



FCM Sustainable Communities Mission

British Columbia, 2008

Case Study: Integrating Sustainability into B.C. Neighbourhoods

OVERVIEW

A mixed-use community allows people to live where they work and shortens their commutes, encourages diverse residents, and provides the neighbourhood with a commercial economic base. According to Franc D'Ambrosio, the architect of Selkirk Waterfront in Victoria, it is not possible to segregate neighbourhood uses and expect the area to function well. District energy facilities, wastewater management systems, alternative transportation, and green building principles are also key parts of a sustainable neighbourhood.

Integrated sustainable community planning seeks to achieve long-term socially, environmentally and economically viable communities through design principles such as:

- Creating socially cohesive and diverse communities through a mix of housing types and employment opportunities
- Promoting alternative transportation and energy
- Promoting efficient use of resources
- Locating residential areas close to recreational and commercial services with pedestrian and cycling connections

The following initiatives illustrate leading-edge examples of integrated environmentally sustainable communities that meet Leadership in Energy and Environmental Design (LEED®) standards, and enhance the social, economic, and environmental health of the larger areas of which they are a part.

- Sustainable community planning seeks to achieve long-term socially, environmentally and economically viable communities, and includes key elements such as district energy facilities, wastewater management systems, alternative transportation, and green building principles.
- Innovative developments like Victoria's Dockside Green, Vancouver's Southeast False Creek, and the Downtown Squamish Concept Plan use sustainability principles to create livable, affordable communities where diverse residents can live, work, play, and learn.
- These integrated mixed-use communities address environmental and social issues through leading-edge building design and community infrastructure, and their economic viability helps spur further sustainable development projects.



"Joe Van Belleghem (Partner, Windmill West/Dockside Green) speaks to Berry Urbanovic (Kitchener, ON) at Dockside Green"



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DOCKSIDE GREEN

Dockside Green is a new, mixed-use community in Victoria that uses sustainability principles. In his extensive experience with green buildings, developer Joe Van Belleghem learned that “you can’t get all the economic value of green buildings unless you integrate them into a green community.” He is co-developing Dockside Green on a 15-acre brownfield in Victoria. The City of Victoria issued a Request for Proposals for the land in 2004 and identified the principles of sustainability as the basis for evaluation.

Dockside Green is environmentally sustainable. Van Belleghem committed to construct only LEED Platinum buildings, instituting a \$1 million penalty to substantiate that commitment and build trust with the community. In July 2008, the first phase of the project attained the highest LEED rating in the world. “Marketing experts said you have to have air conditioning,” Van Belleghem said. “We ignored them.” Instead, high quality glazing, insulation, and passive design regulate air temperature. The buildings use fifty-four per cent less energy and sixty-seven per cent less water than conventional buildings of the same size.

Dockside Green will be the first community in North America to consume less energy in its buildings than it generates onsite. The neighbourhood’s waste wood gasification power plant will provide heat to the community and export excess heat offsite to a nearby hotel.

An onsite sewage treatment plant was made economically feasible in part by water-conserving fixtures and appliances in the residences that reduced water consumption by more than fifty per cent. This significantly reduced the necessary size for the plant, as well as its operating costs. One hundred per cent of the treated water is used for flushing and irrigation.

Van Belleghem challenged engineers to avoid using pipes, because “nature is the best way to get water offsite.” A creek system, “designed to integrate the community,” connects the site along north-south lines and naturally manages all the stormwater. To prevent stagnant water in periods of low rainfall, the sewage treatment plant water ensures constant flow through the creek.

To build community spirit, buildings are situated near the street, and brand name stores are not permitted: “we want the people that live in Dockside to work there,” Van Belleghem said. To facilitate a diverse population, prices for ten per cent of Dockside Green will be discounted, and a covenant will be placed on the title so the appreciation rate is limited.

The community emphasizes alternate modes of transportation: the regional bike system traverses the neighbourhood and commercial buildings will have cycling end-of-trip facilities. There is an onsite harbour ferry dock, and Dockside Green is partnering with the Victoria Car Share Co-operative to offer a vehicle-sharing program.

“When you create a culture of sustainability in your city, the real winners are going to be the businesses,” Van Belleghem said. Dockside Green used local, green building materials, and the concrete contains fly ash from coal-fired power plants. Eco-wood from Triton Logging, a B.C. environmental wood products company, is used in the construction of Dockside Green townhouses. The biomass plant runs on B.C. technology, and the sewage plant uses Canadian technology.

Seven community groups were engaged in the design of the Dockside Green park. They approved high levels of density because the design met the community’s needs.

Van Belleghem met the Chief of the First Nation on whose traditional territories Dockside Green is being constructed and said, “We took this land away from you, we contaminated it, let’s work together to heal it.” The developers signed a memorandum of trust with the First Nation, made an ecological pledge to the First Nation children, and employed First Nation people as apprentices and at the construction sites.

Van Belleghem said the success of Dockside Green is the result of “a value shift proposition”: the development has garnered meaningful community support and engagement because the community believes in the values of sustainability. “You need to get in people’s hearts.”

“As we urbanize,” Van Belleghem said, “our children are losing their connection to nature. As developers, we have an obligation to put nature back into our urban centre.” Dockside Green has succeeded: “We had an otter playing in our water the other day,” Van Belleghem said.

Mission participant Shelagh Montgomery, a city councilor from Yellowknife, NWT, agreed. “What is important to me is not just the environmental issues but also the social ones,” she said. “We need to meet the needs of everyone. I am interested in building standards that create affordable and accessible housing.”



The project is made affordable by low entitlement costs through high density and low marketing costs. In 2006, Docksider Green received a grant from the FCM Green Municipal Fund. BC Hydro has supported the project because Docksider Green will contribute to BC Hydro's energy conservation goals. The city does not charge residents to treat their water; the neighbourhood has its own sewage treatment plant. Those economic savings were put back into the development.

SOUTHEAST FALSE CREEK

Vancouver's Southeast False Creek is the "largest single development ever undertaken in Vancouver" Andrews said, and "the most sustainable development of this scale in North America." It is a pilot project for the new LEED for Neighbourhood Development certification.

The development is improving the environmental health of the area significantly. The land in the 80 acre brownfield was all industrial fill, including municipal incinerator ash, zinc slag, and sawdust. During construction, 750,000 tonnes of soil have been moved, "and I use 'soil' loosely in this project," Andrews said. Southeast False Creek will occupy 6 million square feet in 120 new buildings.

Developers built an island in False Creek to "bring back the natural ecosystem that was destroyed over the last 100 years of industrial activities." The intertidal marine habitat was so successfully reintroduced that the construction was slowed when 3,000–4,000 stickleback fry were found in the creek, the highest volume since the 1920s.

All buildings will be minimum LEED Gold, and two will be LEED Platinum. Energy will be conserved through design as much as possible. "Passive design," Andrews said, or "designing [buildings] differently from the ground up, makes it cheaper" to build to LEED Gold standards. Energy needs will be generated or captured onsite. Solar panels will be installed and energy consoles in the suites will help residents understand their energy consumption.

The Salt Building, a heritage building dating to 1931 that refined salt and shipped it out by rail, is being restored to Class A Heritage standard and will likely become a brew pub. The building will be entirely saved, along with the foundation of fir piles that were logged off the slopes surrounding Vancouver.

The neighbourhood has a rainwater harvesting system instead of a storm sewer system. Rainwater will be collected from the streets in open grass swails and a drainage basin. The wetlands under construction will bio-treat unused rainwater. Rainwater levels in the wetlands will be controlled and water will be released periodically into the

ocean. Each building has a massive rainwater cistern beneath its underground parkade, and a second set of rainwater pipes in the buildings go straight to the toilets. "Residents don't have to do anything except show up and they'll use half as much water as their neighbours down the road," Andrews said.

A neighbourhood energy utility will extract heat from a major city sewer main. Southeast False Creek will be entirely self-sufficient for heating and for domestic hot water.

The decision to support pedestrians first—followed by cyclists, public transit, and lastly, single-occupancy vehicles—encourages alternative means of transportation. Buildings will be equipped with co-operatively owned cars; two rapid transit stations bookend the development. In 2006, the City of Vancouver won a Sustainable Community Award from FCM and CH2M HILL Canada for the Southeast False Creek Sustainable Transportation Strategies.

The community will have amenities to support a diverse population and create a sustainable society, including a childcare facility, an interfaith centre, a playhouse for theatre, and a grocery store. There will be 250 units of affordable housing, among them rental units and a co-operative housing unit that will be run by a non-profit society.

The Southeast False Creek development is contributing to efforts to address poverty in Vancouver. The Vancouver Regional Construction Association has established training modules for residents of Vancouver's low-income Downtown Eastside neighbourhood. A minimum of 100 graduates of the program will be provided with employment on the construction site. The development also procured \$15 million in materials from inner city suppliers.

"Density is one of the core principles we have to look at," said Mission participant Brenda Holmlund, a councillor from the District of Tumbler Ridge, B.C. "It needs to be part of the plan from the beginning. Being sustainable is a new way of thinking."

It was important that the Southeast False Creek development be economically replicable, and not "an expensive showcase" Andrews said: all funds "were from within our own revenue model." The first phase of the development will be the Vancouver Athlete's Village during the 2010 Winter Olympics. To provide this service, the developers entered into a business deal for \$30 million with the Vancouver Organizing Committee for the 2010 Winter Olympic and Paralympic Games (VANOC).



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SUSTAINABILITY BLOCK

The Downtown Squamish Concept Plan was created through the Smart Growth on the Ground process, a unique program that uses an inclusive collaborative approach to gather community input, practical research, and follow-through to get the results “on the ground.” The plan envisions a complete community where diverse residents can live, work, play, and learn. The Squamish Sustainability Block is designed using sustainability principles; it features efficiencies in energy, land use, and design. The principles of the Sustainability Block will be applicable to all future large developments in Squamish, and the block could serve as an anchor in efforts to obtain LEED for Neighbourhoods certification for the downtown area.

The Sustainability Block currently under development was offered by the owner as a test for implementation of the concept plan. Because it is the first of its kind, it will offer educational opportunities for developers and citizens, and provide knowledge and skills in green building techniques. Called a “catalyst” project because it will encourage and spur future development, the Sustainability Block can demonstrate the benefits of mixed-use, energy-efficient, pedestrian-friendly living.

“It’s a real convergence of opportunities: to develop and to build green,” said Morris Flewwelling, mayor of Red Deer, Alberta. “If we’d built all this ten years ago and then LEED had come along, we’d be in trouble. So we can and should use LEED as an opportunity.”

Squamish is largely a commuting population. By de-emphasizing the single-occupancy vehicle and encouraging alternative means of transportation, the Sustainability Block will help to shift the expectation that the automobile will be prioritized in urban design. It will combine all the catalyzing elements of Squamish’s Community Energy Plan and be part of the District Energy System. It will also provide easy access to the transportation hub.

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ADDITIONAL RESOURCES

This case study highlights sites visited by delegates on the 2008 FCM Community Energy Planning Mission. For additional information on the Mission, including more Mission case studies, presentations and the 2008 Mission Report, visit the FCM Centre for Sustainable Community Development Website at www.sustainablecommunities.fcm.ca.