes a pedestrian-priority section which is one-way traffic, and it widens north of Fisgard Street as it travels through a light industrial area. Further north, Gorge Road travels through the Burnside-Gorge Neighbourhood connecting the Humber Green Village Centre to the border of the District of Saanich.

There are concurrent transportation planning projects occurring in this study area. The Burnside Gorge Transportation Study, in conjunction with the Burnside Gorge Neighbourhood Plan, is currently underway. The scope of this study includes the design of five major corridors within the neighbourhood, including Government Street and Gorge Street. These two projects are closely aligned to ensure safe and accessible connect to the Burnside Gorge neighbourhood.

The recommended bicycle facilities on Government Street / Gorge Road include:

- **Government Road Between Chatham Street and Yates Street:** One-Way Protected Bicycle Lanes.
- **Government Road Between Yates Street and Humboldt Street:** Contraflow Protected Bicycle Lane.
- **Gorge Road:** One-Way Protected Bicycle Lanes.

The implementation of bicycle facilities on Government Street between Yates and Wharf Street requires additional engagement with adjacent business owners to identify loading requirements and options. As well, the City should work with the Downtown Victoria Business Association (DVBA) to incorporate the results of their design charrettes. The DVBA has design interests in street trees, widening sidewalks between Johnson Street and Pandora Avenue, and revitalizing the Government/Wharf/Humboldt intersection.
There was strong public support through the engagement process for pedestrianization of this segment of Government Street. Based on the impact on vehicle traffic and unknown level of support from businesses this is not the preferred option at this time. It is recommended that the City continue to explore temporary and pilot closures (e.g. Sunday Streets, Car-free Day) to evaluate the positive and negative impacts of closing this portion of the street to vehicles.

In order to implement protected bicycle lanes along Gorge Road, the City is encouraged to complete the neighbourhood planning process to determine the appropriate short and long-term approach to enhancing cycling facilities along this corridor. In addition, additional consultation with BC Transit is essential to identify potential mitigation measures to ensure frequent transit is able to maintain consistent travel times along the corridor. Finally, the City may choose to pursue a longer term option for this route with the acquisition of adjacent property in order to retain two westbound vehicle travel lanes and preserve current traffic operations.

"Very important to get from South Victoria to the North. I know there are challenges but this one is important"

~ Survey respondent, 2015
PANDORA – OAK BAY AVENUE

Pandora – Oak Bay Avenue is a key east-west corridor that provides a direct connection from the new Johnson Street Bridge to the municipal boundary with Oak Bay. The City is implementing a protected bicycle lane on Pandora Avenue between Store Street and Cook Street in 2016, and as such, it is recommended that an All Ages and Abilities facility extend further east. This corridor would then provide access to Royal Jubilee Hospital, retail businesses on Oak Bay Avenue, and to the District of Oak Bay.

The recommended bicycle facilities on Pandora - Oak Bay Avenue include:

- Between Cook Street and Begbie Street: Two-Way Protected Bicycle Lane.
- Between Begbie Street and Foul Bay Road: One-Way Protected Bicycle Lanes.

Although this is a desirable corridor that was chosen because it meets the needs of the #Biketoria project, the corridor passes through the Oak Bay Avenue Village, which requires context sensitive design considerations. Design treatments through this special study area will require further discussions and consultation with impacted stakeholders on an on-going basis through the next phases of design in order to develop design solutions that mitigate their concerns.

As such, several context sensitive design solutions have been considered through the Oak Bay Avenue Villages, as outlined on the following page.
This option would provide a protected bicycle lane on each side of the street, but would require the removal of the majority of parking along the corridor.

**OPTION 2: SHARED SPACE**

Through the consultation process, Several stakeholders raised the possibility of considering a shared space treatment through the neighbourhood villages where bicycle users would share the street with motor vehicle vehicles. However, this option would not be suitable given existing traffic volumes.

**OPTION 3: CONVENTIONAL BICYCLE LANES (MAINTAIN PARKING BOTH SIDES)**

Conventional bicycle lanes could be provided through the Village while maintaining parking on both sides of the street; however, painted bicycle lanes are not attractive to people of All Ages and Abilities.

**OPTION 4: TERMINATE CORRIDOR AT OAK BAY AVENUE VILLAGE**

To minimize impacts through the neighbourhood village, the protected bicycle lane could end at the beginning of the neighbourhood village.

**OPTION 5: CONSIDER ALTERNATE CORRIDOR**

If none of the above options could be considered, the protected bicycle lane could end at the beginning of the neighbourhood village and use alternate corridors.

Based on a review of the guiding principles, **Option 1: One-Way Protected Bicycle Lanes (Retain Parking on One Side)** is recommended with considerations. There are a number of constraints along this corridor, particularly along Oak Bay Avenue through Oak Bay Village. In order to implement protected bicycle lanes along Oak Bay Avenue, it is recommended that additional targeted consultation and information be shared with business owners along Oak Bay Avenue. Within Oak Bay Avenue Village, it is important to minimize and mitigate the impact of parking removal. Additional design work should be completed to modify current parking setback requirements in this area. The City should also continue to examine opportunities to mitigate any parking loss along this corridor in consultation with local businesses. In addition, the City of Victoria should work with the District of Oak Bay to connect cycling facilities and extend this corridor further.

It would be wonderful to have a protected bike lane from Oak Bay Ave at Foul Bay to Government Street.
~ Survey respondent, 2015
HAULTAIN STREET / KINGS ROAD

Haultain Street / Kings Road is a very popular east-west route that is enjoyed by recreational cyclists, commuters and families. It provides access to the Royal Jubilee Hospital and Oak Bay to the east and Quadra Village and Quadra Community Centre to the west. With minimal interventions along the majority of the corridor, it can become an attractive All Ages and Abilities facility.

The recommended bicycle facility along Haultain Street and Kings Road is a neighbourhood bikeway. To connect to Government Street, it is recommended that Kings Road/off-street pathway be developed through the addition of traffic lights and statutory rights-of-way.

In order to enhance the safety of people on bicycles along Haultain Avenue between Fernwood Road and Shelbourne Street, it is recommended that the #22 bus be re-routed to Bay Street. This will enable greater traffic calming and diversion to occur without impacting the operations of this bus route. This proposed realignment requires extensive engagement with BC Transit and the local residents to ensure quality transit service is maintained.

The Kings Road connection between Dowler Place and Government Street will require resources to implement additional pedestrian and bicycle activated traffic lights and obtain statutory right-of-way from private land owners. Finally, it is recommended that the City approve a bylaw to limit speeds on this corridor to 30 km/hour.

“Make sure to calm around Cedar Hill Road. People use Haultain as a short-cut. Traffic calming necessary. Make it easier to connect with Cook, Bay, and Vancouver Streets.”

~ Survey respondent, 2015
OFF-SHELBOURNE

This corridor connects Pandora Avenue to the municipal boundary with the District of Saanich. This route provides access to Hillside Mall and a key connection to the University of Victoria as regional facilities are developed. As well, the route travels near Victor School, Oaklands Elementary School, and the Victoria School for Ideal Education. A majority of the route travels along Shakespeare Street, where the City has recently created a multi-use trail through the park.

It should be noted that the Begbie Street / Shelbourne Street was originally identified as a bicycle facility because this route provides access to key destinations and a regional connection to the University of Victoria. With further analysis, several challenges with this corridor were identified, including:

- It is a Frequent Transit Network corridor;
- Extensive on-street residential parking removal would be required between Bay Street and Hillside Avenue;
- Topography of Begbie Street;
- Drainage concerns (water pooling at road edge); and
- Heritage street trees which limit the ability to widen the road.

The recommended bicycle facility consists of a neighbourhood bikeway along Stanley Avenue, Pembroke Street, and Shakespeare Street. This recommended route avoids many of the challenges noted above.
Though the Off-Shelbourne alignment is recommended as part of the 2018 AAA Cycling Network, it is important for the City to continue to pursue a long-term cycling facility on Shelbourne Street. This is particularly important if the District of Saanich approves dedicated bicycle facilities along the length of Shelbourne Street. The Begbie/Shelbourne route already has designated space for cycling along a portion of it with buffered bicycle lanes. In addition, the City has obtained some additional right-of-way on the west side of Shelbourne Street as properties have developed. It is recommended that the City continue to pursue additional right-of-way to enable a facility to be built in the future that does not conflict with frequent transit or the preservation of heritage trees.

The development of the Off-Shelbourne route will require the addition of traffic lights as it crosses major roads. Additional traffic calming and route signage will be necessary and it is recommended that the City approve a bylaw to limit speeds on this corridor to 30 km/hour. Finally, the City should work with the District of Saanich to develop regional connections as the Shelbourne Corridor planning process continues.

“

The side streets running parallel to Shelbourne (west of Shelbourne) already provide good options. It’s just being able to get to them safely that’s the issue.

~ Survey respondent, 2015
HUMBOLDT - RICHARDSON STREET

The Humboldt - Richardson Street corridor provides access from downtown into the Fairfield neighbourhood. Richardson Street is already a popular route for people riding bicycles and has a relatively low volume of vehicle traffic. The installation of traffic diversion and traffic calming measures would make it a pleasant riding and walking corridor. It would also connect to McNeill Avenue in Oak Bay. In addition to traffic calming, certain segments would be converted to a one-way street for motor vehicles, while maintaining two-way flow for transit, people on bicycles, and people walking.

It should be noted that Fairfield Road was initially identified as the preferred cycling access to the Fairfield neighbourhood because it provides direct access from Downtown and destinations include two schools, a community centre, and commercial area. With further analysis, several challenges with this corridor were identified, including:

▪ It is a Frequent Transit Network corridor;
▪ Narrow road width with limitations to provide bus landing pads; and
▪ On-street residential parking removal would be required along the entire corridor.

The recommended Humboldt - Richardson Street alignment is a local transit network corridor and has gentler topography. During the public consultation process, there was strong support for the Richardson Street corridor with multiple letters of support.

The recommended bicycle facilities on Richardson - Humboldt Street include:

- Humboldt Street between Government Street and Douglas Street: Two-Way Protected Bicycle Lane
- Humboldt Street between Douglas Street and Richardson Street: Neighbourhood Bikeway
- Richardson Street: Neighbourhood Bikeway
It is recommended that this corridor be considered for a pilot project to ensure successful traffic calming and diversion. To ensure this route is successful, it is important that neighbourhood connections to adjacent destinations are completed. This includes the schools, parks, and commercial areas.

This route requires additional consultation with BC Transit regarding the proposed re-routing of buses that unload on Humboldt Street and to monitor any performance impacts on the #1 Downtown / Richardson bus. Finally, it is recommended that the City approve a bylaw to limit speeds on this corridor to 30 km/hour.

“I prefer the Richardson option for these reasons: 1) it is more pleasant to ride there, scenic, 2) not as much traffic, 3) not as many driveways or parked vehicles or buses, 4) not as hilly, 5) it seems wider, 6) more direct to Oak Bay than Fairfield, 7) still close to schools, 8) great connections when Cook, Fort, Pandora bike lanes done, 9) it’s cheaper than the Fairfield plan and would be an easier sell I think

~ Survey respondent, 2015
COOK - FIFTH STREET

Cook - Fifth Street is a direct and continuous north-south corridor that reaches from the waterfront at Dallas Road all the way to the Saanich border. This corridor travels along Cook Street between Dallas Road in the south and Haultain Street in the north, before travelling into the residential neighbourhoods along Graham Street and Fifth Street to connect to Saanich. The corridor provides direct connections to many commercial areas and important destinations, including Cook Street Village, North Park Village, and Quadra Village. Though a majority of the corridor does not currently have cycling facilities, many people choose this route because of its access to destinations, directness, and relatively flat topography for the majority of the corridor.

Although Cook – Fifth Street is a desirable corridor that was chosen because it meets the needs of the #Biketoria project, the corridor passes through several neighbourhood villages which require context sensitive design considerations. Design treatments through these special study areas will require further discussions and consultation with impacted stakeholders on an on-going basis through the next phases of design in order to develop design solutions that mitigate their concerns.

Throughout the consultation process, there was strong interest among many stakeholders to consider Vancouver Street as an alternative to Cook Street due to a number of concerns along Cook Street, including on-street parking removal, traffic operations related to removal of turning lanes, among others. As such, an analysis was conducted of the characteristics of both Vancouver Street and Cook Street in terms of destinations, topography, traffic operations, connections, parking, cycling safety, transit, and public and stakeholder input. Based on this analysis and public feedback, Cook Street was identified as the preferred corridor. However, with strong public support for the continuation of Vancouver Street as a cycling and greenway corridor, it is important that the quality of cycling along Vancouver Street should not be compromised by any cycling improvements on Cook Street. It is recommended that further improvements are pursued along Vancouver Street in tandem to any upgrades to Cook Street. Vancouver Street improvements include
enhancements of the current traffic diversions to allow safe cycling throughways and further traffic calming.

The recommended bicycle facilities on the Cook Street corridor include:

- Fifth Street / Graham Street: Neighbourhood Bikeway
- Cook Street: One-Way Protected Bicycle Lanes

Context sensitive design solutions are required through the two Neighbourhood Villages along the corridor – Cook Street Village and North Park Village. Through discussions with stakeholders, it is understood that there are concerns related to impacts on parking, loading, and congestion in particular. As such, several context sensitive design solutions have been considered through the Villages, including:

**OPTION 1: ONE-WAY PROTECTED BICYCLE LANES (MAINTAIN PARKING BOTH SIDES)**

This option would provide a protected bicycle lane on each side of the street, while maintaining the majority of parking. However, with this option the protected bicycle lane would be located immediately adjacent to the passenger side door, introducing potential safety concerns. To minimize concerns with passenger door openings, it is recommended that the protected bicycle lane be raised to sidewalk level.

**OPTION 2: ONE-WAY PROTECTED BICYCLE LANES (MAINTAIN PARKING ONESIDES)**

This option would provide a protected bicycle lane on each side of the street, but would provide a more comfortable space for bicycle users by removing parking on one side of the street.

**OPTION 3: SHARED SPACE**

Through the consultation process, several stakeholders raised the possibility of considering a shared space treatment through the neighbourhood villages where bicycle users would share the street with motor vehicle vehicles. However, this option would not be suitable given existing traffic volumes.

**OPTION 4: CONVENTIONAL BICYCLE LANES (MAINTAIN PARKING BOTH SIDES)**

Conventional bicycle lanes could be provided through the villages while maintaining parking on both sides of the street; however, painted bicycle lanes are not attractive to people of all ages and abilities.

**OPTION 5: TERMINATE CORRIDOR AT NEIGHBOURHOOD VILLAGE**

To minimize impacts through the neighbourhood villages, the protected bicycle lane could end at the beginning of the neighbourhood village.

**OPTION 6: CONSIDER ALTERNATE CORRIDOR**

If none of the above options could be considered, the protected bicycle lane could end at the beginning of the neighbourhood villages and use alternate corridors.

Based on a review of the guidance principles and the degree to which impacts can be mitigated, **Option 1: One-Way Protected Bicycle Lanes (Maintain Parking Both Sides)** is recommended, although it is recognized that further consultation is required.
In order to implement protected bicycle lanes along Cook Street, it is recommended that additional targeted consultation and information be shared with both the neighbourhood associations and all business owners and operators along Cook Street. Businesses in both neighbourhood villages raised concerns regarding parking and centre turn lane removal. With the raised protected bicycle lane design, the on-street parking in these areas has been retained. Additional analysis and consultation is required regarding turning movements and loading zones within the neighbourhood villages.

The City should work closely with the North Park Neighbourhood Association to align the implementation of this corridor with the neighbourhood planning process, village revitalization planning and the re-paving of Cook Street.

Along the Graham / Fifth Street portion of the corridor, it is recommended that the City implement a 30 km/hour speed limit. It is also essential that the City work with the School District regarding access through Quadra Elementary School and with the District of Saanich regarding connecting to their cycling facilities at Tolmie Avenue.

“We are happy to see a real emphasis on connecting people to destinations especially children and families with schools and community centres. Specifically, we are very happy to see a protected bike lane planned for Cook Street.”

~ Letter, 2015
The recommended 2018 AAA Cycling Network will extend to and through all of Victoria’s neighbourhoods. This network will establish a city-wide minimum grid of All Ages and Abilities bicycle facilities that connect residents to destinations across the City.

The City of Victoria has already committed $7.75 million of Gas Tax funding towards cycling infrastructure between 2015 and 2020. In addition the City receives $3 million per year in additional Gas Tax funding that can be used for green infrastructure projects.

Order-of-magnitude cost estimates were developed for the 2018 AAA Cycling Network. Cost estimates were developed for each of the corridors and applicable segments identified for implementation. These order-of-magnitude cost estimates include all labour and materials, engineering and design and a flexible contingency depending on the level of risk associated with each project. These cost estimates are preliminary in nature, and will be further refined through the detailed design process for each corridor.

The recommended network is ambitious, and includes an extensive network of 8 corridors and over 25 km of proposed AAA cycling facilities. It is anticipated that the total cost to implement the AAA Cycling Network is approximately $27.1 million using interim design treatments.

To provide Council with options on how to move forward to implement the proposed network, a phased implementation approach has been developed based on the network planning principles, the “Hub and Spoke” framework, public input, and current and potential financial and human resources. Four implementation phases have been developed to reflect different levels of ambition/speed in implementation, respond to financial and human resources available, and align with public consultation opportunities.

Each phase follows the “Hub and Spoke” approach and aligns with the network principles of ‘complete, convenient, and connected.’ In addition, each option builds off the Pandora Avenue protected
bicycle lane that will be built between Store Street and Cook Street in 2016. The recommended phases are described and summarized below:

**PHASE 1 | Minimum Grid:** This phase would see 5.4 km of connected AAA cycling facilities implemented by 2018. A majority of these facilities would be protected bicycle lanes that would form a grid through the Downtown core bounded by Pandora Avenue, Humboldt Street, Wharf Street, and Cook Street. This network would provide access to some, but not all, neighbourhoods. The estimated cost for this phase is $6.9 million, which corresponds to the current funding allocated by Council for bicycle infrastructure.

**PHASE 2 | Completing the Hub:** This phase consists of an addition 3 km of connected All Ages and Abilities cycling facilities to extend the Hub north up to Kings Road. The implementation of this phase would require further financial resources, which could include aligning with other infrastructure projects and annual Gas Tax Funding.

**PHASE 3 | Regional Connections:** This phase consists of an additional 10.5 km of connected All Ages and Abilities cycling facilities to connect to neighbourhoods. These “spokes” provide corridors into the Hillside-Quadra, Fernwood, Oaklands, North Jubilee, Vic West, Burnside Gorge, and Fairfield neighbourhoods. The implementation of this phase would require further financial resources, which could include applying for additional federal and provincial funding through a variety of programs.

**PHASE 4 | Completing the Network:** This phase consists of 6.2 km of connected All Ages and Abilities cycling facilities that builds the remaining network to completion. There are a number of challenging corridor segments, specifically Oak Bay Avenue Village and Cook Street Village, that will require further public consultation and design consideration to ensure the cycling facilities meet the local community needs, as well as City-wide goals. The implementation of this phase would require further financial resources, which could include applying for additional federal and provincial funding through a variety of programs.

<table>
<thead>
<tr>
<th>PHASE</th>
<th>DESCRIPTION</th>
<th>LENGTH</th>
<th>ESTIMATED INTERIM DESIGN COST (M)</th>
<th>FUNDING SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Minimum Grid</td>
<td>A denser grid of cycling corridors in the downtown that builds on the Pandora Avenue Protected Bicycle Lane.</td>
<td>5.4 km</td>
<td>$6.9</td>
<td>Existing approved funding</td>
</tr>
<tr>
<td>[2] Complete the Hub</td>
<td>An extension to the hub north of downtown, and additional corridors into the Burnside Gorge and Vic West neighbourhoods.</td>
<td>3 km</td>
<td>$3.6</td>
<td>Leveraging other internal sources, Annual Gas Tax allocation</td>
</tr>
<tr>
<td>[3] Regional Connections</td>
<td>Spokes into Hillside-Quadra, Fernwood, and Fairfield.</td>
<td>10.5 km</td>
<td>$8.0</td>
<td>Other external funding sources; additional municipal funding</td>
</tr>
<tr>
<td>[4] Completing the Network</td>
<td>Remaining corridor segments.</td>
<td>6.5 km</td>
<td>$8.6</td>
<td>Other external funding sources; additional municipal funding</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>25.1 km</td>
<td>$27.1</td>
<td></td>
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</table>
To consider the financial implications of the four implementation phases described above, there are several strategies that the City can consider, including:

- **Leverage Internal Infrastructure Projects:** The City can identify opportunities to leverage other infrastructure projects, including road repaving, signal upgrades, sidewalk implementation, which can be used to help build components of the 2018 AAA Cycling Network. The City should seek all opportunities to integrate recommendations of this report in conjunction with these other projects to maximize and make the best use of City resources.

- **Gas Tax Funding:** The City receives Gas Tax Funding on an annual basis. This is permanent and predictable funding for municipalities to build and revitalize local infrastructure. The City of Victoria receives approximately $3 million each year, which could be allocated towards completing the 2018 AAA Cycling Network.

- **External Funding:** The City should leverage all other potential sources of funding that may be available over the next three years, including provincial programs and initiatives, federal funding, Green Municipal Funds, Carbon Tax Rebate, and ICBC road improvement funding.
Overall, the installation of bicycle facilities, including both protected bicycle lanes and neighbourhood bikeways, will improve the pedestrian experience. Protected bicycle lanes provide a buffer between sidewalks and vehicle travel lanes. Neighbourhood bikeways reduce vehicle speeds and traffic volumes, which increases the comfort, safety and enjoyment of pedestrians. It is recommended that additional pedestrian facilities and amenities, including crosswalks and benches, be integrated during the detailed design phase of the #Biketoria project.

PEDESTRIANS AND ACCESSIBILITY
It is important that the installation of the bicycle facilities along the recommended corridors do not compromise the experience and access of people walking. In a limited number of cases, curb corner bulges are recommended for removal to allow the installation of protected bicycle facilities. In those cases, it is recommended that a pedestrian waiting area be developed as part of the buffer to the protected bicycle lane.

MITIGATING IMPACTS
As the City move towards implementing the 2018 AAA Cycling Network, there are a number of common issues and impacts on several corridors. These concerns were raised through the analysis and public consultation process. The City should seek to mitigate these impacts in subsequent phases of design. Several common impacts and potential mitigation measures are described below.

TRANSIT
Transit is an important form of sustainable transportation and the City would like to grow transit ridership. It is therefore essential that transit service is not compromised by the addition of All Ages and Abilities bicycle facilities on City roads. The #BIKETORIA planning process has identified a number of measures to minimize the impact bicycle facilities will have on the current and future transit network.
On-street vehicle parking, both residential and commercial vehicle parking, is important to both residents, visitors and customers. Of particular importance is the use of parking by seniors and people with disabilities.

It is recommended that any vehicle parking that is removed for bicycle facilities be replaced by additional parking in the close vicinity to the corridor. These spaces can be created by changing the parking regulations (for example, residential parking to become time-limited parking, or the creation of flex parking that allows for both residential and time-limited parking). Key on-street parking spaces should be designated for people with disabilities or passenger loading to ensure accessibility to businesses. The City should also consider the creation of new vehicle parking spots where road space allows for angle parking.

It is important that additional consultation regarding on-street vehicle parking be completed before the installation of bicycle facilities to ensure that the mitigation measures meet the needs of the local community.

LOADING ZONES
Loading zones are essential for business to receive goods and allow for business to be successful. Loading zones have been identified as a priority to be retained along the recommended corridors. Additional consultation with individual businesses is recommended to ensure that the recommended loading configurations will meet the needs of the local businesses. In some cases, specific loading times may be recommended to balance the needs of road users and adjacent land uses.
CONCLUSION

#Biketoria is a bold, ambitious project to help make Victoria become one of the world’s best small cities for cycling. Through this study, the City is looking to rapidly implement a city-wide, minimum grid of bicycle facilities that will be comfortable for people of all ages and abilities. This recommended 2018 AAA Cycling Network includes 8 priority corridors that will establish a city-wide minimum grid of AAA bicycle facilities that connect residents to destinations across the City.

To implement this network, the City of Victoria has already committed $7.75 million of Gas Tax funding towards cycling infrastructure between 2015 and 2020. In addition the City receives $3 million per year in additional Gas Tax funding that can be used for green infrastructure projects. A number of phasing options have been developed to provide the City with options on how to move forward with the implementation of the proposed network.

It is recognized that implementation of the 2018 AAA Cycling Network may result in several real and perceived impacts related to parking, transit, street trees, vehicle operations, pedestrians and accessibility, and loading, among many others. Through this study, preliminary concepts have been identified for each corridor to demonstrate what is possible. However, this study is only the first step in implementing the network. To proceed with building this minimum grid of AAA cycling facilities, detailed design of the approved corridors must be completed. This next phase of design should be undertaken alongside public consultation, particularly of the adjacent and affected business and residents along the priority corridors. Through this next phase of detailed design and public consultation, further consideration can be given to working with stakeholders to mitigate issues.

By implementing this network by 2018, Victoria has a unique opportunity to change the way residents and visitors travel through the City. This opportunity will also have significant benefits on community engagement, the environment, and local economic development. By building a complete AAA cycling network that connects major destinations throughout the City, Victoria can be one of the world’s most active, healthy, and happy small cities.