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**TO:** Neil Connelly  
General Manager, Community Services

**DATE:** June 28, 2005

**FROM:** Christina Thomas  
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**FILE:** 6780 30 50 GRBU

**SUBJECT: GREEN BUILDINGS PROJECT – GREEN BUILDINGS TOUR**

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### PURPOSE

The purpose of this report is to provide an update about the status of the Green Buildings Project and, in particular, the Green Buildings Tour.

### BACKGROUND

The Board approved terms of reference for an exploratory phase of a Green Buildings Project in November of 2004 with the objectives of becoming more informed about green buildings and making a decision about future phases of a project to promote green building practices in the region.

Green buildings are buildings that require less energy to operate, contribute fewer emissions to the environment, conserve water, generate less solid waste, and provide more comfortable and productive environments for their inhabitants.

The first of the three deliverables of the exploratory phase of the Green Buildings Project, an educational tour of the green buildings in the Vancouver and Victoria areas, was conducted on June 22<sup>nd</sup> through June 24<sup>th</sup>. Hughes Condon Marler: Architects (HCMA)<sup>1</sup> was contracted by the RDN to organize and conduct the tour for RDN staff and elected officials<sup>2</sup>. HCMA's tour work included the preparation of the pre-tour report "Green Building Case Studies: Greater Vancouver and Greater Victoria Area" to provide information about the green buildings on the tour (*hard copies available for viewing at the RDN Administration office and at the July 12, 2005 Committee of the Whole meeting, electronic copy will be available for viewing on the RDN web site*), the coordination of arrangements for the participation of the owner/operator/designer at each green building, and responding to participants' questions about green buildings throughout the tour. The tour participants visited fifteen green buildings on the tour (6 LEED certified<sup>3</sup>, 9 not LEED certified) as outlined in the following table:

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<sup>1</sup> The consultant team included LEED Accredited Professional architects Michel Labrie and C.J. Rupp of Hughes Condon Marler: Architects and LEED Accredited Professional engineer Jennifer Sanguinetti of Keen Engineering.

<sup>2</sup> Directors Stanhope, Holme, Holdom and Krall participated in all three days of the tour, and Director Westbroek participated in the one day Victoria portion of the tour. Christina Thomas (Senior Planner, Community Services, RDN) and Rob Lawrance (Environmental Planner, City of Nanaimo) participated in all three days of the tour, and Neil Connelly (GM, Community Services, RDN) and Gary Noble (Development Approval Planner, City of Nanaimo) participated in the one day Victoria portion of the tour.

<sup>3</sup> Leadership in Energy and Environmental Design (LEED) is a well-known, widely used system to rate the greenness of buildings. It is a voluntary, consensus based self-assessment tool that has been embraced nationally and internationally as 'the green building design standard'. LEED establishes a system in which a specified number of points are assigned according to the particular attributes of the building in five performance areas: the sustainability of the building site, water efficiency, energy and atmosphere, materials and resources, and indoor

June 22, 2005	June 23, 2005	June 24, 2005
<ul style="list-style-type: none"> <li>▪ Hughes Condon Marler: Architects Office Renovation (LEED –Ci Silver)</li> <li>▪ West Vancouver Aquatic Centre</li> <li>▪ Gleneagles Community Centre</li> <li>▪ Telus / William Farrell Building Revitalization</li> <li>▪ Fred Kaiser Building</li> <li>▪ CK Choi Building</li> </ul>	<ul style="list-style-type: none"> <li>▪ City of Vancouver National Works Yard (LEED Gold)</li> <li>▪ Richmond City Hall</li> <li>▪ Semiahmoo Library &amp; RCMP Facility (LEED Silver)</li> <li>▪ White Rock Operations Centre (LEED Gold)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rogers Elementary School</li> <li>▪ Vancouver Island Technology Park (LEED Gold)</li> <li>▪ Dr. W. Harry Hickman Building UVIC</li> <li>▪ Medical Sciences Building UVIC (LEED Gold certification expected)</li> <li>▪ Engineering Laboratory Wing UVIC</li> </ul>

Typically the newest green buildings in the table above are LEED classified, and the older ones in the table above are not because the LEED system was not in place at the time the building was constructed.

### ***Green Building Tour Highlights***

The following highlights some of the key features of the green buildings on the tour that contribute towards their classification as green buildings:

- ☑ An onsite stormwater management system that reduces, and in some cases eliminates, the need for piped stormwater management infrastructure (*at the Gleneagles Community Centre, CK Choi Centre, Vancouver Island Technology Centre, Dr. Harry Hickman Building UVIC, Medical Sciences Building UVIC*);
- ☑ The reuse of parts of old buildings in the construction of new buildings (*at the West Vancouver Aquatic Centre, HCMA offices, Telus William Farrell Building, CK Choi Building, White Rock Operations Centre*);
- ☑ The use of exposed concrete walls and floors (often including high fly ash content which reduces greenhouse gas emissions) to serve double duty as finished interior surfaces, thereby reducing the total materials used in the building and lowering the building’s Volatile Organic Compound (VOC) level (*at the Gleneagles Community Centre, Fred Kaiser Building, CK Choi Building, City of Vancouver National Works Yard, Semiahmoo Library and RCMP Facility, White Rock Operations Centre, Dr. Harry Hickman Building UVIC, Medical Sciences Building UVIC*);
- ☑ The use of low water flow fixtures in washrooms at all of the buildings, including ‘dual flush’<sup>4</sup> toilets (*in buildings such as the City of Vancouver National Works Yard, White Rock Operations Centre, Fred Kaiser Building, Semiahmoo Library and RCMP building*) and waterless urinals (*in*

environmental quality. Depending upon the number of points accumulated, and hence the sustainability of the building, buildings are classified as LEED Certified, Silver, Gold or Platinum. The United States Green Building Council, a national non-profit entity, developed the LEED trademark, and continually updates the model to respond to new information and science. The Canada Green Building Council, a non-profit coalition of public and private building industry leaders, holds the LEED trademark for Canada and is responsible for recent adaptations of the system for Canada (i.e. LEED™ Canada) and British Columbia (i.e. LEED™ BC), as well as continual updates to these systems. LEED was created to define green buildings by providing a standard for measurement and to prevent exaggerated claims about the greenness of a building. It also provides a mechanism to recognize leaders, stimulate green competition, raise consumer awareness, transform the marketplace, and establish market value with a recognized ‘brand’.

<sup>4</sup> A dual flush toilet has two buttons: one for a 3 litre flush and one for a 6 litre flush.

*buildings such as the City of Vancouver National Public Works Yard, Fred Kaiser Building, Semiahmoo Library and RCMP building, CK Choi Building, White Rock Operations Centre);*

- A wastewater management system that completely treats wastewater onsite without a sewer system connection by using waterless composting toilets and using the greywater to irrigate the onsite forest and vegetation (*at the CK Choi Building*);
- The use of a porous grass or gravel pave system rather than a traditional concrete or asphalt paved parking lot to reduce the amount of onsite impervious surface (*at the Vancouver Island Technology Centre and the White Rock Operations Centre*);
- A focus on the use of natural ventilation instead of traditional mechanical air conditioning systems (and in some cases the complete elimination of mechanical cooling) to reduce energy consumption and increase building users' control of climate in their workspaces (*at the HCMA offices, West Vancouver Aquatic Centre, Gleneagles Community Centre, Telus William Farrell Building, CK Choi Building, Fred Kaiser Building, White Rock Operations Centre*);
- The use of geothermal heating systems which capture heating and cooling energy from the earth, thereby reducing the need for energy from other less sustainable sources (*at the City of Vancouver National Works Yard, the West Vancouver Aquatic Centre, Rogers Elementary School*);
- The use of photovoltaic panels to capture energy from the sun to heat the building, thereby reducing the need for energy from other less sustainable sources (*at the Fred Kaiser Building, the White Rock Operations Centre, the City of Vancouver National Works Yard, the Vancouver Island Technology Centre*);
- The use of solar hot water tubes to provide heat for the building and the domestic hot water system (*at the White Rock Operations Centre*);
- The use of a raised access floor system to act as an air plenum for displacement heating and cooling (air distribution is through floor-mounted individually controlled diffusers that can be relocated easily) to provide flexibility in spaces that are frequently reconfigured (*at the Telus William Farrell building, the Semiahmoo Library and RCMP Facility*);
- Reduced needs for artificial light by strategic use of windows (*at the Telus William Farrell Building, Semiamhoo Library and RCMP, City of Vancouver National Works Yard, Fred Kaiser Building, Richmond City Hall* ) and light shelves (*at the Telus William Farrell Building, the Vancouver Island Technology Centre*);
- The use of daylight and occupancy sensors to reduce the use of artificial lighting (*at the CK Choi Building, City of Vancouver National Works Yard, Semiamhoo Library and RCMP Facility, Fred Kaiser Building, White Rock Operations Centre, Rogers Elementary School*);
- The use of a ceramic frit pattern applied to the exterior glazing of windows to control solar gain (*at the Telus William Farrell building, Fred Kaiser building*);
- The use of a green roof to contribute towards the on-site management of stormwater and reduce the heat island effect (*at the City of Vancouver National Works Yard, Richmond City Hall, White Rock Operations Centre*);
- The use of native, drought resistant plants to reduce or eliminate the need for piped irrigation equipment and water use (*at most of the buildings toured*);
- Recycling or salvaging construction waste (*at the HCMA office, Telus William Farrell Building, Semiahmoo Library and RCMP Facility, White Rock Operations Centre, Vancouver Island Technology Centre*) and the establishment of recycling programs within the building for operational activities (*at all of the buildings toured*);

- The establishment of a green cleaning plan that focuses on the use of non-hazardous, low environmental impact cleaning products that meet the Green Seal Standard (*at the HCMA office, Medical Sciences Building UVIC*);
- Siting buildings in very close proximity to public transit routes (*most of the buildings*) and the provision of bicycle parking facilities and change rooms (*Vancouver Island Technology Centre, buildings at UVIC & UBC*) to facilitate more environmentally friendly transportation options;
- The use of materials that are manufactured within 500 miles of the building (*most the buildings*).

### ***Next Steps in the Green Buildings Project***

Remaining Project deliverables include: [1] a research report regarding local government green building programs and policies, and [2] the development of terms of reference for a future phase of the Project. Hughes Condon Marler: Architects is presently completing the local government green building program research report as a part of their contract to conduct the green building tour, and it is anticipated that the report will be complete on July 30, 2005. That research report will be used by staff in the development of terms of reference for a potential future phase of the Project. It is anticipated that the terms of reference will be provided to the Committee of the Whole and Board for consideration in the Fall of 2005.

### **ALTERNATIVES**

1. To receive the report.
2. To receive the report and request additional information about a specific aspect of the Project.

### **FINANCIAL IMPLICATIONS**

Receipt of this report has no financial implications. Twenty thousand dollars (\$20,000) was included in the Regional Growth Management Services 2005 budget, at the Board's direction, specifically for the exploratory phase of the Project. The allocated budget is sufficient for the work delineated in the RDN Board approved terms of reference for the exploratory phase of the Green Building Project.

### **GROWTH MANAGEMENT IMPLICATIONS**

Green buildings and a green building program would help make the region more sustainable, the overall purpose of the Regional Growth Strategy. It would provide a direct contribution towards the achievement of the Regional Growth Strategy environmental protection goal, which is to protect the environment and minimize ecological damage related to growth and development.

### **ENVIRONMENTAL IMPLICATIONS**

Green buildings and a green building program would help address environmental problems caused by poor building performance. It would result in the construction of buildings that are more environmentally compatible because they require less resources to construct, operate and maintain, and because they result in fewer harmful emissions to the environment. A green building program would result in less solid waste disposal at the regional landfill and contribute towards the achievement of the Regional District's Solid Waste Management Plan objective of 'zero waste' because green buildings typically involve the reuse of existing materials. A green building program would also result in reduced consumption of potable water and reduced generation of liquid waste because green buildings typically include more efficient appliances and infrastructure.

## **SUMMARY**

The first of three deliverables of the RDN Green Buildings Project, an educational tour of green buildings in the Vancouver and Victoria areas, is now complete. Work is underway on the second deliverable of the Project, a research report about local government green building programs. The third Project deliverable, terms of reference for a future phase of the Project, will be completed in the Fall of 2005.

## **RECOMMENDATION**

That the report on the educational green building tour conducted as a part of the Green Buildings Project be received.

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Report Writer

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General Manager Concurrence

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