arboreal urbanism

shasta mccoy

neighbourhood nodes masterplan : hastings corridor individual design

sustainable urbanism : the hastings corridor

ubc urban studio : fall 2008

Introduction

Cities in a physical sense may be understood as the extended bodies of the human species: the shape of these bodies being dictated by the processes and functions that support that organism. Like all living creatures, the city form is encoded in a replicable DNA or a fixed set of instructions that creates or should create the conditions necessary for life of the organism. As a North American urban species, we currently find ourselves in a position of self reflection: standing in front of a mirror revealing that our body is not creating the conditions for continued life, but may in fact be the prescription for our untimely end. At the very least, we are due for a rough go.

This realization provokes us to examine the set of instructions that are informing our cities, and seek solutions in the way of mutations of the urban DNA. Urban design in this paradigm becomes an exercise in genetic therapy where the real challenge is to develop ability to perceive as a species and respond appropriately to information in the form of environmental stimuli.

The difficulty with the evolution of the urban form, as with all organisms, is the chance that a mutation will render the creature worse off than before. It is likely this risk that inhibits any rapid evolution of the urban form. David Shane observes that “by bottling up urban change in... spatial pockets, urban actors can conduct utopian experiments without endangering the established disequilibrium of the larger system.” Shane suggests that if the experimental urban form is successful, then it may be replicated elsewhere, but in the truer sense of evolution, the success of a particular body type would, over time, naturally displace the older presumably less adapted form even in the absence of a cross-pollinating agent.

It is with a general faith in evolution to select an optimal form in which to propel our collective consciousness forward, that **Arboreal Urbanism** advances the principles set forth by the “Neighbourhood Nodes” master plan and offers a “microscopic” view into the genetic instructions for shaping a neighborhood. To achieve this end it is helpful to examine scraps of urban genetic material that appear to strengthen the urban physique, and recombine these concepts into a strategy for addressing the long block between Kensington and Sperling Streets on the Hastings Corridor.

“Neighborhood Nodes” Design Principles:

-Provide a variety of jobs
-Provide a diversity of housing options
-Create walkable neighborhoods
-Increase mods share of transit, walking, and cycling
-Create neigbourhood nodes along the corridor
-Use green infrastructure

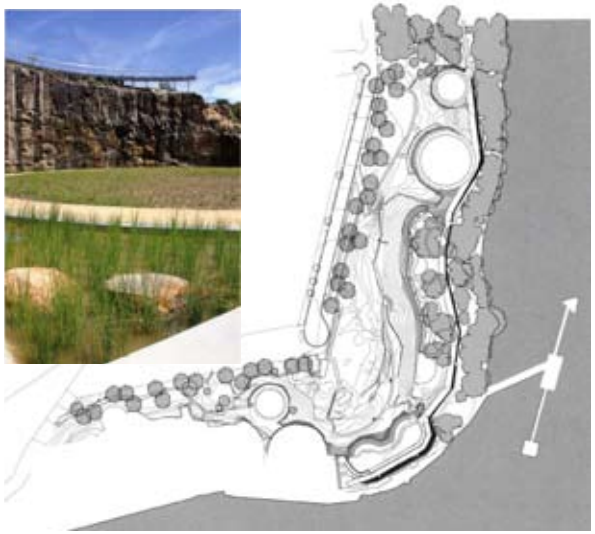
The bit of landscape that **Arboreal Urbanism** experiments with is an oil refinery that is currently being decommissioned located north of Hastings Street. In the context of an abandoned brownfield, Sue McNeil notes that “designing developments that are consistent with good principles of urban design is a relatively straightforward task.” The blank-slate opportunity presented by this site is an ideal petri dish in which to test design responses in an otherwise already saturated urban condition. The former Shell oil refinery presents itself as a landscape in need of healing and a testing ground for a set of design principles that could potentially hold answers for healing the physical urban form. While the brownfield offers designers a path of least resistance in terms of community objection to development, the onus remains to retain some remnant of the historic land-use so that the evolutionary sequence of the place is not erased entirely. One solution to this has been to weave a recreational program into the artifacts of the former industrial activity. The following precedents highlight recreational landscapes where remains of an industrial history remain to interact visually and physically with landscape processes and human activities.

McNeil, Sue, & Deborah Lange. 2001. Engineering urban brownfield development: examples from Pittsburgh. Manufactured Sites. New York, NY: Taylor & Francis Group.

Shane, David G. 2005. Recombinant Urbanism: Conceptual Modeling in Architecture, Urban Design, and City Theory. Chichester, West Sussex: John Wiley & Sons Ltd.

precedents

British Petroleum Park, Sydney, Australia



On this site, remnant industrial fragments are repurposed for new recreational use. Footprints of the old petroleum storage tanks are preserved and become a focal feature of the park. The bio-remediation of the site contaminants is accompanied by a restored native coastal forest and a retrofitted stormwater infiltration system.

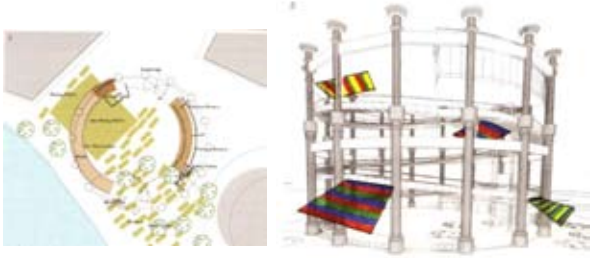
Margolis, Liat, & Alexander Robinson. 2007. Living Systems and Technologies for Landscape Architecture. Basel, Switzerland: Birkhauser Verlag AG.

Union Park, Oakland, California

This park concentrates the recreational activities of a community on a former shipyard of the San Francisco Bay. A combination of reused industrial artifacts and new constructions with a distinct industrial aesthetic fulfill the programmatic needs of the waterfront.

Benitez, Christina P. ed. 2007. Urban Landscape: NEW Tendencies NEW Resources NEW Solutions. Barcelona, Spain: Loft Publications.

Flux Park, London, UK



This scheme for the redevelopment of an abandoned railroad line near Kings Cross Station recycles old industrial forms in a new town square and enlivens the space with a flexible programmatic emphasis on arts and culture.

Ryan, Zoe. 2006 The Good Life: new public spaces for recreation. New York, NY: Van Allen Institute.

Burnaby Maps

Goal: Demonstrate how an abandoned industrial site, and auto-centric retail center could be redeveloped as an ecologically restored, transit-oriented community node that capitalizes on the opportunities inherent to the Hastings Street corridor.

Objectives:

-Establish a community armature that integrates the native coastal forest into the urban fabric

-Daylight streams & restore hydrological function to watersheds.

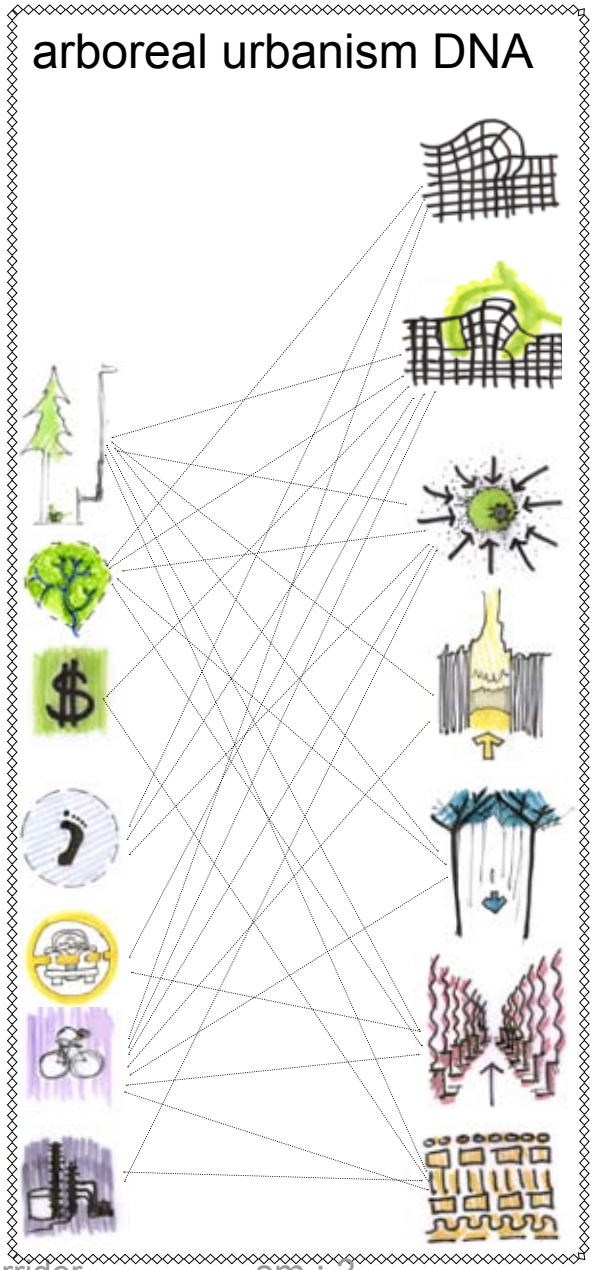
-Save community money on lifecycle cost of infrastructure

-Locate all residents within walking distance of key amenities: transit, shopping, school, jobs, and green space thereby reducing need for automobile trips & ownership.

-Calm automobile traffic

-Facilitate pedestrian and cyclist movement & experience

-Interpret the industrial history of site by integrating the ruins of the oil refinery into the recreational program of the community



Design Principles:

-Wrap interconnected street grid around landform

-Allow streams to penetrate into community & inform land use

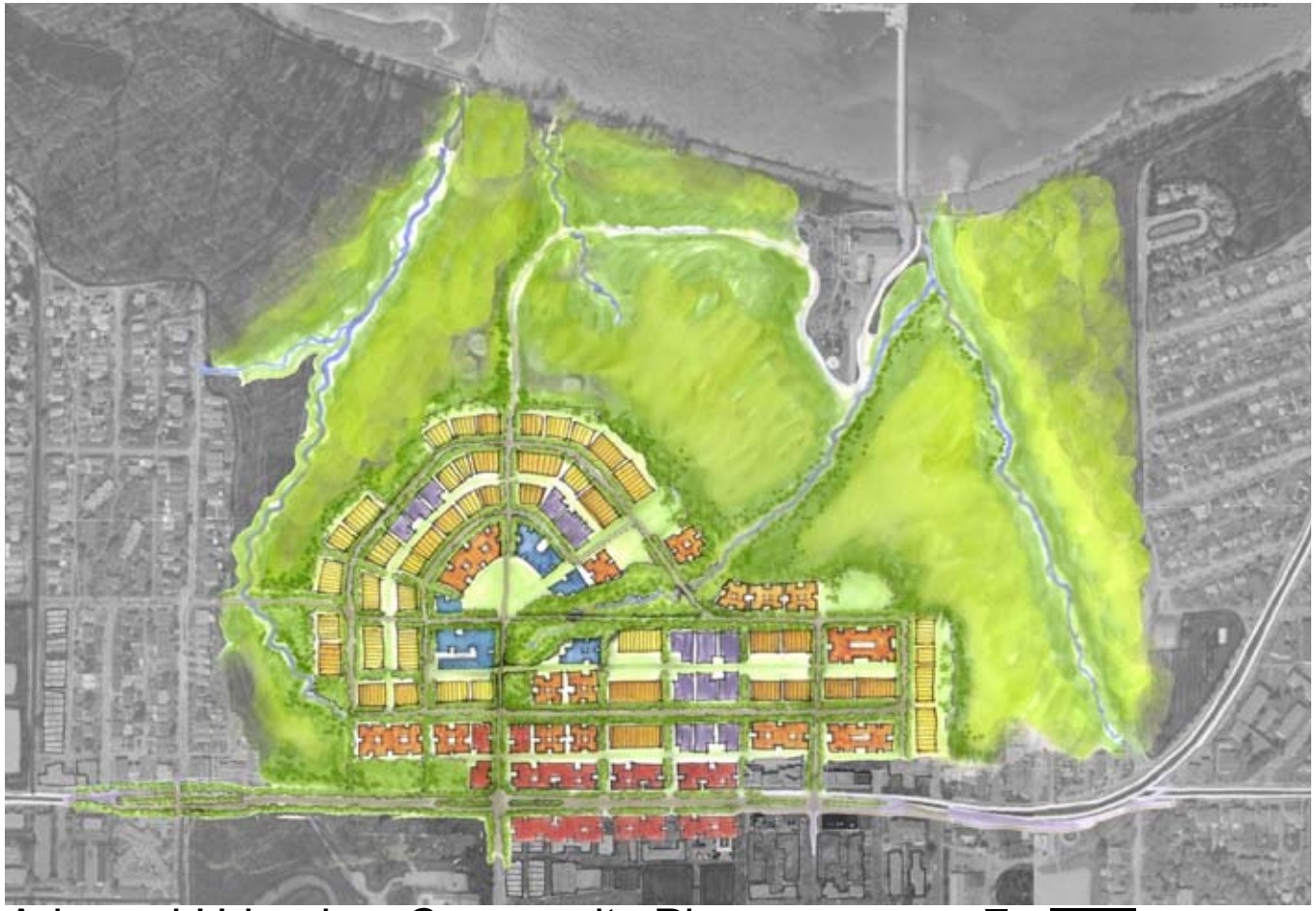
-Focus community around important natural and historical features

-Strategically use sunlight penetration to draw community together & instigate social interaction

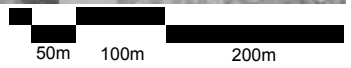
- Provide vaulted overhead protection for cyclists & pedestrians

- Use side-friction to reduce automobile speeds

- Vertically layer uses of built form

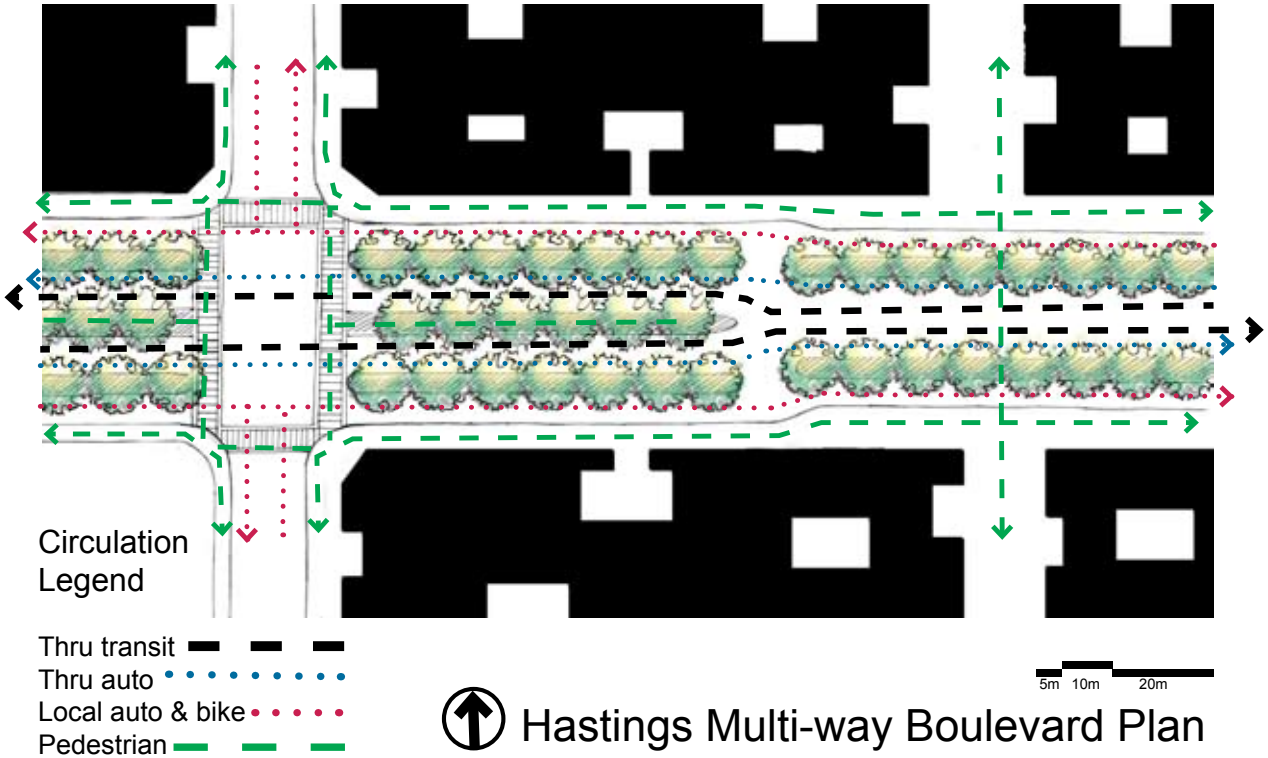


Arboreal Urbanism Community Plan



This scheme for the redevelopment of the former Shell petrol storage facility is characterized by the reintegration of the coastal native forest into the community rather that pushing the forest out to the periphery of the urban body. This move allows for the restoration of a kilometer of streams that were previously buried during the industrial land-use. By accommodating the large forest trees into the streetscape, the typical urban condition of stormwater runoff is essentially eliminated, further contributing to the health of the community streams. The character of Hastings is redefined as a canopied boulevard with wide pedestrian walks to support a thriving commercial district. In the interior of the site, the neighborhood focuses itself around the restored stream, and a sweeping green surrounded by civic buildings. This green gives way to a view of the old refinery towers that are repurposed as recreational elements. About 1000 individuals can live here, and enjoy a short commute to over 500 jobs while enjoying a high quality of life with access to the forest right outside every door.

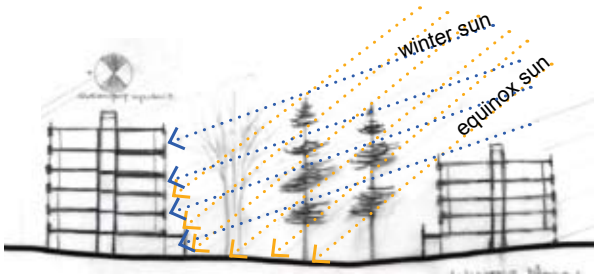
hastings street gets a life



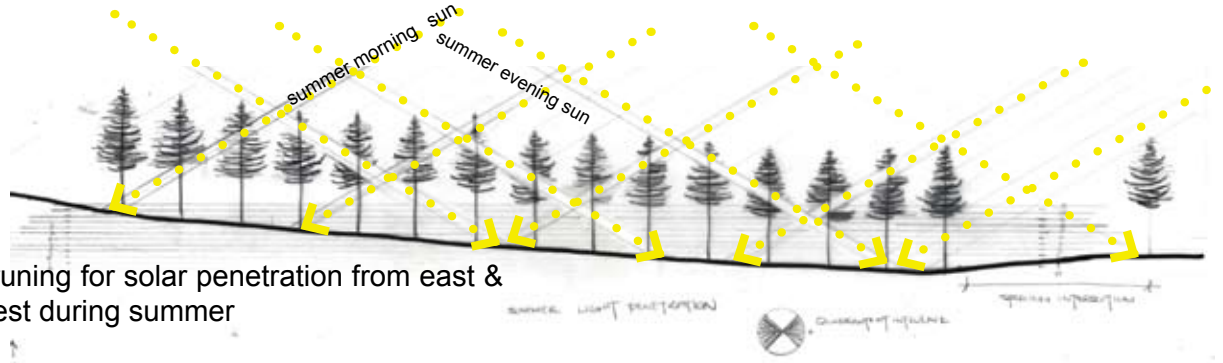
Hastings Multi-way Boulevard Plan

Within the long block between Sperling and Kensington Streets, lies the unique possibility to reshape Hastings Street as a multi-way boulevard. In response to the necessary transition from the high-speed condition of the Barnet Highway to the east, Hastings Street needs to make a strong statement here about its function as a neighbourhood main street. In the absence of such a signal, automobile traffic disregards the community and continues at speeds that dramatically erode the pedestrian experience, and prevent the success of a commercial district.

While the large trees provide a delightful natural canopy for pedestrians and cyclists, side friction for slowing drivers, and permeable areas for infiltrating stormwater, there remains the possibility of the canopy being oppressive by blocking sun In response to this, a pruning strategy is employed that strategically invites shafts of sunlight into the corridor.



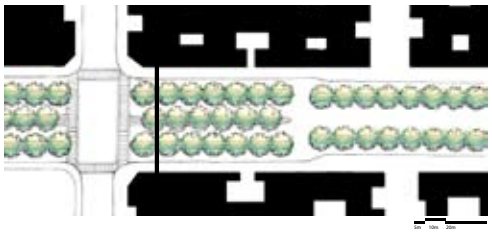
Pruning for solar penetration from south during equinox & winter solstice

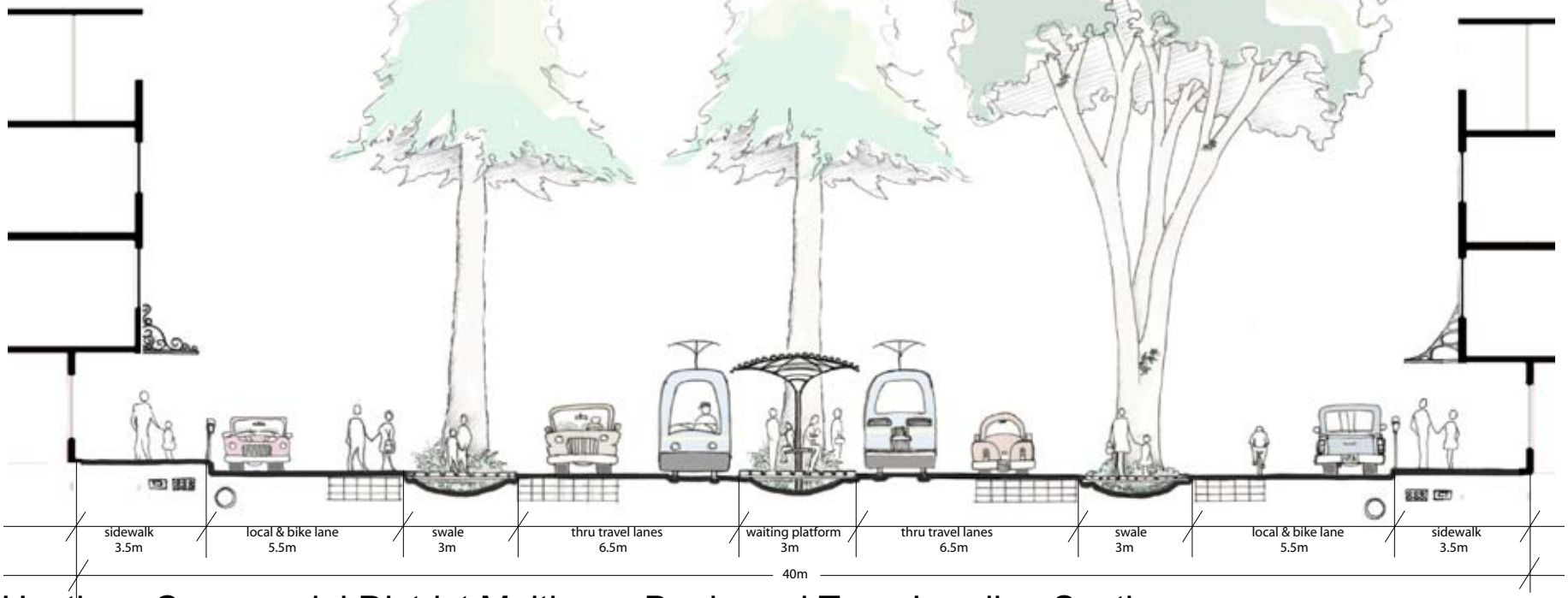


Pruning for solar penetration from east & west during summer

hastings street reborn

In the section-view, it is possible to visualize the altered scale of the streetscape that Arboreal Urbanism creates. Gone are the 15-20 foot flowering cherry trees common to Vancouver's streets, and they are replaced with the majestic cedars, hemlocks and big-leaf maples that create a sense of being in a cathedral. The root health of these big trees is protected from compaction by the use of permeable asphalt, infiltration swales, and Silva-Cells™ that give the carriageway necessary structural characteristics to accommodate traffic. This multi-way bouldvard acts as a giant sponge and contributes to a restores hydrological regime and healthy streams.

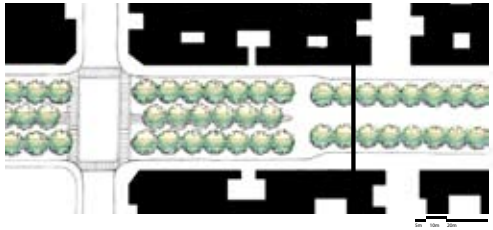


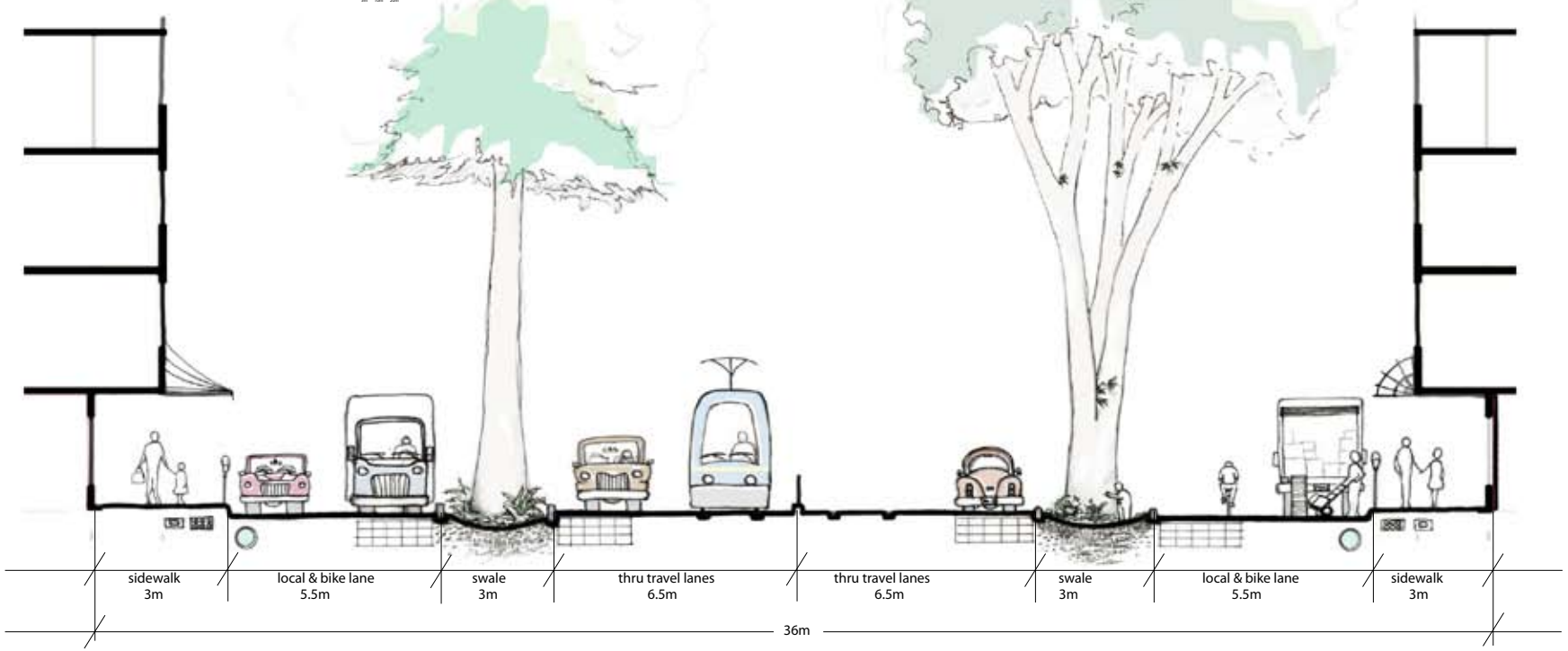


Hastings Commercial District Multi-way Boulevard Tram Loading Section

hastings street reborn

The re-allocation of two lanes of the carriageway to a light rail system is a necessary adaptation to transition the region from an automobile-oriented lifestyle to a transit oriented one. The key, however to this transition is that amenities are distributed throughout the discreet neighborhoods to make the car less necessary. Add to this, a streetscape that explicitly favors alternative modes of travel, and a change in our auto-centric behavior becomes more and more imaginable. Without these radical actions it is difficult to imagine the automobile ever receding from its prominence in North American cities. A street with less cars holds a great deal of potential as an exciting and activated public realm.





Hastings Commercial District Multi-way Boulevard Mid-Block Section

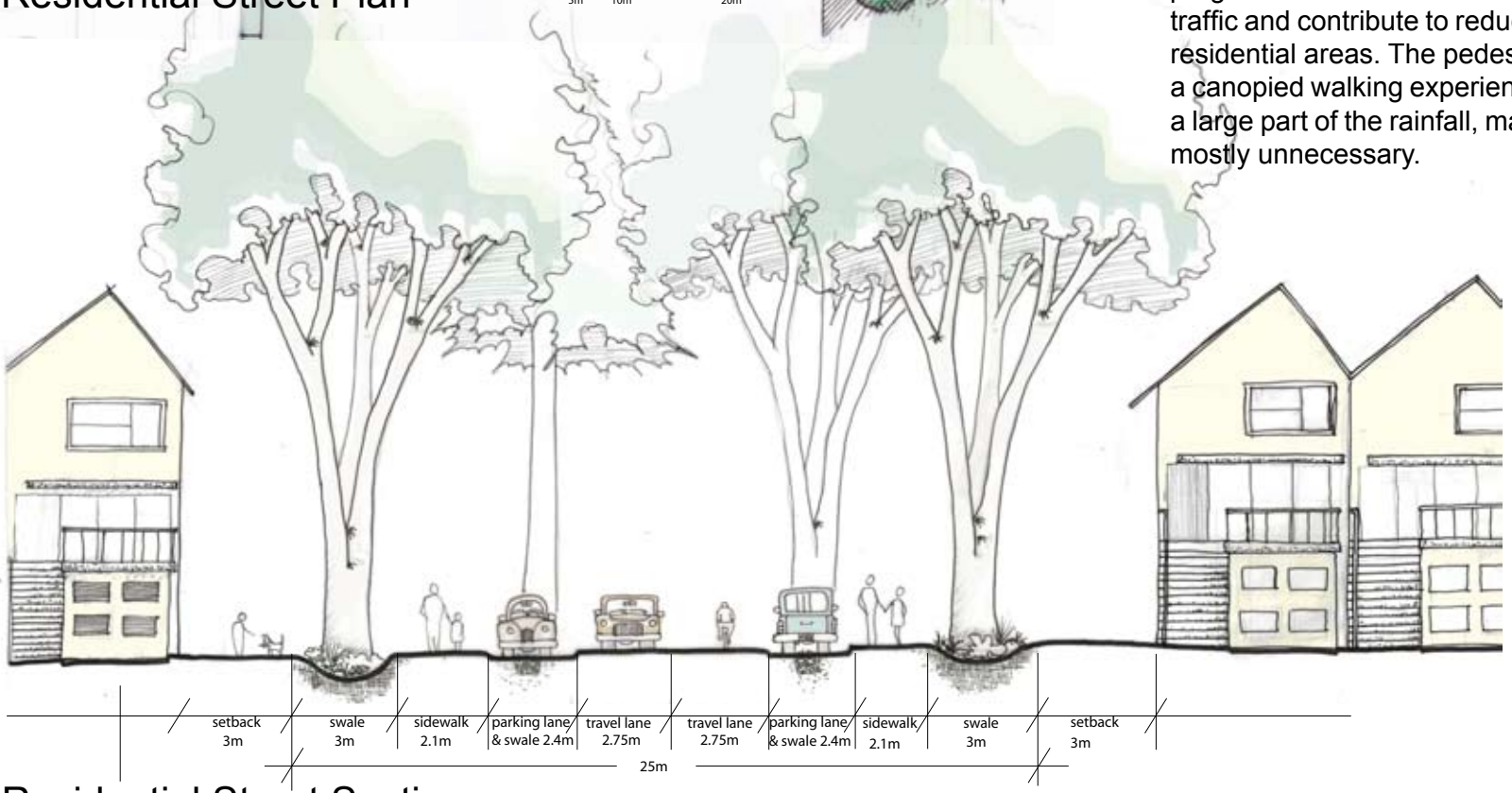
Hastings & Kensington Multi-way Boulevard Intersection

The intersection in this street scheme becomes an attractive gathering place for the community, as the tree canopy gives way to a sunny corner with local shops and cafes. Without storm grates to catch bicycle wheels, and the elimination of puddles with permeable pavement, the street is attractive to cyclists year-round.

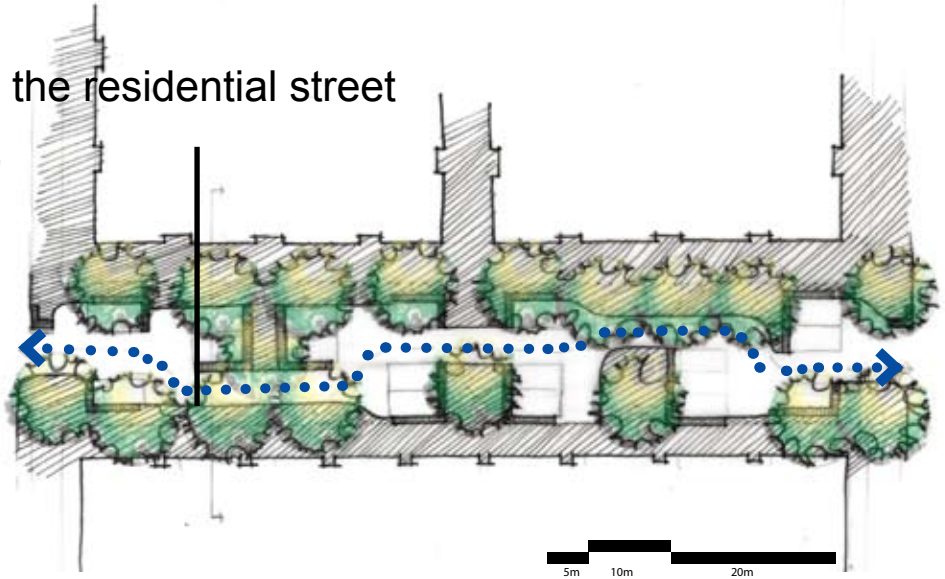
the residential street

To the north of Hastings, the coastal forest continues to dominate the streetscape. Two-way traffic movement is sandwiched by an alternating condition of parked cars, and large native trees in a plant 3/park 3 pattern. These programs create side friction for the thru traffic and contribute to reduced speeds in the residential areas. The pedestrian is treated to a canopied walking experience that intercepts a large part of the rainfall, making an umbrella mostly unnecessary.

Residential Street Plan



Residential Street Section



Arboreal Urban Woonerf Plan

A borrowed strategy from Europe, the woonerf restricts the thru movement of the automobile while freeing up space for spontaneous play and interaction in the public realm. This woonerf is canopied by the large native trees, and infiltrates stormwater and contributes to the health of the local watershed.

Arboreal Urban Woonerf Section

Community Building Types

Total Population: 965 people

Job Capacity: 520

In order to accommodate the projected doubling of the population in the Greater Vancouver region, it is necessary to provide a diversity of housing options. This scheme allows for residents from diverse economic situations to live together and enjoy a short commute as many jobs are located within a five-minute walk

Multi-use on corridor 45 du/acre

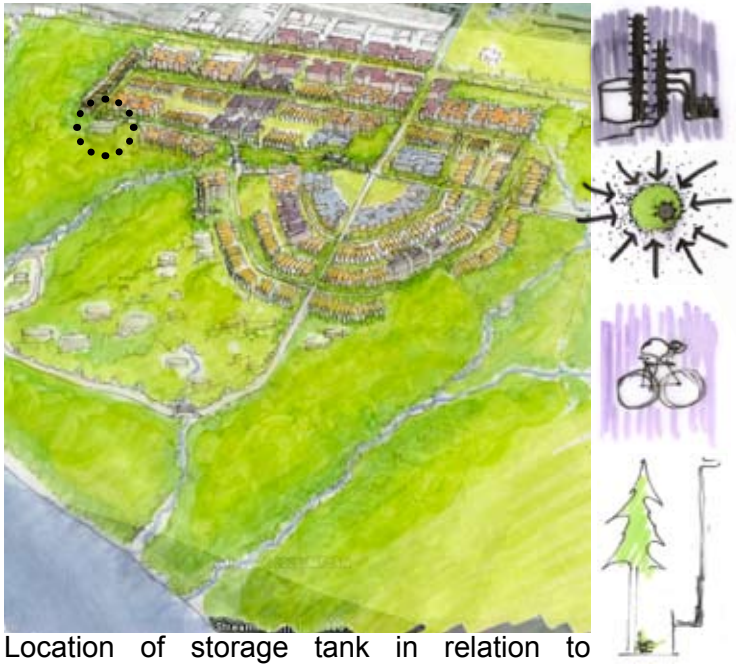
4-story apartments 65 du/acre

Insustrial & loft residences 35du/acre

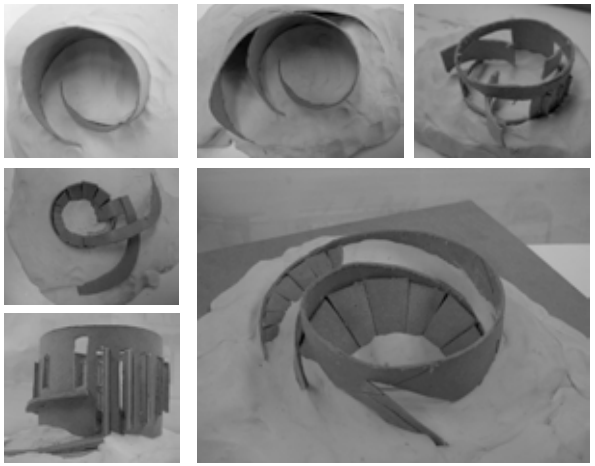
Civic w/attached commercial & office

Townhouse w/attached workshop 22du/acre

Double-stacked townhouse 35du/acre

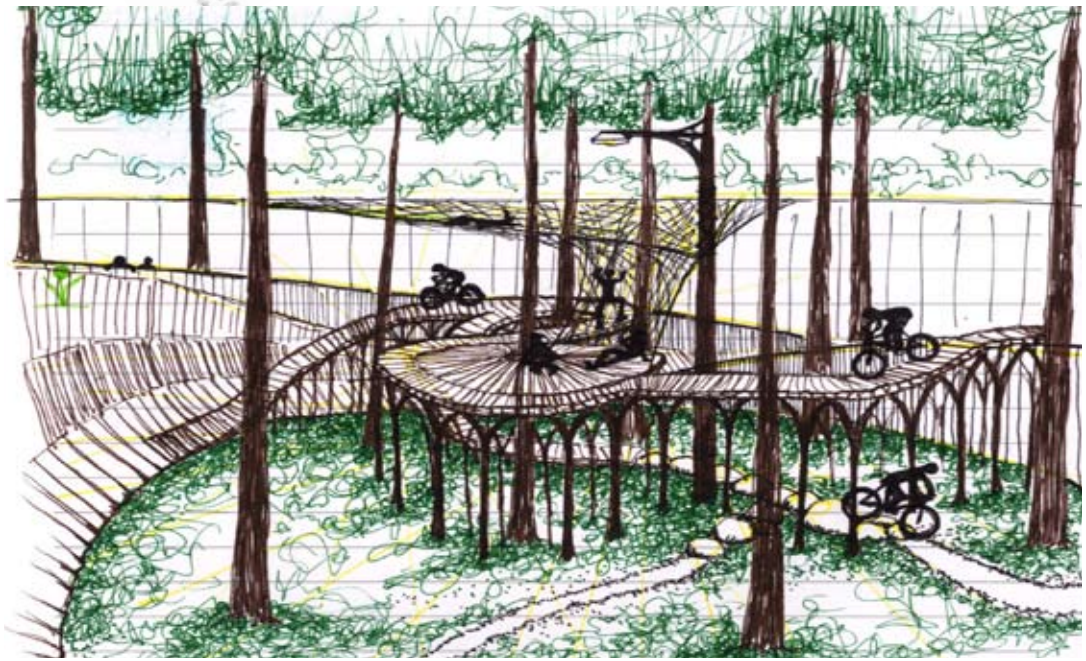


Location of storage tank in relation to community

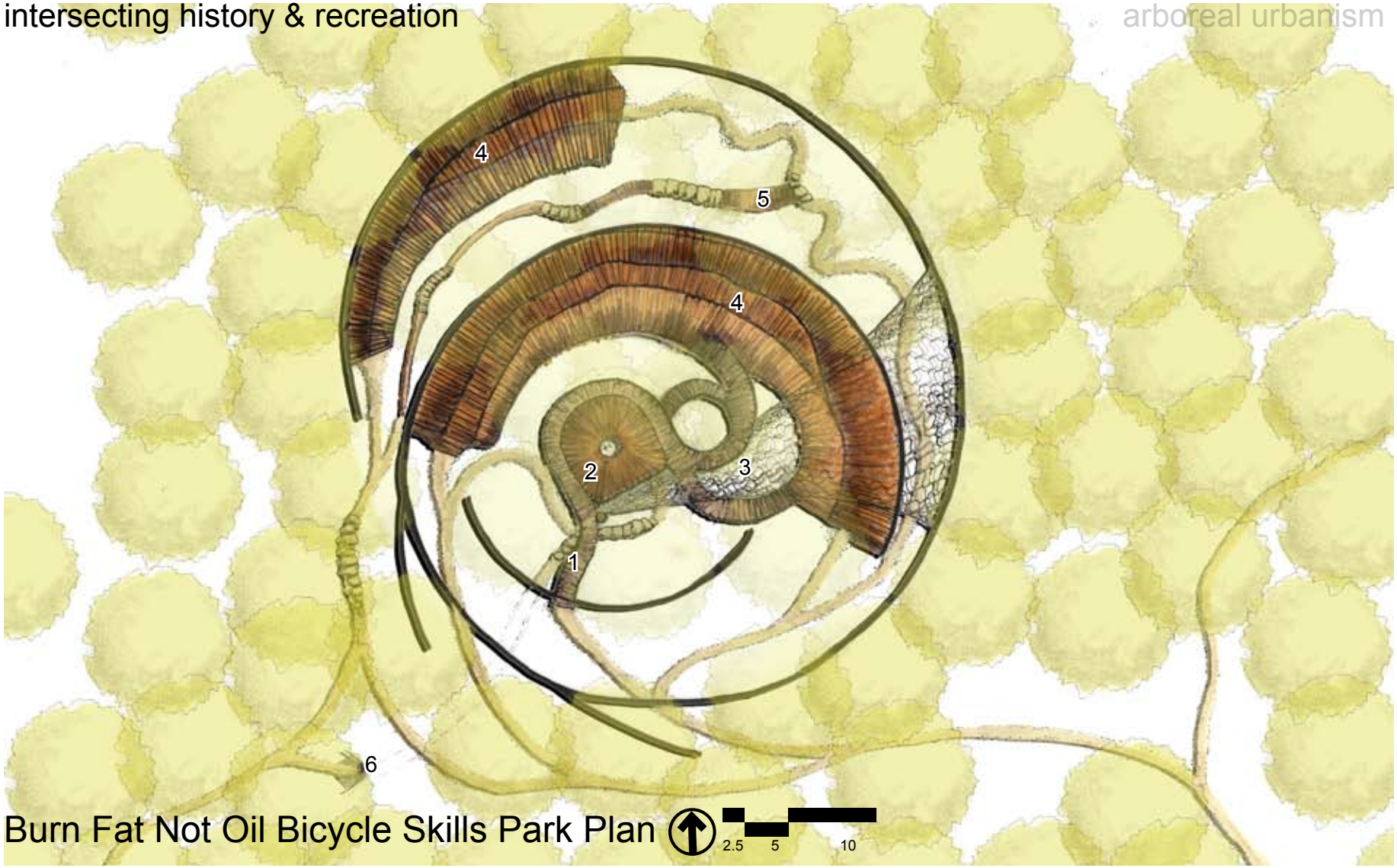


Exploratory models test strategies for deconstructing the storage tank

In the future, is will become increasingly important to provide alternative recreational opportunities for community members. Recreation has the potential to be more than just fun, it can be the vehicle for interpreting the industrial past of a place. In this project, the remains of an petrol storage tank are pealed apart and become the armature for a bicycle skills park in the tradition of British Columbia's freeride trail building style. In repurposing this industrial artifact, we begin to fundamentally reshape our relationship to the oil industry itself. This scheme was developed with the use of quick exploratory models, and loose conceptual sketches.



Experiential concept sketch of bike park



Burn Fat Not Oil Bicycle Skills Park Plan

1. Big bridge
2. Treehouse
3. Giant Hammock
4. Wall ride
5. Spine to Skinny Trail
6. Tunnel

The Burn Fat Not Oil Bike Park transforms the old storage tank into a freeriding feature that allows a progressive acquisition of skill and accommodates riders of diverse abilities and spectators as well. The native forest is restored even within the tank itself providing a canopy for use of the park in all weather conditions.