Introduction

- The District of Squamish’s “Bridging to the Future” report identified several “catalyst” projects.
- One of the proposed catalyst projects is the creation of a SMART GROWTH BLOCK or SUSTAINABILITY BLOCK
- It is an extension of the recent Smart Growth on the Ground Concept Plan - it is proposed that a specific block (or cross-section of blocks) be redeveloped as a showcase of the many design innovations for streetscapes, landscapes, and technologies.
The Smart Growth (Sustainability) Block is:

- intended to act as a catalyst for smart growth development in Squamish by exploring and eventually implementing examples of innovative infrastructure, urban design and energy efficiency initiatives at the block scale as well as delivering more pedestrian-friendly streetscapes and building design.
- likely to incorporate and could become the showcase for other CEP sub projects such as District Energy, Renewable Energy/Electricity, Building Energy Efficiency, Transportation Hub as well as smart growth concepts such as pedestrian friendly streetscapes, parking management, alternative fuel supply etc.
- intended to provide learning opportunities for District of Squamish (DoS), landowners, developers, consultants and other stakeholders and provide information for DoS staff and key stakeholders about the challenges and opportunities for applying smart growth, green building and sustainable energy principles to a block in Squamish that can be applied more broadly.
- intended to help advance Kyoto targets and the District’s One Tonne Challenge. This will require a profound transformation in urban design and lifestyle expectations for new and existing residents - this catalyst project can demonstrate the allure of mixed-use, energy-efficient, pedestrian-friendly living in Squamish.
- a showcase of design, policy and technology approaches

Objectives

- Collaborative learning between the District, landowner/developer, utilities and technical consultants
- Improved environmental, social and economic performance
- Reduced operating costs
- One time and on-going educational opportunities
- Integrated design
- A project that all involved can be proud of
- A catalyst for improved development and design
Candidate Sites - Blocks 41, 44, & 45

Views of the sites
Site Selection

- The candidate sites were selected for a number of reasons:
  - Brownfield site in Downtown Squamish
  - Developer willing to explore concepts and ideas of sustainability block
  - Selected blocks are in a fairly advanced state of planning (timing right)
  - Opportunity for higher density/mixed use
  - The blocks are “Gateways” to the Peninsula and therefore have a high profile
  - Findings would be applicable to other oceanfront/downtown sites

- The Westmana Development Corporation, which has extensive land holdings on the Squamish Oceanfront Peninsula, has agreed to work with the District of Squamish to explore the idea of the Sustainability Block on one of their land parcels:
  - Block 41;
  - Block 44; or
  - Block 45.

- The exercise is exploratory - the ideas generated could usefully be applied to other blocks and other developers/landowners in the Downtown or Oceanfront Peninsula.
Current Plans

Challenges & Goals of Sustainability

Address these things:
- Climate Change / Air Quality
- Fossil Fuel & Energy Supply
- Waste / Resource Scarcity
- Water Quantity/Quality Supply
- Ecosystem Damage
- Food Supply / Quality / Security

- Reduce Emissions
- Use Renewable Energy / Efficiency
- Reduce Waste / Recycling
- Better Water Management
- Ecological Design / Protection
- Organic / Local Supply

While Maintaining or Enhancing:
- Economic Prosperity / Viability
- Social and Community Health
- Mobility

- Diverse, Local, Prosperous Economy
- High Individual and Community Health
- Convenient, Comfortable Transportation
Levers for Change - Key Elements of the Sustainability Block

- Location and Context
- Density and Mixed Use
- Pedestrian Oriented Street Design
- Alternative Transportation
- Parking
- Building Performance
  - Energy efficiency
  - Water and liquid wastes
  - Materials, solid wastes, durability
  - Indoor Environment
- Energy Supply - e.g. District Energy System, Renewables
- Multi-purpose open space design
- Economic Development
- Learning opportunities
- Building Operation and User Behaviour

Combining these in a “Sustainability Matrix”

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Location and context

Density and Mixed Use

Driving vs Residential Density

11 upa

222 upa
Density, Driving and Transit Use:

- Denser communities have less SOV's (single occupant vehicles)
- Denser communities use transit more

Source: Hotzclaw et al., 2002

Pedestrian Oriented Street Design
Alternative Transportation

Parking

- Underground
- On street
- Standards
Energy Efficient Building Design

Energy efficient building envelope - White Rock Operations Building, White Rock, BC (LEED Gold)

Mountain Equipment Co-op, Winnipeg, Manitoba (LEED Gold)

Natural lighting, Solar orientation

Insulation - Green Roofs

Energy Supply - District Energy System

District Heating Schematic
Water and liquid waste management

- Living machine wastewater treatment
- Rain garden
- Low-flow fixtures and metering
- Xeriscaping

Open Space Design
Materials and Solid Wastes

- Low VOC Materials
- Convenient Recycling
- Composting
- Construction Waste Management

Economic Development
Building Operation and User Behaviour

Learning opportunities
Sustainability Block Precedents

Built
- Caper’s Block - Vancouver
- BedZED, London, UK
- Mole Hill, Vancouver

Under Development
- Dockside Green

Caper’s Block, Vancouver

- Context and Location
  - West 4th Avenue, Vancouver - urban high street
  - Redevelopment of a former auto dealership
- Density and Mixed Use
  - 2.5 FSR
  - First floor - ground-oriented retail
  - Second floor - offices
  - Third/fourth floors - residential
- Pedestrian Oriented Street Design
  - Pedestrian scale
  - Narrow 25 foot bay storefronts to create pedestrian interest
  - Street furniture in courtyards for rest and people-watching
  - Street front retail continuity
Caper’s Block, Vancouver

- **Alternative Transportation**
  - Fine-grained pedestrian connections through the block
  - Located on frequent-service transit route
- **Parking**
  - Underground pay parking & on-street parking

- **Building Performance**
  - Filtered water system
  - Garbage recycling program
  - Double-wall rainscreen for durability & noise reduction
  - Courtyard light wells provide residents with views and sunlight
- **Energy Supply**
  - Geothermal energy - ground source heat pump for heating & cooling
  - High-efficiency gas fireplaces
- **Economic Development**
  - Anchor tenant - Capers Market
  - Retail
  - Offices
Caper’s Block, Vancouver

1. Context and Location
   - 1.7 hectare site close to downtown London
   - Brownfield redevelopment - former sewage treatment facility

2. Density and Mixed Use
   - site includes 82 residential units and 2500m2 of commercial space and live-work units

3. Pedestrian Oriented Street Design
   - Pedestrian-only mews separating buildings
   - Parking located adjacent to the local street around the perimeter of the site
   - Slow speed limits, increased lighting, & creative design

BedZED, London, UK
**BedZED, London, UK**

**Alternative Transportation**
- Cycling promoted through storage facilities for each unit, maintenance sessions, & cycling event listings
- Located on two bus routes & within 15 minutes of two train stations servicing London
- Car share program
- Free parking for electric vehicles and free charging provided

**Parking**
- Parking per unit ratio of 1:1
- Only car-share vehicles will have allocated spaces
- Residents parking and commercial parking will double up

**Building Performance**
- Super insulation, a high-quality passive ventilation system and multi-layered windows
- Green roofs with rooftop gardens and sedum matting
- Runoff from roof collected & stored for greywater recycling
- Energy efficient appliances
- Stormwater management plan: porous pavement, green roofs, swales, rainwater collection
- On-site wastewater treatment plant
- In-suite recycling units

**Energy Supply - e.g. District Energy System, Renewables**
- Biomass woodchip-fueled system
- Photovoltaic roof-mounted panels
BedZED, London, UK

- Economic Development
  - Live-work
  - Commercial space
- Learning opportunities
  - Resident’s Manual on energy & water efficiency
  - Literature & programs on reducing vehicle use - encouraging walking or cycling
  - Educational space for learning about sewage treatment
  - Information on maintaining a vegetable garden
  - General information on sustainable living
- Building Operation and User Behaviour
  - Electricity meters
Mole Hill, Vancouver, BC

- **Context and Location**
  - Located in the heart of Vancouver’s West End
  - In one of the highest density neighbourhoods in N America
  - Re-development & restoration of 27 heritage homes
  - Mole Hill: 2.5 FSR

- **Density and Mixed Use**
  - 170 units of non-market housing for low-income singles, families, seniors and long-time residents of the block
  - St. Paul’s Heart Home: provides housing for heart transplant patients
  - Watson House: A transition house for people with mental health issues
  - Dr. Peter Centre: for persons living with HIV/AIDS

Mole Hill, Vancouver, BC

- **Pedestrian Oriented Street Design**
  - Laneway was modeled after the Dutch concept of “Woonerf”: a street which gives precedent to pedestrians
  - Greenways through the neighbourhood

- **Alternative Transportation**
  - Quick walk to amenities: community centres, theatres, libraries, restaurants, the waterfront
  - Access to downtown transit network with connections to sky train, train stations, and regional bus network

- **Parking**
  - Four spots dedicated to the Vancouver Co-operative Auto Network
Mole Hill, Vancouver, BC

- Building Performance
  - Preserving and restoring of all city owned heritage homes
  - A focus on energy-efficient lighting and appliances also helps minimize energy use
  - Construction materials with recycled content
  - Natural lighting
- Energy Supply – e.g. District Energy System, Renewables
  - Geo-thermal: energy-efficient heat exchanging pumps

Mole Hill, Vancouver, BC

- Economic Development
  - Daycares
  - Public/private/non-profit partnerships
- Learning opportunities
  - Community Gardens
  - Summer months, a Farmer’s Market offers a selection of locally produced food
  - A unique leasing and partnership agreement with the city and the province could be replicated by other organizations
- Building Operation and User Behaviour
  - COHO Management, which usually provides services to Co-operative Housing initiatives, administers the day to day upkeep and management of Mole Hill
Dockside Green, Victoria, BC

- **Context and Location**
  - 15 acres on Victoria’s waterfront
  - Brownfield site

- **Density and Mixed Use**
  - High-density, mixed use development
  - 1.3 million sq. ft of office, residential, retail, and commercial
  - 73 u.p.a.
  - Broad housing mix: seniors housing, live-work, work-live, small and large units
  - Affordable housing (target 26 affordable market units and 49 low-income rental units)
Dockside Green, Victoria, BC

Pedestrian Oriented Street Design
- Central pedestrian greenway
- Extension of Galloping Goose Trail through the site
- Enhanced pedestrian experience: tree planting, public art, interpretive signage

Alternative Transportation
- Vehicle sharing program
- Mini-transit system focusing on key drop-off points downtown
- Bike lanes, trails, and public & residential bike racks
- Harbour Ferry
- Subsidized bus passes for affordable housing

Parking
- Parking stalls for car-share vehicles
- Selling parking separately from the housing units

Dockside Green, Victoria, BC

Building Performance
- High efficiency buildings: energy modeling projects 50 to 52% savings
- LEED certification
- Sustainable & local materials
- 100% of all sewage treated on site
- Potable water savings: 66.5% (70 million gallons per year)
- On-site stormwater treatment - naturalized creek & pond system
- 90% of construction waste diverted from landfill

Energy Supply - e.g. District Energy System, Renewables
- Biomass Cogeneration Facility (centralized waste wood gasification plant) for electricity & heating.
Dockside Green, Victoria, BC

Economic Development
- Commercial centre with local businesses e.g. pubs, bakery, health food store, restaurants
- Community amphitheatre
- Live-work, work-live

Learning opportunities
- Developing local training and education initiatives
- Sustainability Centre
- Renewable energy technologies demonstrated on site as part of environmental education plan
- Historical, aboriginal, and environmental signage & public art

Building Operation and User Behaviour
- Annual Sustainability Reporting - performance & accountability
Discussion Questions (for breakout groups)

1. What additional objectives should the Sustainability Block be trying to achieve?

2. What elements of design, infrastructure, building standards etc. should/could the sustainability Block contain?

3. Are there synergies between certain uses/tenants that should be explored?

4. What are the marketing opportunities for the Sustainability Block?

5. What are the barriers/challenges to making this a reality and what key policies and strategies should be employed to make this happen? (e.g. Zoning/Development Control variances & amendments).