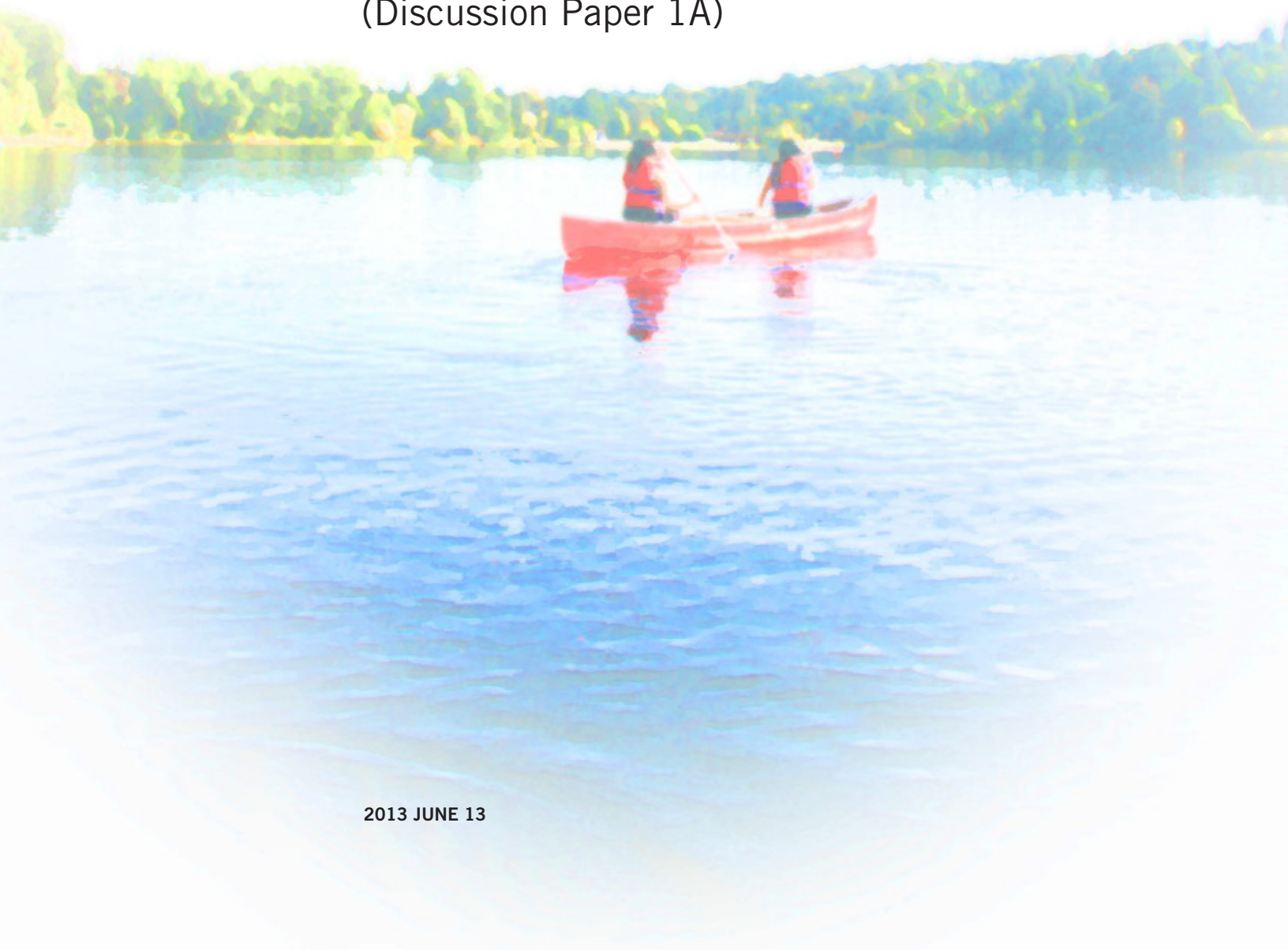




BURNABY'S ENVIRONMENTAL ACHIEVEMENTS

A BURNABY ESS CONTEXT REPORT

(Discussion Paper 1A)



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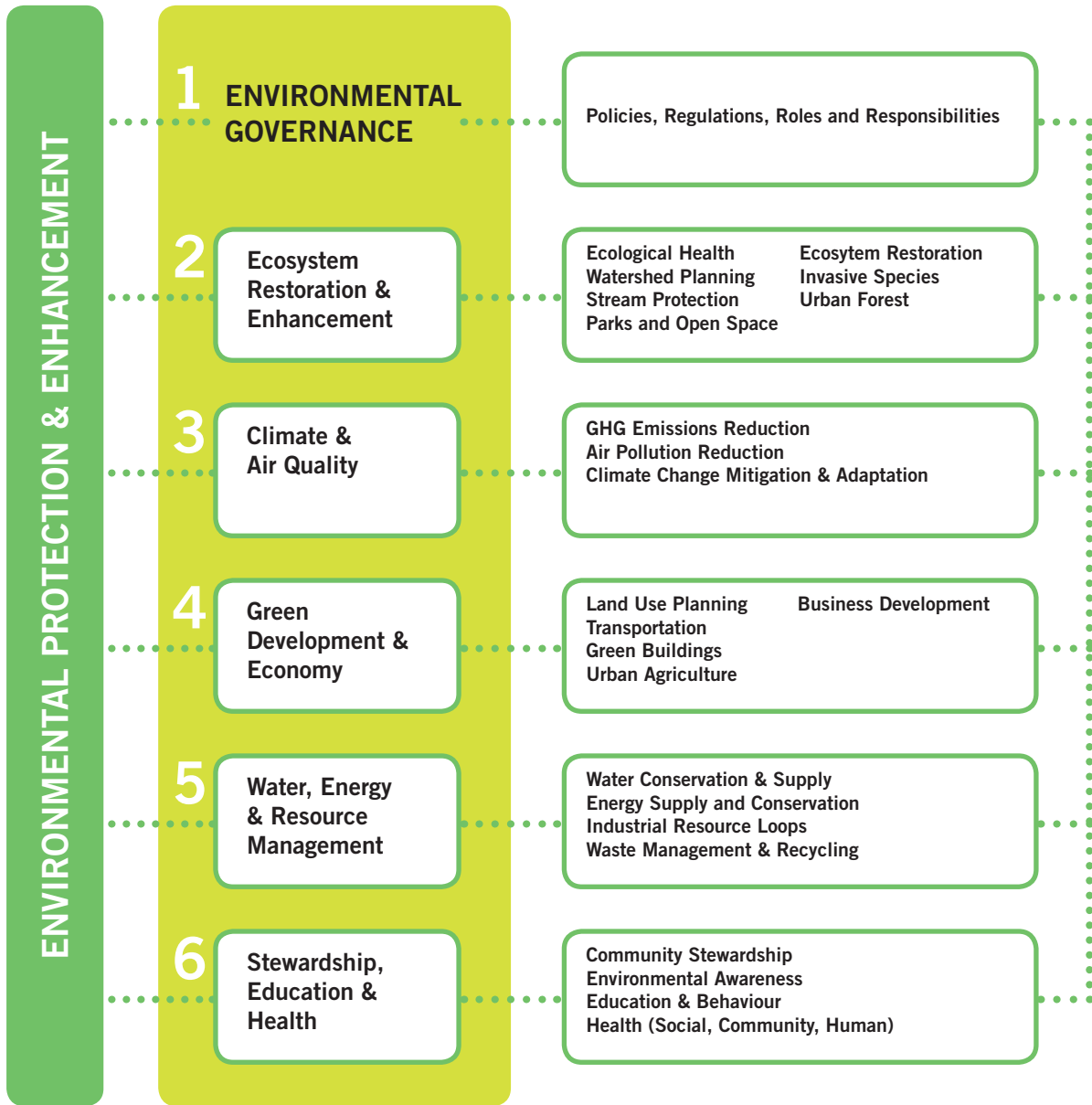


Figure 1. Topics supporting environmental protection and enhancement in Burnaby



INTRODUCTION

The purpose of this document is to provide a summary of selected past achievements and current initiatives in environmental sustainability in the City of Burnaby, as context for the Environmental Sustainability Strategy (ESS). The ESS is a forward looking strategic plan that will complement existing economic and social sustainability plans, to guide the City's future development as it relates to environmental protection and enhancement. It is important that the ESS be founded on an understanding of what we have accomplished already, so that we can build on our successes.

Our environment is our surroundings that sustain us – the air we breathe, the earth we walk on, the places we live, work and play. A healthy environment in turn supports healthy ecosystems, vibrant and prosperous communities and personal health and well being.

In this context, the City of Burnaby has implemented a comprehensive framework of policies and regulations and has undertaken leading initiatives in cooperation with our partners. These policies and initiatives are organized in this report according to the following topics, as shown in **Figure 1**:

1. Environmental Governance
2. Ecosystem Restoration and Enhancement
3. Climate and Air Quality
4. Green Development and Economy
5. Water, Energy and Resource Management
6. Stewardship, Education and Health

In order to recognize successes and challenges of the past, today and the future, these categories are organized around three questions:

- Where are we today?
- What have we accomplished?
- What lies ahead?

This document reviews some of the key environmental achievements in the past 10 to 15 years, recognizing that these have been preceded by many more in earlier years.





Deer Lake Park

1.0 ENVIRONMENTAL GOVERNANCE (POLICIES AND REGULATIONS)

1.1 WHERE ARE WE TODAY?

The City of Burnaby has implemented a broad framework of environmental policies and regulations and has updated them over time to address key concerns and considerations.

The following environmental policies and regulations are organized within four general themes:

- Over-arching Environmental Policy
- Community Development and Ecosystem Protection
- Parks and Conservation Areas
- Urban Forest and Vegetation Management
- City Operations and Infrastructure

1.2 WHAT HAVE WE ACCOMPLISHED?

Over-arching Environmental Policy

At the broadest level, the **Official Community Plan** sets the overall vision for the City, including an Environmental Policy Framework and an Environmental Regulatory Framework. The urban structure proposed by the Official Community Plan includes four high density mixed use town centres (MetroTown, Brentwood, Edmonds, and Lougheed) all served by a rapid transit and a frequent bus network which also fundamentally enhances the environmental sustainability of Burnaby by providing four complete communities within the larger City, and offering residents low-impact transportation choices.

The City of Burnaby completed a **Social Sustainability Strategy** in 2011, and an **Economic Development Strategy** in 2007. Completion of the **Environmental Sustainability Strategy** will complete the framework of strategic plans to move toward integrated sustainability.

The City has preserved a **network** of greenspaces, watercourses, shorelines and forested areas. Many of these have been designated as environmentally sensitive areas (ESAs) through the completion and Council approval of the **State of the Environment Report** in 1994, and the **Environmentally Sensitive Areas Strategy** in 1995.



Burnaby
Social
Sustainability
Strategy



Burnaby
Environmental
Sustainability
Strategy

Community Development and Ecosystem Protection

The City reviews environmental protection and enhancement opportunities in association with all development proposals, particularly those of substantial size and scope. Over the years, this has resulted in many successful ecosystem enhancements, and successful collaboration with the development community and stewardship groups.

Policies and regulations relating to development and ecosystem protection include:

- The Environment section in the **Official Community Plan** identifies some of the key environmentally sensitive areas (shown as Green Zones), and outlines an Environmental Policy Framework that includes protection of Environmentally Sensitive Areas.
- Since the 1970s the City has had an **open watercourse policy** that has enabled preservation of over 70 streams contained within three major watersheds.
- The City enacted the **Streamside Protection and Enhancement Areas (SPEA) Bylaw** in 2005, establishing applicable setbacks for development near streams.
- The City's **Environmental Review Committee**, first established in 1998, reviews development proposals for compliance with City policies for ecosystem protection, including applications for variance to the SPEA Bylaw.
- All **City development and operations** undergo internal and external environmental review for compliance with local, provincial and federal regulations, to ensure any impacts are mitigated.
- The City provides guidance and outlines **requirements for developers** through the Planning and Building, Engineering, and Parks, Recreation and Cultural Services Departments, in order to identify opportunities for ecological enhancement, remediation of contaminated lands, mitigation of construction impacts, and long term protection of key lands.
- The **Watercourse Bylaw**, established in 1988, prohibits fouling or impeding any watercourse or drainage system.
- The **Parks Regulation Bylaw No. 7331**, established in 1979, prohibits dumping in Parks.
- The **Total Stormwater Management Approach** policy (2003) establishes requirements for on-site retention, infiltration and treatment of stormwater, for both new development and redevelopment, to protect downstream watercourses.
- The **Soil Removal Regulation Bylaw** (1961) and **Soil Deposit Bylaw** (1971) outline permit requirements for soil removal and placement, to control potential adverse effects on nearby ecosystems.
- **Sediment control plans** are required for all major developments, to ensure sediment is not allowed to enter storm sewers and waterways.
- The **Burnaby Bylaw Enforcement Notice Bylaw 2009**, permits a City Bylaw Enforcement Officer to issue a violation ticket and associated fine for an offense under various environmental bylaws.



Salmon habitat sign



Parks and Conservation Areas

The Official Community Plan (OCP) defines the future framework of Burnaby's **Parks & Public Open Spaces**, which are key defining features of the City and its commitment to the creation of a sustainable community that protects and enhances its environmentally sensitive areas. With over 150 parks, covering about 2400 hectares (6,000 acres), set aside for park and open space, Burnaby is among the greenest major cities in Canada with over 25% of its land area and water features protected through park and conservation plans. The completion of the **Park and Open Space Plan** refines the future of park planning in the City by further delineating park boundaries, classifications and approved acquisitions.

The primary function of the **Major Parks** system of the City is to protect the significant natural heritage of five key ecological features of Burnaby: **Ocean, Mountain, Lakes & Streams, Forest and River**. The majority of these park lands are also designated as part of the regional "Green Zone" and dedicated by public referendum to ensure their long-term protection and status as part of the region's natural assets. Provision has also been made within several of these parks for many diverse recreational and cultural opportunities and facilities that are designed to respect and ensure the protection of the natural environment.

Burnaby's park and recreational needs for residents are achieved through a comprehensive system of both **District and Neighbourhood Parks**, which are integrated with all of the City's public school sites. These areas include significant environmental features such as waterways and forested areas which are managed as part of the City's ecosystem through specific management and design plans. **Special Purpose Parks and Public Open Spaces** are lands that have been specifically designated for use as golf courses, buffer areas, bicycle and walking trails, and urban plazas which also are managed to contribute to the City's open space and conservation objectives.

The Official Community Plan has created four key achievement goals for the Parks & Public Open Space System that are the focus of this program:

1. **Create Opportunities:** To provide and maintain a comprehensive mix of park and public open space opportunities sufficient to meet the changing needs of the community.
2. **Regional Land Use Protection:** To preserve City-wide and regionally significant open space areas as part of the Regional plan.
3. **Civic Legal Dedication:** To ensure the permanent preservation of major park and public open space areas under City ownership through public referenda dedication.
4. **Connectivity:** To provide a system of pedestrian/cycle trails, habitat corridors and other greenways to connect the major park and open space areas of the City with each other and other strategic components of the City and adjacent municipalities.

The acquisition of parks and public open spaces is to be guided by principles including:

- providing for the **appropriate amount, type and location** of open space, parks, and facilities to meet the existing and future requirements of the City's growth;

- protecting and enhancing the quality of Burnaby's **environmentally sensitive areas**;
- undertaking the **design of park and recreational facilities** in context with the special, natural and developed features of the City, and in response to local and Burnaby wide community needs;
- co-operating with the **Burnaby School Board** in the joint use of school/park sites;
- and striving for an **equitable distribution** of parks and open spaces throughout the community.

Urban Forest and Ecosystem Management

The urban forest consists of trees and treed ecosystems throughout the City that help to protect ecosystems and human health in numerous ways, for example by:

- providing food and shelter for wildlife;
- producing oxygen;
- removing air pollution;
- removing carbon dioxide from the air and storing it as biomass (helping to mitigate climate change);
- stabilizing soils on steep slopes;
- providing cooling shade over streams, important for fish such as salmon;
- buffering and protection from extreme weather (e.g. wind, hot weather);
- reducing energy demand in buildings (through shading and wind protection);
- enhancing the aesthetics of neighbourhoods and providing community character.

Ecosystems

Ecosystems in the City are managed through several policies and programs, including:

- The 1995 **Environmentally Sensitive Areas Strategy**, which outlines Planning and Design Principles to protect ESAs;
- Invasive species and pest management initiatives, as described below;
- Ecosystem restoration and enhancement is described in more detail in Section 2.

Trees

Trees in the City are protected, planted and managed on public and private lands through a number of policies and initiatives, including:

- **Burnaby Tree Bylaw** - outlines requirements for tree protection and replacement tree planting on single and two family lots subject to a Building Permit or Demolition Permit.
- **Development Policies for Tree Protection** - sites subject to Subdivision and Rezoning must include provisions for tree retention and replacement in a landscape plan. The City also ensures bird nesting areas and other environmentally sensitive areas are identified on plans and, where pos-

sible, protected prior to site clearing.

- **Tree protection regulations and policies** are currently (as of 2012) under review by the City to ensure they are up to date with best practices and continue to serve the City's needs.
- **Public Programs** - the City's Forestry Program is responsible for maintenance and planting of trees on public lands, including in parks and street boulevards.
- **Parks and Open Space Planning** – as noted above.

Invasive Species

Invasive species are exotic or non-native plants or animals that adversely affect local habitats through economic, environmental and/or social impacts. Due to their aggressive growth habits, many invasive species can damage forested areas, freshwater ecosystems and marine ecosystems, by out-competing native species and degrading ecosystem structure and function. The City of Burnaby has various environmental policies and regulations related to the control and management of invasive plants on public and private lands, including:

- The **Integrated Pest Management (IPM)** Policy and Program, adopted in 1994, outlines an ecological approach for controlling pests (primarily targeting invasive plants), including minimizing the use of pesticides. IPM is defined in the Policy as per the Ministry of Environment:

“Integrated pest management or IPM is an ecological approach to suppressing pest populations in which all necessary techniques are consolidated in a unified program, so that pests are kept at acceptable levels in effective, economical and environmentally safe ways. Because pest problems are often symptomatic of ecological imbalances, the goal is to attempt to plan and manage ecosystems to prevent organisms from becoming pests.”

The principles of this policy have subsequently been incorporated into City operations and development approvals. Other policies/regulations related to invasive species control include:

- The **Pesticide Use Control Bylaw**, enacted in 2008, prohibits the use of pesticides for cosmetic purposes on public and private lands. Prior to this regulation, since 1988, the City had a City Council ban on the use of chemical pesticides in public areas (excluding golf courses, greenhouses and select sites).
- A number of **ecosystem restoration and enhancement projects** have been undertaken together with redevelopment and new development, in various zoning districts and public lands, and have included the long term control and management of invasive species, and replanting of suitable native species. Some examples are provided in Section 2.2.
- The City reviews **landscaping plans for new developments** to ensure that known invasive species are not included among the proposed plants; the inclusion of native species is also encouraged.
- Through the **Environmental Review Committee**, consisting of City staff and a representative from the Department of Fisheries and Oceans Canada, the City may require the removal and long term control of invasive plants in riparian (streamside) areas, as part of an ecological enhancement plan, as a condition for the variance of setbacks for streamside protection and enhancement where appropriate.



Invasive plant species removal



Purple loosestrife—an invasive plant

- The City shares information and **collaborates** with regional and provincial invasive species agencies, to further the research and development of measures to manage invasive species.
- The City has a number of ongoing **invasive species control projects**, including initiatives on public lands, and outreach and education for Burnaby residents.

City Operations and Infrastructure

The City is continuously improving its approach to operations and infrastructure management to reduce environmental impacts, such as:

- **Water conservation** programs and management of the sewer systems (see Section 5.1).
- **Land acquisition** including a focus on ensuring procurement of non-contaminated lands.
- **Building retrofit programs** to improve energy efficiency and lower greenhouse gas emissions.
- **The Sustainable Purchasing Guidelines and Initiatives**, approved by Council in 2008, help to ensure that purchasing decisions include consideration of factors that will support the City in reducing environmental impact, encouraging social improvement, and leveraging fiscal responsibility. The initiative is implemented by the City's **Green Team**, an internal staff group that tracks indicators and targets to support the initiative's objectives, and reports back to Council each year. Objectives include:
 - o Establishing more specific objectives for purchasing consideration.
 - o Identifying specific priority areas for systematic review from a sustainability perspective.
 - o Defining resource requirements, including any pilot program testing resources to undertake and complete specific priority area reviews and implementation of recommended actions.
 - o Developing a communications plan to further inform staff and provide sufficient education and training of the Sustainable Purchasing Guidelines and specific product and commodity objectives and criteria.
 - o Establishing procedures for continuous review, monitoring and updating of specific priority areas, and defining requirements for progress reporting.
- **Road maintenance programs** including reducing application of road salt where possible, to reduce impacts on nearby streams and waterways.
- **Golf course operations** including tree planting initiatives, reducing chemical applications, and integrating initiatives to improve wildlife habitat on City golf courses.
- **Sewer system rehabilitation and replacement** program – includes combined sewer overflow (CSO) separation, minimizing inflow and infiltration into sanitary sewers and detecting and reducing cross-connections with the sanitary sewer system, to improve water quality in the receiving environment and to reduce the burden on the regional sewage treatment system (see Section 5.2).

1.3. WHAT LIES AHEAD?

Burnaby's environmental policies and regulations will continue to be updated as required, in order to address new priorities, concerns and opportunities, and to remain current with best practices. The City will be updating the OCP in the near future, which will address the City's framework for development planning and protection of key environmental assets. The City will need to adapt some policies and regulations to address environmental sustainability challenges associated with its ongoing evolution to an increasingly urban and culturally diverse community. New policy directions may arise from the ESS, which will require a careful approach that addresses environmental concerns as well as other community priorities, while maintaining or improving efficiency and removing barriers to desired outcomes and visions for integrated sustainability.

As Burnaby's population and urban areas continue to grow, parks and open spaces (including school sites) will become increasingly valuable community assets. As such, it is important that Burnaby continues to acquire and protect lands that contribute to its Parks and Open Space Framework. In addition, greater emphasis will need to be placed on the planning and management of parks and open spaces to protect environmental attributes, meet community recreation needs, and appropriately support projected urban development.

The City will be undertaking a review of planned residential growth, within the current framework of district and neighbourhood parks, to ensure future parks and recreation needs are provided for. Findings of this review, along with the review of the parks acreage standards, will help define areas of focus for future park expansion and development.

In particular, it is expected that new acquisitions for park land will focus on 1) the protection and enhancement of natural features and ecosystems, and 2) the provision of neighbourhood and district parks, trails and urban plazas to address the needs of our increasingly urban community. The specifics of these required changes will be developed in the context of an updated Parks Master Plan and Parks Acquisition Program. They will be incorporated within the next proposed review of Burnaby's Official Community Plan for Council's review and adoption.



Parks and Open Space Connectivity Concept.
Burnaby Official Community Plan, 1995



Creek restoration at Madison Avenue/Dawson Street development

2.0 ECOSYSTEM RESTORATION AND ENHANCEMENT

Urban ecosystems often become degraded as a result of human impacts; however, with careful planning, we can also help to restore¹ and enhance ecosystems through the development process and through collaboration with community groups and environmental agencies.

2.1 WHERE ARE WE TODAY?

The City recognizes the importance of healthy, functioning ecosystems, which support an array of wildlife species and enhance the quality of life for people. The City's environmental regulations and policies (described in Section 1) set the context for ecosystem protection, as well as for the restoration and enhancement of damaged or degraded ecosystems.

At the landscape level, **watershed planning** is undertaken to assess current conditions and plan for a long term vision of healthy creeks and upland landscapes. These plans integrate considerations for fish habitat, water quality, mitigating flood risk, protecting greenspace, managing parks, and planning land use to protect aquatic ecosystems.

The City actively protects and acquires streamside and other environmentally sensitive areas through the **parks and open space plan and development approval** processes. Stream restoration and enhancement projects are often undertaken as a condition of development approval as required by the City and/or Fisheries and Oceans Canada (DFO).

Ecosystem enhancement opportunities are often identified through **watershed planning initiatives and protected area management plans**, and many have subsequently been implemented through the City's capital program and private sector contributions. Numerous sites along significant waterways throughout Burnaby have been improved with new and restored channels, expanded wetlands, streamside plantings and culvert improvements to facilitate fish migration, and slope stabilization to protect habitat and public safety. Some examples are provided in Section 2.2



Initial preparation of creek restoration at Madison Avenue/Dawson Street development



Restoration of Chub Creek

¹ Ecological restoration is defined as the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed (Society for Ecological Restoration International www.ser.org).

All major institutional, commercial, industrial, and residential development projects in the City located adjacent to or connected with Burnaby's **environmentally sensitive areas** are subject to review to ensure that restoration and enhancement initiatives are identified and incorporated appropriately into the design and construction of buildings and site features, including stormwater management systems. Burnaby has acquired significant areas for ecosystem protection through the registration of legal covenants and easements to protect forests and waterways.

2.2 WHAT HAVE WE ACCOMPLISHED?

The various processes described above have resulted in a number of successful initiatives:

Plans and Capital Projects

- The **Brunette Basin Watershed Plan** was completed in 2001 through a multi stakeholder process led by Metro Vancouver, and with the input of a Task Group chaired by the City of Burnaby. The Plan identifies a vision, objectives and guiding principles for management of the watershed, and outlines a large number of strategic options for *improving ecosystem health*.
- The City has completed **Integrated Stormwater Management Plans** (ISMPs) for several major watersheds, on track with the regional requirements under the Integrated Liquid Waste and Resource Management Plan. ISMPs have been completed for Stoney Creek Watershed (1999), and Still Creek Watershed (2007). As of 2012, ISMPs for Byrne Creek and Kaymar Creek Watersheds are largely complete and in final review, and an ISMP for Eagle Creek is in progress.
- An **invasive plant inventory** and management prescriptions report was completed in 2006 for the Still Creek watershed.
- The **Central Valley Greenway Ecosystem Restoration** project began in 2011, and includes pilot projects to control invasive species and restore native streamside forest vegetation in several sites along the route, based on recommendations from the Still Creek invasive plants report. Project components include a variety of techniques for site preparation (soil treatments and mulching), species selection, planting methods and site monitoring and maintenance, to improve success and reduce long term maintenance costs in invasive species control.
- Associated with a new **Public Works Yard** in the Central Valley, the City is undertaking significant restoration of adjacent watercourses, along with invasive species removal, construction of a naturalistic wetland near Still Creek, and bioswales within the parking lot for stormwater treatment.
- Through implementation of the **Big Bend Development Plan** and related initiatives, the City has acquired title to approximately 60% of the waterfront property abutting the North Arm of the Fraser River, including with a statutory right-of-way on adjacent private lands, allowing for development of a public trail system and preservation of existing high value habitat.



Brunette River



Burnaby Fraser Foreshore Park



Bio-swale on North Fraser Way

- In 2011, the City completed the **Burnaby Lake Rejuvenation Project** which has improved the lake for recreational use and enhanced the lake environment for fish and wildlife through improved water quality by removing 215,000 m³ of polluted lake sediments.
- The City has installed and maintains **sediment control ponds**, and has undertaken **drainage management** of lands in Burnaby's south slope ravines, to reduce habitat damage by erosion/sedimentation and to protect public safety.

Development-Related Initiatives

- As part of a **multi-family residential development** in Edmonds Town Centre approved by Council in 2011, a unique opportunity was identified to daylight a 150m section of Byrne Creek that has been enclosed in a storm sewer since 1962. Downstream sections of Byrne Creek support salmon and trout, and have been subject to a focused restoration effort over the decades by the City and Byrne Creek Streamkeepers. The restored creek, expected to be completed in 2013, will include approximately 2000 m² (22,000 sq.ft.) of new aquatic and riparian area which will be planted with over 3000 native trees and shrubs, providing habitat for fish, invertebrates, birds and small mammals, as well as an aesthetic and educational amenity for residents of the development and the neighbourhood. In accordance with the Town Centre Plan, Adjacent to the creek, Sixteenth Avenue will be closed to vehicular traffic, and converted to a greenway trail, which will cross the new creek to connect with the existing greenway network, improving pedestrian and cycling access for the community, and linking with the restoration project.
- **Burnaby Central Secondary School**, completed in 2012, includes protection and enhancement of a tributary of Beaver Creek, which flows into Deer Lake. The creek was enhanced through removal of invasive species, planting of native riparian species, establishment of a protective covenant, and provision for five years of monitoring and maintenance.
- A high density **mixed use development** in the Brentwood Town Centre area at Madison Av. and Dawson St. (completed in 2005) incorporated significant **habitat enhancement** through land redevelopment, including the replacement of 5 acres of asphalt with wetlands and meadow habitat to enhance a fish bearing tributary of Still Creek.
- The expansion of the **Electronic Arts complex**, beginning in 2004, included dedication and permanent protection of the **Discovery Place Conservation Area**, and a rigorous plan for enhancement of the forest in this area, including removal of invasive species, planting of 1600 native trees and 5500 native shrubs to diversify the forest, and 10 years of monitoring and maintenance. A formal network of nature trails and interpretive signage was also developed, creating a recreational and educational amenity for employees, residents, and visitors to the area.
- Associated with the development of a subdivision in southeast Burnaby near North Fraser Way and Marine Way, off-site compensation habitat was created next to the Fraser River, providing **rearing habitat for salmon and trout** with an intertidal marsh feature, and on-site enhancement of Jerry Rogers Creek.
- Development of **Glenlyon Business Park** in south Burnaby included



Burnaby Central Secondary School



Retention pond at Glenwood Industrial Estates



Development at Madison Avenue and Dawson Street



Habitat enhancement at Fraser Foreshore Park

riparian enhancements to Byrne Creek, Sussex Creek, and Gray Creek, creation of biofiltration ponds to treat a portion of the site runoff prior to entering the Fraser River, sustainable landscaping, and connectivity to the Urban Trail network and Fraser Foreshore Park.

- Development of **Burnaby Mountain Secondary School** included enhancements to the creek and riparian zone of a tributary of Stoney Creek.
- The **Burnaby Business Park** in the Big Bend area included construction of bioswales along North Fraser Way to treat runoff from the site prior to flowing into Jerry Rogers Creek and the Fraser River.
- The City acquired and purchased nearly 90 acres of land adjacent the North Arm of the Fraser River in the 1990s which was included as a major component of the **Burnaby Foreshore Park** system for appreciation of natural habitats and passive recreational use. In 1994, the City together with the Department of Fisheries and Oceans (DFO) embarked on a three year program to re-establish rearing habitat for salmon as well as to enhance the natural landscape to maximize wildlife values in this park site.

2.3 WHAT LIES AHEAD?

Opportunities for ecosystem restoration and enhancement will continue to be identified in all major development and re-development projects. Within the next couple of years, the City expects to complete ISMPs for all high-priority watersheds.

As with all urban areas, there are numerous challenges ahead to maintaining and restoring healthy ecosystems in close proximity to dense human populations, including impacts related to population growth, climate change, and invasive species. While these stressors cannot be eliminated, the City is taking steps to protect and restore ecosystem function with careful planning, such as concentrating most growth within higher density Town Centres and Urban Villages, and providing for environmental enhancements on site or in nearby areas where feasible.



Byrne Creek near high density development in Edmonds Town Centre



3.0 CLIMATE AND AIR QUALITY

Climate change refers to the current accelerated rate and scale of change in global temperatures and climate patterns, compared to the past range of variability, due largely to the emissions of greenhouse gases by human activities. Greenhouse gases (GHG) include carbon dioxide, methane, and other products of combustion. Canadians produce among the world's highest quantity of GHG per person. Climate change is now widely recognized to be a serious global concern that is already affecting many parts of the world. Some of the impacts likely to affect our region include more frequent extreme storms and rain events, sea level rise, increased incidence of drought and associated air quality concerns, and changes to ecosystems including altered stream flows (e.g. affecting salmon in the Fraser River) and increased invasive species and pests (e.g. affecting agricultural production and natural ecosystems).

Climate change planning usually falls into two categories:

- **Mitigation** means reducing greenhouse GHG to lessen one of the main drivers (causes) of climate change.
- **Adaptation** means preparing for the inevitable impacts of climate change to the extent possible.

3.1 WHERE ARE WE TODAY?

The need to reduce greenhouse gas emissions to mitigate global climate change is recognized in the City of Burnaby Official Community Plan, in the **Environmental Policy Framework** (under the heading of Environmental Quality), together with air quality improvement objectives. Burnaby is a member of the **Partners for Climate Protection**, a collaborative initiative of local governments aiming to address climate change. The City of Burnaby participates in regional climate initiatives such as the **Integrated Air Quality and Greenhouse Gas Management Plan**.

3.2 WHAT HAVE WE ACCOMPLISHED?

Based on a GHG inventory completed in 2004, in June 2010, the City of Burnaby adopted an interim target for community scale GHG reduction, of 5% below 2007 levels. This target is anticipated to be met through policies and initiatives already in place or in progress, and complies with the Province's Bill 27 Local Government (Green Communities) Statutes Amendment Act. In 2012, the City embarked on a more comprehensive approach to address both corporate and community emissions reduction, with a GHG emissions reduction strategy, called the **Community Energy and Emissions Plan (CEEP)** which will also seek opportunities for reducing energy consumption and developing sustainable energy systems in the City.

Existing policies and programs that contribute to GHG emissions reduction and climate change adaptation include:

- The regional **Integrated Air Quality and Greenhouse Gas Management Plan**.
- **Corporate initiatives** in energy planning, including hiring a Corporate Energy Coordinator, and undertaking energy retrofits in City buildings to reduce greenhouse gas emissions.
- Implementation of a **land use and development approach** with a strong relationship to alternative transportation options and other support services and infrastructure, resulting in more efficient buildings, less reliance on personal automobiles for transportation, with overall less greenhouse gas emissions.
- **Transportation planning**, involving a strong emphasis on walking, cycling, transit, and other initiatives to reduce greenhouse gas emissions.
- A protected **network of greenspaces and stream corridors** that provide some buffering of extreme weather events; woody vegetation in these areas also functions to capture and store carbon.
- **Urban agriculture programs**, helping to reduce reliance on imported food and associated greenhouse gas emissions.
- In collaboration with developers, the City supported the development of a **Neighbourhood Energy Utility** and other existing sustainability features at the award-winning UniverCity development that substantially decrease GHG emissions from this community.

The City has indicated its commitment to addressing climate change through Council initiatives, including:

- Council endorsed the call of Tides Canada for a **New Energy Vision for Canada**, which proposed development of a national energy strategy with a focus on renewable energy and a long term transition away from fossil fuels, in order to meet climate change objectives, as well as generate significant economic benefits (2011 October 17).
- Council Report (Official Community Plan Amendment, Greenhouse Gas Reduction Target), including adoption of an **interim GHG target** to meet Provincial Bill 27, in advance of a comprehensive Community Greenhouse Gas Emissions Reduction Strategy (2010 April 22).
- Council Resolution urging the Federal Government to contribute to a **global climate agreement in Copenhagen** based on global equity and



Transit Loop at Lougheed Town Centre station



Urban agriculture in the Big Bend



UniverCity Childcare Centre

scientifically established emissions reduction targets, and an accompanying Council Resolution advocating for the role of local governments to be addressed in the Copenhagen Accord (2009 December 7).

- Council Report regarding **Peak Oil**, outlining the concern of the global peak in oil resources, and general policy needs for shifting to alternative energy sources (2006 January 16).
- Council Report regarding the **Provincial Task Force on Energy Policy**, in which Council resolved to oppose the Task Force for reasons including an emphasis on exploiting oil and gas resources at the expense of sustainability and environmental protection, and the exclusion of climate change considerations from the policy approach (2001 March 12).

3.3 WHAT LIES AHEAD?

Concurrent with the development of the Environmental Sustainability Strategy (ESS), the City is in the process of developing a Community Energy and Emissions Plan (CEEP), including achievable, yet progressive, targets for reducing greenhouse gas emissions. This approach will integrate related sustainability goals identified in the ESS.

The City is in the process of completing the Metrotown District Energy (Pre-feasibility) Study (MDES) which is investigating opportunities for district energy in the Metrotown Town Centre. District energy shows the potential to cost effectively and substantially reduce greenhouse gas emissions associated with space heating and cooling, and to improve energy security and resilience.

The City will also soon be updating the Transportation Plan, which is expected to have a strong focus on reducing greenhouse gas emissions from the transportation sector.



Green Roof

4.0 GREEN DEVELOPMENT AND ECONOMY

“Green development” is a broad concept that addresses urban development approaches and practices that strive to minimize negative impacts, or ideally have a net positive impact, on the environment and nearby ecosystems. This is a rapidly developing field that combines ecological principles with advanced technology, often resulting in significant social and economic benefits.

The green development “toolbox” includes:

- planning and land use development techniques to manage transportation demand to limit automobile use and encourage walking, cycling and transit use;
- green building certification and rating systems such as LEED™ (Leadership in Energy and Environmental Design) that quantify energy efficiency and other green design goals;
- technologies and systems that capture and re-use or re-purpose “waste” products from materials (e.g. construction waste) and energy (waste heat), often with significant economic benefits;
- design and implementation of engineered ecosystems such as constructed wetlands, green walls, green roofs and rain gardens / bioswales, that clean the water and air while beautifying the built environment; and
- engagement of the business community in sustainable practices and development of the ‘clean-tech’ economic sector.

4.1 WHERE ARE WE TODAY?

At the policy level, green development is addressed in the City’s OCP within the Environmental Framework (under the Growth Management heading). Green development requirements are stipulated in the form of a bylaw for the award-winning UniverCity development. In other areas of the city, green development opportunities are identified and established on a case by case basis in new developments as part of the rezoning process. Amendments to other City bylaws, and City policies, are periodically undertaken to ensure up-to-date provision for green building and development practices.

Urban Structure / Transportation

Burnaby's urban structure is evolving toward transit-oriented development, with nodes of higher density Town Centres and Urban Villages located near SkyTrain stations, helping to enhance livability and health by encouraging walking and cycling, and reduce air pollution and greenhouse gas emissions from personal automobiles. The City will be updating the Transportation Plan in the near future, which will establish directions for future policies and initiatives.

Some specific examples of ongoing transportation initiatives include:

- Standards for **sidewalks and other pedestrian infrastructure**, such as recycling facilities, benches, landscaping, lighting and accessibility.
- A multi-use **urban trail network** to encourage walking and cycling.
- A **cycling network** including separated cycle tracks and on-road bike lanes, developed to link up with regional networks, and publication of the **Burnaby Bike Map** each year.
- Three **SkyTrain lines** (Expo Line, Millennium Line and the Evergreen Line – currently under development) and 11 SkyTrain stations.
- Development and improvement of **transit stations**, in partnership with Translink

Green Development

Green building and landscape initiatives for public and private developments are frequently considered and advanced by the City through community plan development, comprehensive site plans, and specific development and building projects. Many developments have incorporated LEED™ standards, high energy efficiency and other significant environmental considerations to help set the framework for broader application of Green Development initiatives in the City.

Green Economy

Burnaby's Economic Development Strategy (EDS 2020) acknowledges the City's strengths and potential through a number of general and sector-specific strategies that help to further develop Burnaby's leadership in the 'green economy'. These include:

General Strategies

- G1 – building a strong, livable, healthy community;
- G2 – making efficient use of land;
- G3 – creating urban character;
- G4 – striving for a greener community;
- G10– cooperating regionally; and
- G11– making progress on regional transportation;

Sector Strategies

- S1 – information technology, communication/wireless;
- S2 – biotechnology, health, life science;
- S5 – environmental technology, services; and
- S10 – agriculture.



Millennium Line near Lougheed Town Centre



Aerial view of UniverCity



Local shopping at UniverCity

UniverCity has won many awards for sustainable innovations:

- 2011 – Federation of Canadian Municipalities, Sustainable Communities Award.
- 2011 – The Canadian Institute of Planners, Planning Award of Excellence in the Neighbourhood Planning category.
- 2008 - The American Planning Association National Planning Excellence Award for innovation in green community planning.
- 2007 – City of Burnaby Environment Award for Planning and Development
- 2005 - BC Hydro Power Smart Excellence Award
- 2005 - Award of Excellence for the most sustainable development by the Urban Development Institute
- 2005 - Project of the Year Award from the Association of University Real Estate Officials

CASE STUDY: UNIVERCITY

UniverCity is Burnaby's flagship sustainable mixed-use community, located adjacent to Simon Fraser University (SFU) on the top of Burnaby Mountain. Planning began with the SFU Official Community Plan (OCP) in 1996, coupled with a land transfer of 320 hectares of forest land from SFU to the City that were incorporated in the Burnaby Mountain Conservation Area. SFU Community Trust, in partnership with the City, plans and implements development in the community in accordance with the adopted Community Plan and approval process. As of 2012, there are 3,200 residents living at UniverCity; SFU staff, faculty and students make up about 41% of this population. At full build-out, the population of this new urban community will reach approximately 10,000. UniverCity is a 'complete community' built around a village-style commercial High Street, and includes a variety of housing types, a supermarket, restaurants and businesses, a town square, a neighbourhood park, child care facilities, an elementary school, and community use of SFU campus recreational and cultural facilities.

UniverCity exemplifies many sustainable urban planning policies, technologies and practices, including:

- Innovative **rainwater management** practices and requirements for on-site infiltration and retention to protect downstream watercourses, as set out in the 2002 Stormwater Management Plan. Monitoring and implementation of the plan is carried out with a multi-stakeholder Adaptive Management Committee, chaired by the City.
- Requirements for building performance, water conservation and other **green building practices**. As a condition of rezoning in Phase 3 of the development and subsequent phases, at least 30% greater energy efficiency must be achieved compared to the Building Code, and a density bonus is offered for achieving 45% energy efficiency.
- **Sustainable transportation initiatives** include a car-cooperative, reduced parking requirements, an extensive pedestrian-cyclist network, and a community transit pass that was made available to residents between 2002 and 2011 to encourage increased transit ridership. As of 2011, approximately 36% of UniverCity residents used transit for commuting which is the highest percentage of transit use in the City.
- A **Neighbourhood Energy Utility** has been developed, currently using a high efficiency natural gas boiler, which is planned to eventually transition to a biomass system that dramatically reduces CO₂ emissions associated with heating and cooling.
- The University Highlands **Elementary School** was built to **LEED™ Gold** standards, and includes outdoor teaching areas and a curriculum strongly focused on the environment and sustainability.
- The **UniverCity Childcare Centre**, which opened in 2012, aims to be one of the first projects in Canada to achieve "**Living Building Challenge**" certification, an advanced green building rating that exceeds the highest LEED™ standards.

4.2 WHAT HAVE WE ACCOMPLISHED?

Green Economy

Burnaby is rapidly gaining an international reputation as a desirable location for a variety of businesses involved in the knowledge-based green economy. Many leading firms now call Burnaby home:

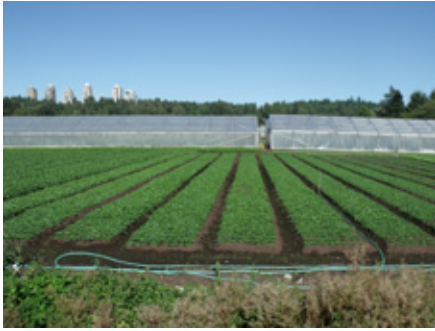
- **Information technology/communications/wireless** (IBM, Kodak, PMC-Sierra, Rogers, Telus)
- **Biotechnology/health/life science** (Amgen, LifeLabs, Tekmira Pharmaceuticals, Xenon Pharmaceuticals)
- **Film/digital entertainment/new media** (Bridge Studios, Electronic Arts/Black Box, Global TV, Mammoth Studios, Knowledge Network)
- Education (BCIT, Simon Fraser University)
- **Environmental technology/services** (Azure Dynamics, Ballard Power, Day4 Energy, Xantrex Technology)
- **Tourism/sports tournaments/arts/culture/retail** (Delta Burnaby Hotel and Convention Centre, Hilton Vancouver Metrotown, Holiday Inn Express Metrotown)
- **Finance/management/professional services** (G&F Financial Group, HSBC, Pacific Blue Cross, Travellers Financial Group)

Some of the more notable examples of specific environmental sustainability initiatives in the business sector include:

- **Ballard Power Systems** is a Burnaby-based fuel cell technology firm which helps to provide lower cost, clean energy for a range of applications (backup power; forklift and similar vehicles; buses; and distributed power generation systems).
- **Hemlock Printers** has been based in Burnaby for over 40 years, growing from a one-man print shop to one of the largest commercial printers in the Pacific Northwest at their 79,000 square foot facility that employs over 170 staff. A carbon-neutral company, Hemlock Printers has successfully integrated social, economic and environmental initiatives in a triple bottom line approach, and has won numerous awards in recognition of their sustainability successes.
- **Electronic Arts** is a global leader in interactive entertainment software, employing hundreds of employees in Canada alone, and is headquartered in Burnaby. An expansion of the Burnaby facility in 2004 incorporated green building features, a green roof, and on-site enhancement of the ecosystems surrounding the development. Electronic Arts therefore contributes significantly to Burnaby's economy with a product having a small environmental footprint, while exemplifying sustainable practices

Urban Agriculture

Burnaby has a proud history of agricultural production that spans 150 years. The City supported the creation and the ongoing protection of 223 hectares of land within the Agricultural Land Reserve (ALR) within the Big Bend district of South Burnaby under the A1 and A3 Agricultural District zoning. The ALR was established by the Provincial Government through the Land Commission Act passed by the B.C. Legislature on April 18, 1973. The ALR is managed



ALR in the Big Bend



Community Garden at BAGARA



Burnaby Farmers' Market



Bee-keeping (apiculture)

through the provincial Agricultural Land Commission.

In addition to the ALR the Big Bend Community Plan also supports the retention of the agricultural and residential land use of the Riverside neighbourhood under the A2 Agricultural District.

Burnaby's ALR and Riverside neighbourhood have rich alluvial soils formed from the Fraser River delta. Within the ALR approximately 117 hectares of these highly productive lands are in agricultural production with minor supporting commercial retail and residential uses. This represents a significant increase in land under production as compared with only 42 hectares in production in 1982.

The long-term protection of Burnaby's agricultural lands is important for sustainability and is recognized in the City's overall planning framework. Burnaby's Official Community Plan supports protection and expansion of agriculture in the Big Bend area, among other community development objectives.

The City supports and encourages urban agriculture through a number of policies, regulations and initiatives, including those within the following strategic plans:

- the City's **Official Community Plan (OCP)**, Agriculture Section
- the **State of the Environment Report (SOER)**
- the **Economic Development Strategy 2020 (EDS)**, completed in 2007, which classifies a number of short, medium and long-term agricultural actions; and
- the **Social Sustainability Strategy (SSS)**, completed in 2011, which identified a number of strategies and actions relating to food security and community gardens.

Specific urban agriculture initiatives include:

- **Bee-keeping** (apiculture) is now allowed in seven residentially zoned districts of Burnaby and within the three agriculturally zoned districts, after changes to the Zoning Bylaw were approved by Council in 2009.
- The **Burnaby Farmers Market**, open from May to October at Burnaby City Hall, operates under the direction of the non-profit organization Artisan Markets, and offers a range of locally grown food and artisan products.
- **Community gardens** offer garden plots for growing food and ornamental flowers for personal use. Burnaby's largest community garden consists of 373 garden plots on 14 hectares of city-owned land in the Riverside neighbourhood of the Big Bend, and has been operated by the **Burnaby and Region Allotment Gardens Association (BARAGA)** for over 30 years. Other community gardens in Burnaby include the **North East Burnaby Community Association Garden** near Lougheed Town Centre, the **Stride Community School Garden** in the Edmonds community, the **Simon Fraser University Garden** located in Burnaby Heights.

Green Development

Green Development initiatives have been (and continue to be) implemented throughout the City in private and public projects, incorporating green roofs, energy efficiency, pedestrian and cycling infrastructure, rainwater amenity features, street trees and vibrant streetscapes to encourage a healthy live-work community. Outstanding examples include:

- The City allows for **amenity bonuses** in Town Centres, in exchange for community amenities, affordable housing and environmental improvements. This program has resulted in many community benefits, including riparian area enhancements and contributions to parkland throughout the City.
- In 2010, a **Supplemental Community Benefit Density Bonus Policy** was approved, which builds on the successes of Burnaby's pre-existing density bonus program, to offer increased densities in the City's core Town Centre areas while securing contributions to provide for needed community amenities through the development approval process. Amenities can include environmental enhancements, improved public realm design, social amenities, and other initiatives to improve the community's livability and urban fabric.
- The City of Burnaby's **new public buildings** such as the **Tommy Douglas Library** and the **Edmonds Aquatic and Community Centre**, have been developed to meet various green building standards.
- The new City **Public Works Yard** has been designed in accordance with sustainability principles and is aiming to achieve a Gold LEED™ rating. The facility design includes provision for a green roof, innovative stormwater management and restoration and enhancement of adjacent streamside areas.
- Through collaboration with the development community, **green roofs** (eco-roofs) are frequently included in new developments; these roofs provide a number of benefits, including improving building energy efficiency, reducing rainwater runoff, providing scenic views from above, and contributing to habitat. Over the past five years about a dozen new green roofs have been constructed on City and private or institutional buildings. A study carried out in 2002 inventoried 49 green roofs in Burnaby, placing the city among the top two municipalities in the region in overall number of green roofs.
- **Harmony House**, a single family dwelling in South Burnaby and the subject of a 2012 Environment Award from the City, has been designed to be "net zero" meaning that it will produce more energy than it consumes, including recharging of the family's electric car. Other sustainability features of the project include the use of renewable and recycled building materials, passive solar design, and water conservation measures, with a number of building materials sourced within Burnaby.
- The **UniverCity Childcare Centre**, which opened in 2012, was designed according to the International Living Building Institute's **Living Building Challenge** criteria, a system that is currently the highest standard for green building design, with 7 rigorous environmental performance components, including treatment of all wastewater on-site, and provision of all drinking water from rainfall. The Childcare Centre is vying to be the



Tommy Douglas Library



Artist's rendering of Edmonds Aquatic and Community Centre



Harmony House



The Green



MetroTowers I, II and III



Burnaby Mountain Secondary School



Griffiths Drive Pedestrian/Cycle Overpass



Central Valley Greenway along Brunette River

first building in Canada to meet this certification, pending confirmation after one year of occupancy that its performance meets the standards. Even with these innovative approaches, the centre was constructed within a budget equivalent to a 'standard' building.

- Burnaby has **partnered with BCIT** to investigate opportunities and benefits of green roofs; the program included acquiring \$29,000 for monitoring equipment to include the green roof on the Electronic Arts building in the Regional Infrastructure Network.
- In 2007, **The Green**, an aptly-named residential development in the Edmonds Town Centre, was completed under the voluntary Built Green certification program. The **325-unit townhouse development** incorporates many of the City's green building guidelines that were initiated at UniverCity, such as water and energy efficiency measures and a car-sharing program.
- **Discovery Green**, a five-storey, 140,000 square foot commercial building in Discovery Place Business Park in Central Burnaby, includes a variety of energy efficiency and sustainability features and achieved a LEED™ Platinum (Core and Shell) rating in 2009.
- **Metrotower III**, a 29-storey, 400,000 square foot office tower currently (as of 2012) under construction, will feature energy efficiency, re-use of stormwater, and exceptional indoor air quality and working environments. The project is pre-certified LEED™ Platinum, allowing tenants to achieve LEED™ Commercial Interior certification, in support of greening their businesses.
- **Burnaby Mountain Secondary School**, constructed in 2000, uses an efficient geothermal heating/cooling system.
- The City is currently improving **flood protection dikes** along the Fraser River, to protect public safety and property. Dike designs include, where possible, protection and enhancement of existing sensitive ecosystems, tree replacement, and integration with the City's urban trail network.

Transportation

- In 2002, the **Millennium Line** phase of the SkyTrain light rail system was opened by Translink, connecting the City of Vancouver to Burnaby, Coquitlam and New Westminter, and tying in to the pre-existing Expo Line to Surrey. This infrastructure complements the City's development objectives of Brentwood and Lougheed Town Centres, and Bainbridge Urban Village, and allows for an urban structure supporting many sustainability objectives.
- In 1999, Burnaby endorsed the **regional Greenways Vision** for a 14 km recreational greenway that would link a number of components of the Green Zone including: Burrard Inlet, Burnaby Mountain, Burnaby Lake and the Brunette River to the Fraser River.
- Burnaby has undertaken a number of initiatives to improve the city's **pedestrian network**, for example the Kingsway Pedestrian bridge that opened in 2007.
- Burnaby has implemented **traffic calming** on many local streets to reduce traffic infiltration of residential neighbourhoods and provide for additional liveability through the use of streets by pedestrians and cyclists.

- The **Edmonds Transit Village Showcase project** (2005) provided capital funding for pedestrian and bike related projects in the Edmonds Sky-Train Station area.
- The City has implemented **Transit priority measures** such as bus-activated signals to facilitate the use and efficiency of public transit.
- Burnaby is currently completing construction of the Council-approved **Alternate Street Design** pilot project for Watling Street, as a means to test state-of-the-art “**green**” **stormwater management** techniques that will reduce the volume of runoff flowing into sensitive ravine ecosystems, and improve water quality in fish-bearing streams.

4.3 WHAT LIES AHEAD?

Opportunities to incorporate and encourage innovative green development practices is anticipated to continue, with an increasingly strong focus on strategies that provide multiple benefits to the community and the environment. As green building practices become more commonplace, the City will need to keep pace with regulatory and policy changes to minimize barriers to innovation, where possible. Green development practices will be increasingly important as a means to mitigate and adapt to climate change and the rising costs of fossil fuels. Green development also has the potential to contribute to healthier and more prosperous communities, creating a powerful incentive for change.



Solar Panels at Harmony House

5.0 WATER, ENERGY AND RESOURCE MANAGEMENT

Every other species on this planet produces no “waste”; instead, outputs from one organism become resources for another, creating a 'virtuous cycle' and maintaining healthy ecosystems. We face a major challenge to model human communities and systems on this premise, to avoid ecosystem degradation, and ensure healthy and sustainable communities for generations to come. Fortunately there are many examples, locally and worldwide, of technologies and systems that can help to accomplish this shift.

5.1 WHERE ARE WE TODAY?

The City of Burnaby has a number of ongoing policies and public education programs for sustainable use and management of resources.

Resource and Residuals Management:

- In accordance with the regional **Integrated Solid Waste and Resource Management Plan**, the City is now challenging itself to achieve a regional goal of 70% solid waste diversion by 2015.
- The City currently supplies waste collection services to single family, multi-family, commercial/industrial and institutional sectors.
- The City operates the **Still Creek Recycling Depot**, where residents can recycle a wide variety of materials accepted in the City's recycling program, as well as yard waste for composting and some toxic materials.
- The City implements a comprehensive **public education and outreach program**, to encourage waste reduction and diversion, including outreach via the City website and printed publications, and in schools and at public events.

Water Conservation and Sewer Systems

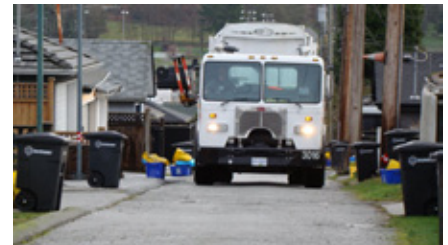
- Burnaby has adopted local government commitments in the regional **Integrated Liquid Waste and Resource Management Plan**.
- Burnaby's **drinking water** comes from two mountain watersheds: the Capilano and Seymour Reservoirs. These reservoirs, which collect water from snowmelt, creeks and streams, are protected areas operated and

managed by Metro Vancouver. Metro Vancouver treats and tests the water for quality at the source before it is delivered to Lower Mainland municipalities, and closes public access to the reservoirs to prevent human-related contamination.

- The City of Burnaby undertakes **drinking water quality sampling** within the community to ensure compliance with the B.C. Safe Drinking Water Regulations and the Health and Welfare Canada Guidelines for Canadian Drinking Water Quality.
- The City is responsible for operating and maintaining 581 kilometres of **sanitary and combined (sanitary and storm) sewer** mains and 20 pump stations. Typical maintenance activities involve cleaning sewers by using sewer flush trucks, inspecting and repairing manholes, excavating and repairing broken sewer mains and services.
- The City maintains over 454 kilometres of **storm sewers**, and a similar number of ditches, which receive runoff from urban land surfaces and drain into Burnaby's creeks and streams. Through the development and implementation of Integrated Stormwater Management Plans, this infrastructure is managed to minimize impacts on Burnaby's watersheds where possible, to minimize risk of flooding, and to protect human health.
- Since 1989, the City of Burnaby and other member municipalities of Metro Vancouver have participated in the development of an **Integrated Liquid Waste and Resource Management Plan**. This plan intends to manage liquid waste issues throughout the region; outlines the need for numerous sewerage facility improvements; and provides for eventual elimination of the combined sewers that are located within some of the region's older neighbourhoods.

5.2 WHAT HAVE WE ACCOMPLISHED?

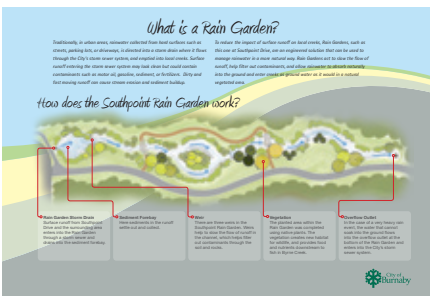
- In 2011, the City diverted 49% of the waste stream with 21% recycling and 28% as green waste (yard waste and food scraps).
- The City's **Green Team** (as described in Section 1.1.), in 2011 reported: a corporate reduction of 4% reduction in copy paper purchases since the previous year; 35% of all office purchases representing 'green' options from the supplier; 60% reduction in GHG associated with office supply deliveries; continued upgrading of printers to allow for duplex (2-sided) printing; a net zero growth in the City's vehicle fleet through sharing programs; replacement of 10 fleet vehicles with more fuel-efficient models; expansion of a system to automatically power off computers not in use, saving electricity; and additional ideas to shift to more sustainable products throughout the supply chain in food services and janitorial departments in the future.
- The City has collected **yard waste** from single and two family households in the curbside collection program since 1997, and for multi-family complexes since 2003; this organic matter is composted and turned into rich soil at a local facility.
- In 2010 the City initiated **food scraps collection** along with yard waste, for all single and two family households. In 2011 this program was expanded to multi-family complexes.



- The City's "I Recycle @ Work" Program was launched in 2011 with a goal of increasing **waste diversion at civic facilities** through education and outreach. The program has been implemented in several City Hall buildings and Fire Halls, and will be expanded to remaining civic facilities in the near future.
- A **school food scraps recycling pilot** project was initiated in 2011 to determine optimum methodologies and delivery programs for eventual full scale implementation of food scraps recycling in schools.
- The City's new solid waste and resource storage requirements help to ensure successful waste management programs in multifamily and commercial buildings.
- In 2012, the City initiated a **Styrofoam recycling pilot project**, allowing residents and businesses to recycle this material at the Still Creek Recycling Depot.
- At **UniverCity** on Burnaby Mountain, the City has enacted a **bylaw establishing numerous green development requirements**, including an energy efficiency target of 30% improvement over standard practices, and offers a density bonus option if 45% energy efficiency is achieved. Other requirements include 75% waste diversion for construction; low VOC materials and finishes; drought tolerant landscaping; and minimum recycled content and/or rapidly renewable resources for building materials.
- **The Southpoint Rainwater Management Amenity project** provides an example of a 'green infrastructure' approach to rainwater management and public open space. In 2010, the City transformed an un-used cul de sac on Southpoint Drive in south Burnaby into series of depressions that allow infiltration and cleansing of stormwater runoff, which benefits the ecology of Byrne Creek. Native plant landscaping, is integrated with a public pedestrian and cycling trail and interpretive signage.
- A **Neighbourhood Energy Utility** has been designed and constructed at UniverCity, consisting of a high efficiency gas boiler currently (as of 2012) servicing three buildings, and that will service all future developments in the community with heat and hot water; the facility will be switched to use biomass as the primary fuel, once a threshold of new development has been reached. The facility allows for significant greenhouse gas emissions reductions compared to standard electric baseboard heating systems.
- The UniverCity Childcare Centre, opened in 2012, uses a highly advanced **on-site wastewater treatment system** that safely treats all sewage produced in the building, to a standard safe for recreational contact. The treated water is **re-used for flushing toilets**, and any excess water is released, below the soil surface, **to replenish groundwater, benefitting watershed ecosystems**. The relatively clean **rainwater from the roof** is treated to potable standards, and used for drinking and washing. The building design also incorporates numerous other sustainability features including locally sourced and non-toxic materials.
- **Combined sewers** collect sanitary sewage and stormwater in a single sewer system; during wet weather these combined systems cannot carry all the sewage flows to regional treatment plants, and by design, discharge excess flows into Burrard Inlet and the Fraser River. These overflows



Food scraps collection was expanded from single- and two-family areas to include multi-family residences in 2011



Informative panels at Southpoint Rain Garden

negatively impact the environment, and the City has committed to a remedial plan to eventually eliminate all existing combined sewers and to construct new separated sewer systems in their place. To date, the City has invested nearly \$35 million and has successfully separated over 15km of combined sewers in north Burnaby.

- The City has developed a **sewer system infiltration and inflow** management program, to limit extraneous sources of storm and groundwater from entering the sanitary sewer system, which otherwise puts additional burden on the regional sewage treatment systems.

5.3 WHAT LIES AHEAD?

Through collaboration with developers, and development of new public infrastructure, Burnaby will continue to capitalize on opportunities to sustainably manage water, energy and resources. In the longer term, creative systems, new perspectives and enhanced standards and requirements will be needed to truly shift to a society that produces no waste. This shift will go a long way to address the enormous challenges we currently face in sustainability across environmental, social and economic realms.



World Rivers Day Community Event at Guichon Creek, 2011



Salmonid release at Guichon Creek



2012 Burnaby Environment Award recipients



City of Burnaby Environment Week display, 2011

6.0 STEWARDSHIP AND EDUCATION

The City of Burnaby is fortunate to have a diverse and engaged citizenry, including youth who are emerging as leaders in the community, as well as two world class post secondary education institutions, British Columbia Institute of Technology (BCIT), and Simon Fraser University (SFU).

6.1 WHERE ARE WE TODAY?

- The City supports **streamkeeper organizations**, helping to educate residents and businesses about watershed stewardship, and to implement fish habitat improvements to local streams.
- Burnaby staff contribute environmental information at **community events** in the City including Canada Day, the Hat's Off Day parade, Burnaby Rhododendron Festival, Discovery Days, the Great Salmon Send-Off, and Burnaby Youth Sustainability Network's "Do-It-Green" conference.
- City staff host community **workshops** on topics including water conservation, caring for streams, recycling, invasive plant management, and pesticide free gardening.
- The City carries out workshops and training for both the public and staff regarding the identification, control and removal of **invasive plants**.
- The City produces the **Let it Grow Naturally** education brochures about sustainable and pesticide-free lawn and garden care.
- The City offers low-cost **water efficiency kits** for indoor and outdoor residential use, as well as **rain barrels** to collect roof runoff for garden irrigation.
- City staff regularly respond to questions and concerns from residents, including non-compliance with environmental regulations, reports of spills in waterways or on land, and dealing with particular issues such as managing invasive species on private lands.

6.2 WHAT HAVE WE ACCOMPLISHED?

- **Stoney Creek Environmental Working Group (SCEWG)** is an inter-agency group facilitated by the City of Burnaby that includes stream-keepers, industry, and regional, provincial and federal representatives. Since 1999, the city has facilitated bi-annual meetings of the SCEWG, to coordinate and collaborate on environmental protection and sustainable development initiatives within watershed. Since its inception, the SCEWG has provided a forum for coordinated environmental action.
- **Partnerships with students** at BCIT, SFU and UBC have resulted in progressive research in a variety of areas, including ecology (e.g. fish and wildlife habitat; urban ravines), green roofs, and land use planning.
- In 2003 the City began an **education program** to help residents reduce the amount of cosmetic herbicides used on residential properties.
- The **Pesticide Use Control Bylaw**, enacted in 2008, prohibits the use of pesticides for cosmetic purposes on public and private lands.
- The City of Burnaby was awarded with the BC Landscape & Nursery Association's 2005 **Environmental Stewardship Award** for its education and awareness efforts.
- In 2012 the City produced an updated version of the popular **Waterways of Burnaby** map, to educate residents about the many streams, lakes and rivers in Burnaby. The map includes 39 newly stream names selected through a public **Heritage Creek Naming Project**.
- The City's **Environmental Awards and Stars Program**, initiated in 1996, annually recognizes outstanding environmental achievements in the categories of Community Stewardship, Communications, Planning and Development, Green Choices, Youth, and Business Stewardship.
- Since 1997 the City has coordinated an annual celebration of **World Rivers Day**, to help educate people about the importance of healthy streams in the City, including opportunities to engage in restoration activities.
- Since 1997 the City has coordinated and facilitated activities for **Environment Week**, each year in June, including speakers and entertainment, educational booths, and outdoor activities.
- The Stoney Creek Environment Committee, in cooperation with the City of Burnaby, the Sapperton Fish and Game Club, Department of Fisheries and Oceans, and Metro Vancouver, facilitated numerous **habitat improvements to Stoney Creek**, including construction of a series of weirs, culvert baffles and a fish ladder to facilitate fish passage. As a result, fish are now able to spawn in a section of the creek that had been impassable for over 25 years.

6.3 WHAT LIES AHEAD?

The City will continue to implement existing programs for environmental education and stewardship in the community. New or expanded programs may be developed, particularly where the initiatives can support the objectives of multiple strategic plans and policies. Working collaboratively with community members will be increasingly important.



Byrne Creek ivy pull



2012 Waterways of Burnaby map



Byrne Creek Steamkeepers

Cipywmyk photo



7.0 CONCLUSION

Burnaby has accomplished many successes over the years together with our partners, including protecting and enhancing ecosystems, innovating with new sustainable technologies and practices, and establishing an urban structure that supports multiple aspects of sustainability. These legacies have established a high standard of living and allow us to meet the challenges of the future from a position of strength, as we proceed to develop the ESS.

A companion report, **What is Sustainability? A Burnaby ESS Context Report**, further explores key challenges and opportunities of the ESS.

