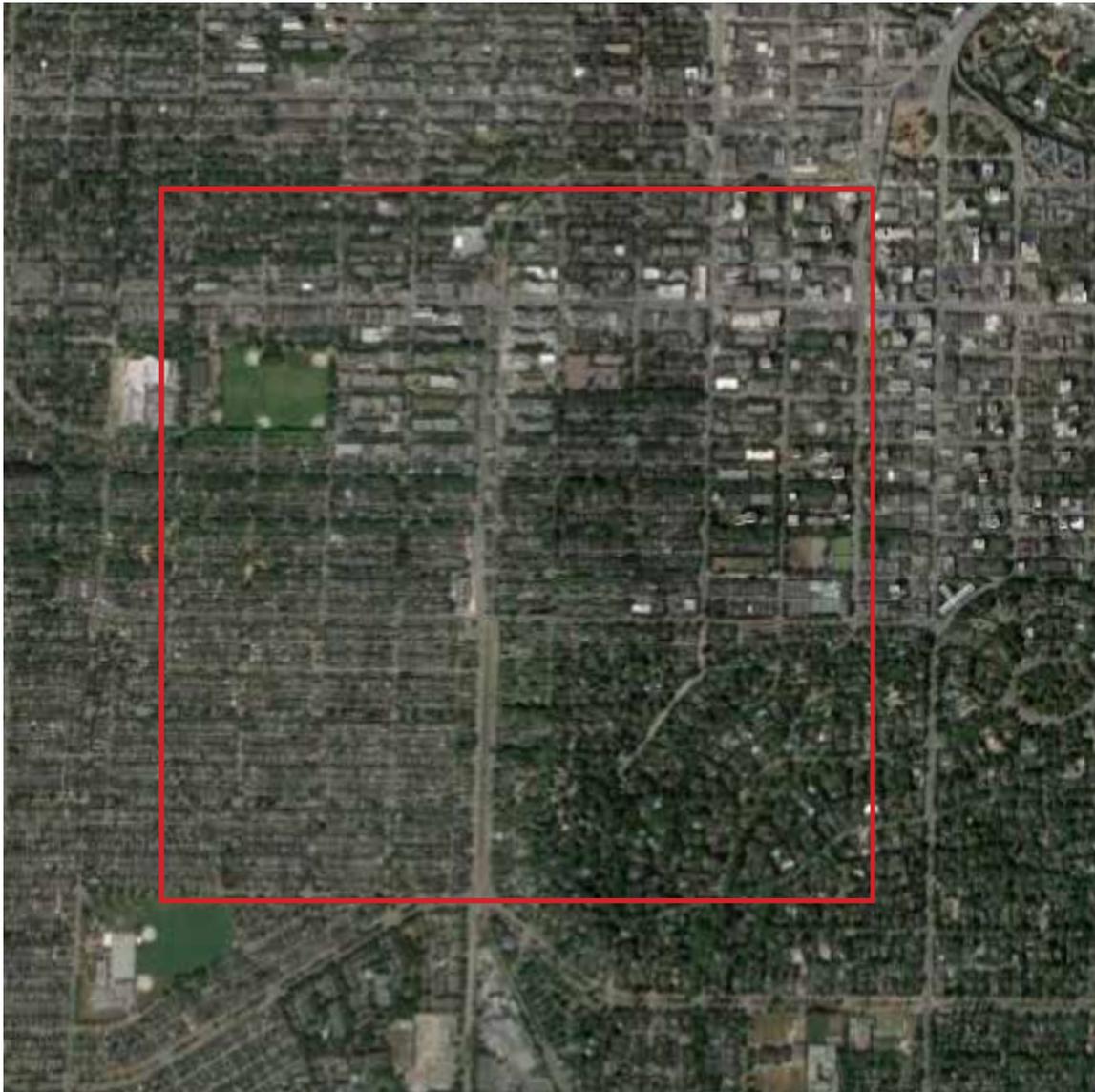




a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

School of Architecture + Landscape Architecture



LARC444/553 (Girling) Team 8

## Enhancing Green Networks & Fabric

### FINAL REPORT

Site 8

Team Members:

Michelle Gagnon-Creeley

Vivian Hua

Eliza Kwun

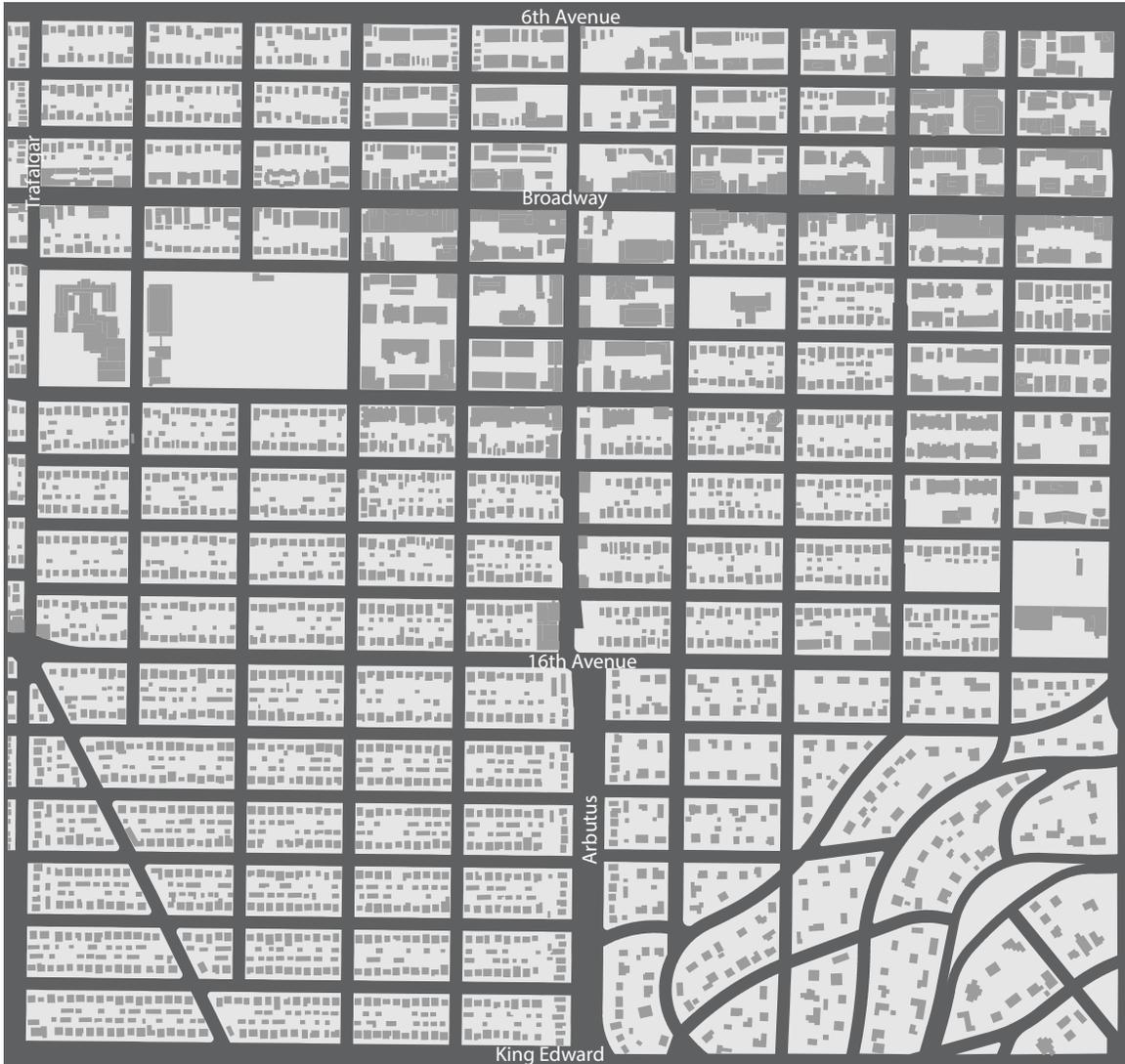
Cody Lai

Site 8 Boundaries, 1:1 000

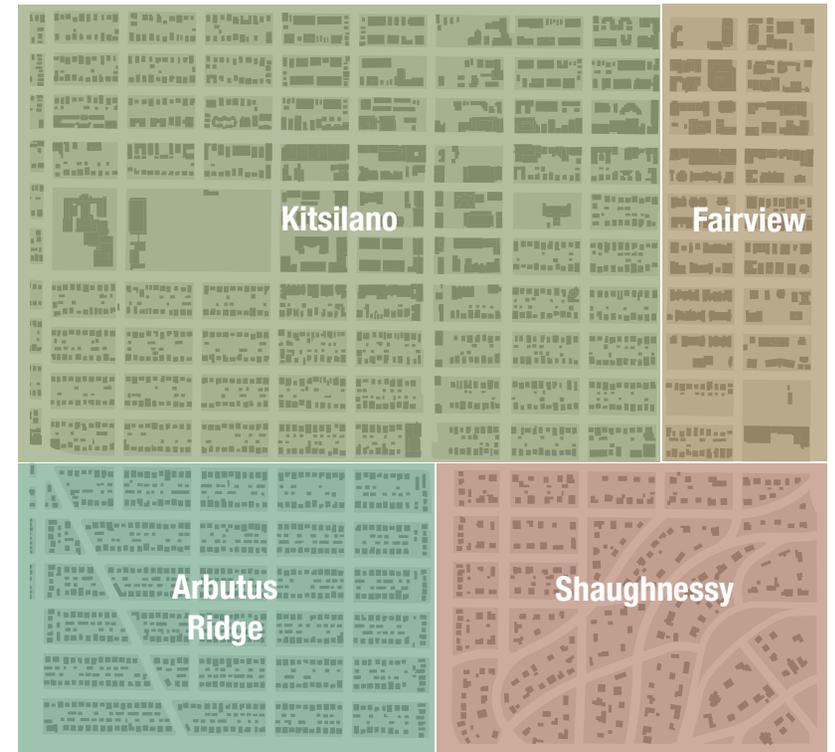
December, 2017

## Site Context

Site 8 is located within the boundaries of 6th Avenue & King Edward from North to South, and Fir Street & Trafalgar Street from East to West. It is comprised of 4 neighbourhoods; Kitsilano, Arbutus Ridge, Fairview & Shaughnessy.



Major Streets of Site 8, 1:10 000



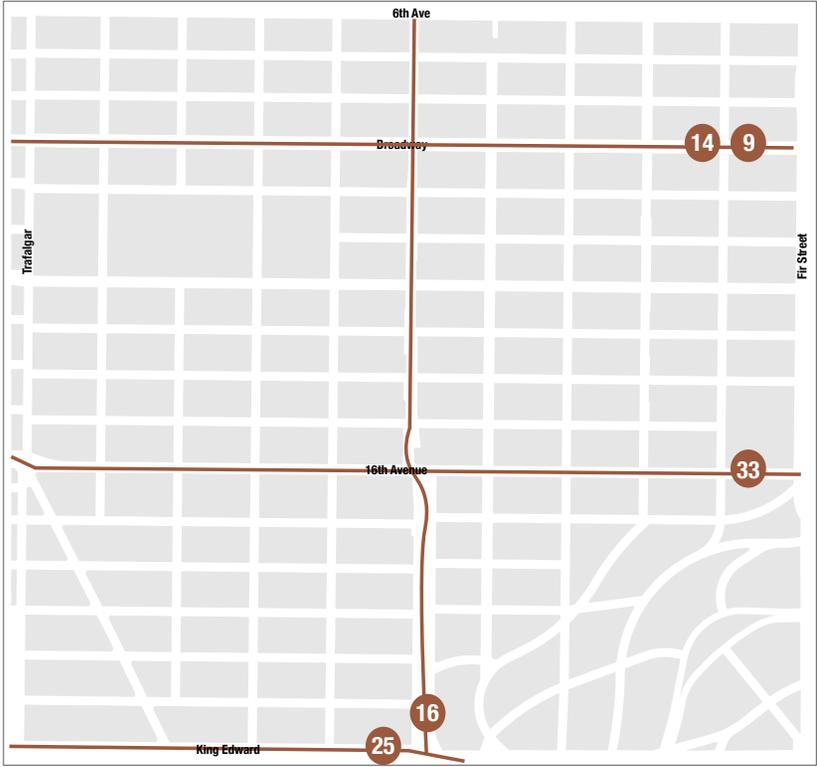
Neighbourhoods of Site 8, 1:15 000

# Access

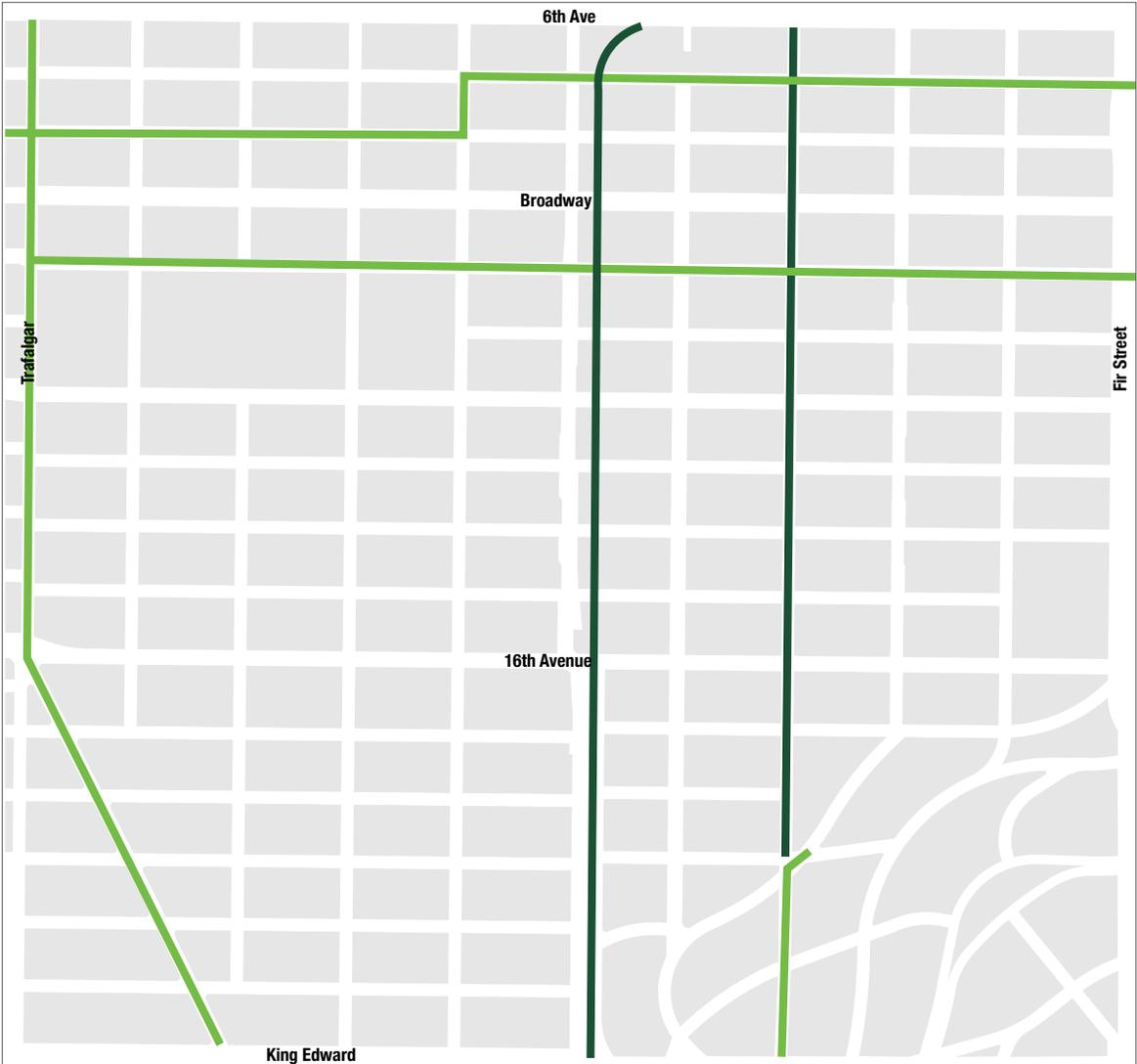
The area is well served by public transit, with multiple bus lanes bringing users downtown or to UBC campus. Bike paths are well connected from the North to South but limited along the East to West corridor, with many of the paths in this direction being “bicycle friendly” streets with no dedicated bike lane.

## Legend

- Bus Routes
- Dedicated Bike Lanes
- Bicycle Friendly Streets



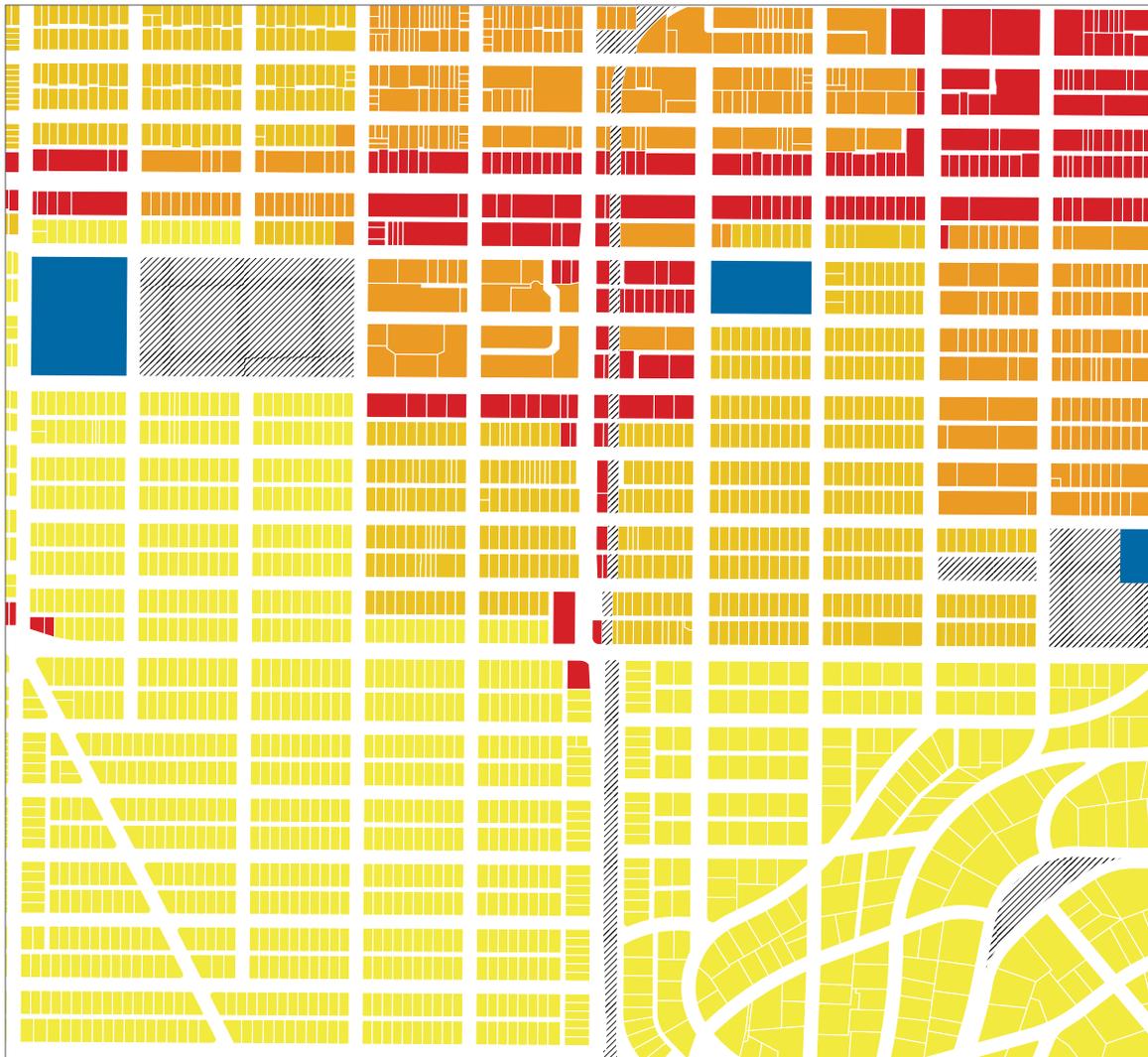
Major Transit Routes, 1:15 000



Bus Routes, 1:10 000

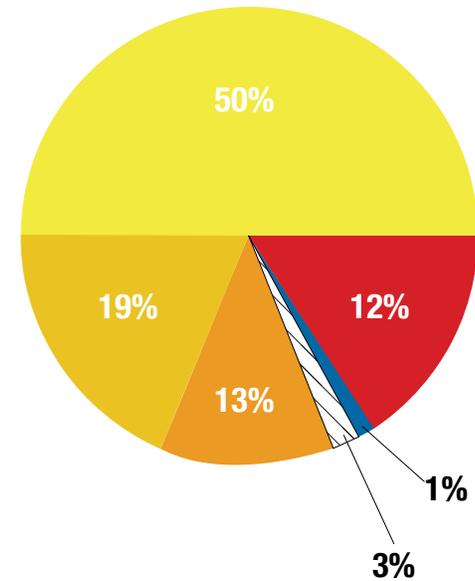
## Land Use

Site 8's land use distribution is fairly homogenous, with 81% of the area being residential. The overall density of the area is relatively low, with 50% of houses being single family homes. The area is predominantly private with limited access to community services. Commerce is also limited, with a lot of concentration along the Broadway corridor but very little retail elsewhere.



Land Use, 1:10 000

Land Use Distribution

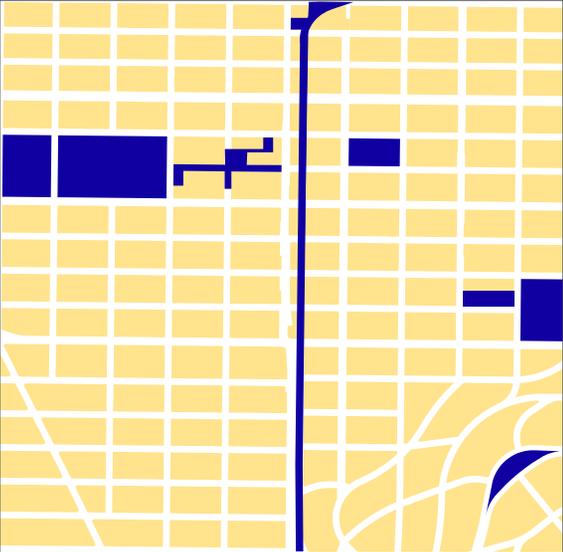


Legend

- Residential (Single Family)
- Residential (2 Family)
- Residential (Multiple Families)
- Commercial
- Institutional
- ▨ Park

### Public Access to Nature

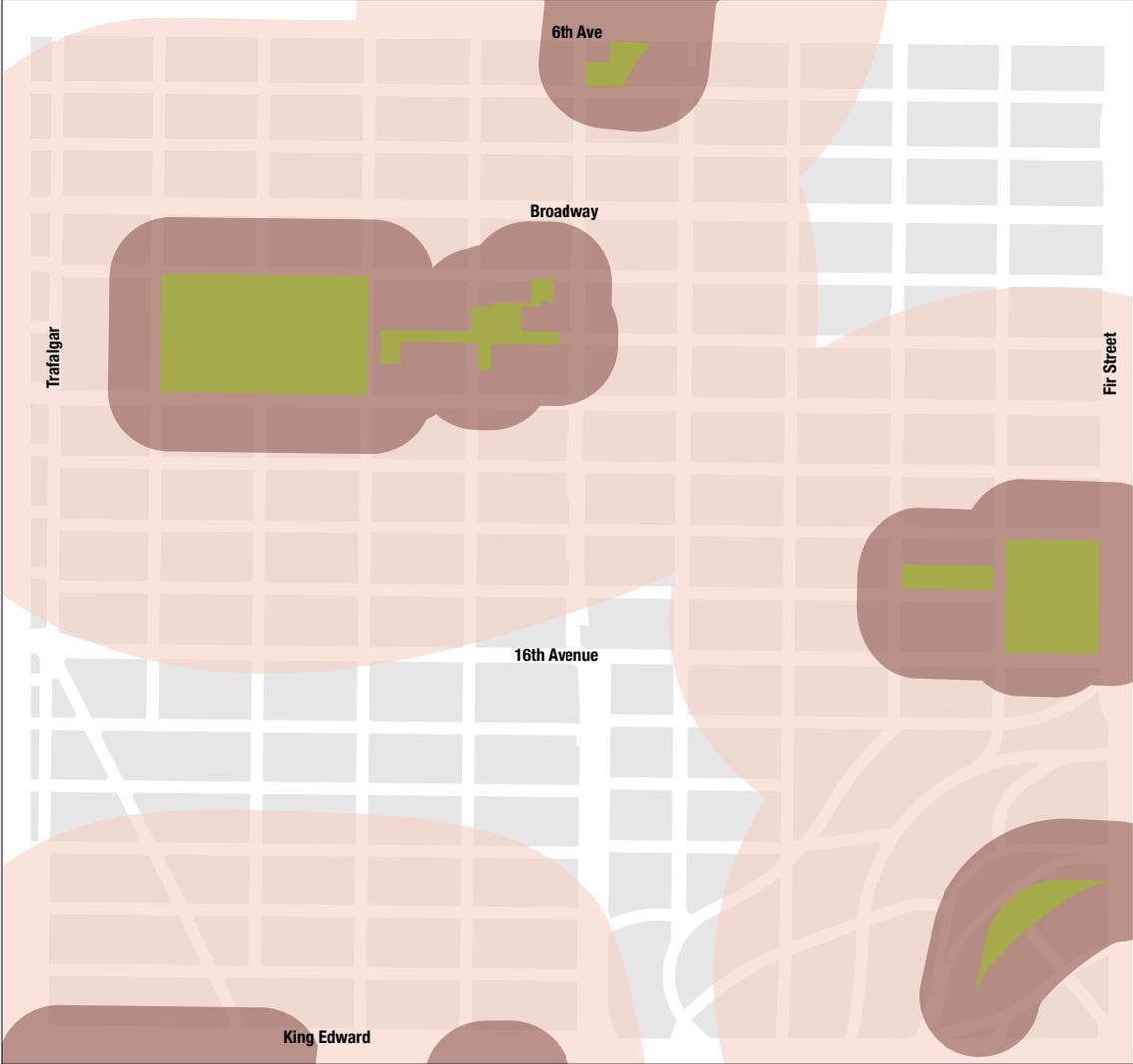
The area is predominantly private and the areas which are public are predominantly park spaces with some institutions (an elementary school & a community center). 80% of the site is within 400m of park space and there is a total of 1650 meters of walking trail, which is the Arbutus Corridor that spans the entire length of Site 8 & continues North to Granville Island.



Public vs. Private, 1:20 000

#### Legend

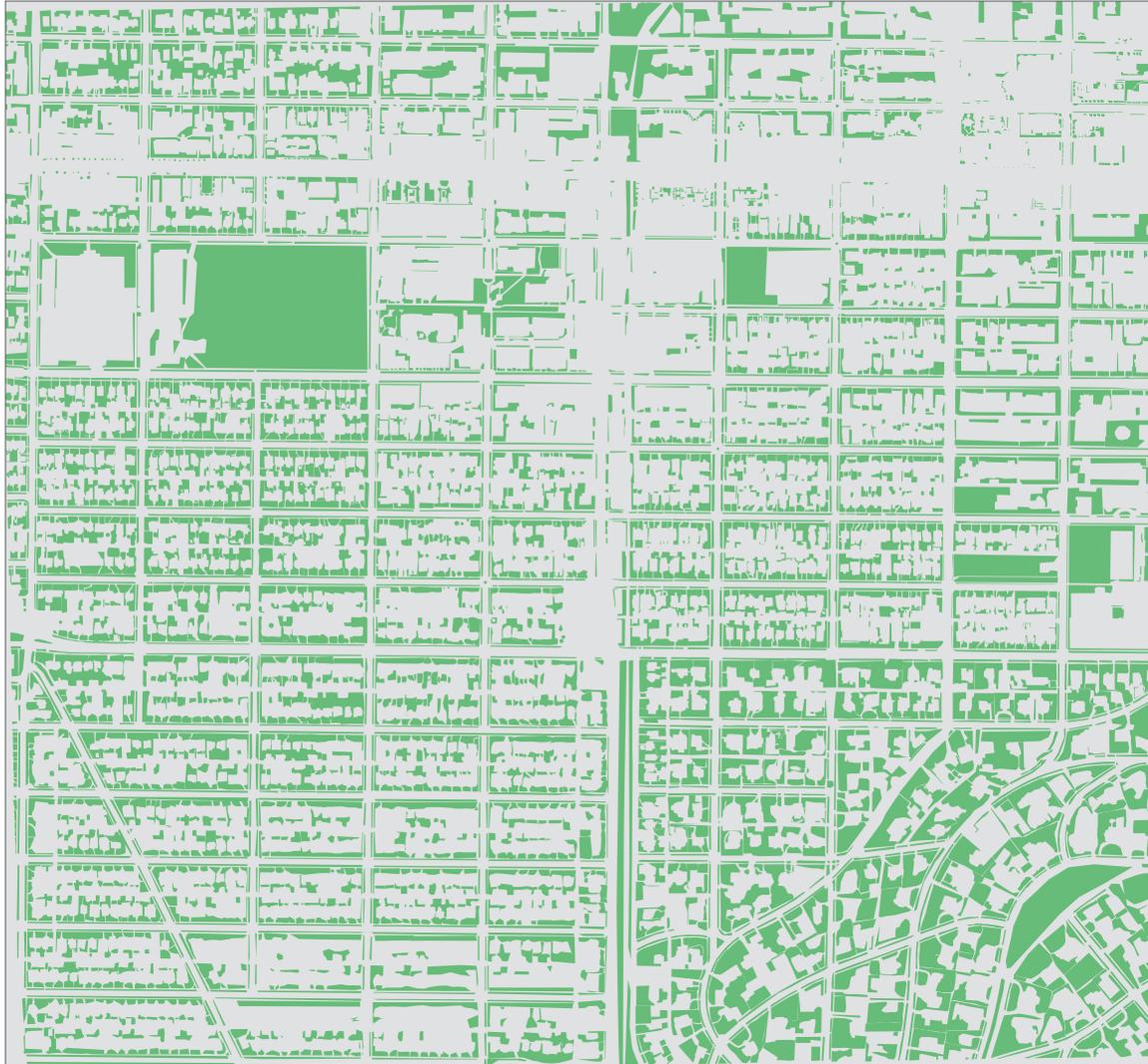
- Privately-Owned Properties
- Public Properties
- Green Space
- Areas within 100m of nature
- Areas within 400m of nature



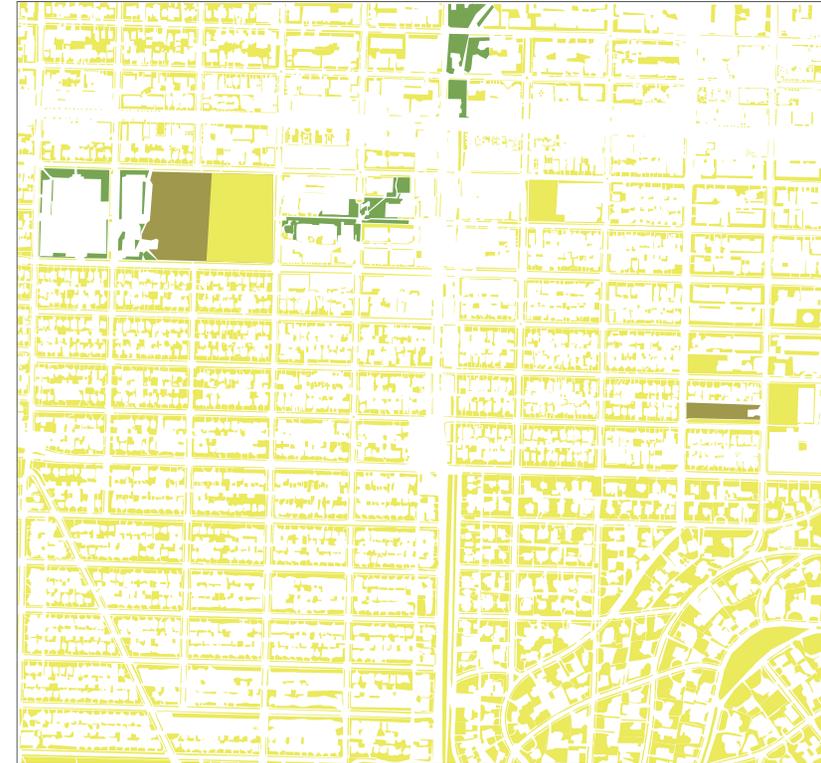
Access to Nature, 1:10 000

## Green vs. Grey

Green space was determined to be any area that was vegetated; a grass lawn, a patch of greenery along a sidewalk, a median or a green roof. The results showed that only 27% of the site is green space. Shaughnessy visibly has more green space in its neighbourhood whereas Fairview & Kitsilano have much less green space, due in large part to Broadway. Of the green space in Site 8, the vast majority of it is herbaceous, with some pockets of more vegetated spaces. None of the green spaces on Site 8 are natural and most are cultural or altered vegetation, providing little to no space for habitat.



Green vs. Grey, 1:10 000



Vegetation Types, 1:15 000

### Legend

- Herbaceous (Grass)
- Sparse Vegetation
- Shrub Land

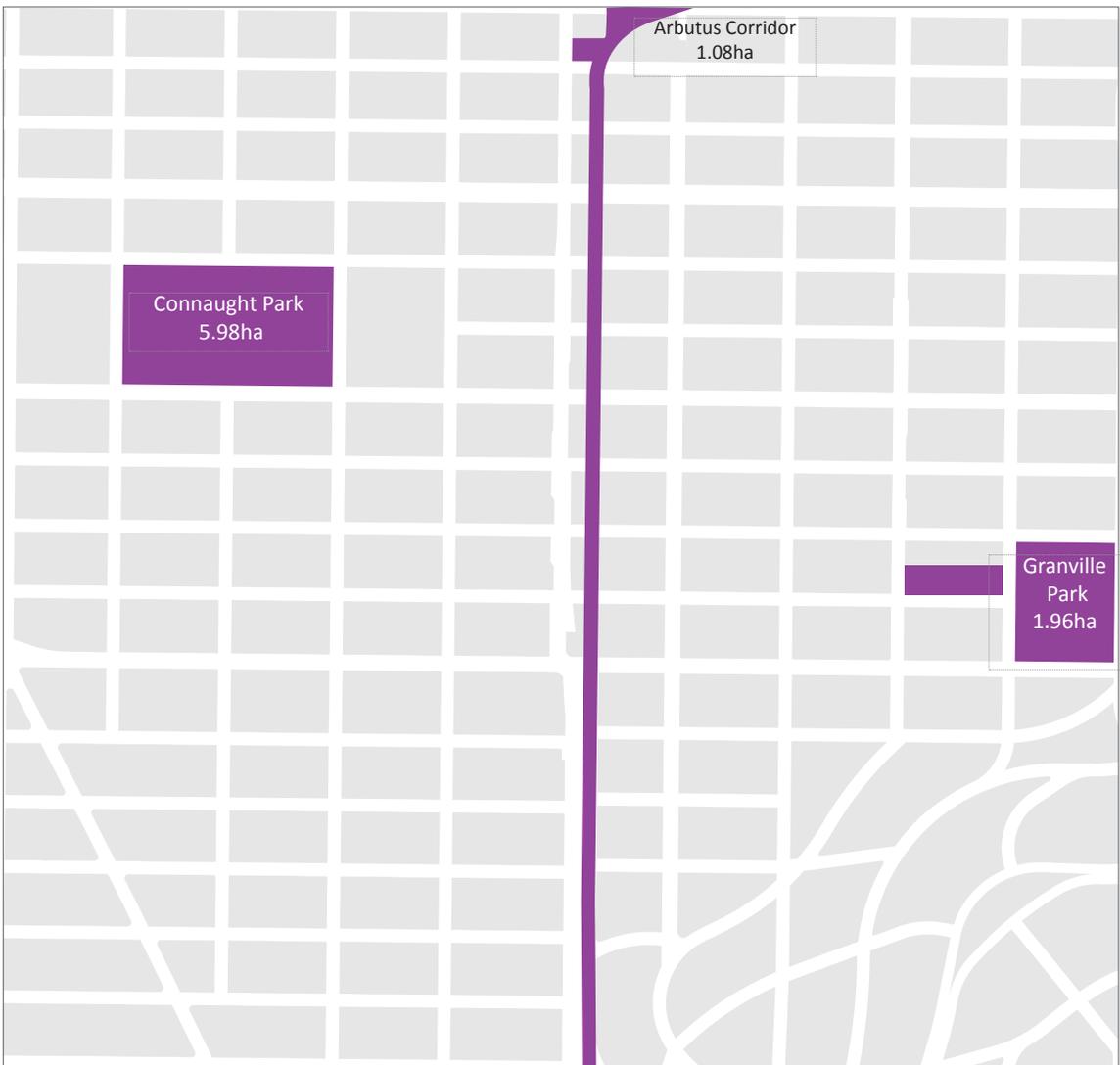
### Habitat Analysis

None of the green spaces on Site 8 are natural and most are cultural or altered vegetation, providing little to no space for habitat. Since habitat is likely to occur in vegetated spaces of 0.5ha or higher, there were 3 areas within the site that fit this description--all 3 of which are public parks. There are not any significant habitats within these spaces aside from habitat for pollinator species & birds.



Vegetation Naturalness, 1:15 00

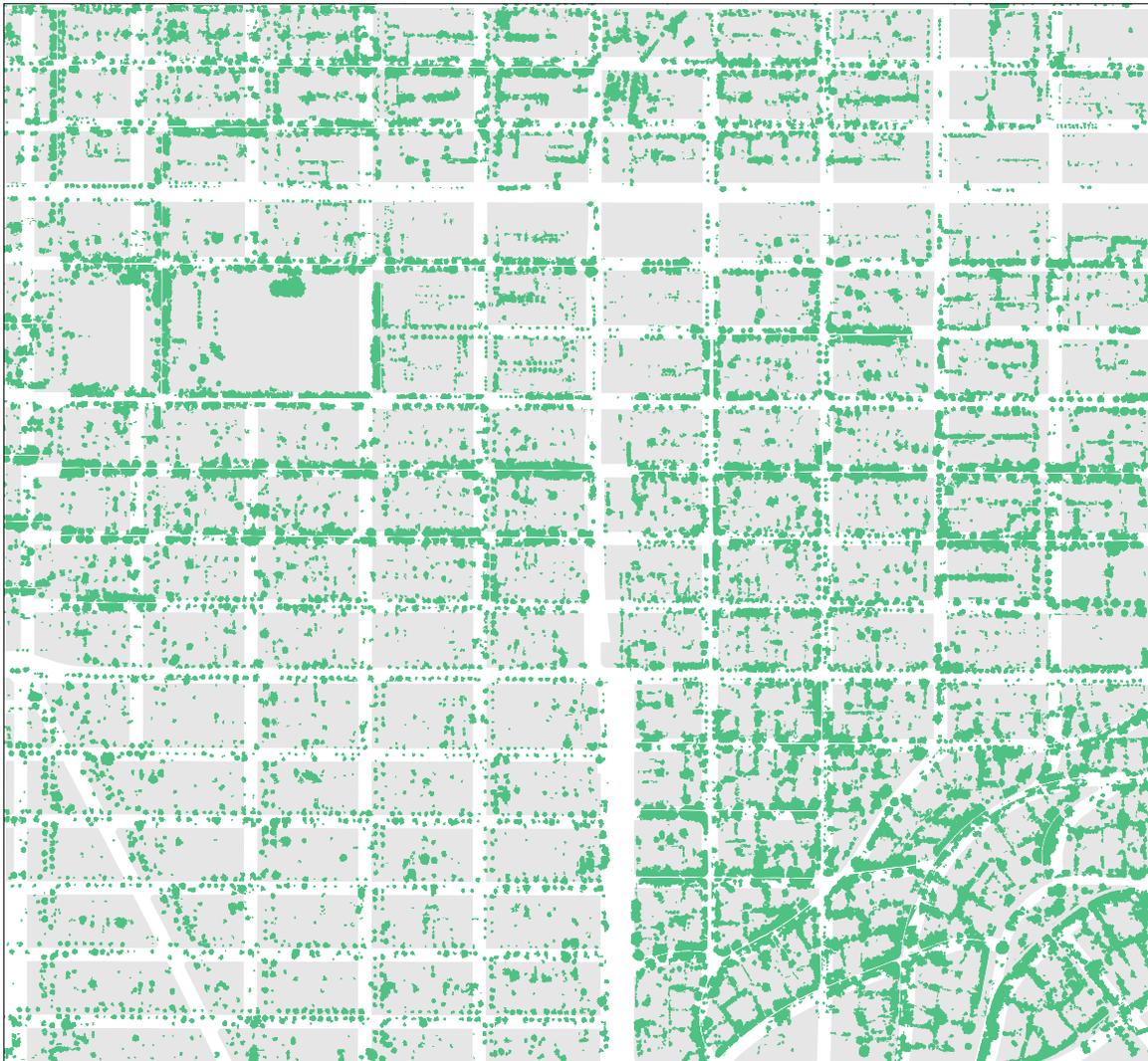
- Legend**
- Orange square: Cultural Vegetation
  - Green square: Altered Vegetation



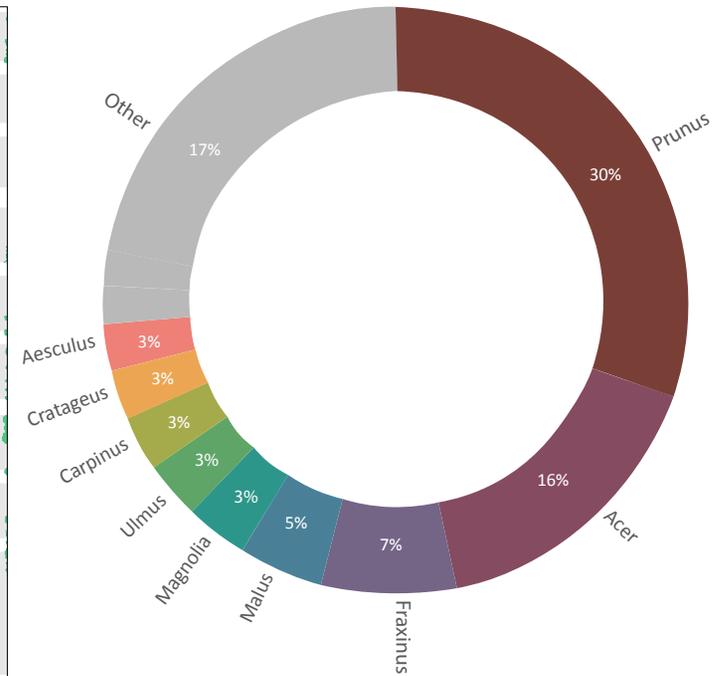
Potential for Habitat Hotspots, 1:10 000

## Canopy Cover

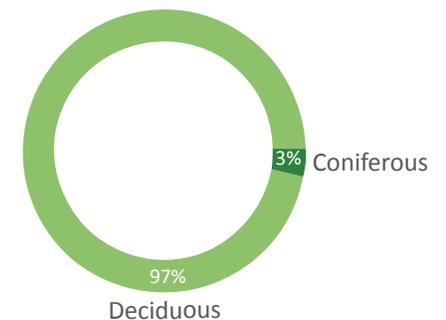
Tree canopy covers 18% of Site 8 during the summer months. Shaughnessy's canopy cover is much denser compared to the other 3 neighbourhoods, with 75% of its area being covered by canopy. A significant amount of trees on Site 8 are prunus trees which are not native to the Vancouver. The tree diversity data indicates that there are a lot of trees that are not conducive to local habitat. Only 3% of canopy cover is coniferous which is problematic as during the winter months as it means that there is little to no presence of trees and thus very little carbon sequestration and pollution mitigation can take place.



Canopy Cover, 1:10 000



Tree Diversity



Deciduous vs. Coniferous

## Goals & Targets



Introduce complete streets into Site 8 as a means to create safer pedestrian spaces, more dedicated bike routes, accessible public transit & sustainable infrastructure.

**City of Vancouver Target**  
Have 2/3<sup>rd</sup>s of all trips in Vancouver be on foot, bike or transit by 2040.  
(Transportation 2040)



Develop linear green spaces & modify existing park spaces to become habitat hotspots.

Provide support to private landowners to develop landscaping schemes that can support habitat.

**City of Vancouver Target**  
Restore or enhance 25 ha of Vancouver's natural areas by 2020.  
(Biodiversity Strategy)



Create parklets & linear green spaces that allow for all citizens within Site 8 to live within a 5 minute walk to nature.

**City of Vancouver Target**  
Ensure that all citizens live within a 5 minute walk to natural space.  
(Healthy City Strategy)



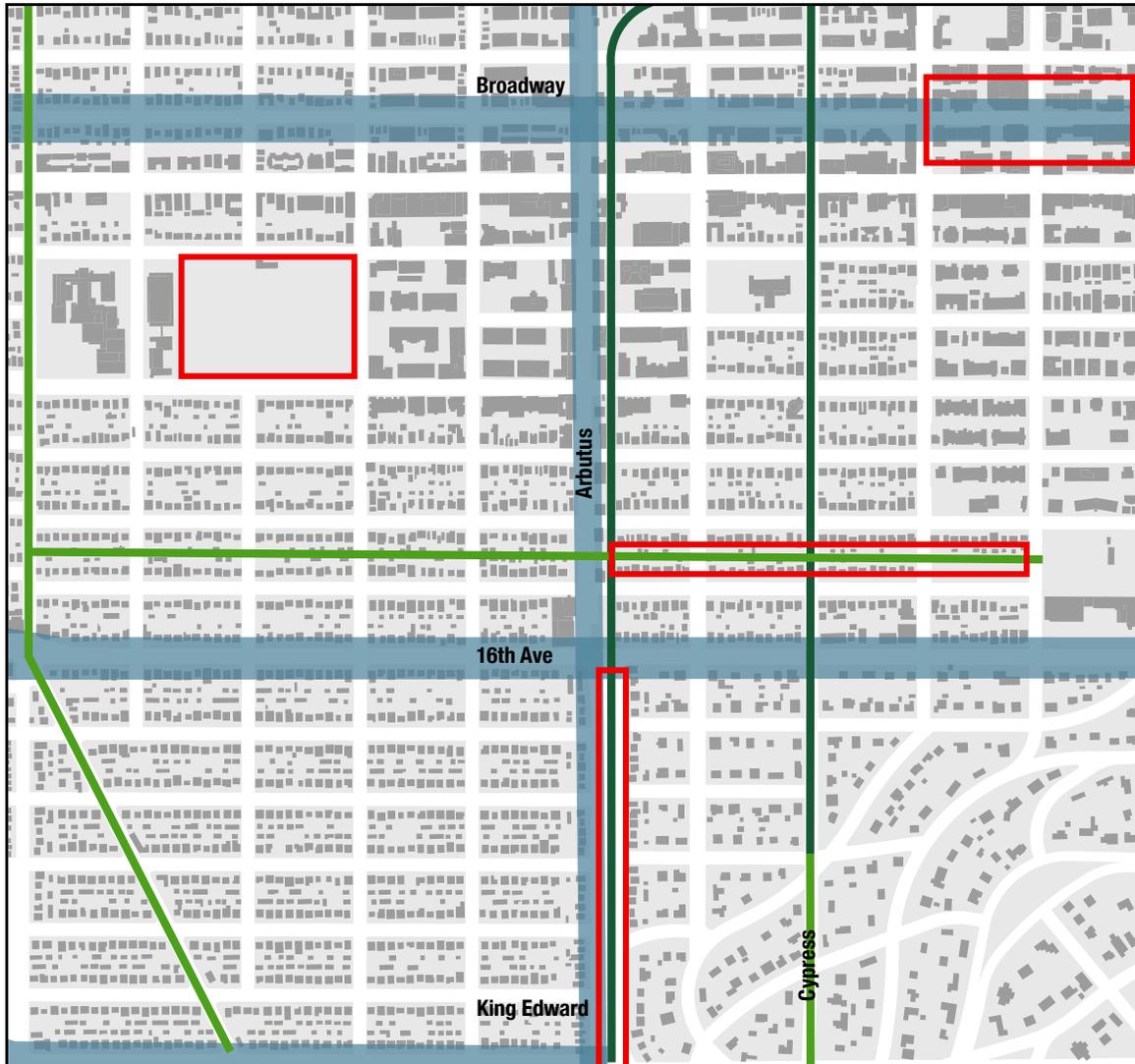
Increase overall canopy cover in Site 8 by 2%.

Provide support to private landowners to ensure that existing trees are properly maintained and new trees are appropriate to the space.

**City of Vancouver Target**  
Plant 150 000 new trees by 2020 and providing overall canopy cover of 20%.  
(Urban Forest Strategy)

## Proposal: Human Connections

We would like to propose encouraging non-vehicular modes of transit through the introduction of complete streets along the major roadways of Site 8. Along with a new East to West bike corridor in the alleyway between 14th ave & 15th ave, all complete streets would contain dedicated bike lanes, allowing for 4 new bike lanes to be created. We would also like to allow for bicycle friendly streets to become dedicate bike lanes for users.



### Legend

- Proposed Complete Streets
- Existing Bike Paths
- New Bike Paths
- Zoom Studies

# Proposal: Habitat Connections

Given that the area of Site 8 has no significant spaces for habitat, we would like to propose that places with a potential for habitat value (Connaught Park, Arbutus Corridor, Granville Park) be redesigned to reduce herbaceous vegetation and include more native vegetation. We would also like to increase tree canopy cover along Broadway (by 5%) and in the neighbourhoods of Fairview & Arbutus Ridge (by 2%). We would also like to propose the introduction of green alleyways that could act both as habitat corridors and major East to West bike corridors.



- Legend**
- Proposed Habitat Sites
  - Proposed Habitat Corridors
  - Areas for Increased Canopy Cover
  - Zoom Studies

## Zoom Study: Connaught Park, Cody Lai

Removal of sports facilities to allow for the reintroduction of a low-lying marsh



Site Location, 1:100

Connaught Park has high cultural services but lacks regulating and supporting services. The total area is 3 ha but would be adequate enough to form a complete marshland habitat. This same habitat has worked in Hinge Park in downtown Vancouver and Camosun bog, both of which have high density use.

Arbutus Ridge used to be called the Asthma Flats before intensive development began. The Asthma Flats was characterized by low lying elevation conducive for a natural low-lying marsh (About Vancouver, 2015). Re-introducing a low-lying marsh can increase and introduce new ecosystem services and wildlife. Currently there are no biodiversity hotspots and this would be the first in Arbutus Ridge and Shaughnessy area.

## Precedents



Hinge Park, PWL Partnership

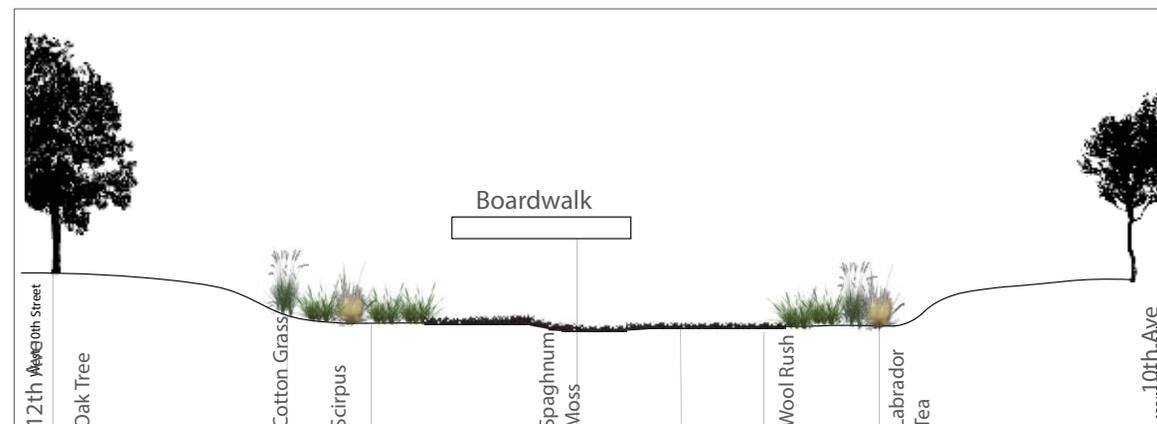
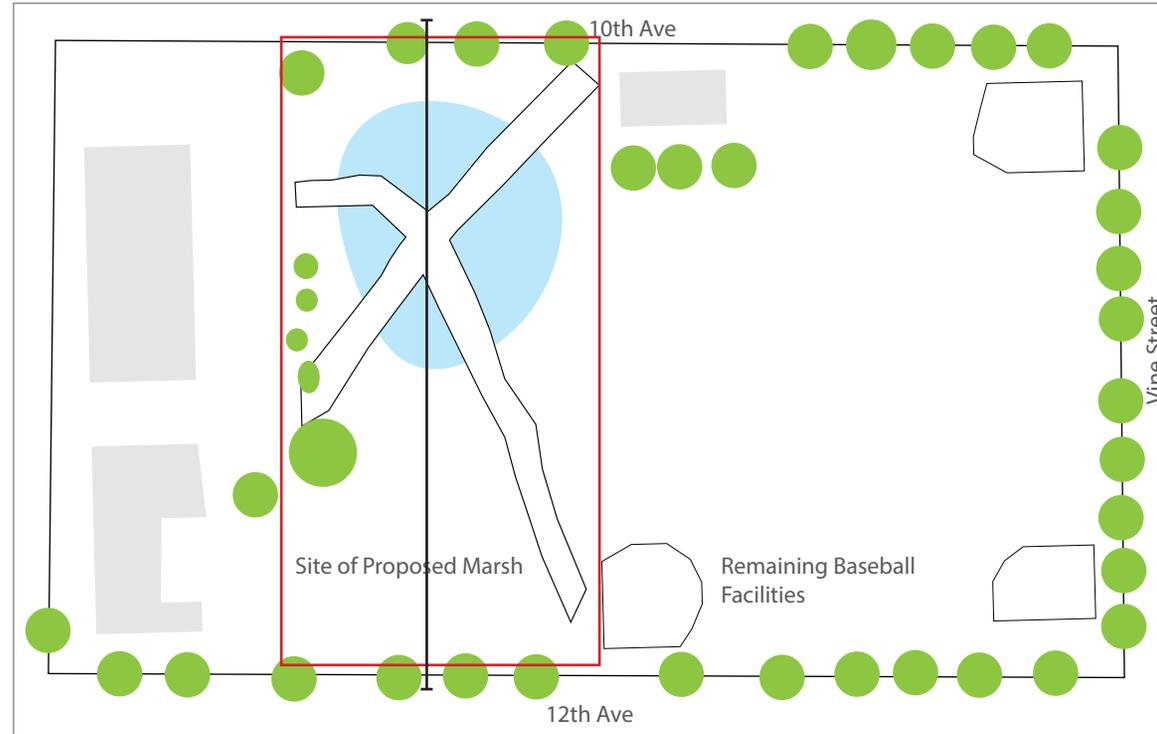


Camosun Bog, City of Vancouver

## Zoom Study: Connaught Park

Removal of sports facilities to allow for the reintroduction of a low-lying marsh

### Proposal



Hinge Park and Comosun Bog have an area of 1 hectare and 0.5 hectare, respectfully. Our proposed bog covers an area of 1.3-hectare while preserving 3 hectares of recreational field, for the diverse groups of recreational users. One hectare is a sufficient amount of area to create a biodiverse and unique ecosystem not found in Arbutus Ridge. The bog only removes one out of the four baseball diamonds that are heavily used. Finally, the bog is located at the lowest elevational point of Connaught Park at 29m above sea level and will be rainwater fed. The environment is conducive to reintroduce key stone specie such as sphagnum moss.

### Ecosystem Services Provided

- Regulating Services: Stormwater Mitigation, Water Filtration, Habitat Hotspot
- Supporting Services: Nutrient Cycling, Primary production, mediates flora and fauna habitat

### References

City Of Vancouver. "Arbutus Ridge." City of Vancouver, RedDot CMS, Apr. 2017, [vancouver.ca/news-calendar/arbutus-ridge.aspx](http://vancouver.ca/news-calendar/arbutus-ridge.aspx).

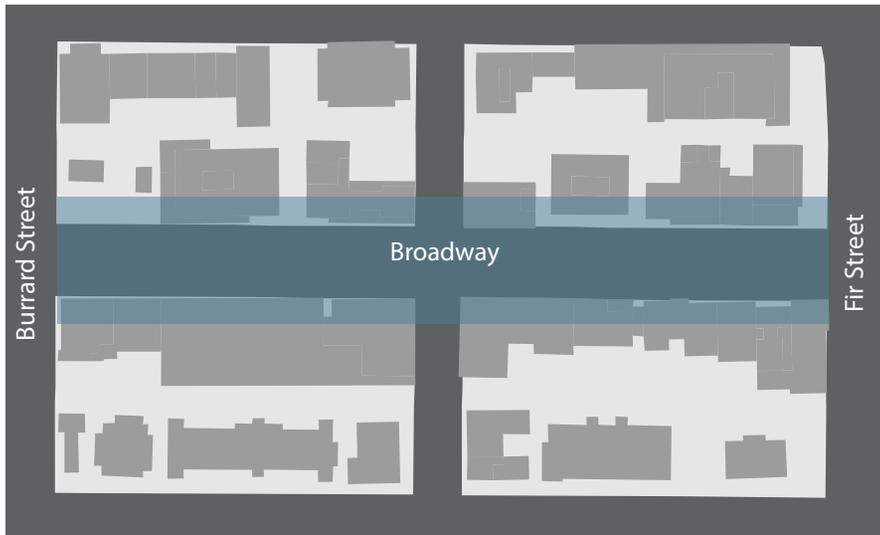
"Hinge Park." City Of Vancouver, [covapp.vancouver.ca/parkfinder/parkdetail.aspx?inparkid=240](http://covapp.vancouver.ca/parkfinder/parkdetail.aspx?inparkid=240).

"Peatland Vegetation." Miller Orthopedic Specialists, [peatmoss.com/what-is-peat-moss/peatland-vegetation/](http://peatmoss.com/what-is-peat-moss/peatland-vegetation/).

Reichstein, Naomi. "Hidden treasures: New boardwalk brings you closer to Camosun Bog." Vancouver Public Space Network, 12 Apr. 2017, [vancouverpublicspace.ca/2017/04/14/getting-down-new-boardwalk-brings-you-closer-to-camosun-bog/](http://vancouverpublicspace.ca/2017/04/14/getting-down-new-boardwalk-brings-you-closer-to-camosun-bog/)

## Zoom Study: Broadway between Fir & Burrard, Eliza Kwun

Creating a complete street on Broadway that will allow for mixed modes of transit and increased green space & canopy cover



Site Location, 1:50

I would like to convert Broadway Street to – especially from Fir Street to Burrard Street – would be shown in the first picture on page 14. There are currently 6 lanes in total, 3 going each way. I would use the parking lane (currently the most outer lane) to create a small buffer but, instead of concrete, I would suggest permeable concrete asphalt as well as a visible green rain garden for water retention and infiltration. This would also be a great place to place trees to increase street trees in the neighbourhood. The other approximate two-thirds of the lane would be used to make a designated bike lane. Having these separated bike lanes will suggest protection, thus increasing the use because of the element of safety.

## Precedents



8th and 9th Avenue (Manhattan) & Delaney Source: New York City Department of Transportation



Example of a bike path/rain water retention. Source: The Indianapolis Cultural Trail

## Zoom Study: Broadway between Fir & Burrard

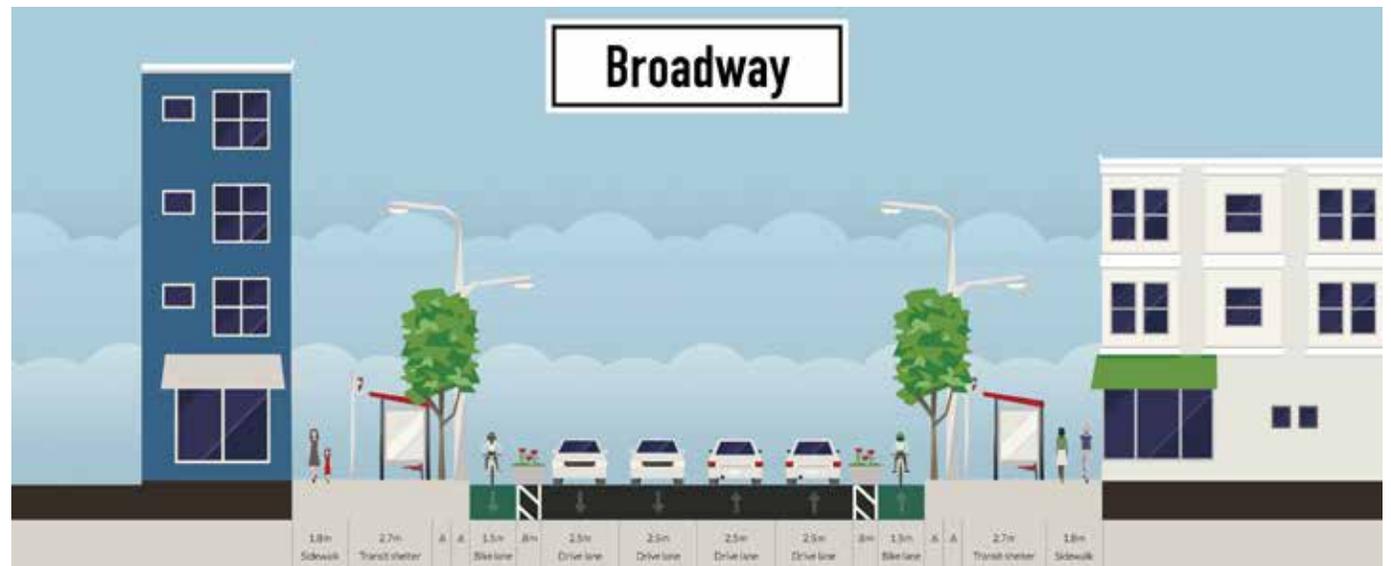
Creating a complete street on Broadway that will allow for mixed modes of transit and increased green space & canopy cover

This would be a small example of how to convert part of Broadway into a complete street. There is a lack of an east-to-west bike corridor, so having this would not only help meet Vancouver's Transportation 20140 goal of making at least two-thirds of trips on foot, bike and transit, but having less lanes for drivers will hopefully decrease their desire to drive, thus having an indirect effect and lowering carbon release.

An example of a successful protected bike lane is in Manhattan, NYC. With protected bike lanes, there was a 35-58% decrease in injuries (dependent on streets) and up to 177% increase in bicycle volumes. The Indy Cultural Trail in Indianapolis, IN is another great example that connects people to the downtown core, with protected bike lanes and incorporated greenery. The use of these bike lanes is high in both places despite their constant precipitation during the year, suggesting that it is possible for Vancouver as well.



Current conditions of W Broadway facing east at the intersection of Fir Street. Source: Google Maps.



Design of what Broadway could look like. Street dimensions add up to ~26 meters, which was what the width of the road was, with car lanes approximately 2.5m wide.

## Zoom Study: Arbutus Corridor, Michelle Gagnon-Creeley

The design of a habitat corridor for bird & pollinator species that also allows for human recreation & movement



Site Location, 1:5000

I would like to reduce the size of the street on East Boulevard to allow for a wider green space on the Eastern edge of the Arbutus Corridor between King Edward and Arbutus. The current condition of this part of the Arbutus Corridor is heavily paved with some herbaceous species along the edges. I would propose the use of permeable paving to maintain the bike path, and significantly changing the plantings for native species of trees and shrubs with an emphasis on evergreen species.

Three projects which are guiding my design are 1) The 606 in Chicago by Michal Van Valkenburgh and 2) The High Line in New York City by James Corner Field Operations and 3) Hinge Park in Vancouver by PWL Partnership. The 606 and the High Line are of interest to me for their use of human pathways and connections, while Hinge Park is of interest for its use of native plantings to reintroduce habitat into a very urban area of Vancouver.

### Precedents



The 606 (Image retrieved from <http://bit.ly/2BTQ6XW>)

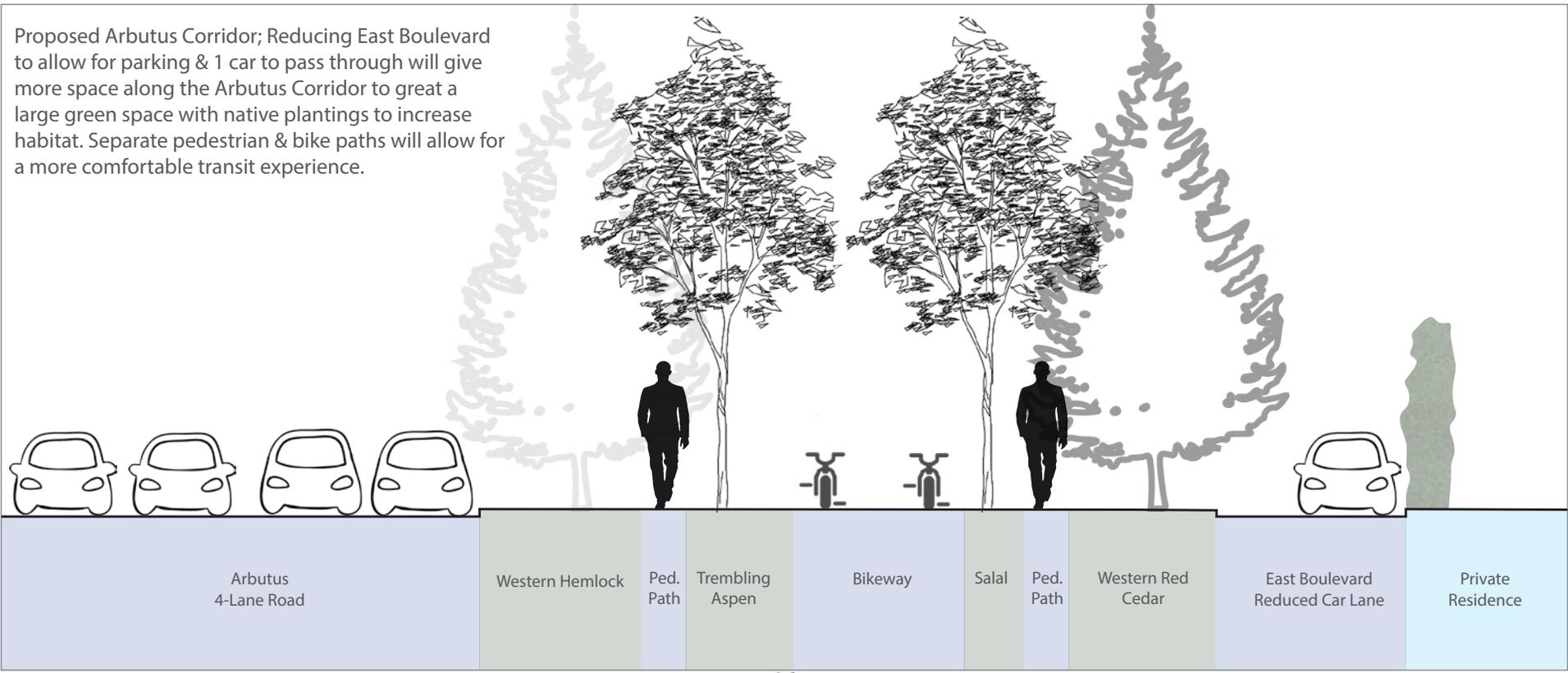
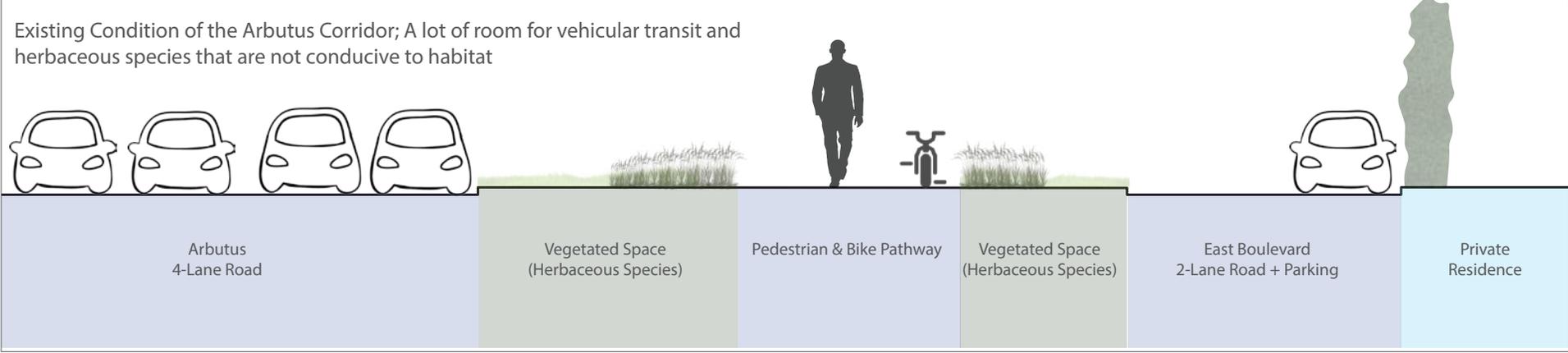


The High Line (Image retrieved from <http://bit.ly/TmmjRy>)



Hinge Park (Image retrieved from <http://bit.ly/2AtDhYd>)

The design of a habitat corridor for bird & pollinator species that also allows for human recreation & movement



## Zoom Study: Alleyway between 14th Avenue & 15th Avenue, Vivian Hua

Turning the alley into a green corridor that allows for a bike & pedestrian paths



Site Location, 1:5000

To implement our proposal of increasing the access to nature to 5 min walking distances, we propose to turn the alleys into green corridors that allows for both biking and pedestrian paths. The zoom study we chose for our site is the alley between 14th and 15th ave, which connects the Granville Park to Arbutus green way. We found this green alley projects in the city of Montreal, we thought this is a very good example of showing how you can turn an alley into green corridors. We believe the proposal could not only increase the aesthetic value within the community but also beneficial for multiple ecological services

### Precedent



Green Alleyway Project, City of Montreal



## Zoom Study: Broadway between Fir & Burrard

Creating a complete street on Broadway that will allow for mixed modes of transit and increased green space & canopy cover

### Ecosystem Services Provided

Regulating Services: Carbon sequestration & storage, Pollinator habitat, Stormwater management/Flood mitigation

Cultural Services: Physical & Mental well-being, Recreation/social cohesion, Aesthetics/Spiritual experience

### References

<http://www.biopolis.ca/en/projects/green-alleys-of-montreal/>

<http://www.greengaragedetroit.com/site/building/green-alley/>



Existing Condition of the Site