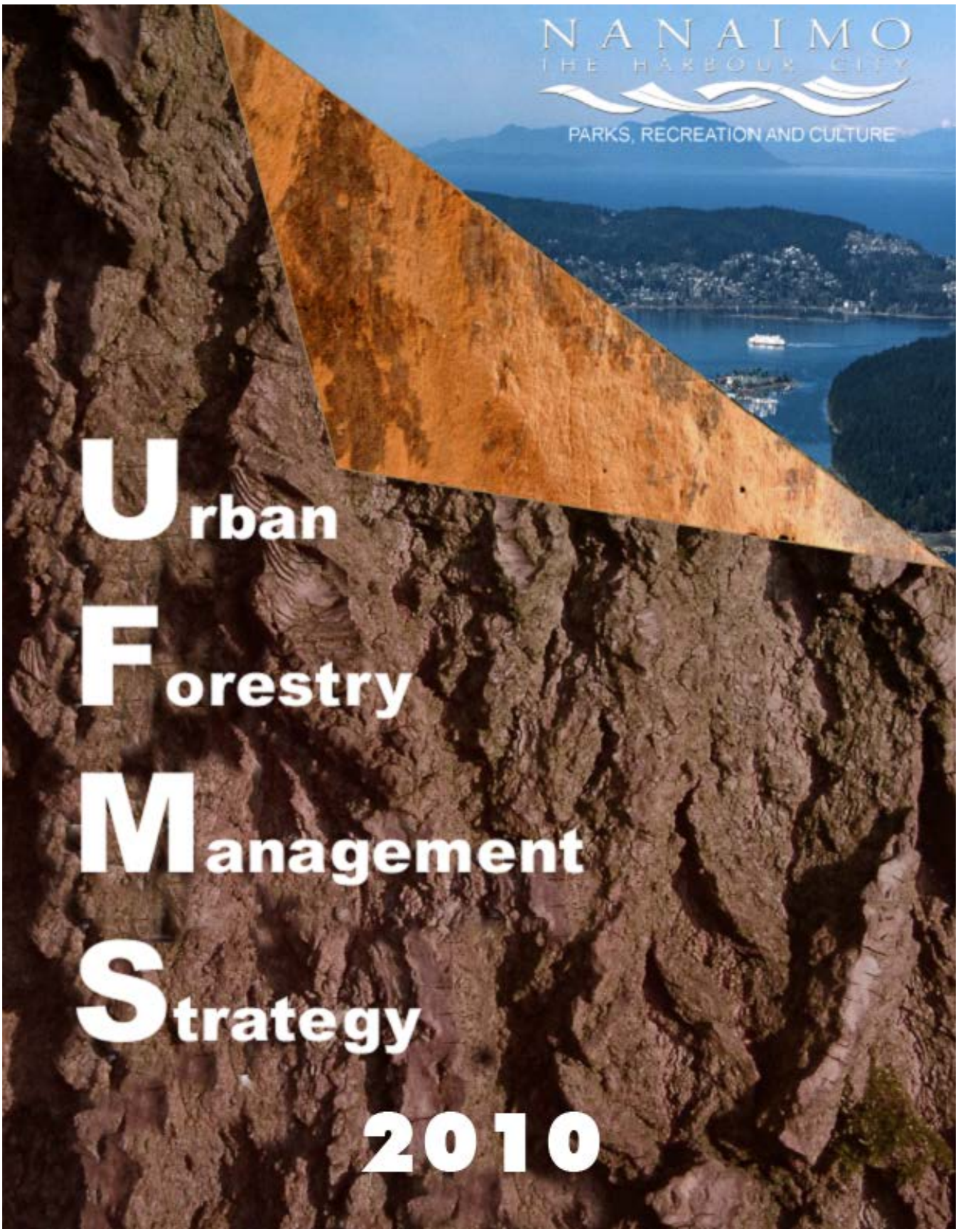
NANAIMO
THE HARBOUR CITY
PARKS, RECREATION AND CULTURE
Urban
Forestry
Management
Strategy
2010

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"A society grows great
when old men plant trees
whose shade they know
they shall never sit in."
Greek Proverb

ACKNOWLEDGEMENTS

Nanaimo City Council

City of Nanaimo Parks and Recreation Commission

City of Nanaimo Advisory Committee on the Environment

Focus Group Members

" People who will not sustain trees will soon live in a world which cannot sustain people."
Bryce Nelson

EXECUTIVE SUMMARY

This Urban Forest Management Strategy (UFMS, the Strategy) has been developed to fulfill a need for better forest, vegetation and ecosystem management throughout the City of Nanaimo. The Strategy establishes the overall direction of the management of Nanaimo's urban forest using guiding principles and policies that are organized around a series of "modules".

The need for an Urban Forest Management Strategy was identified in the following City documents:

- Official Community Plan (2008).
- Urban Forest Study - City Trees and You (2008).
- Parks, Recreation and Culture Master Plan (2004).

A multi-phase approach was taken in developing the strategy. It included a research and review of current management plans from communities in British Columbia and across North America; a series of focus group meetings to define the scope and direction for the strategy and to help design a public survey to identify relevant issues and concerns from the public; and open houses to present a preliminary layout of the strategy to gauge the public on its content. A set of modules were then designed to identify goals, objectives and action plans for seven key issue areas:

- Education and Public Outreach.
- Natural Areas Management.
- Street Trees, Boulevard and Landscaping Management.
- Tree Removal and Replacement.
- View and Privacy.
- Wildfire and Urban Interface Management.
- Planning and Enforcement.

New approaches in financing these programs will need to be considered, including new funding sources for green projects, both federal and provincial, such as Trees For Tomorrow, Tree Canada and BC Hydro Community Outreach.

Douglas Maple – Street tree

1.0 INTRODUCTION

1.1 Vision Statement of the Urban Forest Management Strategy

Nanaimo is a community that strives to balance human, natural and economic priorities in maintaining and enhancing its urban forest. The urban forest is seen as a fundamental utility which provides wildlife habitat, clean air and water, economic prosperity and a physically attractive setting for the City's residents and visitors.

1.2 The Scope and Purpose of the Urban Forest Management Strategy

The purpose of urban forest management strategies is typically to provide context and a framework for the sustainable management of a city's existing and future urban forest. Part of the direction for this Strategy comes from the City of Nanaimo's Official Community Plan (OCP) and from the Parks, Recreation and Culture Master Plan. In addition, the Strategy reconnects existing City tree-related policies, the latest urban forest research, best management practices in arboriculture, and input from the public into a vision for the future of Nanaimo's urban forest.

The goal of the Urban Forest Management Strategy is to provide direction in how the City of Nanaimo will work with its community partners to manage Nanaimo's overall urban forest and:

- promote and retain the overall tree canopy;
- retain sustainable forest stands as part of the subdivision of land;
- review practices in managing danger or hazard trees;
- enhance forest biodiversity;
- improve tree health; and
- maximize the benefits of trees for all residents.

The Strategy recognizes our urban forest as a living utility, similar to roads, water systems and other necessities of an urban environment. Like other City utilities, the urban forest should have development and management plans. In preparing this Strategy, existing strategies, plans and research from Canada, the United States, Australia and the United Kingdom were reviewed.

Nanaimo's rapid growth raises the priority for the management and enhancement of the green spaces within the City. The Urban Forest Management Strategy is expected to assist in the planning, preservation, protection and enhancement of trees, shrubs and other forms of vegetation throughout the City. It should be noted that this Strategy does not apply to lands defined as Managed Forest Land under the *BC Assessment Act.*

1.3 The Need for an Urban Forest Management Strategy

This Urban Forest Management Strategy has been developed to fulfill the need for better forest, vegetation and ecosystem management throughout the City of Nanaimo. The Strategy contains a set of guiding principles and policies which provide direction for the ongoing management and operations of Nanaimo's urban forest.

The need for an Urban Forest Management Strategy was identified in the following documents:

- Official Community Plan (2008).

> Urban Forests and Greenways – 5.6
>
> 1. The City will develop an urban forest plan. This plan should cover the following:
>
> - A review of the objectives and implementation of the Tree Protection Bylaw;
> - A review of the regulations and policies concerning the management of trees and forests in parks and other protected lands;
> - An investigation of the role of trees in stormwater management, energy use, air quality, habitat, views, aesthetic and property values;
> - A vision, supported by staff and public process, for the role and form of the desired urban forest in Nanaimo;
> - Recommended strategies, implementation tools, and budgets for tree protection, planting, maintenance and removal; and
> - Planning and budgeting for the installation and maintenance of street trees.

- Urban Forest Study- City Trees and You (2008).
- Parks, Recreation and Culture Master Plan (2004).

CITY TREES AND YOU

The Urban Forest Public Opinion Study (Urban Forest Study- City Trees and You) determined that the citizens of Nanaimo value the trees within Nanaimo. The study also determined that 80 percent of homes have trees on residential property, and 30 percent have street trees on City property in front of their place of residence. Nearly 70 percent of residents have a City park within a 10-minute walk of their residence, and just over 50 percent have an undeveloped forested area within a 10-minute walk of their residence. The survey also indicated that 67 percent of the respondents perceived a decrease in the number of trees within Nanaimo overall. The respondents indicated that they place a high value on the urban forest and support further initiatives for better urban forest management.

This high level of public support for our urban forest stems from the perceived benefits of City trees. Not surprisingly, most residents felt that trees improve the appearance of their residence and of their neighbourhood. In addition, most residents valued the ecological values of trees; e.g. providing habitat for birds and wildlife, reducing erosion, reducing flooding and removing carbon from the atmosphere. These responses suggest a strong understanding of natural processes and support for environmental stewardship within an urban environment. This is an important finding, and is an opportunity to build strong partnerships in stewardship between the City of Nanaimo and the Nanaimo community.

ENVIRONMENT

Environmental and ecological issues also indicate the need for the development of an urban forest management strategy. Air and water quality, addressing climate change, wind reduction, temperature moderation, noise levels, privacy, aesthetics and wildlife are all impacted by the presence (or absence) of an urban forest. This impacts the residents and visitors of Nanaimo. The potential risk of forest and residential interface fires is also considered in the development of this Strategy.

TREE BYLAW

Ideally, the Tree Protection Bylaw should be protecting and sustaining Nanaimo's urban forest, but in order to do this effectively, the bylaw needs to be updated. The tree replacement ratio needs to be changed and vary from size and species of tree. The incentives and fines also need to be evaluated and updated so that the bylaw is adhered to.

Arbutus – Newcastle Island

2.0 METHODOLOGY

In developing the Urban Forest Management Strategy, the following steps were undertaken:

Step 1: Research of Strategies, Plans and Best Practices

Precedent research was conducted through internet searches, phone conversations and meetings with staff to review current urban forest strategies and plans within Canada, the US and other international cities. The purpose for reviewing those strategies was to determine the aspects which would be important for the success of Nanaimo's Urban Forest Management Strategy.

Step 2: Focus Group Meetings

A focus group was established which met to discuss the Urban Forest Management Strategy development. This group also helped to develop a survey which was distributed to 2,000 randomized addresses in Nanaimo. This survey helped to determine the public opinion on the current tree coverage within Nanaimo. The focus group also met to review the survey findings and suggest ways to improve the current urban forest.

Step 3: Preliminary Outline of the Strategy

Research collected from the previous phases was analyzed and a preliminary outline of the Urban Forest Management Strategy was produced. This outline was circulated among several City staff members, as well as focus group members for comments and feedback.

Step 4: Open Houses

The preliminary outline of the Urban Forest Management Strategy was presented to the public during three open house presentations which took place in June 2008. The open houses took place on Protection Island, the Oliver Woods Community Centre and Maffeo Sutton Park. These open houses were designed to educate the public about urban forestry issues, as well as receive input on the further development of the Strategy. A guided comments sheet was provided at each open house.

Step 5: Module Development and Final Strategy

Follow-up meetings were set up with different interest groups to further develop the Best Management Practice modules. From these discussions, the modules were changed to reflect the goals and objectives which were identified, and the final version of the Urban Forest Management Strategy was developed.

Step 6: Process / Implementation

This Strategy was initiated through recommendation in the Parks, Recreation and Culture Master Plan (2004). A report was sent to the Parks, Recreation and Culture Commission (the Commission) by the Director of Parks, Recreation and Culture. This report outlined the need for an urban forest strategy and the process that would take place to create the strategy. Throughout the process, information reports were presented to the Commission to keep them informed on progress.

Downtown Waterfront

3.0 NANAIMO'S URBAN FOREST

3.1 What is an Urban Forest?

The City of Nanaimo defines its urban forests as all of the trees and associated shrubs and ground vegetation within the boundaries of the City of Nanaimo. The urban forest spans both natural and built environments and contributes to important ecological, physiological and economic benefits of the City.

Nanaimo's urban forest expands across both public and private property. Below are examples of some of the components which make up Nanaimo's urban forest:

- Trees and vegetation along streets.
- Trees and vegetation bearing edible fruits, nuts and/or vegetables.
- Landscaping in parks, around homes and infrastructure.
- Vegetation in commercial and industrial areas (aside from lands classified as Managed Forest Land under the British Columbia *Assessment Act)*.
- Multi-layered forests in natural areas.
- Trees and vegetation on Newcastle Island and Protection Island.
- Treed environments found in our City parks.
- Private conservation lands (Morrell Sanctuary, Buttertubs Marsh and Nanaimo Estuary).
- Treed vacant land (both private and government-owned).
- Older Coastal Douglas fir forest remnants, such as those found in Morrell Sanctuary.
- The riparian areas around our streams, ponds, lakes and other aquatic environments.
- Foreshore areas that are populated with Arbutus, Shore pine and Douglas fir.
- Remnant Garry oak ecosystems, which include wildflower meadows, shrubs, fungi and fauna associated with this ecosystem.
- Remnant patches of woodland that survive around commercial or industrial parks.

A healthy urban forest is essential to our quality of life. It aesthetically contributes to our neighbourhoods, and it is an asset that increases over time. By either maintaining existing natural ground vegetation or selecting appropriate species in a more formally landscaped site, the level of natural biodiversity can be greatly enhanced. This will provide benefits to a wide variety of species that live in the City and provide residents and visitors with greater opportunities to interact with nature in Nanaimo.

3.2 Current State of Nanaimo's Urban Forest

The Landscape

The City of Nanaimo occupies a land mass of 82 km^2 (Statistics Canada, 2006) and is located on the east coast of Vancouver Island. Nanaimo is 20 km long and 5 km wide stretching from the Nanaimo River Estuary in the south, to Lantzville in the north, and from the Georgia Strait in the east, to the Vancouver Island Ranges in the west.

The City has a wide variety of native and non-native tree species which help define the character and give texture to many of our neighbourhoods and parks. Much of this variety has come though the influence of various people who have shaped the landscape leaving their impression on Nanaimo. Initially, the Snuneymuxw First Nation, who have occupied the Nanaimo area for thousands of years, performed modest landscape management of the Garry oak ecosystems which once covered large areas of Nanaimo. Some of these meadows still exist in fragments throughout Nanaimo, but the majority of the meadows were lost after European settlement. After European settlement, an influential individual named Samuel Robins, Mine Superintendent of the Vancouver Coal Company Mine, planted a wide variety of tree and plant species which he had imported to Nanaimo. Many of his plantings are still present on the property he once lived on as well as areas of Harewood.

Nanaimo's landscape has also been shaped by the many invasive species which have been introduced over the years. These invasive species have out-competed many of the native plants that once flourished in Nanaimo, and in areas where these invasive plants have been removed, the native species are slowly returning.

Currently, the City of Nanaimo has approximately 28 percent forest cover (Malaspina University College, 2006), and as of January 2008, there are over 15 km^2 of parks and open spaces and over 117 km of trails within the City of Nanaimo. Some significant examples of highly-vegetated areas include Bowen Park, Newcastle Island Provincial Marine Park, the Westwood Lake and Colliery Dam Park areas, Linley Valley and "DL 56", Morrell Sanctuary and around the Nanaimo Estuary.

Nanaimo has many areas with prestigious landscaping and beautiful gardens, including City Hall grounds, Maffeo Sutton Park, Bowen Park and Beban Park to name a few. Many of Nanaimo's streets are lined with boulevard trees thanks to community members, BC Hydro and Green Streets Canada. As neighbourhood plans are developed for new areas or revised for older ones, boulevard trees will be included in many of the landscaping plans.

The Climate

Nanaimo is located within the Coastal Douglas fir moist maritime zone (CDFmm), one of the 12 zones which make up the biogeoclimatic zones of British Columbia. It is a relatively dry rain shadow area, and historically the vegetation was controlled by natural and man-made brush fires. The more common native species found in Nanaimo have all adapted well in this environment to date. For example, Coastal Douglas fir has developed a thick bark which makes it more fire resistant than other potential competitors. Other native species, such as Gary oak

and Arbutus, are fast-growing and can quickly colonize an area following a fire. These adaptations have reflected the climatic conditions typical to East Vancouver Island up to this point. Maintaining these ecosystems is important in maintaining biodiversity for the future which will be more and more significant as the changing climate places greater stress on our existing urban forest. Questions as to whether we can continue to maintain these types of ecosystems in an urban setting need to be considered. If we wish to maintain these ecosystem types, then management practices that mimic the effects of fire will need to be adopted.

On the south coast of BC, climate change is expected to lead to a series of significant changes to our forests in the coming years. Warmer temperatures, more precipitation in the winter months (heavy rain events), longer periods of drought in the summer, a decreased snow pack at higher elevations and changes to the timing and magnitude of river discharge are all predicted. Over the next century, climate change is expected to result in several key changes. Temperatures are expected to increase 1 - 4°C (Hengeveld, 1997; BC Ministry of Water, Land and Air Protection, 2002), and precipitation is expected to increase 10 - 20 percent along East Vancouver Island (BC Ministry of Water, Land and Air Protection, 2002). The management of the urban forest, therefore, will need to adapt to the changing environment.

Management

There are other urban forest management issues which will need to be addressed in this Strategy. For example, in some parts of the City, the urban forest has matured to a point where viewscapes are restricted, and there is concern by some residents that the trees may come down on homes. In other parts of the City, the mature trees are seen as the view and are enjoyed by many.

Some street tree choices prove to be poor choices due to safety concerns over sight lines and the damage that has been caused by root systems to sidewalks and road-ways. Information on the selection and location of street trees will be made more readily available to the public through this Strategy and via the City website under Urban Forestry.

In addition, landscaping choices by both residents and the City have encouraged the spread of a number of invasive species that have become problems on both public and private property. The introduction and spreading of these species has impacted the urban forest landscape by wiping out or inhibiting the growth of some native species that once occupied the area. Invasive species which are common in Nanaimo include Scotch broom, English ivy, Himalayan blackberry, Giant hogweed, Daphne and Gorse. More information about the management and removal of these species can be found at www.nanaimo.ca in the Parks, Recreation and Culture portion of the website.

The City recognizes that the trees and vegetation of private property contribute largely to the overall forest coverage of Nanaimo. It is important, therefore, for the City of Nanaimo to work with the residents of Nanaimo to create a sustainable urban forest.

3.3 A Sustainable Approach Towards an Urban Forest

The City of Nanaimo is working to prepare for the challenges of the 21st century by working to be a more sustainable community. This change in approach will bring new challenges that all of us will need to address, including:

- climate change and its diverse array of impacts;
- constraints on the supply of fossil fuels leading to rising energy costs;
- steadily growing water demands;
- increasing impacts on natural ecological systems, locally, regionally and globally;
- increasing pressure on the global food supply and growing support for healthy local food;
- changes in economic patterns and stability; and
- ageing, demographic change and other social issues.

Part of how we work toward becoming more sustainable will be determined by how we adapt our urban forest management practices in light of the coming challenges. The City's urban forests and open spaces include extensive and diverse landscapes offering ecosystem protection and enhancement opportunities; space with a rich array of recreational options and potential for producing and celebrating local food. This latter concept is recognized and further explored in the Official Community Plan (2008), Sec 3.4 – Food Security.

3.4 Benefits of a Sustainable Urban Forest

The City of Nanaimo recognizes that the urban forest is an essential part of a "liveable" and economically-sound community. As such, urban forests are coming to be known as a component of "green infrastructure". Green infrastructure provides important ecological, health and social functions that translate into direct cost-savings for the local government and indirect stimulation of the local economy. This green infrastructure accrues value and provides greater services as time passes. Below are some of the benefits of a sustainable urban forest.

Rainwater Capture

Pollutants carried in surface water are the primary cause of degradation of our streams and rivers. An intact canopy reduces runoff and pollutants by intercepting and storing rainfall. This increases the amount of storm water infiltrating into the soil and transpiring back into the atmosphere, thus reducing the rate at which water reaches streams, maintaining longer annual flows in fish-sensitive streams and reducing the threat of flooding.

Air Quality Improvements

Trees absorb gaseous pollutants, such as ozone, nitrogen oxides and sulphur dioxide, and they filter particulate matter, such as dust, ash, pollen and smoke. Reduction in these pollutants results in improved health and reduces the severity of ozone-induced asthmatic responses. Urban trees absorb carbon dioxide at an approximate rate of 230 lbs per year per tree, a large, healthy tree can also produce enough oxygen each day for 18 people.

Some pollutants can be absorbed into the tree, though most particles that are intercepted are retained on the plant surface. The standardized pollution removal rates differ among cities according to the amount of air pollution, length of in-leaf season, precipitation and other meteorological variables (Nowak 1995). Trees in parking lots reduce air temperature through tree shade and indirectly reduce the emissions of some pollutants that are temperature

dependent, such as hydrocarbons released through gasoline evaporation from parked cars (Cappiella 2005).

Energy Savings

Throughout the year, trees can moderate temperatures for adjacent buildings and public spaces. They release water vapour by transpiring the water within the leaves. The trees also create a cooling effect in the summer which can lessen the temperature levels found in highly developed / urbanized areas (known as the Urban Heat Island Effect) in major cities. The lower temperatures create less demand on mechanical cooling systems in buildings which will lower overall energy consumption in the City.

Food Sources

Fruit and nut-bearing trees, as well as edible plants in Nanaimo's urban forest and parks, provide a great deal of nutrition to each other, animals and people. These species make up Nanaimo's edible landscape and are integral to Nanaimo's established and developing sustainable food systems.

Public Safety and Health

Trees along transportation corridors narrow a driver's field of vision, reducing traffic speeds and increasing pedestrian safety by providing a natural, physical barrier. Public spaces with trees receive more visitors, facilitating more social bonds in our neighbourhood environments.

Wildlife Habitat

Trees and intact ecosystems provide essential food and nesting habitat for all wildlife from micro-organisms to birds and small to larger mammals. The presence of these species in our communities contributes to our well-being and our connection with nature. This includes decaying wildlife trees, as well as healthy trees.

Economic Benefits

Improving aesthetics of our community has tangible economic benefits. Systems of open space and trails give a community a reputation for being a good place to live and visit. Increased recreational and community activity attracts new businesses and stimulates tourism. Well-maintained trees improve residential "curb appeal" and increase potential buyers' willingness to travel to a well-treed commercial district. Shoppers also indicate that they are willing to drive farther and stay longer if a retail district is well landscaped with trees (University of Washington, 1998).

Property Values and Aesthetics

Trees have been shown to enhance the market value of residential properties by as much as 25 percent in some cities. Many people prefer to live in treed neighbourhoods (Clean Air Online, 2005)

Further information available at:
University of Washington, College of Forest Resources
Urban Forest Values: Economic Benefits of Trees in Cities

http://www.cfr.washington.edu/research.envmind

Green Infrastructure Guide:
http://www.wcel.org/wcelpub/2007/14255.pdf
Source: West Coast Environmental Law

Green Infrastructure:
http://www.greeninfrastructure.net/?article=2064
Source: Society of American Foresters: Western Forester, January 2007

Rhododendron Garden – Bowen Park

4.0 GUIDING PRINCIPLES FOR THE URBAN FOREST MANAGEMENT STRATEGY

The Urban Forest Management Strategy should be viewed with the following principles in mind:

Sustainability (Environmental, Social and Economic):

- Support the protection of trees, woodlands and riparian areas as key components of our ecosystems and promote our natural heritage.

- Recognize the importance of tree canopies and their contributions to clean air, water, rainwater attenuation, energy conservation, improved public health and economic factors. The urban forests are as important to our well-being and health as other utilities, such as our roads and storm drain systems.

- Support public / private partnerships with business and non-profit organizations in mobilizing resources, widening funding sources and engaging the community in the understanding of the importance of urban forests.

Accessibility:

- Support the importance of community awareness and engagement as major contributors to healthier urban forests and in guiding neighbourhood involvement and community pride.

- Our urban forest should allow for various levels of access to allow residents of all abilities to enjoy the ecological, spiritual, nutritional and recreational benefit of our urban forests.

"Trees are the best monuments that a man can erect to his own memory. They speak his praises without flattery, and they are blessings to children yet unborn."
Lord Orrery, 1749

Sea Blush / Camas meadow – Bowen Park

5.0 RECOMMENDATIONS AND NEXT STEPS

This Strategy contains a series of modules that identify goals, objectives and procedures that the City is either pursuing or will commit to over the next five years.

This section summarizes seven operational modules and also provides some general recommendations to the City. The summary level detail in this section will be supported by the operational detail provided for each module.

The following modules identify various aspects of issues which need to be addressed in this Strategy. These issues are addressed through a number of distinct "themed" Best Practice Modules. It is expected these modules will be added to in greater detail as priorities, resources and best practices evolve. The seven Best Practice Modules are listed as follows:

Module 1: Education and Outreach – Staff and public education and community outreach based on the values and management of the urban forest.

Module 2: Parks and Natural Areas Management – Natural areas management based on discussions with City staff; including options for preserving intact or recoverable Coastal Douglas fir and Garry oak ecosystems.

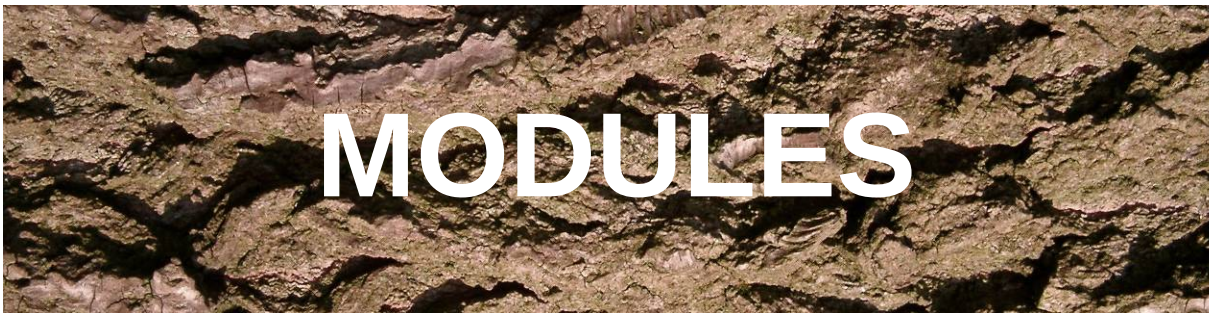
Module 3: Street / Boulevard Trees and Landscaping – Designing, planting and maintenance of trees and surrounding landscaping.

Module 4: Site Specific Tree Removal and Replacement – Designing, planting, maintenance, and replacement of trees and surrounding landscaping.

Module 5: Property Value: Views and Privacy – Public value of views and privacy and their effect on the trees in the surrounding area.

Module 6: Wild Fire Interface – Wild Fire Interface management based on initial discussions with City staff and others.

Module 7: Planning and Enforcement – Planning review of development applications for conformance to existing tree ordinances. Bylaw modifications will help to make the Tree Protection Bylaw protective of a wider span of trees.


MODULES

Module 1: Public Education and Outreach

Goal: To raise public awareness of the benefits, health and maintenance of trees and vegetation in Nanaimo.

Overview:

The forest landscapes within the City of Nanaimo are an important and vital part of a healthy living environment. The majority of residents in Nanaimo live close to large forested areas. It is important to raise awareness of the implications of managing and maintaining forests, as well as understanding the value of naturally forested areas to the urban environment. Finally, it is important that the entire community recognize that the health and environmental benefits from our trees do not differentiate between public and private spaces.

The City could strengthen ties and coordinate with local community organizations in communicating to the public and working together to develop programs that are accessible to all citizens of Nanaimo.

Objectives / Actions:

1. Communication Plan and Outreach Strategy

a. Identify target audiences and partners: community groups, Snuneymuxw First Nation, schools, business managers.
b. Develop communication "tools" to deliver the message of the importance of tree health within the context of forest ecology.
c. Identify the most effective means to deliver the message to residents in Nanaimo.
d. Develop a funding strategy to support a public education program.
e. Work with School District #68 and organizations such as Evergreen Canada and the International Society of Arboriculture to deliver educational programs in City Schools and throughout the community.
f. Establish a means for public feedback to allow for adjustments to the program to maintain effectiveness and relevance.

2. Inform the Public on the Management and Care of the Urban Forest

a. Utilize social marketing techniques when communicating components of the Strategy.
b. Ensure information about Nanaimo's urban forest is available on the City's website.
c. Provide information on identifying and managing invasive species for private homeowners and parks volunteers. Coordinate and develop partnerships with similar organizations, such as the Coastal Invasive Plant Committee.
d. Expand educational interpretive signs to other public spaces aside from nature parks.
e. Establish a training workshop program for contractors, parks volunteers and interested residents on tree and vegetation management (beyond invasive species control).

Action Plans:

Short Term (to be completed within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Other Specific Actions	**Department Responsible**	**Timing**
1-1	Establish and maintain a regular seasonal feature in the newspaper on the significance of Coastal Douglas fir Zone trees and vegetation.	Parks Department	Ongoing
1-2	Meet with the School District to determine the interest level in an education project.	Parks Department	Medium Term
1-3	Develop a communication plan aimed at educational institutions, businesses, governments, and citizens promoting urban forestry.	Parks Department	Short Term
1-4	Create a training workshop program.	Parks Department	Short Term

Module 2: Parks and Natural Areas Management

Goal: To maintain and expand the forested character of Nanaimo by preserving wildlife habitat, parks and greenway corridors with policies relating to tree retention, replanting and pre-planting in newly-developed areas.

Overview:

The natural areas of Nanaimo are defined as areas that are relatively undisturbed, contain a high percentage of native plant species, and provide for considerable indigenous wildlife habitat of various densities and sizes which are found in private and public lands. These natural areas can also be jointly owned and managed to provide public education opportunities, as well as to protect conservation values (i.e., co-management of the Buttertubs Marsh Conservation Area with the Nature Trust of British Columbia).

Environmentally Sensitive Areas (ESAs) are components of the City's natural areas which have been previously identified by the City of Nanaimo following up on the provincial Sensitive Ecosystem Inventory conducted from 1993 to 1997. These areas are natural ecosystems greater than 0.5 ha in size that provide productive fish and wildlife habitat, contain sensitive, rare or depleted ecosystems and landforms, and represent sites of Nanaimo's natural diversity that are in danger of disappearing. These areas include wetlands, riparian areas, rocky outcrops (terrestrial herbaceous sites), Arbutus and Gary oak woodlands and older, primarily second growth, forests. More than 90 percent of the original natural landscape of Nanaimo has been altered or removed.

The City has recognized and provided significant protection for the City's ESAs through an ESA Development Permit Area (DPA), the Steep Slope DPA and Zone, and through the Watercourse DPA and Zone which complies with the Provincial Riparian Areas Regulation (RAR).

The City's natural areas are also a piece of our living history and provide a multitude of free services to Vancouver Island communities. Wetlands purify water, forests clean the air, and open flower meadows provide spiritual emotional relief for many residents who view them. In these sites there is a higher proportion of biodiversity compared to non-ESAs, so protecting these sites helps to protect local biodiversity. The physical spaces ESAs provide give residents a chance to observe a wide variety of wildlife within a relatively short distant from their homes.

Maintaining connectivity between these ESAs is also important so that these sites are sustained for the long-term. Identifying natural corridors (primarily along watercourse riparian areas and significant stands of Coastal Douglas fir ecosystems) and using a variety of tools to protect and maintain these corridors, therefore, need to be addressed.

Underlining all forest management concerns will be the growing impacts of climate change on Nanaimo's urban forest. As mentioned in the introduction, with rising temperatures, changes in precipitation levels and the eventual loss of local snow packs, what we plant and how we maintain our forest will need to be reviewed. Maintaining biological diversity will provide us with options in future years that may not be evident now. Continuing to build and expand the City's invasive species management program, therefore, will be important. The species we decide to plant also need to be considered in light of future expected changes to our climate. For example, the use of Cedar in planting prescriptions needs to be revised in favour of other species more common to southern latitudes, such as Garry oak.

The City of Nanaimo, having signed onto the provincial Climate Change Charter, has made a voluntary commitment to become "carbon neutral"[1] in its operations by 2012. While energy conservation and green building practices will lower emissions, efforts to account for all our emissions as a corporation will mean we consider projects that mitigate for carbon emissions we cannot avoid. One part of the solution could be in refocused efforts to preserve existing trees and plant additional trees to help sequester carbon from the atmosphere. Another part of the solution could be in establishing edible landscapes within City parks as part of a greater local food strategy for Nanaimo. This program could be provided through the Volunteers in Parks (VIP) program. Local food production and use can contribute toward building some local capacity to feed ourselves and limit our dependence on food being grown and transported vast distances for use in Nanaimo.

When developing park management plans, long term forest and ecosystem sustainability, management of hazard trees and invasive species, and maintenance and restoration of biodiversity of the forest understory shall be priority issues to be addressed. As part of determining the long-term forest / ecosystem sustainability of each park, the health and age of the forest stand will be reviewed and options for reforestation will be considered.

Objectives / Actions:

1. Develop a forest management / natural areas plan for each City park. First consideration for these plans should go to parks where there are significant conflicts between user groups and natural space and/or major invasive species infestation. Suggestions for priority consideration include:
    a. Loudon Park;
    b. Westwood Lake Park;
    c. Theresa Terrace Park;
    d. Planta Park;
    e. Bowen Park;
    f. Colliery Dam Park;
    g. Northfield Nature Park;
    h. Linley Valley Park;
    i. Dunster Park; and
    j. Piper's Lagoon Park.

2. The City will explore partnership opportunities with Snuneymuxw First Nation in co-managing culturally significant natural landscapes (Garry oak meadow areas) within the City's parkland.

3. The City will work to enhance forest biodiversity when replacing trees in City parks. Specifically:

[1] Carbon neutrality involves measuring the greenhouse gas emissions that come from government operations such as buildings and fleet vehicles and then reducing those emissions to net zero. Governments achieve carbon neutrality by reducing emissions where possible, by purchasing carbon offsets to compensate for its greenhouse gas emissions or by developing projects to offset emissions. Such projects may include converting to energy efficient buildings and replacing old fleet vehicles and buses with hybrids. It may also include developing extensive tree planting programs. (http://www2.news.gov.bc.ca/news_releases_2005-2009/2007OTP0139-001194.htm)

a. Replacement trees and shrubs in natural areas need to include native plantings within the replanted stands.
    i. Include native vegetation to all tree planting plans in natural areas.
    ii. Arrange trees in natural groupings and clusters characteristic of natural settings.
b. Trees and plants to be planted in natural areas will be native to Nanaimo and the CDFmm biogeoclimatic zone.
    i. If it is not possible to use native plant material, plant material that is similar in appearance, growth habitat, colour and texture to the native plants in the area and which will not be invasive to the natural environment, will be considered.
c. On forested steep slopes, trees strands will be retained that represent a range of ages to provide for natural succession and the long-term sustainability of the forest ecosystem. The minimum size of these stands will be determined at a later date.
d. Trees and shrubs will be planted in masses and patterns characteristic of a natural setting and with the intent of encouraging biodiversity while balancing concerns for public safety and fire hazards.

4. Environmentally Sensitive Areas
    a. All modifications to trees in recognized environmentally-sensitive areas must be in accordance with the Watercourse Bylaw, the Tree Protection Bylaw, the Environmentally Sensitive Development Permit Area and the Steep Slope Development Permit Area Guidelines where applicable.
    b. A review of the current ESA development permit area will be carried out to consider if other natural areas need to be included within the development permit area (i.e., significant Coastal Douglas fir sites).

5. Vegetation Buffers Adjacent to Agricultural Lands
    a. On lands adjacent to the Agricultural Land Reserve (ALR), vegetation buffers need to be incorporated into designs for development applications. These buffers should conform to the Agricultural Land Commission's *Landscape Buffer Specifications* (March 1993).

6. Climate Change
    a. Review all approved tree and landscaping species lists and make any necessary adjustments in order to fully consider expected climate change impacts.
    b. Work with Current Planning staff to revise Development Permit Area 9 (Form and Character) to include greater direction on protecting existing natural landscapes on lands to be developed.
    c. Provide public awareness on the values of trees as natural insulators for buildings which reduce energy consumption. Older trees on site act as carbon sinks and, therefore, have greater value in place in dealing with climate change impacts.

7. Significant Forests
    a. The City will seek to protect lands that possess significant environmental urban forest for both conservation and recreational value (e.g., wildlife corridors).

b. The City will work to acquire significant urban forest stands, as opposed to individual trees, as part of a rezoning or during the subdivision approval of land.

8. Greenways
   a. The City will strive to create an interconnected greenway network that includes, but is not limited to, the following current and potential greenways:
      i. Millstone River Watershed (completed).
      ii. Chase River Watershed.
      iii. Wexford Creek.
      iv. No Name (Nanaimo River Watershed).
      v. Cottle Creek Watershed/ Linley Valley.
      vi. Richard and Beck Creek Watershed.

Action Plans:

Short Term (to be completed within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	Department Responsible	Timing
2-1	Develop Forest Management Plans for parks.	Urban Forestry Coordinator	Ongoing
2-2	Review DPA 9 and incorporate Bill 27 tools in combating Climate Change.	Development Approval Planner, Environmental Planner	In Process
2-3	Determine the level of forest fire risk in parks.	Parks Department, Fire Department	Medium Term
2-4	Create an interconnected greenway.	Parks Department, Engineering Department, Planning Department	Long Term
2-5	Review planting specification lists.	Urban Forestry Coordinator, Planning Department, Engineering Department	Short Term

2-6	Review section 14 of the Engineering Standards and Specifications	Parks Department	Medium Term

Module 3: Boulevard Trees and Landscaping

Goal: Maintain attractive and visually appealing urban street trees and landscaping along the City of Nanaimo's boulevards and street network. This is to be done in a cost effective manner that maintains public safety and effectively integrates tree / vegetation management with other City infrastructure and includes public involvement.

Overview:

Street and boulevard trees planted along roads and in sidewalks enhance the visual appearance of the area in which they are planted. In addition, street and boulevard trees provide privacy and enhance aesthetics to the property owners. These trees can increase property value, as well as add to the aesthetics of the neighbourhood. Boulevard trees can also give neighbourhoods an identity, potentially creating a sense of community and cohesion within a neighbourhood. The location of boulevard trees can be either on the created boulevard before the sidewalk (community boulevard tree) or on the owner's property (residential boulevard tree). These two planting options allow the boulevard trees to benefit individuals and the community if they are maintained and healthy.

Until the City completes a street landscape and tree boulevard plan that more clearly defines suitable locations for native and non-native street tree plantings, the following will be accepted:

- Main Street and Arterials Boulevards, along with the City gateways are to have a higher level of maintenance and irrigation. They will be planted with ornamental (non-native) tree species.
- All other streets bordering City watercourses, the City Parkway, City parks with Natural areas, and significant privately-owned open spaces will select trees that are native and as low maintenance as is reasonable. Landscaping will be complementary to the surrounding ecosystems and be primarily native, biologically diverse and require little maintenance.

Objectives /Actions:

1. Develop a mechanism to clarify responsibility for the maintenance of the boulevard, street and median trees and vegetation between the City and private landowners.
    a) Identify candidate streets for future tree planting programs. Work with City neighbourhood associations to help identify the sites and generate interest in planting / maintaining street trees. Promote the Volunteers in Parks Program as a mechanism to connect local volunteers with local urban forestry projects.
    b) Identify and replace old, damaged, or unhealthy trees. Draft a regulation that outlines responsibilities for the development and maintenance of boulevard trees, shrubs and other vegetation.

2. Include restrictions on certain tree species / types in the City of Nanaimo's Tree Management and Protection Bylaw in order to minimize potential damage to City infrastructure

3. Create a street landscape plan that identifies vegetation suitable for specific regions of Nanaimo, including urban nodes and corridors for transportation and wildlife.

a) Identify ways to integrate natural habitat into development design to mimic habitat from wildlife corridors as part of development applications (i.e., landscaping requirements in DPA 9).
b) Identify opportunities to incorporate edible landscapes and fruit-bearing trees into the public space through the Volunteers in Parks program.
c) Develop a tree management plan for major boulevards / corridors.
d) Create an inventory of all boulevard, street and median trees in Nanaimo.
e) Remove any invasive species from the tree planting specification list.
f) Ensure ongoing maintenance of trees, tree replacement and budgeting.

Action Plans:

Short Term (to be completed within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	Department Responsible	Timing
3-1	Create a landscape visionary plan for Nanaimo's main streets, arterials and gateways.	Parks Department, Engineering Department, Planning Department	Short Term
3-2	Create an inventory of all the boulevard trees in Nanaimo using a desktop program.	Parks Department	Short Term
3-3	Working through the Volunteers in Parks Program (VIP), connect with community groups and neighbourhood associations interested in implementing planting and education initiatives.	Parks Department	Short Term
3-4	Review the existing tree planting specifications.	Parks Department, Engineering Department	Immediate
3-5	Review planting specifications for new subdivisions.	Parks Department, Planning Department, Engineering Department	Short Term

Module 4: Site Specific Tree Removal and Replacement

Goal: To increase the tree canopy coverage in the City of Nanaimo.

Overview:

A lush tree canopy benefits the citizens and visitors of Nanaimo. The current percent cover of tree canopy in Nanaimo is 28 percent. This Strategy recommends that this figure increase by four percent over the next ten years.

Individual trees within the City may be in need of removal from time to time. Some trees are dying due to disease and insects, animal damage or other factors, such as root damage, storm damage and environmental changes. Tree damage can be caused by construction activity in their vicinity, vehicle accidents, vandalism and other similar events. There are a number of situations where specific tree removal is requested and/or required. These situations may involve private landowners, organizations and/or other agencies (BC Hydro / BCTC) involved in construction or maintenance activities, City employees, and contractors employed by the City.

The retention of trees and forests in the City needs to become a significant component of the City's overall plan to achieve its carbon neutrality targets for 2012 and beyond.

Trees that require removal because of health and safety concerns can be generally classified as hazardous trees. Tree removal will require replacement in order to ensure maintenance of the urban forest, especially in parks, on boulevards and along streets. Replacement in more natural areas, (i.e., nature parks) is more appropriate when large areas of tree removal take place and the resulting space can be partially or completely replanted. For example, some selective removal of trees within mature stands could provide opportunity to replant with alternate species to provide greater diversity and age of stands.

A replacement plan will be developed to determine the replacement ratio for the different sizes and species of trees to be removed. Certain species are more beneficial in sequestering carbon than other trees, and these species need to be taken into consideration when the replacement plans are developed.

Objectives / Actions:

1. Set realistic and defensible targets to increase the City's tree canopy.
2. Integrate the City's tree planting program into the City's Climate Change Plan by determining the level of carbon sequestration in the City's urban forest and using these levels as a tool in determining tree removal and replacement.
3. Revise current methods for assessing hazardous trees.
    a. Reduce the presence of hazardous trees in the urban forest landscape.
    b. Recognize the distinction and value of wildlife and food-bearing trees in natural areas and within the riparian habitat.
    c. Remove invasive species that may be compounding a hazard tree situation.

4. Identify the principles for the management of requests of specific tree removal.
    a. Provide a system outlining the health of the tree in relation to the point at which it should be removed

b. Improve coordination and communication of tree removal from utilities (i.e., BC Hydro). Provide better notice and understanding of the reasons for the removals.

5. Provide a regulation for tree replacement and removal.
    a. Determine eligibility guidelines for tree removal in this Strategy and in the Tree Protection Bylaw, including:
        i. size;
        ii. damage;
        iii. disease;
        iv. traffic visibility;
        v. hydro and power;
        vi. issues which can be reduced though Crime Prevention through Environmental Design (CPTED); and
        vii. fish, wildlife use and aesthetics.

    b. Determine an equal replacement ratio according to:
        i. size:
        ii. species; and
        iii. location.

6. Establish interdepartmental standard operating procedures regarding roles and responsibilities for nuisance tree and hazardous tree management. When removal is necessary, a replanting program is required.

Action Plans:

Short Term (to be completed in within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	**Department Responsible**	**Timing**
4-1	Work towards no net loss in forest canopy by 2020.	Parks Operations	Long Term
4-2	Develop a protocol for assessing nuisance and hazard trees.	Parks Operations	Short Term
4-3	Establish requirements for protecting and managing wildlife trees within the Tree Protection Bylaw.	Parks Operations, Bylaw Department, Planning Department	Ongoing
4-4	Develop a policy for tree replacement.	Parks Operations, Planning Department	Ongoing
4-5	Develop an incentive program for tree retention.	Parks Operations, Planning Department	Ongoing

Module 5: Property Values: Views and Privacy

Goal: To reduce the incidence of pruning, topping and complete removal of trees solely for view purposes.

Overview:

The aesthetic value of landscape trees can be measured by determining how property values vary in relation to green space either adjacent to or on the property. Property values can increase by as much as 20 percent when trees are present on the land. The monetary value of an individual tree can be determined by an experienced appraiser. Tree appraisal considers a variety of factors, such as the species, size and condition of the tree and its location in a landscape. Taking care of such trees is critical to realizing their values. Trees and hedges also provide privacy by screening a property and by providing an aesthetically pleasing natural barrier between neighbouring properties.

Many of the residential areas of Nanaimo are located near the waterfront or on sloped land providing water views making views a high priority among residents. Some trees can enhance this view, but others may block a desired view.

Views and vegetation both have considerable value and can co-exist. Large trees add to the value of the owner's property, to the neighbourhood and to Nanaimo as a community. Trees can also provide privacy. View issues are more common on steep-sloped areas, and trees and vegetation in this area provide slope stability reducing erosion. Although an unobstructed view is often the goal, a framed view which includes trees and vegetation is an option which should be considered when discussing the creation and maintenance of a viewscape.

Objectives / Actions:

1. Educate the community on the value of having and maintaining healthy trees in the City.
    a. Have a presentation in an open house on the influence of trees on property value.

2. Provide education on proper techniques of tree pruning.
    a. Provide educational pieces in both web-based form and print-based form.

3. Reduce the frequency of tree removal solely for the purpose of obtaining a view.
    a. Add a section preventing tree removal of non-hazardous trees for the purpose of creating a view in the Tree Protection Bylaw.

4. Develop an incentive program for planting appropriate trees on private land.
    a. Reduce the amount of required parking in exchange for the preservation of existing vegetation or an increase in the tree-save area that goes beyond a required standard.
    b. Provide credit (based on DBH) for preserving stands of trees (such as heritage trees) to meet landscaping requirements. Consider offering bonus percentages for preserving existing vegetation. The bonus would apply to the total percentage of landscaping required on a site after disturbance.

Action Plans:

Short Term (to be completed in within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	**Department Responsible**	**Timing**
5-1	Include information about trees and views on the website.	Urban Forestry Coordinator	Ongoing
5-2	Determine an incentive program.	Parks Department, Planning Department	Ongoing
5-3	Make a pamphlet for pruning techniques.	Parks Department	Short Term
5-4	Include a section on views in the Tree Protection Bylaw.	Parks Department, Planning Department Senior Management	Short Term

Module 6: Wildfire and Wildland / Urban Interface

Goal: To reduce the threat of preventable forest fires within the City of Nanaimo while balancing other management considerations.

Overview:

Nanaimo is a growing community. As the City continues to develop, there will be a significant increase in the number of subdivisions and developments adjacent to forested areas and City parks. Many are on steep slopes within forested areas. We are fortunate to live in this environment; however, there are inherent risks that can arise.

The wildland / urban interface is the point where human settlement abuts into the natural forested landscape. Within this interface, structures and vegetation are sufficiently close enough to allow for two possible scenarios. First, a wildfire which may spread to homes and other structures; and second, a structural fire which may ignite and spread causing a wildland fire.

Each year there is a significant number of fires involving wildfires and homes. Many of these have the potential to cause major property loss. Generally, there are significant areas that are at high risk to wildland fires. Unlike the Interior of the province, long periods of hot, dry weather are not common; however, there is a significantly higher volume of fuel in our region unlike that of the Interior. The Fire Rescue Department has identified and mapped the Wildfire Hazard Zones within the service area using specific criteria, such as topography, water supply, access and vegetation. See below.

During a wildfire, time is crucial, and resources are typically limited. Depending on the severity of the situation and what homeowners have done in advance to protect their properties, fire fighters may not be able to safely protect every home threatened by a wildfire. Further, it may also be difficult to protect the exposed forest from an out-of-control structure fire.

The community shares the responsibility for preserving life and property by planning for fire protection. Because of the wildland fire threat in the province, the BC Auditor General has released a report on “Managing Interface Fire Risks” and the “Filman Report” after the 2003 firestorm in Kelowna. The comprehensive review of preparedness within the province identifies local government as important players that can have a significant impact on mitigating the exposure to interface fires. There are a number of planning and public education tools, such as fire-smart guidelines for builders and developers, as well as current residences to make their area fire smart.

Objectives / Actions:

1. Maintain an up-to-date assessment of the wildland / interface risk within the community.
    a) Every two years update the community wildland / interface fire risk map.
    b) Ensure the wildfire risk is identified by a registered professional forester in new developments in forested areas.
    c) Provide a fire-smart home and site hazard assessment system for residents in interface areas.

2. Continue to mitigate the interface fire threat by the thoughtful use of community planning tools.
    a) Review Development Permit Area 9 (Form and Character) and 5 (Steep Slopes) and make adjustments to consider the interface fire threat when addressing sighting, form, exterior design and finish of buildings and structures. Also, establish restrictions on the type and placement of trees and other vegetation. Strive to balance ecological / aesthetic considerations with public safety.
    b) Ensure the provision for fire-protection characteristics and roads suitable for the safe movement of heavy fire-fighting equipment.

3. Create conditions on existing properties that reduce the impact of potential wildland / interface fires and reduce the loss, damage or injury from wildfire.
    a) Encourage individual property owners to embrace Fire Smart principles by thinning, pruning and removing trees, branches and deadfall that can fuel a fire, as well as upgrading building materials, such as non-flammable roofing, siding and thermal pane windows.
    b) Develop and implement a fuel management plan in buffer areas to City parks and adjoining private properties to reduce the hazard in high risk parks.
    c) Establish partnerships for fuel management strategies around utilities, such as hydro, communication towers, reservoirs and pump stations.

4. Ensure an effective emergency response to fires in the interface and forested areas.
    a) Maintain Fire Rescue Department resources to provide a rapid response to wildfires.
    b) Provide and maintain specialized wildland firefighting equipment.
    c) Ensure that the emergency program maintains an emergency plan for wildfires.

Action Plans:

Short Term (to be completed in within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	**Department Responsible**	**Timing**
6-1	Review the fire smart manual and make guidelines more specific to Nanaimo.	Parks Department, Fire Department, Planning Department, Engineering Department	Short Term
6-2	Fireproof high risk parks.	Parks Department	Ongoing
6-3	Create a fire smart home and site hazard assessment system.	Fire Department	Medium Term
6-4	Develop and implement a fuel management plan for buffer areas.	Fire Department, Parks Department	Short Term
6-5	Create fire management plans for City parks.	Parks Department	Short Term
6-6	Complete fuel reduction plans for parks identified in the Wild Fire Hazard Zone by the City Fire Department.	Parks Department	Medium Term

Module 7: Planning and Enforcement

Goal: To create a tree protection bylaw with a high compliance rate through updated policies, incentives and penalties.

Overview:

Currently, the City of Nanaimo's Tree Protection Bylaw provides some protection to the urban forest, but supporting documents, including the Parkway DPA Guidelines, Steep Slope Development Permit Area Guidelines, and the Guidelines for Environmental Sensitive Areas provide more protection for a greater number of trees within the City of Nanaimo. The penalties for not adhering to the Tree Protection Bylaw are not high enough in comparison to the potential benefits of clearing a lot to obtain a view. By increasing fees and penalties for those who do not follow the bylaws and regulations and providing incentives to individuals who do comply, overall public support and confidence for how the City manages its urban forests will be greatly enhanced.

The Preliminary Layout Approval (PLA) process is also limited in its ability to protect trees. The preliminary layout approval is a document which one must fill out when they would like to develop or redevelop a site. The approval process involves a tree management plan, but the implementation of the plan often varies as the development takes place. This process needs to be reviewed to reduce the unnecessary depletion of the urban forest. The timing of tree removals also needs to be considered in order to minimize the impacts to nesting birds and wildlife as required in the Provincial *Wildlife Act*.

Objectives / Actions:

1. Complete a revision and update of the current Tree Protection Bylaw (1993).

2. Lower the frequency of bylaw offences by:
    a. Increasing penalty fees set in the Tree Protection Bylaw by up to 100 percent.
    b. Developing a tree removal policy for street, private and natural area trees.
    c. Increasing the re-planting level of trees that have been removed according to tree significance, species and size.
    d. Providing an incentive to those who do comply with the regulations. More effectively promote the use of conservation covenants with private landowners as a protection and incentive tool.

3. To ensure that the bylaws are being followed:
    a. Frequently check building sites, especially those that have covenanted areas to ensure compliance.
    b. Maintain community outreach on the role of the bylaw, including how it can and cannot be applied in the community.
    c. Create a tree inventory and census of each neighbourhood for comparison use.

Action Plans:

Short Term (to be completed in within five years).
Medium Term (to be completed between five and ten years).
Long Term (to be completed beyond ten years).
Ongoing (to be initiated in the short term with no planned date of completion).

	Action	**Department Responsible**	**Timing**
7-1	Develop an incentive program for tree retention.	Parks Department, Planning Department, Senior Management, Bylaw Department	Short Term
7-2	Revise penalty scheme.	Parks Department, Planning Department, Senior Management, Bylaw Department	Short Term
7-3	Rewrite the current bylaw.	Parks Department, Planning Department, Senior Management, Bylaw Department	Short Term
7-4	Educate the public on bylaw changes.	Parks Department	Short Term
7-5	Create protocol for monitoring sites.	Parks Department, Development Services Department	Short Term
7-6	Tree inventory.		Medium Term

View from Mount Benson

6.0 IMPLEMENTATION AND MONITORING

The City of Nanaimo will use the Urban Forest Management Strategy as the basis for decisions relating to the urban forest over the next ten years. This document will be referred to on a regular basis and will provide guidance on a wide range of issues related to trees, vegetation and landscaping within the City of Nanaimo.

At the end of each year, the Parks, Recreation and Culture Department will prepare an update outlining the areas in the Strategy that have been implemented in the previous 12 months, as well as providing details regarding revisions that may be necessary for the continued implementation of the recommendations. A tree canopy study should be conducted every five years to determine the percentage of tree coverage in Nanaimo and use this as one indicator of the success of the Urban Forest Management Strategy within the City of Nanaimo.

It is recognized that the Urban Forest Management Strategy needs to be seen as a "living document". As time goes on, other projects and priorities may arise which will take precedence over the current recommendations. These may arise as a result of changes in climate, population growth, housing styles, current forest management practices and other circumstances. It is important to note that any amendments to the Strategy must be documented and appended to the Strategy. To ensure the document remains relevant, this Strategy should be reviewed every five years and updated and adjusted accordingly.

Once the tree bylaw is updated, it should be placed in the appendix of this Strategy along with other supporting documents for tree removal and replacement.

Chase River Park

7.0 FUNDING OPTIONS

Expanding the funding for urban forestry makes it possible to increase the number of projects which can be accomplished each year, as well as reduce the reliance on City funds. Leveraging City funds with other sources of funding from local, provincial and government organizations will increase the number of partners with a vested interest in sustaining a healthy urban forest. Potential sources of additional revenue are identified as follows.

Green Streets Canada has funding available to eligible applicants for street tree planting programs. Green Streets Canada is open annually to all Canadian municipalities and First Nation Communities with a minimum of 50 percent matching funding from other (non-Tree Canada) sources. Communities who have already received Green Streets funding are also eligible to apply under this year's program. Green Streets Canada "will work with any group to promote the educational value of tree planting and maintenance, tree inventory projects, as well as the planning and execution of the simple act of planting a tree. Tree Canada promotes the planting, as well as the maintenance of trees taking into account the reality that putting the tree in the ground is only a small part of the battle to keep trees growing!"

Greening Canada's School Grounds is a program run by Tree Canada for the purpose of planting trees on school grounds. Tree Canada will provide educational information, technical advice and financial support up to $5,000 towards the transformation of their school grounds into environmentally enriched learning landscapes. School Communities* wishing to participate in the Greening Canada's School Grounds Program will be evaluated, and funds awarded based on the technical soundness and implementation capability of a submission. Applications are available at http://www.treecanada.ca/programs/school/index.htm.

*School communities refer to the catchment area of the school, including local businesses, neighbours, the school board, students, teachers, maintenance and other school employees, and parents.

BC Hydro has both a donation and a sponsorship program which the City of Nanaimo, businesses and community groups can apply to receive. The areas for donations and funding are listed below:

- **Environment and Sustainability**
  Initiatives that involve environmental sustainability and foster a conservation culture in B.C.

- **Youth and Education**
  Initiatives that offer opportunities to educate B.C. youth on environmental topics, sustainability, science, technology and energy conservation in B.C.

- **People and Leadership**
  Initiatives that provide opportunities for people to engage, educate and exchange information about diversity and B.C.'s energy future, and develop leadership skills in their communities.

- **Community Initiatives**
  Initiatives that fit one or more funding criteria that support unique ways to strengthen the communities served by BC Hydro and provide opportunities for customer interaction.

For requirements, eligibility and applications visit
http://www.bchydro.com/community/outreach/outreach51779.html

The Community Development Trust Fund JOP Program will fund projects providing short-term employment for unemployed forest workers in forest-dependent communities. Activities that will be considered for funding include fuel management, recreation site and trail management, silviculture (brushing, spacing and planting), stream restoration and ecosystem and range restoration, such as invasive species removal. More information can be found at http://www.cd.gov.bc.ca/cdt/jobs/index.html.

Nanaimo Businesses are a potential funding source for projects which will benefit the community. These businesses would then have a vested interest in the success of the urban forest.

"Streets and their sidewalks, the main public places of a city, are its most vital organs. Think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull."
J. Jacobs, 1962, p. 37

GLOSSARY

"Arbutus and Gary oak Woodland"	means an environmentally sensitive area found in open forested areas that support a rich diversity of plants, insects, reptiles, and birds. Garry oak woodland is known to have an especially high number of plant species.
"Branch"	means the lateral secondary woody growth originating from the stem of a tree.
"Bylaw Enforcement Officer"	means a person or persons appointed from time to time by resolution of the City Council pursuant to Section 36 of the *Police Act*, to enforce regulatory bylaws of the municipality.
"Boulevard Tree"	a tree planted on the boulevard beside the sidewalk managed by either the property owner or the City of Nanaimo.
"Buffer Area"	means an area 6m in width adjacent to the whole of a tree retention area.
"Certified Arborist" (CA)	means a person certified by the International Society of Arboriculture or the National Arborist Association as an arborist.
"City"	means the City of Nanaimo.
"City Tree"	means any tree located on property owned or in the control of the City.
"City-Owned, Non-Recreational Green Space"	Publicly owned semi-forested land without recreational use used for utilitarian purposes including: Water District lands next to Colliery Dam Park 1071College Drive 4217 Early Drive 100 acres at the south end of Wellington Some riparian ravine areas.
"City Park (PRC-3)"	City level parks are destination facilities that serve the needs of the entire community, and may include a mix of many different functions and provide significant protected environmentally sensitive areas. Maffeo Sutton Park, Westwood Lake Park and Beban Park are examples of City Level Parks. Means use of lands, buildings or structures for participatory recreation including recreational facilities, libraries, cultural facilities, golf courses, golf driving ranges, mini putt golf courses, assembly halls, horse riding stables, petting zoos, daycares and the like. This definition shall specifically include accessory uses of restaurant, office, retail, caretakers dwelling unit, commercial school, and lounge and neighbourhood pub.
"Community Park (PRC-2)/ Neighbourhood Parks"	Parks typically provide a broad range of leisure opportunities for a local area. They are designed to include natural and play areas, seating, sport courts, trails and various programs. Neighbourhood parks can be walk-to destinations within an 800m radius of local homes and without parking, or they can be drive-to destinations with small-scale parking to serve larger areas. When provided, neighbourhood parks can become the hearts of subdivision or housing development, should be directly accessible by walking or cycling, and should be highly visible. Woodstream Park and Gyro Park are two examples of Neighbourhood Parks. Means use of lands, buildings and structures for recreation including playgrounds, band shells, skateboard parks, canoe and kayak docks, boat houses, playfields, multipurpose courts and the like.
"Cut"	means to cut down, kill or remove a tree by any means and without limiting the generality of the foregoing includes the topping of a tree or the removal of any branch or stem of a tree.
"Dead, Diseased or Damaged Tree Limbs"	means a tree limb identified by a qualified person as being, or likely to become in the immediate future, a danger to people or property.

“Development Period”	means the time between the adoption of this bylaw and the completion of all buildings, works and services authorized or required by a “development approval” granted after enactment of this bylaw.
"Diameter of Branch"	means the measurement obtained by dividing the circumference of a branch measured at its junction with the stem by 3.142.
"Diameter of Tree Stem"	means the measurement obtained by dividing the circumference of a tree stem measured at 1.4 meters (4.5 ft.) above the point of germination by 3.142.
"Director"	means the person or persons appointed from time to time by Council as Director of Parks, Recreation and Culture and any duly authorized delegate of the Director.
"Drip Line"	means a line on the ground around the stem of a tree directly beneath the ends of the outermost twigs and branches of a tree.
"Hazardous Tree"	means any tree which due to its location, condition, health or any other circumstances, has been determined by a Certified Arborist and/or as approved by the Director, to present a hazard to the safety of persons or to the public or to private property.
"Heritage Tree"	means a tree listed and identified in Schedule 'A' attached hereto.
“Landmark Tree"	means a tree of the genus/species and size outlined in Schedule 'C' attached hereto.
"Length"	means the distance from the point of germination to the crown measured along the axis of its stem.
“Median Tree”	A tree growing in a hard or soft surface between traffic lanes.
"Nature Park (PRC-1)"	means use of lands, buildings or structures primarily for conservation and enjoyment of natural areas. Uses can include boardwalks, trails, environmentally sensitive areas, nature centres, nature sanctuaries and the like.
"Nature Trust Lands"	Designated sanctuary area for wildlife, e.g., Buttertubs Marsh, Nanaimo Estuary, Morrell Sanctuary.
"Older Forests"	means an environmentally sensitive area where the vegetation in the forest has an average age of 100 years or more. These ecosystems include standing dead trees, fallen logs, and large live trees. Some species found here can only survive in typical features, such as hollow tree centers and underneath thick tree bark. The majority of older forests are conifer forests.
"Owner"	means in respect of real property the registered owner of an estate in fee simple and includes: (a) the registered holder of the last registered agreement for sale; (b) the holder or occupier of land held in the manner defined under “owner” in the *Land Title Act* (RSBC 1996); and (c) an agent authorized in writing by the owner to act on his behalf.
"Permit"	means written permission from the Director authorizing the cutting, removal, damaging or pruning of one or more trees from a specified parcel of land.
"Protection"	means taking any and all actions necessary to ensure that trees on a parcel of land are not in any way damaged.
"Prune"	means the removal of living or dead parts of a tree, including branches, in order to reduce size, to maintain shape, health, and flowering or to regulate growth, but does not include topping.
"Protected Tree"	*means:* (a) a City tree, (b) a Significant tree, (c) a tree beyond an approved building setback or below top of the bank within an area defined in the latest amendment of Official Community Plan Bylaw 6000 Development Permit Area 1 – Watercourses; Development Permit Area 2 – Environmentally Sensitive Areas; Development Permit Area 3 – Natural Hazard Lands; Development Permit Area 5 – Steep Slope

	Development, (d) within an area defined in the latest amendment of Official Community Plan Bylaw 6000, Development Permit Area 4 – Nanaimo Parkway Design Guidelines, as follows: (i) a tree within the Character Protection Zone; or (ii) a tree 15 cm in diameter or greater within the Tree Protection Zone; (e) a tree within a 15 m radius of a Wildlife tree; or a tree beyond a 15 m radius of a Wildlife tree as designated by a Registered Professional Biologist, (f) a tree within an area designated by a covenant to: (i) protect stability of a slope; or (ii) provide a landscape buffer. (g) a tree designated to be retained within an area pursuant to an approved Development Permit landscape plan. (h) a tree with “scientific value”.
"Provincial Crown Land"	Crown Land under the administration and control of Her Majesty in right of a province or any agency thereof (e.g., DL56 / Newcastle / Brannen Lake Correctional Centre).
"Public Boulevard Tree"	means a boulevard tree planted between the road and the paved sidewalk.
“Raptor Nest”	means a nest used by birds of prey (e.g., eagle nesting grounds)
“Registered Professional Biologist (R.P.B.)”	means a person who is registered under the *Biologists Act*.
"Registered Professional Forester (R.P.F.)”	means a person who is registered under the *Foresters Act*.
“Replacement Tree”	means any tree, regardless of size, that is shown on a tree cutting and replacement plan as a replacement for a tree which has been removed or damaged on the same property.
"Residential Boulevard Tree"	means a boulevard tree planted on the residential side of the sidewalk, or at the edge of the property.
“Retained Tree”	means a tree not to be cut, removed or damaged.
"Riparian Areas"	means an environmentally sensitive area ecosystem which forms beside lakes, streams and rivers where soil moisture and light conditions support plants that are distinct from surrounding land areas. They supply critical habitat conditions for fish (food, cover, and water).
"Rocky Outcrop (Terrestrial Herbaceous) Areas"	means an environmentally sensitive area that has natural grassland as well as grass / moss covered rock outcrops. Few trees survive on the shallow soil, but spring wildflowers thrive here. A number of rare species of plants, mosses, and butterflies are known to live in these sites.
“Scientific Value”	A tree may be considered to be of scientific value when it: (a) is evidence of the former range limits or extent of the species or an ecological community; or (b) is an endangered or vulnerable species that is endemic to the local region now reduced in range or abundance; or (c) demonstrates a likelihood of providing information which will contribute significantly to a wider understanding of natural history by virtue of its use as a research site, teaching site, type locality or benchmark site; or (d) is of botanical or genetic value and is not well represented elsewhere on Vancouver Island; or (e) is a significant habitat element for a threatened native species.

"Significant Private Lands"	Land of two or more hectares owned by individual people / groups or businesses, including parks, sanctuaries, golf courses, bays, schools e.g., Linley Valley, Harewood Plains, South Nanaimo, Cable Bay, and Nanaimo Golf Course.
"Significant Tree"	means any tree that is of particular significance to the city, due to size, age, landmark value, overall cultural, ecological or social impact, scientific value, trees planted by the City on boulevards, and any tree that is protected as wildlife habitat for an egg or nest under section 35 of the *Wildlife Act*.
"Stem"	means the main ascending axis of a woody plant.
"Street Tree"	a tree planted within the public right-of way in a hardscape (sidewalks) managed by the City of Nanaimo.
"Sustainability"	the ability of society to meet the needs of the present, without compromising the ability of future generations to meet their own needs. Sustainable development is not an end in itself, but rather a process of evolution and change.
"Tree"	means a native or non-native, living self-supporting perennial woody plant, including native shrubs, that is a species of coniferous or deciduous genus, but does not include vines or non-native shrubs.
"Tree Management Plan"	means a plan of a parcel of land prepared by or for an owner identifying the trees proposed to be cut or removed, the trees proposed to be retained, and the trees proposed to be provided in replacement of the trees that are to be cut or removed.
"Tree Protection Area"	means a specified area within a construction site or development site that has a tree or trees that are to be protected.
"Urban Forestry Management Strategy"	means a strategy developed to preserve, protect and enhance the greenspaces in Nanaimo.
"Wetlands"	means an area where water remains at or near the land surface. They are the most productive ecosystems of all.
"Wildland / Urban Interface"	means the point where human settlement begins to impinge on the natural forested landscape.
"Wildlife Tree"	means a tree (either living or dead) which: (a) contains the nest of an eagle, peregrine, falcon, gyrfalcon, osprey or heron; or (b) contains the nest of a bird not referred to in paragraph (a) when the nest is occupied by a bird or its egg; or (c) contains a nest of a forest mammal. (d) is listed in Schedule "B".

APPENDIX A:

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APPENDIX B:

RELEVANT DOCUMENTS

City:

- Nanaimo's Parks Master Plan (2005)
- City of Nanaimo Official Community Plan (2008)
- Parkway Development Permit Area
- Steep Slopes Development Permit Area / Zoning Bylaw
  - Section 3.2 Natural Environment
  - Section 3.5.4 Land Clearing and Tree Retention / Removal Plan
  - Appendix A: Fire Protection for Interface Areas
- Environmentally Sensitive Development Permit Area
- Integrated Storm Water Management Plans (Walley Creek / Wexford Creek)
- Engineering Standards and Specifications
  - Section 13
- City of Nanaimo Tree Management and Protection Bylaw
- Parks, Recreation and Culture - Horticulture Strategy

Provincial:

- *Fish Protection Act*
- Riparian Areas Regulation
- *Wildlife Protection Act*
- "Develop with Care" Best Management Practices
- Beyond the Guidebook

Federal:

- *Fisheries Act*
- *Species at Risk Act*

APPENDIX C:

TREE HEALTH CARE

Tree Maintenance
Trees provide many benefits to a community as a whole and to the individual homeowners who have trees on their property. Proper care and maintenance will ensure a happy and healthy tree.

Pruning
An arborist can determine what type of pruning is necessary to maintain or improve the health, appearance and safety of your trees. There are different techniques for pruning older trees and for pruning young trees. The following techniques are general rules to follow:

- Eliminating branches that rub each other.
- Removing limbs that interfere with wires, building facades, gutters, roofs, chimneys, and windows or obstruct streets or sidewalks.
- Removing dead or weak limbs that pose a hazard and may lead to decay in the tree if not removed.
- Removing diseased or insect infested limbs.
- Creating better structure to lessen wind resistance and reduce the potential for storm damage.
- Removing limbs damaged by adverse weather conditions.
- Thinning or removal of unnecessary branches.
- Improving the shape or silhouette of the tree.

Removal
Tree removal is a last resort, but there are circumstances when it is necessary. An arborist can help decide whether or not a tree should be removed. Arborists have the skills and equipment to safely and efficiently remove trees. Removal is recommended when:

- the tree is dead or dying and is not in an acceptable spot for retention as a wildlife tree;
- the tree is considered irreparably hazardous;
- the tree is causing an obstruction that is impossible to correct through pruning;
- the tree is crowding and causing harm to other trees;
- the tree is to be replaced by a more suitable specimen; and
- the tree should be removed to allow for new construction.

Refer to the City of Nanaimo Tree Protection Bylaw.

Tree Health and Removal Status

	Repair and Maintain 1	Repair and Maintain 2	Repair and Maintain 3	Remove	Remove ASAP
General Condition	Fair	Poor	Very Poor and/or minor indication of injury	Unlikely to recover and indication of mortal injury	Dead
Trunk	1 or 2 wounds < diameter of the trunk in any dimension	1 or 2 wounds > diameter but <2x diameter of the trunk in width, or 2-4x diameter in height or 3-5 wounds < diameter but <2x diameter of the trunk in any dimension	1 wound >2x diameter of the trunk in width, or > 4x diameter but <6x diameter in height or 3-5 wounds > diameter but <2x diameter of the trunk in any dimension	Less than 1/10 of the circumference of bark and cambium alive at any height of 2 or more wounds >2x diameter of the trunk in width, or >4 x diameter in height or biological attack present that will make the tree structurally unsafe within five years	Structurally unsafe due to physical or biological damage
Branches	Less than 1/4 of branches dead, removed or damaged but acceptable structure remains	1/4 to 1/2 of branches dead, removed or damaged but acceptable structure remains	More than 1/2 of branches dead, removed or damaged but acceptable structure remains or can be developed	Branch(es) dead, removed or damaged such that acceptable structure redevelopment is unlikely	Branch(es) removed or damaged making the tree unstable
Canopy	Less than 1/4 foliage killed or damaged but should recover within two years	1/4 to 1/2 foliage dead or badly damaged, may take more than two years to recover	More than 1/2 of foliage dead or badly damaged, may take more than five years to recover	Most of foliage destroyed, recovery of the tree is unlikely	
Young Tree	Loss of less than 25% of roots between circles of radius 5x and 10x DBH of trunk	Loss of >25% but <50% of roots between circles or radius 5x and 10x DBH of trunk or loss of < 20% of roots within circle of radius 5x DBH of trunk	Loss of >50% but <75% of roots between circles of radius 5x and 10 x DBH of trunk or loss of > 20% but < 40% of roots within circle of radius 5x DBH of trunk	Loss of >75% of roots between circles of radius 5x and 10 x DBH of trunk or loss of >40% of roots within circle of radius 5 x DBH of trunk	Tree unstable due to root loss or damage or loss of more than 75% of roots
Roots	Loss of <10% of roots between circles of radius 10x and 15x DBH of trunk	Loss of >10% but < 25% of roots between circles of radius 10x and 15x DBH of trunk	Loss of > 25% but <50% of roots between circles of radius 10x and 15x DBH of trunk or loss <10% of roots between circles of raduis10x DBH of trunk	Loss of >50% of roots between circles of radius 10x and 15x DBH of trunk or loss of >10% of roots within circle of radius 10x DBH of trunk	Tree unstable due to root loss or damage or loss of more than 60% of roots

APPENDIX D:

BOULEVARD TREE LANDSCAPING AND PLANTING GUIDELINES

Landscaping Specifications before Boulevard Tree Installation

These documents should be made easily accessible to the public through the internet. Landscape standards and specifications apply to all landscaping areas within the rights-of-way (R.O.W.) of roadways in the City of Nanaimo, including medians, soft landscape areas between the curbs and the R.O.W. lines and plantings in urban plaza and sidewalk areas. Trees in boulevards have to adhere to many guidelines to ensure safety for utility lines, drivers and pedestrians.

Developer Information:

The developer shall submit a landscape plan with tree locations and irrigation design (by a Landscape Architect) following the specifications in the City of Nanaimo Engineering Standards and Specifications, as well as the guidelines below.

Landscaping may be installed with the exception of the trees when the plan is accepted and the timing is appropriate.

All standards and specifications in Section 14 of the City of Nanaimo Engineering Standards and Specifications must be followed.

The developer will notify the City of Nanaimo for the following:

- Inspection of the pipe in ground to ensure it is exposed with bedding material before back fill.
- Inspection of the back-flow prevention and point of connection as per Drawing 1-1 of Section 14 of the City of Nanaimo Engineering Standards and Specifications before back fill.
- Inspections to ensure T-joint couplings are installed before back fill at the location where future trees will be.
- Inspection of the irrigation controller installed.
- Soil samples and testing be done as per Section 14.14 of the City of Nanaimo Engineering Standards and Specifications, and a copy of the report sent to Parks Operations Department prior to installation.
- Inspection of turf by the City of Nanaimo when installed by the developer.

Final inspection of irrigation to be completed at a time appropriate to charge the lines to ensure there are no breaks or leaks in the system.

As-built drawings must be provided to the City of Nanaimo Parks Operations Department prior to release of bonding.

The City of Nanaimo Parks Operations Department will then install the boulevard trees in the planned locations when the majority of build out has occurred.

Having this process followed precisely will ensure successful installation of boulevard trees when build out of the subdivision is sufficient to do so.

Engineering Specifications for Boulevard Trees

In the City of Nanaimo's Engineering Standards and Specifications, the following setbacks are outlined:

SETBACK TREES FROM:	DISTANCE
Underground street light conduit or irrigation main	0.6 m
Other underground utilities	1.2 m
Lamp standards	6.0 m
Steel and wooden utility poles	3.0 m
Driveways	2.0 m
Catch basins	2.0 m
Manholes, valve boxes, services	1.2 m
Sewer service boxes	1.5 m
Fire hydrants	2.0 m
Road Intersection	7.0 m
Curb face	1.0 m
Sidewalk	0.85 m
Buildings – fastigiate (columnar) tree	2.0 m
Buildings – regular crown tree	3.0 m-5.0 m

The minimum width for grass boulevards shall be 1 m, 1.5 or greater preferable. Maximum slope for lawns to be 3:1.

The minimum width for shrub or ground cover beds shall be 0.6 meters, 1m or greater preferred. Maximum slope for shrub or ground cover beds to be 2:1.

The minimum width of boulevards for tree planting shall be 2.0 meters measured from face of curb.

Trees shall be selected such that:

- boulevard or street trees shall be of a single species / cultivar on either side of the street within a given block. Median tree species may vary.
- street tree species shall vary between intersecting streets.

All street trees shall meet the following criteria:

- Compact or upwards branching structure.
- Ability to withstand pruning for pedestrian, vehicle and/or building clearance without compromise to tree health or form.
- Absence of species / varietal characteristics of structural weakness, susceptibility to wind damage, or thin, easily damaged bark.

Select street trees according to proposed site conditions either from tables below or from an alternate source provided that the proposed trees meet the site criteria contained within the relevant parts of the tables below and all other criteria contained in the City of Nanaimo Engineering Standards and Specifications. Also, obtain written approval from the Director of

Parks, Recreation and Culture for tree selections not taken from the table on the following pages.

Suggested Trees to Plant in Nanaimo

Part 1- Trees for Directly Under Hydro Lines

Minimum allowable soil volume per tree 4 cu.m. with 1 m depth pit.
Selection criterion for alternative trees not listed in Part 1: Mature height not greater than 7.62 m.

Common Name	Scientific Name	Features	Mature size (metres)		Light and Soil Tolerances	Comments
			Height	Width		
Paperbark maple	*Acer griseum*	Chestnut bark flakes and peels; dark green, three-palmate leaves turn deep brown to red in the fall.	10-20	4-8	Sun to partial shade; prefers moist, well drained soil.	A slow-growing, spreading tree suitable for gardens of all sizes; clean up peeling bark.
Amur maple (tree form)	*Acer ginnala*	Typically showy red, but can be yellow; colors early in fall; small, pale yellow flowers.	3-10	3-10	Full sun or partial shade, colder climates (cool summers); adaptable to different soils.	Easily transplanted; can be pruned heavily; small specimen or patio tree, containers, hedges or screens, groupings or mini-groves.
Globe Norway maple	*Acer platanoides* 'Globosom'	Develops a compact, rounded, dense head.	3-6	3-6	Full sun; average water needs; water regularly but do not overwater.	Suitable for growing in containers, an excellent choice for planting beneath utility lines.
Tatarian maple	*Acer tataricum*	Large, multi-stemmed shrub or small rounded tree; pink winged seed pods, yellow to red fall colour.	3-8	5-7	Requires well drained soils; tolerant of shade; fairly drought tolerant.	Attractive small tree for limited spaces; a good tree for planters or patios.
Amur maackia	*Maackia amurensis*	Leaves emerge silvery-gray, becoming dark green; white flowers in July and August.	8	8	Prefers full sun, average-medium moisture and well-drained soil; adapts to a wide range of soil conditions.	Grows slowly and is easy to transplant.
Amanaga cherry	*Prunus serrulata* 'Amanagawa'	Ornamental variety; flowers are densely clustered; they are white, flushed pink and fragrant.	6-8	1-4	Grow in any moist but well-drained, moderately fertile soil; full sun.	Easily transplanted, but prone to damage from aphids and caterpillars.
Kwanzan cherry	*Prunus serrulata* 'Kwanzan'	Bundles of large double light pink blossoms.	4-8	4-6	Widely adaptable to differing soil and moisture types; full sun,	Rapid growth rate.
Pink perfection cherry	*Prunus serrulata* 'Pink Perfection'	A compact flowering cherry with abundant tight, rosy-pink flowers in mid-spring.	4	4	Sunny location is best; it needs moist, well-drained soil, preferably slightly acidic.	Moderate growth rate; good for smaller parks and gardens.

Part 2- Trees for beside Hydro Lines (Min. 2.75m lateral distance from nearest line.)
Minimum allowable soil volume per tree 4cu.m. with 1m depth pit.
Trees listed in Part 1 may also be used.
Selection criterion for alternative trees not listed in Part 2: Mature spread not greater than 5m.

Common Name	Scientific Name	Features	Mature size (metres)		Light and Soil Tolerances	Comments
			Height	Width		
Columnar Norway maple	*Acer platanoides* 'Columnare'	More compact form of columnar; summer foliage is dark green and turns yellow in the fall.	8-18	10	Partial to full sunlight,; grows in various soil conditions.	One of the more drought resistant maples; fast growing and not as susceptible to leaf scorch; excellent for street planting.
Crimson sentry Norway maple	*Acer platanoides* 'Crimson Sentry'	Dark red-purple leaves turning red, brown and orange in autumn and small clusters of red-tinged, yellow spring flowers.	12-15	4-5	Full sun or partial shade; fertile, moist, well-drained soil.	Excellent specimen tree for a medium-sized garden.
Bowhall red maple	*Acer rubrum* 'Bowhall'	Red leaves, pyramidal or elliptical when young which become more spreading with age.	12-18	7-14	Sun to shade; range of soil types.	One of the first trees to show fall color; wide variation due to seedlings; easy to transplant.
Fastigiate hornbeam	*Carpinus betulus* 'Fastigiata'	Tear drop or oval-vase shape with age; bright green leaves.	9-12	5-9	Part-full sun; grows in various soil types; moist and well-drained.	Well-adapted for planting in areas with limited horizontal space; for crown development tolerates clipping well; can be used as a screening plant; attracts birds.
Princeton sentential ginkgo	*Ginkgo biloba* 'Princeton Sentinel'	A dense, columnar form; vivid yellow fall color.	15-20	4-6	Ginkgo tolerates most soil, including compacted, and alkaline.	Easily transplanted; recommended for buffer strips around parking lots or for median strip plantings in the highway; sidewalk cut-out (tree pit); or residential street tree.
Katsura	*Cercidyphyllum japonicum*	Leaves dark purple in spring changing to bluish green. Apricot fall colour	12 - 18	6 - 9	Full sun; rich, moist soil	Somewhat difficult to transplant; can be street tree and excellent for homes and parks.
Fastigiate beech	*Fagus sylvatica* 'Fastigiata'	Deep purple foliage densely pyramidal to oval or rounded, branching to the ground.	30	10-14	Part shade- full sun; various soils.	Slow to medium growth, withstands pruning well; can be used to form a very narrow yet tall hedge or windbreak.
Fastigiate English oak	*Quercus robur* 'Fastigiata'	Dark green oak leaves, acorns; massive open-headed tree with a short trunk,	18-21	6	Tolerates poor soils (but prefers well drained); pH adaptable; full sun	Good narrow oak that can be 50 to 60' but only 10 to 15' wide.
Corinthian linden	*Tilia cordata* 'Corzam'	Dark green leaves changing to yellow in the fall; yellowish fragrant flowers.	18-25	12-15	Moist, well-drained fertile soils; pH adaptable; full sun.	Easily transplanted; one of the best street and city trees; quite pollutant tolerant.

Part 3- Trees for Limited Available Soil Volume
Trees listed in Part 1 or 2 may also be used.
Selection criterion for alternative trees not listed in Part 3: Mature spread not greater than 10m.

Common Name	Scientific Name	Features	Mature size (metres)		Light and Soil Tolerances	Comments
			Height	Width		
Hedge maple	*Acer campestre* (tree form)	Rounded and dense; often branched to the ground; dark green maple leaf.	7-12	7-12	Rich, well-drained soil; variable pH levels; full sun or light shade.	Readily transplanted; extremely adaptable; withstands severe pruning; excellent small lawn specimen, street tree; can be pruned into hedges.
Vine maple	*Acer circinatum* (tree form)	Vine-like in shade; large shrub or small tree in full sun.	5	6	Shade to full sun; moist, humus-rich soil.	Nesting site and cover for many birds and mammals.
Norwegian and Pacific sunset maples	*Acer platanoides* x *truncatum* cv.	Rounded symmetrical crown, usually with very dense foliage and shallow root system; dark green leaves.	12-16	8-12	Various soils; prefers full sun, tolerates full shade.	Easy to transplant; well adapted to extreme soils; use as lawn, street, park tree; needs considerable space ;tends to heave sidewalks unless adequate rooting space is provided.
Raywood ash	*Fraxinus oxycarpa* 'Raywood'	Oval and upright; moderate canopy; dark green leaves.	15-19	7-9	Prefers sun and moist well-drained soils, but can withstand drought, any soil, and extreme temperatures; does not tolerate constant wind or fog.	Fast growth rate; used in large variety of areas.
Redspire callery pear	*Pyrus calleryana* 'Redspire'	Symmetrical canopy with a regular (or smooth) outline; white flowers.	10-14	6-9	Full sun; variety of soil types; variety of pH levels; well-drained.	Street tree, parking lot islands; it is also quite suited for downtown tree pits due to its urban tolerance; able to tolerate small soil spaces.

Part 4- Trees for Available Soil Volumes of 9cu.m. per Tree or More, 1m Pit Depth
Trees listed in Part 1-3 may also be used.
Selection criterion for alternative trees not listed in Part 3: Mature spread not greater than 20m.

Common Name	Scientific Name	Features	Mature size (metres)		Light and Soil Tolerances	Comments
			Height	width		
Black locust	*Robinia pseudoacacia*	Upright tree becoming scraggly with age	10 - 15	7 -10	Very tolerant of toughest conditions	Very tolerant tree useful in all kinds of conditions but not recommended for home use.
Black locust cultivars		Purple Robe has dark rose pink flowers; Frisia has golden yellow leave				These two cultivars are much hardier and more attractive than Honey locust.
Shademaster honeylocust	*Gleditsia triacanthos* 'Shademaster'	Tree with short trunk; open spreading crown; long green glossy leaves.	15-22	11-15	Part shade/part sun; grows in full sun; can grow in variety of soils and pH levels; prefers moist, rich, well-drained soils.	Variety of uses; surface roots can lift sidewalks or interfere with mowing; tree has winter interest due to unusual form; nice persistent fruits; showy winter trunk, or winter flowers.
Skyline honeylocust	*Gleditsia triacanthos*	Rounded canopy comprised of several	15-22	11-15	Part shade to full sun; variety of soils and pH	Fast growing; require little pruning; not suited for

	'Skyline'	dominant ascending branches; yellow flowers			levels; prefers moist, rich, well-drained soils.	street tree planting.
Scarlet oak	*Quercus coccinea*	Green oak leaves, acorns; irregular, spreading crown; green oak leaves turn red to scarlet in fall; acorns half-covered by a deep cap.	25	13	Full sun; prefers acidic, sandy soils on the dry side based on natural occurrence.	Difficult to transplant; long-lived oak with distinctive shape and character; striking fall color; shade/ lawn tree.
Red oak	*Quercus rubra*	Round topped and symmetrical; green oak leaves, acorns.	18-23	18-23	Well drained, slightly acidic soils; full sun.	Fast growing oak; for lawns, parks, golf courses and commercial areas.
Crimean linden	*Tillia x euchlora*	Upright and oval; retains lower branches; rounded, glossy green leaves; yellowish-white flowers.	12-16	6-10	Sun; prefers moist well drained soil but will grow in a range of soil types; tolerates wind, salt, and air pollution.	Highly attractive to bees and the nectar can have a narcotic effect on them.

Part 5-Trees for Wide Boulevard or Wide Median

Trees listed in Part 1-4 may also be used.
Trees require a minimum available root zone of 20 cu.m. per tree with a minimum width of 3.5m.

Common Name	Scientific Name	Features	Mature size (metres)		Light and Soil Tolerances	Comments
			Height	Width		
	All non-dwarf coniferous sp.					
Pacific white dogwood cultivar	Cornus Nuttallii "white wonder"	Greenish flowers, tipped with purple grow in tight clusters surrounded by six large, showy, white bracts.	10-25	8-10	Full sun to part shade; Moist, humus rich, deep, well-drained soil.	Red fruits provide food for birds and other wildlife; grows best along forest edges with its roots protected from late afternoon sun.
European beech	*Fagus Sylvatica* (sp., & full size cultivars)	Green leaves; upright oval growth habit; three-sided pointed nuts; small, husky and prickly fruits; in Autumn it reveals small, three-sided, pointed nuts that are consumed by wildlife.	15-19	10-13	Full sun to partial sun; performs best in deep, rich, evenly moist, well-drained, slightly acidic soils; tolerant of other soil conditions.	Slow to medium growth; shade tree focal point, or wildlife attraction tree; can be used as a hedge.
Sweetgum	*Liquidambar styraciflua*	Deep green, maple-shaped leaves; oblong or rounded shape.	18-23	12-16	One of the most adaptable hardwood species in its tolerance to different soil and site conditions; grows best in moist, slightly acidic soil; full sun.	Can transplant but it takes time for the tree to re-establish; can be used as a lawn, park, or street tree, but needs a large area for root development.
Tulip tree	*Liriodendron tulipifera*	Oval to round tree with several large branches; bright green leaves turn yellow in fall; greenish-yellow flowers.	21-28	10-16	Moist, well drained soil, slightly acidic; full sun.	Prune in winter; not a tree for small residential property or streets; needs large areas.
London planetree	*Plantanus x acerifolia*	Open wide-spreading outline with massive branches; medium to dark green leaves.	21-30	20-25	Deep, rich, moist well-drained soils, but is highly adaptable; full sun or very light shade.	Medium growth, but needs large area; withstands pollutants in cities; useful for open areas in parks, golf courses and campuses; too large for a street tree.
Pin oak	*Quercus palustris*	Pyramidal shape; glossy dark green narrow and pointed oak leaves, changing to russet, bronze or red in the fall; acorns.	18-22	7-12	Moist, rich, acidic, well drained soils; full sun.	Easily transplanted; good lawn shade or street tree; lawns, golf courses, streets, commercial areas.

Fastigiate English oak	*Quercus robur* 'Fastigiata'	Dark green oak leaves, acorns, massive open-headed tree with a short trunk.	18-21	5-6	Tolerates poor soils (but prefers well drained); pH adaptable; full sun.	Needs large space; good for parks and other large areas.
Red oak	*Quercus rubra*	Round topped and symmetrical; green oak leaves changing to red in the fall; acorns.	18-23	18-23	Well drained, slightly acidic soils; full sun.	Fast growing oak for lawns, parks, golf courses and commercial areas.

APPENDIX E:

STREET TREE SIZE, SPACING AND LOCATION

Trees shall be minimum 5 cm calliper measured at 300 mm above root ball at the time of planting and of uniform size if planted in a boulevard row.
Minimum number of boulevard trees shall be calculated as follows:

Tree Size	Single Family
Medium Trees (± 10-20 m ht.)	Greater of 1 per lot or 15 m
Small Trees (Under 10 m ht.)	Greater of 1 per lot or 10 m

Plantings of trees closer than 6 m on center shall require written approval from the Park Planner or the Urban Forest Coordinator.

Locate trees at least 1 m offset from the curb face.
Locate trees fronting on single-family lots at the center of the lot frontage unless otherwise approved by the City Engineer.

Trees Planted in Pavement
Select urban trees in pavement in accordance with tables above with the exception of Acer rubrum sp., which may not be used as they have very aggressive roots which cause problems in sidewalks. Select the site which will eliminate long-term above or below ground conflicts with utilities, buildings and structures and pedestrian and vehicular traffic. All urban trees in pavement must be in accordance with section 14.07 URBAN TREES IN PAVEMENT, in the City of Nanaimo Engineering Standards and Specifications.

Safety Considerations
Do not obstruct the line of vision at intersections within the triangular area bounded by the intersection of lot lines and a line joining each lot line 7 meters from their intersection.

The maximum mature maintained height for plant materials located within sight distance triangles at intersections shall be 300 mm above finish grade.

Specify trees near approaches to left turn slots, driveways or pedestrian crosswalks which can be pruned up from the base to a minimum height 1.5 meters. Shrubs in these areas shall not exceed 3 m in mature height.

Locate trees a minimum of 1 meter distance from the pavement or curb face, unless planted in accordance with Standard Drawing P-5 or P-6 of the City of Nanaimo Engineering Standards and Specifications.

Tree branch clearances requirements are 5 m over the traveled portion of road and 2 m over the sidewalk.

APPENDIX F:

NATIVE TREES

Native Trees and Shrubs for Landscaping Non-Boulevard Areas: (Lists not exhaustive and do not include other native plants that may be suitable for landscapes such as ferns and herbaceous perennials. There are many good reference sources and native plant nurseries that can assist in choosing these types of plants for various landscape designs.)

Part 1- Native Trees for Public or Private Planting

Common Name	Specific Name	Features	Mature size (meters)		Light and Soil Tolerances	Comments
			Height	width		
Arbutus	Arbutus menziesii	Heavy branches; bark is brownish-red and peels off; dark green oval leaves; white urn-shaped flowers; orange red berries.	15-30	To 15	Full sun; dry, infertile, extremely well-drained soil.	Important for deer, bees and hummingbirds; have peeling bark, dropping leaves and berries; generally do not survive transplanting, unless done with particular care.
Pacific dogwood	Cornus nuttallii	Much branched-irregular form; leaves are oval and pointed at the tip; greenish-white flowers tipped with purple surrounded pinkish white large showy bracts; bright red berries.	12-20	8-10	Moist, rich, deep, well-drained soil; full sun to part shade.	Easy to transplant; require little watering in summer months; try not to prune, unless removing dead, diseased or dying branches.
Gary oak	Quercus garryana	Heavy limbed tree often short and crooked in rocky habitats; shiny green round-lobed oak leaves; tiny flowers; acorns.	12- 25	9-15	Oaks are most often grown from seed; no pre-treatment is necessary; need deep rich well-drained soil; often grow on dry rocky slopes or bluffs; full sun to part shade.	Many oaks require cold temperatures to initiate shoot development.
Oregon ash	Fraxinus latifolia	Oval shaped tree; long oval leaves; seeded winged fruits.	18- 25	8-10	The Oregon ash prefers damp, loose soils at low elevations; full sun.	Low maintenance; works well for streamside and wetland plantings.
Pacific crab apple	Malus fusca	Shrub or small tree; armed with sharp spur shoots; white to pink, showy fragrant blossoms; tart yellow-reddish apples.	2-12	2-12	Moist to wet nitrogen-rich soils; full sun.	Pick apples; birds eat fruits.
Shore pine	Pinus contorta	Often has crooked trunk and irregular dense green crown; long needles; small reddish green pollen cones; egg-shaped seed cones.	12- 20	8-14	Can grow in soils that vary widely but are better in moist, well drained soil; part shade to full sun.	Highly adaptable; tolerant of low-nutrient conditions; needles shed and cones drop.
Western white pine	Pinus monticola	Slender and flexible needles; yellow pollen cones; long seed cones.	15-40	3-9	Moist valleys to fairly open and dry slopes, from near sea level to subalpine.	Pick up needles and fallen cones; wildlife habitat.
Pacific yew	Taxus brevifolia	Branches are spreading to drooping in flat sprays; has needles and yellow pollen cones.	2-15	1-9	Adapted to medium textured, moist rich soils; full sun to partial shade.	Needle clean-up, cone clean-up.
Douglas maple	Acer glabrum	Many-stemmed; maple leaf shaped leaves	5- 10	1-4	Succeeds in any soil; preferring a good moist	Leaf clean-up; seed clean-up.

		which turn bright yellowish-orange to crimson in fall; greenish-yellow flowers and small; winged seeds.			well-drained soil; full sun to part shade.	
Douglas fir	Pseudotsuga menziesii	Branches spreading to drooping; bark is very thick, rough and brown; flat yellowish-green needles, small reddish brown pollen cones, and green seed cones.	15-90	8-20	Sunny location with a moist well-drained soil.	For large landscapes and reforestation only; needle and cone pick-up.
Western red cedar	Thuja plicata	J-shaped branches and turned up at ends; leaves are green and overlap in a shingle arrangement; numerous tiny reddish pollen cones; brown and woody seed cones.	15-60	10-15	Tree grows in part shade/part sun/ full sun; tolerant of many soil types, moist well drained area; low-medium elevations.	For large landscape, low maintenance; tolerating shearing quite well; ideal for use as a hedge or screen, or a specimen for a large landscape.
Yellow cedar	Chamaecyparis nootkatensis	Often has slightly twisted trunk; branches tend to hang down vertically and appear limp; bluish-green leaves; pollen cones and round, light green seed cones.	20-50	8-12	Large area with moist well drained soil; at middle to high elevation; full sun to shade.	Soften landscape; use near water or around a patio or as a lawn specimen in residential or commercial landscapes.
Bigleaf maple	Acer macrophyllum	Often multi-stemmed tree; large dark-green 5-lobed maple leaves; greenish yellow flowers hanging in cylindrical clusters; winged seeds	18-30	18-21	Dry to moist rich soil, full sun; low to middle elevations	Leaf clean-up; seed clean-up.
Pacific silver fir	Abies amabilis	Tall narrow tree; flat needles; small reddish pollen-cones; seed cones- erect, deep purple, barrel-shaped.	30-70	20-30	On a variety of sites, most commonly in moist forest, on deep, well drained soils; full shade to full sun.	The best specimens grow in deep moist soils and cool wet air conditions such as fog belts.
Grand fir	Abies grandis	Tall straight tree; flat needles; yellowish pollen cones; long, erect, yellowish-green seed cones.	20-80	5-10	Moist, well-drained soils; part sun to part shade.	Needle clean-up.

Part 2 - Native Shrubs and Ground Covers for Public and Private Land

Common Name	Specific Name	Features	Mature size (meters)		Light and Soil Tolerances	Comments
			Height	width		
Indian plum	Oemlaria cerasiformis	Shrub or small tree; pale green leaves; small blueish-black berries (look like plums).	1.5-5	2-3	Dry to moist soil, well drained; part sun to shade.	Birds eat the fruit.
Saskatoon berry	Amelanchier alnifolia	Shrub to small tree; thin round, oval leaves; large white flowers; dull-red to purple-black berries.	1-5	1-2	Rocky shorelines, bluffs, talus slopes, meadows, thickets and forest edges; dry to moist open forest to roadsides, in well-drained soils; scattered at low-middle elevations.	Deer tolerant; birds eat the berries; long lasting flowers.
Ocean spray	Holodiscus discolor	Rounded shrub; brownish peeling bark;	1-4	1-4	Dry to moist areas; variety of soil	Bark clean-up; does well on dry slopes and at the edge of

		dull green leaves; white to cream flowers in dense lilac-like cluster; flowers turn brown and remain on plants over winter.			compositions; low-middle elevations; full sun to part shade.	deciduous forests; can also stand alone as a feature plant in a garden.
Red osier dogwood	Cornus stolonifera	Freely standing shrub with many stems; branches are often bright red; oval leaves; 5-10cm, sharp-pointed white to greenish flowers, in dense clusters; small white fruits; inedible.	1-6	1-4	Moist soil, typically in swamps, stream side forest and in scrub; from valley bottoms to mid elevation; full sun to shade.	Low maintenance; use as flowering accents, architectural screens or mat-like ground covers.
Red stem ceanothus	Ceanothus sanguineus	Smooth reddish to purple bark; thin oval leaves; white, heavily scented flower clusters, small seed capsules.	1-3	1-1.5	Prefers a warm sunny position but tolerates light shade; moist to dry well-drained soils.	Should be planted out into their permanent positions while they are small; it is best not to cut out any wood thicker than a pencil.
Red flowering currant	Ribes sanguineum	Crooked stems; dark reddish-brown bark; 5 lobed leaves; white to rose coloured round berries.	1-3	1-2	Grow in reasonably fertile, well-drained soil in full sun; low to middle elevations.	After flowering, cut back shoots to strong buds, and remove one-third to one-fifth of old shoots at the base.
Black gooseberry	Ribes lacustre	Rounded shrub; maple-leafed shaped leaf; reddish to maroon, saucer-shaped clusters of drooping flowers; dark purple berries.	0.5-2	0.5-2	Moist woods and streambanks to drier forested alpine slopes, and subalpine ridges, often on rotting wood; partial shade.	Will die if gets too cold or too dry.
Hooker's willow	Salix hookeriana	Columnar shape; oval to egg-shaped leaves; flowers with dark brown bracts; small capsules.	3-6m	3-4	Succeeds in most soils, including wet, ill-drained or intermittently flooded soils, but prefers a damp, heavy soil in a sunny position.	Helps control erosion and shades fish habitat when planted near water; its stems and foliage are enjoyed by deer and rabbits, birds and other wildlife.
Beaked hazelnut	Corylus cornuta var. californica	Many stems, twigs, leaves are elliptic to oval; flowers are catskins; spherical edible nuts enclosed in tubular husks.	1-4	1-2	Found in moist but well drained sites, at low to middle elevations, in open forest, shady openings, thickets, clearings, rocky slopes and well-drained stream-side habitats.	Wildlife eat the nuts.
Common juniper	Juniperus communis	Stiff prickly needles; bluish-black berry-like cones.	0.1-0.8	1-2	Dry, open woods, gravelly ridges, outcrops, muskeg and open rocky slopes; low to high elevations; full sun.	Has the largest range of any woody plant; ornamental shrub.
Dull oregon grape	Mahonia nervosa	Leathery, green spiny-toothed leaflets; bright yellow flowers; blue berries in elongated clusters.	0.30 to 1.00	1.00 to 2.00	Any moderately fertile, humus rich soil; full sun to full shade; can be found in range of forest types and from low to mid elevations.	It is able to grow under mature stands of Douglas fir or Western red cedar making use of intermittent pools of sunlight that reach the ground; attracts hummingbirds and supports wildlife.
Tall oregon grape	Mahonia aquifolium	Green leaf, bright yellow flowers; blue-black berries.	1-2	0.5-1.5	Dry to moist rich, well-drained soils; low to mid elevations; full sun to shade, but grows best in partial to full shade.	Slow growth; in shaded forests; the berries are eaten by birds.

Hairy manzanita	Arctostaphylos columbiana	Bush evergreen greyish-green egg to lance shaped leaves, 2-5cm long; white to pinkish urn-shaped flower. Blackish-red coloured berries.	1.5	2	Prefers light to medium, moist, well drained, acidic soil; can grow in semi-shade or full sun.	Wildlife eat the fruits of this shrub.
Kinnikinnick	Arctostaphylos uva-ursi	Brownish red to dark grey, peeling bark leathery, oval dark green leaves; pinkish to white urn-shaped flowers; dull red drupes, (look like miniature apples).	0.5-2	0.2-1	Moist but well-drained, humus rich, acidic soil; full sun to part shade	Food source for birds and wildlife.
Pacific rhodo-dendron	Rhododendron macrophyllum	Erect to spreading, stout, branched; leathery thick leaves; pink to purple bell shaped, 5 lobed flower; woody capsules.	1-8	1-2	Prefer moist, but well-drained, humus rich, acidic soil; full sun to partial shade.	Prune lightly after flowering; in areas with poorly-drained or alkaline soils; are often grown in raised beds using mediums such as composted pine bark.
Evergreen huckleberry	Vaccinium ovatum	Erect, bushy; dark green leaves; pink bell-shaped flowers in clusters; deep purplish-black berries.	2-4	1-3	Full sun to shade; moist, well-drained, acidic soil.	Can be pruned into a hedge; prune after flowering; remove dead branches; attracts wildlife who eat the berries.
Dwarf rose	Rosa gymnocarpa	Spindly, alternate compound leaves; pale pink to rose flowers.	1–1.5	1	Variety of habitats, from open to wooded, dry to moist; at low to middle elevations.	A pleasant tea can be made from the young leaves and twigs.
Nootka rose	Rosa nutkana	Spindly, with a pair of prickles at the base of each leaf.	1–3	1	In a variety of generally open habitats at low to middle elevations.	The hips are a good source of Vitamin C, but caution must be taken with the seeds as they can be a source of irritation.

APPENDIX G:

PARKS: FOREST FIRE INTERFACE RISK

The following parks are located in areas of very low, low, moderate, high or extreme fire hazard rating as shown in the Fire Interface Assessment Hazard: The City of Nanaimo map, 2004.

Risk Level of Interface Fire in Nanaimo's Parks

Extreme	High	Medium	Low	Very Low
Cable Bay Trail	Alderway Park	Allison Way Park	Amsterdam Park	Buttertubs Marsh Park
Colliery Dam Park	Barrington Park	Barsby Park	Anchor Way Park	Buttertubs Marsh West Park
Country Hills Park	Beach Estates Park	Biggs Park	Arbutus Park	
Fillinger Waterfront Park 2	Beban Park (forest trails)	Black Diamond Park	Ardoon Place Park	
Jesters Way Park	Ben Gunn Park	Brackenwood Park	Barney Moriez Park	
Joan Point Park	Biggs Road Park	Brookwood Park	Bastion Square Park	
John Weeks Park	Blackbeard Park	Butternut Park	Bayshore Park	
Linley Valley	Blueback Beach Access	Cathers Lake Park	Beaufort Park	
Cottle Lake Park	(R.O.W.)			
Lost Lake Trail	Bowen Park(central)	Chambers/Crowsnest Park	Beban Park	
McGuffie Park	Brannen Lake Boat Launch	Diver Lake Park	Bob-O-Link Park	
Morrell Nature Sanctuary	Camcrest Park	Glen Oaks Park	Bowen Park (east portion)	
Neck Point Park	Captain Flint Park	Harewood Centennial Park	Bowen West Park	
Newcastle Island Park	Captain Hook Park	Horth Park	Brechin Boat Ramp	
Newcastle Park	Captain Morgan Park	Jordan Avenue Park	Breonna/Schonner Park	
Oliver Road Park	Cariboo Park	Lakeside Park	Broadway Park	
Park Reserve	Carrington Park	McKinnon Place Park	Bruce Avenue Park	
Walley Creek Trail Park	Cinnabar Valley Park	Nottingham Drive Park	Bruce Park	
Westwood Lake Park	Collinwood Park	Nova Park	Caledonia Park	
Westwood Ravine Park	Crystal Brook Way	Orchard Circle Park	Capilano Park 1	
Williamson Road Park	Dogwood Park	Park Gully Park	Capilano Park 2	
	Douglas & Eighth Park	Pearson Park	Carmana Park	
	Douglas Park	Ravine Park	Carriage Way Park	
	Dunbar Park	Robins Park (L--> M)	Cathedral Grove Park	
	Dunstar Park	Rosstown Road Park	Catherine Gisborne Garden	
	Eagleview Park	Salish Park	Charlaine Boat Ramp	
	Egli Park	Sandra Road Park	Chase River Estuary Park	
	Elaine Hamilton Park	Southhampton Road Park	Chase River Watercourse Park	
	Elmwood Park	Sugarloaf Mountain Park	Chesterlea Park	
	Emery Way Park	Sunrise Place Park	Chinese Memorial Gardens Park	
	Gallows Point Light Park	Theresa Terrace Park	Cilaire Park 1	
	Georgia Triangle Park	Third Street Park	Cilaire Park 2	
	Green Lake (R.O.W.)	Wardropper Park	Clarence Way Park	
	Hawthorn Park	Wexford Park	Cliffside Park	
	Hidden Treasure Park	Wheatcroft Park	Connaught Park	
	Holland Road Park	Woodstream Park	Connaught/Railway Park	

	Horth Park		Cosgrove Crescent Park 1	
	Icarus Rafter Park		Cosgrove Crescent Park 2	
	Invermere Beach Access		Country Club Park	
	Jack Point Park		Country Club Park 1	
	Janes Park		Country Club Park 2	
	Kerry Lane Park		Dallas Square Park	
	Kinette Evergreen Park		Davies Lane Park	
	Koram Park		Departure Bay Centennial Park	
	Labieux Park		Deverill Square Park	
	Lakeview Park		Diana Krall Plaza	
	Lewis Park		Doreen Place Park	
	Long John Silver Park		Duggan Road Park	
	Loudon Park and Trail		Duke & Robins Park	
	Malibu Terrace Park		Durham Park	
	May Richards Bennett Park		E&N Trail	
	Millstone Park 1		Elks Park	
	Mollys Marsh Park		Entwhistle Park	
	Monashee Park		Entwhistle/Cabriolet Park	
	Morningside Beach Access		Entwistle Beach Access	
	Morningside Park		Everest Drive Park	
	Ninth Street Park		Fern Road Park	
	Northfield Nature Park		Fillinger Waterfront Park	
	Noye Road & Big Bear Park		Flagstone Park	
	Parkway Trail		Folk Fest Park	
	Petroglyph Park		Forest Drive Park	
	Pipers Lagoon Park (M--> H)		Georgia Park	
	Pirates Park		Gregalach Park	
	Planta Park		Groveland Park	
	Porpoise Place Park		Gyro 1 (Comox) Park	
	Porter Road Park		Gyro Park (Waddington)	
	Rafter Road Park		Gyro Youth Park	
	Ranchview Park		Harry Wipper Park	
	Reservoir Park		Harwell Drive Park	
	Richards Marsh Park		Hawthorne Park	
	Roberta Road Park		Icarus Drive Park	
	Rockridge Park		Italian Square Park	
	Rocky Point Park 1		Jingle Pot Park	
	Rocky Point Park 2		Jordon/Nova Park	
	Roxanne Park		Keighley Park	
	Rutherford Park		Kenwill Park	
	Ryan Road Park		Kinsman Park	
	Saxer Park		Knowles Park	
	Schook Park		Lancashire Park	
	Sealand Park Access		Lions Square Park	
	Smugglers Park		Maffeo Sutton Park	
	Tralee Park		Manchester Road Park	
	Trillium Park		Mansfield Park	
	Uplands Park 1(M-->H)		McGirr Community Park	
	Uplands Park 2 (M-->H)		McGirr Sports Fields	

			McGregor Park Medd Road - Road Access Merle Logan Field Millstone Park 2 Nanaimo Aquatic Centre Nob Hill Park Norasea Park Northfield Marsh Northfield Rotary Lookout Park Parkway Drive Park Parkway Park Parkwood Park Pawson (Gyro 3) Park Pioneer Cemetary Park Pioneer Square Park Piper Park Pleasant Valley Park Queen Elizabeth II Promenade	
			Railway/Connaught Park Rosamond Park Seabold Rotary Park Seabold Trail Sealand Park Sechelt Drive Park Shaughnessy Park Shenton Park Shoreline Park Springfield Place Park St. George Ravine Park Staffordshire Park Stirling/Deering Park Taylor Place Park Three Lagoon Islands Park Thunderbird Park 1 Thunderbird Park 2 Townsite Square Park Turner/Carlton Park Valley Oak Park Wellington Park Wessex Lane Park Westdale/Leslie Park Westhaven Park (Bayshore)	

APPENDIX H:

MALASPINA UNIVERSITY-COLLEGE (NOW VIU) FOREST CANOPY STUDY – JUNE 2006

The forest coverage study was conducted using City of Nanaimo aerial photos from 2003. Each area was analyzed individually for specific tree species coverage, as well as overall coverage. The results are as follows:

Planning Area	Size of area (Ha)	Tree coverage (Ha)	Percent coverage within area
Westwood	1211.93	567.23	46.80
Linley Valley	654.34	223.22	34.56
South End / Duke Point / Chase River	1923.26	627.45	32.62
Five Acres	545.54	138.06	25.31
North Slope	369.76	92.34	24.97
Diver Lake	450.53	55.70	12.03
Pleasant Valley	741.9	124.73	16.81
Dover	371.66	49.69	13.37
Harewood	463.07	55.70	12.03
Northfield	430.89	51.69	12.00
Townsite	208.95	13.92	6.66
Newcastle	148.48	5.46	3.68
Total Nanaimo Area	**8805.19**	**2435.61**	**27.66**

APPENDIX I:

SURVEY RESULTS – CITY TREES AND YOU

City of Nanaimo
Urban Forest Study- City Trees and You
July 2008




Results of Public Opinion Survey

Prepared by
Rick Rollins
Malaspina Tourism and Recreation Research Institute

Malaspina University-College

TABLE OF CONTENTS

1.0 Introduction

The purpose of this report is to describe the results of a survey conducted in Nanaimo in January and February 2008 measuring public opinions regarding trees in the city (the urban forest). The survey results will be used to inform the development of the "Urban Forest Management Plan" for the City of Nanaimo, and constitute one component of public input designed to develop this plan.

The purpose of the Urban Forest Management Plan is to "guide Nanaimo's future efforts to increase overall tree canopy cover, support the protection of trees, improve tree health, and maximize the benefits of trees for all residents." Urban forests can provide many benefits to the community, such as flood water control, erosion control, and visual appeal. On the other hand, the urban forest can create some concerns. Some people may be concerned about blockage of views, the effort to clear falling leaves and branches, and other issues.

The ultimate success of the Urban Forest Management Plan will depend on public support, and this is linked to public perceptions of the possible benefits and concerns related to urban forests.

This study measures these public perceptions of the current urban forest, as well as public views on the management practices of the current urban forest in Nanaimo.

2.0 METHODOLOGY

2.1 Use of Mail Survey Approach. The approach used for conducting this study was with a mail survey. Compared to other approaches (telephone, face to face, on line), mail surveys have the following advantages:

- The cost is less than face to face or telephone interviews. Although an on-line survey is cheaper, it assumes all respondents have access to internet, and that email addresses are known for all households.
- Mail surveys are less intrusive than other approaches because respondents can complete the questionnaire at a time convenient to them.
- Mail surveys provide a higher level of confidentiality, since respondents are not seen or spoken to by interviewers. Confidentiality is an important ethical concern. In addition, confidentiality usually leads to more candid responses.
- Related to confidentiality, is the advantage that every respondent receives exactly the same information with questions presented the same way to all respondents. This reduces the "interviewer effect" that sometimes occurs with telephone and face to face surveys.

However, mail surveys present some challenges, as follows:

- Compared to other approaches, mail surveys take longer to obtain results, due to the postal system and the length of time people take before mailing back completed questionnaires. For this project, sufficient time was available, so time was not a concern.
- Many mail surveys experience low response rates, raising concerns about sample size and non- response bias (does the sample truly represent the views of a population). However, if properly implemented, mail surveys can produce acceptable response rates (see discussion below).
- Compared to personal interviews or telephone interviews, there is no opportunity in a mail survey to clarify any questions that respondents may have. In this study we addressed this concern by providing several places where respondents could write in their own comments. In addition, a phone number was provided for people to call with their questions.

2.2 Implementing the Mail Survey. In order to provide reliable and accurate information through a mail survey, it is important to follow procedures that engage the respondent appropriately. This study used techniques developed by Salant and Dillman (1994), which have shown an improved response rate and response quality in mail surveys by addressing methods for motivating respondents and reducing the difficulty of completing a mail survey. This approach is outlined in the following:

- Design the questionnaire as a booklet, which is appealing to the eye. For example, the cover page should contain no questions, but should provide an interesting illustration (e.g., photos of street trees), as well as a survey title, and the name of the agency conducting the study (City of Nanaimo).
- Keep the questionnaire short; focus only on the essential information needed.
- Create interest with the respondent by asking interesting, relevant questions first.
- Make all questions easy to answer (e.g., by providing numbers to circle). Provide some optional open-ended questions for some respondents who may have the time or interest to expand on their responses.
- Provide a short cover letter that is motivational to the respondent, providing a brief and clear explanation of the purpose of the study, how the respondent and the community will benefit from the results of the study, and measures taken to protect the confidentiality of the respondent.
- Provide a return envelope that is pre-addressed and with postage attached. This reduces the cost and inconvenience to the respondent.
- Personalize the mail-out package by printing the respondent's name on outgoing mail, and using real postage rather than bulk rate postage options (often associated with "junk mail").
- Follow up one week after the first mail-out with a reminder letter sent to all people in the sample.
- Do not place the name of the respondent on the questionnaire – but place a unique number on each questionnaire, that is matched with the sample list so that when questionnaires are returned it is possible to know who has not yet returned the questionnaire.
- After two weeks, send a follow-up package to non-respondents only. This follow-up package is similar to the first mailing, but contains a revised cover letter, stressing in different language the importance of the study and the importance of hearing from each respondent.

Collectively these approaches serve to motivate the respondent toward responding to the questionnaire, and providing thoughtful responses. The actual implementation of the Nanaimo City Trees survey followed these procedures, as follows:

- November 27, 2007. Focus group to discuss issues related to urban forestry, and the process for developing the Nanaimo Urban Forest Management Plan.
- November, 2007 – January, 2008. Development of questionnaire, and development of sample list (2,000 randomly selected names and addresses)
- January 18, 2008. First package mailed out, containing cover letter, questionnaire, and return envelope with postage.
- January 29, 2008. Reminder letter sent to all respondents.
- February 18, 2008. Follow-up package sent to those in the sample who had not yet responded. This package contained a replacement questionnaire, revised cover letter, and return envelope with postage.
- February 27, 2008. Last day for accepting returned questionnaires.
- March 3, 2008. Data entry onto excel spreadsheet completed. Data transferred into SPSS software for analysis.
- March 11, 2008. Draft report prepared.
- June 16, 2008. Second focus group conducted, to review the draft survey findings.
- July, 2008. Final report submitted.

2.3 Survey Sample. The sample list contained the names of 2,000 randomly selected residents of Nanaimo. Using the approaches described above, a total of 1,059 responses were obtained. Of the original 2,000 surveys sent out, 205 envelopes were returned un-opened, due to changed addresses or the difficulty of delivering to apartment buildings. In summary, the actual usable sample list contained 1,795 names, so the 1,059 completed returns represent a response rate of 59%.

With a sample size of 1,059 it is possible to estimate the "margin of error" (accuracy) of the sample. Based on this sample of 1,059 completed questionnaires, the margin of error is plus or minus 3.1% at the 95% confidence level. This means that the sample results should be a very accurate portrayal of the views of the adult population of Nanaimo, with all results within 3.1% of true values. For example, in Table 1 below, the survey results report that 87.5% of the sample lived in houses. This sample result is a prediction of the true value for the total Nanaimo population, and the sample result likely is within 3.1% of this value (between 84.4% and 90.6%).

Additional checks on the sample are provided in Table 1. This table compares information from the 2006 census for Nanaimo with characteristics obtained from returned questionnaires. A number of comparisons are important to note:

- With regard to age, gender, and household size, the sample compares well with the census data.
- With regard to ownership / renting of home, the survey sample under-represents renters and those living in apartments (mainly the same group probably). As noted above, it was difficult for Canada Post to deliver to apartments and many of those questionnaires were returned by Canada Post. Although this is unfortunate, the sample still represents most elements of the population quite well.
- The sample consists of a good cross-section of people who have lived in Nanaimo for various lengths of time, and of people who have lived in their present home for various lengths of time. Comparable census data for these characteristics is not available.

The sample was further analyzed by postal code, so that survey results could be compared between north Nanaimo, central Nanaimo, and south Nanaimo, with sub-sample sizes as follows:

- North Nanaimo = 583 respondents
- Central Nanaimo = 190 respondents
- South Nanaimo = 280 respondents
- Missing = 6 respondents

With each survey response, comparisons between regions were computed, and an appropriate statistical test was applied (chi squared, or analysis of variance), to determine which of the apparent differences between regions are statistically significant.

Table 1. Sample Characteristics

Characteristic	Sample (%)	2006 Census
Type of accommodation (Q13)		
House	87.5	71.8
Townhouse	5.6	4.0
Apartment or condominium	1.5	20.5
Other	4.7	3.5
Own or rent (Q14)		
Own	97.6	69.7
Rent	2.4	30.1
Number living in home (Q15)		
1 person	15.3	27.5

2 persons	50.6	42.7
3 persons	11.7	13.3
4 - 5 persons	15.8	15.0
More than 5persons	5.9	1.6
Years lived in present home (Q16)		
Less than 2 years	7.1	
2 - 5 years	29.3	
6 - 10 years	20.0	
11 - 15 years	14.8	
16 - 20 years	12.1	
More than 20 years	17.2	
Years lived in Nanaimo (Q17)		
Less than 2 years	3.2	
2 - 5 years	13.2	
6 - 10 years	12.6	
11 - 15 years	11.6	
16 - 20 years	14.1	
More than 20 years	45.2	
Gender (Q18)		
Male	46.5	48.0
Female	53.5	52.0
Age (Q19)		
19 - 24 years	0.4	5.6
25 - 40 years	12.9	14.3
41 - 50 years	21.7	14.9
51 - 64 years	32.3	26.7
65 years or older	32.7	20.8

3.0 SURVEY RESULTS

Survey results are displayed in two formats. In the text of the results section, individual results are summarized and presented with graphical techniques for ease of reading and interpretation. More detailed summaries of the results are included in the appendices.

Also, survey results compared regions of Nanaimo: north Nanaimo, central Nanaimo, and south Nanaimo. As stated in the methodology section of this report, when comparing results between regions, it is important to apply statistical tests to determine if each comparison is "statistically significant". An apparent difference between regions can be interpreted in two ways:

- The sample data reflects true differences in the population, in which case the apparent differences are said to be "statistically significant"; or
- The sample data reflect "random sampling effects" within the sample, rather than a true difference in the population. Statistical tests make it possible to estimate the likelihood of the sampling effects outcome, and if this probability is relatively small (5% or smaller) then we can infer that the apparent differences in regional responses are "significantly different".

With each survey response, comparisons between regions were computed, and an appropriate statistical test was applied (chi squared, or analysis of variance), to determine which of the apparent differences between regions are statistically significant.

3.1 Awareness of City Trees. In this first section of the questionnaire respondents were asked to reflect on their homes and neighbourhoods in terms of the relative abundance of street trees. Figures 1 and 2 illustrate these reflections. Figure 1 reveals that over 80% of homes have trees on the residential property, and the number of trees varies considerably. Comparisons between regions of Nanaimo reveals that people in north Nanaimo report having more residential trees compared to people living in central Nanaimo; but there is no statistical difference between north and south Nanaimo, or between central and south Nanaimo (see Appendix A, Table 2).

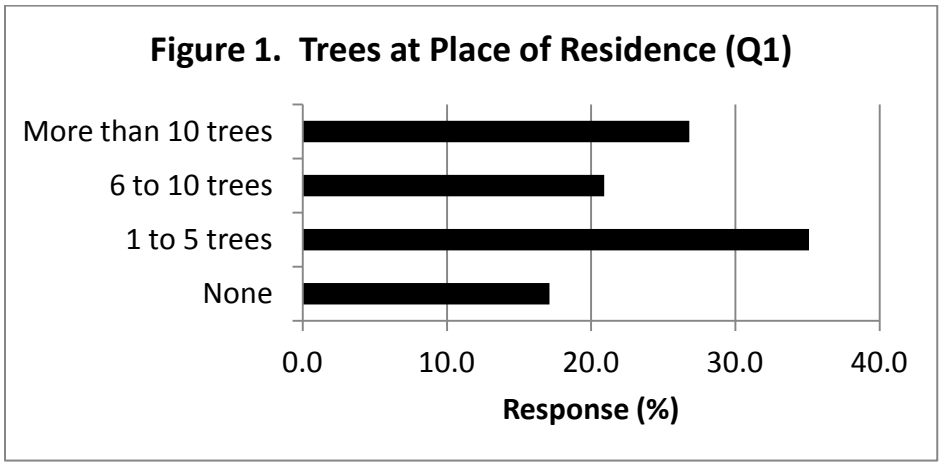
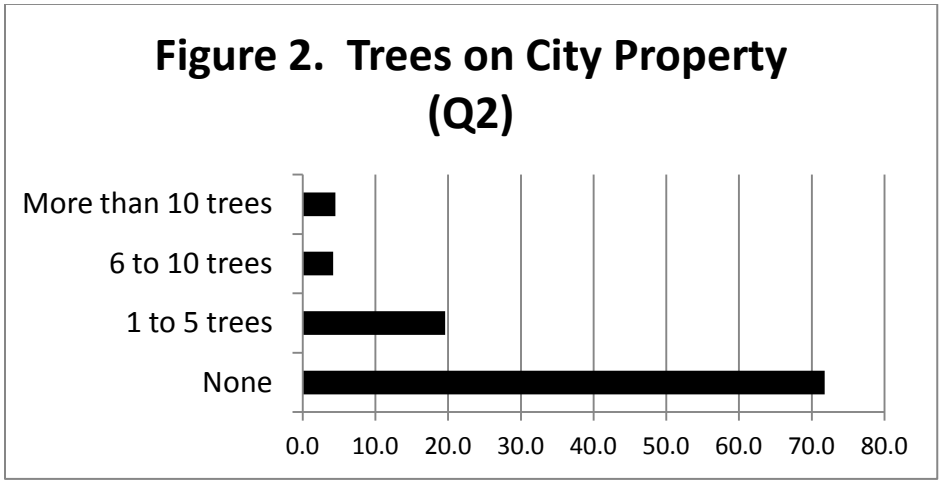


Figure 2 indicates that many homes (over 70%) do not have street trees on city property in front of places of residence. Comparisons between regions of the city (see Appendix A, Table 3) indicate no significant differences between north, central or south Nanaimo in the number of trees on city property.

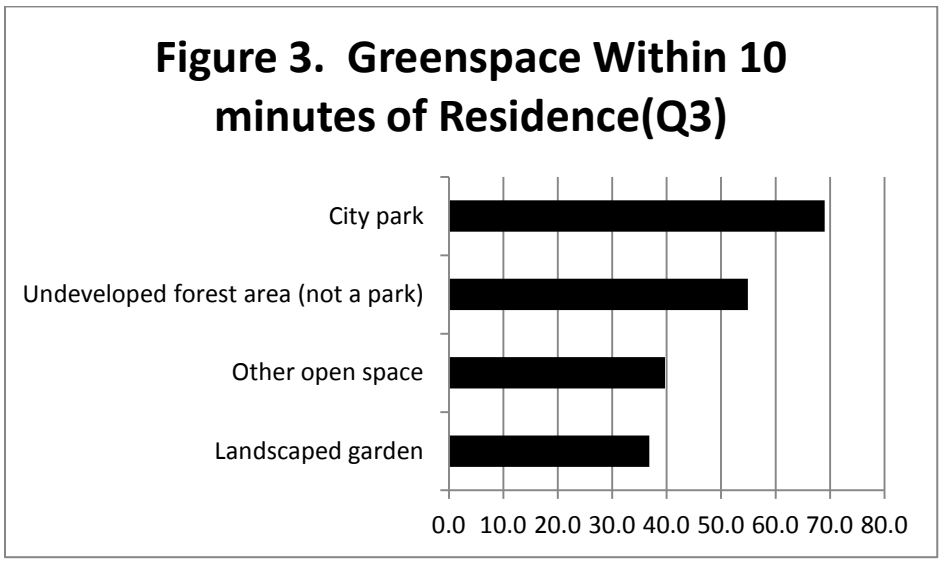


As well as trees in or adjacent to place of residence, it was also important to determine the proximity of treed areas in the same neighbourhood (within a 10-minute walk). Figure 3 indicates that most residents (nearly 70%) have a city park nearby (within a 10-minute walk), and a large number (over 50%) also have an undeveloped forest nearby. A smaller number (about 36%) have a landscaped garden nearby. Overall, nearly all respondents indicated they had at least one of these nearby:

- 4.5% had none of these types of green space nearby.
- 30.8% had one type of green space nearby.
- 30.5% had 2 types of green space nearby.
- 23.3% had 3 types of green space nearby.
- 10.0% had 4 types of green space nearby.

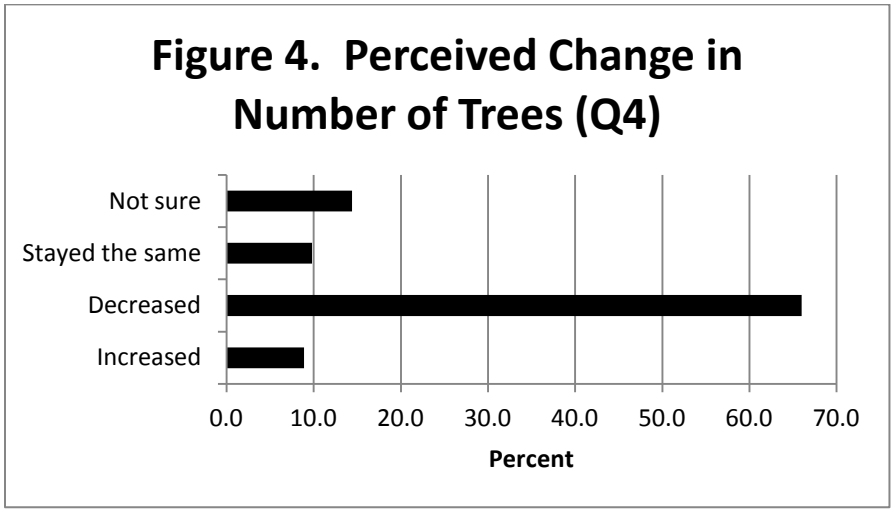
In addition, statistical comparisons between regions indicate statistically some significant differences between regions of Nanaimo (see Appendix A, Table 4) regarding:

- Large open spaces. More in north and south Nanaimo, compared to central Nanaimo.
- Undeveloped forest areas. More in north and south Nanaimo.
- City parks. More in central and south Nanaimo, compared to north Nanaimo.



Finally, respondents were asked to indicate if they felt the number of trees seems to have increased, decreased or remained the same. Figure 4 reveals that about 67% feel that the number of trees has decreased.

Analysis by region of the city (Appendix A, Table 5) indicates that residents of north Nanaimo are more likely to feel that the number of trees in their region has decreased, as compared to the perceptions of residents of central and south Nanaimo.



3.2 Perceived Benefits of City Trees. Public support for urban forests depends in part on the perceived benefits of urban trees. Figure 5 presents a summary of perceived benefits. Respondents were presented with a list of possible benefits, and were asked to indicate for each statement if they viewed it as a "minor benefit", "major benefit", "not a benefit", or "not sure". Each bar in Figure 5 represents the proportion of respondents who viewed each possible benefit as a "major benefit". Beside each statement in brackets is the mean response, which can vary from 1 to 3, where 1= not a benefit and 3= major benefit (not sure = 0).

Results in Figure 5 indicate that the strongest perceived benefits (with at least 70% indicating major benefit) are:

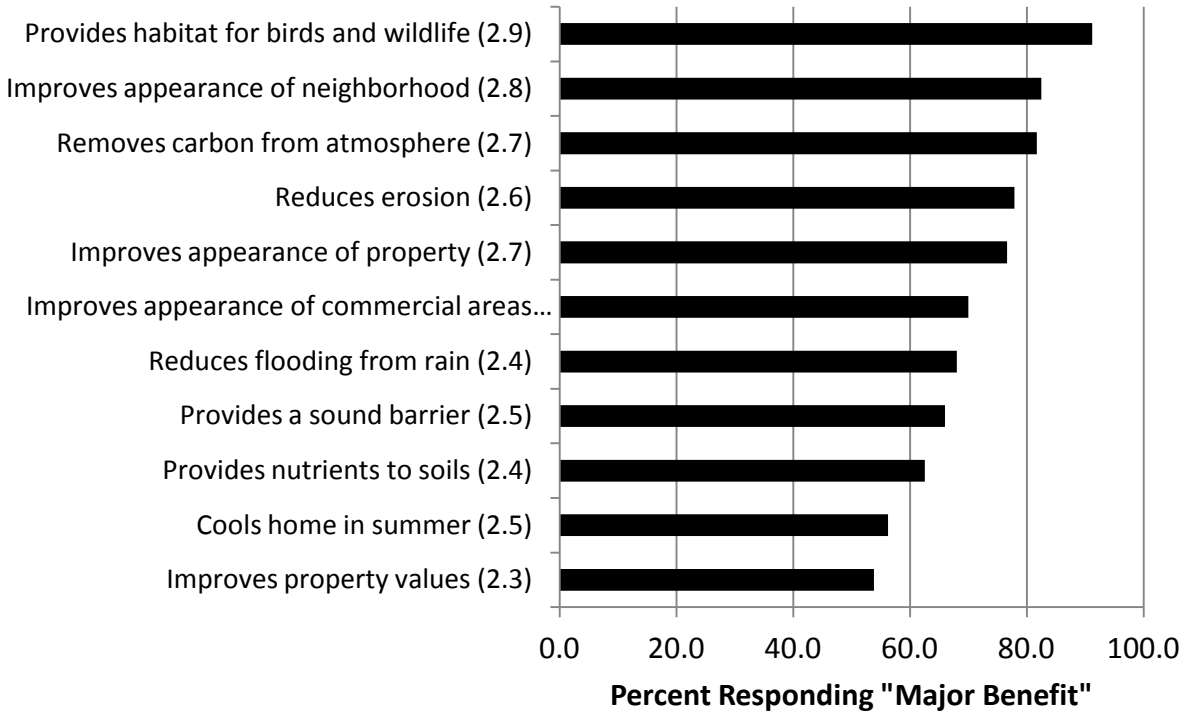
- Provides habitat for birds and wildlife.
- Improves appearance for neighbourhood.
- Removes carbon from atmosphere.
- Reduces erosion.
- Improves appearance of property.

The lowest perceived benefit was for "improves property values", but over 50% of respondents felt this was a major benefit.

Comparisons by region of the city indicate few statistically significant differences, with the exception of:

- Improves appearance of property (lower perception in central Nanaimo).
- Provides habitat for birds and wildlife (lower perception in central Nanaimo).

Figure 5. Perceived Benefits of City Trees (Q5)



Respondents were provided with the opportunity to comment on other possible benefits (Q6). These open-ended responses were analyzed and placed into categories (See Appendix B for a representative selection of the comments), as follows:

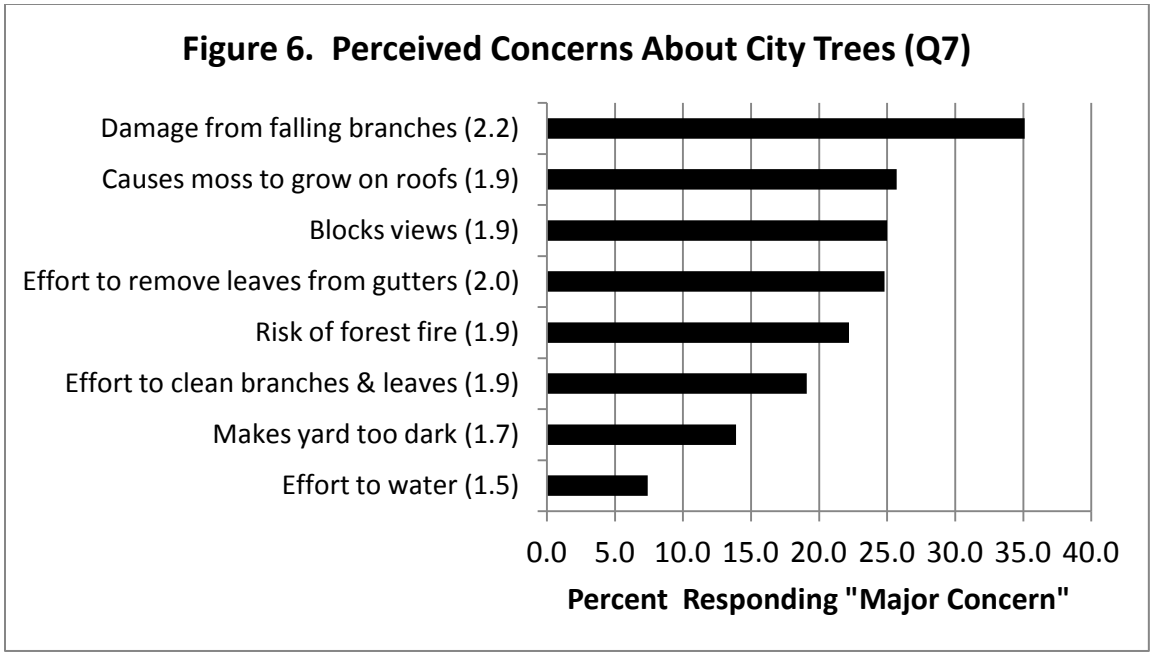
- Privacy (56 comments).
- Visual (53 comments).
- Health – feel good (56 comments).
- Good for children (17 comments).
- For wildlife (12 comments).
- Improves development (1 comment).

- Reduces cost to landscape (2 comments).
- Provides firewood (3 comments).
- Food source (11 comments).
- Noise reduction (4 comments).
- Provides shade (20 comments).
- Wind reduction (21 comments).
- Future (2 comment).
- Other (52 comments).

3.3 Perceived Concerns of City Trees. Public support for urban forestry is influenced by perceived benefits and concerns. Looking now at perceived concerns, the questionnaire provided a list of possible concerns and asked respondents to rate each statement as "not a concern", "minor concern", "major concern" or "not sure". Figure 6 presents a summary of these reponses where each bar indicates the percent of the sample who responded "major concern." Beside each statement in brackets is the mean score, derived from scoring each response where 1 = not a concern, 2 = minor concern, 3 = major concern, and 0 = not sure.

Overall, concerns are rated much lower than benefits (compare Figure 6 with Figure 5), with the most significant concerns, ranging from a 25% to 35% rating of "major concern" being:

- Damage from falling branches.
- Causes moss to grow on roofs.
- Blocks views.
- Effort to remove leaves from gutters.



When comparing these responses by region of the city, only one significant difference was observed: damage from falling branches, which was lower in south Nanaimo (see Table 7B in Appendix A).

In addition to these findings, respondents were provided the opportunity to write in any additional comments or concerns. A representative selection of these open-ended responses are listed in Appendix B (Table 12), and a summary of these additional comments (those not listed above) is provided below:

- Damage to power lines (36 comments).
- Damage created when roots enter drains and pipes (16 comments).
- Damage when roots interfere with foundations, sidewalks, and driveways (13 comments).
- Block street signs and visibility of traffic (21 comments).
- Danger and property damage (64 comments).
- Fire risk (5 comments).
- Moss on roof and grass (6 comments).
- Insects and disease (9 comments).
- Financial (11 comments).
- Other (53 comments).

3.4 Perceived Importance of City Trees. As stated above, public support for city trees and the Nanaimo Urban Forestry Management Strategy will be influenced by perceived benefits and concerns regarding city trees. The discussion above suggests that perceived benefits are stronger than perceived concerns for most repondents, so we would expect these findings to lead to generally positive support for city trees. This seems to be the case. The questionnaire (Question 9) asked respondents to rate a series of statements by responding "not at all important", "somewhat important", " very important", or "not sure". Figure 7 displays the overall importance that respondents attach to city trees, reporting on the percentage of respondents who indicate "somewhat important" or "very important" to each statement. In brackets beside each statement, the mean response is reported, where 1 = not at all important, 2 = somewhat important, 3 = very important, and 0 = not sure.

Figure 7. Perceived Importance of City Trees (Q9)

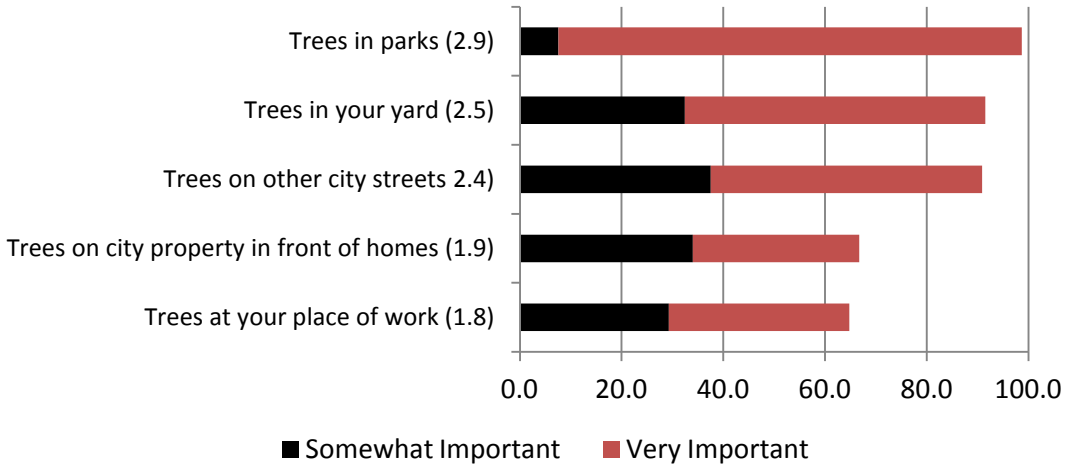


Figure 7 reveals high levels of importance for city trees, with the highest levels of support for trees in parks, trees in your yard, and trees on other city streets (not in front of homes). The lowest rating was for trees at your place of work, but here over 60% of respondents felt trees were somewhat or very important.

When responses were compared between north, central and south Nanaimo, no significant differences between regions were apparent (see Table 8B in Appendix A).

3.5 Priorities for Managing City Trees. The final section of the questionnaire examined public support for tree-related programs and services provided by the City of Nanaimo. For each statement, respondents could indicate their rating as "low priority", "medium priority", "high priority" or "not sure." These responses are summarized in Figure 8 below, where each bar represents the percentage responding as "high priority." In brackets beside each statement is the mean response, where 1 = low priority, 2 = medium priority, 3 = high priority, and 0 = not sure.

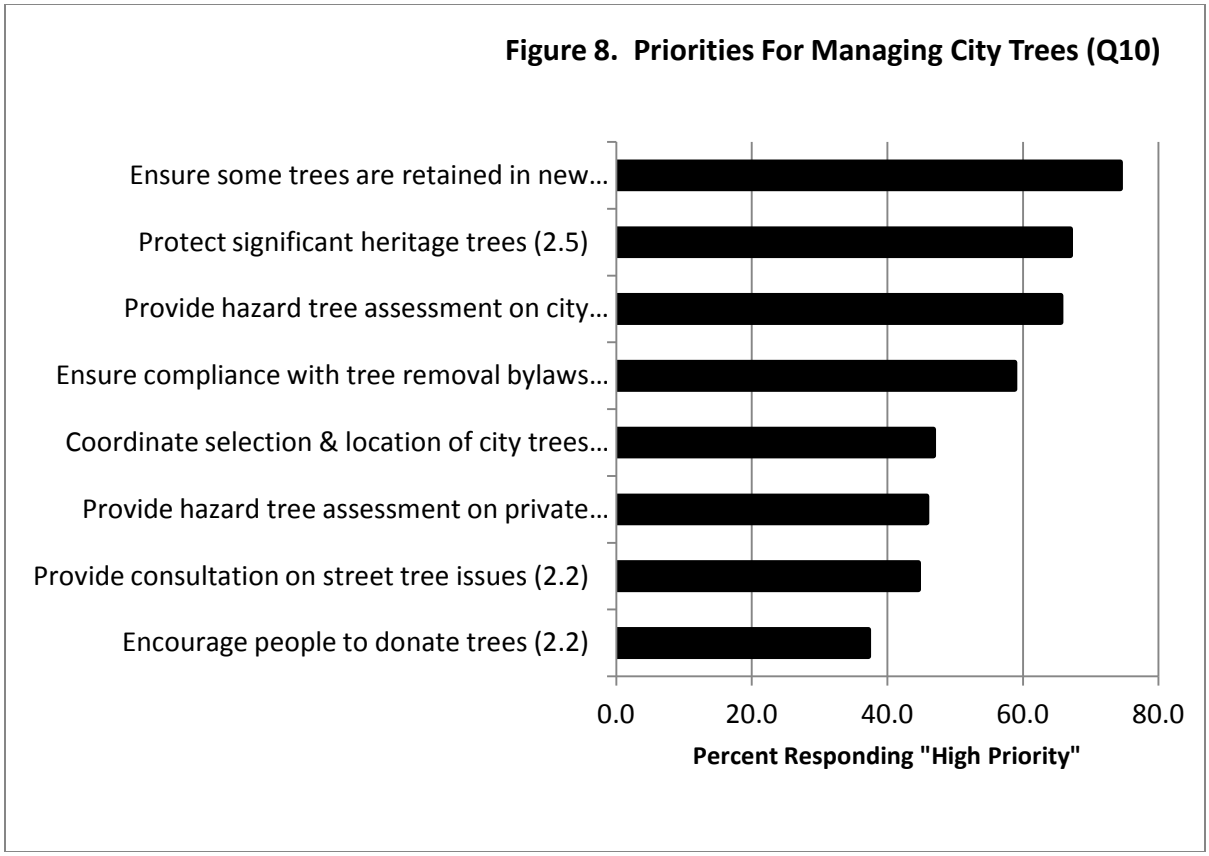


Figure 8 indicates strong support for most programs, and highest priority attached to the following (each with over 50% of respondents providing a “high priority” rating):

- Ensuring some trees are retained in new developments.
- Protecting significant heritage trees.
- Providing hazard tree assessment on city property.
- Ensuring compliance with tree removal bylaws.

These priorities are consistent across different regions of the city, with the exception of “ensure some trees are retained in new developments”, which was rated slightly higher in north Nanaimo (see Appendix A, Table 9-B).

In addition to these programs, respondents offered a number of additional suggestions that are summarized below (see Appendix B for listing of all comments):

- City should do more pruning of street trees, and control of tree height.
- City should do some thinning of trees to allow some views.
- City should provide curb side pick-up of branches and leaves.
- City should offer a mulching service for branches and leaves.

- City should do more to manage diseases in trees.
- City should plant the “right trees” that are strong and need little maintainence.
- More ornamental trees should be provided in the dowtown area.
- City should educate the public about the value of street trees.
- City should educate the public on proper tree selection and maintenance of trees.
- Ensure that some trees are left in new developments.
- City should provide a web-site providing information about trees, tree services, and how to maintain trees.
- City should provide a hot-line where people can call in for information, or to report concerns.
- City should work with local nurseries for donations and sponsorships for cost reductions.
- City should not over-regulate trees on private property, but should focus on trees on city property.

Related to this discussion, respondents were asked to indicate their willingness to be involved in the selection and location of street trees in their neighborhood. Responses illustrated in Figure 9 below indicate that 31% would welcome this opportunity. Analysis of responses by region indicated no significant differences between north, central and south Nanaimo (see Appendix A, Table 10-B).

4.0 SUMMARY AND RECOMMENDATIONS

These results indicate strong support from the residents of Nanaimo for sustaining urban forestry in the city. Most residents support having trees in their yard, on city streets in front of their home and elsewhere, including city parks.

This support for urban forestry stems from the perceived benefits for city trees. Not surprisingly, most residents felt that trees improve the appearance of their residence and of their neighbourhood. In addition, most residents valued the ecological values of trees; for example in providing habitat for birds and wildlife, reducing erosion, reducing flooding, and removing carbon from the atmosphere. These responses suggest a strong understanding of natural processes and support for environmental stewardship within an urban environment. This is an important finding, and an opportunity to build strong partnerships in stewardship between the Nanaimo Parks Department and the Nanaimo community.

However, to sustain this relationship and community support, some of the issues raised in this study will need to be addressed. Some suggestions are provided below:

- *Damage from falling branches*. This comment appeared several times in the open-ended questions. The risk can be reduced by increasing individual understanding of tree care management, the application of proper pruning techniques, the proper selection and location of trees, and regular tree assessment.

- *Cause moss to grow on roof*. This can be reduced through the application of moss reducing products to roof surfaces. The selection and placement of trees can also reduce the probability of moss growth.

- *Block views*. This is a complex issue, with a range of responses, depending upon the specific situation. For example, city trees blocking views could be pruned or thinned to allow for some views without requiring tree removal. On the other hand, some people plant trees that obscure the views of neighbours – this situation may require bylaws that are sensitive to the impacts of trees on surrounding properties.

- *Effort to remove leaves from gutters*. There are a variety of ways this issue can be reduced, including: attention to the location of trees, selection of trees, and regular pruning.

- *Risk of forest fire*. The City of Nanaimo has developed guidelines regarding the proximity of urban homes to mature forest stands where forest fires are most likely to originate. Perhaps these guidelines need to be made more apparent to residents.

- *Effort to clean branches and leaves*. This issue can be reduced by exploring ways of providing mulching and street side pick-ups of garden refuse.

- *Make yards too dark*. As with other issues discussed above, this problem can be reduced through better tree selection and placement as well as pruning.

- *Effort to water*. Not many people viewed this as a problem, but this problem can be reduced by using trees and shrubs that require less water, including native species.

- *Trees blocking street signs and reducing visibility of traffic*. This comment was raised several times by respondents. However, such comments appeared in the open-ended portions of the questionnaire, so it is difficult to assess how prevalent this concern may be. Nevertheless, the City of Nanaimo will need to be vigilant in pruning to reduce this hazard. Providing public access to information and request for service, through a web site or hot line, would also assist in an individual's ability to report this situation.

Many of the comments raised here relate to the approaches developed for managing trees in the city. In this regard, there was strong support evidenced for a number of programs provided by the City of Nanaimo, including:

- Retaining some trees in new developments.

- Protecting significant heritage trees.

- Providing hazard tree assessment.

- Ensuring compliance with tree removal bylaws.

- Coordinating the selection and location of street trees.

- Providing consultation on street tree issues.

The many comments provided on the survey questionnaires and the high response rate to the survey suggests a strong interest by the public to be heard and involved regarding the management of trees in the city of Nanaimo. This support can be sustained and improved by developing a communication strategy, built around the provision of an effective website. This website could provide information about managing trees and plants on private property, seasonal tips for yard maintenance, responses to frequently asked questions, links to city bylaws and other resources. This would be an effective public relations tool, and would contribute to sustaining public support for the urban forest.

Detailed Tables of Results

Table 2. Trees on Place of Residence (Q1)

Trees on Place of Residence	Percent Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo
None	17.1	9.0	7.1	10.5
1 to 5 trees	35.1	37.4	48.4	34.5
6 to 10 trees	20.9	21.9	24.3	24.0
More than 10 trees	26.8	32.7	20.1	30.9
Mean	11.7	12.6	8.6	12.0

Analysis of variance = .044 (* significantly more residential trees in north Nanaimo, compared to central Nanaimo; no difference between north and south Nanaimo, or between central and south Nanaimo)

Table 3. Trees on City Property - Street (Q2)

Trees on City Property - Street	Percent Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo
None	71.8	72.5	76.8	66.7
1 to 5 trees	19.6	17.9	19.2	23.3
6 to 10 trees	4.2	4.9	1.2	4.9
More than 10 trees	4.5	4.7	2.8	5.2
Mean	2.2	2.2	1.3	2.7

Analysis of variance = .22 (* no significant difference in trees on city property when comparing responses from north, central and south Nanaimo)

Table 4. Green Space Within 10 Minutes Walk of Residence (Q3)

Type of Green Space	Percent Responding "Yes" Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo	Chi-squared Probability
Landscaped garden	36.8	35.2	40.3	38.1	.64
Other open space	39.7	40.0	30.6	45.0	.00
Undeveloped forest area (not a park)	54.9	64.8	29.0	51.6	.00
City park	69.0	64.4	80.1	71.0	.00

Chi squared results indicate statistically significant differences between regions of Nanaimo regarding:

- Large open spaces (significance = .00). More in north and south Nanaimo.
- Undeveloped forest areas (significance = .00). More in north and south Nanaimo.
- City parks (significance = .00). More in central and south Nanaimo.

There was no significant difference between regions regarding close access to landscaped gardens (significance = .64)

Table 5. Perceived Change in Number of Trees (Q4)

	Percent			
Response	Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo
Increased	8.9	7.4	11.2	10.6
Decreased	66.0	73.0	62.6	55.7
Stayed the same	9.8	8.9	8.6	12.8
Not sure	14.4	10.7	17.6	20.9

Chi squared results (probability = .00) indicate that residents of north Nanaimo are more likely to feel that the number of trees in their region have decreased, as compared to the perceptions of residents of central and south Nanaimo.

Table 6-A. Perceived Benefits of City Trees (Q5)

	Response (%)				
Possible Benefits of City Trees	Not a Benefit	Minor Benefit	Major Benefit	Not Sure	Mean
	1	2	3	0	
Cools home in summer	5.6	37.0	56.2	1.2	2.5
Improves appearance of property	3.5	18.9	76.6	1.1	2.7
Improves appearance of neighbourhood	2.8	13.9	82.5	0.8	2.8
Provides a sound barrier	5.4	25.4	66.0	3.2	2.5
Improves appearance of commercial areas	5.1	21.9	70.0	3.0	2.6
Improves property values	5.8	32.1	53.8	8.4	2.3
Reduces flooding from rain	4.4	17.9	68.0	9.7	2.4
Reduces erosion	3.0	13.5	77.9	5.6	2.6
Provides nutrients to soils	4.5	24.4	62.5	8.6	2.4
Removes carbon from atmosphere	1.1	11.8	81.7	5.5	2.7
Provides habitat for birds and wildlife	1.2	7.2	91.2	0.5	2.9

Table 6-B. Perceived Benefits of City Trees (Q5), Comparing Responses by Region

Possible Benefits of City Trees	Percent Responding "Major Benefit" Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo	Chi-squared Probability
Cools home in summer	56.2	53.9	60.2	59.9	.40
Improves appearance of property	76.6	77.9	69.4	80.1	.05*
Improves appearance of neighbourhood	82.5	83.9	78.1	85.5	.49
Provides a sound barrier	66.0	65.9	69.5	64.9	.59
Improves appearance of commercial areas	70.0	71.5	69.7	68.8	.89
Improves property values	53.8	54.2	51.6	54.5	.20
Reduces flooding from rain	68.0	70.8	66.7	64.6	.41
Reduces erosion	77.9	80.7	76.3	74.9	.18
Provides nutrients to soils	62.5	62.2	59.4	66.2	.64
Removes carbon from atmosphere	81.7	83.8	79.7	79.7	.77
Provides habitat for birds and wildlife	91.2	93.0	88.3	90.6	.02*

Chi squared results indicate statistically significant differences between regions of Nanaimo regarding:

- Improves appearance of property (significance = .05). Lower in central Nanaimo.
- Provides habitat for birds and wildlife (significance = .02). Lower in central Nanaimo.

No significant difference between regions regarding other possible benefits (significance values reported in final column on right all greater than .05)

Table 7-A. Perceived Concerns About City Trees (Q7)

Possible Concerns About City Trees	Response (%) Not a Concern 1	Minor Concern 2	Major Concern 3	Not Sure 0	Mean
Blocks views	32.0	42.1	25.0	0.9	1.9
Damage from falling branches	13.9	50.7	35.1	0.4	2.2
Effort to clean branches and leaves	29.0	51.2	19.1	0.7	1.9
Effort to water	46.4	42.9	7.4	3.4	1.5
Effort to remove leaves from gutters	26.1	48.6	24.8	0.6	2.0
Risk of forest fire	32.8	44.0	22.2	1.1	1.9
Makes yard too dark	43.0	42.4	13.9	0.8	1.7
Causes moss to grow on roofs	27.2	45.4	25.7	1.7	1.9

Table 7-B. Perceived Concerns About City Trees (Q7), Comparing Responses by Region

	Percent Responding "Major Concern"				
Possible Concerns About City Trees	Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo	Chi-squared Probability
Blocks views	25.0	26.6	27.8	20.8	.21
Damage from falling branches	35.1	39.8	36.4	26.0	.01
Effort to clean branches and leaves	19.1	19.6	22.6	16.4	.09
Effort to water	7.4	7.4	8.5	6.9	.27
Effort to remove leaves from gutters	24.8	25.1	31.6	20.5	.09
Risk of forest fire	22.2	25.0	21.8	17.7	.15
Makes yard too dark	13.9	15.8	15.0	9.4	.33
Causes moss to grow on roofs	25.7	26.0	31.9	21.7	.09

Chi squared results indicate statistically significant differences between regions of Nanaimo regarding:

- Damage from falling branches (significance = .01). Lower in south Nanaimo.

No significant difference between regions regarding other possible concerns (significance values reported in final column on right, all greater than .05)

Table 8-A. Perceived Importance of City Trees (Q9)

	Response (%)				
Importance of City Trees	Not at all Important 1	Somewhat Important 2	Very Important 3	Not Sure 0	Mean
Trees in parks	1.2	7.6	91.1	0.1	2.9
Trees in your yard	8.4	32.4	59.1	0.2	2.5
Trees on city property in front of homes	30.5	34.0	32.7	2.7	1.9
Trees at your place of work	29.0	29.3	35.5	6.1	1.8
Trees on other city streets	7.3	37.5	53.4	1.8	2.4

Table 8-B. Perceived Importance of City Trees (Q9). Comparing Responses by Region

	Percent Responding "Very Important"				
Importance of City Trees	Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo	Chi squared Significance
Trees in parks	91.1	93.2	88.9	89.9	.20
Trees in your yard	59.1	58.2	59.7	61.4	.74
Trees on city property in front of homes	32.7	31.8	30.1	38.1	.59
Trees at your place of work	35.5	36.6	37.3	38.2	.45
Trees on other city streets	53.4	51.6	58.3	54.4	.37

Chi squared results indicate no statistically significant differences between regions of Nanaimo regarding any category (significance values reported in final column on right, all greater than .05).

Table 9-A. Managing City Trees in Nanaimo (Q10)

Types of Programs Provided by City of Nanaimo	Response (%) Low Priority 1	Medium Priority 2	High Priority 3	Not Sure 0	Mean
Ensure some trees are retained in new developments	5.1	19.2	74.4	1.2	2.6
Provide hazard tree assessment on private property	16.7	33.3	45.8	4.2	2.2
Provide hazard tree assessment on city property	5.1	26.6	65.6	2.8	2.5
Ensure compliance with tree removal bylaws	10.6	26.2	58.8	4.4	2.4
Protect significant heritage trees	7.7	22.5	67.0	2.9	2.5
Provide consultation on street tree issues	11.8	38.8	44.6	4.8	2.2
Coordinate selection and location of city trees	10.2	38.1	46.8	4.9	2.2
Encourage people to donate trees	19.0	38.9	37.2	4.9	2.1

Table 9-B. Managing City Trees in Nanaimo (Q10); Comparing Responses by Region

Types of Programs Provided by City of Nanaimo	Percent Responding "High Priority" Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo	Chi squared Significance
Ensure some trees are retained in new developments	74.4	77.9	70.3	73.8	.05
Provide hazard tree assessment on private property	45.8	46.4	48.1	45.6	.51
Provide hazard tree assessment on city property	65.6	66.7	68.6	64.1	.19
Ensure compliance with tree removal bylaws	58.8	61.6	55.1	58.8	.48
Protect significant heritage trees	67.0	66.3	68.4	70.1	.83
Provide consultation on street tree issues	44.6	44.5	49.7	44.2	.58
Coordinate selection and location of city trees	46.8	46.8	50.5	45.8	.61
Encourage people to donate trees	37.2	36.4	42.0	37.1	.75

Chi squared results indicate statistically significant differences between regions of Nanaimo regarding:

- Ensure some trees are retained in new developments (significance = .05). Higher in north Nanaimo.

No significant difference between regions regarding other types of urban forest programs (significance values reported in final column on right, all greater than .05)

Table 10. Desire to be Involved In Selection and Location of Trees (Q11)

Response	Response By Region Total Sample	North Nanaimo	Central Nanaimo	South Nanaimo
Yes	30.5	28.4	37.2	31.9
No	44.3	45.9	40.2	45.6
Not sure	25.3	25.7	22.4	22.6

Chi-squared significance = .23, so no significant differences in response by region of city.

Representative selection of the Responses to Open Ended Questions

Approximately one third of the responses are shown here.

Table 11. Other Possible Benefits (Q6)

Privacy
Affords privacy, reduces energy consumption: more trees, less lawn, less lawn mowing. Improves view: I don't have to look at the new homes being built around my property.
Blocks view from neighbours.
Creates privacy.
I would prefer to live where there are trees; it makes properties more private.
Improved privacy.
Possibly privacy for some.
Privacy.
Privacy and trees help keep us from being encased in a concrete jungle. Places for children to play.
Privacy- neighbours.
Privacy, area to play.
Privacy/visual barrier.
Provides privacy from neighbours.
Provides privacy from neighbours, city streets.
Provides privacy.
Provides privacy; trees help us develop a personal spirituality- a sense of being part of the greater whole- create an inner peace.
Small city lots- provides some privacy.
They can act as a privacy shield, and trees make a neighbourhood look more appealing and blend in with the natural environment.
Trees also provide privacy between neighbours. We provide habitat for birds. I would like to see cats controlled like dogs to stop them from killing birds under our trees.
A very calming aspect to our home; provides significant privacy; a great wind break.
Visual
Aesthetic enjoyment.
Aesthetic - generally soften a landscape visually.
An attractive city will encourage people to relocate and visit here.
Emphasis on beautification of Nanaimo.
Give added beauty, greenery.
Hides unsightly developments.
I love trees - we should not cut any trees down, last thing to do. Trees are beautiful and make the city of Nanaimo look very lovely.
I protect neighbourhoods with mature trees and could not imagine living in a development where all old trees are cut down.
Just nice to see nature around us.
Makes for a better vacation place, adding to the beauty of the city.
Not when they grow over your ocean view.
They add good looks and ambiance by having trees around.
Trees lush with growth reflects the nature of Nanaimo - This is a rainforest so let's look like one.
Trees make our city beautiful, good for breathing too!
Trees very well located and properly maintained add greatly to the overall appearance of subdivision. There are not enough trees planted in the new subdivisions, they are clear-cut, there should be requirements that certain number of trees are replanted by developers.
When a tree is well maintained, it's as attractive as any flower.

Health
Allows recharge to ground water, provides habitat to mosses, etc.
Beneficial to the environment and to the cleanliness of Nanaimo's air.
Quality of life for all of us.
Fun to put lights on.
Give off oxygen.
Gives us a sense of nature back to us.
Gives you a reason to smile.
Improve a person's well being!
Improves our morale / mood. Enhances our spiritual life.
Makes me feel good to see trees.
Provides shade on a sunny day.
Provides very good and healthy water.
Reduces sunburn when gardening in shade.
Shade during summer.
Summer shade.
Trees give us a calming feeling. Reduces the stress effects a city life can bring.
Visually trees are calming and contribute to emotional well being - by deflecting the impact of the concrete urban sprawl.
Shade for people in summer, children can play in / on them (forts, swings).
Children
Place for kids to play.
Provide play places for children.
Helps people, especially children, connect to nature.
A place for kids to play (forts, swings).
Wildlife
Attracting wildlife to our home.
Benefits the large population of deer and other wildlife. Also privacy to home owners.
Habitat - are having a harder and harder time finding a space to live as trees are removed for extensive development.
Provides food for wildlife as well as people. Don't take out all the blackberries.
Development
Too many trees and their habitat have been removed for housing developments.
Financial
I love trees but because I am on disability, I need my small funding to survive myself. BC is a tree province; take that away and we no longer stand out.
Provides employment, gardening, tree services, etc.
Firewood
In the end they could provide firewood to some residents.
Source of firewood.
Food
Fruit trees – privacy.
Provide a harvest of fruit in season.
Wind barrier /fruit trees / food.
Future

I believe trees whether rural or urban are vital for today and for future generations. Human beings must coexist with our ecosystem. In doing so, inspiration, understanding and enjoyment of nature will continue to exist on our globe.
Noise Reduction
Although the parkway falls under MOT control, the city and the province might consider planting more sound absorbing trees along the parkway. The sound from vehicles travels a long way.
Don't minimize sound muting. This area has become incredibly loud with buses, loud mufflers, trucks, speeding vehicles.
Property Value
Increases property value. Keeps everything green.
Wind Reduction
Lessens wind in certain situations.
Protects nearby trees from strong winds.
Provides a windbreak –shade.
Provides habitat for other plants (shade tolerant species). Can reduce landscaping capital. Properly placed wind firm trees around homes block wind (reduce heating cost, more comfortable).
Provides shelter from wind.
Reduce wind damage.
Wind break.
Other
Helps cool commercial areas too- trees should be planted in more parking lots.
Compost from trees.
I would think concerns will vary from property to property. Location and exposure determine benefits and concerns.
Median trees keep drivers focused on their own lane but tree cover can be enough to block view of oncoming traffic.
Maintain species.
Not killing unnecessarily.
Removal of dead and dangerous branches.
Smells nice.
Thanks for trying to keep Nanaimo beautiful.
Trees are good around living area, but do not like tall tree if in storm they fall it damages the property.
Without trees, man cannot breathe, without trees man will not survive. Before we allow anyone to remove a tree because he or she wants to improve or create a "view" we should remember that every tree, every living natural entity, serves a purpose, a purpose which is bigger, more complex, more inexplicable, than man can even hope to comprehend. At our peril we remove trees for someone's "view."

Table 12. Other Possible Concerns (Q8)

Hydro and Electrical damage
Power outages.
Hanging over Hydro lines.
Causing power outages.
Power outages often occur when stormy weather causes trees to fall on power lines; the need to monitor trees / power lines.
Possible power outages - lets put the power lines under ground and save the trees.
Hydro outage from falling branches.
Should be trimmed or removed near power lines.

Fallen trees and branches causing power outages.
Damage to driveways etc as tree roots mature. Damage to power lines and similar services.
When trees get too close to electric lines they should be trimmed by BC Hydro.
Hydro lines get caught up.
Risk of root incision of water drainage systems.
Interference with hydro lines, blocking light from City light posts.
If any trees are close to BC Hydro line they should be topped and trimmed.
Interference to foundations, sidewalks and driveways
Some trees can cause damage to services and crack driveways by their root systems.
Uplifting of sidewalks from tree roots. People planting fast growing, tall trees like Leyland cypress and poplar on small city lots.
Structure of building compromised when planted too close to foundations.
Damage to drains and pipes
Roots causing plugged perimeter drains.
Clogging drains.
Root system can block drainage pipes; sewer, run off, underground services-new building sites seem to demand all services underground.
Roots in pipes and drains.
Root damage to underground pipes is a major concern. Residents dependent on solar E.
Visibility Issues
Blocking viewing of traffic at some corners.
Blocking street signs and ensuring good visibility when driving, etc. Major!
Wind damage to property.
Trees near corner intersections that block view of oncoming traffic (i.e.; Left turn Oliver & Rutherford). One has to pull out over crosswalk to see the traffic.
Trees growing too close to corners, etc. curbs where they block your view of oncoming traffic are of major concern.
Blocking visibility from the roads and curb sides. Safety concerns.
Trees in the middle of roadways on traffic islands. Uplands by Longwood block views when trying to get in and out.
Trees blocking a clear view at intersections. A safety issue for traffic.
Blocking visibility - driveways and intersections. Root damage to sidewalks, paths and driveways .
Obstructing traffic views for oncoming traffic around corners, harbouring diseases transmitted to private.
Blocking signs that indicate school zones, e.g. Sign on NE corner of McGirr / Waldbank intersection.
With respect to A-blocking views; it's a concern when people leave trees and shrubs unpruned and block views of traffic thus possible causing accidents.
Foliage that obscures traffic signs on the sides of the road.
Poorly trimmed trees blocking sidewalks and growth overhanging can be dangerous for visually impaired.
Willow tree on corner Ashler & Kerr Blocking view at intersection. Also shrub tree at corner of Doric & 1st.
Development Projects
To often trees are left after clearing. Developers are left to clean up the mess. We need a better method of what is to stay and what must be clear cut.
Wholesale cutting of trees for development, i.e. Hammond Bay Rd, Ridge north of Laguna, etc.
Huge loss of trees due to housing construction.
I am concerned about damage caused to mature trees by topping them to improve views. I am concerned about removal of trees by developers; trees need more and better protection.
Too many trees removed by developers. Enact tougher laws against indiscriminate removal.
We are very concerned when a beautiful tree lot is cut to build homes - there could be more restrictions on the cutting and building.
I have trouble finding out what the bylaws are regarding trees on other peoples property blocking my view.

There doesn't seem to be a clear policy on this.
Trees/views need to be addressed. Development standards make tree retention almost impossible.
Falling branches increase danger and property damage
Damage to homes and other structures & power lines in a wind storm.
safety concern
Provide hazard tree assessment of trees on private & city property.
It would be nice to have long standing trees limbed to ensure safety of homes & improve view.
Liability due to trees on our property. Potential damage to adjacent properties. Conflict between roots & drainage piping.
Damage the house if falls in a heavy wind.
Large cedar/maple trees behind property; deer eroding steep bank abutting major thru-traffic streets. Concerned if they fall will damage/destroy portion of house & contents
The effort to top/prune dead trees. To prevent toppling in winds/heavy snow and even dry weather.
Some of the large trees should be removed from house lots. Too big and dangerous
Trees should be pruned to a maximum height
It's more the fact that if trees are maintained a lot of these concerns wouldn't be there i.e. branches, leaves and forest fire
Financial Concerns
I think more people would be inclined to plant trees if the cost of water goes down a lot. I know I would.
Worried about growing tax burden to look after trees.
Difficulty & cost of disposing of fallen branches & leaves.
Risk of Fire
If Newcastle catches fire we will have an ugly city. What is the plan if a fire starts?
Shade leads to increased moss growth on roof and grass
moss can be natural means Falling leaves/branches can be maintained by Homeowners
The lack of sunlight during winter months if possible plant deciduous trees on southerly exposures.
When you have a lot of trees which makes the yard dark which makes the moss grow in the lawn
not enough sun get through
Insects and Disease
Large number of Fir trees on neighbouring properties does create big problems of moss growing on roofs & endless problems of bugs & debris.
Trees suffering from severe root rot.
blight or infestation
Insects.
Other Comments
Topped trees that are then left unattended. This leads to split trunks which are then more likely to fall and damage property.
The tree is leaning. No branches below. Someone peeled bark off trunk.
When underbrush not removed - a haven for misbehaviour. Trimmed trees a solution to most major concerns. I wish city would collect our leaves from ditches.
We are not located near large trees but people who are/ would be concerned with the entire list.
Species selection should not be left to homeowners.
Like Victoria, plant the right trees that are strong and need little care
I would like 2 trees on city property - at the front of my house to come down. To allow me more ease to enter my property in icy weather….etc
Proper species selection can reduce or eliminate any of the above concerns.
Ban on yard burning makes getting rid of fallen branches and trimmings expensive and requires use of polluting gas engines to haul to dump or chip.

Supply a pick-up of branches and leaves for composting two times a year.
Trees live for hundreds of years with few complaints. We should treasure them.
You must be aware to plant trees to not obstruct or block doors and windows for security reasons.
Trees of any kind are beautiful and make Nanaimo beautiful. It's a shame we clear-cut every tree to put in new subdivisions.
Some trees prevent other plants from growing. Trees can obscure views which can be detrimental to safety and security.
We feel the City parks dept. does a very good job.
Trees provide oxygen. Humans need oxygen to survive. Trees add beauty to any landscape. Please leave nature alone.
Fall trees in neighbouring gardens create fear of falling across house.
Neighbours' trees are a problem because they leave a mess.
Trees are most valuable and their merits out weigh vastly any detrimental affect. I am the owner of a great heritage tree that is registered under the Heritage Tree Act of B.C.
Why doesn't the City trim their trees and cut grass on their property?
City trees like parks. Highway landscaping is a big source of work for doubtfully useful City workers. We can't afford them.
The City and property owners let trees get too large. Property owners should be able to remove any trees on their property without having to get permission from the City to do so.
More attention should be done by the City to put in storm drains and get rid of open ditches.
Need to prune trees on City and private property. Large trees may provide unwanted hiding places - security risk.

Table 13. Other Possible Tree Services (Q.12)

Hydro and Electrical damage
Private and City trees should not be allowed to cause a problem for BC Hydro users.
Closer monitoring with regard to power outages due to falling limbs. Assessment of possible damage because of falling trees.
Hydro lines and cables.
Our power source is lost each year due to falling trees and hydro lines.
Yes, trees on City property should be controlled under utility lines.
Planting suggestions
Plant more.
I have noticed many new properties where no trees have been replaced. I believe properties should be required to replace or plant at least 3-4 trees.
I would like to see the City plant more trees in new subdivisions, (tree boulevard trees) as often residents do not plant many trees in new areas.
Tree section or links to tree issues on city websites.
More planting of trees and other plants
City should develop a tree nursery to supply to new developments, parks and streets.
Planting of ornamental trees whereever it is suitable.
I would like to see more trees. We need every street to be more like Victoria.
More planting of trees and other plants.
Reforestation/replanting.
Plant only strong branch trees on side of streets for low risk of branch breakage.
The type of trees chosen for City property is very important. They should be low maintenance varieties in order to keep the costs within reason while enhancing the high value of trees in our environment.
Plant more.
Indigenous trees for surviving indigenous animals, birds and insects. Demands less tree service.
Pruning suggestions
Limbing of trees in green belt area.
Regular tree pruning, control and removal of City trees.

Trimming of trees on private property which could damage our home.
Topping trees that block city views not cutting them down.
Pruning advice - workshops, articles.
Annual pick-up of dead fall limbs and cuttings.
Topping of very tall trees.
Removing pruning. Create a bylaw – re: tent caterpillars and removal on private property.
Provide regular topping, pruning, removal of trees that may topple or create danger.
Tree thinning for view corridors.
Fallers to cut them down.
Regular tree pruning, control and removal of City trees.
View restrictions and occasional topping and thinning to maintain views.
Hedge height and mgmt. trees used to stop erosion.
Compulsory trimming/pruning to protect views or reduce unwanted overgrowth on private property paid for by the beneficiary
Trees should be pruned and kept healthy before they become dangerous hazards.
Tree growth management where trees have overgrown their place.
Falling branches increase danger and property damage
Provide regular topping, pruning, removal of trees that may topple or create danger.
City should be prepared to cover the cost of removal of trees which are creating a hazard to neighbours.
Removing pruning. Create a bylaw – re: tent caterpillars and removal on private property.
Any trees that are a hazard on private or City property should be checked. Size.
Trees that cause issues to a tree on a neighbour's property.
There may not be space for street trees in older, well established areas. Too much enthusiasm for removing unsafe trees in the past. i.e. Bowen Park
Topping of dangerous trees and rotten ones regardless of which park they are in.
Provide City assistance for private home owners or home purchasers to have hazardous trees removed from their property if necessary. Maybe also a problem to a neighbour or danger.
Assessing tree hazards near homes of city parks. Brechin City park has many, trees are dead, very tall and branches fall on homes.
Dead trees or fallen trees on City property should be cut down and removed or trees that are diseased and could fall or topple onto a house etc.
Financial Concerns
City should be prepared to cover the cost of removal of trees which are creating a hazard to neighbours.
Since trees require pruning, the City should provide, within current tax levels, twice a year curb side chipping or pick-up.
Discount given for tree trimming for private yards, or take trees that are no longer wanted and replant instead of cutting down.
Anything to keep cost down, donations, clubs, volunteers, property owners splitting costs.
Create a program in which suitable trees could be purchased at a reduced price instead of the high prices at nurseries or residents could adopt a tree.
City provides free trees to property owners. This program ran in Nanaimo about 12-15 yrs ago.
Education
Letting the public know about donating trees.
Information and educating the public on how to recognize and treat arbutus trees affected with blight. Protecting remaining arbutus trees from dev. Cutting or root disturbance which also weakens them.
Advice on dangerous trees.
Notification of tree disease if found in City and measures suggested to culprit.
Providing clear maps of buried hydro, Telus, gas, and sewer lines for anyone who wants to plant.
Consultation on tree care.
Pruning advice - workshops, articles.
More public awareness of the value of our trees, especially in schools.

Leaf / branch clean- up
Leaf clean- up service .
More readily available and affordable composting drop-off sites for tree trimmings and leaf matter during the fall and spring.
Semi-annual collection at curb side.
Stump removal.
Have a leaf collection pickup each fall. The City can use them as compost for city garden beds.
Curb side pick-up.
Once or twice a year have the opportunity to mulch tree branches through city service.
Curbside pick-up of tree branches and pruned branches on a periodic basis from private property 3-4 times a year; this would greatly promote health and beauty of the city's private property trees.
Mulching service to benefit park / forest walkways.
Provide drop-off areas for tree branches and pruning, etc.
Annual pick-up of dead fall limbs and cuttings.
Since trees require pruning, the City should provide, within current tax levels, twice a year curb side chipping or pick-up.
More readily available and affordable composting drop-off sites for tree trimmings and leaf matter during the fall and spring.
Phone line
Provide a department in City Hall where a concerned tax-paying citizen can phone to complain about a neighbour's trees that are blocking views and sun and maybe creating a potential risk (high wind, storms, etc.) especially where a neighbour is unapproachable and uncooperative.
Open a complaint department to deal with over height tree complaints.
Other
Please consider not cutting down everything in Nanaimo to aid your "high-density" campaign.
Maintain sight lines to the ocean and mountains.
I would like to see developers prohibited from cutting down whole forests, particularly on sandy hills. There must be a balance between need for housing development and leaving trees in the same area.
Residents and City should be responsible for trees on City and private properties. They should be held accountable for the proper upkeep of them and dangerous unkempt should be removed by a by-law.
Ensure Arborist is involved when removing trees from private residences. For example, a few years ago – I had very old established trees removed from my property for water line issues. The City outsourced a tree falling company who ended up killing another of my established trees. Very disappointing.
I have noticed many new properties where no trees have been replaced. I believe properties should be required to replace or plant at least 3-4 trees.
City looking after the trees they have planted.
Identification of old possible heritage trees including and especially fruit trees in the City.
Where ocean views etc. are concerned, maintain property control over height of trees and plants.
Assist with annual maintenance of city-owned trees.
Tree section or links to tree issues on city websites.
Small park benches under trees so citizens and visitors can enjoy a break. Not big enough to sleep on.
Get rid of large trees lining island highway behind condo developments, hazards, moss growth, etc.
I would like to see a tree planting program for all the babies born in Nanaimo. Parents or loved ones to plant the tree and have it catalogued.
Monitor / rate fire hazard of properties.
City should develop a tree nursery to supply to new developments, parks and streets.
Disease management and consultation.
What purpose is served by retaining a few separated trees on lots intended for housing where buyers are then required to remove to build their houses on?
Disease control
Diseased trees being uncared for and the "blight" spreads. These should be removed.

We live on a cul-de-sac with limited city space for trees. Most neighbours have mature landscaping.
Cut back trees which obscure street signs.
Consult First Nations people.
Not allowing developers to clear cut potential sub divisions.
Note other comments - see sheet.
Fruit tree spraying by the City for domestic trees as well as City property. Encourage collecting fruit for distributing or swapping, etc.
Needs to be effective laws in place to protect owners rights to remove or plant trees to improve the enjoyment and usefulness of the property but there needs to be some reasonable recourse in disputes.
Awareness - when your neighbour wants to cut down many trees to gain light, it would be nice to know they are removing only their trees!
No comment.
We want to emphasize the importance of retaining trees in city developments (residential otherwise).
Disease control.
Removal of trees on private land dangerous to blocking of views or on-coming traffic.
I think private property after development should be the owner's concern on what trees should stay or be removed.
If the tree is on my property I think I should be responsible for it.

Table 14. Other Comments

Development
Concerned about over-development and impact on environment and habitat of tree removal. Too much removal.
Do not allow builders to clear-cut- contributing to the "uglification" of Nanaimo!
I feel the most important thing to do right now during the construction boom is to monitor new subdivisions.
I realize development can't be stopped but to remove every tree from a subdivision is not smart. Even more so on a slope. It also creates areas for wind gusts to pick up, and remaining trees are at risk, make these greedy developers leave a few trees.
Other cities I lived in plant trees on the road r/w in all new subdivisions once the lots have been built on.
Please do not send again. I do not need any trees thank you.
The more trees in urban areas the better. Developments such as those in North Nanaimo should no be allowed to strip log areas in order to build houses; some trees should be retained, these supply relief from the sun and wind.
Too many new developments lack trees and any green space. There is no room for them either.
Education
A good neighbour awareness program. Departure Bay area needs some trees for shade and beauty.
A regular column in the local newspaper about core and maintenance of trees would be good.
Environment
Nanaimo has a great responsibility to our environment. Trees do this! Keep planting! I would be happy to donate to tree planting.
Serious concerns regarding clear cutting / demolishing mountain behind property in the event of extreme rainfall. One envisions a slide of epic proportions. Who is responsible?
Financial
Trees may impede a view as they grow older but I feel their benefits outweigh the view. Now if only people's taxes would reflect the loss of view they may be more sympathetic to the trees. But having said that, when people buy a house and there are trees in the surrounding area, they must know that trees do grow and it is usually up!
With the current concerns of "global warming", cities and communities should be encouraged to plant / preserve the urban forest. This could be accomplished though government and corporate funding and education.
Food

I would love to see areas where we could have fruit planted for use in community food share programs. Parks could have fruit trees where neighbours could pick the fruit and volunteers help with the City to manage the tree gardens. Schools could have fruit to provide the children with fresh fruit in the growing seasons.
Hazardous trees
Some of the trees in my area are a hazard on stormy days.
I feel trees definitely add to quality of life, the only concern is if they are unsafe because of wind hazard, traffic, view, blockage, etc.
The heights of many trees in Nanaimo have reached a hazardous level. Trees that are above the height of your home have no value to cooling your home or aesthetics. Every year someone in the forest is hurt or fatally wounded, the risk of this happening on an urban area from similar trees is much higher.
Hydro and electric
Do not think trees should be allowed to grow under power lines and have to be trimmed forever by the City. (On city property – boulevards, etc.)
Maintenance
City should provide maintenance.
Hang onto what we have and look after them, rather than strip area for re-development and then replant!
Keep trees trimmed.
Trees are immensely important. Trees planted maintained by the City become yet another excuse for incredible expense and corruption.
Persons' property with trees should provide clean-up of trees, branches and leaves on public property.
Personal threat
I love tree-lined boulevards but in this day and age where even shopping centres are not safe from unseen attacks and innocent people continually prey upon, caution and wisdom need to be the primary concern for planning tree plantings.
Planting
I strongly support planting trees and landscaping the city.
More trees should be planted along meridians, etc. Let's get this city greener.
Not nearly enough median trees in streets / residential neighbourhoods- need more decorative blooming trees on city streets (cherries, plums, etc.) for seasonal delight.
Planting trees that have foliage year- round.
Please plant more Japanese cherry trees on streets they are soooo pretty!
Replace interesting species of trees with similar ones set back if possible when trees- such as the 100 year old black walnut had to be removed for widening the down-town to the bypass connection along Third Street.
There should be several species of trees spread throughout the city so that if possible they don't have devastating impacts on the tree populations.
Would like to see more street trees.
Rooftop trees in the city center, on malls, and industrial areas.
Policy
I do not know if there is some law for the following 1) the owner of a dog must pickup the excrement of their animal in the public area. 2) an owner that blocks the view of the ocean of their surrounding neighbours must prune, clean and culture trees at the level of the roof of their house - many thanks. If there is no law for these please work to have some - it is very important for the peace of the neighbourhood. Many thanks for these considerations.
NEED a tree bylaw with a focus on SAFETY (huge trees on adjacent properties), view corridors, (neighbours, lower properties) and selection of appropriate species. Tricky, balancing private property rights and different people's opinions and perspectives. The tree that provides one person privacy blocks another person's view.
Please zone green spaces along ridges for both beauty and to reduce noise from highways.
Requirement, if not already addressed, should be put in place limiting the number of trees a developer can

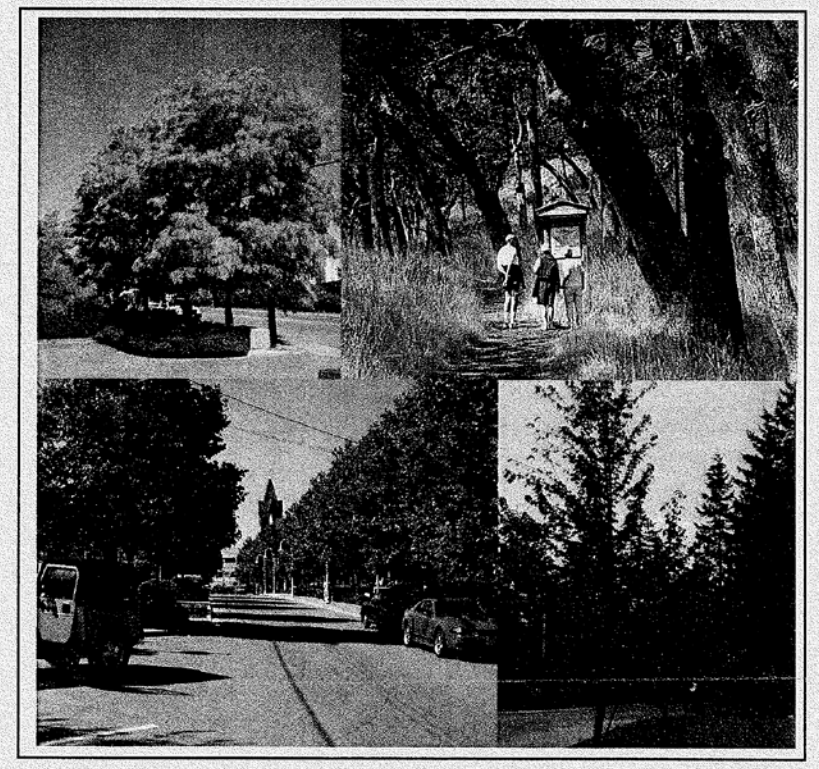
remove when developing a subdivision. Too many times they have been allowed to destroy all the trees.
We need a bylaw to restrict the height of trees in CILAIRE and other places. They should not be higher than the roof of the house.
Preserve
Heritage trees should include "split trees" which are important to the First Nations.
People generally move to an area because of the beauty - trees, greenery, and general "feel" of the area. Nanaimo needs to protect its "green spaces". We need them as well as the animals and other living creatures living there.
Property damage
I am concerned about trees on private property that have limbs that break off and fall on the neighbour's property and cause damage.
Removal
I have been discouraged by clearing of trees for development, particularly in the North End of Nanaimo.
I was somewhat disturbed to see a seemingly healthy arbutus tree cut down by City staff during the past summer. I would have liked to have had information on this before it happened as it was a feature of our street and didn't seem to be affected by disease.
I was very sorry to see all the cherry blossom trees removed from the south end of Nicol.
When someone's trees are to be "bulldozed" it could be beneficial to offer them to residents for transplant versus simply filling the landfill.
Retain
It is important that we make sure that trees remain as important fixtures in Nanaimo area. Green space is very limited.
View
Some of my trees block the view of neighbours, and neighbours' trees block my view, it's life.
Trees that block views should be dealt with consideration for all concerned.
Visibility
Large old trees over the road provide incredible charm to city streets.
Trees should be properly and regularly pruned so they don't impede drivers' views at corners or obstruct street signs and driveways for homeowners or cars going past driveways.
Visual
A city without trees looks cold and uninviting. Trees make a city look alive and vibrant. Help reduce erosion and pollution.
I do think trees on the streets are somewhat important; they really pull the look of the city together and make it look cleaner. Greener=cleaner.
I think that it is important to plant / keep as many trees as possible - especially around commercial developments and road development; trees in parking lots and road medians do a lot to beautify and also reduce the amount of exposed asphalt which heats up so much in the summer. Keeping trees where possible, and planting them, should be part of residential development too.
Trees on streets add flavour and colour to the areas.
We purchased our property because of the numerous trees and adjacent greens space- I feel this is a huge asset to our investment.
Wildlife
Trees are an important part of Nanaimo; the trees provide beauty, a safe home for birds, and shade for us. Trees are great.
Trees are important for the animals. Perhaps a park could be set up for the animals.

Other
I believe this is an important issue- thank you for addressing it!
We live on a beautiful island; we should keep it lush and green. We should not try to turn it into a concrete jungle, after all this is beautiful BC- is it not?
Keeping the island as green as possible is important.
Nanaimo should be proud of the amount of trees it has, the variety and the values to the city and its population.
Should have similar studies by the City on variety of issues.
Surveys are very important to obtain the city population input especially on major issues which could affect a majority of the population.

Survey Questionnaire

CITY OF NANAIMO
THE HARBOUR CITY

City Trees and You



A Public Opinion Survey Regarding the Management of Trees in Public Places

January, 2008

ABOUT CITY TREES

The purpose of this questionnaire is to determine public opinions about city trees (trees growing within city limits), and how they are managed. The results will be used to help the City of Nanaimo improve its level of service in the future.

Q.1 First, considering your **place of residence**, about how many trees are within the property?
_____ Trees on your property

Q.2 About how many trees are on city property on the street in front of your residence?
_____ Trees on City property

Q.3 In the neighbourhood where you live, please indicate if any of the following are located nearby (within a 10 minute walk). Please circle all that apply.

1. Landscaped garden
2. City Park
3. Undeveloped forested area (not a park)
4. Other open space

Q.4 Over the period of time you have lived in Nanaimo, would you say the number of trees within the city limits has increased, decreased, or stayed the same. Please circle number.

1. Increased
2. Decreased
3. Stayed the same
4. Not sure

POSSIBLE BENEFITS OF URBAN TREES

Q.5 Retaining city trees within the city provides a number of benefits, but also a number of concerns. Looking first at possible benefits, please indicate if you feel each of the following is a minor benefit, major benefit, or not a benefit. Please circle a number beside each statement.

	NOT a Benefit	MINOR Benefit	MAJOR Benefit	NOT SURE
A. Helps cool homes in summer.....	1	2	3	4
B. Improves the appearance of a property.....	1	2	3	4
C. Improves the appearance of a neighbourhood.....	1	2	3	4
D. Provides a sound barrier.....	1	2	3	4
E. Makes commercial areas more attractive.....	1	2	3	4
F. Improves property values.....	1	2	3	4
G. Reduces flooding from rain.....	1	2	3	4
H. Reduces erosion.....	1	2	3	4
I. Provides nutrients to the soil.....	1	2	3	4
J. Removes carbon from the atmosphere.....	1	2	3	4
K. Provides habitat for birds and other wildlife.....	1	2	3	4

Q.6 Are there any other possible benefits you would like to mention?

_____

_____

_____

_____

POSSIBLE CONCERNS ABOUT CITY TREES

Q.7 Listed below are a number of possible concerns regarding city trees. Please indicate if you feel each of the following is a minor concern, major concern, or not a concern.

	NOT a Concern	MINOR Concern	MAJOR Concern	NOT SURE
A. Blocking views.....	1	2	3	4
B. Damage from falling branches or trees.....	1	2	3	4
C. The effort to clean falling leaves & branches...	1	2	3	4
D. The effort to water.....	1	2	3	4
E. The effort to remove leaves from house gutters	1	2	3	4
F. The risk of forest fire.....	1	2	3	4
G. Making the yard too dark.....	1	2	3	4
H. Causing moss growth on roofs	1	2	3	4

Q.8 Are there any other possible concerns you would like to mention?

_____

_____

_____

_____

_____

Q.9 Please indicate the importance to you of each of the following

	NOT AT ALL Important	SOMEWHAT Important	VERY Important	NOT SURE
A. Trees in parks.....	1	2	3	4
B. Trees in your yard.....	1	2	3	4
C. Trees on city property in front of your home	1	2	3	4
D. Trees at your place of work.....	1	2	3	4
E. Trees on other city streets	1	2	3	4

MANAGING CITY TREES IN NANAIMO

Q.10 Below is a list of tree related programs and services provided by the City of Nanaimo. For each, please indicate if it is a low, medium or high priority.

	LOW Priority	MEDIUM Priority	HIGH Priority	NOT SURE
A. Review development projects to ensure some trees are retained or replanted.....	1	2	3	4
B. Provide hazard tree assessment for city trees on <u>private</u> property	1	2	3	4
C. Provide hazard tree assessment for city trees on <u>city</u> property ...	1	2	3	4
D. Ensure compliance with tree removal bylaws	1	2	3	4
E. Protect significant trees through the Heritage Tree Program.....	1	2	3	4
F. Provide consultation on street tree issues.....	1	2	3	4
G. Coordinate selection and location of city trees.....	1	2	3	4
H. Encourage people to donate trees.....	1	2	3	4

3

Q.11 Would you like to be involved in the selection and location of street trees in your neighbourhood?
1. Yes 2. No 3. Not Sure

Q.12 Are there any other tree services you think should be considered?

_____

_____

_____

_____

ABOUT YOU

In order to help analyse these results it is helpful to know a few things about you.

Q.13 Which of the following best describes where you live?
1. House 2. Townhouse 3. Apartment
4. Condominium 5. Other

Q.14 Do you rent or own?
Rent Own

Q.15 How many people live in your place of residence?
_____ People

Q.16 About how many years have you lived in your present residence?
_____ Years

Q.17 About how many years have you lived in the greater Nanaimo area?
_____ Years

Q.18 What is your gender?
_____ Male _____ Female

Q.19 Please circle the number best describing your age.
1. 19 - 24 Years 2. 25 - 40 Years 3. 41 - 50 Years
4. 51 - 64 Years 5. 65 Years or older

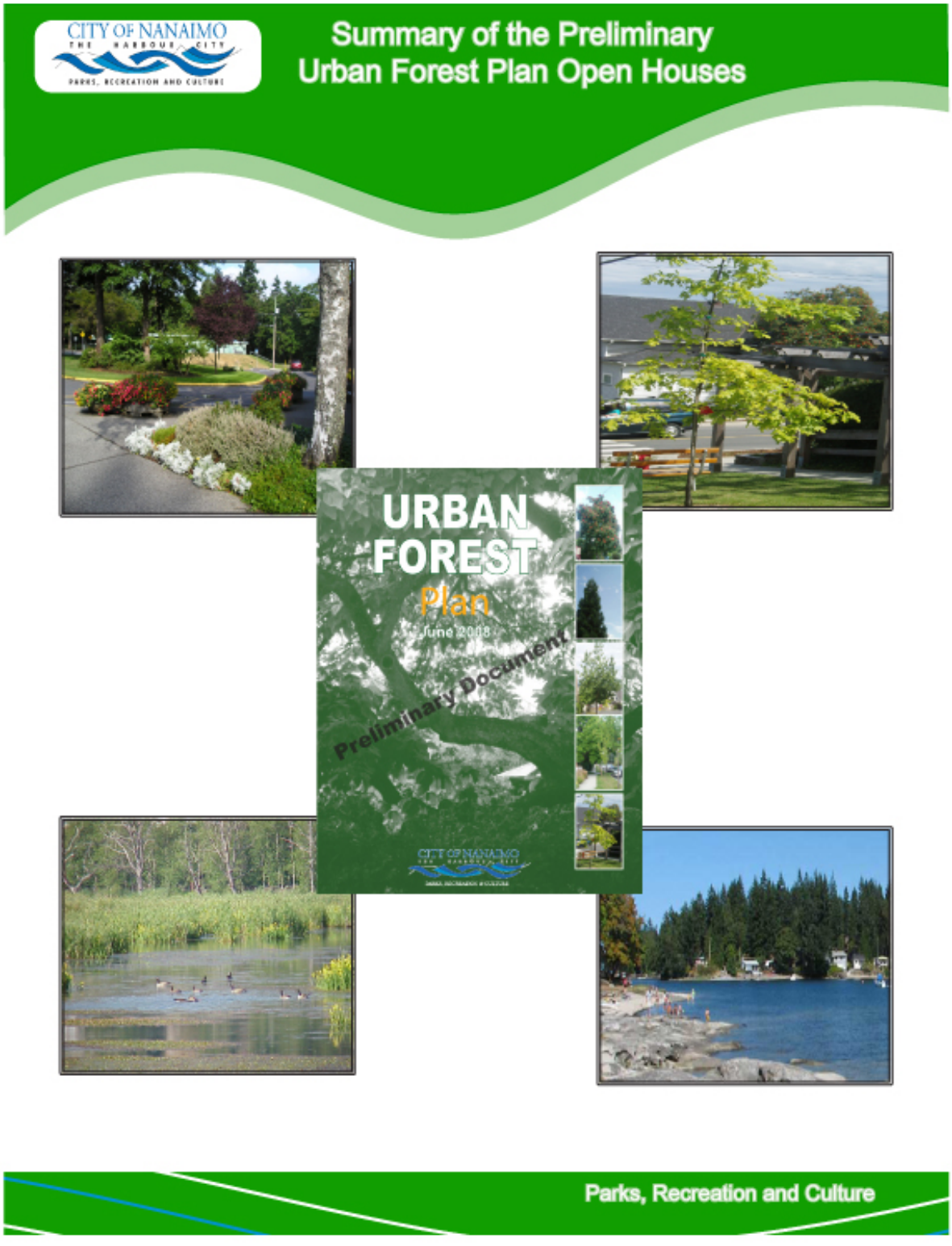
OTHER COMMENTS

Please use the space below to provide any additional comments about street trees in Nanaimo. If there is not adequate space, please feel free to attach notes.

Thank you for participating in this study. Please insert your completed questionnaire into the pre-addressed and stamped envelope provided, and mail today.

APPENDIX J:

OPEN HOUSE COMMENTS



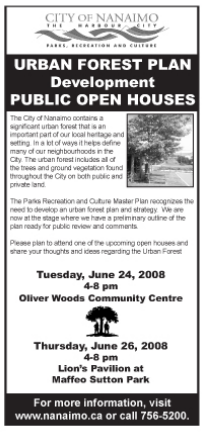
Introduction
The City of Nanaimo contains a significant urban forest that is an important part of our local heritage and setting. In a lot of ways it helps define many of our neighbourhoods in the city. The urban forest includes all of the trees and ground vegetation found throughout the city on both public and private land.

The Parks, Recreation and Culture Master Plan recognizes the need to develop an urban forest plan and strategy. We are now at the stage where we have a preliminary outline of the plan ready for public review and comments.

Open House
Three open houses took place the week of June 21 - 26 2008. In these open houses 13 informational posters were on display for the public. They described

- What is an urban forest.
- The benefits of an Urban Forest Management Plan.
- What is an Urban Forest Management Plan.
- A timeline.
- Information on each of the seven modules which will make up the bulk of the plan. These were:
    - Module 1: Education and Outreach.
    - Module 2: Street / Boulevard Trees and Landscaping.
    - Module 3: Parks and Natural Areas Management.
    - Module 4: Site Specific Tree Removal and Replacement.
    - Module 5: Property Value: Views and Privacy.
    - Module 6: Wild Fire Interface.
    - Module 7: Planning and Enforcement.

During the open house a minimum of three staff members were available to answer questions and guide the public though the display.
The three open houses were Monday June 21, 2008 on Protection Island from 7 - 8:45pm at the Beacon, Tuesday June 22 from 4 - 8pm at the Oliver Woods Community Centre, and Thursday June 24 from 4 -8 pm at Maffeo Sutton Park. In total approximately 90 people attended the open houses.



Advertising
Advertisements for the open houses were placed in the Bulletin, the Daily News and the Harbour City Star running from June 14 - 24. Colourful advertisements were placed in shopping malls, grocery stores, coffee shops and other businesses, community centers, city facilities and offices, and public bulletin boards.

The Survey:
The survey we designed was to acquire information and suggestions of ways to make the Urban Forest Plan better and more useful to the residents of Nanaimo. The survey consisted of a series of open-ended questions to allow for maximum flexibility. 13 surveys were filled out at the open houses and 6 surveys were sent in by July 3, 2008. One was received on July 21, 2008 for a total of 20 surveys.

The Results:

1. What is your impression of the Urban Forest Plan so far?

The general impression of the Urban Forest Plan is a positive one form the comments received in survey form and from conversations which took place with visitors at the open houses. The presentation of the Plan was general and many of the specifics were removed to make the presentation more interesting and readable. There were several people who felt that this Plan is needed within the city of Nanaimo. For full comments see below.

Comments
A good start.
After a brief visit to the display at M/S Park, it appears comprehensive enough and worthy of an "A" grade at the university level. An academic exercise?
Excellent.
Generally positive but lacking specifics.
Good implementation has long been needed.
Good start to the process; a 5-year plan and strategic overview important. Council needs to be informed and aware of the environmental trade-off though?? Tree removal and development, e.g., carbon footprint, habitat loss.
Good start- very comprehensive.
Good start. I'm a plant and tree lover, so I definitely agree with enhancing our urban forest!
Great! Make it bigger, keep working at it.
I have no complaints.
It seems non-existent. However the proposal is excellent!
OK.
Over the past 15 years since I have lived in Nanaimo, there have been horrible "clearcut" property developments particularly the north end, but it is moving south too. So I am pleased the City is looking at this issue.
Preliminary- thanks for looking for input at this stage of the game!
Pretty good but I wish there had been information in the media prior to this open house.
The goal of maintaining overall tree coverage is in basic conflict with the growth of Nanaimo where the original cover, often wilderness forest, must be reduced to allow for development and to increase safety from fire and physical danger. Human activity is incompatible with wilderness forest and even with the urban forest talked about in the Plan. To adhere to the Fire Smart recommendation would require more vigorous vegetation management than is being advocated by the Plan.
Well thought out.
Well thought out, need more "action plans".

2. What improvements should be made to the Plan?

Education is a theme to several comments about ways to improve the Plan. Within every module an education component exists. It is important that the public education programs are accessible and interesting for all age and knowledge levels. It was a concern by one respondent that more information about native pants should be included in the Plan. Suggestions for the selection and planting of native species in particular locations will be included in the tree specification list of the Urban Forest Management Plan. For full comments see below.

Comments
Ban sale / use of pesticides, herbicides, etc.
Changing the bylaw that existing mature trees cannot be cut down unless it is a problem tree. It has to be replaced by another tree within a year.
EDUCATION- the right tree in the right place!!
Emphasize education of the general population through nature walks greenways / urban forest open houses / workshops. Interpretive signs.
I'm concerned about large developments (such as Cable Bay) being able to remove trees on private property. I hope the plan will enable enforcement so that areas like this must have trees left intact as much as possible rather than allowing urban and rural clear cutting.
Invasive species removal - more public and education input on tree removal. Private tax incentive.
Involve students more- collaborate with the Artist Response Team (Holly Arntzen)- perhaps have science projects relating to Urban Forest Management?
More education to the populations in Nanaimo- like School District and college.
More emphasis on the social value of trees to the community. More explanations on protection of trees.
More evergreen trees in all development landscaping along boulevard areas. Trees along Terminal also; E&N trailway, St. George to Wellington Rd.
More focus on private and business education, incentives and support for green sustainability.

Not much is mentioned regarding shrubs and native plants. I feel they are just as important as trees.
Please include climate change (local) effect (benefit). Education tool for defining sustainability.
Stress should be given to the compromises that are necessary to allow Nanaimo to progress and yet recognise the importance of vegetation. Trees will be lost and cannot be replaced. This has obvious negative connotations but often has benefits such as increased vistas (maybe Nanaimo's strongest asset?).
The plan is great as a beginning- needs more detail as to how to educate the public and change attitudes, get developers on board, etc.
Very concerned about Linley Valley - need to keep DL 56 intact plus ideally 50% of the area intact. Concern over riparian buffer and making sure regulations are at least similar to BC forestry regulations.

3. What changes to the Plan need to be addressed?

Respondents suggested ways to maintain the urban forest by having a replacement plan for tree removal, providing incentives and education for homeowners and developers to maintain trees, and learn of the potential benefits and hazards of treed areas. The importance of long-term planning has been recognized, and by having the Urban Forest Management Plan in place will help plan for the future. For full comments see below.

Comments
Better vegetation management should be emphasized. When trees are lost replacements, if any, would increase proportion of broadleaf trees bringing benefits such as summer cooling and winter warming. Evergreens are the most hazardous trees with respect to fire. Undergrowth management and a non-continuous canopy are desirable goals and should be required as much as the preservation of trees. This might be mentioned as preservation of people!
For every tree cut down, another must be planted- no matter where.
It's important to have incentives and education for homeowners to maintain existing trees (e.g., Boulevard plantings) and info on varieties to plant on private property.
Just needs the details now of how to get it done (see above). As a member of WITS (Wildlife Tree Stewardship Program) I suggest you check their website for ideas and support www.wildlifetree.org. Also NALT may want to partner to support this initiative.
Long-term planning, education of the public and developers to minimize carbon loss through tree removal.
Module 5: view from and property desired by an individual or developer should not override the wildlife or other importance of any tree.
More emphasis on native species. Vandalized trees should be replanted by the City if on city property.
No.
Species monitoring??, maximum / minimum canopy.
Stress FIRE PROTECTION of properties. Danger of cougars, etc.
Take out "for the purpose of creating a view" after "removal of non-hazardous trees" (Module 5 item 3), and add planning trees to enhance private privacy and neighbourhood values are retained or restored.
What about off-setting taxes with a plan to utilize (harvest) trees in the urban forest? Key is to plan ahead so that a tree species replaces the tree harvested. Another key is to have it assessed for board feet by a nonpartisan.

4. Are there any issues not covered by the Plan that you feel are important?

One of the goals of Module 7 is to update the tree protection bylaw, encouraging the public and developers to retain as many trees as possible. In the tree specification list, consideration should be made to climate change. Suggestion for which trees will be more suitable to the climate in the future could be included here. For full comments see below.

Comments
Better bylaw protection for trees illegally cut by property owners, e.g., Hammond Bay Road near Departure Bay Road.
Climate change - certain species will do better than others (as per climate change lecture / discussion at Port Theatre June 25th- sponsored by PBS).
Developers' design and actual construction should NOT be clearing ALL vegetation and then replanting. Oliver

Road development is an example of how this may be done. More needs to be done. There are lots of examples of "green" development.
Developers should have a clear mandate to keep as many existing trees as possible and if unable then must plant some.
Habitat corridor for wildlife; future development of Linley Valley is VERY important! Developers are apparently bringing Linley Valley incentives to developers to leave more trees and property owners to keep trees. Public education programs - outreach to schools and property owners on the value of trees. No trees = No birds!!
I don't see small areas (e.g., corner of Howard and Beaconsfield owned by City) and trees around school playgrounds included in Module 3 and feel all the green areas should be protected.
Importance of wildlife habitat and ecosystems - for instance I live in "Eagle Point" but the resident eagles have few trees left for their nests. Birds need not just a nest tree but a "buffer zone" around the tree including perch trees and roost trees. Check out the WITS website - www.wildlifetree.org/whatcanbedone.htm.
No.
No.
Planting new trees is a great idea but I would also like to see older trees remain. Planting a young tree doesn't ease the pain of well-established trees coming down, i.e., trees in Lubbock Square, large tree - 200 block Pine Street. Also I hate to see forests levelled for new developments.
See above. Most urgent!!! (Info from above: Changing the bylaw that existing mature trees cannot be cut down unless it is a problem tree. It has to be replaced by another tree within a year.)
Tax incentives.
The physical danger associated with trees is not specifically mentioned. Proximity to buildings, diseased trees, wind danger and fire should receive stronger emphasis. Noxious weeds (Daphne laurel, Broom, English ivy, etc.) should be discussed. Mention should be made of the negative aspects of some trees (Lombardy poplar- invasive suckering, evergreens-flammable oils, giant sequoia- in proportion to lot, etc.)
Urban agriculture.
Yes, it does not mention that trees produce oxygen, a necessity for human survival.

5. One of the goals of the Urban Forest Management Plan is to maintain the overall tree coverage in Nanaimo. Do you have any suggestions to increase willingness of individuals to maintain trees and plants?

Many suggestions to increase the willingness of individuals to maintain trees and plants. Education again is a key component here as well as incentives and fines. Workshops, contests and performances can also be used to increase awareness of the urban forest and the importance of vegetation and intact ecosystems. For full comments see below.

Comments
A reminder to landlords when they receive their property tax notice that good maintenance would enhance the vale and they should look after the grounds.
Clarification of responsibility alone would help. Major pruning, etc. needs to be the responsibility of the City due to the financial cost and liability issues.
Community projects, individual incentives, contest, workshops.
EDUCATION- the right tree in the right place!!
Emphasize the positive benefits of trees- cleaner air, produce oxygen, reduce greenhouse gases and global warming, show pictures / examples of neighbourhoods with beautiful trees and landscape intact. Also trees, vegetation reduce erosion.
Every homeowner should be given a free tree if so desired to plant on his / her property with definite instructions and for assistance to get it planted correctly!
First let's talk to professionals.
Free classes on tree care. Free classes on veggie care.
Implement huge fines for cutting down healthy trees on City boundaries.
Incentives to developers to leave more trees and property owners to keep more. Public education programs - outreach to schools and property owners on value of trees. No trees=no birds!

No data.
Perhaps involve community schools? Lots of workshops so "gardeners", etc. will know how to care for trees and plants - "City Repair" competitions between different neighbourhoods?
Some examples of good management should be given. Cilaire seems to have the right balance and I suspect the original forest was completely removed. What might be thought of as a loss originally has been turned to the residents' advantage.
Tax concessions.
There is already a strong emphasis on education. Now you need a way to connect to the ignorant people who already think they know enough, such as through regulated professionals like realtors and arborist and developers.

What is your impression of each of the seven modules?

Module 1: Education and Outreach

The respondents' comments show that the Education and Outreach module is important and critical. Outreach programs will be important for the community to embrace the new concept of an urban forest. For full comments see below.

Impression	Content Changes
excellent	
excellent	Can't think of any - use neighbourhood groups "tree parties".
excellent, critical!	No data.
good	
good	
good	Education needs to include fieldtrips / walks.
good	Involve the Artist Response Team.
good	No data.
good	No data.
good	Utilize existing resources - Malaspina, community organizations.
necessary!	Need to educate homeowners AND developers.
no data	
no data	Needs to include "what BC Hydro looks for when assessing trees". Part of education should include how to negotiate with BC Hydro OR how to access GREENSTREETS.
no data	No data.
no data	The average person does not have a university education so presentation (i.e., vocabulary) needs to be altered to be understood by most people (words such as "modules" and "interface" are examples.)
no data	The City should sponsor and partner with ecoforestry groups to have a "Forest Week" filled with workshops, demonstrations and celebrations. Include First Nations (engage various communities for pilot projects).
so-so	It's all education - for outreach need hard-wired connections for the key trades and professions.

Module 2: Street / Boulevard Trees and Landscaping

The Street / Boulevard Trees and Landscaping module was perceived as important from nine of the survey respondents. Three comments have been made about planting native species for boulevard and street trees; this comment was also common in the large survey that we conducted in February. In this survey one person also mentioned a garden waste removal program - this comment also appeared several times in the large survey. For full comments see below.

Impression	Content Changes
excellent	
excellent	

excellent	I assume you're working with BC Hydro for suitable native, short varieties of trees.
good	
good	
good	Add concept of succession plan; include optimal replacement rate and times; include harvest.
good	Variety of species benefit for environment and appeal. Focus on native species
good	we need boulevard trees landscaping with natural, native plants.
no data	City may need to start a garden waste removal service (like Victoria has) to remove dead leaves.
no data	I definitely agree with this but once beds are planted we have to MAINTAIN them, weed them, etc. If we don't have the staff or money what's the point?
no data	Lets become a leader in planting an urban forest in most if not all communities.
super!	

Module 3: Parks and Natural Areas Management

The Parks and Natural Areas Management module was perceived as important by 10 survey respondents. Implementation steps will be critical to meeting the goals in this module. For the development of this module, it will be important to meet with neighbourhood groups, environmental groups, community members and developers and gain their input. For full comments see below.

Impression	Content Changes
excellent	
good	
good	
good	Add concept of succession plan; include optimal replacement rate and times; include harvest.
good	Add small "natural" neighbourhood areas school / sports field surrounds.
good	Inform neighbourhood groups to discuss.
good	It's not enough just to have a plan - we need to set a goal to stop and reverse deforestation asap.
great	Continue to expand our green and protected spaces working with environmental groups.
great	Focus on Linley Valley; it is the natural open area at most risk.
I like the restoration of natural landscape and wildlife	Do not put a water main though Colliery Dam Park.
no data	I've noticed too many shrubs and trees being removed. Is this "tidy"? Why are we allowing trees in Colliery Dam Park to come down to make way for a water line? SHAMEFUL in such a beautiful forest.
no data	The waterfront should be as treed and as "natural" as possible with walking trails for public access.

Module 4: Site-specific Tree Removal

The Site-specific Tree Removal module is perceived as fairly important by eight respondents but the goals need to be clarified. It would be useful to research forestry (removal and replanting) practices in Europe. It is also important to meet with neighbourhood groups in the development of this module. For full comments see below.

Impression	Content Changes
excellent	
excellent	Good to have clear procedures.
good	
good	Replace trees or replant certain areas. This works well in some European countries.
good	

good	Replacement of dangerous / hazard trees needs to be a priority.
Inventory should be taken everywhere in town	How many trees are removed unnecessarily? The ones at Prideaux Cemetery looked pretty good.
needs clarification	Define "need" policies, involve neighbourhood in discussion.
no data	Implement fines for removal of healthy mature trees!
no data	I think liability is becoming a real buzz word and big trees are at greater risk because the City doesn't want to be held liable should it fall, etc.
no data	Public education is an important part of doing this wisely.
no data	
no data	No data.
ok but still weak	Unnecessary tree removal needs strong and clear definitions, strong penalties.

Module 5: Property Values, Views and Privacy

The Property Values, Views and Privacy module is perceived as useful by 6 survey respondents, but the implementation processes need to be considered carefully. The success of this module will be heavily dependent on educating the public of the value of trees. Both landowners and developers need to be involved in this module's development. For full comments see below.

Impression	Content Changes
excellent	
good	
good	
good	I'm concerned views and property values would over-ride forest values.
great to have a bylaw preventing tree removal just for a view!	Public and developers need education and persuasion here.
great!!	
needs clarification	Growing population creates need for more privacy and want "best" views.
no data	Love Newcastle Island. Please keep it beautiful. Bowen Park is also a jewel.
no data	This can be a touchy matter for private / City on who wants to remove some at top.
no data	People should be made more aware of the advantage of having a healthy forest on and around their property.
no data	Public education and procedures to support community communication! (neighbour to neighbour)
weak	Add real tree protection processes that don't depend on educated landowner. Require reforestation plans to revive privacy, views, etc.

Module 6: Forest Fire Interface

The seven respondents' comments show that the Forest Fire Interface module is important but few respondents commented on it suggesting maybe it isn't as important as the others; however, verbal comments clearly expressed the concern of forest fire and the need for a plan to manage this. BC Hydro, the Nanaimo Fire Department, and community members are important for the development of this module. For full comments see below.

Impression	Content Changes
excellent	
good	
good	

good	
good	
good	No data.
good	
no data	Interface - surely there must be a more understandable term than this to use. The average parson can only guess at what this means!
no data	This is important - we don't want another Kelowna.

Module 7: Bylaws, Fines and Enforcement

The Bylaws, Fines and Enforcement module is important for the success of the Urban Forest Management Plan. Three survey respondents suggest changing the fines and increasing the rates to reduce unnecessary or excessive tree removal. This was also suggested by several respondents of the large survey. For full comments see below.

Impression	Content Changes
good	Increase penalties.
good	
good	Add hotline for 24 / 7 response when neighbours hear the chainsaws.
good	No data.
good	More resources need to go to site identification / enforcement.
good-especially an inventory	Especially need to strengthen penalties for cutting down trees for view enhancement only and cutting down trees which are home to wildlife, e.g., eagles.
no data	Dog owners need to be more aware of negative impacts some dogs have on native species.
no data	Fines should be stiffened.
no data	Implement fines for removal of healthy mature trees.
no data	No data.
very Important	Increase the fines so there is a real economic impact to the offender; require developers to leave a greater percentage of trees and parkland.

Other suggestions for the modules

The following suggestions were made for the improvement of the modules:

Suggestions
Bylaws are a crude tool to try to encourage good practice. It is interesting that no trees are designated under the current bylaw. City should offer consultation on vegetation management rather than increase powers of bylaws. Most people do not manage vegetation well through ignorance rather than a destructive bent. Covering all vegetation (trees?) under a bylaw would generate additional work for City staff but have minimal effect on vegetation management.
Develop a carbon footprint model / assessment for the city riparian corridor planting.
I agree with identified goals - they sound good but hope implementation has correct emphasis to property, urban forest values and native plants.
Maintaining the UCB would assist to meet many of the goals that are trying to be achieved.
One might stipulate for every tree removed, another must be planted as close as possible to the location of the original!
Public education regarding "nuisance" trees and mess. How about some seminars on "neighbour friendly" hedging? Pros and cons of different species.
This is a good start.

Other comments

Comments
Bylaws to protect trees, identification of significant, wildlife and heritage trees needs to be widely available.
City should set an example of vegetation management particularly on Protection Island where the fire danger is extreme. The City parks adjacent to every homeowner's property are wilderness forest. Ladder fuel, floor detritus, unlimbed trees, undergrowth, diseased trees, noxious weeds (Broom, English ivy, Daphne laurel) abound. It is arguably the worst example of vegetation management in the city. Budgets must be procured to immediately address this issue. The City may even have a liability if these are not addressed.
Dogs are certainly an introduced species and often have a negative impact on other native species. Stricter enforcement of on-leash regulations needs to be implemented. Pollution (point source and indirect) needs to be addressed.
For people moving here from out-of-province, advertise "West Coast" lifestyle and landscape- trees, wildlife; it's not just removing all trees for an ocean view. Beef up the fines for tree removal; require developers to leave a greater percentage of land for parkland; and have enough staff to monitor and enforce.
I believe developers should be specifically mentioned or targeted in this Plan. Have you seen the trees destroyed, the land clearing, ecosystems altered by the development at such locations as Hawthorne near Buttertubs Marsh and Benson Heights? And more large developments are in the planning stages! (20 years too late)
I would like to top a couple of trees on my property - partly for the view but mainly for the increasing shade and close encounter when heavy snow falls occur. Is there any hope consideration could be given to NALT who have a native plant nursery to supply some species?
St. George to Wakeisiah needs some trees planted along the E&N trail. It looks very barren. Also, plant more evergreens on projects as opposed to deciduous trees. In the winter, some places look like Edmonton - no greenery! Overall, very happy that this department has been formed. It's an important park in our community.
Talk to more professional foresters and to other municipalities.
Thank you for allowing public input.
Things have changed for the better in Nanaimo in the past few years. Everyone seems aware of the value of trees now, but yet many property owners are still cutting down trees. Great start! Well done!

Discussion:

This survey shows that there is support for the Urban Forest Management Plan from the survey respondents and the majority of people who attended the open house who were also supportive. The availability for public input at this early stage of the Urban Forest Management Plan development was appreciated by the attendees of the open houses. The Plan appears to be supported by the public. Although the attendance was not high at these public open houses, there were a wide range of interest groups present: community members; people with specific tree inquiries; developers; teachers and professors; parents and children; youth; seniors; city staff members; and passers-by. All of the posters presented were and are available online for the public to view and make responses.

Each module needs to be filled out and a group of key stakeholders and information sources needs to be indentified to discuss each module. This survey shows that education is extremely important for the success of this Plan. All levels of the public need to have easily accessible information sources. The need for a hotline for illegal tree removals was mentioned by several people who attended the open houses; this comment was also a comment made by a survey respondent.

Conclusion:

Overall, the three open houses for the Urban Forest Management Plan were successful. Many suggestions for plan improvements were made which will help in the next stages of the development process. The modules we presented were viewed as important, having the highest importance placed on the Education and Outreach module. Education is linked to all of the other modules; therefore this will be a particularly important component of the Plan. It is clear from this survey, discussions and the larger survey in February that the Tree Protection Bylaw needs to be updated to achieve the goal of maintaining the current tree and vegetation coverage in Nanaimo. As each module is developed, a meeting with the

key stakeholders and information sources in Nanaimo needs to take place. This will increase the input received by the community; it will link key stakeholders to the Urban Forest Management Plan; and it will allow for an informative discussion on the goals and the steps needed to achieve the goals for each module. All comments provided in this survey will be used in the development process.