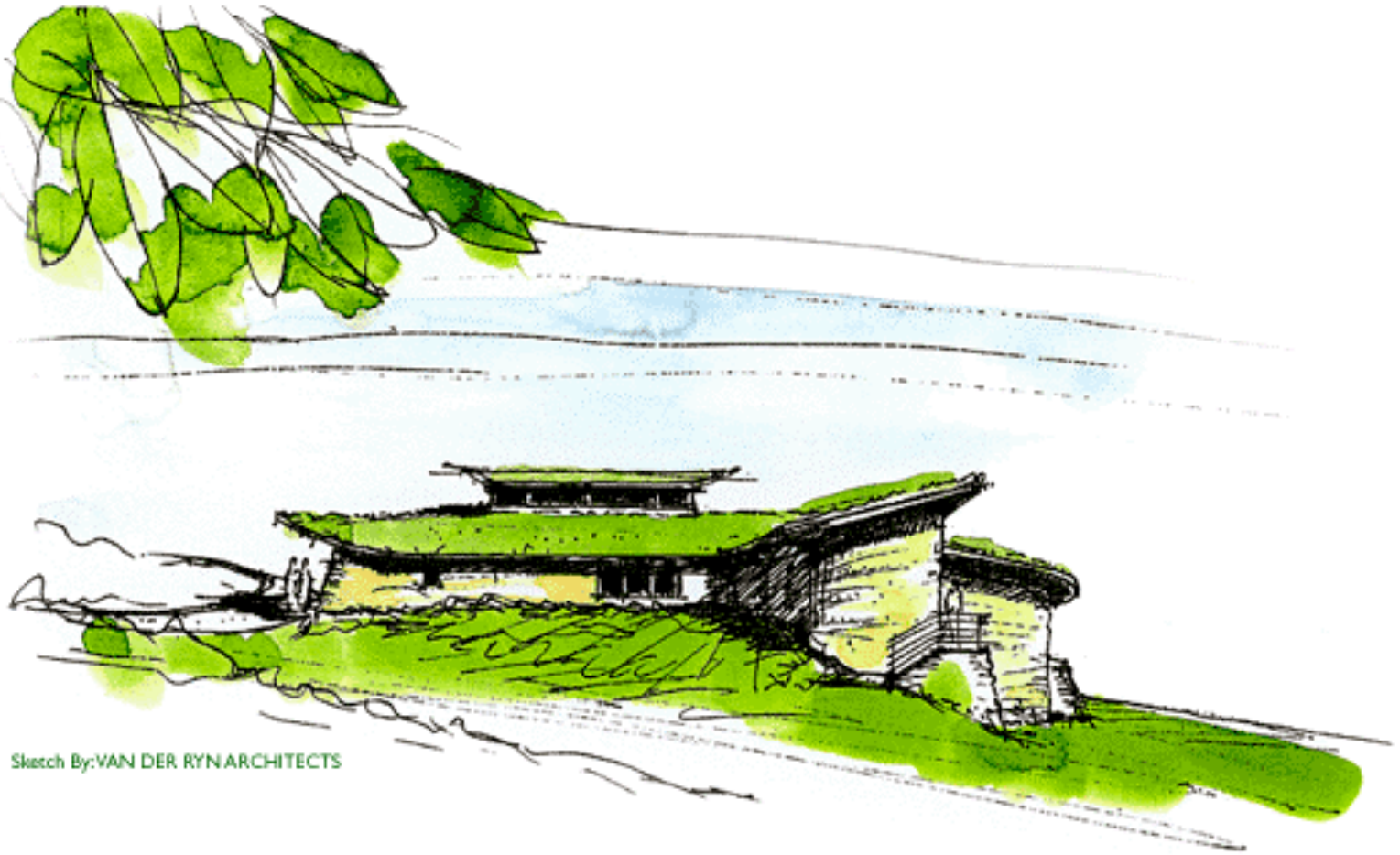
Green Roof Technology

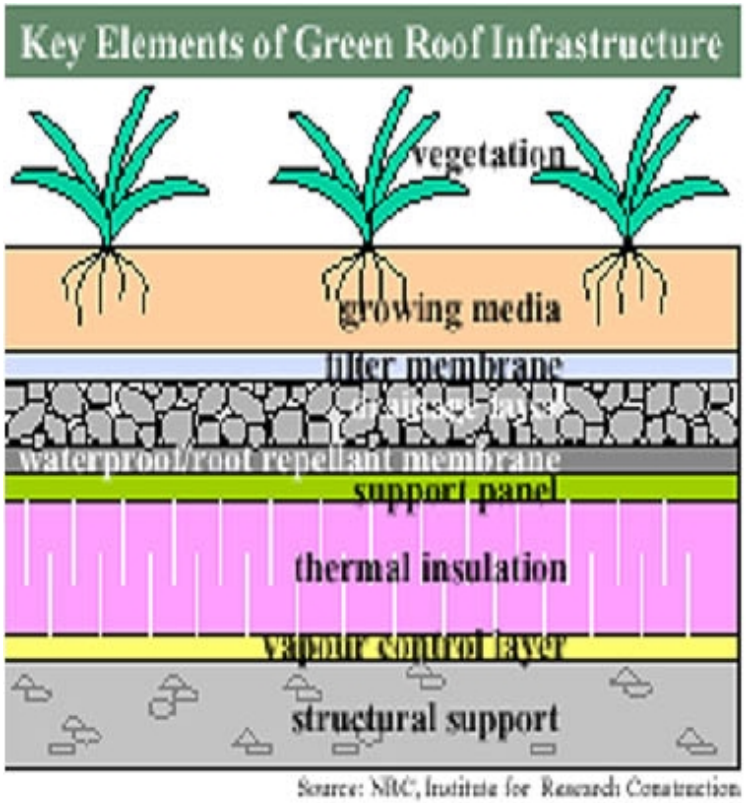
Stormwater retention system that is designed to support green space on top of a human made structure



Greenroof Technology

Green roof infrastructure differs from containerized rooftop because it is part of the roofing system.

The elements include: a special waterproof and root repellant membrane, a drainage system, a lightweight growing medium and appropriate plants.



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Canadian Greenroofs

Ryerson Polytechnic, Toronto

Vancouver Public Library

Solar Aquatics

Greenhouse-based water treatment system

System that treats wastewater using natural bio/geo/chemical processes common to streams, rivers and marshes

Greywater Recycling

"Phosphate rich soaps and mild cleaning chemicals (greywater) are considered pollutants because they accelerate algae growth in the waterways, which in turn leads to oxygen depletion for fish and other marine lifeforms. The beauty of this "problem" is that these same phosphorous, nitrogen, potassium and protein "pollutants" are excellent sources of nutrition when you reuse greywater for irrigation of fruit trees, landscaping, and gardens (planter beds)."

The Natural Home Building Source
www.thenaturalhome.com/greywater.html

Local Greywater Recycling

CK Choi Building, UBC

- Utilizes subsurface constructed wetland to filter and clean water naturally with the help of plants and microbial life.
- Site also includes a 7000 gallon cistern to collect rainwater to irrigate the landscape during the summer.
- Water conservation achieved through low water use fixtures and composting toilets throughout the building.

Geothermal Heating

Burnaby Mountain Secondary School

Costs usually recovered within 5 years, residential set ups now increasingly feasible. One incentive is possible rebates from BC Gas.

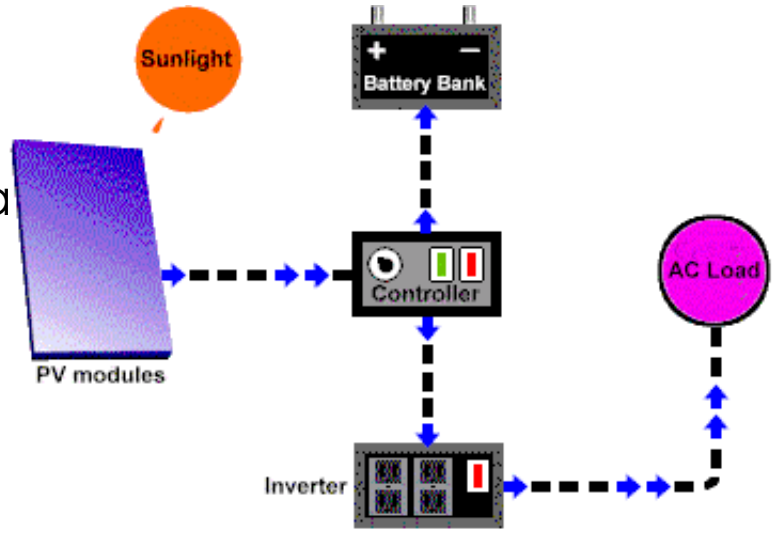
Ground source heat pump
Extracts heat from and rejects
heat to the ground through 24 km of pipe below play fields.

Photovoltaics

Converting sunlight directly into electrica energy

Essentially a solar powered battery that uses light to fuel it

**CK Choi is designed to accommodate this technology but is not yet equipped with the cells.



Oberlin College, Ohio

Mixed Use Buildings

Capers, on West 4th Avenue

First commercial use of ground source energy in Western Canada

Five-storey mixed use including ground floor retail, second floor offices, apartments on the 3rd and 4th floors

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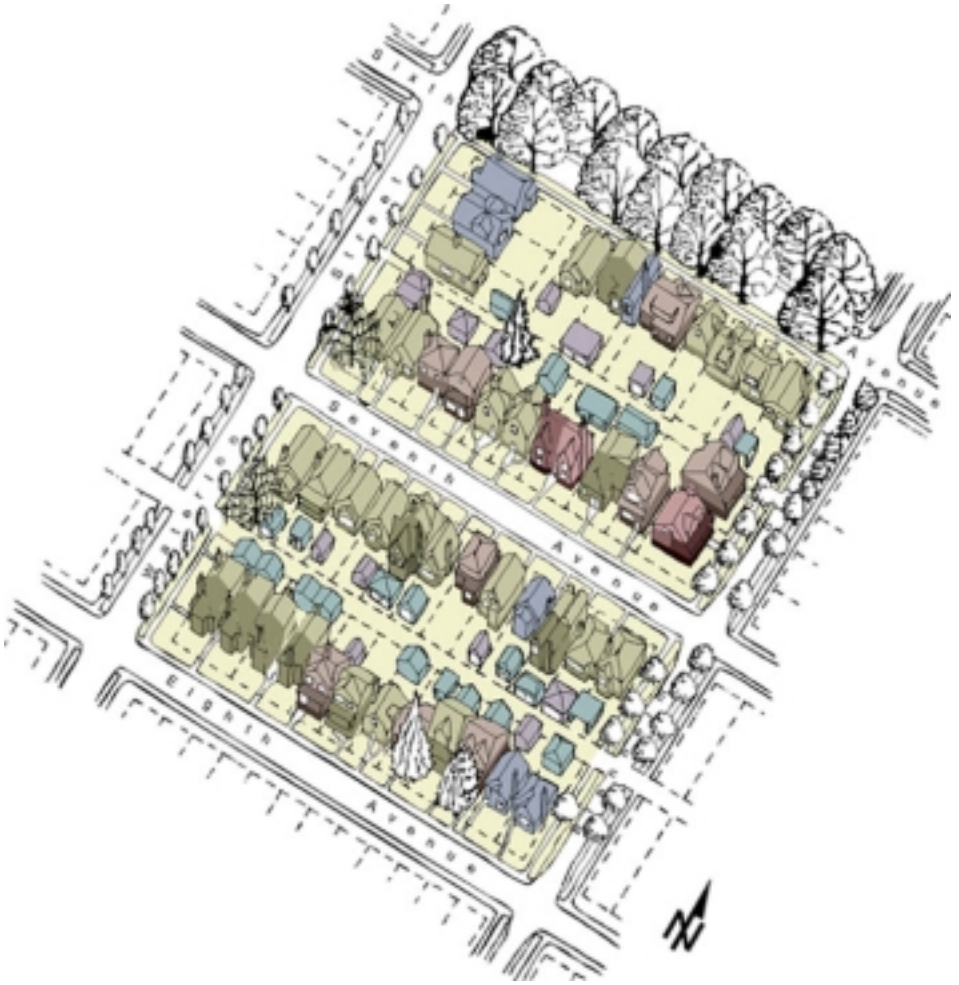
Mixed Housing Types

Ground oriented

Preserve residential character

Rental Units


Seventh Avenue
Eighth Avenue

Secondary-Suite Options

- Mortgage helper creates mix of incomes
- This option also makes home ownership more feasible
- Recognizing secondary suites allows infill with potential little change to infrastructure

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Battling the process, working within and around existing zoning and regulatory policies

Challenges to Implementation

Region

- Lack of sustainable focus in policy making
- Funding cuts to social programs

City

- Existing Infrastructure supports traditional methods (out-dated engineering standards)
- Government liability (floods, infrastructure failure)
- No incentive for developer innovation

Neighborhood

- Alternative development not in line with social norms
- Lack of knowledge about possible alternatives
- Lack of trust in infrastructure

Personal

- High front end costs for implementation
- Perception of high maintenance
- Intuitively not aesthetically pleasing to many

Strategies Currently in Place

- CBIP Program
- GVRD shift to Sustainability
- LEEDS BC Initiative

Small Scale Recommendations

Options for Increased Environmental Sustainability

- Rainwater collection
  - ranging from basic outdoor use in gardens etc. to indoor drinking water depending on the degree of infrastructure desired

- Composting
  - simple backyard composting pile to self-contained mechanical composting systems.

- Rooftop gardens
  - utilizing unused outdoor space (decks, rooftops etc) for vegetables and other plant growth.

- Reducing water use for toilet
  - ranging from replacing standard toilet with a composting/low flow toilet to adding weight (brick, water bottle) to toilet tank.

Small Scale Recommendations

Options for increased Social Sustainability

- Encourage Housing Mixture in Neighbourhood
  - ranging from secondary suites to higher density infill development

- Participate and Encourage Use of Community Gardens
  - ranging from organizing a new gardens to increasing the use of existing plots.

- Focusing spending on local shops
  - creating stronger ties between the commercial and residential community, and secure local sources of products for the long term.

- Help to Build Capacity with the Neighbourhood
  - utilize community centres etc. as a area to exchange skills and knowledge for community improvement (language skills, facilitation skills etc.)

Policy Recommendations

•Work with LEEDS BC (or similar policy framework) to support Sustainable building practices at all levels of government

•Assess impediments to sustainable building practices and create programs such as tax incentives, density transfer and bonus systems to alleviate those impediments

•Use a full cost accounting approach in calculating infrastructure costs

•Include sustainability themes in visioning workshops

•Rezone incrementally to accommodate housing diversity to accommodate the needs of all ages and affordability

•Provide adequate special needs housing for seniors and disabled persons

Residential Building Form Recommendations

Commercial Building Form Recommendations

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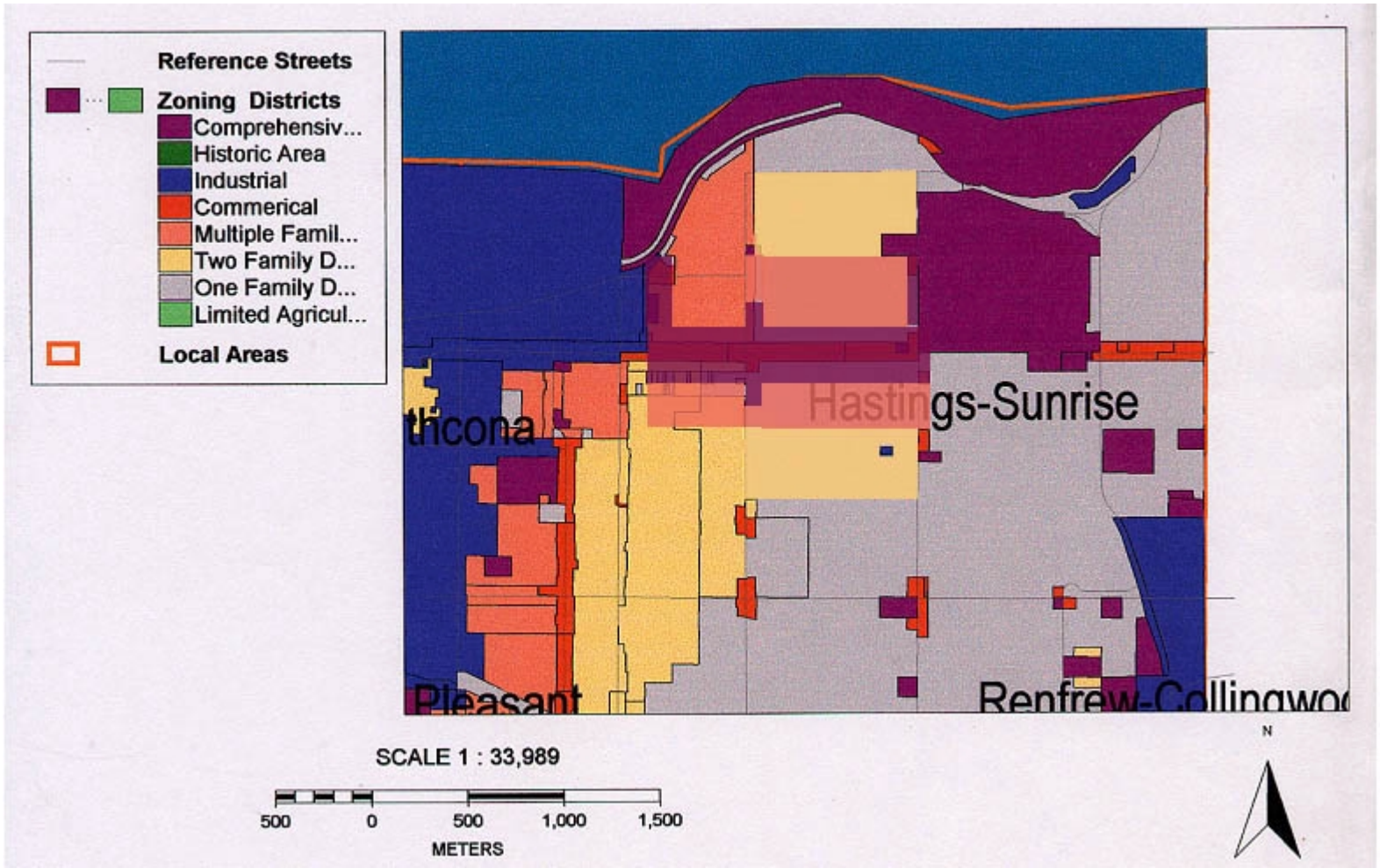
Proposed Zoning



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