Supports Item No. 4
P&E Committee Agenda
May 17, 2007

CITY OF **VANCOUVER**

POLICY REPORT
ENVIRONMENT

Report Date: April 20, 2007
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Meeting Date: May 17, 2007

TO: Standing Committee on Planning and Environment

FROM: General Manager of Engineering Services and Manager of Sustainability Group in consultation with the Chief Building Official, Director of Planning, and the Co- Directors of Development Services

SUBJECT: Progress Report on Vancouver Green Building Strategy

RECOMMENDATION

A. THAT Council receive this update and endorse the development of the recommended By-law amendments and Zoning Guidelines to enhance the environmental performance of all buildings regulated under Part Three of the Vancouver Building By-law (generally over 3 storeys or greater than 600 m^2 in building area) as outlined in this report.

B. THAT the Green Building Steering Committee develop options and recommendations for future scope, approach, staffing and resourcing for coordinating and broadening Vancouver's green building and infrastructure strategy (beyond the By-law changes described in this report); and report back to Council.

CITY MANAGER'S COMMENTS

The City Manager RECOMMENDS approval of A and B above.

GENERAL MANAGER'S COMMENTS

The General Manager of Engineering Services RECOMMENDS approval of A and B above.

COUNCIL POLICY

Several City Council initiatives have brought about the development of the Green Building Strategy:

- July 8, 2004: Council approved a program to promote the development of green building policy in the City. This program included LEED™ Gold certification requirement for all civic buildings, and LEED™ Silver design requirement for all buildings in Southeast False Creek (SEFC). Council further directed staff to develop a city-wide strategy that would ensure that all new construction in Vancouver be built to a green standard.
- November 3, 2005: Council approved the Green Building Strategy to develop specific zoning guidelines and by-laws to enhance the environmental and human health performance of all Part 3 buildings.

Many other City initiatives have been undertaken to support the environmentally responsible development and operation of the City of Vancouver:

- October 16, 1990: Clouds of Change – Recommendation #1 to reduce carbon dioxide emissions by 20%. Reduced greenhouse gas (GHG) production through better energy efficiency of buildings was recommended.
- 1995: Vancouver joined the Federation of Canadian Municipalities' "20% Club", which became the Partners for Climate Protection Program in 1998.
- 1995: Vancouver CityPlan adopted: directions related to establishing neighbourhood centres, prioritizing non-automobile transportation, clean air and water
- 1997 Vancouver Transportation Plan; directions for pedestrian, cycle, transit, goods movement, and automobile, in that order of priority.
- 2001: Southeast False Creek Policy Statement adopted by Council, including the development of green buildings and technologies.
- May 2, 2002: Council carried the motion, proposed by the Federation of Canadian Municipalities, to support the Canadian Government's ratification of the Kyoto Protocol, with the City's biggest impact being on new construction and building retrofits.
- March 25, 2003: Council approved an emissions reduction target of 20% from 1990 levels for the corporation of the City of Vancouver. Council created the Cool Vancouver Task Force and a Greenhouse Gas Reduction Action Plan. Green buildings are a big part of this plan, and represent up to 40% of all GHG emission in the Lower Mainland.
- December 9, 2003: Council approved the Action Plan for Creating a Just and Sustainable Food System for the City of Vancouver. This policy report includes a specific action area for the City to facilitate and support the inclusion of rooftop gardens on residential developments, commercial and industrial buildings.
- June 8, 2004: Council approved revisions to the Building By-law to improve the energy performance of new, large commercial and residential buildings by approximately 13% by updating references to the 2001 version of ASHRAE90.1.
- March 1, 2005: Vancouver City Council approved the Southeast False Creek Official Development Plan (ODP) at Public Hearing. In its approval, Council approved LEED™ Silver as the minimum and an objective of LEED™ Gold for the Olympic Athletes' Village and Council approved a working green building strategy for all other development with LEED™ Silver as a design goal.
- March 29, 2005: Council approved the Community Climate Change Action Plan. The Plan contains specific elements related to improving building performance.
- November 14, 2006: Council approved the EcoDensity Report to initiate a process of broad public discussion to develop high quality, affordable, and high performance densification strategies to be presented to Council at a public forum in June 2007.

PURPOSE

The purpose of this report is to update City Council with regards to the status and projected timeline to completion of the Vancouver Green Building Strategy.

SUMMARY

The Vancouver Green Building Strategy (GBS) was developed to advance sustainable design practices in the marketplace in order to minimize the impacts that buildings have on the local environment and their contribution to global climate change. The approved strategy reflects a long-term commitment to improving energy, water, wastewater, stormwater and material conservation, and indoor environmental quality in all new and retrofitted buildings constructed in the City of Vancouver.

This report:

- outlines the status of the City's regulatory effort to increase the performance of Vancouver's building stock, focused on a systematic program to upgrade the design and construction standards for all buildings regulated under Part Three of the Vancouver Building By-law (e.g., generally buildings over three storeys in height);
- describes how the work is being undertaken via a Technical Team work program, jointly led by the Sustainability Group, Central Area Planning and the Office of the Chief Building Official, with support from Engineering Services, Environmental Protection, Licences and Inspections, Social Planning and Development Services;
- describes the timing for advancing 15 specific regulation changes that set an environmental performance baseline to assist relevant buildings to achieve the equivalent of a LEED™ Certified level of performance; and
- confirms that the GBS approach will reflect the City's priorities related to sustainability, and result in a package of changes that can be integrated into the established City development processing, permitting, inspection and enforcement systems.

To advance the GBS, City Council authorized the Chief Building Official to hire a temporary Engineer for a one-year period to provide staff support to the Technical Team. With the help of this Engineer and without additional budget allocation, the Technical Team has folded the current scope of the GBS into their existing department work programs. This temporary Engineer position will be retained through 2007 using existing budget resources, and the July 2007 report (Recommendation B) will address the ongoing staffing needs for 2008 and the need to establish this as a permanent position in the Chief Building Official's Office.

The GBS is moving forward. Inter-departmental technical teams have made significant progress on determining what initiatives are most appropriate in Vancouver. These technical teams have identified important implementation issues, such as further technical work and stakeholder consultation that need to be addressed. However, implementation has been slower than proposed in November 2005 due to other policy and program priorities competing for staff time. Accordingly, staff recommend that the GBS regulations be implemented over three phases in 2007 and 2008.

The GBS is one of many emerging green building and planning initiatives to reduce the environmental impacts of buildings and related infrastructure, including EcoDensity, EcoStructure, SEFC, and other major rezonings. These initiatives are expected to

significantly broaden the scope of work beyond the by-law changes related to the Green Building Strategy. To ensure these efforts are compatible and coordinated, staff recommends that the Green Building Steering Committee develop a comprehensive sustainable development framework and interdepartmental staff allocation for this work. This framework will incorporate a vision, workplan, and expected staff and budget implications. The intent is to report the framework to Council in summer 2007.

BACKGROUND

The City has launched the GBS to accelerate transformation of the development industry to consistently follow sustainable building practices. On July 8, 2004, Council approved a series of recommendations related to green buildings, including the adoption of LEED™ Gold certification as a goal for civic buildings greater than 500 square meters, and LEED™ Silver as a minimum goal for the SEFC Olympic Village (SEFC). In two of the recommendations in the July 2004 report, Council specifically asked staff to "develop and report back on an interim strategy to address current, privately initiated green building applications outside of Southeast False Creek."

Council approved a temporary 18-month Planner 1 position, and related budget, to undertake the work described above.

Based on the work done with staff and stakeholders, in November 2005 staff reported to Council with a proposed Green Building Strategy (GBS) that was adopted by City Council. It consisted of a one year action plan to develop and adopt specific By-law changes to enhance the environmental performance of all Part 3 buildings in the areas of stormwater management, landscape practices, urban agriculture, energy and water conservation, indoor air quality, thermal comfort, waste minimization, and transportation. The proposed GBS was designed to be compatible with the Leadership in Energy and Environmental Design (LEED™) certification system, as implemented by the Canada Green Building Council (CaGBC). The GBS was conceived from the outset to align itself with this building rating tool, and to result in commercial, industrial, and multi-family buildings effectively being somewhat above a LEED™ Certified level. However, due primarily to environmental and economic conditions unique to Vancouver, significant adaptations to the environmental impact reduction philosophies and priorities embodied in LEED™ have been necessary. As such, the GBS parallels LEED™ where possible, and diverges from this guide where advantageous.

A Technical Team, Steering Committee, and development industry Stakeholder Committee were formed to analyze, develop and review by-law changes. Council approved using existing funding from the Sustainability Group and remaining funding from the original GBS program for staff training and the hiring of a temporary Engineer in the CBO's office to provide support to the Technical Team. Beyond that, the actual work on the By-law changes was to be integrated into the relevant departmental work programs.

In addition to this initiative, the City has been undertaking a number of other green building activities:

- Rezonings: As part of rezoning negotiations, green building practices are being incorporated in projects on a voluntary basis, based on the LEED™ rating system.
- Development Applications: on applicants' initiative or staff suggestions, a variety of applications are incorporating some green building elements.

- Policy Statements and Official Development Plans (ODP): statements for projects like East Fraser Lands, VCC Langara College, and Oakridge Centre are incorporating green building principles.
- Building By-law Equivalencies: Over the past few years, the Chief Building Official's Office has been accepting alternative solutions to permit green building technologies that are not currently accommodated in the requirements of the Building By-law.
- Sustainable Developments: The SEFC Redevelopment is a prototypical residential community, designed from the outset with sustainability as a priority.
- EcoDensity: Under development, EcoDensity is intended to reduce the ecological impacts of urban development by advancing very efficient, dense forms of development throughout the city.
- City Building Analysis: The City is in the process of upgrading the energy efficiency of civic buildings in accordance with the City's Corporate Climate Change Action Plan.

DISCUSSION

This report describes the work to date, the GBS strategies being pursued, and the recommended work plan. In addition, there is a brief discussion of the upcoming challenges related to expanding and coordinating City green building initiatives overall.

1. Work to Date

Following Council approval to develop the Green Building Strategy in November, 2005, representatives from work groups throughout the City (Planning, Engineering, Sustainability, Chief Building Official's Office) were gathered to form the GBS Technical Team. The mandate of the Tech Team is to investigate the strategies and initiatives through which the objectives of the GBS would be met.

Concurrently, a multi-disciplinary group of Vancouver's building industry professionals were approached to form the GBS Stakeholder Committee. Meeting formally every two months since early 2006 to review Tech Team progress, the Stakeholder Committee also provides specialized knowledge and assistance to the GBS development process when necessary.

Work to date has focused on investigation into environmentally responsive initiatives that are classed into the following six broad categories:

A. Greenhouse Gas Reduction
B. Water Management
C. Landscape Standards and Open Space Design
D. Transportation and Transportation Alternatives
E. Waste Management: Construction and Occupancy
F. Healthy Interior Environments

2. Overview of Current GBS Scope

The GBS Tech Team has worked to identify strategies to pursue in each of the above-listed categories. The following section briefly highlights the various strategies and the phases in which they will be pursued. Further details, such as the relevant regulations, are provided in Appendix A.

A. Greenhouse Gas Reduction

Greenhouse gas reduction strategies are aimed at reducing green house gases through energy conservation and passive design solutions in order to meet the City's community green house gas mitigation targets. These targets are intended to reduce the overall and per capita energy use of new building stock and reduce the impact of buildings on the City and region's energy infrastructure. Passive design solutions may be achieved through the implementation of architectural features that reduce energy consumption. The energy efficiency and green house gas reduction strategies will be carried out in the following two phases:

- Phase 1 - Building By-law Amendments
- Phase 2 - Passive Design Zoning Guidelines

During the first phase of this strategy, staff will consider the impacts of adopting the most current edition of the energy standards referenced by the Building By-law. In addition to adopting the most current energy standard, staff will be pursuing further regulatory changes to the By-law by mandating that a building's energy performance exceed the referenced standard by a further 12% to 15%.

The second phase of the greenhouse gas strategy will focus on developing zoning guidelines aimed at encouraging the use of passive design best practices. These passive design guidelines will consider the impact of the winter and summer sun on buildings, daylight harvesting, and ventilation strategies. As with the False Creek Neighbourhood Energy Utility, the potential for further emission reductions through district energy systems will be considered.

B. Water Management

Water management strategies are aimed at reducing the consumption of potable water in buildings as well as the consumption of potable water for the irrigation of landscaping. The water management strategies proposed will be carried out in the following three phases:

- Phase 1 – Use of Rain Water for Irrigation and Toilet Flushing
- Phase 2 – 3rd Party Water Efficiency Standards for Irrigation Equipment
- Phase 3 – Expanded requirements for Low Flow Water Closets, Urinals, and appliances

For all phases of the water management strategies, staff will carry out an analysis to determine the costs and impacts of these regulatory approaches

The first phase of this strategy will reduce the barriers in the Building By-law that make it difficult for building owners to harvest rain water and use it for toilet flushing and the irrigating of landscaping. Since rain water harvesting is not currently permitted by the Building By-law, building owners must submit equivalency solutions to the Chief Building Official for acceptance. These alternative solutions are then reviewed by the Chief Building Official for conformance to the performance objectives of the By-law. Over the next few months, staff will review past accepted alternative solutions and consider developing Building By-law provisions which could be incorporated into the By-law for everyone to use. Should rain water harvesting solutions be added to the Building By-law, it will be easier for building owners to implement this type system in their buildings.

The second phase of this strategy will look at the efficiency of equipment used for the irrigation of landscaping for buildings. Currently there are no efficiency standards for this type of equipment. Over the next few months, staff will review various efficiency standards for possible adoption into the Building By-law.

The third phase of the water management strategy will involve the development of regulations aimed at expanding the water efficiency for appliances such as toilets, urinals, dishwashers and laundry washing machines in buildings. In order to reduce the amount of potable water used by appliances in buildings, staff will consider Building By-law regulations for low flow and dual flush toilets, low-flow and waterless urinals and Energy Star dishwashers and laundry machines.

Also included under the broad Water Management category is Stormwater Management.

The strategies in this category address the need to improve stormwater quality and in some areas decrease the quantity of runoff from the City's urban development. Effectively managing stormwater is a priority as the city densifies and as storm events become more intense due to climate change; therefore, we should take advantage of redevelopment activity to improve water quality and reduce stormwater runoff where practical. The City is looking at a variety of implementation options to help manage stormwater runoff through on-site infiltration and elimination of contaminants. Phase 1 strategies focus on improving the quality of stormwater from parkades and surface parking lots, a major source of contaminants, by requiring enhanced stormwater management practices to reduce pollutants. Phase 2 focuses on developing a stormwater management plan for the City through comprehensive analysis, beginning with a rainwater and runoff study. The study will look at the benefits and impacts to the environment at the end of the pipe and will develop strategies and practices for public and private lands. The study will include the following:

1) Determine flow reduction and quality benefits to our waterbodies and the City's infrastructure, including combined sewer overflows, if on-site stormwater management strategies are implemented across the City (e.g. infiltration chambers, roof leader disconnection, etc on private sites, and managing stormwater on City streets and lanes with new designs such as Crown Street and our Country Lanes)

2) Identify the costs and any issues related to stormwater management strategies identified above (effects on infrastructure, adjacent properties, flooding, etc), with consideration of how strategies should be tailored to suit various areas of the City.

3) Prepare standard designs and typical costs of appropriate "best practices" for pollution reduction (e.g. bioswales, mechanical systems, etc.); and infiltration methods (e.g. infiltrations chambers, roof leader disconnection, etc.)

4) Identify work programs and next steps to implement a comprehensive stormwater management plan for private sites throughout the City.

C. Landscape Standards and Open Space Design
In Phase 1, these strategies investigate the application of greenroofs, urban agriculture, and native and low-water use landscaping through the development of voluntary zoning guidelines. Phase 2 includes an analysis of performance-based regulations for landscape site design.

D. Transportation and Transportation Alternatives
This category focuses on improving building design to reduce vehicle parking requirements, provide additional relaxation for minimum parking requirements, review feasibility of unbundling parking requirements, update requirements for secure bicycle parking and other end-of-trip facilities, expand transportation demand management requirements for new developments, develop requirements for accommodating charging of electric vehicles, and introduce maximum parking requirements in some zoning districts.

E. Waste Management
The primary focus of this category is promoting quality construction practices and waste minimization throughout the various phases of a building's life: construction, operation, and demolition. Phase 1 strategies focus on building durability, construction waste management and building operation waste diversion. Phase 2 focuses on further strengthening Construction & Demolition recycling by implementing recycling targets (e.g. 50-75%). Targets will be set by analyzing building types and GVRD bans, recycling infrastructure, and robustness of markets.

F. Healthy Interior Environments
The objective of this category is to improve the health and comfort environment of building occupants through the establishment of minimum performance targets for indoor air quality and thermal comfort. Phase 1 strategies include pursuing the development of new regulations to require the use of low volatile organic compounds (low-VOC) paints, adhesives, sealants, and other indoor finish materials and an evaluation of relevant standards as a minimum design requirement for the maintenance of adequate indoor temperature moderation/control.

3. Work Plan and Resources

The work plan for the coming year reflects the capacity that staff have to incorporate this work into their already busy work programs. The By-law changes will be done in batches. This phased approach will allow staff to manage a large volume of work.

Staff proposes the following work plan for 2007:

Activity	Lead Department	Completed By
Continue to convene Technical Team and Steering Committee.	Sustainability Group	Ongoing
Finalize by-law and zoning guideline changes as described in Appendix A.	Sustainability Group/CBO Office	Phase 1: Nov '07 Phase 2: Feb '08
Prepare cost benefit analysis of proposed by-law and zoning guideline changes.	CBO Office	Phase 1: Nov '07 Phase 2: Feb '08
Continue to convene Stakeholder Committee to provide development industry feedback on GBS recommendations.	Sustainability Group	Ongoing
Develop training program of the relevant staff who use the by-laws including development of policies, procedures, guidelines, and bulletins.	CBO Office	Phase 1: 1st set: Sept '07 Phase 2: 2nd set: Jan '08
Integrate changes into the review and permitting and inspection system; including submission requirements, procedural changes and monitoring service delivery performance.	Steering Committee/CBO Office	Phase 1: 1st set: Nov '07 Phase 2: 2nd set: Feb '08
Create series of information bulletins targeting the development and construction industry to inform them of the proposed changes and best practices.	CBO Office	Nov '07 and Feb '08

The GBS activities proposed for 2007 will continue to be done within the existing work programs and budgets of the Sustainability Group, Development Services, CBO's Office, Engineering Services, Environmental Protection, Social Planning, and Planning. The temporary Engineer who was hired in September 2006 will continue to assist with technical expertise, as well as to further develop and coordinate GBS related By-law and Zoning Guideline changes, organize internal and external consultation, and develop staff training. Since this policy and enforcement work will be on-going for the foreseeable future, it is recommended that this position be continued through 2007 using existing budget resources and that the July 2007 report address the need to establish the temporary Engineer in the CBO's Office as a permanent position.

Consultation

The development of strategies throughout Phase 1 and 2 will include significant consultation with the architectural, engineering, and development sectors prior to their proposed adoption in the May 2007 and February 2008. Staff will continue to consult with the Stakeholder Committee (Appendix C) to ensure both the technical robustness and the acceptability of the by-law and zoning guideline changes.

Management and Supervision

The overall GBS will be facilitated and led by the Sustainability Group. This includes convening internal and external committees and reporting. By-law and Guideline changes will be overseen by relevant department managers. Day-to-day supervision of the temporary Engineer within the CBO's Office will be provided by the Chief Building Official. Additionally, staff training and implementation of GBS Building By-law requirements and procedures will be coordinated through the CBO's office under the direction of the Chief Building Official.

The GBS will continue to be managed by the Steering Committee composed of senior level staff of Planning, Sustainability Group, CBO's Office, Environmental Protection, Engineering Services, and Development Services. The members of this committee will be responsible to ensuring that the proposed By-law changes go through the necessary internal departmental reviews.

Future Green Building and Related Initiatives

The Green Building Strategy approved by Council in November 2005, and updated in this report, was one of a number of green building-related initiatives:

- Commitment to building City buildings to the equivalent of LEED™ Gold
- SouthEast False Creek, planned as a model sustainable community with higher green building and green infrastructure standards to be attained in rezonings and development applications
- Encouragement and evaluation of voluntary green building practices in private rezonings
- Inclusion of sustainability policies in the East Fraserlands Official Development Plan
- Initiation of the EcoDensity Initiative and measurable reductions in ecological impacts

These have been undertaken as separate initiatives, linked through the Sustainability Group, and in some cases by the fact that the same staff have been involved in the projects. There have been challenges in dealing with the different levels of GBS expectations, and in having enough staff time available to complete the work.

There is also a range of possible future green buildings and green infrastructure work. Examples include:

- Development of standards for Part 9 combustible buildings (generally under 4 storeys);
- Investigation of options for raising the GBS standards beyond the current, and look at tools needed to do so;
- Investigation of the possibilities for green infrastructure (roads, utilities) in the City more broadly, beyond SEFC and East Fraserlands;
- Creation of a technical assistance program to encourage best practices; and
- Development of a green building economic development strategy, promote growth of trades' training to encourage market penetration and growth.
- Development of a "Vancouver Green Building Reference Guide" that provides details on all by-law and zoning guideline changes and relevant local green building resources.

Given the customary limitations on City budgets, and the heavy staff workloads which will likely continue until the 2010 Olympics, it is likely that GBS work will need to be selective.

Recommendation B calls for the GBS Steering Committee to report back to Council with recommendations for the future scope, approach, staffing and resourcing for coordinating and broadening the green building and green infrastructure strategy, noting that this will need to be done in conjunction with the EcoDensity and EcoStructure Initiatives.

In the time since Council initiated the GBS (July 2004), many new initiatives have emerged across North America to accelerate market transformation. These initiatives encompass energy and greenhouse gas emissions from buildings, provide guidance on regulatory and incentive measures for improving performance, and illustrate the need for adaptive strategies

that can evolve in a timely fashion. Staff recommendations will benefit from these advances, and help inform future directions.

FINANCIAL IMPLICATIONS

The recommendations provided in this report will not have any financial implications for the 2007 Operating Budget.

ENVIRONMENTAL IMPLICATIONS

The GBS will assist in reducing building related greenhouse gases, energy consumption, potable water use, stormwater runoff, harmful indoor water quality, and material waste in Vancouver.

CONCLUSION

The GBS will establish a City regulated baseline for green building performance in Part 3 buildings. This approach meets multiple objectives: simple; practical to achieve under City By-laws; referenced to LEED™; focused on City sustainability priorities; updateable; and incremental. The GBS will assist all mid- and high-density residential, mixed use, commercial and industrial development in Vancouver in achieving at least the equivalent of LEED™ Certified, with an emphasis on the City's sustainability priorities such as GHG reduction, energy efficiency, and stormwater management.

Consequentially, the GBS will significantly improve market penetration of green building practices and technologies in Vancouver by creating consistency that will help bring costs down and increase professional capacity over time.

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Appendix A: PROPOSED GBS BY-LAW & ZONING GUIDELINE OVERVIEW

Strategy	Intent	By-law change	Timeline	Proposed Strategy Content
1 On-Site Stormwater Management	▪ Improve stormwater quality and reduce stormwater discharge in new development especially in Ecologically Sensitive Areas. ▪ Promote strategies to reduce impervious surfaces and improve infiltration. ▪ Reduce contaminants in runoff from hard surfaces by using mechanical and natural treatment systems such as vegetated filter strips and bioswales.	VBBL; S & W BL; Z& DBL; GL	Nov '07 Feb '08 Feb '08	▪ Action 1: Require parkade drains to connect to sanitary instead of stormwater lines. ▪ Action 2: Develop on-site stormwater management requirements for surface parking lots to include oil separation and infiltration facilities to reduce runoff and improve water quality. ▪ Action 3: Conduct analysis with recommendations and timeline for a city-wide stormwater management plan for development.
2 Rainwater Harvesting	▪ Reduce water consumption and stormwater discharge from building sites.	VBBL; S&WBL; GL	Feb '08	▪ Action: Remove barriers from VBBL to permit rainwater harvesting for irrigation and toilet flushing through prescriptive design requirements. Requires changes to Part 7 of VBBL, review for conflicts in zoning by-laws, and indemnification.
3 Greenroofs	▪ Investigate the installation of extensive greenroofs and high albedo Energy Star™ "cool" roofs that reduce heat island, glare, and storm-water runoff and increase biomass and habitat.	Z&DBL; GL	Feb '08 Feb '08	▪ Action 1: Develop zoning guidelines for extensive greenroofs and high albedo Energy Star™ "cool" roofs that maximize stormwater management, energy efficiency, habitat, and aesthetics. (Note: Greenroofs will be voluntary. The guidelines will address how they should be handled when provided.) ▪ Action 2: Liaise with Home Protection Office on any issues related to greenroofs. ▪ Action 3: Analyze the development of ecological performance standards (e.g. Seattle's Green Factors).
4 Urban Agriculture	▪ Contribute to a sustainable food system by ensuring provision of permanent facilities for urban agriculture on rooftops, podiums and ground-level landscaped areas such as courtyards.	Z&DBL; GL	Feb '08	▪ Action: Develop guidelines for urban agricultural installations (voluntarily provided) outlining plot design, safety, support facilities, and access. (Note: Urban agriculture will generally be voluntary, unless it forms an agreed part of a policy plan or rezoning, e.g. SEFC and East Fraserlands. The guidelines will address how it should be handled when provided.)
5 Native and Low-Water Use Landscaping	▪ Reduce use of potable water for irrigation by 50% particularly during summer extended dry periods through the use of native, low-water use plant species. ▪ Increase habitat and biodiversity and biomass through the use of native plant species as part of private development.	Z&DBL; GL	Nov '07 Nov '07	▪ Action 1: Develop guidelines for native & low-water use landscaping. Guidelines will include appropriate plant lists and irrigation and maintenance best practices. (Note: Native and low-water use planting will generally be voluntary, unless it forms an agreed part of a policy plan or rezoning, e.g. SEFC and East Fraserlands. The guidelines will address how it should be handled when provided.) ▪ Action 2: Investigate feasibility and effectiveness of revising Private Property Tree By-law to include water efficient tree replacement options.

6	Water Efficient Irrigation Systems	▪ Reduce use of potable water for irrigation by 50% particularly during summer extended dry periods through the use of efficient irrigation systems.	VBBL; GL	Nov '07	▪ Action: Adopt 3rd party equipment efficiency specifications for drip and sprinkler head irrigation.
7	In-Building Water Use Reduction	▪ Reduce in-building water consumption by 20% through the use efficient fixtures and equipment to increase local water supply and wastewater treatment facilities efficiencies.	VBBL	May '07 Nov '07 Feb '08	▪ Action 1: Adopt low flush toilets in non residential buildings. ▪ Action 2: Permit waterless urinals as accepted plumbing fixture: ANSI standard. ▪ Action 3: Review and analyze cost impacts and benefits and regulatory barriers to requiring dual flush toilets and Energy Star laundry and dishwashers.
8	Energy Efficiency & Green House Gas Reduction	▪ Reduce energy consumption of new Part 3 buildings 12-15% below ASHRAE 90.1 requirements to help meet City's community green house gas mitigation targets and reduce impact of building on City and region's power infrastructure. ▪ Streamline and simplify energy code requirements through development of energy performance targets.	VBBL	May '07 Nov '07 Feb '08 Feb '08	▪ Action 1: Improve and streamline enforcement of Energy Utilization By-law requirements ▪ Action 2: Adopt ASHRAE 90.1 2004 as new Energy Utilization By-law. ▪ Action 3: Decrease overall building energy use requirements by 12-15% beyond ASHRAE 90.1 2004 to meet Natural Resources Canada (NRCan) Commercial Building Incentive Program (CBIP). ▪ Action 4: Develop energy use targets by building type as an alternative energy compliance path.
9	Indoor Air Quality	▪ Improve the indoor air quality of building occupants through the establishment of minimum performance targets for indoor air quality prior to building occupancy.	VBBL	Nov '07	▪ Action: Investigate the requirement of low VOC paints, adhesives, sealants, and indoor finish materials referencing CaGBC LEED rating system EQ Credit 4 requirements, with ASHRAE flush out spec. as secondary requirement for non compliance buildings.
10	Thermal Comfort	▪ Provide more comfortable and productive work environments.	VBBL	Nov '07	▪ Action: Analyze ASHRAE Standard 55-2004 as a minimum design requirement for the maintenance of adequate indoor temperature moderation/control for adoption in commercial buildings.
11	Passive Design	▪ Promote passive solar design, natural ventilation, and daylighting through site and building design to enhance indoor occupant comfort and increased energy efficiency.	Z&DBL; GL	Feb '08 Feb '08	▪ Action 1: Evaluate passive design FSR exclusions that were used in SEFC Olympic Village; assess desirabilty and feasibility of extending exclusions more broadly; assess compatibility of current design guidelines and regulations with passive design feastures. Recommend approach to zoning and/or guidelines revisions. ▪ Action 2: Develop zoning and guideline revisions based on recommended approach.
12	Building Durability	▪ Improve durability of building envelope/rain screen wall system.	VBBL	Nov '07	▪ Action: Analyze to what extent the City can require regulatory compliance with all or portions of CSA S478.
13	Construction Waste Management	▪ Reduce the amount of building and site construction and demolition waste to maximize waste diversion from landfill disposal.	VBBL; GL	Nov '07 Feb '08	▪ Action 1: Develop mandatory Construction Waste Management Plans for all construction projects to be monitored through the building permit process. ▪ Action 2: Develop recycling targets (e.g. 50-75%) by analyzing existing building types and GVRD bans, recycling infrastructure, and robustness of markets.
14	Waste Diversion & Reduction	▪ Facilitate the reduction of waste generated by building occupants that is landfilled by redirecting organics and	Z&DBL; GL	Nov '07	▪ Action: Develop zoning guidelines for in-building waste reduction facilities (waste, recyclables, organics) to support future banned materials such as organic waste. Sizing formula based on building occupancy.

	recyclables to be processed and utilized. Reduce the amount of vehicle trips required to pick up solid waste.			
15 Transportation & Transportation Alternatives	▪ Reduce the environmental impacts of accommodating vehicles on-site and support sustainable transportation modes.	Z&DBL; GL; PBL; VBBL	Nov '07 / Feb '08	▪ Action 1: Update/reduce minimum parking requirements for multiple dwelling units outside the downtown. ▪ Action 2: Provide additional relaxation for minimum parking requirements. ▪ Action 3: Review feasibility of unbundling parking requirements. ▪ Action 4: Update requirements for secure bicycle parking and other end-of-trip facilities. ▪ Action 5: Expand transportation demand management requirements for new developments. ▪ Action 6: Develop requirements for accommodating charging of electric vehicles. ▪ Action 7: Introduce maximum parking requirements in some zoning districts.

NOTE:

- GL Guideline
- S&WBL Sewer and Waste By-law
- VBBL Vancouver Building By-law
- Z&DBL Zoning and Development By-law

APPENDIX B: VANCOUVER GREEN BUILDING STRATEGY STAKEHOLDER COMMITTEE

Name	Organization
Michael Geller	SFU Trust
David Negrin	Concord Pacific
Brian Ellis	Polygon
Robert Brown	Resource ReThinking
John Holland	BOMA
Donald Yen	BCIT
Chuck Brook	Brook Development
Curt Hepting	EnerySys Analytics
Helen Goodland	SBC
Jamie McKay	Morrison Hershfield
Jeff Fisher	UDI
Gordon Dickson	UDI
Blair McCarey	Stantec
Kathy Wardle	BPW
Peter Busby	BPW
Kevin Hanvey	Omicron
Norm Shearing	Parklane
Thomas Mueller	CAGBC
S. Ross Rettie	Association of Professional Engineers and Geoscientists of British Columbia (APEGBC)
Philip Hochstein	Independent Contractors and Businesses Association of BC (ICBABC)
Peter Simpson	Greater Vancouver Home Builders Association (GVHBA)
Alex Jeletzky	Vancouver Board of Trade
Lucia Su	Canada Mortgage and Housing Corporation (CMHC)
Max Richter	Architectural Institute of British Columbia (AIBC)
Ron Kato	Architectural Institute of British Columbia (AIBC)
Stu MacGillivray	Terasen
Liz Johnston	BC Hydro
John Tylee	GVRD
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