

## PROJECT 2

### **ANALYZING the Green Network and Fabric**

*“...at the scale of the metropolitan area, the green networks are the major river systems and large open space preserves, whereas at the neighbourhood scale, the green networks are fine grained and include heterogeneous bits of nature, such as small patches of native vegetation and narrow green corridors. Acting together the coarse and the fine grains form an integrated functioning whole.” (Girling, Kellett 2005, page 139)*



In this exercise we will de-laminate the green networks and fabric of a study area to reveal and diagnose its current order and condition. We will analyze the study area in terms of the land use, land cover, public green spaces, urban forest, and biodiversity. At the conclusion of this assignment, our class will have compiled an informative spatial analysis of our study areas that highlights and evaluates important green systems in terms of key green networks and livability metrics.



(In Project 3 we will look into the future and make propositions for improving the quality, connectivity, and functioning of the green network in the study areas.)

#### **Learning objectives:**

- Learn to understand, analyze and critique urban green networks and fabric
- Learn to distill and represent the green networks and fabric in clear and evocative ways
- Apply methods for evaluating green networks and fabric against performance indicators introduced in class

#### **GROUPS**

Once again this is a group project. Students can form your own groups of two to **three**.

#### **SELECT STUDY AREA**

Groups will select an area of approximately 1 km x 1 km to study (approximately 100 hectares).



Green networks and fabric: top-Wesbrook Place @ UBC, Middle- Heritage Park, Minneapolis, MN; Bottom-Stapleton, Denver, CO

#### **ANALYTICAL MAPPING**

With consideration of the outline below, each team will develop a plan and approach to the analysis of their study area. Maps and diagrams accompanied by photos and other illustrations will present a critical analy-

sis of the study area. Narrative will explain and supplement graphics.

## MAPS

The content should include but is **not limited to** the following:

LAND USE (all of study area)

- residential, commercial, comprehensive development, civic (includes schools), parks (greenspace), industrial
- public lands

LAND COVER (all of study area)

- green vs. grey land cover (see City's infrared imagery)

URBAN FOREST (public trees)

- all tree canopy cover on public lands (distinguish forest from urban trees)

BIODIVERSITY (public lands)

- habitat hotspots and habitat sites
- habitat types (see Vancouver Biodiversity strategy)

GREENSPACE TYPE

- types of parks, schools other green public lands

NETWORKS

- rapid transit, bus, cycle routes, greenways

*\*All maps should be presented at the same scale.*

## METRICS

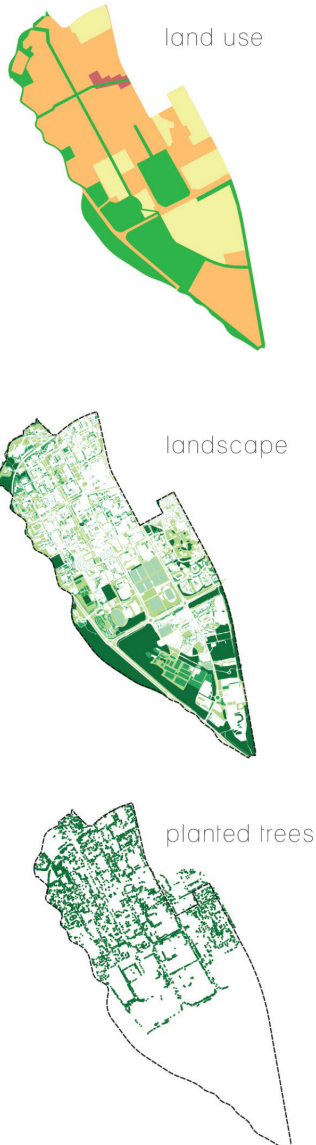
A minimum list of spatial metrics will be estimated by every team. Feel free to do more as part of your diagnosis.

- % areas of green vs gray land cover (as % of study area)
- % of each different land uses (as proportion of study area)
- % coverage of public tree canopy (as % of study area)
- diversity of public trees (species, age, mature size...)
- % of study area within 100 meters & within 400 meters of "nature"
- area with moderate and high habitat (hotspots and sites = high) (hectares)
- % of public greenery with moderate or high habitat value (as % of all green)
- one other metric of your choice

**IMPORTANT:** Incorporate the metrics within your diagnosis. Use big, clear numbers, bar, pie or ring charts to visually represent the metrics. The metrics should be adjacent to the relevant maps when possible.

## DIAGNOSIS

Discuss with your team: Assess the extent, distribution and connectivity of the green networks in your study area. Do people have access to nature? Do they have access to diverse types of greenspace? Comment on the overall condition and biodiversity of the urban forest in your study area. Also call out areas that are devoid of vegetation or where the vegetation is in poor condition. Comment on the distribution and accessibility of the greenspaces.



Source: Caylee Dyck, "Branching Out: The socio-ecological potential of campus landscapes." Graduate Project, 2016.

## SUMMARIZE FOR PRESENTATION

What are the most urgent and obvious issues with the green fabric and networks in your study area that should be addressed in the future?

What are the obvious opportunities to improve the quality, coverage and connectivity of the green fabric and opportunities to create or enhance green networks?

How might people's access to nature be improved?

## MAPPING:

Much of this exercise is about making meaningful analytical maps to distill and represent some of the indicators of green fabric extent, distribution, biodiversity and connectivity that will inform future green network and fabric propositions.

Good map-making depends on both an understanding of the relevant information AND a good sense of what can be omitted or amplified without diminishing the the attributes being mapped. The challenge is not only to identify key attributes and locate them in space, but to do so in ways that reveal and accentuate why and how they are important.

Generic map legends are provided for Land Use, Land Cover and Habitat Types. Please create your own clear legends for the other maps.



Figure 6.6 Vegetative stratification



Figure 6.13 Forest buffers and trees planted in public realm

Source: Girling et al, Wesbrook Place, UBC, A Case Study, 2015.

## DELIVERABLES:

**Team and site:** Email to Cynthia your team's names and a Google map image of your proposed site by midnight Wednesday, **January 23**.

**Presentation:** Each team will prepare a brief presentation for the class of the most interesting and important findings of this analysis and diagnosis of the study area. Your maps and metrics will illustrate the points you are making.

Each team will have 5 minutes to present their Part 1 project. Please prepare a thoughtful and informative presentation. We will use a Pecha Kucha format- slightly modified—

10 slides at 30 seconds per slide = 5 minutes per team.

**DATE: February 25 and 27** in class

(Groups will be scheduled on one of two days well in advance.)

**LOCATION:** Room 40 FNH.

Please arrive a bit early to load your presentations.

**SUBMIT A PDF:** Presentations must be turned into one PDF and submitted on Canvas by midnight February 27.

## EVALUATION (25% of grade):

- Content and quality of maps is strong (neat, legible, appropriate amount of information, correct scale)
- Rigor and logic of mapping (clear categories, appropriate levels of detail)
- Metrics are complete and accurate. Visual representation is clear.

- Diagnosis is logical, thoughtful and informative
- Presentation is clear, interesting, informative, within time limit.

**REFERENCES:**

Map based data sources (GIS) have been compiled for the City of Vancouver. A folders of data is located on a Google Drive. See the blog for a link to the Drive.

Sources for the Vancouver data are:

City of Vancouver > VanMaps (Open Source Data)

City of Vancouver Biodiversity Strategy map data (obtained from Nick Page, Vancouver Parks Board)

**Policy context City of Vancouver:**

City of Vancouver Greenest City Action Plan <http://vancouver.ca/green-vancouver/greenest-city-action-plan.aspx>

City of Vancouver Biodiversity Strategy > <http://parkboardmeetings.vancouver.ca/reports/REPORT-BiodiversityStrategy2016-FINAL.pdf>

City of Vancouver Urban Forest Strategy & Tree Protection Bylaw <http://vancouver.ca/home-property-development/urban-forest-strategy.aspx>

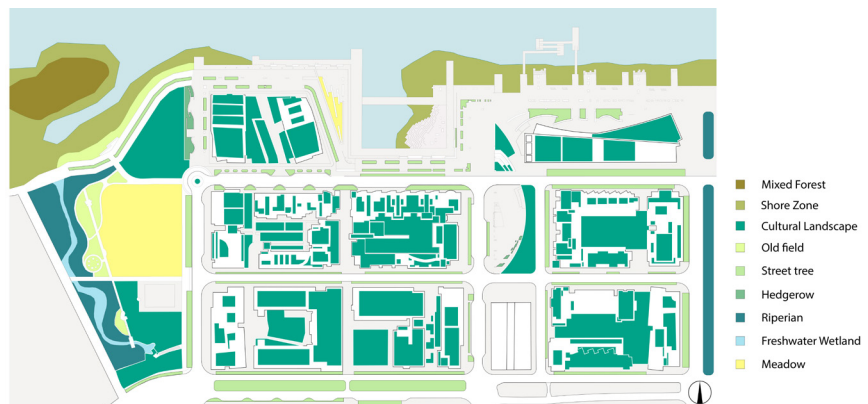
City of Vancouver Integrated Rainwater Management Plan <http://vancouver.ca/home-property-development/managing-rain-and-storm-water-runoff.aspx>

Vancouver Park Board: Vancouver’s Playbook: a plan for the future of our parks and recreation <https://vancouver.ca/parks-recreation-culture/vanplay-parks-and-recreation-strategy.aspx> (this planning process is underway and not complete)

Arbutus Greenway web site <http://vancouver.ca/streets-transportation/arbutus-greenway.aspx>

Look up neighbourhood plans here: <https://vancouver.ca/home-property-development/neighbourhood-planning-projects.aspx>

Look up information about parks on the Board of Parks and Recreation web site <http://vancouver.ca/parks-recreation-culture/parks-and-recreation.aspx>



Habitat at Southeast False Creek. Redrawn from Figure 3, page 101, Patrick Mooney and Glenn Brown (2013) Ecosystem Services, Natural Capital & Nature’s Benefits in the Urban Region.

## Legend




### Landuse

#f2ea3f		Residential (one-family dwelling)
#eac323		Residential (two-family dwelling)
#eb9a24		Residential (multi-family dwelling)
#994922		Comprehensive Development
#d52028		Comercial
#0069a6		Civic
#763c92		Industrial
		Public Land
#164c25		Parks & Green Spaces






### Land Cover

#bcbcbc		Grey
#66bc78		Green

### Biodiversity

		Habitat Hotspot
#914299		Habitat Site
		Habitat Connections

#### *Habitat Types*

#2b8340		Forest
#42beac		Riparian
#c1d82f		Meadow
#eb9167		Urban Park
#a9cd93		Wetland
#0069a6		Subtidal
#4d69b1		Intertidal

<p><b>City-wide Data (covering City &amp; UBC)</b></p>	<ul style="list-style-type: none"> <li>- <b>CoV other watercourses [polylines]</b></li> <li>- <b>2013 potential corridors [polylines]</b> <ul style="list-style-type: none"> <li>o Function (F/NF/I)</li> <li>o Length</li> </ul> </li> <li>- <b>CoV 2012 Citywide vegetation mapping [polygons]</b> <ul style="list-style-type: none"> <li>o Class (SV/FO/SH/UV/HB)</li> <li>o Subclass (DE/GR/EV)</li> <li>o Modifier</li> <li>o Sub modifier</li> <li>o Naturalness (1-5)</li> <li>o Forest age (Y/M)</li> </ul> </li> <li>- <b>Vancouver and MV highwater mark [polygon]</b></li> <li>- <b>2013 CoV Hubs and Sites</b> <ul style="list-style-type: none"> <li>o Component (H/S)</li> <li>o Hectares</li> </ul> </li> <li>- <b>2013 CoV Biodiversity Zones [polygon]</b> <ul style="list-style-type: none"> <li>o Name</li> <li>o Area</li> <li>o Perimeter</li> <li>o Hectares</li> </ul> </li> <li>- <b>SEI revised CD [polygon]</b> <ul style="list-style-type: none"> <li>o SourceName</li> <li>o SourceDate</li> <li>o Jurisdiction</li> <li>o Location</li> <li>o Classification</li> <li>o Comp1Lgnd (Riparian/Nature Forest (ME)/ Young Forest, etc.)</li> <li>o Shape Area</li> <li>o Habitat_CD (Types: deciduous forest, coniferous forest, freshwater wetland, riparian, etc.)</li> </ul> </li> <li>- <b>1m contour lines [polylines]</b> <ul style="list-style-type: none"> <li>o Elevation</li> </ul> </li> <li>- <b>Lidar Data</b></li> <li>-</li> <li>- <b>Landsat Data</b> <ul style="list-style-type: none"> <li>o Band 7 – Shortwave Infrared</li> <li>o Band 6 – Thermal</li> <li>o Band 5 – Shortwave Infrared</li> <li>o Band 4 – Near Infrared</li> <li>o Band 3 – Red</li> <li>o Band 2 – Green</li> <li>o Band 1 – Blue</li> <li>o Natural</li> </ul> </li> </ul>
<p><b>City Data</b></p>	<ul style="list-style-type: none"> <li>- <b>2013 CoV natural forest [polygon]</b> <ul style="list-style-type: none"> <li>o Class (FO only)</li> <li>o Subclass (MX/DE/EV)</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Modifier</li> <li>○ Sub modifier</li> <li>○ Naturalness (1-5)</li> <li>○ Forest age (Y/M)</li> <li>○ Area</li> <li>○ Perimeter</li> <li>○ Hectares</li> <li>- <b>2013 cov terrestrial area [polygon; 1 only]</b> <ul style="list-style-type: none"> <li>○ Area</li> <li>○ Perimeter</li> <li>○ Hectares</li> </ul> </li> <li>- <b>2012 CoV lidar forest canopy (1000n2 only) [polygon]</b> <ul style="list-style-type: none"> <li>○ Area</li> <li>○ Perimeter</li> <li>○ Hectares</li> </ul> </li> <li>- <b>Canopy cover lidar 9m FME [polygon]</b> <ul style="list-style-type: none"> <li>○ Neighbourhood</li> <li>○ Area</li> <li>○ Clipped (yes/no)</li> <li>○ Shape length</li> <li>○ Shape area</li> </ul> </li> <li>- <b>CoV Biodiversity Hotspots [polygon]</b> <ul style="list-style-type: none"> <li>○ Name</li> <li>○ Hectares</li> </ul> </li> <li>- <b>Street Trees [point]</b> <ul style="list-style-type: none"> <li>○ Street name</li> <li>○ Neighbourhood Name</li> <li>○ Street Block</li> <li>○ Street side (Even, Odd, Median)</li> <li>○ Height range (0-10 for every 10 feet in height)</li> <li>○ Diameter (DBH in inches)</li> <li>○ Date Planted (some data seem suspicious, for example, a large number of trees through out the city is dated 20170903, while they looks pretty old)</li> <li>○ Planted area (B = behind sidewalk, G = in tree grate, N = no sidewalk, C = cutout, a number indicates boulevard width in feet)</li> <li>○ Root Barrier (Y/N)</li> <li>○ Curb (Y/N)</li> <li>○ Cultivar Name</li> <li>○ Genus Name</li> <li>○ Species Name</li> <li>○ Common Name</li> </ul> </li> <li>- <b>City Owned Properties [point]</b> <ul style="list-style-type: none"> <li>○ Address</li> <li>○ Type (capital fund/ property endowment fund, etc.)</li> </ul> </li> <li>- <b>Greenways [polyline]</b> <ul style="list-style-type: none"> <li>○ Name</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"><li>- <b>Bikeways [polyline]</b><ul style="list-style-type: none"><li>○ Name</li><li>○ Type (Off-Street Path/Shared Lane/Protected Bike Lane, etc)</li></ul></li><li>- <b>Building footprints 2009 [polygon]</b><ul style="list-style-type: none"><li>○ Top elevation</li><li>○ Base elevation</li><li>○ Height at Grade Level (i.e. Top elevation – base elevation)</li><li>○ Roof type</li><li>○ Area</li><li>○ Average height</li><li>○ Min height</li><li>○ Max height</li></ul></li><li>- <b>Property parcel polygons [polygon]</b><ul style="list-style-type: none"><li>○ Address</li><li>○ Site id</li></ul></li><li>- <b>Block outlines [polygon]</b></li><li>- <b>Park polygons [polygon]</b><ul style="list-style-type: none"><li>○ Park name</li><li>○ Park id</li><li>○ Park website url</li><li>○ Area (hec)</li></ul></li><li>- <b>Zoning districts [polygon]</b><ul style="list-style-type: none"><li>○ Zone name (RM-7/RS-1/M-2, etc.)</li><li>○ Category (one-family dwelling, two-family dwelling, multi-family dwelling, comprehensive development, etc.)</li></ul></li><li>- <b>DEM_2013.tif</b></li></ul>
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