



# Viaducts, Eastern Core and False Creek Flats Cycling Improvements

HUB Vancouver/UBC committee

2013/05/13

## *Table of Contents*

### [Executive Summary](#)

### [Cycling in the Viaducts Area: Current Situation and the City's Proposals](#)

### [Proposals for Walking/Cycling Network in Viaducts Area](#)

[Make Extra Space to Accommodate Two-Way Bike Lane on North Side of Expo Boulevard Between Quebec and Abbott](#)

[New Separated Bike Lane: Expo Boulevard Between Abbott to Cambie by BC Place](#)

[New Separated Bike Lane from Abbott to Carrall Under Cycling Bridge](#)

[Relocate Proposed Bicycle and Pedestrian Paths Along New Street Under SkyTrain Guideway](#)

[New Cycle Lane on Taylor Street, Cycle Paths from Keefer Street to Expo Boulevard](#)

[New Two-Way Separated Bike Lane on New Street Between Carrall and Cambie](#)

### [Cycling Bridge \(Dunsmuir Connection\)](#)

[Potential Cyclist-Pedestrian Problems on Cycling Bridge](#)

[Grade on Cycling Bridge Should Be Less Than 5% and Ideally 3%](#)

[Proposal to Land Cycling Bridge at Its Eastern End, East of Carrall Street](#)

[Proposed Southern Fork off Cycling Bridge Towards the South](#)

[Weather Protection at Western End of Cycling Bridge](#)

### [Proposals for Walking/Cycling Network Connectivity to Areas Adjacent to Viaducts](#)

[All-Weather All-Ages Cycling Network](#)

[New Cycling Path Needed on West Side of Quebec to Adanac](#)

[Proposed Separated Bike Lanes Along Main Street in the Area of the Viaducts](#)

[New Bike and Pedestrian Path on Median of Terminal Avenue Between Main and Cottrell](#)

[Examples of Bridges With Weather Protection](#)

[New Bike Path Under Proposed UBC Line Guideway Between Glen and Thornton](#)

[Biking Separated from Traffic on First Avenue Viaduct Between Cottrell and Clark](#)

### [Cycling Improvements as Complement to Transit](#)

## Executive Summary

In June 2012, The City of Vancouver published some display boards (<http://vancouver.ca/docs/eastern-core/viaducts-june2012.pdf>) which can be accessed from its main viaducts web page (<http://vancouver.ca/viaducts>). The boards show the City's plan for removing the viaducts and managing travel for pedestrians, cyclists and other forms of transportation through the viaducts area. The City's current and proposed cycling network in the viaducts area is shown in the next section.

Overall, HUB supports the Viaducts plan, though with some further recommendations. The existing Dunsmuir Viaduct offers a slightly more direct and scenic route between Adanac and Downtown than what is being proposed but overall the City's proposals will improve cycling infrastructure in the area, though there are a number of recommendations for further improvement.

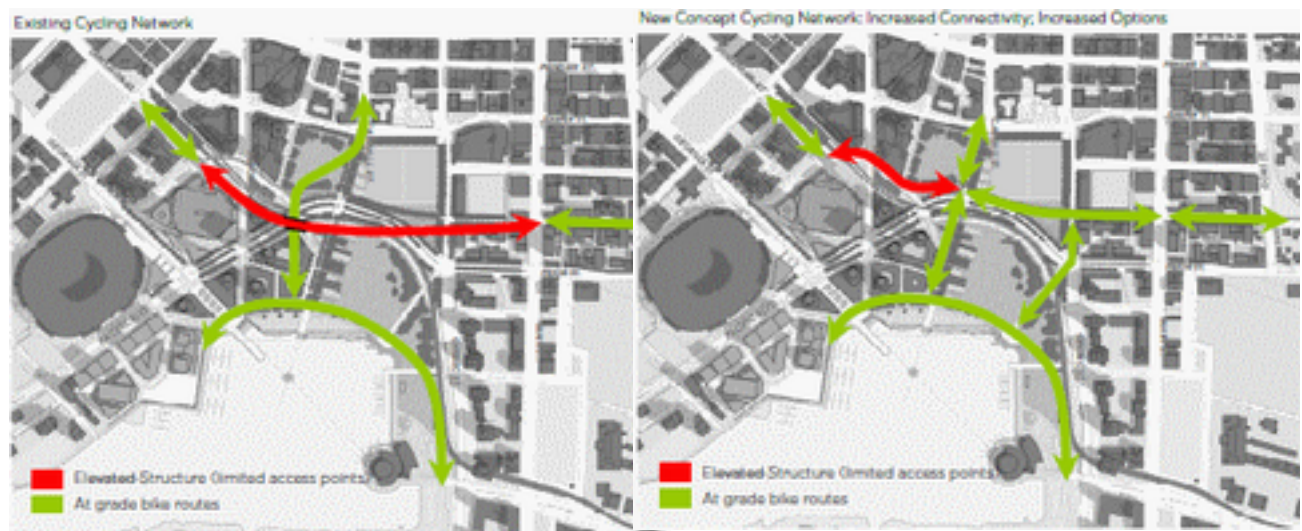
HUB Vancouver recommends a number of improvements to the plan, falling into two groups. One group of suggested improvements concern the viaducts area, and consist of modifications to the City's proposals or identification of perceived gaps in the City's proposals, including modifications to the proposed Cycling Bridge. A second group of suggestions concern connectivity between the viaducts area and adjacent areas, notably Downtown and the Eastern Core and False Creek Flats. The second group of suggestions will improve the safety, convenience and comfort of cyclists and pedestrians at little or no additional cost.

Also proposed is an all-weather all-ages cycling and walking network connecting East Vancouver to Downtown. This network would utilize existing and planned structures including SkyTrain guideways and overpasses to protect cyclists and pedestrians from rain and snow. As some of these routes would parallel the busiest segment of the Expo Line, they have the potential to delay the need for expensive upgrades to the Line allowing transit dollars to be used on other local and regional priorities first.

The structure of this document is as follows. The first section describes the City's current and proposed cycling network in the viaducts area. The next section describes HUB Vancouver suggestions for cycling and walking infrastructure in the viaducts area. A separate section is devoted to the proposed Cycling Bridge. A fourth and final section concerns connectivity between the viaducts area and adjacent areas.

## Cycling in the Viaducts Area: Current Situation and the City's Proposals

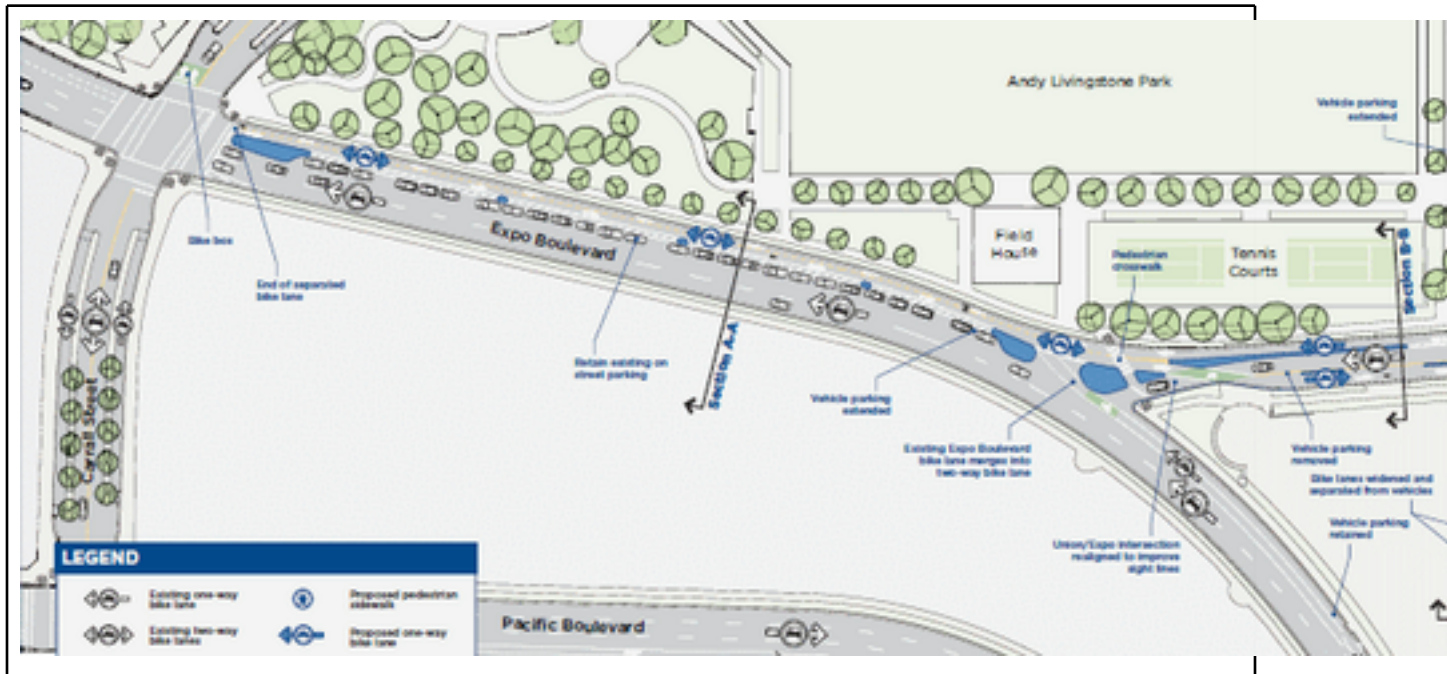
The following maps are from Board 11 of the City of Vancouver's June 2012 display boards (<http://vancouver.ca/docs/eastern-core/viaducts-june2012.pdf>). The map on the left shows the current cycling network in the viaducts area; the map on the right shows the proposed cycling network.



Below is some additional information about the City's proposal for cycling in the viaducts area. The left side summarizes the main cycling linkages that are proposed; the right side shows the elevated structure proposed in place of the western end of the separated cycle route along the Dunsmuir Viaduct, which the City calls a "Cycling Bridge (Dunsmuir Connection)."

<h3>ENHANCED PEDESTRIAN &amp; CYCLING LINKAGES</h3> <p>To align with the City's Greenest City objectives for Green Transportation improved pedestrian and cyclist safety, comfort and east/west and north/south connections are essential to the street network.</p> <ul style="list-style-type: none"> <li>• A new 'bike bridge' links the Adanac Route to Downtown replacing the Dunsmuir Viaduct lane.</li> <li>• The bike bridge connects to 'Straight to the Creek', facilitating movements between downtown and the seawall, and Burrard Inlet.</li> <li>• Georgia Street and the Georgia Steps provide an alternate link for cyclists and pedestrians between Downtown and the False Creek.</li> <li>• Two-way operation of Georgia Street and the new Pacific Boulevard, normalize these streets making them more comfortable for pedestrians and cyclists alike.</li> </ul>	<p>Conceptual Proofing of Cycling Bridge (Dunsmuir Connection)</p>
--	--

The City has also produced the "Adanac Bikeway Improvements: Gore to Carrall" Recommended Design document (<http://vancouver.ca/files/cov/adanac-bikeway-open-house-info-boards.PDF>). Below is an excerpt showing the City's proposal for a two-way bike lane on the north side of Expo Boulevard Between Quebec and Abbott.



## Proposals for Walking/Cycling Network in Viaducts Area

HUB Vancouver suggests the following modifications to the City's proposals for the viaducts area including gaps in the City's proposals:

- Make extra space to accommodate two-way bike lane on the north side of Expo Boulevard Between Quebec and Abbott.
- Add a new separated bike lane on Expo Boulevard between Abbott to Cambie by BC Place.
- Add a new separated bike lane from Abbott to Carrall under the proposed Cycling Bridge.
- Relocate the proposed bicycle and pedestrian paths along New Street under the SkyTrain guideway.
- Add a new cycle lane on Taylor Street and add cycle paths from Keefer Street to Expo Boulevard.
- Add a new two-way separated bike lane on New Street between Carrall and Cambie.

Specifically for the Cycling Bridge (Dunsmuir Connection), HUB Vancouver notes the following:

- Potential cyclist-pedestrian problems on the Cycling Bridge.
- The grade on the Cycling Bridge should be less than 5% and ideally 3%.
- A proposal to land the Cycling Bridge east of Carrall Street at its eastern end.
- A proposed southern fork off the Cycling Bridge towards its east end.
- Weather protection at the western end of the Cycling Bridge.



HUB's proposals are shown in the following map, which is based on the City's "New Concept Cycling Network" shown previously. Opinions differ within HUB Vancouver about how far east the Cycling Bridge and its southern fork should extend. The map shows the Cycling Bridge extending as far east as Quebec, whereas some in HUB propose that the Bridge extend just a little east of Carrall Street. The map also shows the southern fork extending almost to Quebec whereas some in HUB suggest the southern fork extend down to either just west or east of Carrall.



### **Make Extra Space to Accommodate Two-Way Bike Lane on North Side of Expo Boulevard Between Quebec and Abbott**

The City's proposal calls for a two-way cycle path on the north side of Expo Boulevard between Quebec Street and Abbott Street, which is a six-lane road. There is a "pinch point" along Expo Boulevard, just west of Columbia and Union, where it narrows. Expo Boulevard cannot be extended to the south here because the SkyTrain guideway is at ground level here. To make extra space may require taking a little land from Andy Livingstone Park to the north.

### **New Separated Bike Lane: Expo Boulevard Between Abbott to Cambie by BC Place**

This section of Expo Boulevard is covered by BC Place. HUB Vancouver suggests a two-way separated bike lane along the north side of Expo, from Abbott through to Cambie and Nelson. (Currently many people cycle up to downtown using Nelson to Beatty and then on to Robson.)

### **New Separated Bike Lane from Abbott to Carrall Under Cycling Bridge**

HUB Vancouver proposes a new two-way separated bike lane under the Cycling Bridge between Abbott and Carrall. The current plan shows parking under the Cycling Bridge. The proposed bike lane would connect at its eastern end to the separated bike lane along the north side of Expo, from Abbott through to Cambie, by BC Place.

### **Relocate Proposed Bicycle and Pedestrian Paths Along New Street Under SkyTrain Guideway**

HUB Vancouver suggests relocating the bicycle and pedestrian paths, currently proposed for the north of the guideway along New Street, to underneath the guideway where height allows this.

As the guideway runs east-west in general and the proposed sidewalk and bike lane along New Street are to the north of the guideway, the current proposed locations right adjacent to the road will be shaded by the guideway much of the year and the guideway will occupy much of the field of vision to the south. In addition to providing weather protection, placing the bicycle and pedestrian paths underneath the guideway will give cyclists and pedestrians more light and a much better view to the south. This would also provide much more separation from the noise and pollution of traffic, making walking and cycling much more pleasant. Where the Skytrain guideway dips down, the cycle path can veer to the south side. This section could have a rain cover incorporated into any access prevention that is needed for the Skytrain guideway.

### **New Cycle Lane on Taylor Street, Cycle Paths from Keefer Street to Expo Boulevard**

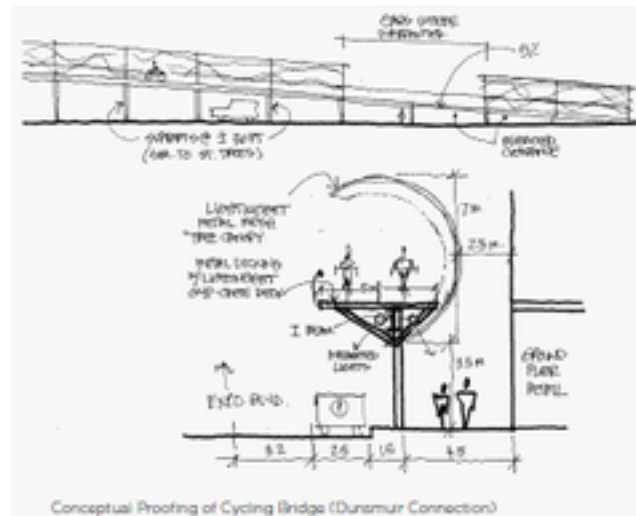
Cycle lanes should be added on Taylor Street from Pender Street to Keefer Street and cycle paths should be added from Keefer Street to Expo Boulevard. Currently, people cycle through Andy Livingstone Park from Pender Street and Taylor Street (and sometimes through the playground) to the corner of Pacific Boulevard and Carrall Street. A school is planned for this corner, so a cycle path would be useful for future students. There should be a good connection to Carrall Street from where this path meets Expo Boulevard.

### **New Two-Way Separated Bike Lane on New Street Between Carrall and Cambie**

A two-way separated bike lane could be placed on the north side of New Street between Carrall and Cambie. Where clearance allows, the bike lane should be placed under the Cycling Bridge to provide weather protection. This, in combination with the covering provided by the BC Place

plaza and walkway, will continue the weather protection all the way to Cambie. Where the SkyTrain guideway dips down, the path could be lowered to provide clearance. Alternatively, an awning could be provided that could be more visually attractive than the guideway, while stopping people from climbing onto the guideway.

## Cycling Bridge (Dunsmuir Connection)



## Potential Cyclist-Pedestrian Problems on Cycling Bridge

HUB Vancouver notes that the Cycling Bridge, while intended only for cycling, could attract pedestrians looking for a quick walking route between Dunsmuir Street and Pacific Boulevard. This could be problematic, especially when events are being held at GM Place. Room for walking, therefore should be incorporated into this bridge with separation of the two modes.

## Grade on Cycling Bridge Should Be Less Than 5% and Ideally 3%

If possible, the grade of the Cycling Bridge should be less than 5%, with 3% ideal. Research indicates that steeper downhill grades and the higher resulting speeds are more dangerous for cyclists (and pedestrians) should a collision occur. Braking distances are longer and the cyclists' centre of gravity is further forward meaning that if a cyclist suddenly brakes, there is a greater chance of them falling over their handlebars and landing on their head. Cyclists heading downhill may be reluctant to stop at Carrall for crossing bicycle and pedestrian traffic, thus creating potential conflicts and collisions. Resist the temptation to shorten the cycle bridge as this will make the grade steeper. A low grade is important for accessibility. There could even be two ramps up to the cycle bridge each at a different grade. The hill of Andy Livingstone Park (if it is to stay) could be incorporated into the cycle bridge ramp.

## Proposal to Land Cycling Bridge at Its Eastern End, East of Carrall Street

One option would be to retain more of the Viaduct on Dunsmuir Street, close to GM Place, and extend the landing point of the Cycling Bridge to the east of Carrall Street. The benefit is that cyclists would not have to cross Carrall at grade.

### **Proposed Southern Fork off Cycling Bridge Towards the South**

HUB Vancouver proposes a fork of the Cycling Bridge for cyclists and pedestrians. This fork from the proposed Cycling Bridge would run along the north part of the guideway (perhaps even attached as on the Canada Line bridge) to south of where the SkyTrain dips as it crosses Expo. It would allow cycling access between the Seawall up to Dunsmuir Street without requiring cyclists to cross Expo Boulevard at grade. Again people will be wanting to walk on it so incorporate walking as well into the design with separation of the modes.

### **Weather Protection at Western End of Cycling Bridge**

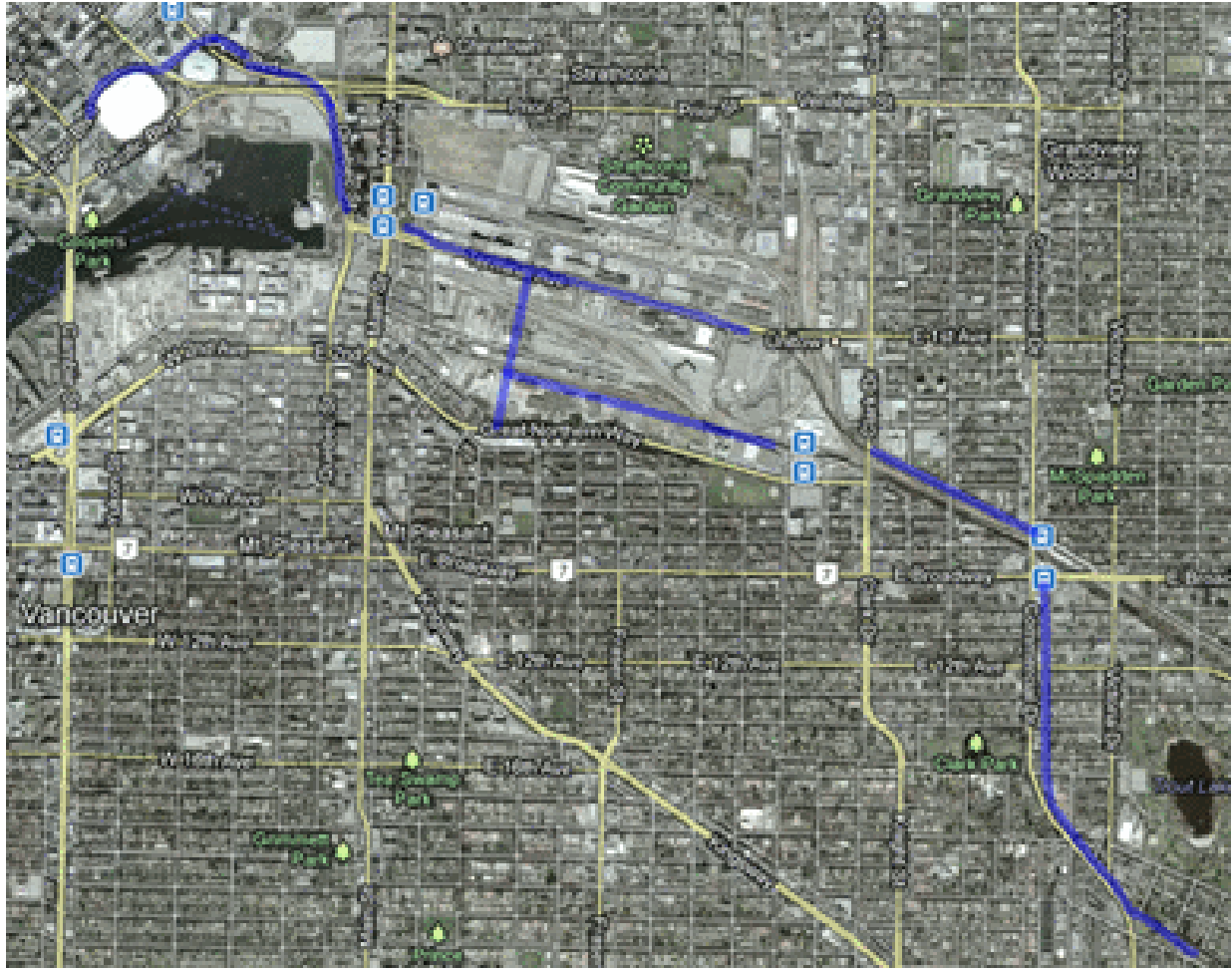
In line with the weather protection offered by the SkyTrain guideway, the screen proposed for the Cycling Bridge could be changed to a weatherproof material. This would also help prevent ice from forming in some conditions, making it safer.

## **Proposals for Walking/Cycling Network Connectivity to Areas Adjacent to Viaducts**

### **All-Weather All-Ages Cycling Network**

HUB Vancouver would like to see better integration of the proposed cycling network for the viaducts area with a larger all-weather all-ages walking and cycling network in adjacent areas such as Downtown, but especially in the Eastern Core and False Creek Flats, leveraging existing and new infrastructure including the SkyTrain guideway linking the East Side to Downtown. The all-weather all-ages network for the Eastern Core and False Creek Flats is shown in the map below.





For a rainy city, the lack of weather protection for cycling and walking is rather surprising. Elevated structures including SkyTrain guideways, roadways and bicycle bridges can provide excellent weather protection at little or no cost, so every effort should be made to place cycling and walking paths under such structures. Portions of the Central Valley Greenway and BC Parkway are already under the SkyTrain guideway providing cyclists with relief from the rain.

In addition to rain protection, covered walking and cycling routes can also help prevent ice from forming on the routes, provide snow cover, and provide shade in the summer. This helps make cycling and walking year-round all-weather activities, levelling out demand on the transit system and roads. New structures that are built can include weather protection.

This all-weather all-ages network could consist of, from west to east:

- Cycling Bridge (Dunsmuir Connection) north and south forks.
- A new cycling path on the west side of Quebec to Adanac under the SkyTrain Guideway.
- New bike and pedestrian path on median of Terminal Avenue between Main and Cottrell under the SkyTrain guideway.

- New separated bike lanes with weather protection on the proposed Thornton Overpass over Terminal Avenue.
- New bike path under proposed UBC Line guideway between Glen and Thornton.
- The Grandview Highway Overpass over Clark Drive, which is an improvement to the Central Valley Greenway proposed in the [False Creek Flats Rail Corridor Strategy](#), but designed with weather protection.

The other recommended improvement that will improve the safety, convenience and comfort of cyclists at little or no additional cost:

- New separated bike lanes along Main Street in the area of the viaducts.
- Biking separated from traffic on First Avenue Viaduct between Cottrell and Clark.

### **New Cycling Path Needed on West Side of Quebec to Adanac**

As the Seawall is often crowded near Science World, this route is currently a very popular connection with a lot of cyclists currently using the Science World parking lot. The "new concept cycling network" does not include a direct connection but instead requires cyclists to backtrack west a bit. A cycling path is needed on the west side of Quebec Street from Adanac Street. One possibility is to route the cycling path under the SkyTrain guideway until the guideway veers west, then route the path over to the intersection of Quebec and Adanac and beyond to at least Keefer.

### **Proposed Separated Bike Lanes Along Main Street in the Area of the Viaducts**

HUB Vancouver suggests adding separated bike lanes along Main Street in the area of the viaducts. This work could be done when the viaducts come down.

Main Street is very popular with cyclists. As a result of limited cycle infrastructure, it also has one of the highest levels of cycling collisions of any street in the city. With no north-south direct routes possible for many trips between Clark and Cambie due to the rail yard and False Creek, Main is by far the most convenient option. Forcing cyclists to travel farther and potentially cross busy streets like Main twice, will discourage cycling and not improve safety. Since the City will have to rebuild a portion of Main if the viaducts are removed, it makes sense to include cycle tracks when the road is rebuilt.

With a significant amount of development happening on and near Main Street, this is an ideal time to plan for cycling improvements along the corridor both to take advantage of planned street construction and developer contributions. By acting now, the City of Vancouver can ensure that the new people who move into the area have great cycling options so they get into the habit of cycling from the day they move into the neighbourhood. This will reduce automobile traffic, will save space on transit for those who can't or choose not to cycle, and will create a more enjoyable neighborhood for all residents and visitors.

Ontario Street, while a useful route for many trips, is not an adequate substitute for the many people currently using Main to access downtown. For people heading downtown, using Ontario means making a jog around Science World, which is exceptionally busy in the summer. This leads to conflicts with the thousands of people going to Science World, as well as many walkers along the waterfront. Separated bike lanes along Main Street will enable a lot of people to safely and quickly access downtown, while creating more space around Science World for tourists and related revenue-generating activity.

### **New Bike and Pedestrian Path on Median of Terminal Avenue Between Main and Cottrell**

The median on Terminal Avenue between Main and Cottrell Street (where the First Avenue Viaduct begins) is wide enough for weather protected bicycle and pedestrian paths under the SkyTrain guideway. The roadway is pretty wide in most places too. Some road space could be reallocated without affecting traffic. This would provide more space on the median which would create more separation from traffic and allow for the addition of greenery to make cycling and walking more pleasant.

### **All-Ages Cycling Facilities on Proposed Thornton Overpass Over Terminal Avenue**

HUB Vancouver would like to see separated bike lanes on the proposed Thornton Overpass or the Overpass built for cycling and walking only. A cycling and walking only overpass would be much less expensive and more consistent with the City's transportation goals. Weather protection similar to the examples below should be provided.

### **Examples of Bridges With Weather Protection**

Peace Bridge Calgary<sup>1</sup>



---

<sup>1</sup> The first image is from flickr user [k-ideas](#); the second image is from <http://www.carsandtrains.com>

Seville, Spain



Porto, Portugal



## **New Bike Path Under Proposed UBC Line Guideway Between Glen and Thornton**

A two-way bike path under the new UBC Line guideway is suggested. In addition to being an all-weather route, this path would be shorter and flatter than the path along Great Northern Way. Also, it would be safer because there would be no driveways or intersections to cross.

## **Biking Separated from Traffic on First Avenue Viaduct Between Cottrell and Clark**

HUB Vancouver would like to see biking separated from traffic on the First Avenue Viaduct between Cottrell Street and Clark Drive. One possibility would be to add painted markings and signage to the sidewalks on the north and south sides of the viaduct, allowing cycling. This separated biking facility would connect with the proposed bike and pedestrian path along the median of Terminal Avenue between Main Street and Cottrell Street, described earlier.

## **Cycling Improvements as Complement to Transit**

These proposed cycling improvements complement transit by making cycling a safe, comfortable and convenient option for shorter trips, freeing space on rapid transit and buses for people who want to or have to use transit.

Associating parts of the cycle network with transit is a key part of the new \$1.5 billion cycling plan by Transport for London (TfL).<sup>2</sup> TfL is even planning on naming and branding its all-ages and abilities bicycle superhighways after parallel underground or bus services. TfL will actively promote these bicycle superhighways as alternatives to transit, thereby reducing crowding.

For example, TfL state “Our new segregated East-West Superhighway along the Victoria Embankment will have the capacity for about 1,000 cyclists an hour, each way. That is equivalent to almost four entire trainloads of people (based on seating capacity) on the District and Circle lines beneath the same street. We could increase effective capacity on this stretch of the Underground by as much as 10 per cent – and for relatively minimal outlay.”

Following TfL’s model, the City of Vancouver could rename an upgraded BC Parkway, the Cycle Bridge (Dunsmuir Connection) north and south forks, the Expo Bicycle Superhighway, and portions of the Central Valley Greenway, as say “The Millenium Bicycle Superhighway.”

---

<sup>2</sup> THE MAYOR’S VISION FOR CYCLING IN LONDON – An Olympic Legacy for all Londoners, Transport for London, <http://www.london.gov.uk/sites/default/files/Cycling%20Vision%20GLA%20template%20FINAL.pdf> p 32.