

# BICYCLE NETWORK – PHASE 1 DESIGN AND IMPLEMENTATION UPDATE

Committee of the Whole

May 24, 2018



## PURPOSE

- Seek Council direction related to the next phase of the City's Bicycle Master Plan implementation plan, Phase 1 corridors
- Outline consultation findings, and identify outstanding issues for Council to consider



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## BACKGROUND

2015 – City initiated All Ages and Abilities (AAA) cycling network portion of the Bicycle Master Plan

Intent of network is to build a purpose-built, safe cycling network, attractive and comfortable for the whole community

The network will help:

- reduce motor vehicle traffic congestion
- reduce accidents with vulnerable road users
- reduce transportation greenhouse gases
- increase household affordability, community health and well being

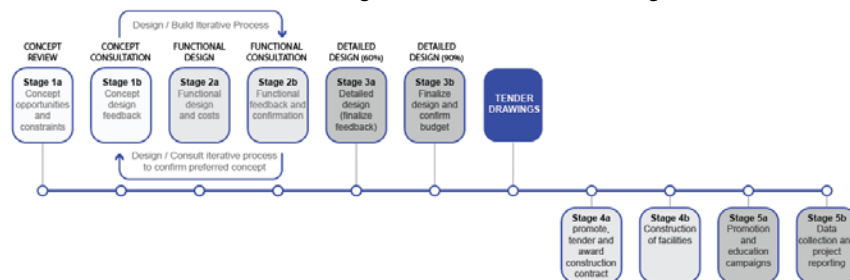


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## DESIGN & ENGAGEMENT PROCESS

**Multi-phased engagement and design process. Revised engagement program:**

- Connect with key stakeholders earlier, including community associations, agencies and property owners early in the design process
- Review important background information, technical data and design constraints
- Provide multiple opportunities for participation by general public/specific corridor stakeholders
- Enable staff to review and integrate feedback in 60% design



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## WHARF STREET

### Wharf Street project now at 60% detailed design

- “Complete street” revitalization aligned with Official Community Plan and Downtown Core Area Plan policies/goals
- Promotes more walkable, multi-modal
- Enhances tourism and economic vitality



### Proposed design will:

- Significantly improve cycling safety and the pedestrian experience
- Support transit and commercial operations
- Maintain current vehicle Level of Service
- Reduce parking on west side of street, due to balancing of vehicle throughput, pedestrian realm and bike-lane



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## WHARF STREET

### Current Conditions:

- 2 travel lanes/parking on both sides of the street

### Design Challenges:

- Safety – intersections/crossings
- Motor vehicle flow
- Street Loading/Operations
- Connectivity – to AAA routes
- Pedestrian Realm

### Engagement Themes (3 phases):

- Safety
- Motor Vehicle Flow
- Cycling Infrastructure Improvements
- Parking Loss
- Tree Protection
- Street Loading/Operations
- Public Realm

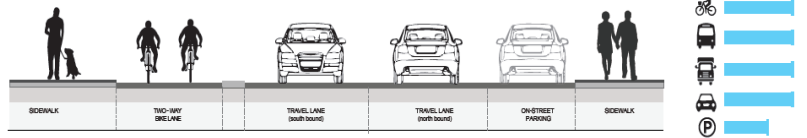


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## WHARF STREET – Cross-section

### Proposed Conditions:

2 way protected bike lanes on west side of street



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## WHARF STREET – Key Features



### Johnson Street Bridgehead:

- Maintain eastbound right turn lane
- stop sign for right turn motorists
- Crosswalk and bike lanes raised, for visibility/safety

### Yates Street:

- New pedestrian traffic signal/shorter crossing
- maintain existing bus stop
- bus stop/hotel zone pedestrian accesses raised, to slow cyclists



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## WHARF STREET – Key Features

### Bastion Square:

- Crosswalk realigned to improve visibility and shorten crossing
- Overhead flashing lights
- Crosswalk raised through bike lane, to slow cyclists
- Parking



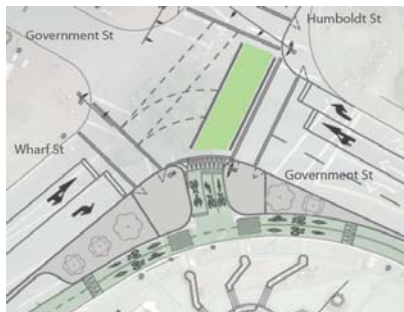
### Fort Street:

- SB left turn lane retained
- Reduced pedestrian crossing distance
- Connection to Fort bike lanes
- Bike signals/phasing
- Bike lane raised, to slow cyclists



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## WHARF STREET – Key Features



### Government/Wharf/Humboldt:

- Reduced pedestrian crossing distances/more room
- Wharf/Humboldt connection
- Raised areas to slow cyclists
- Seating/trees/bike parking
- Protected signal phase for cyclists and pedestrians



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## HUMBOLDT STREET

### Humboldt Street project now at 60% detailed design

Provides east-west connection on gentle topography

- Access to variety of commercial, institutional and residential destinations.
- Corridor east of Douglas Street can be made suitable for AAA status as a shared street
- Lower speeds/lower volumes - does not require physical separation or protection



### Proposed design will:

- Significantly improve cycling safety and pedestrian experience
- Reduce intersection delay at Douglas Street
- Create new pedestrian plaza
- Maintain community transit and commercial operations
- Maintain current vehicle Level of Service



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## HUMBOLDT STREET – Cross-sections

Government to Douglas:

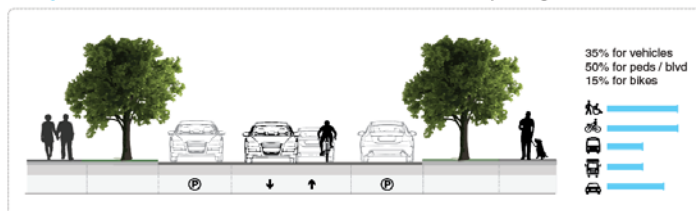
### Proposed Conditions:

2 way protected bike lanes on south side of street



Douglas to Vancouver:

**Proposed Conditions:** Shared travel lane and on-street parking both sides of street



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## HUMBOLDT STREET

### Current Conditions:

- 600 Block (Government to Douglas) - 2 travel lanes/parking both sides of the street
- 700 – 900 Blocks (Douglas to Vancouver) - 2 travel lanes/variable parking either side

### Design Challenges:

- Safety – closure at Humboldt
- Motor vehicle flow
- Street Loading/Operations
- Pedestrian Realm

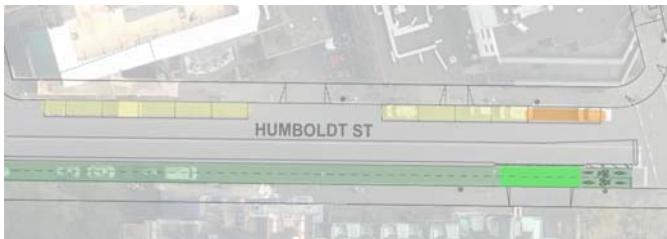
### Engagement - 3 phases. Themes:

- Safety
- Motor Vehicle Access and Flow
- Street Network Improvements
- Parking Loss
- Street Loading/Operations
- Pedestrian Realm



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## HUMBOLDT STREET – Key Features



### 600 Block:

- South side bike lanes (medians, paint and bollards)
- Driveway access at VCC/Empress
- North side loading and parking

### Douglas Street Intersection:

- 5-leg to 4-leg
- Shorten pedestrian crossings at intersection
- Pedestrian plaza
- Traffic re-routed to Burdett/Fairfield
- Transit/tourism routing
- 700 block accessed via Blanshard and/or Penwell
  - Shared Use



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## HUMBOLDT STREET – Key Features



### 800 Block (Blanshard to Quadra):

- Shared Use
- Advisory bike lanes
- Speed tables
- Raised crosswalk
- Parking both sides

### 900 Block (Quadra to Vancouver):

- Shared Use
- Parking both sides

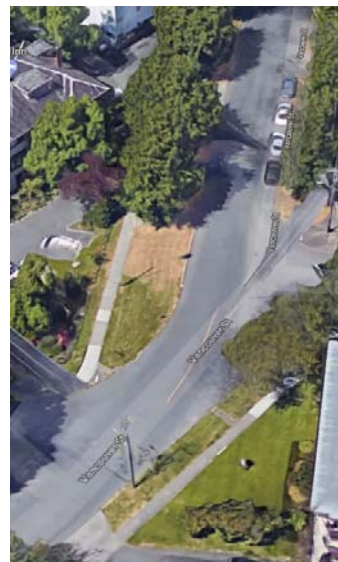


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## HUMBOLDT STREET – Key Features

### Vancouver – Humboldt to Pakington:

- Shared Use
- Traffic circles/less pavement
- New pedestrian crossings
- Slower speeds



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## COOK STREET

### Council Motion (2016):

2. Direct staff to proceed with developing detailed designs....
- c) Cook Street (Pandora Avenue to Pakington Street)

### Current Conditions:

- Two lanes either direction / centre left turn lane
- Limited parking bays in boulevard area

### Design Challenges:

- Safety – intersections/crossings
- Motor vehicle flow – traffic volumes
- Street Loading / Operations
- Pedestrian Realm
- Cost Control

### Engagement – Themes (2 phases):

- Safety
- Motor vehicle flow
- Cycling infrastructure improvements – AAA quality
- Parking loss
- Tree protection
- Street loading /operations
- Public realm



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## COOK STREET – Three Lane Option

### Design Process:

- Objective to balance improved safety for cyclists and pedestrians with managing traffic flow, and residential/commercial property access
- Initial concept development parameters in 2015/2016:
  - Within existing curbs
  - Protected bike lanes on corridor. Dedicated signal phase not contemplated at that time
- Dedicated signal phase for cyclists required between Pandora Avenue and Fort Street, to achieve AAA, given vehicle volumes

### Impacts:

- Combination of lane reduction, dedicated signal phase, creates unacceptable levels of congestion
- Interventions to prevent shortcutting on parallel routes would be required – time and cost to engage/design/construct
- 8 of 17 parking stalls lost, 1 of 9 loading zones would be lost

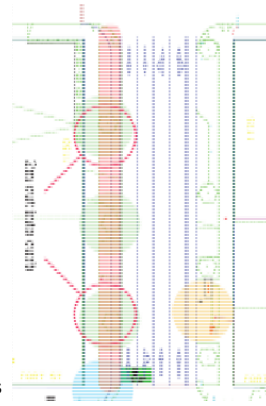
3 Lane Concept: 1 way protected bike lanes on each side of the street



## COOK STREET – Four Lane Option

### Design Process:

- Balancing improved safety for cyclists and pedestrians while managing traffic flow, and residential/commercial property access
- Modified design concept to retain two travel lanes in either direction between Pandora and Rockland by select widening
- Dedicated signal phase for cyclists would be required between Pandora Avenue and Fort Street, to achieve AAA, given vehicle volumes
- Vehicle Level of Service maintained; some peak period impacts



### Impacts:

- Rebuild public realm
- Increased capital costs and project timelines (curb and gutter, utility conflicts)
- Tree impacts (20 mature tree removals estimated)
- Potential for separated bike/bus zones - additional costs
- 16 of 17 parking stalls lost, 9 loading zones maintained



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## VANCOUVER STREET

### Background:

- Vancouver part of Bike Network
- Vancouver, Cook, Linden evaluated in 2015/16
- Cook recommended as priority due to topography, direct connections to destinations

Challenges can be addressed, minimizing impacts to pedestrian/cyclist safety, public realm, traffic flow, and cost

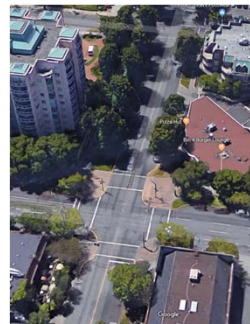
### Current Conditions:

- Pandora to Fort - 2 travel lanes/parking on both sides of the street
- Fort to Southgate - 2 travel lanes/variable parking either side

### Engagement process with stakeholders required

### Design Challenges:

- Safety – protected and shared-use segments
- Connectivity
- Motor Vehicle Flow
- Street Loading/Operations
- Public Realm



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## VANCOUVER STREET – Preliminary Design stage

### Pandora to Fort

- Protected bike lanes either side of the street with protected signal phasing
- Access to variety of commercial, retail and residential destinations (commercial/retail between Pandora and Fort)



### Fort to Southgate

- Shared use AAA can be achieved by traffic diversion / traffic calming / on-street parking
- Lower speeds/lower volumes - does not require physical separation or protection



## SUMMARY – COOK & VANCOUVER

**Vancouver represents a more reasonable compromise between safety, costs and traffic performance, when compared to the Cook St option sets.**

### Vancouver Option Reduces impacts to:

- High cost pedestrian realm and utility rebuilds
- Traffic performance, especially at peak times
- Reduces tree removals
- Still achieves a critical north/south connected AAA facility connecting key destinations, albeit less directly than the Cook Street option.

## NEXT STEPS

### **Wharf Street:**

- Final design details
- IFC drawings and tender process
- Target construction October 2018

### **Humboldt Street:**

- Final design details
- IFC drawings and tender process
- Target construction October 2018

### **Vancouver Street:**

- Design concept refinement - Q2
- Engagement with the Community – Q3 2018
- Report back to Council – late Q3 2018



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## RECOMMENDATION

### **That Council:**

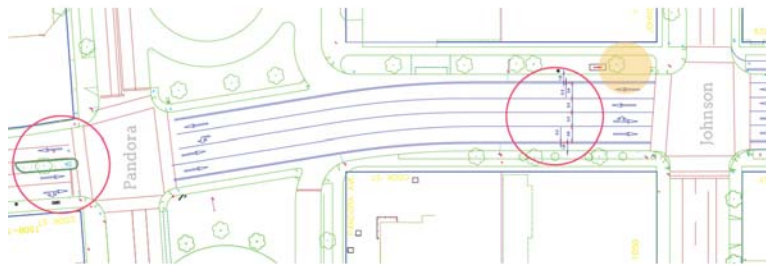
1. Approve the 60% design for Wharf Street AAA cycle track, and direct staff to proceed to detailed design and construction tender
2. Approve the 60% design for Humboldt Street AAA cycle track, and direct staff to proceed to detailed design and construction tender
3. Direct staff to defer the Cook Street project as a part of Phase 1 implementation
4. 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



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## COOK STREET – Four Lane Option



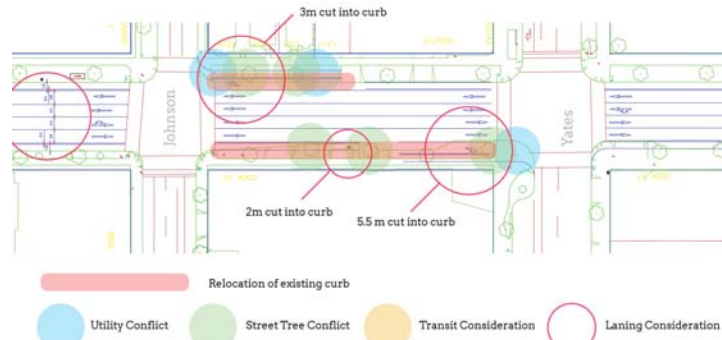
### **Pandora to Johnson:**

- Maintain NB left turn lane at Pandora
- Introduce new median on north side of intersection at Pandora
- Opportunity for separated bus/bike zone at Johnson
- Protected signal phases to give dedicated time to pedestrians and cyclists





## COOK STREET – Four Lane Option



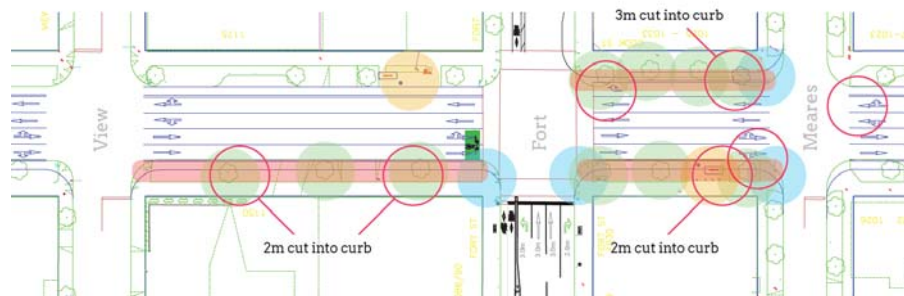
### Johnson to Yates:

- Curb re-alignment in multiple locations
- Shared SB through/left turn lane at Johnson; new NB right turn lane
- Shared NB through/left turn lane at Yates; new SB right turn lane
- Multiple street tree and utility conflicts
- Protected signal phases to give dedicated time to pedestrians and cyclists



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## COOK STREET – Four Lane Option



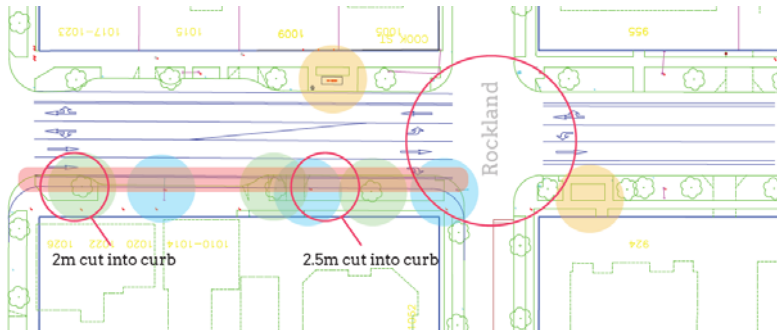
### View to Meares:

- Curb re-alignment in multiple locations
- Opportunity for separated bus/bike zones near Fort
- Shared through/left turn lanes at View
- Shared SB through/left turn lane at Fort; new NB right turn lane
- Multiple street tree and utility conflicts
- Protected signal phases to give dedicated time to pedestrians and cyclists



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## COOK STREET – Four Lane Option



### Meares to Rockland

- Curb re-alignment on west side
- Opportunity for separated bus/bike zones near Rockland
- Shared through/left turn lane at Meares
- NB and SB left turn lanes at Rockland
- Multiple street tree and utility conflicts
- Protected signal phases to give dedicated time to pedestrians and cyclists
- South of Rockland - transition into 3 lane cross section (lower vehicle volumes)



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## COOK STREET – Three Lane Option



### Pandora to Yates:

- Protected intersection signal phases to give dedicated time to pedestrians and cyclists
- Maintain northbound left turn lane at Pandora Avenue and southbound left turn lane at Johnson Street
- Shared bus/bike zone
- 1 tree removal



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## COOK STREET – Three Lane Option



### View to Meares:

- Protected intersection signal phases to give dedicated time to pedestrians and cyclists at Fort Street
- Maintain southbound left turn lane at View Street
- Add northbound right turn lane at Fort Street
- Maintain commercial loading zones and shared bus/bike zones



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## COOK STREET – Three Lane Option



### Meares to Fairfield:

- Left turn lanes for northbound traffic where required and shared right / through turn lanes for southbound traffic
- Yield conditions for lower volume intersections from Burdett to Fairfield
- Maintain commercial loading zones and shared bus/bike zones
- Central medians with opportunity for low-level planting



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## COOK STREET – Three Lane Option



### Fairfield to Pakington:

- Cyclist/pedestrian controlled signal at Pakington Street
- Yield conditions for lower volume intersections
- Left turn lanes for northbound traffic where required
- Maintain existing bus stops north of Oscar Street and south of Southgate Street
- Bike facility ends at Pakington Street



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## VANCOUVER STREET



### Pandora to Yates:

- Protected signal phases to give dedicated time to pedestrians and cyclists
- Maintain parking and commercial loading zones
- Maintain NB left lane at Pandora
- New NB right turn lane at Johnson
- New SB right turn lane at Yates
- No transit conflicts



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## VANCOUVER STREET



### Yates to Fort:

- Yield intersection condition at View and at Fort, based on traffic volumes
- Maintain parking on both sides of streets
- No transit conflicts
- 2 street trees removed between Pandora and Fort



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## VANCOUVER STREET



### Meares to McClure:

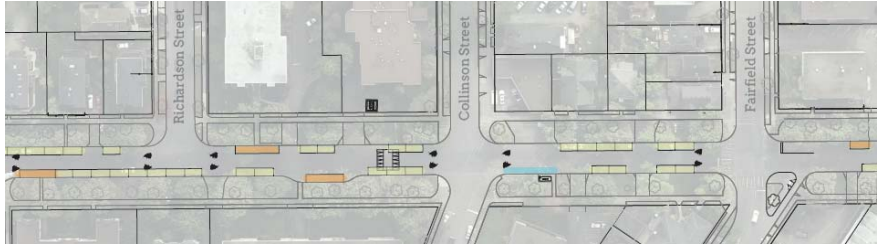
- Shared Use
- Traffic calming and diversion
- Maintain parking and loading zones on both sides of streets
- No transit conflicts



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## VANCOUVER STREET



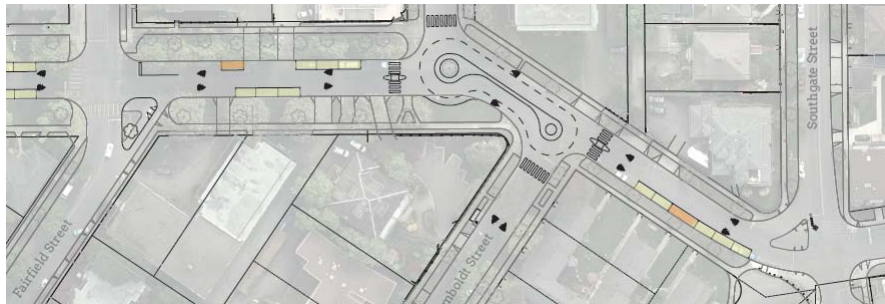
### Richardson to Fairfield:

- Shared Use
- Traffic calming and diversion
- Maintain parking and loading zones on both sides of streets
- Transit accommodated



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## VANCOUVER STREET



### Fairfield to Southgate:

- Shared Use
- Traffic calming and diversion
- Maintain parking and loading zones on both sides of streets
- Enhanced pedestrian crossings
- Transit accommodated



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