

The Maple Ridge Town Centre Concept Plan

March 2005

Prepared by:

Smart Growth on the Ground
Vancouver, British Columbia
March 2005



Copyright © 2005 Smart Growth on the Ground

All rights reserved. No part of this publication may be reproduced, recorded or transmitted in any form or by any means, electronic, mechanical, photographic, sound, magnetic or other, without advance written permission from the producers.

Produced by the Design Centre for Sustainability at UBC
<http://www.designcentreforsustainability.org/>

Elisa Campbell
Patrick Condon
Shana Johnstone
Susan Milley
David Hohenschau

Jodie Siu, Smart Growth BC
and Maple Ridge District Staff

Results of the Smart Growth on the Ground- Maple Ridge Charrette
June, 2004

This Study has been produced with the assistance of the Green Municipal Enabling Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the author(s), and the Government of Canada and the Federation of Canadian Municipalities accept no responsibility for them.

ACKNOWLEDGEMENTS

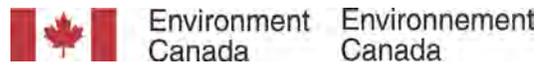
The District of Maple Ridge would like to acknowledge the contribution of its partners and members of the public in the creation of the Town Centre Concept Plan. All participants willingly gave of their time and shared ideas and expertise about the Centre and ways to make it a livable, safe and vibrant community.

It should be noted that the plan is indeed a "concept plan" and should be treated as such and not interpreted literally. An implementation plan for enacting the concepts is an important part of the process of developing the regional town centre and may likely contain aspects that are not part of this concept plan. Some aspects of the concept plan will easily be implemented in a short time frame while others may take many years to achieve. In this sense, the concept plan cannot be assessed for completeness at any one period of time as it is a work in progress.

-District of Maple Ridge

SPONSORS

Smart Growth on the Ground would like to acknowledge the generous support from the following organizations:



Western Economic Diversification

BC Ministry of Community, Aboriginal, and Women's Services

BC Ministry of Water, Land, and Air Protection

Canada Mortgage and Housing Corporation

Greater Vancouver Regional District

VanCity Community Project Grants

The District of Maple Ridge

smart **growth** on the ground
Maple Ridge Town Centre Concept Plan

Table of Contents

Introduction

Page 1

Overview of the Maple Ridge Town Centre Concept Plan 2021

PART A: BACKGROUND

Section 1.0 Project Background

Section 1, Page 1

- 1.1 What is Smart Growth on the Ground?
- 1.2 Partnerships
 - 1.2.1 SGOG Partnership
 - 1.2.2 Community Partnership – Maple Ridge
 - 1.2.3 Advisory Committee
 - 1.2.4 Project Committee
- 1.3 Sustainability Principles
 - 1.3.1 8 Guiding Sustainability Principles
- 1.4 Integrated Planning and Design Process
 - 1.4.1 Project Initiation and Public Consultation
 - 1.4.2 Multi-stakeholder Workshops
 - 1.4.3 Additional Research
 - 1.4.4 Design Charrette

Section 2.0 Baseline Analysis

Section 2, Page 1

- 2.1 Site Information
 - 2.1.1 Regional Context
 - 2.1.2 Local Context
 - 2.1.3 SGoG Project Area: Maple Ridge Town Centre
 - 2.1.4 Water and Soils
 - 2.1.5 Current Land Uses
 - 2.1.6 Official Community Plan
- 2.2 Background Assumptions and Targets
 - 2.2.1 Population Density
 - 2.2.2 Residential Development Opportunities
 - 2.2.3 Commercial Development Opportunities
 - 2.2.4 Providing Options to the Automobile
 - 2.2.5 Rainwater Management and Water Consumption
 - 2.2.6 Energy Management
 - 2.2.7 Waste

PART B: CONCEPT PLAN

Section 3.0 Elements of the Plan

Section 3, Page 1

- 3.1 Land Use Budget
 - 3.1.1 Population and Housing Growth
 - 3.1.2 Density

- 3.2 Land Use Designations
 - 3.2.1 Single Family Residential (20-25 uph /8-10 upa)
 - 3.2.1a Heritage Areas
 - 3.2.2 Multi-Family Housing (25-62 uph /10-25 upa)
 - 3.2.3 Apartment District (62+ uph /25+ upa)
 - 3.2.4 Mixed Use, Commercial Optional
 - 3.2.4a Live Work Areas
 - 3.2.5 Mixed Use, Commercial Required
 - 3.2.6 Town Centre Commercial
 - 3.2.7 Institutional
 - 3.2.8 Parks and Conservation Areas
 - 3.2.9 Greenway

- 3.3 Transportation
 - 3.3.1 Arterial Streets
 - 3.3.2 Pedestrian Streets
 - 3.3.3 Green Streets
 - 3.3.4 Other Local Streets
 - 3.3.5 Public Transit Network
 - 3.3.6 Greenway
 - 3.3.7 Bikeways

- 3.4 Green Infrastructure
 - 3.4.1 Parks and Open Space
 - 3.4.2 Greenway
 - 3.4.3 Green Streets

- 3.5 Energy and Water
 - 3.5.1 Performance Standards
 - 3.5.2 District Energy System
 - 3.5.2a The Downtown Energy System Concept
 - 3.5.2b Technology Description
 - 3.5.2c Economics
 - 3.5.3 District Water System
 - 3.5.4 Challenges and Opportunities

Section 4.0 Detailed Design Guidelines and Performance Standards

Section 4, Page 1

- 4.1 Residential
 - 4.1.1 Description
 - Single Family Residential (20-25 uph)
 - Heritage Areas
 - Multi-Family Housing (25-62 uph)
 - Apartment district (62+ uph)



- 4.1.2 Relationship of Residential Buildings to the Street
- 4.1.3 Built Form and Materials
- 4.1.4 Parking Strategy
- 4.1.5 Environmental Design / Green Infrastructure
- 4.1.6 Energy and Water Use
- 4.1.7 Heritage Areas

- 4.2 Town Centre Commercial
 - 4.2.1 Description
 - 4.2.2 Relationship of Town Centre Commercial Buildings to the Street
 - 4.2.3 Built Form and Materials
 - 4.2.4 Parking Strategy
 - 4.2.5 Environmental Design / Green Infrastructure
 - 4.2.6 Energy and Water Use

- 4.3 Mixed Use (Commercial Required)
 - 4.3.1 Description
 - 4.3.2 Relationship of Mixed Use (Commercial Required) Buildings to the Street
 - 4.3.3 Built Form and Materials
 - 4.3.4 Parking Strategy
 - 4.3.5 Environmental Design / Green Infrastructure
 - 4.3.6 Energy and Water Use

- 4.4 Mixed Use (Commercial Optional)
 - 4.4.1 Description
 - Mixed Use
 - Live Work
 - 4.4.2 Relationship of Mixed Use (Commercial Optional) Buildings to the Street
 - 4.4.3 Built Form and Materials
 - 4.4.4 Parking Strategy
 - 4.4.5 Environmental Design / Green Infrastructure
 - 4.4.6 Energy and Water Use

- 4.5 Transportation
 - 4.5.1 Description
 - New Linkages and Networks
 - 4.5.2 Corridor Types and Uses
 - 4.5.3 Environmental Design / Green Infrastructure

Section 5.0 Implementation

Section 5, Page 1

- 5.1 Integrating the Concept Plan into the Official Community Plan
- 5.2 Implementation Actions

Appendices

- Appendix A Charrette Team
- Appendix B Design Solutions Matrix
- Appendix C Design Brief
- Appendix D Technical Bulletins
- Appendix E Goals and Objectives

List of Figures and Tables

Introduction

Figure

- 1.0 Maple Ridge Town Centre Concept Plan 2021

Section 1: Project Background

Figure

- 1.1 Community workshop
- 1.2 The Design Brief
- 1.3 Charrette participation
- 1.4 Community workshop
- 1.5 Charrette discussion
- 1.6 Hands-on group design at the charrette event

Section 2: Baseline Analysis

Figure

- 2.1 Map of the GVRD
- 2.2 Maple Ridge context map
- 2.3 Town Centre base map
- 2.4 Town Centre water map
- 2.5 Town Centre public and vacant lands map
- 2.6 Maple Ridge Official Community Plan

Section 3: Elements of the Plan

Figure

- 3.1 Town Centre Concept Plan 2021
- 3.2a Residential land budget proposal 2021
- 3.2b Commercial/Mixed Use land budget proposal 2021
- 3.2c Parks, Recreation Areas, Greenways and Institutional land budget proposal 2021
- 3.3 Town Centre Land Use proposal 2021
- 3.4 Town Centre Transportation proposal 2021
- 3.5 Town Centre Green Infrastructure proposal 2021
- 3.6 Downtown Energy Diagram

Table

- 3.1 Land Use Budget

Section 4: Design Guidelines & Performance Standards

Figure

- 4.0 Townhouses with coach house, plan view
- 4.1 Townhouses with coach house, section view
- 4.2 Apartments
- 4.3 Condominiums
- 4.4 Infill separation distance
- 4.5 Building form
- 4.6 Coach house
- 4.7 Shared parking

- 4.8 Green lane
- 4.9 Front porches
- 4.10 Residential energy and water savings
- 4.11 Haney Place Mall retrofit option showing strengthened relationship of buildings to streets
- 4.12 Haney Place Mall retrofit option showing extended green infrastructure connecting civic and other important destinations
- 4.13 Haney Place Mall retrofit option with perimeter transparency
- 4.14 Commercial energy efficiency
- 4.15 Four-storey residential with ground floor retail
- 4.16 Photo simulation: 119th Avenue - before and after
- 4.17 Photo simulation: Riparian trail at 124th Avenue: before and after
- 4.18 Utility corridor
- 4.19 Traffic circle
- 4.20 Bulb-outs
- 4.21 Aquabus ferry (<http://www.aquabus.bc.ca/home.html>)
- 4.22 Typical Lougheed Highway corridor
- 4.23 Typical Dewdney Trunk Road corridor
- 4.24 Photo simulation: Dewdney Trunk Road at 227th: before & after
- 4.25 Photo simulation: Edge Street: before and after
- 4.26 Edge Street
- 4.27 224th Street corridor
- 4.28 Brown Avenue
- 4.29 Green roof
- 4.30 Riparian trail with 15m buffer

Section 5: Implementation

Figure

- 5.1 Maple Ridge Official Community Plan
- 5.2 Town Centre Land Use Proposal 2021
- 5.3 Aerial perspective drawing of the Maple Ridge Town Centre Concept Plan 2021

Table

- 5.1 Density comparisons
- 5.2 Preliminary list of implementation actions



MAPLE RIDGE TOWN CENTRE

Concept Plan

PART A: BACKGROUND



MAPLE RIDGE TOWN CENTRE

Concept Plan

Introduction



Introduction

The Maple Ridge Town Centre Concept Plan (**Figure 1.0**) is the result of an integrated planning and design process that came about from a partnership between the District of Maple Ridge and Smart Growth on the Ground. Rooted in principles of sustainability and open public and stakeholder workshops that guided the process from the outset, the Plan is intended as a guide for sustainable future development in Maple Ridge. The Plan represents the culmination of the multistakeholder process conducted to date, and provides the District with a consensus-based concept design for the Town Centre. Consensus was determined by means of a design charrette: a time-limited, integrative forum where those typically involved in community development negotiate new municipal standards that are more consistent with regional policies promoting sustainable design. Degrees of design suggestion extend from fine-grained pedestrian scales to larger regional networks.

Smart Growth on the Ground (SGoG) is an exciting new initiative created through a partnership between the Real Estate Institute of B.C., Smart Growth B.C., and the Sustainable Communities Program at U.B.C. This initiative strives to create more options for housing and transportation and reduce the environmental impacts of growth, and can help create positive change in the Maple Ridge community by responding to the challenge of building a vibrant district in which to live and work.

Smart Growth on the Ground builds on previous initiatives and analysis and incorporates smart growth, this document, and sustainability principles, while actively engaging the people of Maple Ridge, to ultimately represent a vision and plan for a community that balances social, economic and environmental priorities.

The site area identified by SGoG is consistent with the Greater Vancouver Regional District designation of Maple Ridge as a Regional Town Centre, informed within the Livable Region Strategic Plan, 1996 (see <http://www.gvrd.bc.ca/livablecentres/>).

The document that follows describes the process and the resultant Plan, and provides additional background and attendant information.

Section 1.0 introduces Smart Growth on the Ground and the partnership and committees which informed the process. It also describes the sustainability principles on which the Plan is based, and describes the planning and design process that was followed to create the Concept Plan.

Section 2.0 supplies detailed contextual information about the project area, including local and regional scales, and describes the current land uses in the Town Centre as well as those in the



Figure 1.0 Maple Ridge Town Centre Concept Plan 2021



Maple Ridge Official Community Plan. This section also introduces targeted research which was conducted with information specific to Maple Ridge, to outline opportunities and constraints within specific subject areas and hence better inform the design process. The complete targeted research documents are in Appendix D.

Section 3.0 introduces and briefly describes the Maple Ridge Concept Plan. It identifies the elements of the Plan, including descriptions of transportation, green infrastructure, energy, and water.

Section 4.0 provides more detail into the design guidelines and performance standards that were determined in the process, and describes the specifics of designated land use areas such as built form, size, materials, and movement and inter-connectivity between the systems and places that comprise the Town Centre.

Section 5.0 shows where the Concept Plan differs from the current Official Community Plan (OCP), and begins to delineate how it could be integrated into the OCP. It then proposes a preliminary list of implementation actions for the Concept Plan with an approximate timeline and parties responsible for the activities. The list is subject to change in response to research and ongoing consultation.

MAPLE RIDGE TOWN CENTRE

Concept Plan

Section 1.0 Project Background



1.0 Project Background

1.1 What is Smart Growth on the Ground?

Smart Growth on the Ground seeks to make sustainable community design and construction the standard for development in British Columbia, through creating tangible, built examples of smart growth and sustainability. Smart Growth on the Ground uses inclusive design tools, extensive public consultation, and capacity building processes that engage the community in select partner municipalities.

The Smart Growth on the Ground team uses a collaborative process in implementing sustainability into our communities, to facilitate the creation of a local concept plan, work with the municipality to adopt necessary by-laws, programs, and regulatory changes, and assist in the monitoring of initial construction projects. Each neighbourhood plan will be based upon the Smart Growth on the Ground principles as follows:

- Each neighbourhood is complete
- Options to our cars exist
- Work in harmony with natural systems
- Buildings and infrastructure are greener and smarter
- Housing serves many needs
- Jobs are close to home
- The Centre is attractive, distinctive and vibrant
- Everyone has a voice

Smart Growth on the Ground is characterized by several critical components: an inclusive process, an integrated charrette event, practical research, and a focus on implementation.

The process emphasizes meaningful involvement by diverse multi-stakeholder groups including: municipal officials and their staff; community organizations and residents; property and business owners; real estate and development industry professionals; environmental and social groups; youth; and so on. In each municipality, these groups participate in a series of stakeholder workshops (**Figure 1.1**), and their representatives are involved in the collaborative "charrette" event.

The intensive charrette event forms the centrepiece of Smart Growth on the Ground, and culminates in the creation of a neighbourhood plan. The Smart Growth on the Ground team facilitates the process, but those who will live with the results make the design and implementation decisions. This not only ensures that the neighbourhood plan responds to local realities,



Figure 1.1 The community gathers at workshops to discuss goals and objectives

but also ensures ongoing support by local stakeholders who have been involved in its creation.

The implementation of sustainable community design is often hampered by practical realities and unanswered questions about feasibility, marketability, and costs, for example. During the charrette process, real time economic analysis ensures that the evolving plan is practical. Further, Smart Growth on the Ground will include subsequent research on specific issues raised at the charrette, with the goal of removing barriers to implementation.

Ultimately, the focus is on the implementation of built examples of sustainability. To that end, the Smart Growth on the Ground team works with the municipality to identify, craft, and adopt all plans, standards, and by-laws that are needed for construction projects to be built in accordance with the local concept plan. The team will also assist in the review of initial phases of construction projects.

Smart Growth on the Ground (SGoG) follows a ten-step process in each partner municipality

1. Community Selection and Agreement

Once SGoG partner communities agree in principle to participate, it is necessary to receive assent of Municipal Council. At this stage, a Memorandum of Understanding (MOU) between SGoG and the municipality can be prepared and signed. The Maple Ridge Municipal Council signed the MOU in November of 2003.

2. Stakeholder Consultation and Workshops

The inclusion of a comprehensive set of stakeholders in the definition and design of the local concept plan is a fundamental component of SGoG. This involves identifying the stakeholder groups, engaging in dialogue about the SGoG principles and process through a series of workshops, and receiving input from each interest group and organization. Maple Ridge hosted five workshops which took place in February and March of 2004, and other public input events included the charrette open-house and mid-course review in June, which gave stakeholders and the larger community opportunities to voice opinion on project progression.

3. Preparation of Design Brief

The Design Brief is the key document for guiding the design and discussion during the development of the local concept plan. SGoG guiding principles, relevant policy, and input from stakeholders is translated together into community-specific performance objectives and requirements. The Design Brief was used by Maple Ridge charrette participants to provide a framework for design decisions (Figure 1.2).

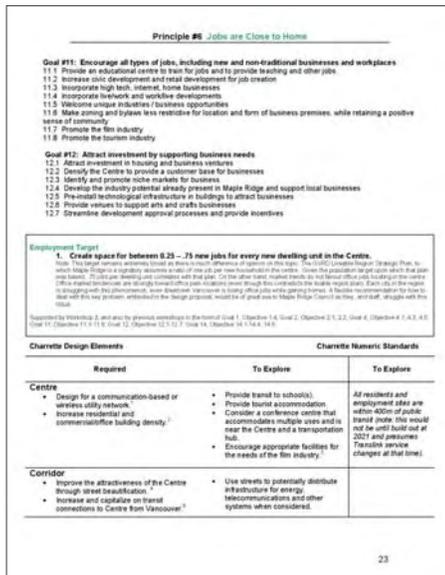


Figure 1.2 The Design Brief summarizes design strategies from workshop consensus of goals, objectives and important targets



4. Organization of Charrette

The organization of the charrette involves compiling a wide range of relevant geographic and resource information, including land use and infrastructure maps, historical and current resource use data, and any other background information that can assist in the planning and design work of the charrette team. This phase also entails event organization and coordination. In addition to the above reference information, extensive photographs were taken around the Maple Ridge Town Centre, including historical areas, streets, parks, riparian areas, and important view corridors.

5. Facilitation of Charrette

The charrette is the focal point of the SGoG process, for it is at this point that the draft local concept plan is developed. The event lasts for a total of 4-5 days, which can be scheduled in a number of different configurations, and typically involves up to fifteen stakeholder participants. It includes an opening forum, a mid-course review, and a final presentation, all of which are open to the public. The SGoG team facilitates the event and offers design and drawing expertise – but the decisions and proposed designs are the product of the larger charrette team (**Figure 1.3**). The final Maple Ridge charrette presentation may be viewed at: <http://www.sgog.bc.ca/uplo/mr6.21.04presentation.pdf>.



Figure 1.3 Charrette participants discuss opportunities

6. Targeted Research

This step creates a bridge between conceptual research, and real-life questions and situations. It can be enhanced by linkage with parallel research initiatives – for example, the Greater Vancouver Regional District's "Sustainable Region Initiative Task Groups", or the provincial "Water Sustainability Committee" work on a water balance model. This research is focused on issues that did not receive consensus during the charrette due to the need for additional information. For example, while the concept of district heating might be agreed to in principle during the charrette, it would be through targeted research that a full cost-benefit and feasibility analysis would be conducted. Results of the research are brought back to the 'design table' for later review and approval. Targeted research for Maple Ridge included energy and water use and conservation, rainwater management, housing affordability, commercial development opportunities and transportation options.

7. Finalization of Local Concept Plan

This step involves finalizing all drawings, integrating all available research results, and preparing a full concept plan document along with attendant plans and appendices. Ultimately, the Municipal Council will formally adopt the plan and the related components.

8. Rezoning and Construction Participation

This step is primarily a negotiation and facilitation one for SGoG, in which the translation of the concept plan into built projects occurs. It includes capacity building activities such as preparing and facilitating technical workshops for developers, home builders and development participants involved in implementing the details of the SGoG principles; preparing detailed subdivision and engineering plans for the first project; and so on.

9. Monitoring and Communication

In order to ensure that the concept plan is implemented, and in order to finetune the process, monitoring and communication is crucial. This includes conducting research related to indicator measurement, cost analysis, post-construction monitoring, and so on. Results will be communicated through various means, including the SGoG website.

10. Post-Project Evaluation

This phase consists of predominantly internal review, during which SGoG evaluates the project process. It is important that the SGoG process be able to continually evolve in response to lessons learned, to further the goal of enhancing community sustainability.

1.2 Partnerships

1.2.1 Smart Growth on the Ground Partnership

The Real Estate Institute of British Columbia, Smart Growth BC, and the Sustainable Communities Program at UBC joined forces to create Smart Growth on the Ground. This unique partnership initially aims to assist three communities over three years with the intention of working with ten communities in ten years.

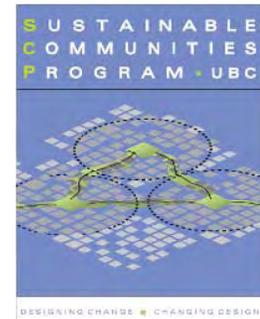
The Real Estate Institute of B.C. is an organization of diversified professionals whose mission is to advance the highest standards of education, knowledge, professional development and business practice in all sectors of the real estate industry. The Real Estate Institute of B.C. provides professional oversight in the area of real estate, conducts “real time” economic evaluation activities, and provides professional development and educational resources for the real estate and land use industries and the community at large.

Smart Growth B.C. is a province-wide, non-profit, non-governmental organization promoting more liveable communities based on compact communities, sustainable transportation, affordable housing options, preservation of greenspace and agricultural land, efficient use of infrastructure, and ongoing citizen engagement. Since 1999, Smart Growth B.C. has provided assistance and resources to citizens and community



associations to facilitate their effective involvement in the land development process. Smart Growth B.C. oversees the community outreach and engagement processes, and conducts many of the communications and administrative activities.

The UBC Sustainable Communities Program (SCP) is focused on applying sustainability concepts to the development of land and community. Situated within the Design Centre for Sustainability (DCS) at the University of British Columbia, the SCP takes advantage of extensive research being conducted at UBC to implement more sustainable forms of growth and development in real-world situations. The SCP specializes in facilitating collaborative design processes as a tool for achieving sustainability.



1.2.2 Community Partnership - Maple Ridge

The District of Maple Ridge B.C is the first Smart Growth on the Ground partner community.

In July 2003, the District Council of Maple Ridge agreed to become the inaugural Smart Growth on the Ground partner community. By doing so, the District committed to exploring the application of smart growth and sustainability principles (see section 2.3) in the project area. The project area is the Regional Town Centre of Maple Ridge, as identified in the Greater Vancouver Regional District's Livable Region Strategic Plan (1996). The project area consists of 294 ha (727 ac), extending from 124th Avenue south to the Fraser River and 221st Street east to Burnett Street. It is currently developed with a variety of residential, commercial and civic uses; includes the Fraser River waterfront; and is the historic "heart" of Maple Ridge. Please refer to section 2.0 for more details on the project area.



1.2.3 Advisory Committee

The Smart Growth on the Ground initiative as a whole is overseen by a multi-sectoral Advisory Committee, including representatives of Regional, Provincial and Federal governments, SGoG funding partners, and organizations with specific expertise in the areas of sustainability, smart growth and land development. The Advisory Committee provides general guidance and advice on the overall Smart Growth on the Ground initiative. Specific areas of advice include the selection of partner communities, marketing, fundraising, coordination with related research and design initiatives, and other strategic issues.

1.2.4 Project Committee

In each partner community, a local project committee oversees the activities and products of the Smart Growth on the Ground initiative. In Maple Ridge, the group is comprised of 19 members, including two Council representatives, key District staff, several local business and property owners, residents, and members of key organizations in the Maple Ridge Town Centre. Resource people from the Greater Vancouver Regional District and B.C Hydro are also participating. The project committee provides review and oversight of the process, products, and implementation actions of SGoG in Maple Ridge, including guidance related to key local issues and interests.

The project committee representatives are:

Claus Andrup

Resident

Jim Charlebois

Maple Ridge Planning Department

Ken Chow

Translink

Ernie Daykin

Councillor, District of Maple Ridge

Chris DeMarco

Greater Vancouver Regional District

Brenda Finlayson

Ridge Meadows Arts Council

Bruce Fuller

Fuller Watson Furniture

Susan Haid

Greater Vancouver Regional District

Jon Harris

Councillor, District of Maple Ridge

Peter Hill

Maple Ridge Lighting

Elizabeth Johnston

BC Hydro

Bob Jones

Downtown Property Owner's Association

Brock McDonald

Maple Ridge Licensing, Permits & Bylaws



Sheila McLaughlin
Ridge Meadows Child, Youth, and Family Network

Ian McLeod
Maple Ridge Historical Society, Chair of the Project Committee

Tom Meier
Johnston Meier Insurance

Jane Pickering
Maple Ridge Planning Department

Frank Quinn
Maple Ridge Engineering Department

Bob Stewart
Resident



Each neighbourhood is complete



Options to our cars exist



Work in harmony with natural systems



Buildings and Infrastructure are greener and smarter

1.3 Sustainability Principles

1.3.1 8 Guiding Sustainability Principles

SGoG projects are guided by eight principles, which were amended by Maple Ridge Council members, District staff, residents and other stakeholders through consultation workshops to better represent the community's desires.

1. **Each neighbourhood is complete**
Smart Growth on the Ground communities allow residents to have the option to live, work, shop and play in the same local area. Compact, complete communities use land and infrastructure more efficiently, while providing more living choices for residents and local employees. Complete communities can reduce per capita expenditure on cars and per capita production of air pollution by over 40%. This means more money in our pockets and less congestion on our streets.
2. **Options to our cars exist**
Smart Growth on the Ground communities reduce the emphasis on automobiles, and provide for other transportation choices. Compact neighbourhoods with an interconnected street network are convenient for walking and cycling, and can provide sufficient residential density and a mix of uses to provide a sustainable ridership base for transit. Transportation choices reduce congestion and pollution and allow residents who cannot drive (such as children, seniors, and people with disabilities) to access daily activities on their own.
3. **Work in harmony with natural systems**
Smart Growth on the Ground communities respect, maintain, and restore the natural functioning of the landscape.



Housing serves many needs



Jobs are close to home



The Centre is attractive, distinctive and vibrant



Everyone has a voice

Communities can be more environmentally friendly, energy efficient, and cost effective, by respecting natural ecosystems - particularly river and stream systems and their associated aquatic habitat.

4. **Buildings and infrastructure are greener and smarter**
Smart Growth on the Ground communities optimize the economic, social and ecological impact of buildings and infrastructure. Innovative development standards, such as “green” infrastructure and buildings or natural drainage systems, can result in lower impact solutions that cost municipalities, residents and businesses much less over the long term.
5. **Housing serves many needs**
Smart Growth on the Ground communities incorporate a variety of housing in the same neighbourhood and even on the same street. A mix of housing types (both owned and for rent) allows residents to live in the same community throughout their life, and recognizes the increase in non-traditional households such as empty nesters, single parent families, and childless couples. A range of housing also allows lower income residents (such as seniors on fixed income or recent university graduates) equal access to community amenities and local employment opportunities.
6. **Jobs are close to home**
Smart Growth on the Ground communities foster sustainable economic growth. Local economic growth allows many residents to find employment close to home and supports local businesses, while making the best use of existing infrastructure.
7. **The Centre is attractive, distinctive, and vibrant**
Smart Growth on the Ground communities are animated, diverse, and have a strong local identity. The cultural heritage of the community is celebrated in functional and meaningful ways, and are incorporated into the vibrant neighbourhood and town centres as focal points for community interaction.
8. **Everyone has a voice**
Smart Growth on the Ground communities belong to those who live, work, and play there. Meaningful participation includes an early and ongoing role for community members by engaging them in planning, design and development processes. This ensures that new development is accepted by existing stakeholders and responds to local needs.

1.4 Integrated Planning and Design Process

The following outlines the steps involved in the open and inclusive planning and design process which led to the formation of and consensus for the Maple Ridge Town Centre Concept Plan.



1.4.1 Project Initiation and Public Consultation

Smart Growth on the Ground utilizes an inclusive multi-stakeholder planning and design approach with significant public involvement. In December 2003, the project was initiated by the formation of the locally based Project Committee (see section 1.2.3). The formal public launch took place at the opening Public Discussion Forum on January 28, 2004. At this event, participants were introduced to the Smart Growth on the Ground initiative and were asked to provide insight regarding the assets of and challenges facing the Maple Ridge Town Centre. This input, along with the insights of the Project Committee, was used to formulate the structure of the multi-stakeholder workshops.

1.4.2 Multi-stakeholder Workshops

The SGoG process in Maple Ridge included a series of public input workshops that examined the SGoG Principles in the specific context of the Maple Ridge Town Centre area.

Workshop participants included residents, business owners, property owners, youth, District staff, local regional and provincial government representatives, and others with an interest in the Maple Ridge Town Centre. Workshop participants were asked to identify their primary area of interest as stakeholders, and to contribute from the perspective of that chosen stakeholder position.

At the first workshop (February 18, 2004), participants discussed ideas, issues, and opportunities (**Figure 1.4**). The Smart Growth on the Ground Principles were reviewed by each stakeholder group and ranked in terms of their difficulty and importance. Draft goals and objectives that resulted from input received, along with the review of existing policy and regulation, were considered at the second workshop (March 3, 2004). The resultant design considerations were addressed at the third workshop (March 31, 2004). Individual workshops for youth and entertainment business interests were also held.

Throughout the process, public input was combined with information from existing local, regional, provincial, and federal policies that have influence in the Maple Ridge Town Centre. Ultimately, the workshop input and policy background (along with additional research - see 1.4.3) were combined to create the Design Brief. This document (found in Appendix C) is the set of design instructions used to guide the participants at the charrette.

1.4.3 Additional Research

The targets and recommendations set out by the Design Brief were informed in part by site specific research on the Maple Ridge Town Centre in the issue areas of transportation, energy,



Figure 1.4 A public input workshop for the Maple Ridge Centre



Figure 1.5 Charrette participants discuss and debate options



Figure 1.6 Hands-on group design at the charrette event

water consumption, rainwater management, and residential and commercial/office development opportunities. See section 2.2 for a summary of targeted research results, and Appendix D for the full research documents or “Technical Bulletins.”

1.4.4 Design Charrette

The Design Charrette is an integrated and collaborative planning and design tool involving stakeholders, professional designers, and key experts. Facilitated by the SGoG team, the goal of the charrette is to produce a sustainable plan of the identified project area (**Figures 1.5, 1.6**). Interaction between all stakeholders, designers and staff at the Maple Ridge Community Design Charrette permitted a proposed design for the project area that addressed the goals as well as concerns of all involved in the process evolved and met sustainability targets as outlined in the Design Brief. The charrette process also established commitment for continued support for the plan from local and regional government and non-government organizations, community groups and individuals, as represented by the charrette participants. For a complete list of charrette team members, see Appendix A.

This local concept plan, titled “Maple Ridge Town Centre Concept Plan” was developed by the charrette team and consists of four major groups: Land Use, Transportation, Green Infrastructure, and Energy. Additionally, embodied within these groups are urban design guidelines, economic analyses, policy recommendations, opportunities for incentives, and management strategies.

Specific design solutions proposed in the Maple Ridge design charrette are recorded in sections 3.0 and 4.0 of this document.



MAPLE RIDGE TOWN CENTRE

Concept Plan

Section 2.0 Baseline Analysis



2.0 Baseline Analysis

2.1 Site Information

2.1.1 Regional Context

Incorporated in 1874, Maple Ridge has a total land area of 265.69 square km (2001 Census). The District is located on the north bank of the Fraser River between Pitt Meadows and Mission, 45 km east of the City of Vancouver (**Figure 2.1**). Maple Ridge joined the Greater Vancouver Regional District in 1995, and has a population of just over 70,000 residents.

Urban land makes up about 87,500 hectares of the 280,000 total hectares in Greater Vancouver. About two-thirds of this is in use and the rest is vacant land. Non-urban land includes forested areas, agricultural land, watersheds, parks and open space. Agricultural land is identified as occupying about 46,500 hectares. The land area in the District of Maple Ridge is 26,000 hectares. The study area for this proposal is 291 hectares of urban land in Maple Ridge Centre.

This area has been identified by the GVRD Livable Region Strategic Plan as one of eight Regional Town Centres, which calls for a higher concentration of commercial office, residential growth and community and civic facilities therein as well as greater regional transit access. Lougheed Highway, the primary east-west road in the lower mainland, passes through Maple Ridge Centre. The Centre is also connected to the region by the West Coast Express commuter train service, Translink bus services, Pitt Meadows Municipal Airport, and the Albion Ferry. By 2008 a new Fraser River crossing, the 'Golden Ears' bridge, will connect from Langley in the south to the Lougheed Highway in Maple Ridge.



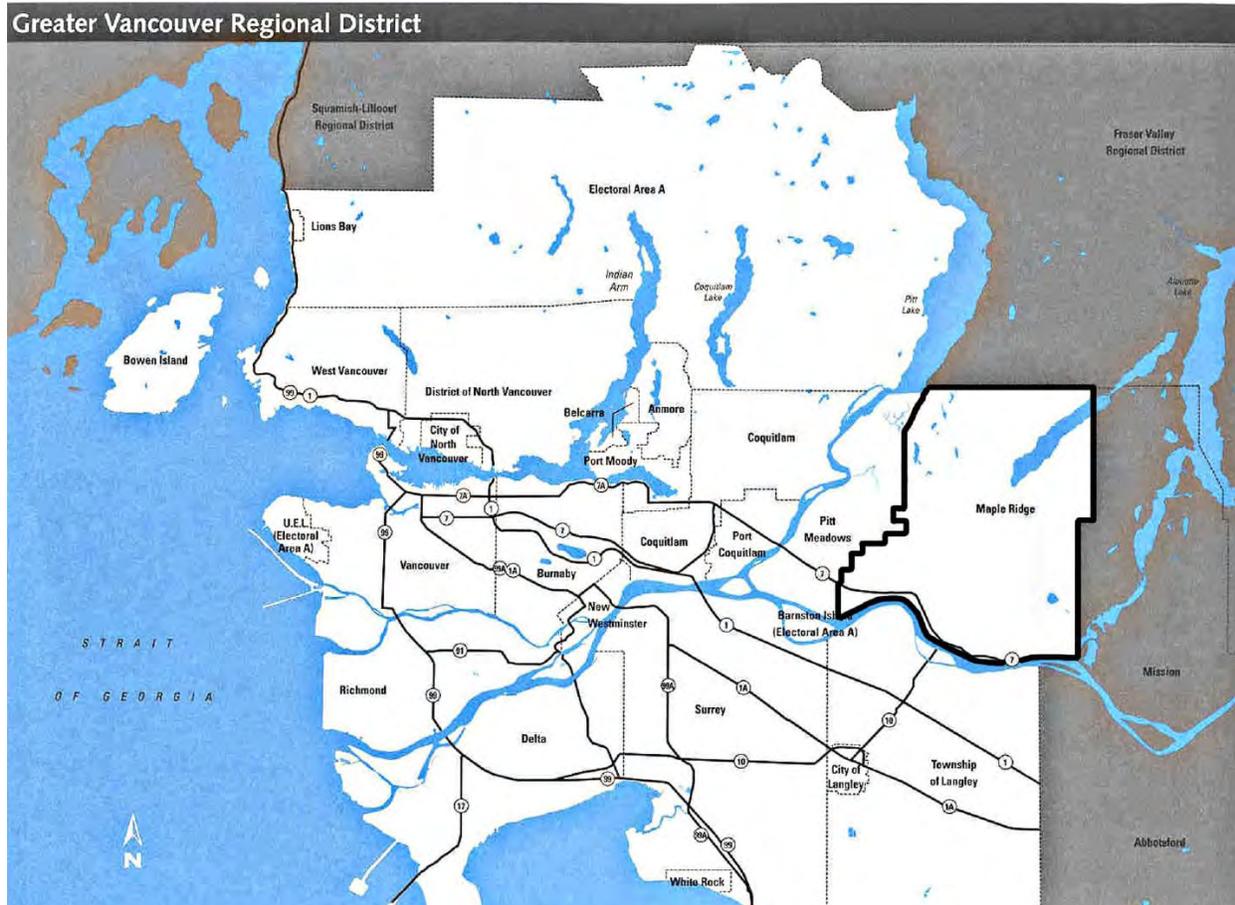


Figure 2.1 Map of the Greater Vancouver Regional District (GVRD) area . Courtesy of the GVRD.

2.1.2 Local Context

The total land mass of Maple Ridge consists of 26,000 hectares (66,000 acres) of land; 4,460 hectares (11,023 acres) of which is agricultural land. The remaining lands support a wide variety of land uses ranging from single family homes to high density residential apartments, including industrial and a wide variety of commercial and recreational uses. Development is currently concentrated in the southern and western areas in the District, although the Silver Valley Area Plan calls for increased development in a northern portion of Maple Ridge. The area is home to the Katzie First Nation reserve, occupying Fraser River waterfront areas in the southeast.

In addition to the First Nation settlement, the Municipality consists of seven historical areas - Haney, Albion, Hammond, Yennadon, Ruskin, Whonnock and Webster's Corner - of which the Haney Town Centre has the largest commercial core and includes the new civic centre.

Maple Ridge is the gateway to Golden Ears Provincial Park to the north. Other major natural areas in the District are the UBC Malcolm Knapp Research Forest, the Kanaka Creek Regional Park (1,050 acres), and an extensive system of dykes along the Fraser River. There are approximately 33 local parks consisting of 127 hectares (315 acres) of publicly owned lands. The District also has a network of over 150 kilometers of equestrian trails (**Figure 2.2**).

The District experiences a moderate coastal climate with small seasonal temperature variations, a 230 day growing season, and 165 to 195 cm of rainfall per year, mostly between the months of October and April. Predominant winter winds are from the east and northeast, and light summer winds are from the west and southwest.



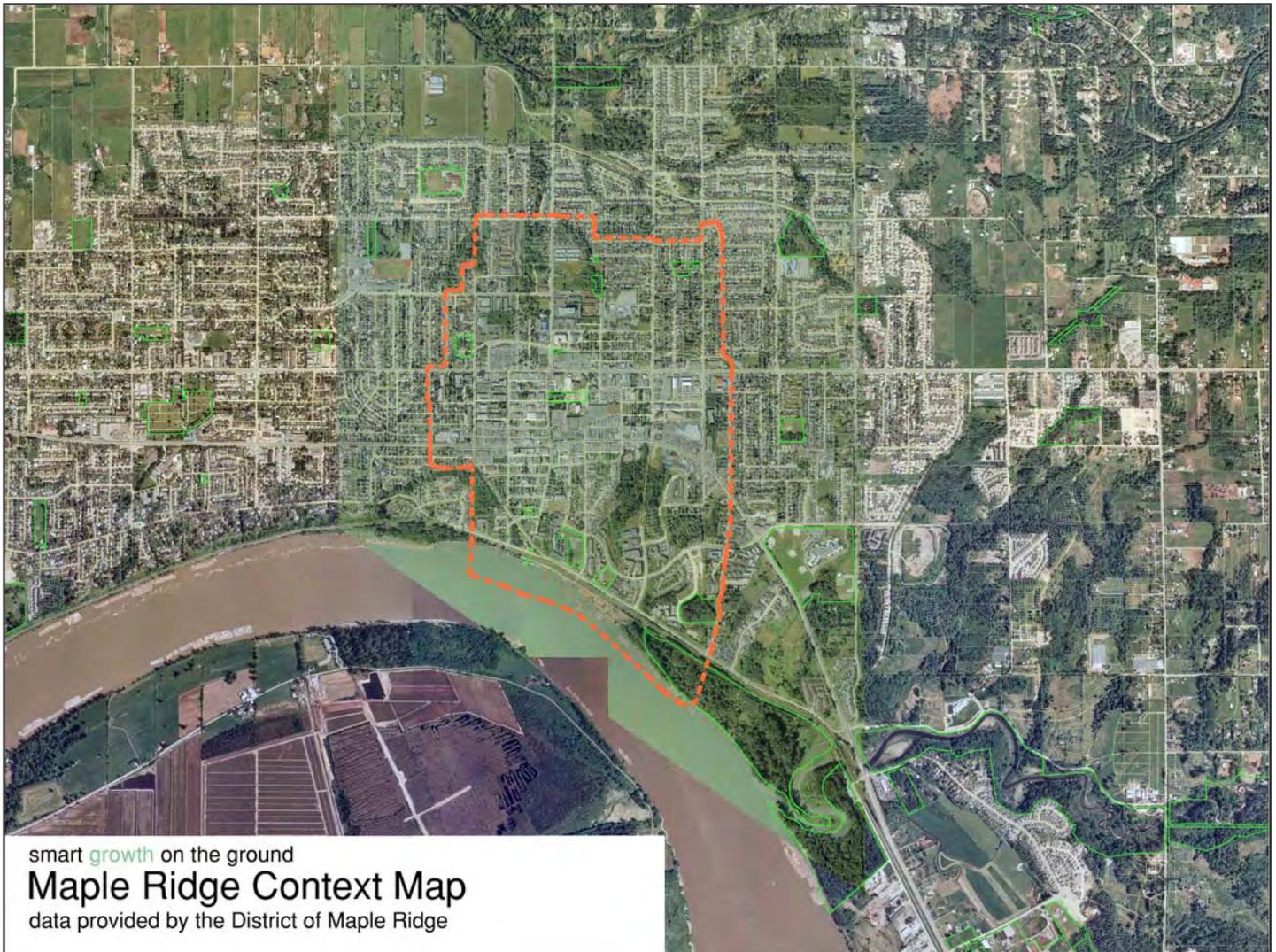


Figure 2.2 Maple Ridge with Town Centre project area outlined in red.

2.1.3 SGoG Project Area: Maple Ridge Town Centre

The Greater Vancouver Regional District's Livable Region Strategic Plan (1996) designates regional "Town Centres" as hubs for future densification and development. Consequently, the designated boundary of the project area is the defined Regional Town Centre of Maple Ridge. The Maple Ridge Town Centre area of 294 ha (727 ac) extends north to south from 124th Avenue to the Fraser River and west to east from 221st Street to Burnett Street. It includes a variety of residential, commercial and civic uses, as well as the Fraser River waterfront (**Figure 2.3**).

This Maple Ridge Town Centre is the "heart" of Maple Ridge, encompassing several historic locations, municipal offices, a concentrated commercial area, and a station for the West Coast Express commuter train service. Three major east-west roads cross the area: Dewdney Trunk Road, Lougheed Highway, and the Haney Bypass. These roads define four distinct sub-areas with distinct land use and geographic characteristics:

- The southernmost area is an industrial corridor and CPR railway line, which also includes the waterfront and historic wharf area.
- The area between the Haney By-pass and Lougheed Highway encloses residential uses, conservation areas and historic land uses on sloping terrain. This terrain interrupts the grid pattern of streets that is typical to the rest of the District.
- The 'Ridge' is the relatively flat area between Dewdney Trunk Road and Lougheed Highway where civic and commercial uses are concentrated. This ridge also marks the boundary separating the Fraser River and Alouette River watersheds. This area has noticeably less tree canopy cover and a high proportion of surface parking lots. The Haney Place Mall and the new Civic Centre are central to this area.
- The area north of Dewdney Trunk road contains residential uses and a large school property, and also parks and conservation areas.





Figure 2.3 The project area is the Maple Ridge Town Centre as defined by the GVRD.

2.1.4 Water and Soils

The Water Management Map informs decisions regarding how and where to implement rain water management techniques within the Maple Ridge Town Centre (**Figure 2.4**).

A key strategy in the Greater Vancouver Regional District's (GVRD) Liquid Waste Management Plan (LWMP), approved in 2002, is to view "stormwater as a resource" (GVRD, 2002, p.7). This means managing rainfall to maintain or restore fish-bearing streams; creating open, public amenities that enhance the liveability of the region; and recharging groundwater wherever appropriate and feasible.

The District of Maple Ridge is a signatory to LWMP implementation. According to the LWMP, municipalities are required to update by-laws or policies addressing at least 2 issues over the 5-year implementation cycle of the plan. Such issues include source control, flood protection, sediment and erosion control, and soil conservation. This commitment includes public participation and completing an Integrated Stormwater Management Plan (ISMP) for each watershed.

The storm system in the Centre is a conventional system of catch basins feeding underground pipes with the occasional exposed ditch flowing into open stream channels. The boundaries for each drainage area are indicated in the Water Management map, and each area can be generally described as flowing either north or south. North of the Centre, the system drains into Latimer Creek, a tributary to the Alouette River. South of the Centre, the system empties directly into the Fraser River.

The Alouette River is a BC Heritage River that has undergone significant restoration. Increasing salmon stocks are now being observed after almost 10 years of work. In order to ensure that this encouraging trend continues, the volume and quality of runoff entering the Alouette River need to be carefully controlled and protected, respectively.

By contrast, the volume of all runoff from Maple Ridge Town Centre to the Fraser will have a negligible impact on a tidal influenced body of water as large as the Fraser River. Management techniques are only necessary to control the quality of runoff entering the Fraser River as quality has an impact at any scale.

Quality and volume of runoff can both be managed within urban land use patterns through retention and infiltration techniques, which is often implemented as a standard for municipally owned right-of-ways, or as a by-law controlling privately owned land. The potential effectiveness for management techniques is largely determined by soil type and slope, which is indicated on the Water Management map as drainage capability. Drainage capability ranges from "poor" to "moderately well" in the Maple Ridge Town Centre. For more information on soil types refer to Appendix D, Technical Bulletin number 3: Rainwater Management in Maple Ridge.



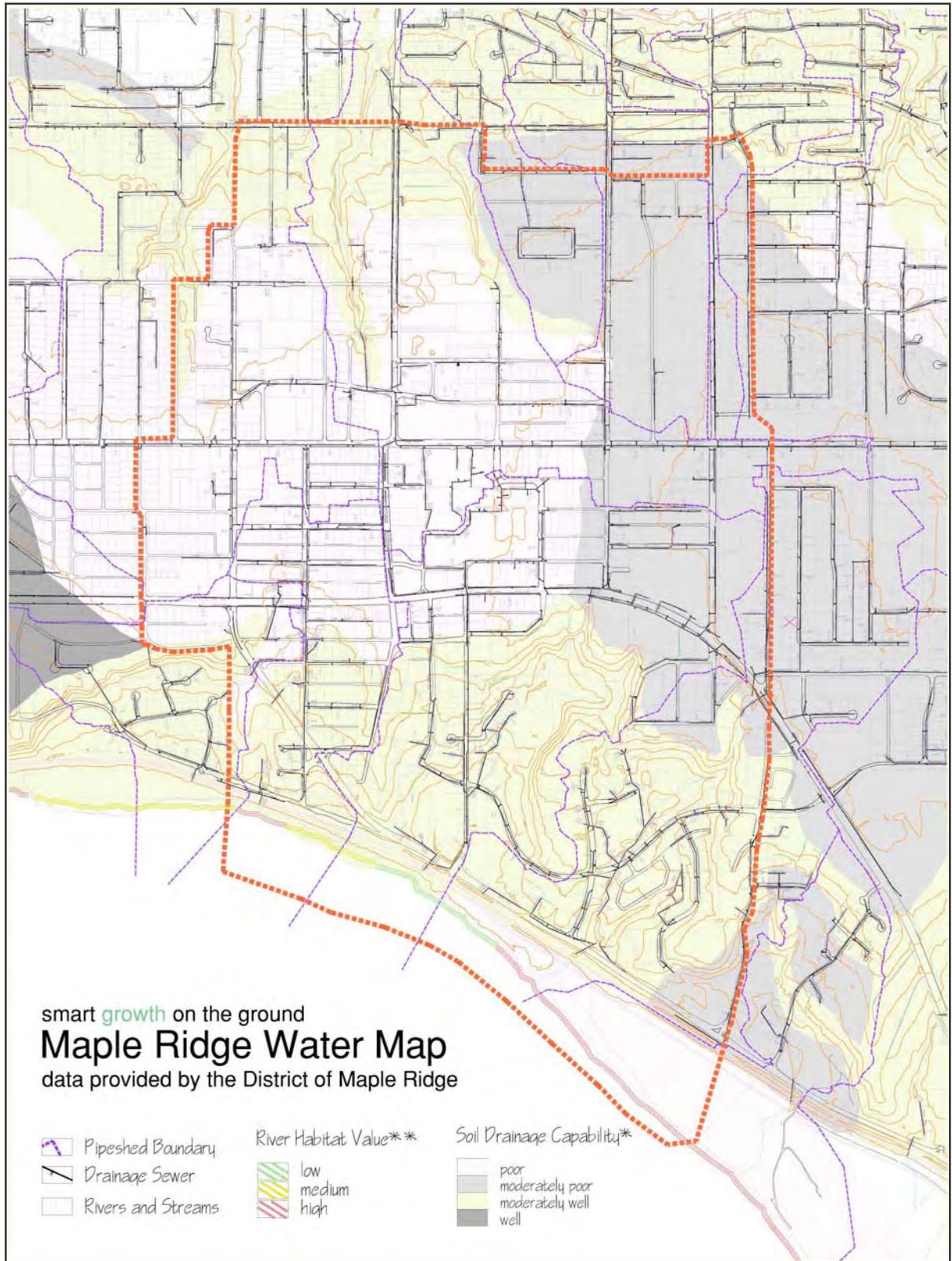


Figure 2.4 Maple Ridge Town Centre Water Map

2.1.5 Current Land Uses

The Land Use Map shows actual, rather than designated, types of land uses in Maple Ridge Town Centre and informs decisions regarding where and how to integrate the social and physical fabric of the community. Current land uses shown are civic, institutional, parks, schools, historic sites, vacant lots, and right-of-ways in Maple Ridge Town Centre (**Figure 2.5**).

These uses represent the pattern of open space, underdeveloped areas, and publicly owned properties that have the greatest potential to immediately support the goals identified in the charrette process. Schools and parks, for example, can provide the basis for a network of green spaces and corridors; vacant lots can be targeted for infill development; and historic places can be preserved and connected to transit or pedestrian networks.



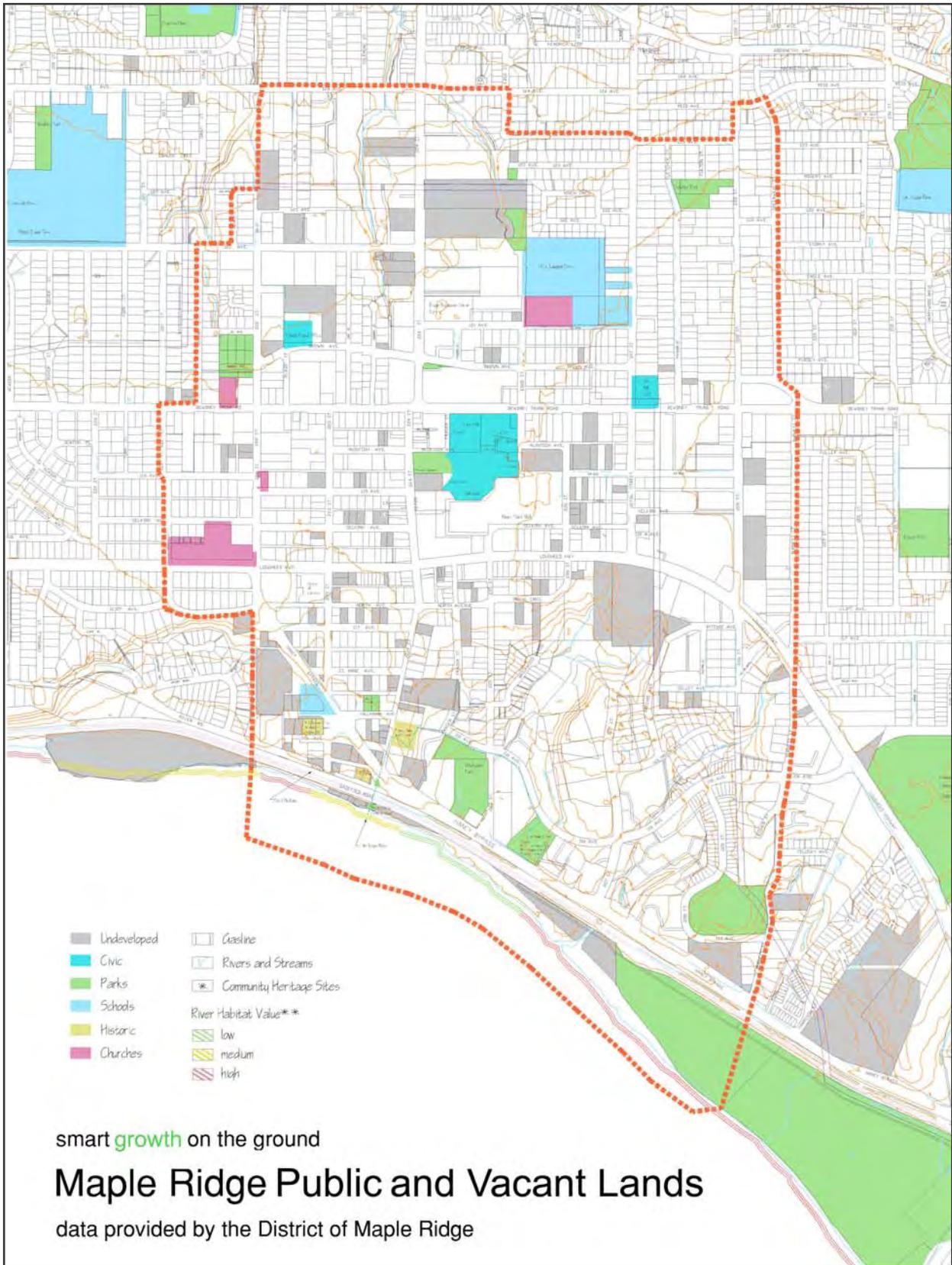


Figure 2.5 Maple Ridge Town Centre Public and Vacant Lands

2.1.6 Official Community Plan

The Official Community Plan (OCP) indicates land use designations that have been assigned by the District through public consultations. These designations characterize the land use that the Municipality would like to see over the next 20 years or more, and served as a point of reference in the charrette process (**Figure 2.6**).

The OCP for Maple Ridge Town Centre indicates the District's intention to create a concentrated commercial district surrounded by medium to high density housing, interspersed by small parks, conservation areas protecting riparian zones, and designated historic places.



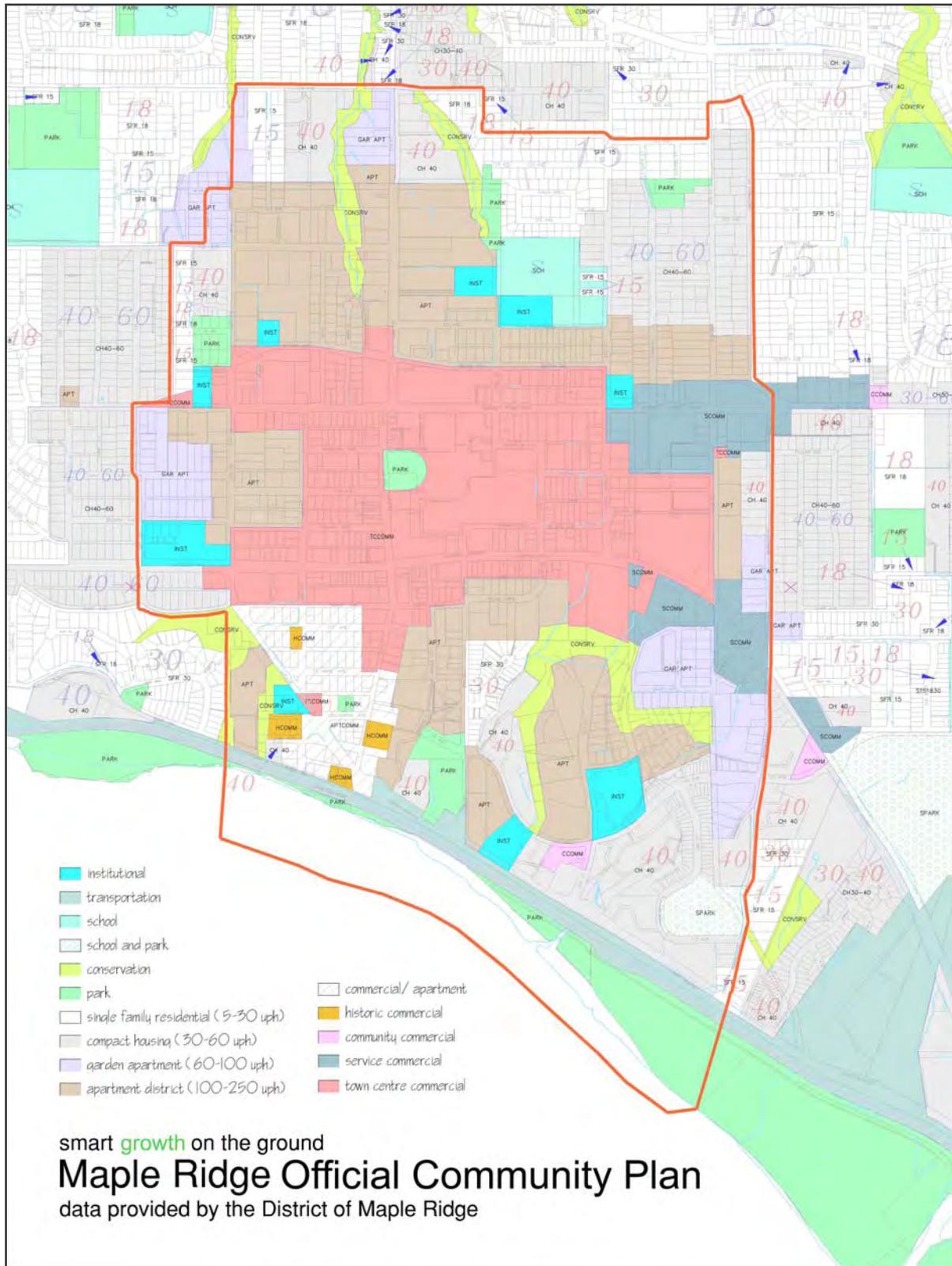


Figure 2.6 Maple Ridge Town Centre Official Community Plan



2.2 Background Assumptions and Targets

Research was conducted on transportation, water consumption, rainwater management, energy management, and residential and commercial development opportunities in the Maple Ridge Town Centre. This research was compiled into Technical Bulletins, and informed the targets and design elements recommended in the Design Brief. The following contains summary points from the Technical Bulletins, which are found in Appendix D.

The targeted research and input from stakeholders were used to inform the design guidelines that appear in the Design Brief. The following issue areas describe the background assumptions and targets that support the SGOG Guiding Principles and comprise the Brief.

2.2.1 Population and Density

Currently, the total population of Maple Ridge is about 66,300 (2001), and it is growing rapidly. By 2021, the population is projected to increase by 27,400 to 93,700¹. The current population of the Centre is 8,050. For the purposes of this charrette, we proposed a target for the Centre that reflects an increase by approximately 50% of the total projected population for Maple Ridge.² (50% of 27,400 = 13,700. 8050 + 13,700 = 21,750.)

This target population reflects the status of the Maple Ridge Centre as one of eight regional town centres defined by the GVRD's Livable Region Strategic Plan (1996). Like the other regional town centres, the Maple Ridge Centre is anticipated to accommodate a greater share of regional future growth as compared with other developing areas. Focusing development within the town centre will offer a wider range of jobs, housing, transportation and other services, enabling people to live, work and play within Maple Ridge³. This responds to public support for increased density as well as market projections.

Based on this assumption, our target population increase for the Centre for 2021 is 21,750.

With a land area of 294 hectares (727 acres), the resulting density of the Centre as projected at 70-100 persons per hectare (28-40 persons per acre).

2.2.2 Residential Development Opportunities in Maple Ridge

Social sustainability issues include the requirement to ensure that all community members have access to housing that meets their needs, and the requirement for a community to reflect a diversity in age, economic status, and life stage. To achieve this,



housing must be affordable for as many people as possible.

Residential opportunities projected from existing conditions in Maple Ridge Town Centre (that is, without responding to SGOG principles) are 150 to 200 apartment units per year, and 150 to 250 townhouse units per year. To achieve general smart growth planning objectives, the Centre would need to capture very high shares of both apartment and townhouse development projections. Refer to Appendix D, Technical Bulletin number 5, for more information on projected residential development opportunities.

The financial viability of residential development in the short term (approximately 5 years) within this projection includes wood frame apartments and townhouses. Redevelopment of existing housing in the short term, under current market and policy conditions, is not viable. In the short term, new residential development will be focused on the vacant sites. Concrete development will not occur. The key for developers in this scenario would be acquiring sites at an appropriate price and managing construction costs.

New housing units by type are estimated (for 2021) for Maple Ridge District as follows: single family – 5400-7300 units; townhouse/attached – 3400-5300 units; apartment – 3400-4350 units (totalling 12,200-16,950 units).⁴

If we assume that half of these new units will be located in the Centre (to support the above target of locating approximately 50% of the population increase in the Centre), then we estimate that between 6,100 and 8,475 units should be located in the Centre. To meet the target of increasing density in this area, the plan should aim to locate between approximately 6,000 and 8,000 units in apartment, ground-oriented units, and infill mixed use development, in the Centre.

2.2.3 Commercial Development Opportunities in Maple Ridge

Approximately 65% of the Maple Ridge labour force is employed outside of the municipality.⁵ This requires a daily commute that congests roads, and empties the community of much of its workforce.

Commercial, office and industrial forecasts suggest that significant demand will occur by 2021, requiring an increase in space devoted to these uses.⁶ The investment of businesses in the community will improve the local economy by keeping wealth within the community, and the increase in local jobs will result in less money and time being spent on commuting. Local jobs have the additional benefit of allowing us to spend more on other pursuits, including recreation, education, arts, and being with our families. The Plan should aim to create between 0.25 – 0.75 new

jobs for every new dwelling unit in the Centre. Commercial opportunities projected from existing conditions would see retail and service needs largely met by new development to the west outside of the Centre along Lougheed Highway. Maple Ridge Town Centre retailers will face increasing competition, but will continue to be attractive to nearby residents and residents to the east. New retail development is financially viable on vacant sites, but only at relatively high lease rates. Therefore, new development will only occur in the mixed-use areas.

2.2.4 Providing options to the Automobile

Currently in Maple Ridge, the automobile is the dominant mode of transportation, with transit measuring 4% of all trips, and walking and biking at 12% of all trips. The average household vehicle kilometres travelled (VKT)⁷ is 84.8 (per weekday), and the average number of vehicles owned per household is 1.2.

Currently, there is a need for more and better transportation options in Maple Ridge, including transit improvements, bike routes, pedestrian corridors, as well as the possibility of an internal transit/shuttle service. Currently, transit use in the Maple Ridge/ Pitt Meadows area is small-scale and infrequent. In the afternoon peak period, only 7% of trips to and from these areas are by transit, and of this, a significant proportion is made by the West Coast Express.⁸ However, projected residential growth in the Maple Ridge Town Centre will increase density to a level that will support frequent transit services within a reasonable walking distance.

Similarly, due in most part to the three major east-west highways running through the Centre, pedestrian sidewalks and paths- where they do exist- are disconnected and unclear and therefore pedestrian, bicycle and other (non-automobile) multi-modal means of travel are greatly reduced.

The projected future condition of Maple Ridge Town Centre, which assumes the application of sustainability principles, suggests that with increased density, more local jobs, more accessible transportation, and walkable/bikeable destinations, there could be 40% less vehicle ownership per household, 52% less VKT per household, and 20% more PKT (pedestrian kilometres travelled) per household.

The plan should aim to reduce VKT by 40-60% through an increase in density, increase and diversification of shops and services, increase in transportation options, increase in connectivity, and an increase in local jobs. Additionally, the plan for Maple Ridge Town Centre should aim for 40-60% of travel in the Centre to be by modes other than the single passenger vehicle.

Demand for office space in the Centre at 5,000-10,000 sq ft. per



year for the next 10 to 20 years will increase jobs in the Centre. Providing a sufficient supply of jobs within the Centre can ensure that as many residents as possible are able to work close to home and reduce the need to commute to other communities. Employment growth is proposed to be focused in the Maple Ridge Town Centre, and in Maple Ridge Industrial Park.⁹ Refer to Technical Bulletin 1.0 for more detail. Transit frequency is scheduled to greatly improve over the next one to five years as delineated in Translink's Area Transit Plan, and projected residential growth in the Maple Ridge Town Centre will increase density to a level that will support frequent transit services within a reasonable walking distance. Refer to section 4.5 for more detail.

2.2.5 Rainwater Management and Water Consumption in Maple Ridge

Maple Ridge Town Centre currently converts 55% of rainfall to surface runoff, due to the largely impervious surface characteristics of this urban area. The "natural condition" of this area (that is, prior to any land development) would have produced only negligible runoff, if any at all. To approximate this natural condition in what is now a developed area, strategies are needed that will reduce runoff. Limiting rainwater runoff to 10% is an effective way to achieve a water balance that approximates pre-development situations, and which therefore limits the negative impact of runoff on water courses and their habitats. The more water we return to the natural hydrological cycle, the less impact is made on natural systems, and we save more tax money from paying for water and sewer services delivered by the Municipality, the Greater Vancouver Sewerage and Drainage District (GVS & DD) and the Greater Vancouver Water District (GVWD). The Water Balance Model is an internet-accessible tool that aids in the understanding of how this 10% runoff goal can be achieved, and this tool was used to model the Maple Ridge Town Centre.

Impervious surfaces often cover up to 90% of urban areas, but it is possible to dramatically reduce the detrimental impacts of urban stormwater by capturing runoff where it falls and using a variety of infiltration techniques. Introducing pervious surfaces and infiltration techniques is recommended for new commercial and mixed-use projects and redevelopments in the Centre. Additionally, using less water in total, capturing and using rainwater, and reusing greywater for non-drinking purposes, will greatly increase water efficiency. The less water removed from the natural hydrological cycle, the less impact is made on natural systems, and more tax money is saved from paying for water and sewer services delivered by the GVRD.

Existing land use types in Maple Ridge Town Centre were used to determine proportions of pervious and impervious land cover. These were then applied to the WBM tool, where it was determined that:

- 10% runoff target (90% infiltration target) can be achieved through an integrated strategy of capturing half of all urban rooftop runoff in green roofs and directing the rest to swales and infiltration areas, and by directing road and parking lot runoff to swales (10% of rights-of-way)
- There is a benefit in incremental 'small step' measures such as reducing pavement widths, creating landscape strips between curbs and sidewalks and increasing canopy cover

In the GVRD today, the average resident uses 325 litres of water per day, equaling a billion litres used every day in the Lower Mainland. Therefore, it is apparent that reducing water demand and wastewater generation would yield significant environmental and financial benefits to municipalities.

The Concept Plan should aim to reduce potable water use per capita by 40-60%. Such reductions, while seemingly dramatic, can often be achieved through simple changes like the installation of low-flow showerheads.

To achieve these benefits, areas of use and strategies were identified:

Indoor Use

- 30% less water used indoors by installing water efficient appliances (6L flush toilets, low flow shower heads, water-efficient dishwashers, etc.)

Outdoor Use

- 20-50% less water used outdoors, through limiting irrigation needs, infiltrating rainwater, capturing water for reuse

Density

- Multi-family residential dwellings consume 14-21% less water than single family dwellings

Metering

- Changing from a flat-rate water system to a metering system in Maple Ridge is expected to result in 35-40% less water use

Additionally, the Plan should aim to reduce impacts to streams, through the use of low impact storm drain features and related infrastructure in new or rebuilt public areas and buildings. For example, the Water Balance Model, as the name suggests, seeks to emulate the natural balance between watershed performance and stream flow to maintain habitat integrity.



2.2.6 Energy Management in Maple Ridge

Sustainable energy use has a variety of positive benefits. Conserving energy puts less strain on available resources, and lessens pollution and environmental damage caused by energy production. When clean and non-invasive sources are used instead of fossil fuels and large scale hydro-electric, greenhouse gas emissions are reduced and water-based ecosystems remain intact. When local sources of energy are used, communities are self-sufficient and in greater control over their own resources. When energy is produced at the block or building scale, individual consumers can add any surplus energy to community resources, possibly for an incentive. And when a variety of energy sources are used, there is increased security in the availability of those resources.

The GVRD's Sustainable Region Initiative Energy Issue Group calls for reducing energy use and maximizing recovery, deriving energy from clean sources, and saving electricity for high-grade purposes. The Energy Plan is in part a response to the fact that BC Hydro is near capacity, and that the price of natural gas has doubled over 5 years. It is also in response to energy use habits of GVRD residents: 15% of all energy use is in homes, 10% is in commercial buildings, and 8% is in auto commuting (totalling 33% of all energy use).¹⁰

There are many energy savings strategies that can be employed in existing communities, including the Maple Ridge Town Centre:

- Smart design (R-2000, Power Smart and C-2000 programs)
- Advanced technology and new technology readiness
- Energy recovery and recycling
- Compact, mixed-use development (which is inherently more energy efficient)
- Block and district energy systems (made feasible with compact, mixed-use development)
- Parcel energy systems (such as geexchange for heating, cooling and hot water)

The Maple Ridge Town Centre Concept Plan should aim to reduce total energy consumption of new buildings and of transportation (on a per capita basis) by 40-60%. Most existing buildings are highly inefficient users of energy so efficiency gains on this order can be achieved for little or no extra cost. Also, doubling the residential density in the Centre while adding necessary services at hand will lead naturally to a 40-60% reduction in per capita car trips, as residents are less dependent on their cars than those in low density suburban areas and more able to walk or take transit to satisfy daily needs. Also, the plan should

investigate opportunities for local energy sources and should locate sources where appropriate within the Centre, the District, and in areas immediately surrounding the District.

2.2.7 Waste

Solid and liquid waste pollutes our land and water, and takes up space in landfills. Typical strategies of dealing with waste involve private garbage collection, keeping it out of sight, and providing some limited treatment. There are, however, alternate methods for dealing with waste.

Despite the collection of wastewater in sewers and its treatment at the Annacis Island Wastewater treatment plant, pollution still enters our rivers and oceans from these sources. Treatment at central plants is inefficient and incomplete. The GVRD's LWMP outlines policies to reduce liquid waste and effectively treat it at centralized waste water treatment facilities and does include plans for decentralized treatment facilities. The GVRD is exploring demonstration sites for alternative technologies that may, over time, be phased in. This charrette offers one opportunity to examine how Maple Ridge might effectively lead the region in this emerging area.

The plan should result in a measurable and significant decrease in per capita liquid and solid waste, in conformance with the OCP, Liquid Waste Management Plan, and regional waste management goals. The amount of solid waste we produce can be greatly reduced through a variety of strategies including reuse and recycling of inorganic materials, reduction in the use of non-recyclable materials, and composting organic materials.

¹ Demographic Analysis and Population and Housing Projection for Maple Ridge, 2001-2031. The Sheltair Group and Kelly & Associates, March 2004, p.v.

² This proposed future population distribution is in conformance with the Liveable Region Strategic Plan's definition of a Regional Town Centre (p.11). Also refer to Appendix D of this document, Technical Bulletin number 5 for more information on projected residential development opportunities in Maple Ridge.

³ Liveable Region Strategic Plan, GVRD, January 1996. "The Liveable Region Strategic Plan is a policy of the GVRD Board of Directors. It will be implemented through the actions of the GVRD in the delivery of regional services, and through partnerships with GVRD member municipalities, other Lower Mainland local governments, the provincial government, the federal government and other organizations".

⁴ Summary of Preliminary Market and Financial Analysis, Coriolis, May 2004.

⁵ As stated in the *Community Profile (1996-2004 The District of Maple Ridge)*.

⁶ Summary of Preliminary Market and Financial Analysis, Coriolis, May 2004, and Planning for Commercial and Industrial Development: A Presentation to District of Maple Ridge, G.P. Rollo & Associates, Ltd. Land Economists, April 26, 2004.

⁷ VKT measures the average kilometers of vehicle travel per household per day. Density, land use mix and street pattern influence VKT. From Sustainable Urban Landscapes: Neighbourhood Pattern Typology, Condon, Patrick, et al. The University of British Columbia James Taylor Chair in Landscape and Liveable Environments for the Sustainable Development Research Institute, 2002.

⁸ [Http://www.translink.bc.ca/Area_Transit_Plans/Maple_Ridge_and_Pitt_Meadows.asp](http://www.translink.bc.ca/Area_Transit_Plans/Maple_Ridge_and_Pitt_Meadows.asp).



⁹ As stated in Translink's Maple Ridge-Pitt Meadows Area Transit Plan: Final Summary Report p. 5, July 2004.

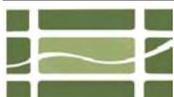
¹⁰ GVRD Sustainable Region Initiative Phase 2 Energy Task Group, Sustainable Energy Framework May 28 2003. <http://www.gvrd.bc.ca/sustainability/SRI-IssueGroupReports/reports/Energy%20Report.pdf>

As part of the GVRD's Sustainable Region Initiative, a number of task groups, including an energy group, involving representatives from organizations outside of the GVRD, examined key issues related to sustainability and prepared discussion papers for the information of the GVRD Board.

MAPLE RIDGE TOWN CENTRE

Concept Plan

PART B: CONCEPT PLAN



MAPLE RIDGE TOWN CENTRE

Concept Plan

Section 3.0 Elements of the Plan



3.0 Elements of the Plan

Overview of the Concept Plan

The Maple Ridge Town Centre Concept Plan incorporates sustainability principles and best practices into a specific design and development approach for the project area. **Figure 3.1** depicts an illustrative plan of the proposed Concept Plan for the Maple Ridge Town Centre.

Some of the major elements of the Plan, which are described in greater detail and character in this section and section 4.0, are as follows:

- A vibrant Centre where residents live within a five-minute walk from shops, services, recreation and cultural events, and where local job opportunities are provided by potential mixed use, flexible, and live/work developments
- Greater connectivity through an integrated transportation network that accommodates cars, pedestrians, bikes, transit and other modes
- “Greener” building guidelines for energy and water efficiency and “smarter” road construction to infiltrate water and improve water quality
- A range of housing options such as secondary suites, ground-oriented townhouses and low-rise apartments, with higher density situated in the downtown area
- Enhancement of natural landscapes such as stream corridors and the Fraser River waterfront for recreation, habitat and aesthetic values, and preserve river and mountain view corridors





Figure 3.1 Maple Ridge Town Centre Concept Plan

3.1 Land Use Budget

A land use budget is a summary account of the type and distribution of land uses within a total site area (**Table 3.1**). Refer to **Figures 3.2a, 3.2b, and 3.2c** for land use budget summary maps.

Land Use	Area	
	Hectares	Acres
Single Family Residential (including Heritage areas)	33.9	83.7
Multi-Family Housing	47.4	117.1
Apartment District	38.2	94.3
Mixed Use, Commercial Optional	3.9	9.6
Live Work	3.1	7.6
Mixed Use, Commercial Required	21.4	53
Town Centre Commercial	14.8	36.5
Institutional/Civic	7.3	17.9
Parks and Open Space	35.8	88.5
Greenway	4.5	11.1
Roads and Rail ROW	84	207
Total Site Area for the Maple Ridge Town Centre	294	727

Table 3.1 Land Use Budget for the Maple Ridge Town Centre Concept Plan

3.1.1 Population and Housing Growth

The population of the District of Maple Ridge was approximately 66,300 in 2001, and is expected to reach approximately 93,700 persons in 2021. In order to accommodate at least 50% of this new population in the Maple Ridge Town Centre, between 6,000 and 8,000 new units must be created in the Centre.

Given the housing types and redevelopment opportunities contemplated in the Land Use Plan, the Centre can accommodate approximately 6,735 new housing units at full build out in 2021. There are currently 4,330 housing units in the Centre, for a potential total of approximately 11,065 housing units in the Centre in 2021.

3.1.2 Density

Throughout the Maple Ridge Town Centre, densities range from



low (20 to 25 units per gross hectare, or 8 to 10 units per gross acre) to high (over 62 units per gross hectare or 25 units per gross acre).

Given the total area of 294 hectares (727 acres) and 11,065 total potential housing units, the total gross density of the Centre at build out (in 2021) could be 37.6 units per hectare (15.2 units per acre), or between 70-100 persons per hectare (28-40 persons per acre).

3.2 Land Use Designations

This section provides a brief introduction to the purpose and intent of the land use categories shown in the Maple Ridge Concept Plan Land Use Proposal, **Figure 3.3**. In general, the land use designations allow for more residential development, a greater mix of housing types and land uses, and ultimately, a more vibrant and revitalized downtown area. More detail on the form and character of proposed development can be found in section 5.0.

3.2.1 Single Family Residential (20-25 uph /8-10 upa) Low Density

Currently, single family residential density in the Town Centre is very low compared to Fraser Valley Standards. The Concept Plan proposed low density residential development that accommodates infill and densification of existing single family neighbourhoods at a density between 20 and 25 units per gross hectare (between 8 and 10 units per gross acre). This stands in contrast to the Maple Ridge Official Community Plan density of between 5 to 30 units per gross hectare (2 to 12 units per gross acre). New units such as coach houses, secondary suites, and townhouses can add housing choices to these areas on a lot-by-lot basis, without altering the essential character of the neighbourhood.

3.2.1a Heritage Areas

Maple Ridge contains a number of historic neighbourhoods, one of which is located in the Maple Ridge Centre. In this unique low density area, special emphasis must be placed on the design and character of infill development to ensure compatibility with the historical character of the surroundings.

3.2.2 Multi-Family Housing (25-62 uph /10-25 upa) Medium Density

Medium density residential development refers to townhouse, stacked townhouse, or other residential developments at a



Figure 3.2a Residential Land Budget Proposal



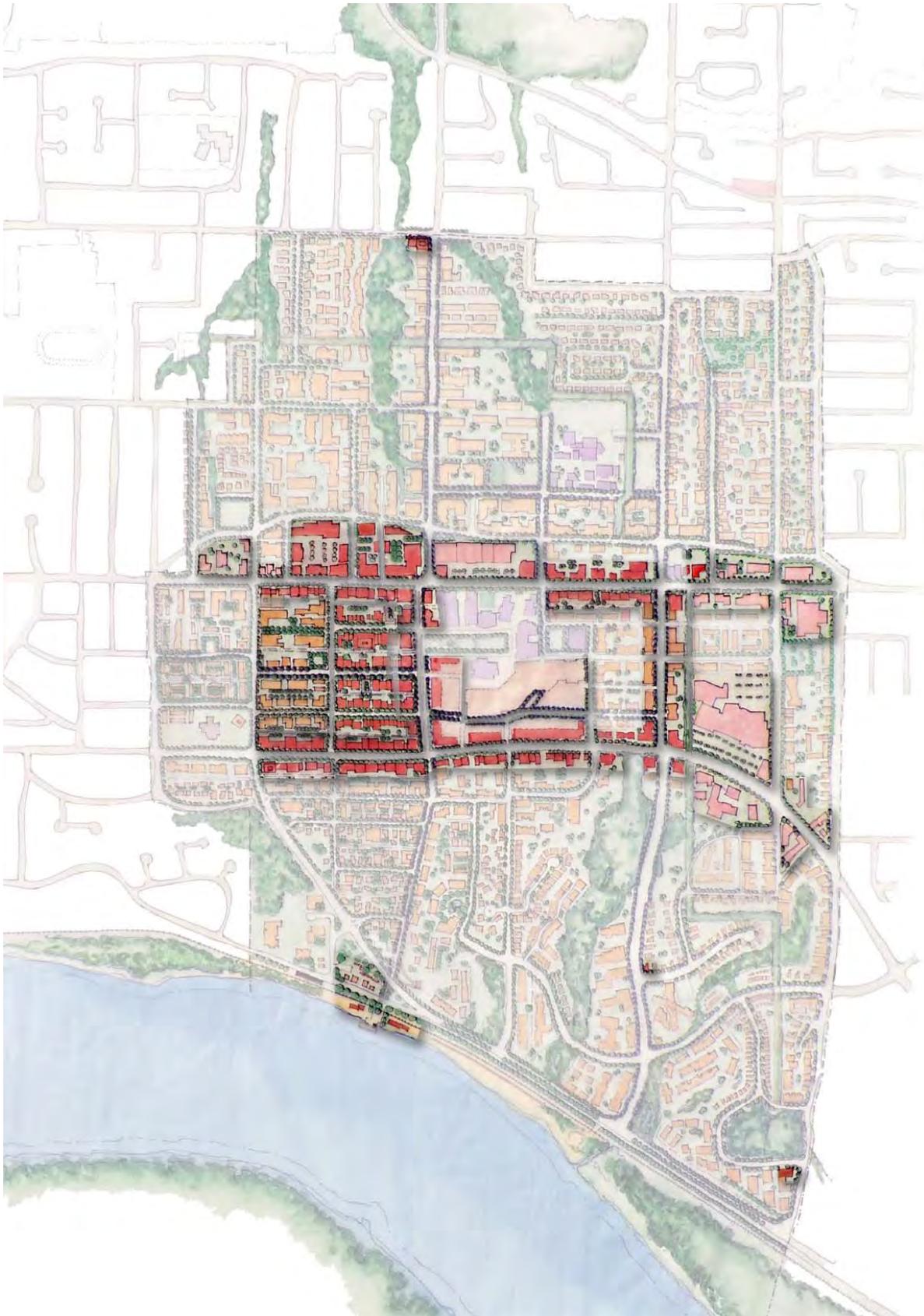


Figure 3.2b Commercial / Mixed-Use Land Budget Proposal



Figure 3.2c Parks, Conservation Areas, Greenway and Institutional Land Budget Proposal



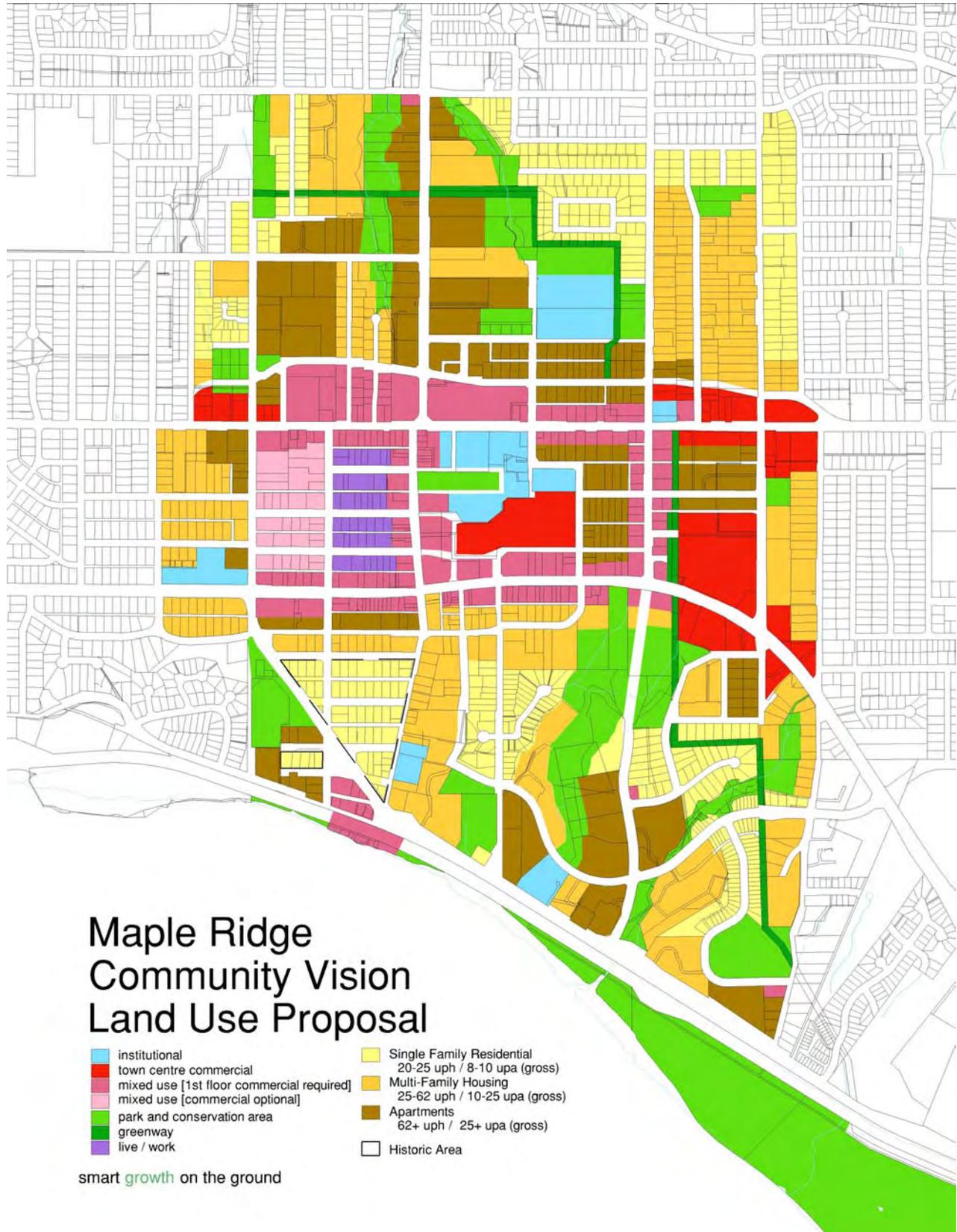


Figure 3.3 Maple Ridge Town Centre Land Use Proposal

25 units per gross acre). Medium density residential provides housing variety in the Centre, with particular emphasis on ground-oriented units. This land use is appropriate in a variety of locations throughout the Maple Ridge Centre.

3.2.3 Apartment District (62+ uph / 25+ upa) High Density

High density residential development refers to apartment units, townhouse, stacked townhouse, or other residential developments at a density above 62 units per gross hectare (above 25 units per gross acre). This land use is concentrated around the edges of the downtown area (in locations where ground floor commercial use is not appropriate), along Brown Avenue and 224th Street north of Brown Avenue, and on several existing high density projects.

3.2.4 Mixed-Use, Commercial Optional

Mixed-use (commercial optional) refers to locations where a mix of residential and non-residential uses is appropriate, both within buildings or simply along block faces. Commercial uses – specifically, ground floor retail – are not required. However, flexible ground floor space can be included to accommodate retail, office, light industrial, and live/work spaces, if market demand for these uses exists. This land use is appropriate in the downtown core area, in areas that do not front onto major commercial roads between Dewdney Trunk Road, 224th Street, Lougheed Highway, and 222nd Street.

3.2.4a Live Work Areas

Live work developments are a specific type of commercial optional mixed use, in which opportunities for home based businesses, studios, or other flexible non-residential spaces can be provided. These flexible spaces are typically located within or connected directly to individual residential units, and provide an opportunity for residents to work at home without the need for commuting. The live work designation is applied to portions of the downtown that do not front onto major commercial roads between Dewdney Trunk Road, 224th Street, Lougheed Highway, and 223rd Street.

3.2.5 Mixed Use, Commercial Required

Mixed use (commercial required) refers to locations where a mix of residential and non-residential uses is appropriate, both within buildings and along block faces. Commercial uses



are required on the ground floor and may be appropriate on upper floors according to market demand. The ground floor commercial requirement ensures that the limited amount of retail space demanded by the market is focused along key corridors. Commercial is required in mixed use areas along Dewdney Trunk Road (from 222nd Street to Fletcher Street), on 227th Street (between Dewdney Trunk Road and Lougheed Highway), on Lougheed Highway (from the gas pipeline to 222nd Street), and along 224th Street (from Brown Avenue to Lougheed Highway).

3.2.6 Town Centre Commercial

The town centre commercial land use category refers to properties with existing, predominantly one-storey commercial uses with on-site parking lots (including several local shopping centers such as Haney Place Mall and Valley Fair Mall). These commercial uses are not expected to undergo redevelopment in the near term due to the high value of the existing improvements. However, in the long term, this land use category does not preclude redevelopment with a mix of uses.

3.2.7 Institutional

The civic category applies to a variety of existing and proposed civic uses and institutions, such as Municipal Hall, the Greg Moore Youth Centre, Maple Ridge Museum, Eric Laughton School, and so on. These uses provide essential public services and focal points for community interaction and pride.

3.2.8 Park and Conservation Areas

Parks provide green space for residents, employees, visitors and other users in the urban setting. Parks provide opportunities for recreation, socialization and community gathering, as well as festivals and public events. Parks designated in the Maple Ridge Concept Plan Land Use Proposal include both existing park space (e.g. Memorial Peace Park and schoolyards), and potential future parks (e.g. new District lands on Brown Avenue and 222nd Street). Another possible park site is at 121st and Edge, which could have multi-use capabilities including playing field and community garden.

Naturalized and riparian areas are lands with considerable ecological and recreational value (typically along waterways). Their use is to be restricted to passive recreation (e.g. viewing and interpretation), although multi-use pathways can be incorporated outside prescribed "leave" areas. These areas are typically dedicated to the District during development processes.

3.2.9 Greenway

The greenway provides a safe, dedicated connection for pedestrians and cyclists from the southeast to the northwest portions of the Maple Ridge Town Centre. The greenway is located along the existing Terasen Gas pipeline right of way, and public access must be negotiated with the utility prior to use as a greenway.

3.3 Transportation

This section provides a brief introduction to the purpose and intent of the transportation elements shown in **Figure 3.4**. In general, the transportation network is intended to provide mobility using a variety of modes, including automobiles, public transit, bikes, skateboards, scooters, on foot, and so on. This plan also intends to specifically recognize the importance of and need for design which is sensitive to modes such as wheelchairs, canes, strollers, and mobility devices which are used by pedestrians with disabilities, as well as by families, teenagers, seniors, and visually impaired people. As such, this plan acknowledges that transportation design shall include strategies for universal accessibility, and that the word "pedestrian" includes this broader cross-section of the population. More detail on the form and character of the transportation networks can be found in Section 4.0.

3.3.1 Arterial Streets

Dewdney Trunk Road and Lougheed Highway

Dewdney Trunk Road and Lougheed Highway both serve dual purposes: to accommodate through traffic, and to serve local needs. As such, traffic capacity on both routes must be maintained, although lane widths may be reduced in order to accommodate wider sidewalks and other amenities such as street trees, and infiltration of rainwater in parking lanes.

3.3.2 Pedestrian Friendly Streets

Pedestrian friendly streets can facilitate connectivity between residents and shops, services, natural areas and major destinations, and are meant to enhance the experience of pedestrian and multi-modal transportation forms. All streets will contain provisions for pedestrian accessibility and all pedestrian streets are green streets (see 3.3.3). Some streets are pedestrian-prioritized: these "high streets" are the north-south roadways of Edge and 224th, and provide important linkages between the waterfront, civic core, and natural features



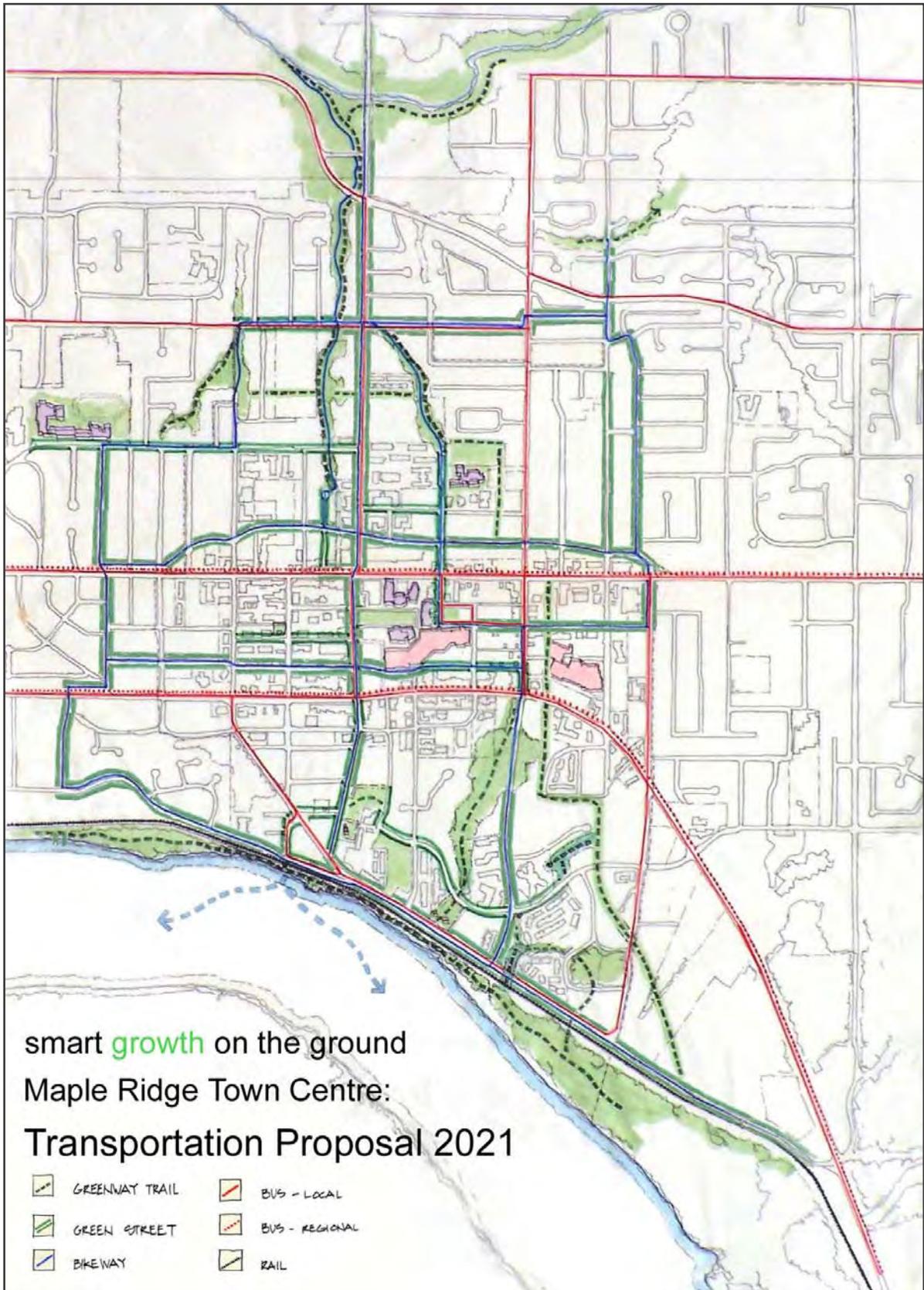


Figure 3.4 Maple Ridge Town Centre Transportation Proposal

to the north. Edge Street could feasibly be lined with a double row of trees on both sides of the street and wide sidewalks to allow for multi-modal travel. Likewise, 224th Street could accommodate a variety of users, including pedestrians, cyclists, and drivers. Traffic calming measures from the District's Traffic Calming Plan should be employed as appropriate to prioritize pedestrian mobility on these "high streets", and techniques for natural infiltration of rainwater should be incorporated. Special streetscape elements may also be considered to differentiate these "civic spines".

3.3.3 Green Streets

Green streets feature green infrastructure designs in order to manage rainwater. This is achieved through a combination of street trees and plantings, gravel parking verges, "country lanes", vegetated roadside swales, and traffic calming measures using planted bulb-outs and roundabouts. The roadway section also includes travel and parking lanes, all of which by various means infiltrate rainwater. Green streets form a network within the broader street grid that connect civic, park, and natural feature destinations. Many green streets also incorporate bike lanes, forming the backbones of intermodal connectivity (**Figure 3.4**). Brown Street is an excellent example of a green street that incorporates a bike lane along with these other special features. Streets north of Dewdney Trunk Road should have more extensive green infrastructure implementations due to their lying within the sensitive Alouette River watershed. Such streets should be designed to ensure 90% rainwater infiltration. Green streets also feature pedestrian-scaled design.

3.3.4 Other Local Streets

Local streets primarily serve neighbourhood traffic. The form and character of these streets will vary depending upon local circumstances. In general, streets should accommodate a variety of users, including pedestrians, cyclists, and drivers. Traffic calming measures from the District's Traffic Calming Plan should be employed as appropriate, and techniques for natural infiltration of rainwater should be incorporated.

3.3.5 Public Transit Network

Maple Ridge is currently served by a network of local and regional bus routes, a commuter rail line (West Coast Express) and an automobile ferry (Albion Ferry). Transit travel within Maple Ridge is provided by a number of local routes while access to adjacent communities is provided by one regional route (#701) and the West Coast Express. The #701 provides regular daily connections between Maple Ridge East, Haney and Coquitlam Station, while the West Coast Express connects Mission with downtown Vancouver (via Maple Ridge) during the



weekday peak periods. Haney Place is a major focal point for transit services serving the Maple Ridge area.

In 2003, TransLink undertook an Area Transit Plan (ATP) for the Maple Ridge/Pitt Meadows area, the sixth of seven planned ATPs to be developed by TransLink since 1999 in partnership with municipalities in the GVRD. The current Maple Ridge/Pitt Meadows ATP (2004-2008) identifies short to medium term service improvements (one to four years) and longer term (to five years) transit priorities for the two communities, including both local and regional improvements.

The ATP, developed in consultation with the public and municipal representatives, supports TransLink's Three Year Transportation and Financing Plan (2002-2004), the new Three Year Plan (2005-2007) and Ten Year Outlook to 2013. These plans establish the actions that TransLink will take over the next decade to address transportation needs in Greater Vancouver.

Major highlights from the Maple Ridge/Pitt Meadows ATP and associated TransLink projects include the introduction of:

- new Community Shuttle (small, neighbourhood friendly sized buses) network to serve the local Maple Ridge/Pitt Meadows area and Maple Ridge Town Centre
- new regional Express Bus route connecting Maple Ridge Town Centre with Braid SkyTrain Station via the Mary Hill Bypass
- new Golden Ears Bridge over the Fraser River connecting Maple Ridge/Pitt Meadows with Langley and Surrey
- new regional routes connecting Maple Ridge Town Centre with Langley Centre and Maple Ridge Town Centre with Surrey City Centre (upon completion of the Golden Ears Bridge)
- expanded TrainBus service between Maple Ridge Town Centre and downtown Vancouver to include midday and weekend trips
- new Dial-a-Ride service to provide local service during evenings and weekends from Maple Ridge Town Centre
- a new West Coast Express station to serve the Albion/Cottonwood area of Maple Ridge
- a new off-street transit exchange at Haney Place to replace the current on-street transit exchange at Haney Place

Potential opportunities not currently incorporated in the plan include:

- bus service connecting Maple Ridge with Mission
- Albion passenger-only ferry service to Langley
- expansion of West Coast Express to include more train trips

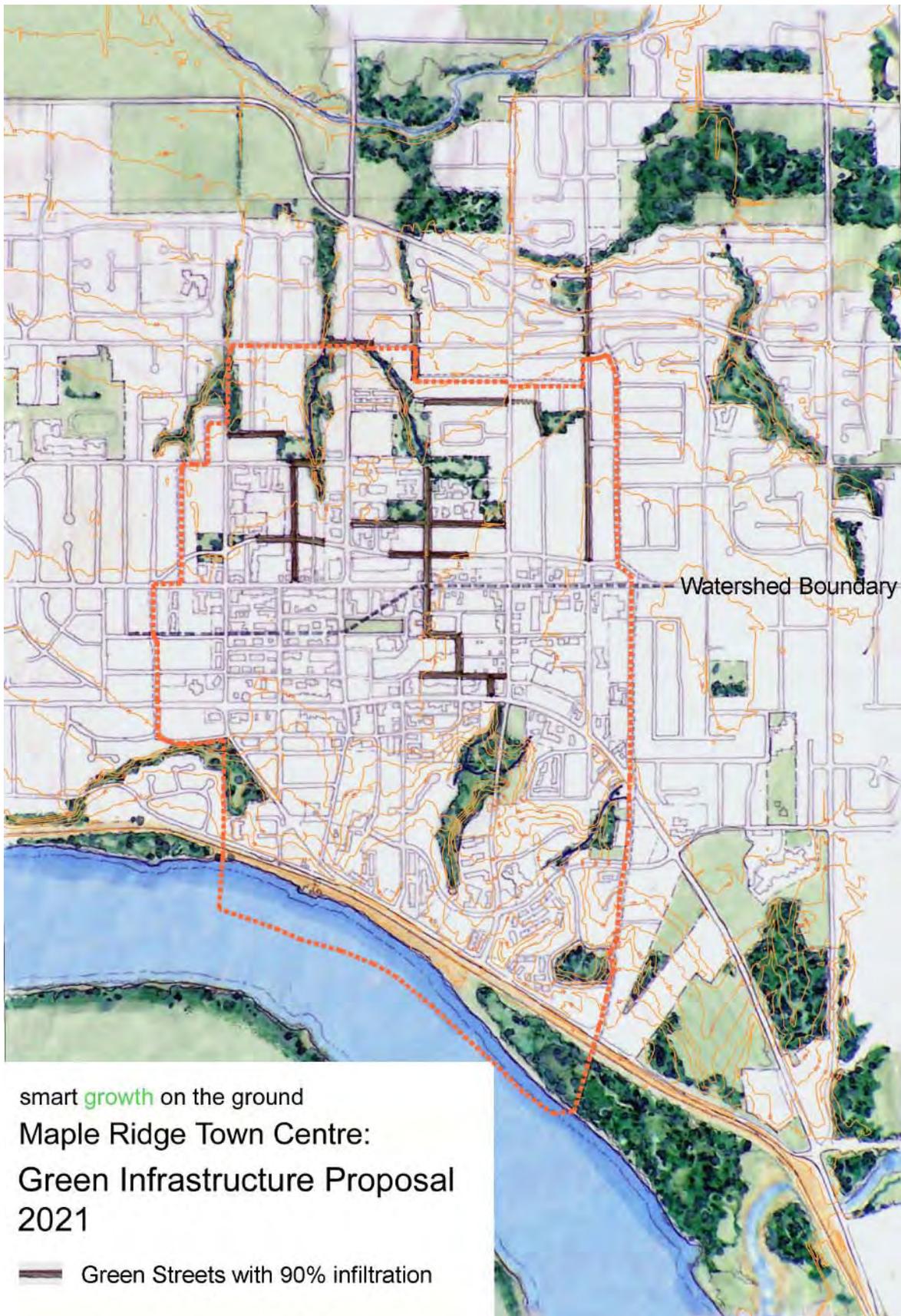


Figure 3.5 Maple Ridge Town Centre Green Infrastructure Proposal

A detailed summary of the Maple Ridge/Pitt Meadows Area Transit Plan is located on the TransLink website at http://www.translink.bc.ca/Plans_Projects/AreaTransit/area_transport_plans/mapleridgeandpitt.asp

The 2021 Maple Ridge Transportation Plan does not contradict the Area Transit Plan.

3.3.6 Greenways

Greenway trails are located in naturalized and riparian areas, and are intended to provide access alongside and through natural features without damaging the ecosystem. Multi-use greenway trails can be incorporated outside prescribed "leave" areas along riparian areas. Such trails allow users to view and move alongside and across riparian areas without damaging the ecosystem. There are several opportunities for such multi-use trails spreading north from the study area along the Alouette River tributaries. There is also a significant opportunity in the river valley running parallel to the future route of 227th Street.

Greenways also provide habitat protection and alternate public transportation options. Together with pedestrian sidewalks, greenway trails can provide linkages to connect all major points of destination within the Centre, including the civic and downtown core, historic wharf and museums, the West-Coast Express station and bus loop, as well community parks, schools and places for youth.

3.3.7 Bikeways

A network of bikeways provides safe and convenient access for cyclists through and within the Centre. The system is composed of a combination of routes, some of which incorporate separate bike lanes. Separately demarcated bike lanes are located along Brown Street, Selkirk Ave, and the Haney Bypass east of 224th Street, 224th Street, and 227th Street. The remainder of the routes are shared with automobiles. On a larger scale, bikeways may connect with the Trans Canada Trail to provide greater regional connectivity, and may join to selected trails along the Alouette River.

3.4 Green Infrastructure

This section provides a brief introduction to the purpose and intent of the green infrastructure proposal shown in **Figure 3.5**. In general, green infrastructure is intended to provide recreational and aesthetic amenities, habitat conservation, and rainwater infiltration. More detail on the form and character of the green infrastructure elements can be found in Section 4.0.

3.4.1 Parks and Conservation Areas

Parks and conservation areas provide green space for residents, employees, visitors and other users in the urban setting. Park spaces provide opportunities for recreation, socialization and community gathering, as well as festivals and public events. Parks designated in the Concept Plan Land Use Proposal (**Figure 3.3**) include both existing parks (e.g. Memorial Peace Park, neighbourhood parks and schoolyards), and potential future park space (e.g. new District lands on Brown Avenue and 222nd Street). Another possible park site is at 121st and Edge, which could have multi-use capabilities including playing field and community garden.

Within the conservation areas, naturalized and riparian areas have considerable ecological and recreational value. Their use is to be restricted to passive recreation (e.g. viewing and interpretation).

3.4.2 Greenways

Greenways extend throughout the Centre, and run parallel to or connect with sidewalks to facilitate pedestrian and multi-modal movement within the area. On a larger scale, greenways may connect with the Trans Canada Trail to provide greater regional connectivity, and will join to existing trails along the Alouette River. Greenway trails provide opportunities for active and passive recreation, natural and social interpretation through public art, as well as providing rainwater management and habitat.

The group proposed a major north-south greenway which follows an existing B.C. Hydro right-of-way, and extends from 222nd at 123rd, to 113th at Burnett. This greenway will function in part as green infrastructure to absorb and channel rainwater to infiltration pockets within larger green spaces like park and school sites and naturalized areas. This function becomes increasingly important in the area north of Dewdney Trunk Road.

3.4.3 Green Streets

Roadways provide connections between natural features, parks, and other uses. In addition, street trees and natural infiltration of rainwater ensures that these streets serve a function as green infrastructure. Measures to control the volume and protect the quality of runoff north of Dewdney Trunk Road are particularly desirable.

3.5 Energy and Water

Energy use is just one indicator of the sustainability of buildings.

The whole “green building” concept captures many other factors, such as land use, water use, waste, healthy indoor environments, greener materials, low maintenance, etc. Many of these factors are more apparent to people than energy. The consensus in the charrette group was that the most effective strategy for promoting energy and water efficiency is to promote green buildings as better quality investments, providing better comfort, healthier environments and lower future costs. This section provides recommendations for alternative energy use, including methods for conserving and reusing energy and water resources, within the Centre.

3.5.1 Performance Standards

Strategies for Achieving Targets at the Building and Block Level:

Residential

- R-2000: Adopting the well established R-2000 technical standard produces townhomes and apartments that perform 30% better than a code building.
- Residential commuting: Commuter trips in Canada use approximately half as much energy again as what is used in homes. Reducing commuter trips by using Smart Growth strategies can reduce the “whole system” energy used in homes.

Commercial

- CBIP. The federal Commercial Building Incentive Program provides funding for design and energy studies that reduce the energy consumption of large, new buildings to at least 25% better than code. It is also possible to apply CBIP to multi family residential buildings. Recent CBIP projects are performing at about 32% better than code.
- C2000. Natural Resources Canada provides limited support for advanced commercial buildings that are designed to perform 50% better than code. C-2000 is usually pursued with CBIP funds (above).
- LEED™ is a comprehensive green buildings rating system. Though LEED™ does not contain an energy target, a recent survey of LEED™ buildings shows that they perform approximately 40% better than a MNECB (Model National Energy Code of Canada for Buildings) building.

Setting Targets

Energy

- Energy use reduction target of 40-60% for residential and commercial buildings

Potable Water

- Residential water use reduction target of 40%. The reference for water reduction is the GVRD's residential per capita water use figure of 325 L/day.

Waste

- The GVRD solid waste reduction target for 2000 was 50% reduction over 1990 volumes. 48.3% was achieved. The proposed Maple Ridge target should result in a measurable and significant decrease in per capita liquid and solid waste in conformance with OCP, Liquid Waste Management Plan and regional waste management goals. The reference for solid waste is the GVRD's mixed waste volume year 2000 figure of 0.71 T/capita/year.

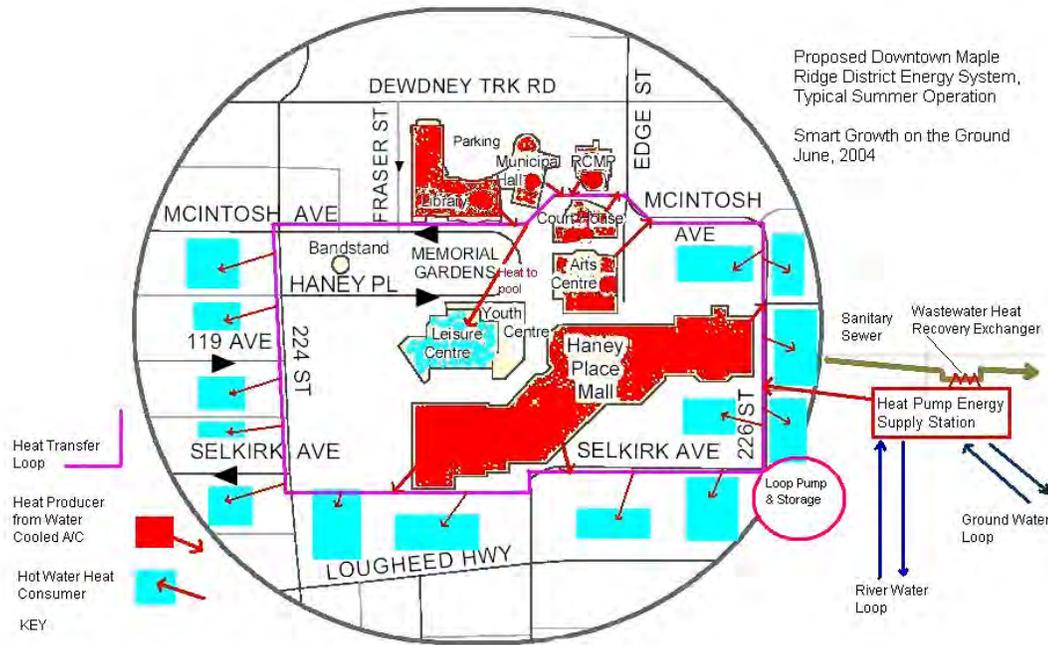
3.5.2 District Energy System

District energy systems can capture and reuse waste heat from sources such as cooling of commercial/institutional buildings and coolers in food stores. Reusing this heat in residential buildings can reduce energy consumption as a whole, and produce a marketable utility. It is estimated that half the domestic hot water for about 500 apartments in the immediate downtown core can be heated by capturing waste heat from adjacent buildings. This represents about a 12% to 16% energy use reduction for these apartment units. It also represents energy savings and economic benefits for the "producer" buildings. District energy systems can also make advanced technologies such as ground source heat pumps (also called geothermal systems) affordable for residential use because the system cost is distributed among many dwellings.

A ground source heat pump is approximately 3 times more efficient than electric space heating or water heating. It can therefore reduce residential energy use by 20% to 35%. A current proposal to use a large, ground loop heat pump system for a 140 unit apartment building in Vancouver's Coal Harbour indicates that the incremental cost of the system is about \$3,000 per apartment. This is only about 10% of the system cost for a single, detached home¹.

District heating systems are currently being installed at a scale similar to Maple Ridge Town Centre in North Vancouver. District heating systems have existed for over 80 years in downtown Vancouver.





Proposed Downtown Maple Ridge District Energy System, Typical Summer Operation

Smart Growth on the Ground June, 2004

Figure 3.6 Downtown Energy Diagram

3.5.2a The Downtown Energy System Concept

The downtown energy system concept is inspired by the third

principle of Smart Growth- Buildings and Infrastructure are Greener and Smarter. It also follows the GVRD Sustainable Region Energy Task Force three principles:

1. Require minimum energy inputs and maximize energy recovery;
2. Derive all of the region’s energy supply from clean, low impact sources; and
3. Rationalize energy usage so that high-grade forms of energy such as electricity are directed for high grade purposes (e.g. computers) and low-grade forms such as waste heat are directed towards low-grade purposes such as space-heating².

The downtown energy system is a heated water loop, accessible to buildings, with very diverse capability to capture waste heat from air conditioning, refrigeration and wastewater and supply it to consumers. It also incorporates advanced heat pump technology to provide supplementary heat from very efficient sources such as groundwater loops and river water.

The general concept is two-fold:

1. Large commercial buildings, such as the shopping

mall and office buildings, reject heat from cooling systems for several months of the year. Retail food services reject heat from food coolers. Other buildings, such as residential and the civic centre swimming pool, are continuous consumers of hot water. A loop allows heat exchange between producers and consumers during times when supply matches demand.

2. Advanced technology energy supplies, such as groundwater or river water heat pumps, are expensive on a single building basis, but achieve economies on a district basis. The same hardware can also recover heat from other central sources such as the sanitary sewer system. Wastewater contains heat from washing and bathing that can be recaptured.

3.5.2b Technology Description

Commercial buildings and food coolers now use small, packaged chiller units that discharge heat to the air from electric motor driven compressors. The rooftop units for building A/C also usually heat in winter using gas, and provide ventilation. To adapt this equipment type to a downtown loop it will be necessary to install or retrofit chillers with water cooled condensers that will send heat into the loop. This type of equipment is also more efficient and much quieter than what is used currently.

Residential buildings and the swimming pool now use electric or gas water heat and space heat. To adapt this building type to a downtown loop it will generally be necessary to use a heat exchanger in each building that can extract heat from the loop. Depending on loop temperature, it may be necessary to use a water source heat pump in the building. These units are very

compact, efficient and quiet. They can provide domestic hot water and low-temperature hot water radiant heat. Generally the heat pump system is 3 to 4 times more efficient than direct electric water and space heating. The heat pump energy supply station is a central plant that will provide supplementary heat into the loop in winter when the heating demand for buildings is high and the air conditioning use is low. It can extract heat from groundwater wells or river water loops that circulate large volumes of water and produce only a slight temperature change. The circulation water is isolated from possible system contamination by heat exchangers. In addition, the station can extract waste heat from the sanitary sewer, also by a heat exchanger, and can tie in to adjacent energy systems serving other areas. Tying to other areas optimizes the exchanges between heat producers and consumers (**Figure 3.6**).



3.5.2c Economics

The capital cost of such a system is high, and will have to be considered by careful analysis of system economies and future energy price expectations. However several important synergies exist:

- Net producers of heat in summer can meter their contributions to the system and receive credits. Micro-metering for this purpose is now available and at low cost.
- Net producers (commercial) can also buy hot water for space heating very economically from the system in winter if it is sized appropriately.
- The technologies used, such as water cooled A/C condensers and groundwater-source heat pumps, are among the most efficient equipment available today. They inherently produce substantial energy savings over conventional systems that will benefit consumers and utilities.
- By careful mechanical design, the equipment can be located and sized to serve various clusters in the downtown, thereby replacing many small pieces of equipment with a few larger, more economical ones.
- The introduction of the downtown loop provides very high future flexibility for new technologies such as co-generation, fuel cells etc.

3.5.3 District Water System

From a municipal standpoint, water conservation measures make financial as well as ecological sense. By reducing water demand and wastewater generation, it is possible for municipalities to defer expensive capital investment projects for water supply and wastewater treatment infrastructure.

Wastewater includes both blackwater and greywater. Blackwater is essentially toilet wastewater. Sources of greywater are all wastes excluding toilet and food wastes, such as used laundry, shower/bath, and dishwasher water.

The charrette team proposed a district water system that works jointly with the energy system to create a heated water loop. As previously described, building energy can be derived from captured waste heat from a variety of sources, including wastewater. A district heating loop could feasibly draw upon blackwater waste heat carried through sewage pipes to provide heat energy throughout the Centre.

Proposed methods for employing captured greywater include

use for city irrigation of parks, community gardens, and planted flower beds.

Groundwater loops and river water could also be used to efficiently provide supplementary heat using advanced heat pump technology.

For more on methods to reduce residential and commercial water consumption, refer to Appendix D: Water Consumption in Maple Ridge.

3.5.4 Challenges and Opportunities

There are a number of challenges regarding the implementation of green building strategies that were identified by the charrette team. These challenges became recognized as areas of opportunity for a future action plan for a sustainable Maple Ridge Town Centre.

General Awareness and Understanding

- Promotional/educational pamphlets on green buildings and systems
- Use the existing Builders' Forum to promote green buildings ideas
- Use the existing Home Show to promote and educate on performance standards (such as R-2000) and green technologies.
- Demonstration projects to showcase green building principles and technologies
- Annual report to document the progress of building green in Maple Ridge

Real and Perceived Costs

- Financial case studies are needed to demonstrate economic feasibility
- Forecast energy and other utility costs

Developing Builders' Skills

- Showcase suppliers of green products at Builders' Forum
- Provide R-2000 training program
- Promote green demonstration projects and tours/open



houses

Administrative Load

- City staff to point interested parties to third party programs, resources and training
- Build capacity within city offices to undertake future green projects

Administrative Options

- **Voluntary.** Residential and commercial green building standards should be introduced in Maple Ridge through an active, voluntary, “education and information based” program, promoting available incentives (above) to offset additional costs. R-2000 residential and CBIP commercial are the most likely standards.

- **Municipal Projects.** Maple Ridge may pursue setting green standards such as LEED for its own municipal building projects. Leadership by the district administration will help to lead the market.

- **Mandatory.** If the municipality decides to require higher building standards than code they will have to seek legal assistance. Some municipalities have found that a “ramped-up” system works well, whereby the program starts with voluntary and light requirements that become increasingly stringent. It is likely that national and provincial energy standards will become more stringent soon. The “ramping-up” could be justified as smart preparation for this eventuality.

- **Covenants and Developer’s Cost Charges (DCC’s).** Some municipalities are experimenting with the use of covenants on developments for green features that produce a public benefit, such as reduction of load on utilities or traffic improvements. Where measurable benefits accrue to the municipality, it may be possible to adjust DCC’s or to provide density bonuses. This will become particularly viable as land values increase in Maple Ridge.

¹ Looking Deep for Heat: GEOTHERMAL I Coal Harbour Tower Taps Earth's Energy.
Wyng Chow for the Vancouver Sun - Sat, Jun 5, 2004, page G5.

² GVRD Sustainable Region Initiative Phase 2 Energy Task Group. Sustainable Energy Framework May 28 2003.

<http://www.gvr.bc.ca/sustainability/SRI-IssueGroupReports/reports/Energy%20Report.pdf>.

As part of the GVRD's Sustainable Region Initiative, a number of task groups, including an energy group, involving representatives from organizations outside of the GVRD, examined key issues related to sustainability and prepared discussion papers for the information of the GVRD Board.



MAPLE RIDGE TOWN CENTRE

Concept Plan

Section 4.0 Design Guidelines & Performance Standards



4.0 Design Guidelines and Performance Standards

4.1. Residential

By 2021, the Maple Ridge Town Centre will accommodate nearly 7,000 new housing units. Directing this growth to Maple Ridge Town Centre will result in the revitalization of the downtown area, new and varied housing choices, a population base to support local businesses and transit, increased public safety owing to more “eyes on the street,” and reduced development pressure in outlying areas of the municipality where rural character and natural areas are valued. Refer to Appendix D, Technical Bulletin number 5 for more information on residential development opportunities in Maple Ridge.

Particularly in the near term, development is most likely to occur on vacant, underused or undeveloped lots, such as those at 121st and Edge Street. Unless they are at the end of their useful life, most existing buildings in the Centre will likely not be redeveloped in the short term. As revitalization gathers momentum, however, existing developed lots could become financially feasible for redevelopment.

4.1.1. Description

The Plan for the Maple Ridge Town Centre encompasses a variety of new housing types, including secondary suites, coach houses, townhouses, rowhouses, and apartments (mixed use buildings may also include housing; see section 4.3 and 4.4). By proposing a range of housing types, the Centre can accommodate a variety of persons at different life stages (e.g. empty nesters, young families) and different lifestyles (e.g. single parent, seniors). An assortment of housing types also provides more opportunities for rental housing and housing to serve a variety of income levels, and provides all residents with the opportunity to live in close proximity to shops and services.

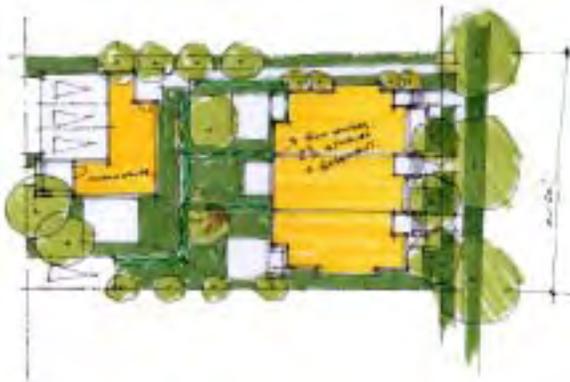


Figure 4.0 Townhouses with coach house, plan view

Single Family Residential

Single family residential development accommodates infill and densification of existing single family neighbourhoods, at a density between 20 and 25 units per gross hectare (between 8 and 10 units per gross acre). New units, such as coach houses, secondary suites, and townhouses can add housing choices to these areas on a lot-by-lot basis, without altering the essential character of the neighbourhood. **Figures 4.0 and 4.1** show an example of appropriate infill development (townhouse clusters with coach houses).



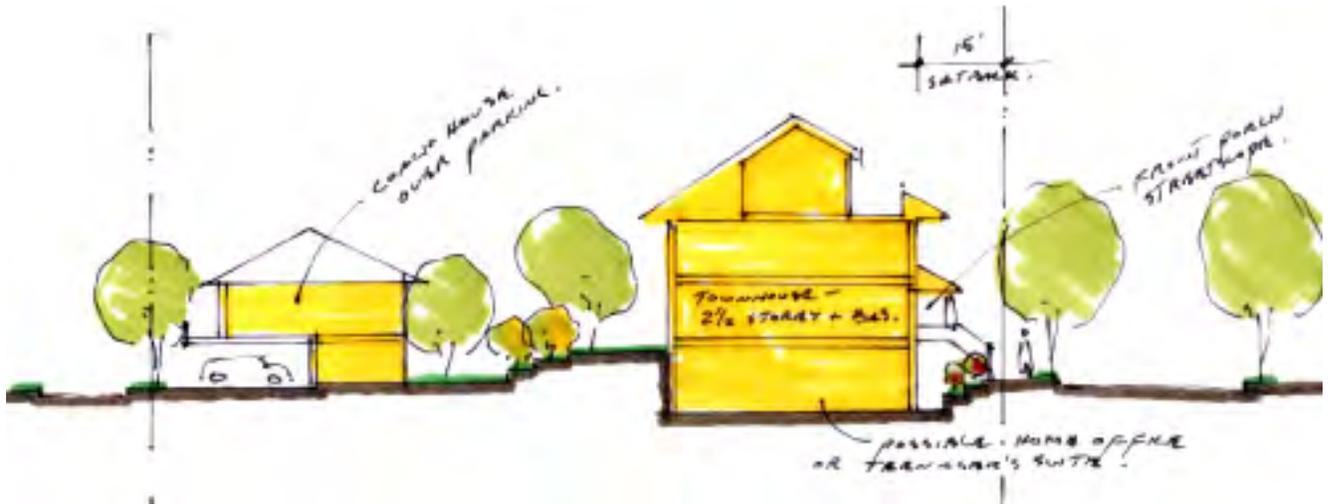


Figure 4.1 Townhouses with coach house, section view

Heritage Areas

Maple Ridge contains a number of historic neighbourhoods, one of which is located in the Maple Ridge Town Centre. In this unique low density area, special emphasis must be placed on the design and character of infill development to ensure compatibility with the historical character of the surroundings.

Multi-Family Housing

Multi-family housing refers to medium density residential developments such as townhouse, stacked townhouse, or other residential developments at a density between 25 and 62 units per gross hectare (10 to 25 units per gross acre). Multi-family housing provides housing variety in the Centre, with particular emphasis on ground-oriented units.

Apartment District

This category includes apartment, townhouse, stacked townhouse, condominium units, and any other residence type which has a high density development above 62 units per gross hectare (above 25 units per gross acre). See **Figures 4.2, 4.3.**



Figure 4.2 Apartments

4.1.2. Heritage Areas

The blocks between 224th Street and Haney Bypass, just south of Noth Ave have been identified as “old Maple Ridge” and still have some good examples of early 20th century craftsman homes. These are large lots with good views. A few small-scale



Figure 4.3 Condominiums

commercial and mixed-use redevelopments have been done in the neighbourhood, but the old residential character is still intact. In keeping with the smart growth principles of *Housing serves many needs* and *The centre is distinctive, attractive and vibrant*, and goal number 8.5 *Adaptively reuse existing buildings, including heritage buildings*, it is proposed that the area be designated a heritage rehabilitation and redevelopment zone. To this end, policies and bylaws can be prepared to encourage the densification by locating new residents in the central area, while enabling the retention of existing, valuable buildings and the addition of infill buildings in character. The professional office and mixed-use building patterns already established in the neighbourhood can also be included.

The closest models for this approach are the RT6 and RT8 zones in West Mount Pleasant, just east of Vancouver City Hall. The intent of these zones is to ensure that development occurs in a manner that retains older homes, preserves the physical character of buildings having “character merit”, or enhances the physical character of architecturally undistinguished buildings and to ensure that development is compatible with the surrounding street and neighbourhood.

Existing Neighbourhood Characteristics

Lot Size, Coverage and Density

The typical lot in the neighbourhood is 20M x 40M (60 x 120 ft.). The typical original homes cover only about 12% of the lot. The FSR is about 0.2 and the density about 14 units per hectare (5.5 /acre)

Building Stock

Among the original houses there is a range of conditions from very poor, to partly restored (such as the CEED house). There are two new mixed-use building housing offices with residential above and one restored original house used as an office. A comprehensive survey should be done.

Typical Densification Pattern

In this zone the appropriate approach is to allow substantial reconstruction and additions to original homes, allowing three suites in a principal dwelling and possibly side-by-side duplex. Renovations and additions must be done according to design guidelines that protect the architectural character of the neighbourhood. Coach houses with suites would follow such guidelines.

When rear yard infills are done it is necessary to maintain appropriate separation distances and shape the rear of principal dwellings to reduce obstruction of light and views. Privacy is an important issue in this densification pattern (**Figure 4.4**).

The placement of infill dwellings and additions on the street side

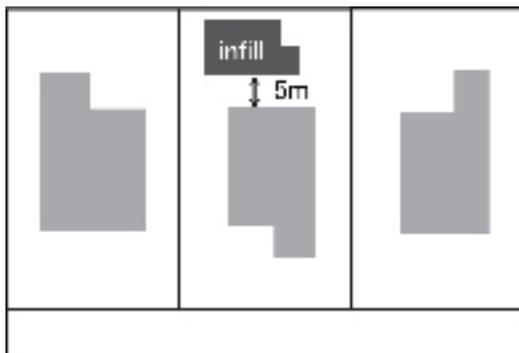


Figure 4.4 Infill separation distance to a principal dwelling



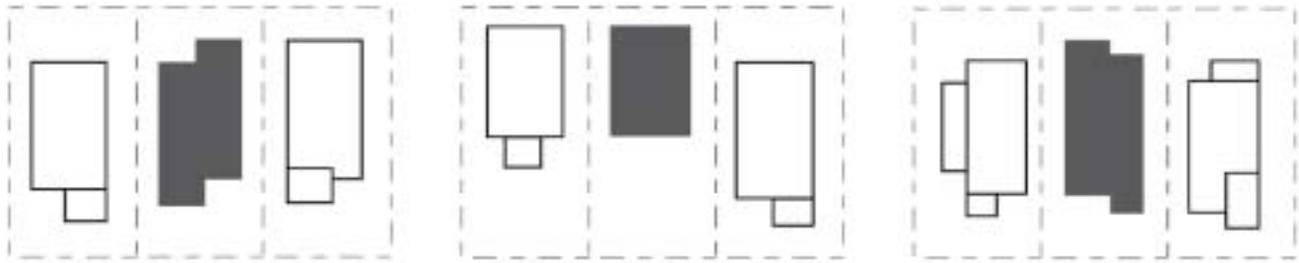


Figure 4.5 New buildings and modifications to existing buildings should take a form which best suits the character of the streetscape

must also respect the existing streetscape profiles of front yards (**Figure 4.5**).

Densification Yield

Additions, infills, coach houses and division into suites could yield approximately 45 units per hectare (18 per acre) (**Figure 4.6**).

Street and Lane Treatment and Parking

On wide lots or assembled lots without coach houses a single driveway may extend from the street to rear yard shared parking (**Figure 4.7**). With coach houses there is usually room for off-street parking off the lane, surface or in coach house garages, as well as garbage collection. These can be green lanes with plantings, grass and solid pavers, and high infiltration capabilities (**Figure 4.8**).



Figure 4.6 Coach House

Design Guidelines

Vancouver’s RT design guidelines offer excellent guidance on building location, massing and architectural character. See: <http://www.city.vancouver.bc.ca/commsvcs/guidelines/R012.pdf>

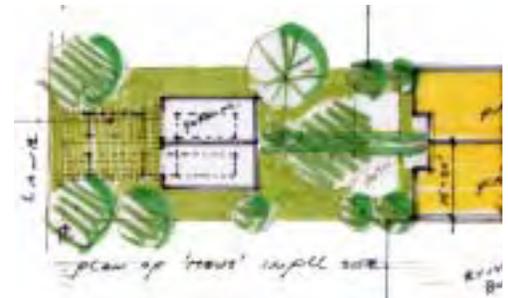


Figure 4.7 Shared Parking

4.1.3. Relationship of Residential Buildings to the Street

Building Coverage

Minimizing impervious surfaces can generate infrastructure cost savings and improvements in the quality and quantity of runoff water.

- Low density residential areas: Building coverage for the sample infill project is approximately 41%. The maximum building coverage should not exceed 45%.



Figure 4.8 Green “Country” Lane in Vancouver

- Medium density residential areas: Building coverage for the sample townhouse project is approximately 45%. The maximum building coverage should not exceed 50%.
- High density residential areas: Building coverage for the sample apartment project is approximately 52%. The maximum building coverage should not exceed 60%.

Building Height

- In low density residential areas, building heights will generally be consistent with the nearby existing single family residential homes (typically up to 2.5 storeys).
- In medium density residential areas, building heights of 2.5 to 4 storeys are proposed.
- In high density and mixed-use areas, 4 storey buildings are proposed in the short term. As land values rise with continued revitalization, taller buildings will become financially feasible and are permitted.
- Where possible, residences will be built and upgraded to maximize view potential.

Setbacks

- In low density areas, buildings should be a minimum of 4.5m from the front property line, and a minimum of 1.5m and a maximum of 2.5m from the side property lines. In heritage areas, these setbacks may be adjusted for consistency with the existing pattern of existing homes.
- In medium density (townhouse and stacked townhouse) areas, buildings should be a maximum of 4.5m from the front property line, and may extend to the side property lines (also known as zero lot line development).
- In high density (apartment) areas, buildings should be a minimum of 3.0m and a maximum of 4.5m from the front property line, and a minimum of 4.5m from the side property lines.

Building Orientation

All residential buildings should have their primary facades facing public streets, parks, or greenways. To increase the feeling of safety and to create a pleasant, pedestrian-oriented atmosphere for residents, residential buildings should be designed to



facilitate “eyes on the street.” To the greatest extent possible, windows, doors, and porches or balconies should face the street to allow for residents to observe the activity in the area. Porches and balconies also increase the social interaction among community members by creating a semi-public area in which residents are encouraged to engage with people passing by (Figure 4.9).

Primary Entries

In medium and high density areas, building design should promote the highest possible number of ground-oriented units with a direct connection to the street. Such ground-oriented units are more desirable for families and also provide greater accessibility.



Figure 4.9 Front porches create safe neighbourhoods

4.1.4. Built Form and Materials

The physical appearance (form and character) of new residential developments should be harmonious with a historically based Maple Ridge identity. Consistency is particularly critical in the heritage single family residential area.

- In non-heritage areas, diversity of building forms and tenures is encouraged within the same area and block. Buildings on a street should be varied in their expression towards the street, through the location of porches, balconies, roof form, façade articulation, and front elevation design details (e.g. window proportions, trim, and materials).
- In heritage areas, building forms should be consistent in height, roof pitch, massing, and style with existing heritage homes.
- Iron, stone, and wood elements especially typify historic Maple Ridge building design.
- Building size, massing, and siting should be consistent with pedestrian scale, accessibility and comfort.
- Crime Prevention Through Environmental Design (CPTED) safety principles should be utilized (see <http://www.cpted-watch.com>)
- For visual interest, balconies can be stepped, shared, small, large or staggered in design.
- Flexible building spaces should be included to allow easy retrofitting for special-needs and accessibility conditions. Adaptive building designs ensure that spaces could have the capacity to accommodate potential retrofits for extra family members, wheelchairs, and

special needs situations.

4.1.5. Parking Strategy

As the Centre builds out, more residents will be within walking distance of local shopping, recreation, schools, transit, and employment. As such, the number of automobile trips and the need for parking spaces will likely be reduced. However, automobiles will not be eliminated, and so residential parking needs will be accommodated as follows:

Parking Location

- In single family and multi-family housing developments, parking can be accommodated on site and at grade. For example, infill projects on existing single-family lots could include shared garages off the rear lane. Townhouse projects can include shared garages or carports, driveway parking, and grass grid parking.
- Rear lane access for parking is preferable to maintain a pedestrian atmosphere on the front streets and to eliminate conflict points between cars and pedestrians on sidewalks.
- In apartment districts, parking should be accommodated underground wherever technically feasible. However, tuck-under parking at rear of buildings may be a less expensive option to be considered, particularly in the short term before market conditions improve.
- Throughout the Centre, on-street parking will be available to reduce the need for excessive amounts of off-street parking (see local street descriptions in section 4.5.2)

Parking Requirements

Development of the housing types outlined in this Concept Plan is financially feasible on vacant sites, given current market conditions and the current parking requirements in the District zoning by-law. However, if the District wants to encourage more rapid redevelopment of the Maple Ridge Town Centre, strategies that reduce development costs should be considered. One such strategy could be to reduce the off-street parking requirement by 0.5 parking stall per dwelling unit.



4.1.6. Environmental Design/Green Infrastructure

Innovative development standards will result in lower impact solutions for commuting, waste management, and rainwater management. These strategies can greatly reduce the cost to the District, residents, and businesses over the long term.

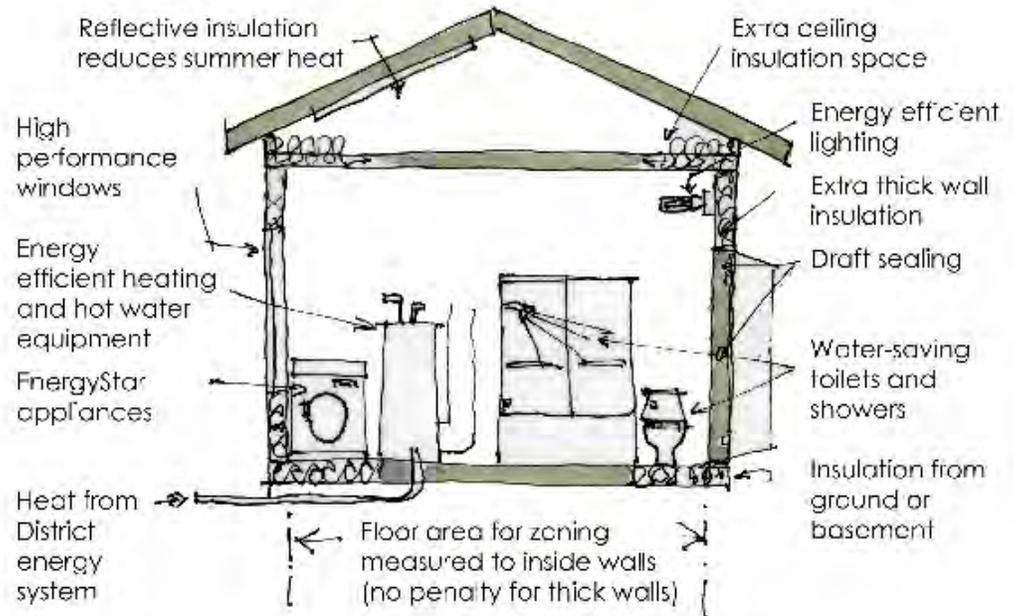
- Flexible building spaces (particularly on ground floors) can provide opportunities to work from home, which minimizes the cost, time and pollution associated with commuting.
- Blue-box recycling program could be extended to include multi-family and mixed use buildings.
- Ecologically sensitive design strategies should be employed in outdoor spaces of residential projects (e.g. using cisterns, disconnecting downspouts). Planted roofs and gardens can intercept and hold (evapotranspirate) or absorb rainwater while insulating buildings from cold, heat and noise.
- Infiltration enhancements can be accomplished via infiltration pits of various designs and configuration. Grass filter strips and elevated yard drain inlets could be used to prevent siltation. In general, infiltration devices should be designed to ensure at least 30 years of trouble-free operation under normal use.

4.1.6. Energy and Water Use

Conserving energy puts less strain on available resources, and lessens pollution and environmental damage caused by energy production. When local sources of energy are used, communities are self-sufficient and in greater control over their own resources. And when a variety of energy sources are used, there is increased security in the availability of those resources. Water conservation similarly enhances long term availability of supplies, and reduces the need for costly additions to water procurement and treatment systems.

- Especially in multi-family housing and apartment districts, alternative energy sources should be considered. Particular consideration should be given to ground source heat pumps and heat exchange systems between adjacent buildings. At minimum, flexible building designs should be employed, with the potential capability to accommodate future technologies like solar panels and ground source heat pumps for more efficient energy options. Such buildings are typically designed to have easy access to utilities and potential re-wiring.

- Energy efficient building and site planning can be achieved by using standards such as Leadership in Energy and Environmental Design (LEED) and R-2000. The resulting improvements to building envelopes and fixtures (such as toilets and showers) can save money and resources (**Figure 4.10**).



RESIDENTIAL ENERGY AND WATER SAVINGS

Figure 4.10

Renewables Readiness and Green Power

Solar power systems and water heating are becoming affordable as technology improves, prices fall and utilities rise. Allocating a space for future retrofits and installing necessary pipes and wiring conduit makes the building “solar ready”. Recommendations for Maple Ridge residential buildings are:

- A 10m² (110ft²) roof area within 60 degrees of south
- An opaque, unobstructed wall area within 45 degrees of south with an area equal to 7% of the floor area.

Adopting wind power, tidal power and micro hydro renewables is generally not feasible on a local scale. The best option is to purchase Green Power Certificates that support renewables producers. BC Hydro has a pilot green power program offering this option. Some municipalities have chosen to support renewables by purchasing green power and TransLink is in the



process of purchasing enough to run its SkyTrain system.

4.2. Town Centre Commercial

4.2.1. Description

The Town Centre commercial land use category refers to properties with existing, predominantly one-storey commercial uses with on-site parking lots (including several local shopping centers such as Haney Place Mall and Valley Fair Mall). For viability of commercial opportunities refer to Appendix D, Technical Bulletin number 6: Commercial Development Opportunities in Maple Ridge.

Over the short to medium term, these commercial uses are not expected to undergo redevelopment due to the high value of the existing improvements. However, the owners of these commercial properties may consider upgrades and infill development on their properties. For example, Haney Place Mall could be retrofitted or expanded. Such projects would follow the design guidelines and performance standards set forth below.

In the long term, properties in this land use category would ideally be redeveloped with a mix of uses. These projects would follow the design guidelines and performance standards of the mixed use (commercial required) category (section 4.3 below).

4.2.2. Relationship of Town Centre Commercial Buildings to the Street

Existing commercial developments are typically one-storey buildings, set far back from the street, with large off-street parking lots between the building and the street edge. Retrofit or expansion of such developments should include the addition of new buildings at street corners and fronting along major commercial streets (such as Dewdney Trunk Road, 224th Street, Lougheed Highway, and 227th Street). These buildings may be up to four stories in height and should have a maximum setback of 1.5m and a pedestrian orientation, similar to buildings in the mixed use areas (see section 4.3) (**Figure 4.11**). The architecture of infill buildings should address these key streets, and should also provide a relationship (such as entrances, connecting sidewalks or paths, or transparent walls) to nearby civic or other important uses (such as the greenway, parks, or the leisure centre) (**Figure 4.12**).

4.2.3. Built Form and Materials

All expansions or retrofits of existing commercial developments should emphasize transparency (e.g. windows and glass or transparent entrances), particularly to recognize the relationship with nearby civic or other important uses. (**Figure 4.13**).



Figure 4.11 Haney Place Mall Retrofit Option 1



Figure 4.12 Haney Place Mall Retrofit Option 2: Extended green infrastructure connecting civic and other important destinations





Figure 4.13 Haney Place Mall retrofit option 3. Red lines indicate perimeter transparency.

Particular emphasis should be given to the principles of Crime Prevention Through Environmental Design (CPTED). Pedestrian linkages, including clear and direct sidewalks or paths, should be added wherever possible, particularly through parking lots and to connect to adjacent civic uses.

4.2.4. Parking Strategy

As the Centre builds out, more consumers will be within walking distance of local shopping, services, and employment. As such, more parking may be available as the result of fewer vehicle trips, thus reducing the need for new parking spaces. However, automobiles will not be eliminated, and so commercial parking needs must be maintained to some extent.

Retrofit of existing commercial developments, particularly the addition of new buildings on the site, will necessarily remove surface parking area. Where an on-going need for this parking is demonstrated, parking should be replaced in underground lots and on streets.

4.2.5. Environmental Design/Green Infrastructure

Innovative development standards can result in lower impact solutions for commuting, waste management, and rainwater management. These strategies can greatly reduce the cost to the District, residents, and businesses over the long term. If and when commercial properties are retrofitted or expanded, the following innovative systems could be considered:

- Ecologically sensitive design strategies should be employed in outdoor spaces. Planted roofs and gardens will intercept and hold (evapotranspire) or absorb rainwater while insulating buildings from cold and heat.
- Infiltration enhancements can be accomplished via infiltration pits of various designs and configuration. Grass filter strips and elevated yard drain inlets are to be used to prevent siltation. In general, infiltration devices are to be designed to ensure at least 30 years of trouble-free operation under normal use.

4.2.6. Energy and Water Use

Conserving energy puts less strain on available resources, and lessens pollution and environmental damage caused by energy production. When local sources of energy are used, communities are self-sufficient and in greater control over their own resources. And when a variety of energy sources are used, there is increased security in the availability of those resources. Water conservation similarly enhances long term availability of supplies, and reduces the need for costly additions to water procurement and treatment systems.

- Alternative energy could be considered. Particular consideration could be given to ground source heat pumps and heat exchange systems between adjacent buildings. Larger commercial buildings such as Haney Place Mall are particularly good candidates for such systems; the mall generates significant amount of surplus heat that could be utilized by other nearby buildings.
- At minimum, flexible building designs should be considered, with the potential capability to accommodate future technologies like solar panels and ground source heat pumps for more efficient energy options. Such buildings are designed to have easy access to utilities and potential re-wiring.
- Energy efficient building and site planning can be achieved by using standards such as Leadership in Energy and Environmental Design (LEED). The resulting



improvements to building envelopes and fixtures (such as toilets and showers) will save money and resources (**Figure 4.14**).

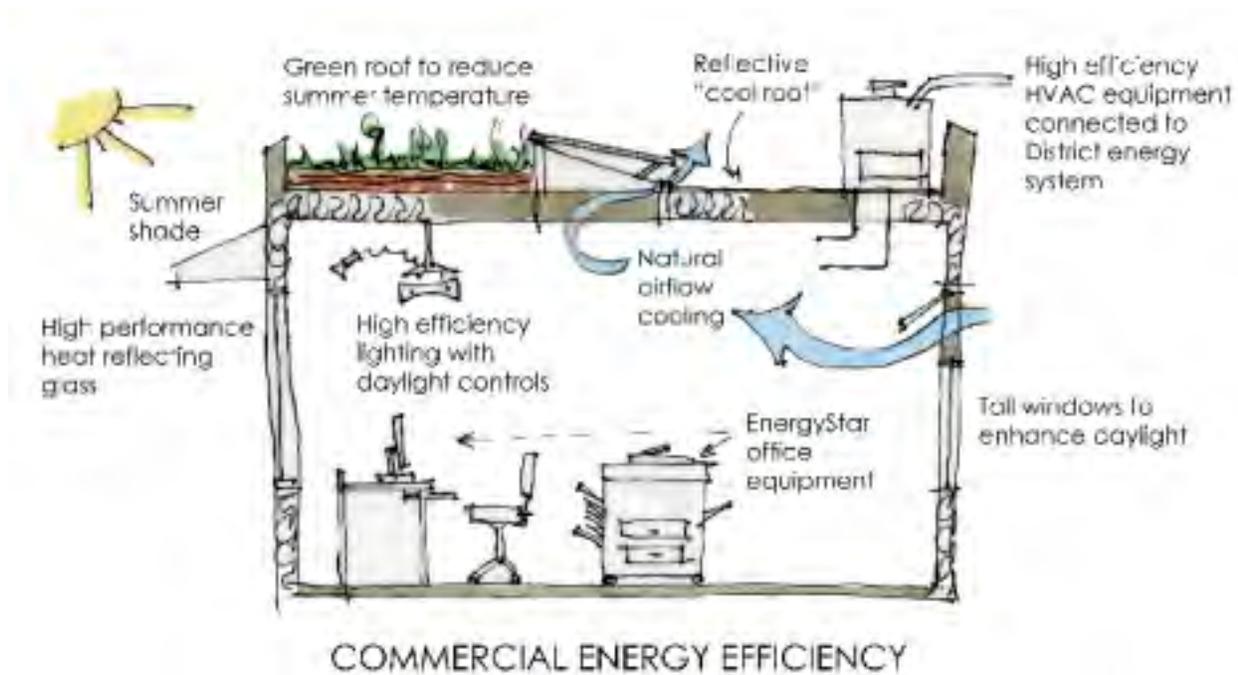


Figure 4.14

4.3. Mixed Use (Commercial Required)

Mixed use development in the Maple Ridge Town Centre can revitalize and restore the prominence of the area as the heart of the District. Shops, services, and other needs should be accommodated in a vibrant district with a range of housing choices.

Mixed-use commercial areas are intended to accentuate nodes of activity where high levels of pedestrian traffic are expected to occur. Commercial uses at grade with residential uses on upper stories could be designed to create an appealing, pedestrian-friendly streetscape that is compatible with surrounding residential uses.

4.3.1. Description

Mixed Use (Commercial Required) refers to locations where a mix of residential and non-residential uses is appropriate, both within buildings and along block faces. Commercial uses are required on the ground floor, and may also be appropriate on upper floors depending upon market demand. The ground floor commercial requirement ensures that the limited

amount of retail space demanded by the market is focused along key corridors (**Figure 4.15**).



Figure 4.15 Above and below: four-storey residential buildings with ground floor retail.

4.3.2. Relationship of Mixed Use (Commercial Required) Buildings to the Street

Building Coverage

Minimizing impervious surfaces can generate infrastructure cost savings and improvements in the quality and quantity of runoff water. In mixed use areas, the maximum building coverage should not exceed 80%, but such projects should utilize infiltration techniques that meet the performance objectives in Section 4.4.

Building Height

In mixed-use areas, up to 4 storey buildings are proposed in the near term. As land values rise with continued revitalization, taller buildings may become financially feasible and could be permitted.

Setbacks

To create a consistent street wall and continuous shopping experience, buildings in mixed-use areas should have no setback or a maximum 1.5m setback from the front property line.

Building Orientation

All mixed use buildings should have their primary facades facing public streets. To increase the feeling of safety and to create a pleasant, pedestrian-oriented atmosphere, buildings should be designed to facilitate “eyes on the street.” To the greatest extent possible, windows and doors should face the street to allow for occupants to observe the activity in the area. Commercial storefronts should be highly transparent (e.g. generous use of windows and glass doors), to provide a continuous window-shopping experience. Buildings on corner lots should include architectural detailing that addresses both streets. Outdoor extensions of cafes and restaurants are encouraged where the context is appropriate.

Primary Entries

Building design should promote the highest possible number of ground-oriented units with a direct connection to the sidewalk. Such ground-oriented units are more desirable for families and also provide greater accessibility. Residential entries should be separate from commercial entrances, be visible from the street, and have a residential character that distinguishes them from commercial entrances.



4.3.3. Built Form and Materials

The physical appearance (form and character) of new mixed developments should be harmonious with a historically based Maple Ridge identity.

- A diversity of building forms and tenures is encouraged within the same area and block. Buildings on a street should be varied in their expression towards the street, through the location of balconies, roof form, façade articulation, and front elevation design details (e.g. window proportions, trim, and materials).
- Iron, stone, and wood elements especially typify historic Maple Ridge building design.
- Building size, massing, and siting should be consistent with pedestrian scale, accessibility and comfort.
- Crime Prevention Through Environmental Design (CPTED) safety principles should be utilized (see www.ceptd-watch.com).
- For visual interest, balconies can be stepped, shared, small, large or staggered in design.
- Street level commercial uses should feature awnings above the sidewalk, which help to buffer noise from street and sidewalk to the residential units above. Such elements also shield people below from sun, wind and rain. All weather protection elements are to be designed to facilitate a continuous, architecturally integrated building frontage. It is recommended that canopies have a minimum slope of 35 degrees, and awnings or architectural overhangs should extend a minimum width of 1.8m.
- Fascia signage and window signage is encouraged. Sign size, location and information thereon should be designed and oriented to pedestrians and should relate to the scale and character of the commercial area. Materials used for signs should be compatible with materials used in adjacent buildings.
- In residential units, flexible building spaces should be included to allow easy retrofitting for special-needs and accessibility conditions. Adaptive building designs ensure that spaces could have the capacity to accommodate potential retrofits for wheelchairs and special needs situations.

4.3.4. Parking Strategy

As the Centre builds out, more residents will likely be within walking distance of local shopping, recreation, schools, transit, and employment. More parking may be available as the result of fewer vehicle trips, thus reducing the need for more parking spaces. However, automobiles will not be eliminated, and employees and customers will continue to come to the Maple Ridge Town Centre from other locations. Parking needs to be accommodated as follows:

Parking Location

- Rear lane access for parking is preferable to maintain a pedestrian atmosphere on the front streets. Perceptions of safety concerns in rear lanes will be reduced as the use of these lanes and the number of local residents is increased.
- In mixed use projects, parking should be accommodated underground wherever technically feasible. However, tuck-under parking at rear of buildings may be a less expensive option, particularly in the short term before market conditions improve.
- Throughout the Centre, on-street parking should be made available to reduce the need for off-street parking (see local street descriptions in section 4.5.2).

Parking Requirements

Development of mixed use projects is financially feasible on vacant sites, given current market conditions and the current parking requirements in the District zoning by-law. However, if the District wants to encourage more rapid redevelopment of the Maple Ridge Town Centre, strategies that reduce development costs should be considered. One such strategy would be to reduce the residential off-street parking requirement by 0.5 parking stalls per dwelling unit.

4.3.5. Environmental Design/Green Infrastructure

Innovative development standards will result in lower impact solutions for commuting, waste management, and rainwater management. These strategies can greatly reduce the cost to the District, residents, and businesses over the long term.

- Ecologically sensitive design strategies should be employed in outdoor spaces. Planted roofs and gardens can intercept and hold (evapotranspire) or absorb rainwater while insulating buildings from cold and heat.



- Infiltration enhancements can be accomplished via infiltration pits of various designs and configuration. Grass filter strips and elevated yard drain inlets are to be used to prevent siltation. In general, infiltration devices could be designed to ensure at least 30 years of trouble-free operation under normal use.

4.3.6. Energy and Water Use

Conserving energy puts less strain on available resources, and lessens pollution and environmental damage caused by energy production. When local sources of energy are used, communities are self-sufficient and in greater control over their own resources. When a variety of energy sources are used, there is increased security in the availability of those resources. Water conservation similarly enhances long term availability of supplies, and reduces the need for costly additions to water procurement and treatment systems.

- Alternative energy sources should be considered. Particular consideration should be given to ground source heat pumps and heat exchange systems between adjacent buildings. At minimum, flexible building designs should be employed, with the potential capability to accommodate future technologies like solar panels and ground source heat pumps for more efficient energy options. Such buildings are designed to have easy access to utilities and potential re-wiring.
- Energy efficient building and site planning can be achieved by using standards such as Leadership in Energy and Environmental Design (LEED). The resulting improvements to building envelopes and fixtures (such as toilets and showers) will save money and resources.

4.4. Mixed Use (Commercial Optional)

Mixed use development in the Maple Ridge Town Centre can revitalize and restore the prominence of the area as the heart of the District. The increased population density, services and employment will support transit, local businesses, and make the best use of existing infrastructure.

4.4.1. Description

Mixed Use (Commercial Optional) refers to locations where a mix of residential and non-residential uses is appropriate, both within buildings or simply along block faces. Commercial uses – specifically, ground floor retail – are not required. However,

flexible ground floor space can be included to accommodate retail, office, light industrial, and live/work spaces, if market demand for these uses exists.

Live work developments are a specific type of Mixed Use Commercial Optional, in which opportunities for home based businesses, studios, or other flexible non-residential spaces can be provided. These flexible spaces are typically located within or connected directly to individual residential units, and provide an opportunity for residents to work at home without the need for commuting.

4.4.2. Relationship of Mixed Use (Commercial Optional) Buildings to the Street

Building Coverage

Minimizing impervious surfaces can generate infrastructure cost savings and improvements in the quality and quantity of runoff water. In mixed use areas, the maximum building coverage should not exceed 80%, but such projects should utilize infiltration techniques that meet the performance objectives in section 4.

Building Height

In mixed-use areas, up to 4 storey buildings are proposed in the near term. As land values rise with continued revitalization, taller buildings will become financially feasible and are permitted.

Setbacks

To create a consistent street wall, buildings in mixed-use areas should have no setback or a maximum 1.5m setback from the front property line.

Building Orientation

All mixed use buildings should have their primary facades facing public streets. To increase the feeling of safety and to create a pleasant, pedestrian-oriented atmosphere, buildings should be designed to facilitate "eyes on the street." To the greatest extent possible, windows, doors, balconies and porches should face the street to allow for occupants to observe the activity in the area. Buildings on corner lots should include architectural detailing that addresses both streets.

Primary Entries

Building design should promote the highest possible number of ground-oriented units with a direct connection to the sidewalk. Such ground-oriented units are more desirable for families and





Figure 4.16 Photo Simulation: 119th Avenue - Before and After

also provide greater accessibility. Residential entries should be separate from any commercial entrances, be visible from the street, and have a residential character that distinguishes them from commercial entrances (**Figure 4.16**).

4.4.3. Built Form and Materials

The physical appearance (form and character) of new mixed developments should be harmonious with a historically based Maple Ridge identity.

- A diversity of building forms and tenures is encouraged within the same area and block. Buildings on a street should be varied in their expression towards the street, through the location of balconies, roof form, façade articulation, and front elevation design details (e.g. window proportions, trim, and materials).
- Iron, stone, and wood elements especially typify historic Maple Ridge building design.
- Building size, massing, and siting should be consistent with pedestrian scale, accessibility and comfort.
- Crime Prevention Through Environmental Design (CPTED) safety principles should be utilized (see www.cpted-watch.com).
- For visual interest, balconies can be stepped, shared, small, large or staggered in design.
- Where street level commercial is provided, these uses should feature awnings above the sidewalk, which help to buffer noise from street and sidewalk to the residential units above. Such elements also shield people below from sun, wind and rain. All weather protection elements are to be designed to facilitate a continuous, architecturally integrated building frontage. It is recommended that canopies have a minimum slope of 35 degrees, and all awnings or architectural overhangs should extend a minimum width of 1.8m.
- Where street level commercial is provided, fascia signage and window signage is encouraged. Sign size, location and information thereon should be designed and oriented to pedestrians and should relate to the scale and character of the commercial area. Materials used for signs should be compatible with materials used in adjacent buildings.
- Retrofitted commercial building spaces will include design adaptations for special-needs and accessibility conditions. Such building designs ensure that spaces will also have the capacity to accommodate potential future retrofits for wheelchairs, extra family members, and special needs situations.



4.4.4. Parking Strategy

As the Centre builds out, more residents will be within walking distance of local shopping, recreation, schools, transit, and employment. More parking may be available as the result of fewer vehicle trips, thus reducing the need for more parking spaces. However, automobiles will not be eliminated, and employees and customers of any commercial uses will continue to come to the Maple Ridge Town Centre from other locations. Parking needs to be accommodated as follows:

Parking Location

- Rear lane access for parking is preferable to maintain a pedestrian atmosphere on the front streets. Perceptions of safety concerns in rear lanes will be reduced as the use of these lanes and the number of local residents is increased.
- In mixed use projects, parking should be accommodated underground wherever technically feasible. However, raising parking up one level may be a less expensive option to be considered, particularly in the short term before market conditions improve.
- Throughout the Centre, on-street parking should be made available to reduce the need for off-street parking (see local road description in section 4.5.2).

Parking Requirements

Development of mixed use projects is financially feasible on vacant sites, given current market conditions and the current parking requirements in the District zoning by-law. However, if the District wants to encourage more rapid redevelopment of the Maple Ridge Town Centre, strategies that reduce development costs should be considered. One such strategy would be to reduce the residential off-street parking requirement by 0.5 parking stalls per dwelling unit.

4.4.5. Environmental Design/Green Infrastructure

Innovative development standards will result in lower impact solutions for commuting, waste management, and rainwater management. These strategies can greatly reduce the cost to the District, residents, and businesses over the long term.

- Flexible building spaces (particularly on ground floors) can provide opportunities to work from home, which minimizes the cost, time and pollution associated with commuting.

- Blue-box recycling program should be extended to include multi-family and mixed use buildings.
- Ecologically sensitive design strategies should be employed in outdoor spaces of residential projects (e.g. using cisterns, disconnecting downspouts). Planted roofs and gardens can intercept and hold (evapotranspire) or absorb rainwater while insulating buildings from cold and heat.
- Infiltration enhancements can be accomplished via infiltration pits of various designs and configuration. Grass filter strips and elevated yard drain inlets are to be used to prevent siltation. In general, infiltration devices are to be designed to ensure at least 30 years of trouble-free operation under normal use.

4.4.6. Energy and Water Use

Conserving energy puts less strain on available resources, and lessens pollution and environmental damage caused by energy production. When local sources of energy are used, communities are self-sufficient and in greater control over their own resources. When a variety of energy sources are used, there is increased security in the availability of those resources. Water conservation similarly enhances long term availability of supplies, and reduces the need for costly additions to water procurement and treatment systems.

- Alternative energy sources should be considered. Particular consideration should be given to ground source heat pumps and heat exchange systems between adjacent buildings. At minimum, flexible building designs should be employed, with the potential capability to accommodate future technologies like solar panels and ground source heat pumps for more efficient energy options. Such buildings are designed to have easy access to utilities and potential re-wiring.
- Energy efficient building and site planning can be achieved by using standards such as Leadership in Energy and Environmental Design (LEED). The resulting improvements to building envelopes and fixtures (such as toilets and showers) will save money and resources.

4.5 Transportation

4.5.1 Description

The term “transportation” includes multi-modal transportation methods. This includes, but is not limited to: pedestrians, bicycles, electric scooters, automobiles, trains, buses, and ferries.



Alternative forms of transportation must be supported and encouraged within the Centre. This plan intends to specifically recognize the importance of and need for design which is sensitive to modes such as wheelchairs, canes, strollers, and mobility devices which are used by pedestrians with disabilities, as well as by families, teenagers, seniors, and visually impaired people. As such, this plan acknowledges that transportation design shall include strategies for universal accessibility, and that the word “pedestrian” includes this broader cross-section of the population.

The following results stemmed from set targets in the Design Brief, which are the product of studies, policies, plans and projections that pertain to the Maple Ridge Town Centre. Additionally, consensus-based input from public workshops and meetings helped detail what the public wants to see for the Centre, and consequently these targets guided and helped form the charrette group’s design proposals. This information references the transportation diagram, **Figure 3.4**.

Specific targets which influenced transportation decisions are the transportation target to find the appropriate mix of land uses to reduce VKT (Vehicle Kilometres Travelled) by 40-60%, and the water target which reduces impacts to streams by a variety of means.

New Linkages and Networks

Several new transportation linkages are proposed to facilitate movement by pedestrian, bike, transit and automobile throughout the Maple Ridge Town Centre and provide extended municipal and regional connectivity. Overall changes include creating and connecting greenways, green streets and bicycle routes, providing additional transit options and demarcating two major pedestrian corridors: Edge Street and 224th Street. In addition, Brown Avenue and 227th Street are proposed to be extended to connect to main streets.

Pedestrian Network

Interconnected pedestrian sidewalks and greenway-riparian trails are proposed for the entire Centre which will strengthen much-needed pedestrian access between residential, commercial, historical, social, and recreational spaces.

Greenway and Conservation Area Network

Pedestrian greenways and conservation area riparian corridors within the Centre can provide continuous multiuse recreational trail access throughout the area, forming corridors which connect with green streets from the Alouette River watershed into the Centre, along the Fraser River waterfront, east to



Figure 4.17 Photo Simulation: Riparian trail at 124th Avenue - Before and After

Kanaka Creek Regional Park, and west to join the Trans-Canada Trail. Greenway widths should vary from pedestrian and accessibility-only minimum sidewalk width requirements, to wider 4m sidewalks which can accommodate pedestrians, bicycles, strollers, scooters and wheelchairs. Riparian greenway areas should be respected and paths should be built outside of a required 15m buffer zone from top of bank. In some cases this setback may extend to 30m given the sensitivity of the watercourse, which is based on a streamside setback assessment. Path material throughout all greenways should be pervious and pedestrian contact within the sensitive buffer zone should be minimal or restricted access.



Greenways can be integrated with a proposed trail over the existing below-ground Terasen Gas utility corridor which runs through the Centre (**Figures 4.17, 4.18**), given that the Municipality could lease or purchase the space. This would create a multi-purpose north-south corridor, providing much needed pedestrian connectivity, greenspace and habitat values through the Centre, while fulfilling its existing utility function.

Bicycle Network

The group felt that existing regional and municipal bike routes should be extended on a finer scale throughout the Centre to connect with pedestrian greenways, popular destinations, and major points of interest. As such, the bikeways suggested in the transportation proposal are identified as major bike routes, but this of course does not preclude biking in other areas such as along local roads and through greenways and conservation areas, where appropriate.

Bicycle routes are usually on paths either separated from or shared with pedestrians. In on-road situations, separate bike lanes may be located on the following roads: 224th Street, Brown Avenue, Selkirk Avenue, 227th Street south of Lougheed Highway and the Haney Bypass east of 224th Street. Otherwise, cyclists are to share the road with vehicles, and this is typically accommodated in wider parking lanes (**Figures 4.27 and 4.28**).

Routes should be identified by signs placed every second block, and by symbols on street name blades. Where a cycling route intersects a busy street, push buttons should be installed at the curb near the cycling right-of-way, and bike logos painted on the roadway. Traffic circles, diverters, medians, bulb-outs and other traffic calming measures clarify routes and ensure safety within bike routes for drivers, pedestrians and cyclists (**Figures 4.19, 4.20**).

Public Transit Network

The charrette team referenced and built upon Translink’s Maple Ridge/Pitt Meadows Area Transit Plan, which details short-term changes and upgrades that will be made to the existing bus service in the Centre (see http://www.translink.bc.ca/Plans_Projects/AreaTransit/area_transport_plans/mapleridgeandpitt.asp). Transit frequency is scheduled to greatly improve over the next one to five years in the Area Transit Plan, and projected residential growth in the Maple Ridge Town Centre will increase density to a level that will support frequent transit services within a reasonable walking distance. Transit connections should be located a maximum three blocks from any residence thus ensuring a maximum walking distance of 400m.

Major highlights from the Maple Ridge/Pitt Meadows ATP and associated TransLink projects include the introduction of:



Figure 4.18 Utility corridor could serve as a continuous pedestrian greenway.



Figure 4.19 Planted traffic circle



Figure 4.20 Bulb-outs.

- new Community Shuttle (small, neighbourhood friendly sized buses) network to serve the local Maple Ridge/Pitt Meadows area and Maple Ridge Town Centre
- new regional Express Bus route connecting Maple Ridge Town Centre with Braid SkyTrain Station via the Mary Hill Bypass
- new Golden Ears Bridge over the Fraser River connecting Maple Ridge/Pitt Meadows with Langley and Surrey
- new regional routes connecting Maple Ridge Town Centre with Langley Centre and Maple Ridge Town Centre with Surrey City Centre (upon completion of the Golden Ears Bridge)
- expanded TrainBus service between Maple Ridge Town Centre and downtown Vancouver to include midday and weekend trips
- new Dial-a-Ride service to provide local service during evenings and weekends from Maple Ridge Town Centre
- a new West Coast Express station to serve the Albion/Cottonwood area of Maple Ridge
- a new off-street transit exchange at Haney Place to replace the current on-street transit exchange at Haney Place

Potential opportunities not currently incorporated in the plan include:

- bus service connecting Maple Ridge with Mission
- Albion passenger-only ferry service to Langley
- expansion of West Coast Express to include more train trips.

Proposals for transit in the Centre result from the need for stronger connections between major and local routes, with commercial, institutional and historical destinations.

Regional bus routes run east-west, and follow Dewdney Trunk Road and Lougheed Highway. Local bus lines also follow Dewdney and Lougheed, and connect these with major north-south routes along 224th Street, 227th Street north from Lougheed Highway, and Burnett Street. Other significant connective routes include the Haney Bypass from where it intersects with Lougheed Highway, and 223rd Street from Callaghan Avenue to River Road, which will improve access from the West Coast Express station. In the interim, a bus loop is proposed for the Centre which would encircle the block bordered by 119th Avenue, McIntosh Street and Edge Street, north-east of the Haney Place Mall. The need for a bus loop will most likely be phased out by 2021 when transit connectivity and use will increase to such a point that routes are more consistently dispersed throughout Maple Ridge, and connections are easily made along streets. At that point, the site could transform to an alternate institutional use, possibly a civic/institutional building with an outdoor public space.



Street Network

The network of roads in the Centre is for the most part configured in a grid pattern, which, if designed with multi-modal intent, could support both vehicle and pedestrian connectivity. The neighbourhoods within this grid are generally comprised of short blocks (no longer than 200m), with the exception of a few 400m+ blocks, occurring primarily in the residential outskirts of the Centre, such as Fletcher Avenue and 228th Street. The charrette team agreed that for optimum connectivity within the Centre, blocks should be no longer than 200m, and all new streets should continue to follow a connected grid pattern, adding and improving sidewalk connectivity where necessary, and allowing natural features to modify and enhance the block wherever possible.

Water Transportation

A small ferry service for the wharf at the Haney waterfront, much like the Granville Island Aquabus Ferries, could connect Maple Ridge with other waterfront communities in the region and would revitalize the historic district for both local and tourist use, and support proposed small commercial initiatives at the waterfront (**Figure 4.21**).



Figure 4.21 Aquabus Ferries at Granville Island, Vancouver

4.5.2 Corridor Types and Uses

Streets act as multi-functioning corridors, transporting vehicles, pedestrians, and stormwater. All streets accommodate these functions, and all should have shade-providing species of street trees where appropriate. Within the Centre, there are four major street types: arterial streets, pedestrian streets, green streets, and local streets.

Major streets in the Centre should be treed and beautified with amenities such as seating, planted areas, public art and textured ground surfaces where appropriate in order to create a comfortable and safe pedestrian atmosphere and should be designed to promote and enhance vehicular and pedestrian connectivity.

Arterial Streets

Lougheed Highway and Dewdney Trunk Road are the two arterial roads which accommodate local east-west traffic, as well as major regional vehicle and transit routes flowing through the Centre. As such, traffic capacity on both streets must be maintained, with reduced traffic speeds. Because of the automobile-oriented nature of these streets, bicycle routes should bypass them in an “off-Broadway” type of situation as currently exists in Vancouver. East-west travelling cyclists can detour off Dewdney one block north onto Brown Street, which is proposed to connect to Dewdney at Greenwell and Dunbar Streets. Off Lougheed Highway, cyclists can detour north along Selkirk Street from 221st Street to 227th Street.

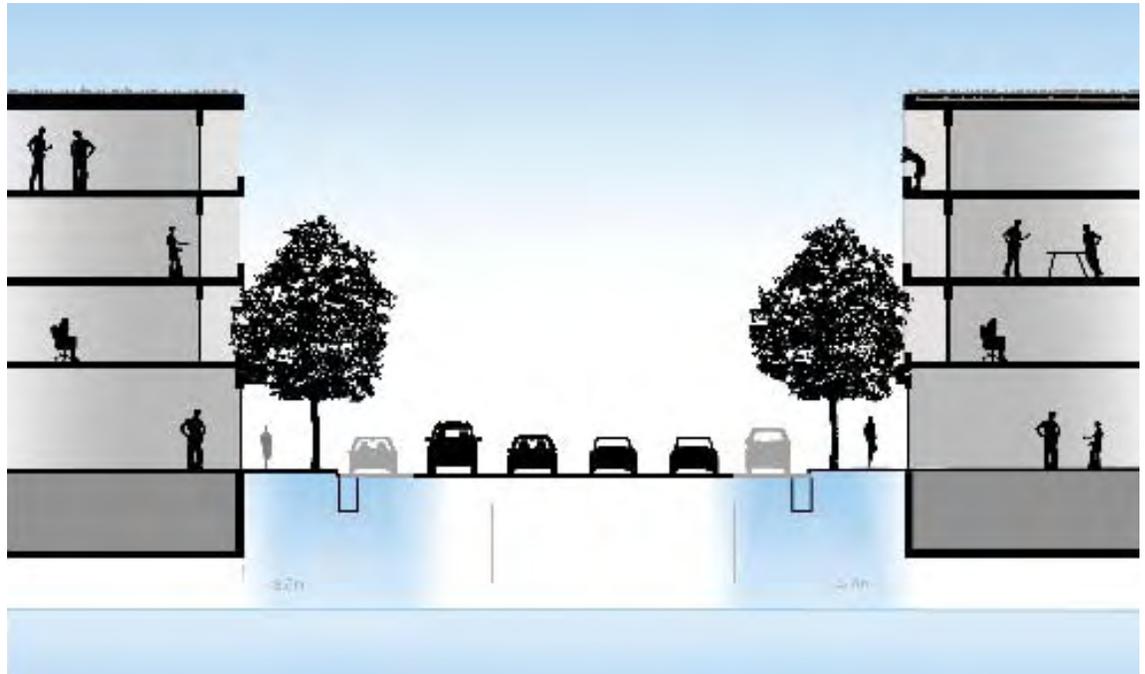


Figure 4.22 Typical Lougheed Highway corridor

Other important goals in the design of Dewdney Trunk and Lougheed should be to provide wider sidewalks and a more defined pedestrian realm, as well as on-street parking areas.

A cross-section of the proposed Lougheed Highway corridor shows a 17.4m right-of-way with parking on both sides of the street and catch-basins beneath to infiltrate water runoff where possible. Lougheed is proposed to have 3.5 - 4m wide treed sidewalks and shallow building setbacks (**Figure 4.22**). Dewdney Trunk Road currently has a 21.7m right-of-way. Like Lougheed, this upgrade includes on-street parking with catch-basin infiltration, wider sidewalks and street trees on either side of the street where possible (**Figures 4.23 and 4.24**). Tree placement could also be incorporated into the sidewalk expansion, creating parking “bays” instead of a single parking lane.

Pedestrian Streets

Pedestrian streets should be designed to facilitate connectivity between residents and shops, services, natural areas and major destinations, and are meant to prioritize the experience of pedestrian and multi-modal transportation forms. Pedestrian streets are green streets.

There are two pedestrian ‘high streets’ proposed within the Centre; Edge Street and 224th Street. These north-south streets differ from others in their stronger connectivity accented by wider sidewalks, additional street trees, plantings and prevalence of other amenities and furnishings like seats which encourage and support major



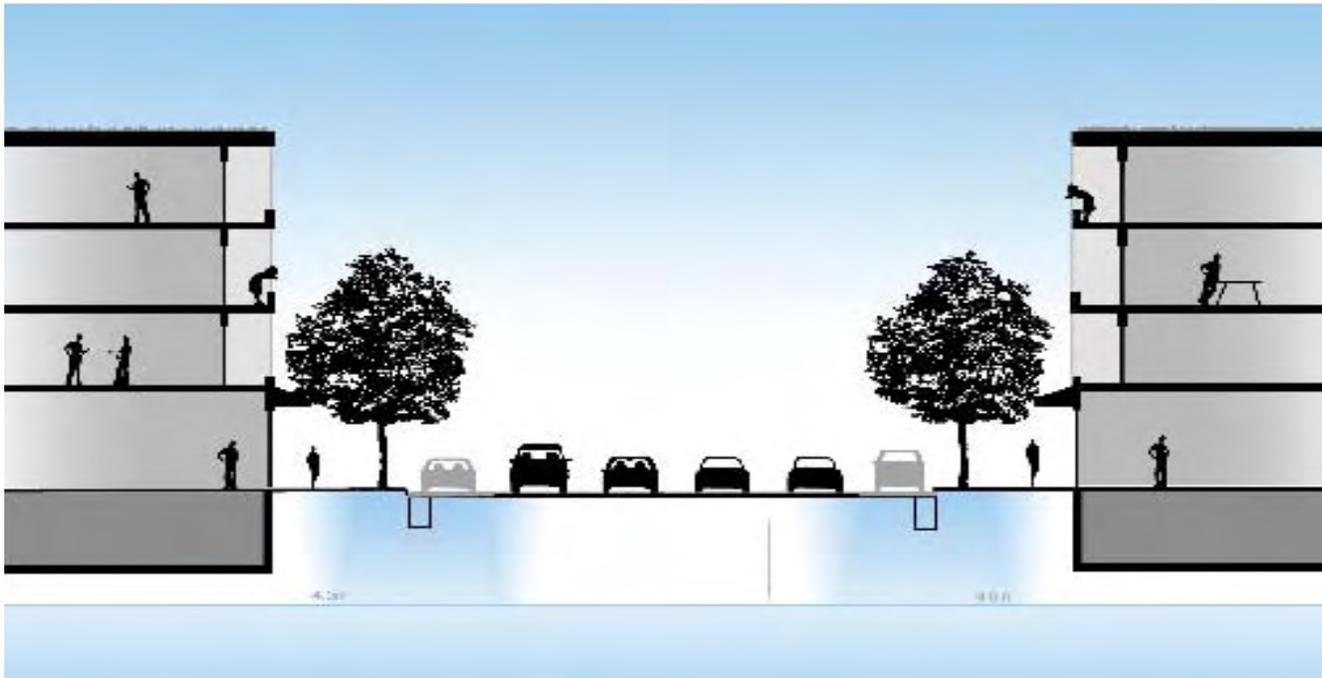


Figure 4.23 Typical Dewdney Trunk Road corridor.

pedestrian use. These streets function as major pedestrian-oriented spines connecting commercial and institutional spaces in the Town Centre with important community spaces further out.

The cross-section of Edge Street shows a 6.5m sidewalk and boulevard area with a double-row of trees flanking both sides (**Figures 4.25 and 4.26**). This street connects a northern greenway with Eric Langton Elementary School, the Civic and Cultural Centre, bus loop and Haney Place Mall in the downtown area.

The 224th Street cross-section shows a 3.5m sidewalk and boulevard space, with bike lanes on either side of the street and modified catch basins for infiltration where possible (**Figure 4.27**). 224th street connects the Alouette greenway in the north to the Civic and Cultural Centre and commercial district, the Haney House Museum and Port Haney heritage walk, and the historical wharf on the original waterfront heart of Port Haney.

Green Streets

Responding to a desire for increased ecological sustainability within the Centre, the group addressed ways of implementing green infrastructure in streets to manage rainwater more effectively than at present. Green streets feature more vegetation and permeable area (e.g. gravel paving) than other streets. These streets have strong pedestrian environments and include all streets with designated bicycle routes (**Figure 3.4**). Furthermore, green streets can form a network within the Centre, connecting to greenway, park and conservation areas.

In the interest of preserving all watercourses and hydrological networks, it is a long-term goal to extend green infrastructure to



Figure 4.24 Photo simulation

all streets within the Centre. This can be an ongoing, incremental process which should be implemented with every street upgrade. Brown Avenue is an example of a green street. Tree canopies shade an approximate 13m right-of-way, with 3.8m shared bicycle and parking lanes on either side (**Figure 4.28**). Catchbasin retrofits will promote rainwater infiltration on streets such as Brown Avenue where gravel verges or swales are not feasible.





Figure 4.25 Photo simulation: Edge Street, Before and After

High Infiltration Green Streets

Within the green street network, some streets should be designed to ensure a 90% infiltration minimum, and should be implemented on roads north of Dewdney Trunk Road as this marks the boundary, or ridge, which divides the Alouette and Fraser River watersheds. Runoff from streets north of Dewdney feeds into the watershed of

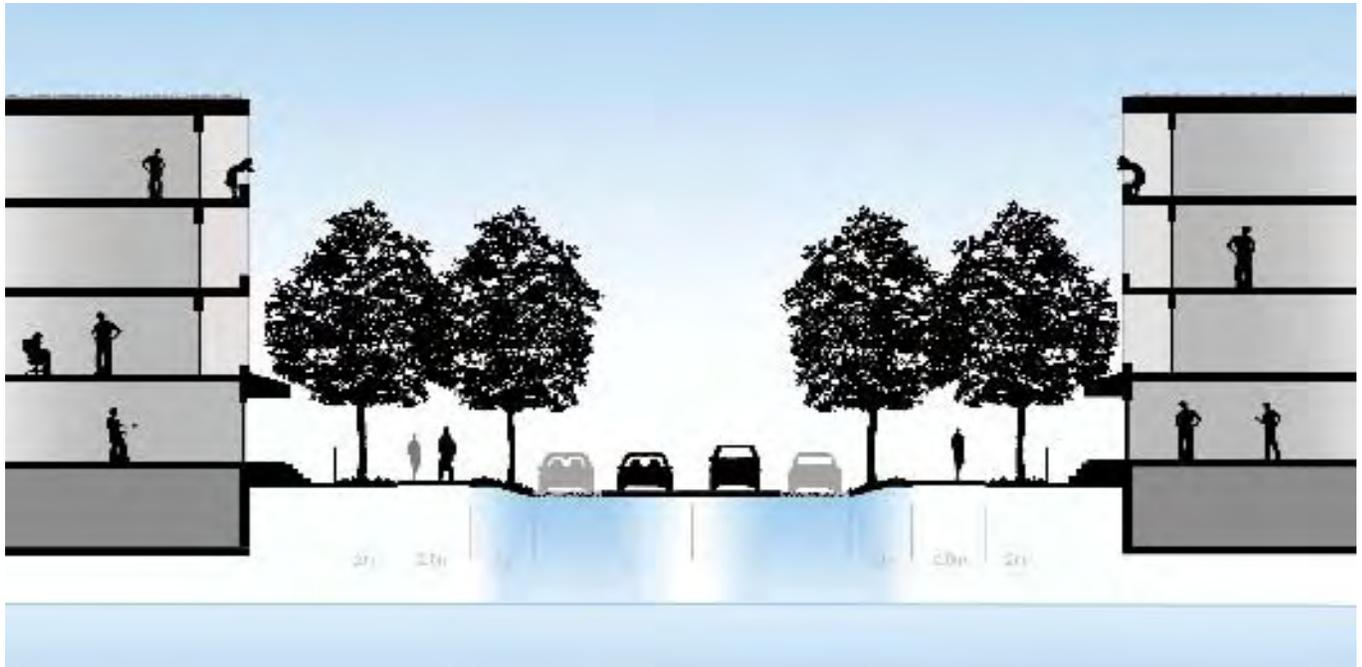


Figure 4.26 Edge Street Concept

the sensitive fish-bearing Alouette River and is thus more likely to carry harmful pollutants and sediment into this delicate ecosystem. Consequently, these high-infiltration green streets shall be determined primarily in accordance with topographic slopes so that water from these streets filters into a larger green corridor or pocket which functions as an infiltration zone which in turn will convey the cleaned water to the receiving channel of the Alouette River (**Figure 3.5**).

The need to infiltrate runoff and therefore clean the water and lessen the quantity before it enters the watershed is a priority for both Alouette and the Fraser watersheds, but the Fraser watershed is not as readily impacted by runoff quantities due to its size.

Using the "Water Balance Model" as a planning tool, streets north of Dewdney should be designed to achieve 90% permeability (whereby 2.54 cm [1"] of water is retained or infiltrated per day), since 10% impervious urban area is a recognized threshold at which aquatic health is initially and significantly impacted. The specifics of this process are addressed in more detail in the corresponding technical bulletin (see Appendix D: Rainwater Management in Maple Ridge), but for the most part this target is accomplished by implementing extensive plantings, continuous permeable gravel parking verges and/or swales, various types of infiltration pockets and continuous, wide canopied street trees on each street in this area.

Edge Street is an example of such a street, and others are shown in the green infrastructure proposal (**Figure 3.5**). In this case, Edge Street is also a pedestrian priority street, and is designed with a double row of trees on either side and generous 2.5m wide sidewalks (**Figures 4.25 and 4.26**).





Figure 4.27 224th Street Corridor Concept

Other Local Streets

Local streets in the Centre are designed to service the mainly residential areas and accommodate all modes of neighbourhood traffic. On-street parking is permitted on both sides of the street at all times and traffic calming measures should be incorporated, as should green infrastructure.

A typical local road could have two 3.0m traffic lanes, plus two 2.5m permeable parking lanes, and pedestrian paths, fitting into a 16.0m right-of-way. Other roads may be narrower and function by “queuing”, whereby vehicles travelling down the same street can allow the other to pass by temporarily pulling over into the parking lane. Prior to finalizing designs, coordination with emergency response departments and agencies should be achieved.

This type of local road continues to work successfully throughout Vancouver and ensures more pleasant and safer roads due to lower vehicle speeds. Additionally, these narrow roads eliminate the need for speed bumps, and allow tree canopies to shade most if not all of the road surface and intercept the majority of rainwater.

4.5.3 Environmental Design / Green Infrastructure

In the interest of preserving ecological integrity within Maple Ridge Town Centre, green infrastructure is proposed throughout the Centre which will enhance and preserve environmental quality while creating recreational, pleasant and safe spaces for people. Green infrastructure is the interconnected network of open spaces,

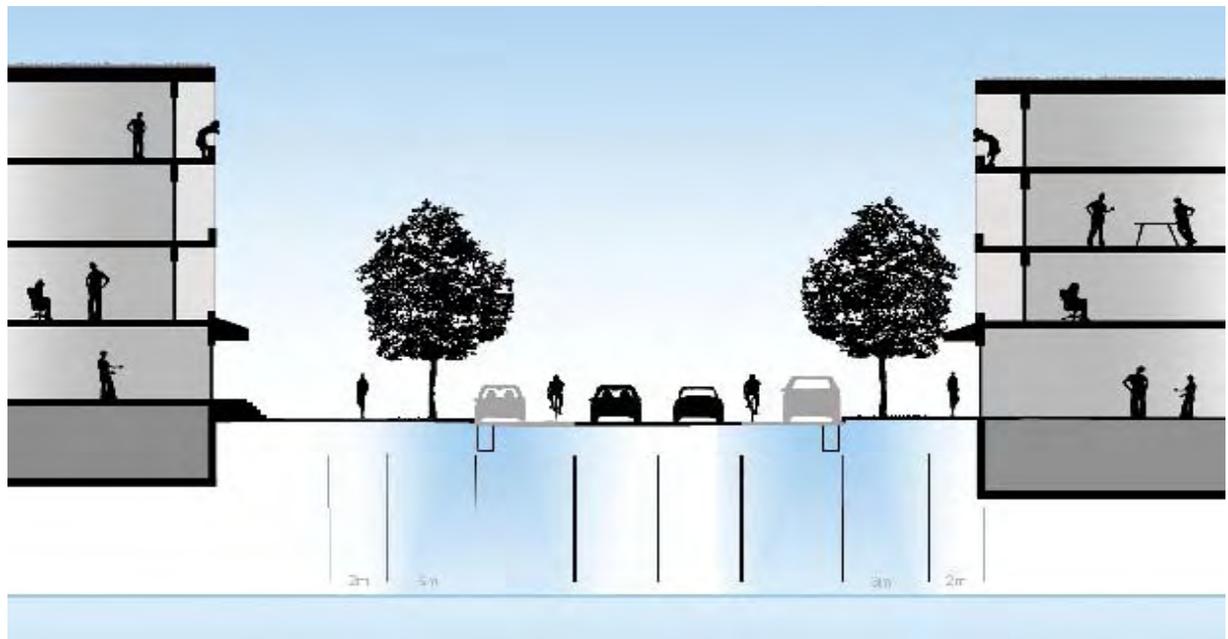


Figure 4.28 Brown Avenue Concept

waterways, and all of the natural areas that sustain human and ecological health. Achieving the performance objectives related to green infrastructure requires minimizing the amount of impervious surface area consequent to buildings and other surfaces on each lot. Features which respond to this, and how they are achieved in the plan, are as follows:

Trees

The target to achieve 50% tree canopy coverage in the Centre was determined during the charrette, and to achieve this target, all streets and surface parking lots in the Centre should be treed, with species that develop wide canopy coverage to efficiently shade surfaces and intercept rainwater. Native tree species planted with other native shrubs and groundcovers will reduce the need for extra water, fertilizer and maintenance.

The GVRD will be providing Maple Ridge with an analysis of the benefits of tree canopy coverage specific to the Town Centre, using a design tool called "CITYgreen". This tool will use the proposed Maple Ridge Town Centre Concept Plan to evaluate the economic savings which natural systems can provide to the municipality. These benefits are measured in infrastructure savings and air and water quantity and quality. CITYgreen analyses stormwater runoff, air quality, summer energy savings, carbon storage and avoidance and tree growth, using the most up-to-date scientific tools and research.¹ For low energy use and habitat-friendly landscaping, Naturescape principles may be adopted as policy for landscaping public lands.² For example, in 1997, the city of Port Moody passed a resolution to adopt the principles of the Naturescape Program for all publicly owned lands and promote the use of Naturescape guidelines where appropriate.³



Pervious Parking Verges

All streets north of Dewdney Trunk Road should have pervious edges from materials such as crushed gravel. Grass filter strips and elevated drain inlets, or other similar devices, must be used to prevent siltation. Curbs that prevent the free flow of water from paved surfaces to permeable areas are discouraged in most places. Green streets throughout the Centre should have pervious edges wherever possible.

Infiltration Areas

Surface parking lots and other expanses which generate sheet runoff shall be upgraded with vegetated swales and permeable pockets of various sizes to absorb and filter rainwater. Residential lots are to be constructed to maximize the retention of permeable surfaces (e.g. infiltration pockets, planted swales and rainwater collection systems). Townhouses and garden apartments can be oriented around a shared

green courtyard that is an extension of a pedestrian greenway. The courtyards serve many functions, including a pedestrian corridor, bird habitat, recreation opportunities, micro-climate control and rainwater management.

Green Roofs

Buildings shall be designed in consultation with R-2000 and/or Leadership in Energy and Environmental Design (LEED) and should include roof gardens or other permeable roof surfaces on new and renovated buildings (**Figure 4.29**). These buildings include garden apartments, townhouses, commercial, live/work and mixed use.



Figure 4.29 A newly built roof garden

Parks and Conservation Areas

Rainwater is managed throughout the site using the vegetated areas in greenways, parks and conservation areas. This connected green infrastructure permits rainwater to infiltrate into the soil, filtering pollutants and replenishing groundwater. Community gardens provide active green-space areas for community farming, waste management (e.g. composting), and socializing. Conservation areas and greenways provide spaces and corridors with considerable ecological value. Because of their sensitive nature, their use is to be restricted to passive recreation (e.g. viewing and interpretation) and riparian areas shall have a 15m buffer zone to protect the stream area (**Figure 4.30**).



Figure 4.30 Riparian trail with 15m buffer zone. Blue line indicates groundwater level.

- ¹ American Forests: CITYgreen,
<http://www.americanforests.org/productsandpubs/citygreen/>
- ² Naturescape British Columbia, <http://www.hctf.ca/nature.htm>
- ³ <http://www.cityofportmoody.com/About+Port+Moody/Awards+and+Recognition/Awards+Weve+Won/Naturescape.htm>



MAPLE RIDGE TOWN CENTRE

Concept Plan

Section 5.0 Implementation



5.0 Implementation

This section reviews the difference between where we are now, and what we need to do, in order to achieve our collective and sustainable Community Concept Plan for the Maple Ridge Centre.

5.1. Integrating the Concept Plan into the Official Community Plan

The Official Community Plan (OCP) indicates land use designations that have been assigned by the District through public consultations. These designations characterize the land use that the Municipality would like to see over the next 20 years or more. The OCP for Maple Ridge Centre indicates the District's intention to create a concentrated commercial district surrounded by medium to high density housing, interspersed by small parks, conservation areas protecting riparian zones, and designated historic places. The OCP was used as a reference and general basis for decisions made in the charrette. **(Figure 5.1)**

Although the Concept Plan does not depart significantly from the OCP, there are some important distinctions **(Figure 5.2)**. Overall, the proposed land use changes allow for more residential development, a greater mix of housing types and land uses, and ultimately a vibrant and revitalized downtown area.

The Plan was designed according to aspects which the community felt were most important to Maple Ridge. These were translated into three overall guiding elements: transportation, green infrastructure, and energy and water (section 3.0). These elements guided the structure of the proposed land use. Specific details related to this structure is as follows:

- The Plan is based on a walkable Centre, and to support this, commercial land use areas lie within a maximum five-minute walk (approx. 400m) from any residence in the Centre. Within these commercial areas, several types are proposed:
 - Town Centre commercial
 - Mixed Use (Commercial Required)
 - Mixed Use (Commercial Optional).A greater variety and density of housing will support the commercial district, with live-work units proposed

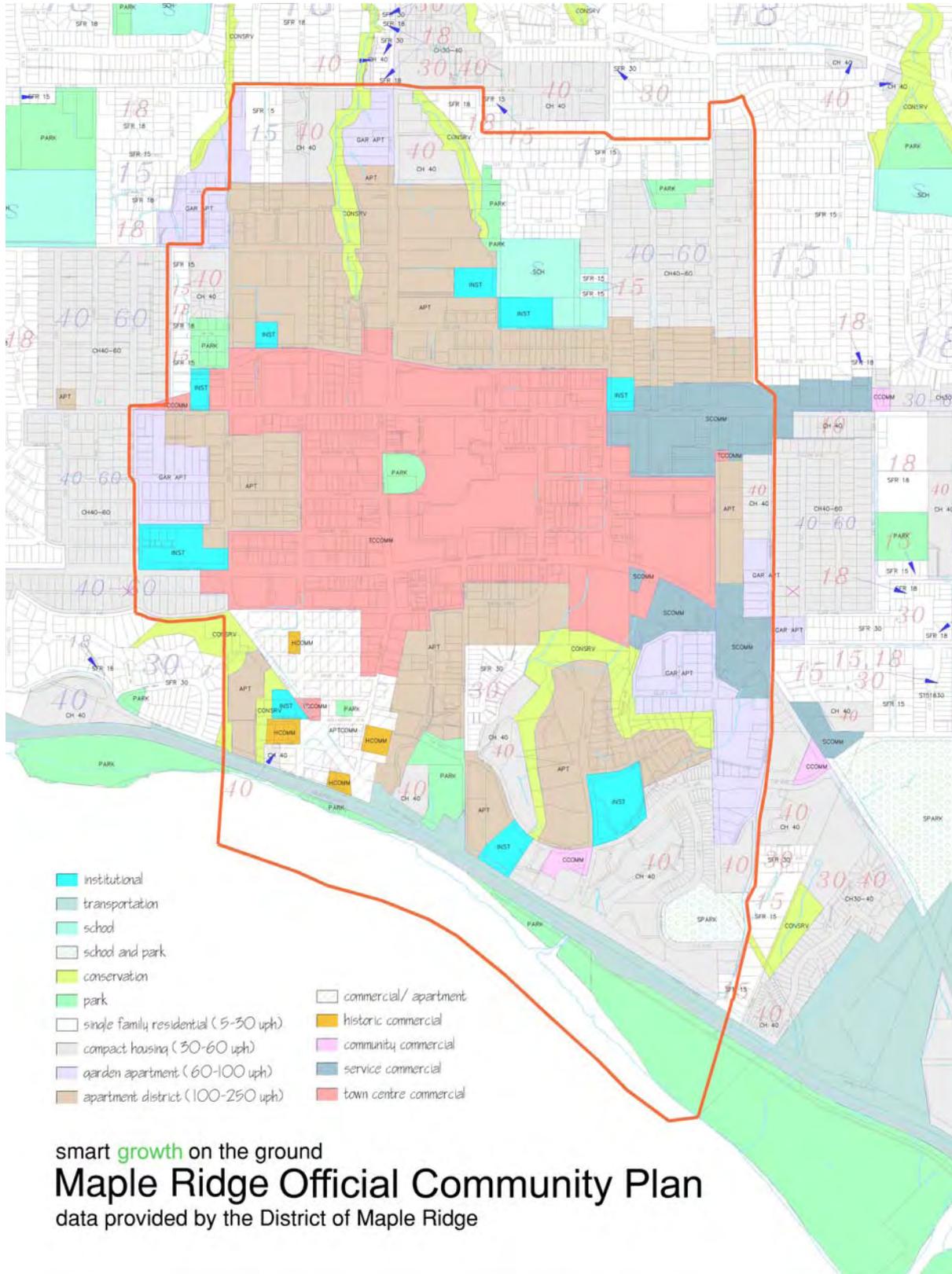


Figure 5.1 Maple Ridge OCP Map



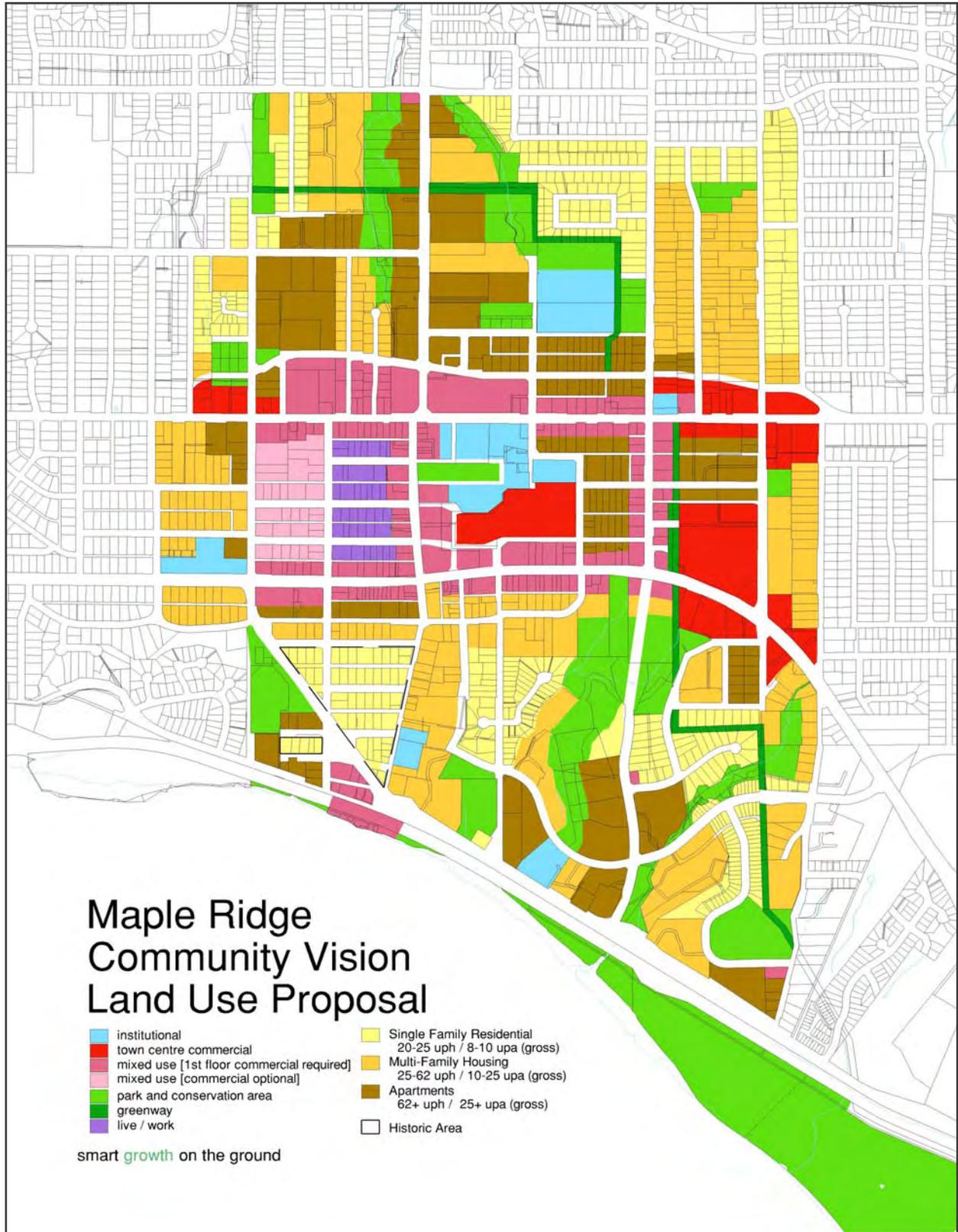


Figure 5.2 Maple Ridge Community Vision Land Use Proposal

to increase local job options, and new units, such as coach houses, secondary suites, and townhouses can add housing choices to these areas on a lot-by-lot basis, without altering the essential character of the neighbourhood. Density targets in the Plan are compared with the OCP in **Table 5.1**.

- The Plan proposes specific building structures, functions and orientations which seek to preserve energy and water resources, and are based on national standards for developing high-performance, sustainable buildings, such as the LEED, C-2000, and R-2000 rating systems. Furthermore, emphasis is placed on redeveloping under-built and under-utilized properties, such as at 121st Avenue and Edge Street.
- A defining aspect within the Plan is a green infrastructure network, which connects conservation areas with greenways and green streets. If the Municipality could purchase or lease the space, a major greenway that runs along an existing underground Terasen Gas utility corridor, is proposed to run through the site. Park sites and green corridors will connect to conservation areas wherever possible, and 15m setbacks will be implemented as a development guideline to preserve existing streams. Parks designated in the Maple Ridge Concept Plan Land Use Proposal include both existing park space (e.g. Memorial Peace Park and schoolyards), and potential future parks (e.g. new District lands on Brown Avenue and 222nd Street), if the Municipality could purchase the land. To encourage regional connections, trails will extend into the Trans-Canada and Alouette park trail systems. A community garden is proposed for Edge Street and 121st Avenue, as an option for the currently under-utilized space. Green streets with infiltration areas, green roofs and increased tree canopy coverage conserve our water resources and ensure ecological integrity in the site is maintained. Rainwater ponds, green roofs, country lanes and various types of infiltration zones are proposed throughout the site, and connect to larger green infrastructure systems.
- The Plan presents a finer grain of differentiation specifically in defining not only where buildings are but also defining their character and how they relate to the street, to intersections, to each other, and what significant places they connect. The Haney Mall for instance, could be retrofitted to encourage transparency in its structure so that it relates to nearby civic and other important buildings and places.
- The emphasis on connectivity is highly defined in the Plan, as it uses the street grid as a framework for vehicle, pedestrian and multi-modal connectivity, both regionally and locally. Two roads in particular have been defined as pedestrian-oriented spines within the Centre: 224th Street



and Edge Street. These function as major connectors between institutional, civic, commercial, natural and historic areas, and building types and streets are designed in response. To encourage non-vehicular travel modes, bike and bus routes have been extended throughout the Centre, with a bus loop proposed around McIntosh Street and Edge Street. These also link important areas and connect with regional routes.

- The Plan responds to the need for enhanced connection between significant places within the Centre: historical areas, the waterfront, the West Coast Express rail line, the civic centre, schools, and the commercial district.

	Single Family Residential	Compact Housing	Garden Apartments	Apartment District
OCP	5-30 / 2-12	30-60 / 12-24	60-100 / 12-40	100-250 / 40-101
Concept Plan	20-25 / 8-10	25-62 / 10-25	Apartments	
			62+ / 25+	

Table 5.1 Density Comparison uph (gross) / upa (gross)

5.2. Implementation Actions

Smart Growth on the Ground is fundamentally concerned with action: “on the ground” activities and programs that will result in built examples of smart growth. Far from a planning exercise, this initiative emphasizes real change to by-laws and regulations, to building standards, and ultimately to the vitality and sustainability of the Maple Ridge Centre.

Area plan preparation and adoption will occur in the Fall/Winter of 2005, and the Maple Ridge Planning Department will take the lead role in zoning changes and development incentives. Further activities are proposed to be scheduled such as a review of D.C.C’s (Development Cost Charges).

The following table (**Table 5.2**) contains a preliminary list of further actions that can be taken to implement this Concept Plan. Some of these activities may prove to be inappropriate or unnecessary as further research or decisions are made. Other activities may be added which are not yet foreseen. However, this table provides a starting point from which the Council, staff, citizens, and others can begin to achieve “on the ground” change. For each action, an approximate timeline and responsible party is noted.

Action	Approximate Timing	Responsibility
Review and adopt the Community Vision as an Area Plan for the Maple Ridge Regional Town Centre	March 2005	District Council
Adopt changes to Official Community Plan map (see section 5.1)	2005	District planning staff, Council
Revise zoning district regulations to remove ground floor commercial requirement in mixed-use (commercial optional) areas	2005	District planning staff, Council
Create new zone to allow a consistent calculation of Floor Area Ratio	2005	District planning staff, Council
Review parking standards (particularly to encourage rapid redevelopment on catalyst projects)	2005	District planning staff, Council
Provide list of incentive programs for green buildings and alternative energy initiatives	2005	BC Hydro
Encourage the use of green building standards and alternative energy initiatives in new and retrofitted buildings in the Centre	Ongoing	District staff, Council
Apply for funding for green building incentive programs (Federal Opportunity Fund, Green Municipal Infrastructure Funds etc.)	Spring 2005 onwards	District staff with SGOG team assistance
Revise road standards as per section 3.3 and 4.5, to apply to any new development or reconstruction of existing roads	2005	District engineering staff, Council
Negotiate road cross sections for Dewdney Trunk Road and Loughheed Highway with Translink	2005	District engineering staff, Council
Conduct research on tree canopy values	2005	GVRD
Conduct research on energy management, conservation, and alternative sources	Fall 2004 onwards	GVRD and BC Hydro
Conduct research on alternative rainwater management technologies	Fall 2004 onwards	GVRD
As appropriate, coordinate workshops or meetings with developers to explore application of community vision and green building technologies	Ongoing	District staff, SGOG team, GLOBE Foundation
Coordinate other research programs and funding sources with applicability to the Maple Ridge Centre	Ongoing	SGOG team
As requested by District staff, assist with developer negotiations on development projects within the Maple Ridge Centre	Ongoing	SGOG team
Construct new buildings which are consistent with this plan	Ongoing	Developers, property owners

Table 5.2 Preliminary list of Implementation Actions





Figure 5.3 Aerial perspective drawing of the Maple Ridge Town Centre Concept Plan 2021

MAPLE RIDGE TOWN CENTRE

Concept Plan

Appendices

Prepared by:

The Sustainable Communities Program

Centre for Landscape Research

University of British Columbia

Vancouver, British Columbia

March 2005



MAPLE RIDGE TOWN CENTRE

Concept Plan

Appendix A The Charrette Team

Prepared by:

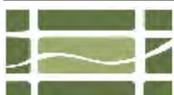
The Sustainable Communities Program

Centre for Landscape Research

University of British Columbia

Vancouver, British Columbia

March 2005





The Maple Ridge Town Centre Concept Plan

Charrette Team



smart growth on the ground

The Charrette: June 2,3,9,10 2004

The Team:

Community Representatives

- 1 Professional / business services: Taryn McKay
- 2 Retail: Racine Barbour
- 3 Entertainment businesses: Penny Daflos
- 4 Developers: Joel Lycan
- 5 Landowners: Rod Gruzelier
- 6 Residents of Centre: Dan Olson
- 7 History, arts, recreation and culture: Helmi Braches
- 8 Social issues: Heather McCain
- 9 Youth: Ryan McCaffrey
- 10 Project Committee: Claus Andrup

District of Maple Ridge

- 11 Council: Ernie Daykin, Jon Harris
- 12 Planning: Jane Pickering
- 13 Engineering: Frank Quinn
- 14 Building Codes: Brock McDonald
- 15 Fire Department: Mark Smitton
- 16 RCMP: Cpl. Bernie Smandych

Other Government and Others

- 17 GVRD: Susan Haid
- 18 Environment Canada: Zita Botelho
- 19 Province of BC: Ted Sheldon
- 20 BC Hydro: Liz Johnston

Core Staff & Facilitators

- 21 Patrick Condon: James Taylor Chair, UBC
- 22 Jodie Siu: Smart Growth BC
- 23 Shana Johnstone: Sustainable Communities Program, UBC
- 24 Susan Milley: Sustainable Communities Program, UBC
- 25 Blair Erb: Coriolis Consulting Ltd.
- 26 Rob Lane: Regional Plan Association, New York
- 27 Bob Worden: Ramsay-Worden Architects
- 28 Andrea Bolin: Ramsay-Worden Architects
- 29 David Rousseau: Archemy Consulting Ltd.
- 30 David Kooris: Student intern, Sustainable Communities Program, UBC

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

¹ **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

7. enter into partnerships with GVRD member municipalities, the provincial and federal governments, and other organizations for the achievement of more complete communities throughout Greater Vancouver.”

² **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (1), “...to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources.” Also 942.11, (2).

³ **Livable Region Strategic Plan, GVRD**, 1996, p.24 “In order to achieve a compact metropolitan region, the GVRD Board will:

11. seek through partnerships on a compact metropolitan region:

11.1 achievement of the population and employment growth targets for 2006 and 2021;

11.4 achievement of adequate population and employment densities in centres and transportation corridors to support planned transit services.”

⁴ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide parks and open space in all areas of the municipalities, particularly where residents are concentrated.”

⁵ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(a) avoiding urban sprawl and ensuring that development takes place where adequate facilities exist or can be provided in a timely, economic and efficient manner.”

⁶ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Land Use and Development:

1) Development of vacant sites and redevelopment of sites with appropriate uses or buildings.

2) Development of high density residential uses in the downtown.

3) A mixture of complimentary uses.

4) Methods to achieve land assembly.”

⁷ **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 4. Transport Supply Policies, 4.3 “Transit providers should place priority on improving local transit services in designated urbanized and denser-developed areas within the compact metropolitan area.”

⁸ **Livable Region Strategic Plan, GVRD** (1996), p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

8.3 an equitable distribution of public social and cultural services and facilities.”

⁹ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide parks and open space which can serve all sectors of the communities (e.g. age groups including youths and the elderly, those with special needs for access); to provide a variety of parks and open space, including recreational parks, natural open spaces, and urban spaces such as plazas and special streets.”

¹⁰ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, “To provide parks and open spaces which accommodate opportunities for a wide variety of pursuits; to provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas; to improve access to the river front, with the objectives of increased parks and open space and a continuous waterfront route, which could include portions of trail, boardwalk and beach.”

¹¹ **B.C. Parks System Goals**, n/d, under the recreation mandate of the *Park Act* – “Goal 4: Local Recreation-to ensure access to local outdoor recreation opportunities for all residents of this province.”

<http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/callaghan/appendices.pdf>

¹² **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(l) preserving, creating and linking urban and rural open space including parks and recreation areas.”

¹³ **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

8.4 development of a network of high-quality, mixed activity urban centres supported by an appropriate level of public transit and a range of community services and cultural facilities for residents and employees.”

¹⁴ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide parks and open space in all areas of the municipalities, particularly where residents are concentrated; To provide parks and open space which can serve all sectors of the communities (e.g. age groups including youths and the elderly, those with special needs for access).”

¹⁵ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(a) avoiding urban sprawl and ensuring that development takes place where adequate facilities exist or can be provided in a timely, economic and efficient manner.”

¹⁶ **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.5 “Near and within all activity centres... a range of housing, within a pedestrian- and bicycle-friendly urban design, both by construction of new centres and by re-development of existing ones; 1.6 “Municipalities should provide a transit-friendly local street pattern allowing transit routes to pass within walking range of a large proportion of dwellings, job sites, schools, shops and other activity centres.”

¹⁷ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #1 – Access & Mobility, “Provide for safe, convenient, and accessible movement of people, goods, and services throughout the District.”

Objectives:

- Move people, goods & services
- Promote accessibility
- Develop multi-modal network
- Enhance safety
- Support regional connections
- Develop efficient roadways
- Support goods movement
- Maintain emergency access

¹⁸ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #3 – Choice, “Provide transportation infrastructure and services in a manner that offers more travel choices to District residents.”

Objectives:

- Integrate modes
- Promote transit
- Promote cycling
- Support pedestrians
- Encourage ridesharing

¹⁹ **Livable Region Strategic Plan, GVRD**, 1996, p.25 “In order to increase transportation choice, and to implement the GVRD Board’s decisions on June 29, 1994 to approve the Transport 2021 Long-Range and Medium-Range Plans, the Board will:

16. seek through partnerships on increasing transportation choice:

- 16.4 to enhance and/or retrofit local streets and infrastructure to favour transit, bicycle and pedestrian uses.”

²⁰ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, “To provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas.”

²¹ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(b) settlement patterns that minimize the use of automobiles and encourage walking, bicycling and the efficient use of public transit.”

²² **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Movement and Circulation:

- 5) In the management of movement and circulation, assign priority to the movement of pedestrians, cyclists, transit and motor vehicles, in that order.
- 6) Smooth traffic circulation in and through the downtown.
- 7) Streets that serve as links rather than barriers to pedestrian activity.”

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

²³ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #2 – Quality, “Provide transportation infrastructure and services that support long-term municipal and regional land use and economic policies and actions.”

Objectives:

- Complement local policies & plans
- Support regional & provincial initiatives
- Support urban design objectives
- Provide flexibility

²⁴ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #3 – Choice, “Provide transportation infrastructure and services in a manner that offers more travel choices to District residents.”

Objectives:

- Integrate modes
- Promote transit
- Promote cycling
- Support pedestrians
- Encourage ridesharing

²⁵ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #5 – Affordability, “Provide transportation infrastructure and services in a cost-effective and efficient manner that make the best use of existing resources.”

Objectives:

- Minimize infrastructure
- Maximize efficiency
- Manage congestion
- Prioritize transit and goods movement
- Identify alternative revenue sources

²⁶ **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

8.7 development of transportation services and facilities that support local access to centres.”

²⁷ **Livable Region Strategic Plan, GVRD**, 1996, p.24 “In order to achieve a compact metropolitan region, the GVRD Board will:

11. seek through partnerships on a compact metropolitan region:

11.3 provision of transportation services and facilities required to support the population and employment growth targets, with priority given to areas identified for above trend population and employment growth.”

²⁸ **Livable Region Strategic Plan, GVRD**, 1996, p.25 “In order to increase transportation choice, and to implement the GVRD Board’s decisions on June 29, 1994 to approve the Transport 2021 Long-Range and Medium-Range Plans, the Board will:

16. seek through partnerships on increasing transportation choice:

16.1 to plan and implement a transit-oriented and automobile-restrained transportation system for the region based on intermediate capacity transit facilities (including light rail transit, SkyTrain and high-capacity busways) within the identified corridors;

16.2 to provide a variety of local transit services and networks with the flexibility to serve different demands in support of the complete communities and the compact metropolitan region.”

²⁹ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(b) settlement patterns that minimize the use of automobiles and encourage walking, bicycling and the efficient use of public transit; (c) the efficient movement of goods and people while making effective use of transportation and utility corridors.”

³⁰ **2005-2007 Three-Year Plan & Ten-Year Outlook: Strategic Transportation Plan Amendment**, December 2003, Executive Summary: Overall Goals, “The 10-year outlook will consider transit services for future needs in the context of the GVRD Liveable Region Strategic Plan (LRSP). The Outlook proposes a balanced approach with a mix of strategies that will meet a number of objectives including:

- Make transit a real option
- Reduce gridlock especially for goods movement
- Maximize economic potential
- Maintain and enhance the environment
- Share benefits and costs equitably”

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

³¹ **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.6 “Municipalities should provide a transit-friendly local street pattern allowing transit routes to pass within walking range of a large proportion of dwellings, job sites, schools, shops and other activity centres.”

³² **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.7 “Municipalities should develop bylaws and guidelines to help attain long range transport goals at both regional and local levels, including retrofitting neighbourhoods which currently have street patterns which are difficult to serve by transit;

4.1 Transit providers should add high quality, fast, frequent services linking facilities linking regional town centres;

4.2 Transit providers should offer a family of local transit services, including para-transit and flexible-route transit services, to serve demand for different time periods and different markets;

4.3 Transit providers should place priority on improving local transit services in designated urbanized and denser-developed areas within the compact metropolitan area;

4.4 To make best use of existing investment, the government should re-allocate existing roadway capacity to maximize people-carrying capacity, not vehicle-carrying capacity, and take into account the expected number of passengers per vehicle rather than the number of seats;

4.9 Governments should follow a single-occupant vehicle restraint strategy, consistent with the regional objective of reversing the past priorities among the transport modes, increasing the choice of modes available, complementing the TDM [Transportation Demand Management] policy and allowing investment in transit to be maximized.”

³³ **Livable Region Strategic Plan, GVRD**, 1996, p.22 “In order to protect Greater Vancouver’s Green Zone, the GVRD Board will:

2. enter into partnerships with GVRD member municipalities, the provincial and federal governments, First Nations, and private organizations for the establishment of Greater Vancouver’s Green Zone.

4. seek through partnerships on the establishment of the Green Zone:

4.5 the viability of the region’s ecology through such measures as an interconnected system of wetlands, upland habitats and wildlife corridors.”

³⁴ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To protect environmental resources, “To secure, protect and enhance natural features, including streams with their riparian corridors, forested areas, special wildlife areas and wetlands; to protect corridors of natural areas to promote use by fish and wildlife; to maintain environmental resources in the communities as a whole, through tree management and other initiatives.”

³⁵ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space To Accommodate Outdoor Recreational Pursuits, “To provide educational opportunities related to natural resources, (e.g. programs, interpretive signs).”

³⁶ **Canadian Environmental Protection Act**, 1999, Duties of the Government of Canada, 2. Including 2.(a) “take preventive and remedial measures to protect, enhance and restore the environment.”

³⁷ **B.C. Parks System Goals**, under the conservation mandate of the *Park Act* – “Goal 1: Protection of Representative Landscapes – to conserve British Columbia’s natural diversity by protecting viable, representative examples of our different landscapes.” Also, “Goal 2: Protection of Special Features – to protect British Columbia’s key natural and cultural features, including outstanding examples of our wildlife, old-growth forests, waterfalls and cultural artifacts.” <http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/callaghan/appendices.pdf>

³⁸ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(d) protecting environmentally sensitive areas.”

³⁹ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 6. Water conservation, “Reduced water use helps to preserve and protect surface waters for fish and wildlife habitat and our natural attractions. These are essential to the economic health of Canada’s tourism and outdoor recreation industries.”

⁴⁰ **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #4 – Community & Environment, “Provide transportation infrastructure and services that enhance quality of life in Maple Ridge and the quality of the natural environment.”

Objectives:

- Maintain road network hierarchy
- Integrate communities
- Coordinate with land use planning
- Preserve historical and natural environments
- Minimize pollution

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

- Support healthy lifestyles

⁴¹ **Energy For Our Future: A Plan For BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, "Controlling Air Emissions, Policy Action #24 (new/ongoing): the government is developing strategies to manage B.C.'s greenhouse gas emissions and air quality in threatened airsheds."

⁴² **Livable Region Strategic Plan, GVRD**, 1996, p.22 "In order to protect Greater Vancouver's Green Zone, the GVRD Board will:

2. enter into partnerships with GVRD member municipalities, the provincial and federal governments, First Nations, and private organizations for the establishment of Greater Vancouver's Green Zone.

4. seek through partnerships on the establishment of the Green Zone:

4.6 minimization of pressure on the Green Zone through management of urban areas;

4.7 limitation of the extent and impact of transportation corridors in the Green Zone."

⁴³ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, "To provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas."

⁴⁴ **Land Development Guidelines for the Protection of Aquatic Habitat**, 1993, Section 1, Purpose and Scope, "The purpose of these guidelines is to protect fish populations and their habitat from the damaging effects of land development activities."

⁴⁵ **Fish Protection Act, Streamside Protection Regulation**, 1997, Purpose of regulation, "The purpose of this regulation is to protect streamside protection and enhancement areas from residential, commercial and industrial development so that the areas can provide natural features, functions and conditions that support fish life processes including, but not limited to, the following natural features, functions and conditions...."

⁴⁶ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), "Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(g) reducing and preventing air, land and water pollution; (j) protecting the quality and quantity of ground water and surface water; (l) preserving, creating and linking urban and rural open space including parks and recreation areas."

⁴⁷ **Air Quality Management Plan-Overview**, December 1994, GVRD AQMP Goals, "The GVRD will, in all air quality management activities, proactively encourage clean air lifestyles and business practices in the community by:

- Applying equitable and effective strategies to minimize emissions from all sources under its jurisdiction, and
- Cooperatively supporting reduction strategies of other regulatory authorities and members of the community"

⁴⁸ **Liquid Waste Management Plan**, February 2001, Policies, p.11. Designated Water Uses will be Protected, "The District and member municipalities will manage wastewater and stormwater to protect receiving water uses which have been designated by the Ministry of Environment, Lands and Parks (MELP); P19. Promotion of Water Conservation. The District will encourage water conservation initiatives by recognizing reductions in water usage and wastewater generation; C.32 Recognition for Water Conservation. The District, in conjunction with the Greater Vancouver Water District (GVWD), will evaluate implementation of a recognition program that acknowledges reductions in water usage and wastewater generation."

⁴⁹ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 2. Environmental quality improvements, "Increased water use efficiency reduces the volume of water used by consumers, and of wastewater going to treatment facilities."

⁵⁰ **Pollution Prevention—A Federal Strategy for Action**, 2003, Working towards results – the action plan, "With the private sector—Achieve a climate in which pollution prevention becomes a major consideration in industrial activities."

⁵¹ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 1. Capital cost saving on the infrastructure to deliver water and treat wastewater, "Water efficiency has the potential to delay or eliminate the public funding required for additional facilities needed to meet future demand for water and wastewater treatment, by reducing the demand. It also will reduce the cost of collecting and treating wastewater as flows are subsequently reduced (over and above reductions in inflow and infiltration)."

⁵² **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 4. Urban intensification, "Water efficiency allows more intensive development on existing water and sewer infrastructure, as less water is required per household or business. Water conserved is generally cheaper than water provided through building a new water plant."

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

⁵³ **Energy for Our Future: A Plan for BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, "Alternative Energy Development, Policy Action #20 (new): Electricity distributors will pursue a voluntary goal to acquire 50 percent of new supply from *BC Clean Electricity* over the next 10 years."

("BC Clean electricity refers to alternative energy technologies that result in a net environmental improvement relative to existing energy production. Examples may include small/micro hydro, wind, solar, photovoltaic, geothermal, tidal, wave and biomass energy, as well as cogeneration of heat and power, energy from landfill gas and municipal solid waste, fuel cells, and efficiency improvements at existing facilities.")

⁵⁴ **Energy For Our Future: A Plan For BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, "Conservation and Energy Efficiency, Policy Action #22 (new): The Province will update and expand its Energy Efficiency Act, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings."

⁵⁵ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), "Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(m) planning for energy supply and promoting efficient use, conservation and alternative forms of energy."

⁵⁶ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Infrastructure:

21) Adequate infrastructure to service future development of the downtown.

22) Efficiently constructed infrastructure.

23) Infrastructure that is well designed, improves the appearance of the downtown, remains unobtrusive, and accommodates future technological change."

⁵⁷ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 3. Energy conservation, "Water efficiency also means being more efficient with the use of energy. Less energy is used to heat water, and to pump potable water and wastewater."

⁵⁸ **Livable Region Strategic Plan, GVRD**, 1996, p.23 "In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

8.2 a diversity of housing types, tenures and costs in each part of the region in balance with job distribution."

⁵⁹ **Livable Region Strategic Plan, GVRD**, 1996, p.24 "In order to achieve a compact metropolitan region, the GVRD Board will:

11. seek through partnerships on a compact metropolitan region:

11.2 the identification of further opportunities for the location of ground-oriented housing, with particular emphasis on the Growth Concentration Area."

⁶⁰ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), "Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(h) adequate, affordable and appropriate housing."

⁶¹ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Land Use and Development:

8) Development of vacant sites and redevelopment of sites with appropriate uses or buildings.

9) Development of high density residential uses in the downtown.

10) A mixture of complimentary uses.

11) Methods to achieve land assembly."

⁶² **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.5 "Near and within all activity centres... a range of housing, within a pedestrian- and bicycle-friendly urban design, both by construction of new centres and by re-development of existing ones."

⁶³ **Filming in Maple Ridge, Policy No. 9.04**, 2002, "The use of Maple Ridge as a production location by the film industry is to be nurtured, encouraged and supported provided: citizens' rights to safety, quiet, and convenience are protected; direct costs and expenses are recovered; the District is saved harmless from claims and liabilities."

⁶⁴ **Livable Region Strategic Plan, GVRD**, 1996, p.23 "In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

8.1 a better balance in jobs and labour force location throughout the region"

⁶⁵ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 5. Development opportunities, increased competitiveness and job creation, "The move to water efficiency will trigger new economic

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

activities for water-related manufacturing and service sectors, encouraging new business opportunities and job creation. Increased efficiency also means lower costs to business, leading to increased competitiveness.”

⁶⁶ **Livable Region Strategic Plan, GVRD, 1996**, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:

- 8.5 development of telecommunications services and infrastructure that facilitate a reduction in travel demand, remove barriers to job location within the region, and support growth of a modern economy;
- 8.6 promotion of private sector investment in the business growth of centres.”

⁶⁷ **Canadian Tourism Commission, Corporate Plan Summary 2003-2007**, March 2003, 9.1 Long-term Goal “To achieve its goal of increasing tourism revenue from its target markets by \$4.1 billion by 2007, the CTC must maximize return on all investments.” Also, 9.3 Key Objectives “...strengthen the Canadian brand in designated markets; optimize industry performance; surpass competing markets; and achieve overall excellence in Canada’s tourism sector.”

⁶⁸ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(f) economic development that supports the unique character of communities.”

⁶⁹ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Business and Finance:

- 24) On-going encouragement and coordination of downtown revitalization initiatives.
- 26) Stimulation of commerce.
- 27) Increased re-investment in the core.”

⁷⁰ **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 5. Development opportunities, increased competitiveness and job creation, “The move to water efficiency will trigger new economic activities for water-related manufacturing and service sectors, encouraging new business opportunities and job creation. Increased efficiency also means lower costs to business, leading to increased competitiveness.”

⁷¹ **Maple Ridge: A Community of Communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Executive Summary, Natural Heritage, “Cliff Falls; trees and plants on Haney House grounds planted by the Haney family; trees of “Shady Lane” 124 Avenue between 216 Street and Laity Street; Copper Beach Tree, on 124 Avenue; and the original stand of Maple Trees at 20818 Golf Crescent.”

⁷² **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council adopt design guidelines for the future development and redevelopment of the downtown core to give the area an overall, coherent sense of design, including the preservation of heritage structures and spaces.”

⁷³ **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council encourage and support in whatever ways it can the planning and organization of festivals and special events involving the arts as a way of celebrating community.”

⁷⁴ **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council acknowledges the role of and include youth in planning the future of the arts in our community.”

⁷⁵ **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Executive Summary, Education, Heritage Awareness, “Public awareness of heritage resources within the District could be improved. Both the Maple Ridge Heritage Management Plan (1998) and the Maple Ridge Heritage Strategy (1995) identify public awareness as a key component to increasing heritage conservation activities.”

⁷⁶ **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Two – Municipal Context, Haney Historic Community Profile. (See list of inventoried heritage resources, p.43-46.)

⁷⁷ **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Three – Heritage Conservation, Maple Ridge Community Heritage Commission Bylaw (No. 5908-2000). The bylaw outlines the terms of reference and duties of the Community Heritage Commission: 5.2, “The commission may a) develop and implement educational and public awareness programs related to heritage conservation in the District.”

⁷⁸ **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Three – Heritage Conservation, Community Heritage Commission 2003-2005 Business Plan Overview, “Vision: to live in a community where all residents and organizations value, celebrate and support heritage conservation. Heritage is understood to include all natural, built and other cultural resources.”

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

⁷⁹ **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Four – Issues, Lessons and Recommendations, Education, “Recommendation: specific programs should be developed in collaboration with the Community Heritage Commission, other local organizations, and the general public in order to raise the profile of the District’s heritage resources, and increase public interest and support.”

⁸⁰ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To raise the profile of parks and open space in the communities.”

⁸¹ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To protect environmental resources, “To identify and protect heritage sites, including minimizing use of sensitive sites.”

⁸² **Parks Canada Guiding Principles and Operational Policies**, October 2003, Part III – Cultural Resource Management Policy, 1.2 Principles of Public Benefit, 1.2.2, “To understand and appreciate cultural resources and the sometimes complex themes they illustrate, the public will be provided with information and services that effectively communicate the importance and value of those resources and their themes.”

⁸³ **Parks Canada Guiding Principles and Operational Policies**, October 2003, Part III – Cultural Resource Management Policy, 1.5 Principles of Integrity, 1.5.2, “Cultural resources should be distinguishable from, and not overwhelmed by, efforts to conserve, enhance and present them.”

⁸⁴ **Heritage Conservation Act**, 1996, Part1-2 Purpose of Act, “...encourage and facilitate the protection and conservation of heritage property in British Columbia.”

⁸⁵ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(n) good stewardship of land, sites and structures with cultural heritage value.

⁸⁶ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Built Form and Design:

- 12) Excellence in the design of all development.
- 13) A pleasant streetscape composed of well-designed buildings, landscaping and public space.
- 14) Safety and crime prevention through environmental design principles in all development.
- 15) Human scale of the built environment and a people oriented environment.
- 16) An effective design management system for development in the downtown.”

⁸⁷ **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council encourage and support in whatever ways it can the planning and organization of festivals and special events involving the arts as a way of celebrating community.”

⁸⁸ **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:
 - 8.3 an equitable distribution of public social and cultural services and facilities.”

⁸⁹ **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:
 - 8.4 development of a network of high-quality, mixed activity urban centres supported by an appropriate level of public transit and a range of community services and cultural facilities for residents and employees.”

⁹⁰ **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide a variety of parks and open space, including recreational parks, natural open spaces, and urban spaces such as plazas and special streets; to provide parks and open spaces which add to the visual character of the city.”

⁹¹ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Public Realm:

- 17) A focus for the downtown.
- 18) Public space which is pleasant to be in and look at.
- 19) A central place for people to meet, rest and visit.
- 20) Green space and landscaping in the public realm.”

⁹² **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To develop the parks and open space system with consideration for safety and security.”

⁹³ **CPTED** principles, see Creating safer communities: an introduction to crime prevention through environmental design (CPTED) for architects, planners, and builders.

APPENDIX 1

General Policy Notes

Supporting Goals and Objectives, and Design Requirements in Design Brief

⁹⁴ **Multiculturalism Act**, 1996, Purposes of the Act, 2 "The following are the purposes of this Act: (a) to recognize that the diversity of British Columbians as regards race, cultural heritage, religion, ethnicity, ancestry and place of origin is a fundamental characteristic of the society of British Columbia that enriches the lives of all British Columbians; (b) to encourage respect for the multicultural heritage of British Columbia; (c) to promote racial harmony, cross cultural understanding and respect and the development of a community that is united and at peace with itself; (d) to foster the creation of a society in British Columbia in which there are no impediments to the full and free participation of all British Columbians in the economic, social, cultural and political life of British Columbia.

⁹⁵ **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Built Form and Design:

- 21) Safety and crime prevention through environmental design principles in all development.
- 22) Human scale of the built environment and a people oriented environment.

⁹⁶ **Liquid Waste Management Plan, February 2001**, Policies p. 36. P.15: Promotion of Pollution Prevention: "Control of the quality and quantity of discharges to sewer by applying the principles of pollution prevention will be emphasized and promoted in all sewer permits, codes of practices, waste management practices and education programs ahtt are issued, developed and implemented by the District".

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

1.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “The community of Maple Ridge shares a collective responsibility to conserve resources and minimize the impact of waste disposal on other communities and ecosystems.” p. 32 **(MR goals 1,8,7,9)**

1.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 24** “Maple Ridge will encourage the development of greater density housing near commercial centres, and where appropriate near transit routes.” **(MR goals 1,3,4,11,12)**

1.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 26** “Urban development is to be limited to urban areas where: a) the best use of existing physical and social infrastructure can be made, or b) where the infrastructure can be provided in an efficient manner.” **(MR goals 1,11)**

1.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 38** “Maple Ridge encourages private and public sector businesses and residents to purchase and employ locally and will promote the diversification of the range of goods and services available in the community for that purpose.” **(MR goals 1,3,12,13)**

1.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 42** “Maple Ridge will encourage through ongoing redevelopment opportunities development of public right-of-ways for access to a mixed use waterfront quay.” **(MR goals 1,2,4,5,12)**

1.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 47** “Maple Ridge will promote the use and development of the Port Haney waterfront for recreation uses on the south side of the CPR train tracks. Transportation connections will be encouraged to the downtown core for pedestrians along 224th Street, and to other communities utilizing our water and rail access.” **(MR goals 1,2,4,5)**

1.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 49** “Maple Ridge will encourage the concentration of additional commercial, retail, office, social, recreational and residential uses into Community Commercial centres...and which incorporates a flexible form of development which compliments the character of the neighbourhoods at an appropriate human scale.” **(MR goals 1,4,14)**

1.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 50** “Maple Ridge will encourage the development of Neighbourhood Commercial centres within walking distance of neighbourhoods to service the daily convenience shopping and service needs of residents on a scale to serve 1500 to 3000 residents.” **(MR goals 1,4,5)**

1.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** “Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores.” The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(MR goals 1,3,4,5,7,10,14,15)

1.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 78** “Maple Ridge will promote the concept of cooperative and community use of grounds and facilities belonging to the School District, the Municipality, local churches and other agencies or organizations.” **(MR goals 1,9,15,16)**

2.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Forests provide important wildlife habitat, recreation value and green space” p.26 **(MR goals 2,6,7,9)**

2.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance” p.26 **(MR goals 2,4,6,7,9,14,15)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

- 2.3** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 12** Maple Ridge will identify greenways throughout both the urban and rural areas to tie together major forested areas and significant stands of trees and wildlife habitat, and establish appropriate procedures for the protection of these lands by measures to ensure fairness to citizens." (**MR goals 2,4,6,7**)
- 2.4** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 14** "Maple Ridge will require new tree plantings as a condition of approval for new developments in urban areas, and may plan for a tree planting program on existing streets." (**MR goals 2,4,7,9,11,15**)
- 2.5** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 42** "Maple Ridge will encourage through ongoing redevelopment opportunities development of public right-of-ways for access to a mixed use waterfront quay." (**MR goals 1,2,4,5,12**)
- 2.6** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 47** "Maple Ridge will promote the use and development of the Port Haney waterfront for recreation uses on the south side of the CPR train tracks. Transportation connections will be encouraged to the downtown core for pedestrians along 224th Street, and to other communities utilizing our water and rail access." (**MR goals 1,2,4,5**)
- 2.7** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 75** "Maple Ridge will promote community education programs and initiatives for vehicle trip reduction." (**MR goals 2,8**)
- 2.8** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 81** "Maple Ridge will encourage accessibility in education, employment, housing, recreation and transportation throughout the community." (**MR goals 2,3, 5,10,16**)
- 2.9** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 85** "Maple Ridge supports social planning activities relating to the social needs, social well-being and social development of the community." (**MR goals 2,16**)
- 2.10** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 88** "Maple Ridge will encourage public access and controlled use of dykes, shorelines, ravines and watercourses where appropriate having regard to conservation, preservation, enhancement, safety and public and private use requirements." (**MR goals 2,3,6,7,14**)
- 2.11** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 89** "Maple Ridge will work with other levels of government and authorities towards a coordinated system of parks and recreation opportunities in the community." (**MR goals 2,8**)
- 3.1** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work" p.29 (**MR goals 3,4,6,7,8,9,14**)
- 3.2** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 24** "Maple Ridge will encourage the development of greater density housing near commercial centres, and where appropriate near transit routes." (**MR goals 1,3,4,11,12**)
- 3.3** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure." p. 37 (**MR goals 3,4,10,11,12, 14,15,16**)
- 3.4** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 "Presently, over one-half of the Maple Ridge employed labour force commutes elsewhere for work thereby creating a jobs-housing imbalance and traffic congestion." p. 40 (**MR goals 3,4,5,12,13**)
- 3.5** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 38** "Maple Ridge encourages private and public sector businesses and residents to purchase and employ locally and will promote the diversification of the range of goods and services available in the community for that purpose." (**MR goals 1,3,12,13**)
- 3.6** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** "Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores." The elements that should be considered include:
- A range of population densities...to serve different household types and affordability requirements

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(MR goals 1,3,4,5,7,10,14,15)

3.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 81**

"Maple Ridge will encourage accessibility in education, employment, housing, recreation and transportation throughout the community." **(MR goals 2,3, 5,10,16)**

3.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 88**

"Maple Ridge will encourage public access and controlled use of dykes, shorelines, ravines and watercourses where appropriate having regard to conservation, preservation, enhancement, safety and public and private use requirements." **(MR goals 2,3,6,7,14)**

4.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 42** "Maple Ridge will encourage through ongoing redevelopment opportunities development of public right-of-ways for access to a mixed use waterfront quay." **(MR goals 1,2,4,5,12)**

4.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 47** "Maple Ridge will promote the use and development of the Port Haney waterfront for recreation uses on the south side of the CPR train tracks. Transportation connections will be encouraged to the downtown core for pedestrians along 224th Street, and to other communities utilizing our water and rail access." **(MR goals 1,2,4,5)**

4.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 49** "Maple Ridge will encourage the concentration of additional commercial, retail, office, social, recreational and residential uses into Community Commercial centres...and which incorporates a flexible form of development which compliments the character of the neighbourhoods at an appropriate human scale." **(MR goals 1,4,14)**

4.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 50** "Maple Ridge will encourage the development of Neighbourhood Commercial centres within walking distance of neighbourhoods to service the daily convenience shopping and service needs of residents on a scale to serve 1500 to 3000 residents." **(MR goals 1,4,5)**

4.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 51** "Maple Ridge will support service commercial centres (gas/service stations, car wash stations...) that accommodate the automobile, pedestrian and transit services and that will integrate into the character of the area." **(MR goals 4,14)**

4.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** "Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores." The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(MR goals 1,3,4,5,7,10,14,15)

4.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 71**

"Maple Ridge encourages pedestrian routes that link local destinations, and will encourage a continuous separated pedestrian system in higher density areas." Maple Ridge will also undertake to secure a major pedestrian trail network. **(MR goals 4,5)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

4.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 72**

"In order to more fully integrate bicycle uses into the transportation planning process, Maple Ridge will support and implement bikeways standards and guidelines referred to in the Bikeways Plan in the planning of municipal roads." (**MR goals 4,5**)

5.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The most significant air quality problem is ground-level ozone or smog from vehicles" p.25 (**M.R. goals 4,5,7**)

5.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 "Presently, over one-half of the Maple Ridge employed labour force commutes elsewhere for work thereby creating a jobs-housing imbalance and traffic congestion." p. 40 (**MR goals 3,4,5,12,13**)

5.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 42** "Maple Ridge will encourage through ongoing redevelopment opportunities development of public right-of-ways for access to a mixed use waterfront quay." (**MR goals 1,2,4,5,12**)

5.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 47** "Maple Ridge will promote the use and development of the Port Haney waterfront for recreation uses on the south side of the CPR train tracks. Transportation connections will be encouraged to the downtown core for pedestrians along 224th Street, and to other communities utilizing our water and rail access." (**MR goals 1,2,4,5**)

5.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** "Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores." The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate.
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(**MR goals 1,3,4,5,7,10,14,15**)

5.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 "Maple Maple Ridge will strive for a transportation system that provides for the safe and efficient movement of goods, services, and people by all modes of transportation including transit, bicycles, pedestrians, trucks and the private automobile... As well, the community is fully aware of the need to provide non-motorized modes of transportation, and the movement of goods and services by rail and water." p. 50 (**MR goal 5**)

5.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 61** "Maple Ridge will encourage the development of an integrated, multi-modal transportation system based upon the long-term interests of the community, the economy and the environment." (**MR goal 4,5**)

5.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 62** "Maple Ridge will encourage the development of an efficient public transit system in order to link community cores with each other and the town centre, and interlink major employment areas with residences. This system will include linkages with other modes of transportation, convenient routing and provision of appropriate facilities." (**MR goals 5,7**)

5.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 63** "Maple Ridge in cooperation with B.C. Transit will promote efficient transit services within communities focusing on movement of people from outlying areas into the town centre, and between community commercial centres and employment centres." (**MR goal 5**)

5.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 66** "Maple Ridge supports priority treatment for public transit for inter-regional movement, and supports improvements to local service and facilities." (**MR goal 5**)

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

5.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 67** "Maple Ridge will encourage decisions on transportation improvements to include the accommodation of alternative modes of movement to the automobile such as by pedestrians, bicycles and by public transit." **(MR goal 5)**

5.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 71**

"Maple Ridge encourages pedestrian routes that link local destinations, and will encourage a continuous separated pedestrian system in higher density areas." Maple Ridge will also undertake to secure a major pedestrian trail network. **(MR goals 4,5)**

5.13 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 72**

"In order to more fully integrate bicycle uses into the transportation planning process, Maple Ridge will support and implement bikeways standards and guidelines referred to in the Bikeways Plan in the planning of municipal roads." **(MR goals 4,5)**

5.14 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 73**

"Maple Ridge will encourage the use of the Fraser River for transportation purposes such as:

- The transshipment of industrial goods and raw materials,
- For recreation, and
- For tourism." **(MR goal 5)**

5.15 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 81**

"Maple Ridge will encourage accessibility in education, employment, housing, recreation and transportation throughout the community." **(MR goals 2,3, 5,10,16)**

5.16 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 50** "Maple Ridge will encourage the development of Neighbourhood Commercial centres within walking distance of neighbourhoods to service the daily convenience shopping and service needs of residents on a scale to serve 1500 to 3000 residents." **(MR goals 1,4,5)**

6.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Surface runoff is a major source of pollution" p.26 **(MR goals 6,7,8,9)**

6.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The impact of additional land development must account for the maintenance of the natural hydrologic balance of watercourses, and must maintain water quality" p.27 **(MR goals 6,7,8,9)**

6.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Many species of wildlife in Maple Ridge depend upon 'corridors' for food, breeding areas and cover from predators and humans" p.27 **(MR goals 6,7)**

6.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 5** "Maple Ridge supports the development and implementation of stormwater management plans that are innovative at providing or enhancing habitat. Plans will need to include on-going monitoring of water flows and water quality for all areas of the Municipality for the purpose of maintaining natural runoff rates in watercourses and in maintaining water quality in those watercourses. The Municipality will encourage rehabilitation of degraded watercourses." **(MR goals 6,7)**

6.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 6** "Maple Ridge regards the preservation of creeks and wetlands as important and has designated those creeks and wetlands on Schedule "E" for special control. Maple Ridge has established watercourse preservation Development Permit Area adjacent to all creeks and wetlands shown on Schedule "E." The Development Permit Areas include all land within 50 metres of the top of bank of those creeks or wetlands." **(MR goals 6,7)**

6.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 7** "Maple Ridge regards the safety of property and persons as important and will require the floodproofing of industrial, commercial, certain agricultural buildings, and new residential construction, in floodplains in accordance with Zoning Bylaw requirements. These requirements will involve setbacks and elevation restrictions from all watercourses, lakes, ponds, wetlands or sloughs." **(MR goals 6,7,16)**

6.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work" p.29 **(MR goals 3,4,6,7,8,9,14)**

6.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Forests provide important wildlife habitat, recreation value and green space" p.26 **(MR goals 2,6,7,9)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

6.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance" p.26 **(MR goals 2,4,6,7,9,14,15)**

6.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 12** "Maple Ridge will identify greenways throughout both the urban and rural areas to tie together major forested areas and significant stands of trees

and wildlife habitat, and establish appropriate procedures for the protection of these lands by measures to ensure fairness to citizens." **(MR goals 2,4,6,7)**

6.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 18** "Maple Ridge will promote water conservation and wise consumption, and will participate in Regional and Provincial programs aimed at reducing water consumption." **(MR goals 6,7,8,9)**

6.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 20** "Maple Ridge will promote acceptable alternative sewage and waste water treatment methods." **(MR goals 6,9)**

6.13 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Maple Ridge has a Green Zone: areas which make up the "ecological footprint" which should be protected from urban development, and are designated on the OCP. These include parks, ALR lands, ESA's, floodplains, hazard lands, forested mountain slopes, and fish and wildlife habitat." p. 34 **(MR goals 6,7)**

6.14 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 88**
"Maple Ridge will encourage public access and controlled use of dykes, shorelines, ravines and watercourses where appropriate having regard to conservation, preservation, enhancement, safety and public and private use requirements." **(MR goals 2,3,6,7,14)**

7.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The most significant air quality problem is ground-level ozone or smog from vehicles" p.25 **(M.R. goals 4,5,7)**

7.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 2** "The District of Maple Ridge will use Municipal mechanisms to reduce harmful air emissions"**(M.R. goal 7)**

7.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "...the high cost of upgrading distribution and storage facilities have led to water shortages and resulted in conservation measures during the summer months" p.26 **(MR goals 7, 8, 9)** also:
"Unless rates of consumption can be reduced, pressure on quantity of water supplies will continue to increase" p.26

7.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Surface runoff is a major source of pollution" p.26 **(MR goals 6,7,8,9)**

7.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The impact of additional land development must account for the maintenance of the natural hydrologic balance of watercourses, and must maintain water quality" p.27 **(MR goals 6,7,8,9)**

7.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Many species of wildlife in Maple Ridge depend upon 'corridors' for food, breeding areas and cover from predators and humans" p.27 **(MR goals 6,7)**

7.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 4** "Maple Ridge will ensure guidelines for appropriate development practices are followed, and will ensure education and information on environmental issues is provided to the public and staff" **(MR goals 7,8)**

7.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 5** "Maple Ridge supports the development and implementation of stormwater management plans that are innovative at providing or enhancing habitat. Plans will need to include on-going monitoring of water flows and water quality for all areas of the Municipality for the purpose of maintaining natural runoff rates in watercourses and in maintaining water quality in those watercourses. The Municipality will encourage rehabilitation of degraded watercourses." **(MR goals 6,7)**

7.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 6** "Maple Ridge regards the preservation of creeks and wetlands as important and has designated those creeks and wetlands on Schedule "E" for special control. Maple Ridge has established watercourse preservation Development Permit Area adjacent to all creeks and wetlands shown on Schedule "E." The Development Permit Areas include all land within 50 metres of the top of bank of those creeks or wetlands." **(MR goals 6,7)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

7.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 7** “Maple Ridge regards the safety of property and persons as important and will require the floodproofing of industrial, commercial, certain agricultural buildings, and new residential construction, in floodplains in accordance with Zoning Bylaw requirements. These requirements will involve setbacks and elevation restrictions from all watercourses, lakes, ponds, wetlands or sloughs.” **(MR goals 6,7,16)**

7.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 8** “In order to preserve watercourses...an owner of land being subdivided shall:

- 1) Provide park land of an amount not to exceed 5% of the land being subdivided in a location acceptable to Council; or
- 2) Pay to the Municipality an amount that equals the market value of up to 5% of the land that may be required for park land purposes.”

(MR goals 7,8)

7.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 9** “Maple Ridge will identify environmentally sensitive land for Conservation, Open Space or Reclamation uses.” **(MR goal 7)**

7.13 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 10** “Maple Ridge will prepare Environmentally Sensitive Area studies for new urban growth areas for the purpose of identifying lands or features that have particular sensitivities to development.

Proposed development within or adjacent to areas or features identified as being particularly sensitive will need an appropriate study prepared that will address the environmental sensitivities identified.”

(MR goals 7,8)

7.14 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work” p.29 **(MR goals 3,4,6,7,8,9,14)**

7.15 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 11** “Maple Ridge will identify environmentally sensitive land for Conservation, Open Space or Reclamation uses.” **(MR goal 7)**

7.16 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Forests provide important wildlife habitat, recreation value and green space” p.26 **(MR goals 2,6,7,9)**

7.17 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance” p.26 **(MR goals 2,4,6,7,9,14,15)**

7.18 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 12** “Maple Ridge will identify greenways throughout both the urban and rural areas to tie together major forested areas and significant stands of trees and wildlife habitat, and establish appropriate procedures for the protection of these lands by measures to ensure fairness to citizens.” **(MR goals 2,4,6,7)**

7.19 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 13** “Maple Ridge will encourage the retention of significant trees as development takes place, and will consider innovative mechanisms to ensure retention.” **(MR goals 7,9)**

7.20 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 14** “Maple Ridge will require new tree plantings as a condition of approval for new developments in urban areas, and may plan for a tree planting program on existing streets.” **(MR goals 2,4,7,9,11,15)**

7.21 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 16** “Maple Ridge will require an Environmental Impact Assessment to be undertaken for areas to be rezoned for high impact uses. The purpose of the assessment is to review impacts on the environment of proposed uses and to identify or recommend any necessary development monitoring and mitigation measures.” **(MR goals 7,9)**

7.22 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “The community of Maple Ridge shares a collective responsibility to conserve resources and minimize the impact of waste disposal on other communities and ecosystems.” p. 32 **(MR goals 1,8,7,9)**

7.23 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 18** “Maple Ridge will promote water conservation and wise consumption, and will participate in Regional and Provincial programs aimed at reducing water consumption.” **(MR goals 6,7,8,9)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

7.24 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 19** "Maple Ridge will encourage the reduction of solid waste generation by the promotion of source reduction, reuse and recycling, and will participate in Regional and Provincial programs aimed at reducing waste generation." **(MR goals 7,8,9)**

7.25 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Maple Ridge has a Green Zone: areas which make up the "ecological footprint" which should be protected from urban development, and are designated on the OCP. These include parks, ALR lands, ESA's, floodplains, hazard lands, forested mountain slopes, and fish and wildlife habitat." p. 34 **(MR goals 6,7)**

7.26 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 "The issue of the appearance of Maple Ridge has been of concern to the public. Not only has this been of concern, but the design of spaces to achieve a better appearance, and functionality is an ongoing issue." p. 48 **(MR goals 7,14)**

7.27 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** "Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores." The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(MR goals 1,3,4,5,7,10,14,15)

7.28 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 62** "Maple Ridge will encourage the development of an efficient public transit system in order to link community cores with each other and the town centre, and interlink major employment areas with residences. This system will include linkages with other modes of transportation, convenient routing and provision of appropriate facilities." **(MR goals 5,7)**

7.29 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 "Conserving significant buildings and natural features indicates environmental responsibility and can contribute to the local economy by increasing tourism." p. 55 **(MR goals 9,7,14)**

7.30 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 88**

"Maple Ridge will encourage public access and controlled use of dykes, shorelines, ravines and watercourses where appropriate having regard to conservation, preservation, enhancement, safety and public and private use requirements." **(MR goals 2,3,6,7,14)**

8.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "...the high cost of upgrading distribution and storage facilities have led to water shortages and resulted in conservation measures during the summer months" p.26 **(MR goals 7, 8, 9)** also:

"Unless rates of consumption can be reduced, pressure on quantity of water supplies will continue to increase" p.26

8.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Surface runoff is a major source of pollution" p.26 **(MR goals 6,7,8,9)**

8.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The impact of additional land development must account for the maintenance of the natural hydrologic balance of watercourses, and must maintain water quality" p.27 **(MR goals 6,7,8,9)**

8.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 3** "Maple Ridge will develop mechanisms and structures to coordinate public and environmental agency input into all departments and service delivery" **(MR goal 8)**

8.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 4** "Maple Ridge will ensure guidelines for appropriate development practices are followed, and will ensure education and information on environmental issues is provided to the public and staff" **(MR goals 7,8)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

- 8.6** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 8** “In order to preserve watercourses...an owner of land being subdivided shall:
1) Provide park land of an amount not to exceed 5% of the land being subdivided in a location acceptable to Council; or
2) Pay to the Municipality an amount that equals the market value of up to 5% of the land that may be required for park land purposes.”
(MR goals 7,8)
- 8.7** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 10** “Maple Ridge will prepare Environmentally Sensitive Area studies for new urban growth areas for the purpose of identifying lands or features that have particular sensitivities to development.
Proposed development within or adjacent to areas or features identified as being particularly sensitive will need an appropriate study prepared that will address the environmental sensitivities identified.”
(MR goals 7,8)
- 8.8** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work” p.29 **(MR goals 3,4,6,7,8,9,14)**
- 8.9** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “The community of Maple Ridge shares a collective responsibility to conserve resources and minimize the impact of waste disposal on other communities and ecosystems.” p. 32 **(MR goals 1,8,7,9)**
- 8.10** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 18** “Maple Ridge will promote water conservation and wise consumption, and will participate in Regional and Provincial programs aimed at reducing water consumption.” **(MR goals 6,7,8,9)**
- 8.11** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 19** “Maple Ridge will encourage the reduction of solid waste generation by the promotion of source reduction, reuse and recycling, and will participate in Regional and Provincial programs aimed at reducing waste generation.” **(MR goals 7,8,9)**
- 8.12** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 21** “Maple Ridge will consider innovative site development proposals and density bonusing to accommodate unique site characteristics, environmental sensitivities or amenities.” **(MR goals 8,9)**
- 8.13** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 33** “Maple Ridge will review innovative approaches to housing including housing form, lot size, road and other engineering standards.” **(MR goals 8,9,10,11,12)**
- 8.14** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 35** “Maple Ridge will encourage consideration of energy efficient site design in the development of all new areas.” **(MR goals 8,9,11)**
- 8.15** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.6 **policy 75**
“Maple Ridge will promote community education programs and initiatives for vehicle trip reduction.” **(MR goals 2,8)**
- 8.16** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 89**
“Maple Ridge will work with other levels of government and authorities towards a coordinated system of parks and recreation opportunities in the community.” **(MR goals 2,8)**
- 9.1** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “...the high cost of upgrading distribution and storage facilities have led to water shortages and resulted in conservation measures during the summer months” p.26 **(MR goals 7, 8, 9)** also:
“Unless rates of consumption can be reduced, pressure on quantity of water supplies will continue to increase” p.26
- 9.2** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Surface runoff is a major source of pollution” p.26 **(MR goals 6,7,8,9)**
- 9.3** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “The impact of additional land development must account for the maintenance of the natural hydrologic balance of watercourses, and must maintain water quality” p.27 **(MR goals 6,7,8,9)**
- 9.4** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work” p.29 **(MR goals 3,4,6,7,8,9,14)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from Maple Ridge Official Community Plan Bylaw No. 5434-1996

- 9.5** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Forests provide important wildlife habitat, recreation value and green space" p.26 **(MR goals 2,6,7,9)**
- 9.6** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance" p.26 **(MR goals 2,4,6,7,9,14,15)**
- 9.7** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 13** "Maple Ridge will encourage the retention of significant trees as development takes place, and will consider innovative mechanisms to ensure retention." **(MR goals 7,9)**
- 9.8** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 14** "Maple Ridge will require new tree plantings as a condition of approval for new developments in urban areas, and may plan for a tree planting program on existing streets." **(MR goals 2,4,7,9,11,15)**
- 9.9** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 16** "Maple Ridge will require an Environmental Impact Assessment to be undertaken for areas to be rezoned for high impact uses. The purpose of the assessment is to review impacts on the environment of proposed uses and to identify or recommend any necessary development monitoring and mitigation measures." **(MR goals 7,9)**
- 9.10** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 "The community of Maple Ridge shares a collective responsibility to conserve resources and minimize the impact of waste disposal on other communities and ecosystems." p. 32 **(MR goals 1,8,7,9)**
- 9.11** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 18** "Maple Ridge will promote water conservation and wise consumption, and will participate in Regional and Provincial programs aimed at reducing water consumption." **(MR goals 6,7,8,9)**
- 9.12** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 19** "Maple Ridge will encourage the reduction of solid waste generation by the promotion of source reduction, reuse and recycling, and will participate in Regional and Provincial programs aimed at reducing waste generation." **(MR goals 7,8,9)**
- 9.13** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 20** "Maple Ridge will promote acceptable alternative sewage and waste water treatment methods." **(MR goals 6,9)**
- 9.14** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 21** "Maple Ridge will consider innovative site development proposals and density bonusing to accommodate unique site characteristics, environmental sensitivities or amenities." **(MR goals 8,9)**
- 9.15** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 33** "Maple Ridge will review innovative approaches to housing including housing form, lot size, road and other engineering standards." **(MR goals 8,9,10,11,12)**
- 9.16** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 35** "Maple Ridge will encourage consideration of energy efficient site design in the development of all new areas." **(MR goals 8,9,11)**
- 9.17** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 "Conserving significant buildings and natural features indicates environmental responsibility and can contribute to the local economy by increasing tourism." p. 55 **(MR goals 9,7,14)**
- 9.18** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 78**
"Maple Ridge will promote the concept of cooperative and community use of grounds and facilities belonging to the School District, the Municipality, local churches and other agencies or organizations." **(MR goals 1,9,15,16)**
- 10.1** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure." p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**
- 10.2** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "Annual housing costs should not exceed 30% of the household's gross income." P. 39 **(MR goal 10)**
- 10.3** Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "The availability of rental housing (ie. The vacancy rate) is subject to market fluctuations which can impose hardship for people in need of low-cost rental housing." P. 39 **(MR goal 10)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

10.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "Affordable ownership housing is an issue throughout the region, and unless steps are taken, it is likely that there will be continued deterioration in the ability of Maple Ridge households to become homeowners...it will be important to consider innovative approaches to facilitating affordable ownership housing." P. 39 (**MR goal 10**)

10.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "The development and location of special needs housing is an issue in Maple Ridge and should be dealt with in the best interests of the community and its residents." P. 39 (**MR goal 10**)

10.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 31** "Maple Ridge will consider a density bonusing policy as a means of encouraging the provision of amenities and affordable and special needs housing." (**MR goals 10,11**)

10.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 32** "Maple Ridge will undertake a detailed review of secondary suites." (**MR goals 10,11**)

10.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 33** "Maple Ridge will review innovative approaches to housing including housing form, lot size, road and other engineering standards." (**MR goals 8,9,10,11,12**)

10.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 34** "Maple Ridge recognizes the need for integration of special needs housing throughout the community." (**MR goals 10,11**)

10.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 45** "Maple Ridge supports the increase of home-based businesses and hobby farms and will review policies, bylaws and procedures to encourage diversification." (**MR goals 10,11,12**)

10.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** "Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores." The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(**MR goals 1,3,4,5,7,10,14,15**)

10.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 81** "Maple Ridge will encourage accessibility in education, employment, housing, recreation and transportation throughout the community." (**MR goals 2,3, 5,10,16**)

11.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 14** "Maple Ridge will require new tree plantings as a condition of approval for new developments in urban areas, and may plan for a tree planting program on existing streets." (**MR goals 2,4,7,9,11,15**)

11.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 "The community will require an increasing proportion of ground-oriented multi-family dwelling units." p. 36 (**MR goals 10,11**)

11.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 24** "Maple Ridge will encourage the development of greater density housing near commercial centres, and where appropriate near transit routes." (**MR goals 1,3,4,11,12**)

11.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 25** "Maple Ridge will encourage small-scale, housing development which increases the housing density in existing residential neighbourhoods where the proposed development is suitably integrated and respects the character of the neighbourhood." (**MR goals 4, 11,14**)

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from Maple Ridge Official Community Plan Bylaw No. 5434-1996

11.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 “Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure.” p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**

11.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 26** “Urban development is to be limited to urban areas where: a) the best use of existing physical and social infrastructure can be made, or b) where the infrastructure can be provided in an efficient manner.” **(MR goals 1,11)**

11.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 31** “Maple Ridge will consider a density bonusing policy as a means of encouraging the provision of amenities and affordable and special needs housing.” **(MR goals 10,11)**

11.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 32** “Maple Ridge will undertake a detailed review of secondary suites.” **(MR goals 10,11)**

11.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 33** “Maple Ridge will review innovative approaches to housing including housing form, lot size, road and other engineering standards.” **(MR goals 8,9,10,11,12)**

11.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 34** “Maple Ridge recognizes the need for integration of special needs housing throughout the community.” **(MR goals 10,11)**

11.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 35** “Maple Ridge will encourage consideration of energy efficient site design in the development of all new areas.” **(MR goals 8,9,11)**

11.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 45** “Maple Ridge supports the increase of home-based businesses and hobby farms and will review policies, bylaws and procedures to encourage diversification.” **(MR goals 10,11,12)**

12.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 24** “Maple Ridge will encourage the development of greater density housing near commercial centres, and where appropriate near transit routes.” **(MR goals 1,3,4,11,12)**

12.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 “Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure.” p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**

12.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 33** “Maple Ridge will review innovative approaches to housing including housing form, lot size, road and other engineering standards.” **(MR goals 8,9,10,11,12)**

12.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 “Presently, over one-half of the Maple Ridge employed labour force commutes elsewhere for work thereby creating a jobs-housing imbalance and traffic congestion.” p. 40 **(MR goals 3,4,5,12,13)**

12.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 36** “Maple Ridge will undertake a detailed review to revise the Municipal economic development strategy and identify goals and objectives to enhance investment and business opportunities within the community, and investigate alternative forms of incentives to stimulate local business initiatives.” **(MR goals 12,13)**

12.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 38** “Maple Ridge encourages private and public sector businesses and residents to purchase and employ locally and will promote the diversification of the range of goods and services available in the community for that purpose.” **(MR goals 1,3,12,13)**

12.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 42** “Maple Ridge will encourage through ongoing redevelopment opportunities development of public right-of-ways for access to a mixed use waterfront quay.” **(MR goals 1,2,4,5,12)**

12.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 45** “Maple Ridge supports the increase of home-based businesses and hobby farms and will review policies, bylaws and procedures to encourage diversification.” **(MR goals 10,11,12)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

13.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 “Presently, over one-half of the Maple Ridge employed labour force commutes elsewhere for work thereby creating a jobs-housing imbalance and traffic congestion.” p. 40 **(MR goals 3,4,5,12,13)**

13.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 36** “Maple Ridge will undertake a detailed review to revise the Municipal economic development strategy and identify goals and objectives to enhance investment and business opportunities within the community, and investigate alternative forms of incentives to stimulate local business initiatives.” **(MR goals 12,13)**

13.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 38** “Maple Ridge encourages private and public sector businesses and residents to purchase and employ locally and will promote the diversification of the range of goods and services available in the community for that purpose.” **(MR goals 1,3,12,13)**

14.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge regards retention and enhancement of parts of the forest cover as an important means of ensuring that the Municipality is an attractive place in which to live and work” p.29 **(MR goals 3,4,6,7,8,9,14)**

14.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance” p.26 **(MR goals 2,4,6,7,9,14,15)**

14.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge has a diversity of open space, scenic views, parks and other landscape features which its residents believe are very important to their quality-of-life and which make this area a desirable place to live and visit. The combination of natural areas, wildlife and open space, including open space created through agriculture, helps lend a unique character to Maple Ridge and contributes positively to the quality-of-life in the community.” P. 33 **(MR goals 14,15)**

14.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 **policy 25** “Maple Ridge will encourage small-scale, housing development which increases the housing density in existing residential neighbourhoods where the proposed development is suitably integrated and respects the character of the neighbourhood.” **(MR goals 4, 11,14)**

14.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 “Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure.” p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**

14.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 49** “Maple Ridge will encourage the concentration of additional commercial, retail, office, social, recreational and residential uses into Community Commercial centres...and which incorporates a flexible form of development which compliments the character of the neighbourhoods at an appropriate human scale.” **(MR goals 1,4,14)**

14.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.3 **policy 51** “Maple Ridge will support service commercial centres (gas/service stations, car wash stations...) that accommodate the automobile, pedestrian and transit services and that will integrate into the character of the area.” **(MR goals 4,14)**

14.8 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 “The issue of the appearance of Maple Ridge has been of concern to the public. Not only has this been of concern, but the design of spaces to achieve a better appearance, and functionality is an ongoing issue.” p. 48 **(MR goals 7,14)**

14.9 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** “Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores.” The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

- The provision of common public areas that support interaction and community identity.
(MR goals 1,3,4,5,7,10,14,15)

14.10 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 “Conserving significant buildings and natural features indicates environmental responsibility and can contribute to the local economy by increasing tourism.” p. 55 **(MR goals 9,7,14)**

14.11 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 88**
“Maple Ridge will encourage public access and controlled use of dykes, shorelines, ravines and watercourses where appropriate having regard to conservation, preservation, enhancement, safety and public and private use requirements.”
(MR goals 2,3,6,7,14)

14.12 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 91**
“Maple Ridge will encourage the conservation and designation of significant heritage structures and landscape features in each neighbourhood.” **(MR goal 14)**

14.13 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 93**
“Maple Ridge will recognize significant heritage areas and will consider designation of these areas as Historic Commercial or Heritage Conservation Areas to ensure development which respects their heritage character.” **(MR goal 14)**

14.14 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 95**
“Maple Ridge recognizes the importance of arts and culture to the community and will support implementation of the Ridge Meadows Arts And Culture Policy And Plan 1996.” **(MR goal 14)**

15.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Linking wooded and riparian areas into continuous linear features is a goal of the community to ensure maintenance of forest cover and linkage between wildlife corridors, recreational areas and sites of significance” p.26 **(MR goals 2,4,6,7,9,14,15)**

15.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 14** “Maple Ridge will require new tree plantings as a condition of approval for new developments in urban areas, and may plan for a tree planting program on existing streets.” **(MR goals 2,4,7,9,11,15)**

15.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 “Maple Ridge has a diversity of open space, scenic views, parks and other landscape features which its residents believe are very important to their quality-of-life and which make this area a desirable place to live and visit. The combination of natural areas, wildlife and open space, including open space created through agriculture, helps lend a unique character to Maple Ridge and contributes positively to the quality-of-life in the community.” P. 33 **(MR goals 14,15)**

15.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 “Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure.” p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**

15.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 59** “Maple Ridge will support the development and enhancement of community cores to act as the focal points of activity. These cores will be centred on the historic cores where appropriate or on Community Commercial cores.” The elements that should be considered include:

- A range of population densities...to serve different household types and affordability requirements
- A mix of services that accommodates a wide range of activities, with an emphasis on close proximity of living and working areas
- To provide an adequate system of local roads building upon the existing grid system and to complete the major arterial network in a grid where appropriate
- The careful attention to the design of public spaces, particularly roads, for the purpose of defining the use of space, promoting pedestrian comfort, and to improve safety
- The provision of public transit to the community cores
- Greater emphasis on the interconnection of destinations with trail, pedestrian and bicycle networks,
- The integration of natural features into new developments, and
- The provision of common public areas that support interaction and community identity.

(MR goals 1,3,4,5,7,10,14,15)

15.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 78**
“Maple Ridge will promote the concept of cooperative and community use of grounds and facilities belonging to the School District, the Municipality, local churches and other agencies or organizations.” **(MR goals 1,9,15,16)**

APPENDIX 2

OCP Policy Notes

Supporting Goals and Objectives, and Design Requirements from **Maple Ridge Official Community Plan Bylaw No. 5434-1996**

16.1 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.1 **policy 7** “Maple Ridge regards the safety of property and persons as important and will require the floodproofing of industrial, commercial, certain agricultural buildings, and new residential construction, in floodplains in accordance with Zoning Bylaw requirements. These requirements will involve setbacks and elevation restrictions from all watercourses, lakes, ponds, wetlands or sloughs.”

(MR goals 6,7,16)

16.2 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.2 “Unless Maple Ridge continues its efforts to concentrate future growth within designated growth areas, urban sprawl will erode the rural character of the community and require additional investments in infrastructure.” p. 37 **(MR goals 3,4,10,11,12, 14,15,16)**

16.3 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.5 **policy 60** “Maple Ridge will support participatory planning and involvement of the public in District, community, and neighbourhood planning coordinated by the Municipality.” **(MR goal 16)**

16.4 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 78**

“Maple Ridge will promote the concept of cooperative and community use of grounds and facilities belonging to the School District, the Municipality, local churches and other agencies or organizations.” **(MR goals 1,9,15,16)**

16.5 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 81**

“Maple Ridge will encourage accessibility in education, employment, housing, recreation and transportation throughout the community.” **(MR goals 2,3, 5,10,16)**

16.6 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 85**

“Maple Ridge supports social planning activities relating to the social needs, social well-being and social development of the community.” **(MR goals 2,16)**

16.7 Maple Ridge Official Community Plan Bylaw No. 5434-1996 section 2.7 **policy 94**

“Maple Ridge recognizes and supports the use of public advisory committees of volunteers to assist in advising Council on issues of the day.” **(MR goal 16)**

APPENDIX 3

What is CPTED?

(The following section is adapted from CPTED Ontario www.cptedontario.ca/)

CPTED (pronounced "sep-ted") is an acronym for Crime Prevention Through Environmental Design. It is a series of pro-active crime prevention strategies utilized by planners, architects, police services, security professionals and everyday users of space.

CPTED works from the assumption that the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime and improve the quality of life.

Emphasis is placed on the physical environment, productive use of space, and behaviour of people to create environments that remove opportunities that cause crime to occur. CPTED is common sense and design approach to creating safe neighbourhoods.

There are four underlying CPTED concepts:

1. **Natural Surveillance** - Is the placement of physical features and/or activities, and people that maximizes natural visibility or observation.
2. **Natural Access Control** - Deters access to a target and creates a perception of risk to the offender.
3. **Territorial Reinforcement** - Defines clear borders of controlled space from public to semi-private to private, so that users of an area develop a sense of proprietorship over it.
4. **Maintenance** - Allows for the continued use of a space for its intended purpose.

MAPLE RIDGE TOWN CENTRE

Concept Plan

Appendix D Technical Bulletins

Prepared by:

The Sustainable Communities Program

Centre for Landscape Research

University of British Columbia

Vancouver, British Columbia

March 2005





TECHNICAL BULLETIN



Smart Growth on the Ground

No. 1
June 2004

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

Reducing Automobile Dependence in Maple Ridge

1.0 Introduction

Socio-demographic and land use characteristics can significantly influence the travel patterns of a community. Neighbourhoods with medium- to high-densities, mixed land uses, interconnected street networks, a strong local employment base, and viable connections to transit can minimize automobile use and encourage walking, bicycling, and using public transit. Communities that are designed to encourage these alternative forms of transportation can significantly reduce average household greenhouse gas emissions and can dramatically improve physical activity and public health levels.

This technical bulletin examines current and potential socio-demographic, land use and travel characteristics of Maple Ridge Town Centre (the Centre) and provides strategies to reduce automobile use. Current and potential travel patterns have been calculated using the CMHC Tool for Evaluating Neighbourhood Sustainability. This tool analyzes socio-demographic, land use, and transportation network characteristics in order to calculate average household travel behaviour and greenhouse gas emissions.

2.0 Current Socio-Demographic and Land Use Characteristics

Table 1: Minimum Desired Densities for Transit Service ²

Service Type	Minimum Desirable Population Density
Conventional Bus	30 pph
Community Shuttle	20 pph

The District of Maple Ridge has been growing rapidly over the past several decades, reaching a population of 66,300 in 2001. It is anticipated that the population will increase by a further 27,400 to reach a total population of 93,700 in 2021.¹ Half of this growth is projected to occur in Maple Ridge Town Centre. With an area of 294 ha and a population of 8,050 residents, the Centre has a current population density of 27.4 persons per hectare (pph) (figure 1). This density complies with TransLink's minimum desired densities for transit service (table 1).²

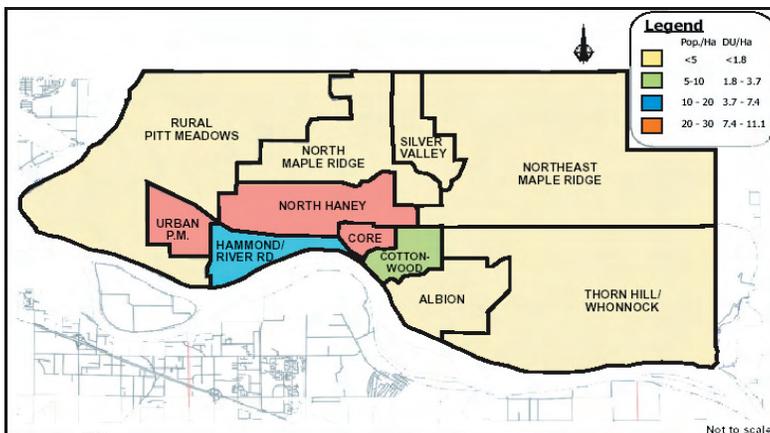


Figure 1: Existing population and dwelling unit densities for Pitt Meadows and Maple Ridge ²

In addition to having density levels that are supportive of public transit, the Centre exhibits many other characteristics typical of smart growth communities. The Centre has a well-developed and predominantly interconnected street network (figure 2); a relatively diverse array of residential and commercial land uses of varying intensities; connections to local and regional transit service; and a significant employment base of 4,575 jobs. In addition, 37% of the district-wide labour force lives and works in the District of Maple Ridge, which is considered to be very high for an outlying community.³

3.0 Current Travel Patterns



Figure 2: Maple Ridge Town Centre street network

Although the Centre exhibits many smart growth attributes, the automobile is the dominant mode of transportation. Throughout the districts of Maple Ridge and Pitt Meadows, public transit currently accounts for only 4% of all trips (compared to 10% throughout Greater Vancouver) and walk and bike trips account for 12% of all trips. In contrast, over 80% of trips generated from these municipalities are made using the automobile (figure 3).⁴ Inserting current metrics from Maple Ridge Town Centre into the CMHC Tool for Evaluating Neighbourhood Sustainability produced even more dramatic results. The model estimated that the average household in the Centre currently generates 84.8 vehicle kilometres of travel (VKT) per weekday (92 % of all travel) and only 7.4 transit passenger kilometres of travel (PKT) per weekday (8% of all travel).⁵ The model also estimated that vehicle ownership levels are relatively high in the Centre with an average of 1.19 vehicles per household. It should be noted, however, that the CMHC Tool only estimates mode share for automobiles and for public transit and does not take into account mode share for walk and bike trips.

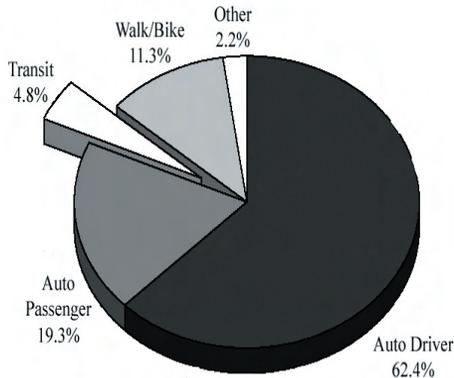


Figure 3: 24-Hour Mode Split for Pitt Meadows and Maple Ridge

Maple Ridge Town Centre is well-served by regional east-west transit services such as the West Coast Express and the #701 bus route to Coquitlam Town Centre, however the Centre itself is not well-served by local transit routes. Currently, there are 5 locally serving bus routes, but these routes do not operate frequently, and even less so during non-peak hours. These routes also do not completely cover the Centre. Since nearly half of all automobile trips currently generated in Maple Ridge and Pitt Meadows remain internal to these communities (figure 4), there is a significant opportunity to capture some of these local automobile trips through improvements to the local-serving transit system.⁶ Regional transit connections will be significantly improved when the new Fraser River Crossing opens in 2007 providing regional north-south transit service to Langley and Surrey Town Centres and a more direct link to the SkyTrain.

4.0 Possible Changes in Socio-Demographic and Land Use Conditions

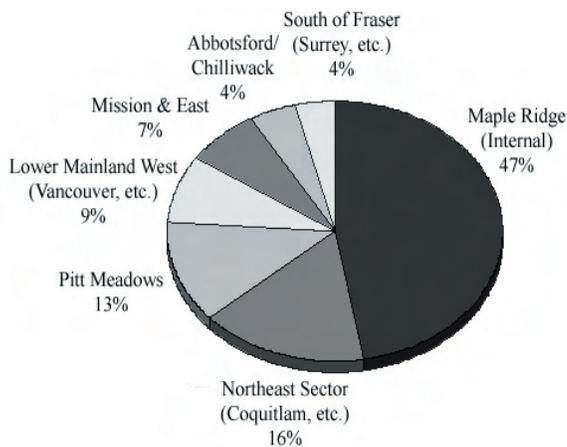


Figure 4: AM Peak distribution of destinations of vehicle trips from Maple Ridge

There are several possible changes to the socio-demographic and land use conditions within Maple Ridge that would help fulfill Smart Growth on the Ground's principle to provide options to the car. First of all, as stated previously, the Centre is anticipated to capture 50% of the projected district-wide population growth over the next 16 years. This would add 13,700 new people to the Centre, requiring the creation of approximately 7,000 new dwelling units (consisting of a variety of typologies to support the needs of all sectors of the community). As a result, population density would increase to about 70-100 pph or 38-54 dwelling units per hectare (uph). Second, to conform to the Livable Region Strategic Plan's principle of balancing housing and jobs in regional town centres, it is anticipated that for each new dwelling unit built, 0.25 to 0.75 new jobs will be created. This would add 1,750 to 5,250 new jobs to the existing 4,565 jobs currently found in the Centre. Third, public transit should be located within 250m of all residents in order to comply with Translink's minimum recommended transit service standards, which state that 90% of the population in areas that have densities that can support transit should have a transit stop within 50m of their dwelling.⁷ Fourth, to create a complete community, all residents should be located within 400m of commercial and cultural facilities. By implementing these changes, walking, bicycling and public

transit can become viable alternatives to the automobile.

5.0 Impacts of Changes on Travel Patterns

To evaluate how increased density, local job creation, the creation of a bike network, proximity to public transit and commercial and cultural facilities may impact travel patterns in Maple Ridge, the CMHC Tool for Evaluating Neighbourhood Sustainability was consulted. The results obtained were impressive (Table 2). By incorporating these elements of smart growth, this tool estimates:

- Reduction in vehicle ownership per household by 40%
- Reduction in automobile VKT per household by 52%
- An increase in transit PKT per household of 20%

Table 2: Vehicle Ownership, Automobile VKT, and Transit PKT Levels for Existing Conditions (2001) and for 2021 Vision

Travel Pattern Comparison	Maple Ridge Town Center, Existing	Maple Ridge Town Center, 2021 Vision
Neighbourhood Attributes		
Urban context	Suburb	Suburb
Land area	250 ha	250 ha
Road layout type	Primarily grid	Primarily grid
Total length of non-expressway roads	26km	26km
Total number of intersections	112	112
Total length of wide arterials (4 lane)	2.5km	2.5km
Daily Bus Vehicle Service Hours	4.7	6.2
Total length of bike routes	0km	7km
Socio-Demographic Data		
Total number of residential units	4330	13000
Total residential density (units/ha)	17.3	52
Housing Mix (1= total mix; 0 = no mix)	0.79	0.79
Number of grocery stores (1-km radius)	0	4
Number of jobs (1-km radius)	4565	9565
Number of jobs (5-km radius)	10000	40000
Locational Characteristics		
Distance to CBD	14km	3km
No. of Jobs (5-km radius)	10000	40000
Distance to nearest rapid transit station (rapid bus)	0km	0.25km
Distance to nearest commuter rail (WCE)	0.25km	0.25km
NEIGHBOURHOOD PERFORMANCE COMPARED		
Weekday Household Travel Behaviour		
Average Vehicles Owned/household	1.19	0.71
Average VKT generated/household	53.7	25.7
Average PKT generated/household	7.4	8.9

6.0 Options to Reduce Automobile Dependence

As mentioned above, changes in land use and socio-demographic characteristics can have dramatic cumulative effects on travel patterns. If only one or a few of these changes are implemented, however, it is unlikely that there will be a significant change in travel behaviour. This section addresses the various options that should be considered to reduce automobile dependence and encourage alternative forms of transportation.

Increasing Density

Increasing residential and commercial density is an important first step to creating more sustainable communities. By increasing density, the community becomes more compact and distances between

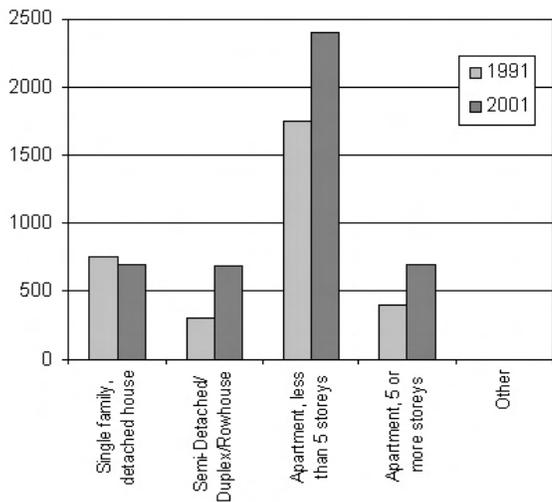


Figure 5: Households by Dwelling Type: Maple Ridge Town Centre, 1991-2001

origins and destinations are reduced. A large body of research has shown that by locating activities close together, automobile dependence is reduced and alternative forms of transportation are encouraged.⁸ One study, for example, found that doubling urban density in North American cities can result in a 25% to 30% reduction in VKT.⁹

Increasing Land Use Mix

Another vital component to reduce automobile dependence is to provide a diverse array of residential and commercial land uses within a given area. As land use mix is increased, the proximity between origins and destinations decreases. Studies have shown that if retail shops are within 90m (300 feet) from residential units, people are more likely to commute by transit, foot or bicycle.¹⁰ As shown by Figure 5, apartment buildings less than 5 stories currently dominate the residential dwellings in the Centre. To increase housing options, alternative dwelling types should be investigated. By increasing and diversifying residential, office and retail uses within the Centre, residents can be enticed out of their cars.

Increasing Local Employment

Many regions in North America suffer from a jobs-housing imbalance, where certain areas contain the bulk of employment while others are dedicated primarily to housing.¹¹ Numerous studies have shown that a job-housing imbalance encourages the use of the automobile. Providing a sufficient supply of jobs within the Centre can ensure that as many residents as possible are able to work close to home and reduce the need to commute to other communities. One study found that, while travel behaviour is affected by small changes in land use, it is also affected when certain employment level thresholds are met or exceeded. Specifically, the study found that reductions in work-related trips require an employment density of 123-173 employees per gross hectare (50-70 employees per gross acre), of which approximately 18% should be residents. For significant reductions in non-work trips, such as shopping, an employment density of 185 employees per gross hectare (75 employees per gross acre) is needed, of which approximately 18% should be residents.¹² Although it is difficult to control how many jobs will locate in the Centre and where these jobs will be located, the scenario used in the CMHC model estimated the creation of .7 local jobs for every new housing unit. From a transit standpoint, increasing the employment density and the jobs-to-housing ratio will also increase viability, since transit can service both employees and residents in the area.

Increase Options for Walking, Biking, and Transit

Maple Ridge Town Centre already exhibits a fairly interconnected street network. It is possible, however, to increase the connectivity for pedestrians and bicyclists through the creation and improvement of pedestrian/bicycle paths or by restricting vehicle traffic on certain streets. The scenario used in the CMHC model suggested that pedestrian/bicycle paths be doubled. Increasing connectivity for pedestrians and bicyclists will increase the utility for pedestrians and bicyclists while decreasing the utility for automobiles. This can help reduce automobile dependence and encourage non-motorized forms of transportation.

7.0 Conclusion

With an increased mixture and intensity of land uses, the possible creation of transit routes across the new Fraser River Crossing, and with a goal of ensuring that every household is located within a 250m walk of a bus stop, there is tremendous potential to increase transit service in the Centre. The scenario used in the CMHC model suggested a tripling of current transit service hours, which can be achieved by increasing the frequency and coverage of both local and regional bus routes. It is likely that the use of Community Shuttles for local-serving routes would be the most cost-effective way to provide this increase in transit service.

This bulletin has shown that by increasing residential and commercial density, increasing land use mix, increasing the number of local jobs, improving the pedestrian and bicycle network, and improving transit service, Maple Ridge Town Centre can see a transition from being a bedroom community to being a

complete community. This transition results in a dramatic reduction in automobile use and an increase in alternative modes of transportation.

Notes:

- ¹ The Sheltair Group and Kelly & Associates. 2004. Demographic Analysis and Population and Housing Projection for Maple Ridge, 2001-2031 p. 35 Report found at: <http://www.mapleridge.org/municipal/departments/planning/demographics-march04.pdf>
- ² Greater Vancouver Transportation Authority. 2004. Interim Report #1 – Background Research & Transit Performance: Pitt Meadows/Maple Ridge Area Transit Plan. P. 9 Report found at: http://www.translink.bc.ca/files/area_plans/int_rep1bkd_research_transit_perf.pdf
- ³ The Sheltair Group and Kelly & Associates. 2004, p. 22
- ⁴ Greater Vancouver Transportation Authority. 2004. p. 14
- ⁵ This figure was found using the 2001 Base Case with the CBD being Downtown Vancouver. This scenario assumes that the Town Center is currently a ‘bedroom community’ instead of being a CBD in its own right.
- ⁶ Greater Vancouver Transportation Authority. 2004. p. 14
- ⁷ Greater Vancouver Transportation Authority. 2004, p. 34
- ⁸ Frank, Engelke, Schmid. 2003. Health and Community Design: The Impact of the Built Environment on Physical Activity. Washington, DC: Island Press, p. 137
- ⁹ Holtzclaw. 1994. Using Residential Patterns and Transit to Decrease Auto Dependence and Costs. Natural Resources Defence Council, San Francisco, p. 6-8 and 21.
- ¹⁰ Cervero, Robert. 1996. Mixed Land-Uses and Commuting: Evidence from the American Housing Survey *Transportation Research A* 30(5): 361-377. p. 375
- ¹¹ Frank et al. 2004, p. 145
- ¹² Frank and Pivo. 1994. Relationships Between Land Use and Travel Behaviour in the Puget Sound Region. Washington State Department of Transportation, Seattle, p. 9-37



TECHNICAL BULLETIN



Smart Growth on the Ground

No. 2
June 2004

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

Water Consumption in Maple Ridge

1.0 Introduction

Two major factors that influence water consumption are the cost of water and residential density. Little information is available regarding water use in Maple Ridge, but within the Greater Vancouver Regional District (GVRD), the average “resident uses approximately 325 litres (L) of water per day around the home.” This translates to a billion litres of water used every day in the Lower Mainland.¹

From a municipal standpoint, encouraging water conservation measures among residents makes financial sense. By reducing water demand and wastewater generation, it is possible for municipalities to defer expensive capital investment projects for water supply and wastewater treatment infrastructure. Conserving water today builds capacity into the existing infrastructure system, which can accommodate water demand of an increasing population.

This technical bulletin explores how the District of Maple Ridge and its residents can work together to significantly reduce residential and commercial water consumption. Encouraging the installation of efficient fixtures, increasing the percentage of high density multi-family dwellings and apartments and moving towards a metered system that charges for the volume of water used are strategies that can reduce water use within Maple Ridge by 40-60%.

2.0 Indoor Water Use

Residential water use is highly dependent on personal habits. However, installing water efficient appliances can reduce indoor water consumption in the home by as much as 30%. Toilets alone account for 30% of the total water used within the home, and replacing older inefficient models can lead to significant reduction in water use. To encourage residents to make the switch, many municipalities – including the GVRD – offer toilet replacement programs, where residents get a cash incentive if they install a low-flow toilet. Table 1 compares the volume of water used in conventional and efficient appliances.

Appliance	Conventional	Efficient
Toilet	Up to 30L/flush	6L/ flush
Shower	18-27L/minute	9-11L/minute
Bathtub	Up to 190L/tubful	115L/tubful
Washing Machine	Up to 190L/cycle	170L/cycle
Dishwasher	Up to 55L/cycle	40L/cycle
Kitchen Faucet	Up to 11.3L /minute	7.6L/minute
Bathroom Faucet	Up to 11.3L /minute	7.6L/minute

In the Lower Mainland, installing efficient appliances and fixtures equates to reducing water use from 325L per person per day to 230L per person per day.

Case Study

In a 1992 Pilot Program, the Regional Municipality of Waterloo and the City of Kitchener, ON showed that households with ultra low-flow (ULF) toilets saw water use fall between 20 and 30%. The annual savings for homes with ULF toilets was between \$65 and \$135.



Figure 1: A dual flush toilet

Dual flush toilets are 26% more water efficient than single-flush 6 litre toilets. Featuring two flush options, dual flush toilets enable the user to choose a shorter 3 litre flush or a longer 6 litre flush.³



Figure 2: A dry urinal

In commercial and institutional settings, installing dry urinals that do not rely on water for flushing can save approximately 151,000 Litres of water per urinal per year!

Similar reductions are achievable in businesses when efficient fixtures and appliances are installed. Table 2 indicates the potential savings in indoor and outdoor water use for six typical business types as well as schools.

Table 2: Potential Savings in Water by Use Area for Businesses and Schools⁴

Sector	Landscaping	Restrooms	Cooling	Kitchen	Laundry	Process	Other	Total
Office	50%	49%	26%	20%	n/a	n/a	10%	39%
Hotel	50%	31%	26%	20%	54%	n/a	n/a	34%
Hospital	50%	47%	26%	20%	42%	52%	n/a	40%
Restaurant	50%	46%	26%	20%	n/a	n/a	10%	29%
Retail	53%	51%	41%	20%	n/a	n/a	25%	37%
Grocery	50%	51%	26%	20%	n/a	n/a	10%	27%
Schools (K-12)	50%	45%	n/a	20%	n/a	n/a	10%	46%

3.0 Outdoor Water Use

Outdoor water use varies dramatically with local climate, and no information exists on how much water Maple Ridge residents and businesses apply to their landscapes. A major study of 12 North American cities completed by the American Water Works Association, however, has shown that lawn irrigation comprises anywhere from 26% of total household water use in Waterloo, Ontario, to more than 75% in Las Virgenes, California, with an overall average of approximately 40% of total water use. The study also revealed that outdoor irrigation is “based on personal habits rather than irrigation needs of turf,” and that homeowners typically overwater their lawns by 18%⁵.

Changing this habit requires promoting awareness of the amount of water a lawn needs; and developing guidelines and restrictions that limit outdoor water use.

In BC’s Lower Mainland, lawns only need 25mm (one inch) of water per week to stay healthy. this is provided with one hour of sprinkling per week. Ensuring that residents and businesses are aware of this fact requires workshops and advertising campaigns provided by the municipality and the regional district.

In new development, effective tools to reduce the need for outdoor irrigation include creating land development guidelines requiring topsoil conservation and integrating stormwater management into all land development.

The heavy equipment used during construction leaves soil compacted and almost impervious to water. Topsoil conservation, as was practiced in the East Clayton neighbourhood in Surrey, BC, ensures that healthy and absorbent soil is returned to the site after construction. (Figure 3) .



Figure 3: Soil Conservation in East Clayton

Integrating rain water management into land development ensures that lawns are absorbent and retain moisture for long periods after rainfall events. In new development, infiltration devices and lot grading will achieve this, while encouraging homeowners to disconnect their downspouts and divert rain to gardens will reduce outdoor water use in existing neighbourhoods.

Developing and enforcing regulations is another tool that can limit outdoor water use. In response to summer water shortages, municipalities have written by-laws to restrict lawn watering. In Maple Ridge, lawn watering during the summer (June 1-September 30) is permitted between 4am and 9am, and between 7pm and 10pm, two days a week.⁶ Initial violations are met with warnings, and subsequent violations are fined. Current research suggests that for homes as well as businesses, these practices can cut the volume of water used outdoors in half.

4.0 Water Use and Density

In the study conducted by the American Water Works Association mentioned above, important connections were made between water use and density. The results show that per person indoor water use in a multi-family dwelling is significantly less than in a single family house. According to that study, average indoor water use in single family residential homes amounts to 318L per person per day. In multi-family dwellings, indoor water use totalled 273L per person per day, and in apartments, indoor water use was 250L per person per day. Table 5 summarizes these findings.

Residence Type	Volume of indoor Water Use (Litres per person per day)	Percent Reduction from Single Family Homes
Single Family Residential	318	n/a
Multi Family Residential	273	14.2%
Apartment	250	21.4%

There are a number of reasons to explain this difference. In general, small homes and rental units are typically fitted with smaller appliances that use less water. In addition, apartments often have shared laundry facilities, which encourages washing full loads all the time. Also, smaller units will require less water for general daily cleaning.

When outdoor water is included in the comparison, the results are more dramatic. The overall gross average water use in multi-family dwellings, including indoor and outdoor water use, is twenty-three percent lower than water use of residents of single family homes. (No number for apartments was available for comparison here).

In Maple Ridge, where single family homes predominate, the results of this research are particularly significant. The commitment to create a more dense urban centre, with a mix of housing types including multi-family dwellings and apartments will have a significant per capita reduction in water use.

5.0 Metering

Residents and businesses in Maple Ridge pay a flat rate for water. Table 4 shows the annual water costs for residential and commercial water use.

Flat rates for water encourage wasteful practices because people do not pay for the volume of water they use. Therefore, there is no financial incentive to conserve water. The alternative to charging a flat rate is to meter water, and charge households and businesses based on the amount used. This simple change has a dramatic effect on water use. For example, in 1994, “metered households used an average of 263L (58 gallons) per person per day, while non-metered households used about 430L (94 gallons) per person per day.”⁸ This suggests that metering water leads to a 38% reduction in water use.

Residential	
Single Family Unit	\$239.20
Additional Unit Within Single Family Structure	\$119.60
Multiple Dwelling Unit	\$237.14
Commercial	
Per Unit	\$239.20

Moving to a metered system where households and businesses pay for the volume of water used creates

Case Study
The town of Port Elgin, ON (pop 6500) avoided a \$5.5 million expansion of its water treatment plant by installing 2400 residential water meters in 1991 at a cost of \$550,000. This reduced summer water use by 50%, and use for all of 1993 by 25%, and dropped the water waterflow by 30%. The town also saved \$12,000 in sewage treatment operating costs.⁷

a demand to save water. The results are behavioural changes such as shorter showers, and investment in efficient fixtures such as low-flow faucets, and appliances that minimize water consumption like dual flush toilets, or sensor controlled faucets and urinals in businesses.

Maple Ridge has initiated water metering for all new residential units, businesses and other non-residential uses such as hobby farms and greenhouses. There are no plans at present to meter existing houses that are currently on a flat rate. As of 2004, a base rate for water consumption has been set to \$0.41 per m³ (1000L), with an additional quarterly charge based on connection size (Table 5).⁹

Connection Size	Base Rate per Quarter
25 mm or less	\$18.41
40mm	\$27.04
50mm	\$43.26
75mm	\$81.12
100mm	\$113.57
150mm	\$167.65
200mm	\$227.14
250mm	\$329.89

6.0 Conclusion

A few simple strategies will go a long way in reducing the amount of water consumed by residents of the Maple Ridge Centre. Encouraging residents and businesses to install water efficient fixtures with rebate programs or through metering can reduce consumption by 30%. Irrigation behaviour can be influenced to achieve a reduction of water used in outdoor applications by 20-50%. If the municipality goes on to develop land development guidelines, households and businesses will save even more outdoor water, as soils will be healthier and more absorbent to water. Lastly, by encouraging higher density development, the municipality will be able to save a predictable amount of water per resident. Together, these strategies can reduce per capita water consumption in Maple Ridge by 40-60%.

Notes:

¹ www.gvrd.bc.ca/water/residential-conservation-initiatives.htm

² CMHC (2000) Household Guide to Water Efficiency, CMHC

³ CMHC. 2002. *Dual Flush Toilet Testing*. <http://www.cmhc-schl.gc.ca/publications/en/rh-pr/tech/02-124-e.html>

⁴ Pacific Institute (2003) *Waste Not Want Not: the Potential For Urban Water Conservation in California* http://www.pacinst.org/reports/urban_usage/index.htm

⁵ Pacific Institute (2003) *Waste Not Want Not: the Potential For Urban Water Conservation in California* http://www.pacinst.org/reports/urban_usage/index.htm

⁶ www.mapleridge.org/services/regulations_bylaws/sprinkling_bylaw.html

⁷ National Action Plan to Encourage Municipal Water Use Efficiency, (2003) http://www.ec.gc.ca/water/en/info/pubs/action/e_action.htm

⁸ CMHC (2000) *Household Guide to Water Efficiency*, CMHC

⁹ http://www.mapleridge.org/services/fees_charges/water_fees.html



Smart Growth on the Ground

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

TECHNICAL BULLETIN



No. 3
June 2004

Rainwater Management in Maple Ridge

1.0 Introduction

“The region will manage waste in a manner that enhances environmental quality.”

This principle is the foundation for the Greater Vancouver Regional District’s (GVRD) **Liquid Waste Management Plan (LWMP)**, approved in 2002.¹ Within the LWMP, a key strategy is to treat “stormwater as a resource” (GVRD, 2002, p7). This means managing rainfall so that it is available to maintain or restore fish-bearing streams; creates open, public amenities that enhance the liveability of the region; and recharge groundwater wherever appropriate and feasible².

The District of Maple Ridge is a signatory to LWMP implementation (Figure 1). This commits the municipality to adopting or updating at least two by-laws and policies that relate to rainwater management, and completing an Integrated Stormwater Management Plan (ISMP) for each watershed. This commitment includes public participation.

Maple Ridge also belongs to the inter-governmental partnership that developed the **Water Balance Model for British Columbia** (www.waterbalance.ca). This internet accessible planning and decision support tool is built around established soil science principles. It creates an understanding of how to get rainwater into the ground and/or absorbed by trees and landscaping - under any combination of land use, soil and climatic conditions. This enables the model user to quantify the benefits that result at a neighbourhood or watershed scale by reducing rainwater runoff at the site level.

This technical bulletin applies the Water Balance Model to the north half of the downtown centre of Maple Ridge. It presents the results of scenario modeling to assess how runoff could potentially be reduced to 10% of the total volume of rain that falls on the site, to enhance the environmental quality of that area.

2.0 Why The 10% Target

The 10% target represents a synthesis of biophysical and hydrologic understanding. Analysis of rainfall patterns shows that 90% rainfall capture is typically within reach.

In coastal watersheds, annual runoff under natural forested conditions ranges between 1% and 10% (Figure 2). Most water is captured by plants, or absorbed into the ground, slowly recharging the interflow zone and sustaining flow in streams. 10% impervious urban area is a threshold at which aquatic diversity and abundance is initially and significantly impacted (Figure 3). By 30%, most urban watersheds may be unable to sustain self-supporting and abundant populations of cold water fish.

To preserve and/or restore the natural water balance in the built environment, the goal is to design site landscaping and infiltration systems to absorb 90% of rainfall, and in doing so limit runoff to 10% (Figure 4). In the Georgia Basin, this is generally equivalent to absorbing 1mm per hour or approximately one inch a day. The one inch figure has been practically achieved locally at East Clayton, in Surrey, BC at densities of 10 dwelling units per acre, and at Simon Fraser University with densities twice that high.

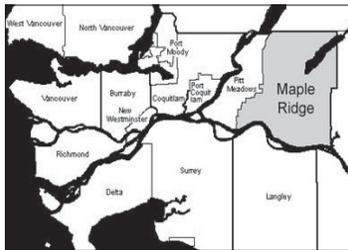


Figure 1: Maple Ridge in the
Greater Vancouver Regional
District

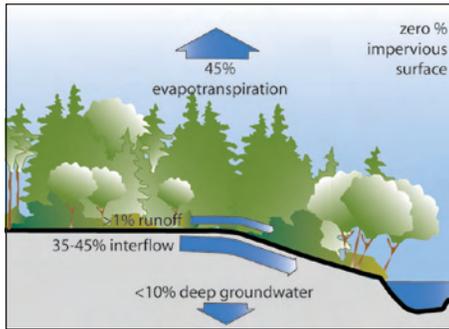


Figure 2: Runoff in an undeveloped watershed: ‘Water Balance’.

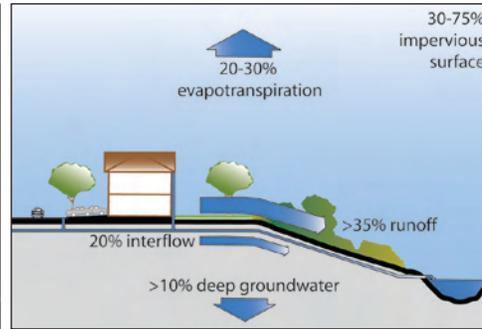


Figure 3: Runoff in a moderate to heavily developed watershed.

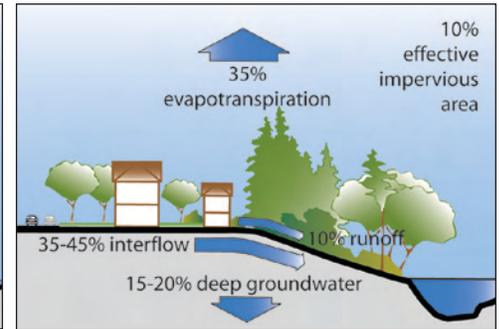


Figure 4: Runoff controlled in a moderate to heavily developed watershed to move towards ‘water balance’.

3.0 Maple Ridge Centre 2004

Land Use and Soil

Maple Ridge Centre (Figure 5) is approximately 300 hectares (3km²), and consists of 4 broad land use types: Single Family Residential; Urban; Multi Family Residential; and Open Space, each with varying amounts of impervious area. By combining aerial photography with previous neighbourhood pattern research³, certain assumptions can be made about the proportion of ‘impervious area’ in each land use type. Typically, impervious area is made up of roads, parking lots, and rooftops. In the Single Family residential area, about 55% is impervious; the Urban area is 75% impervious; the Multi Family area is 40% impervious; and Open Space is 10% impervious (see Figure 6). Table 1 indicates the area of each land use type and the percentage of the area covered by roads and parking, rooftop, grass, and forest.⁴



Figure 5: Maple Ridge Centre (approx. 300 ha)

Table 1: Area covered by roads and parking, rooftop, grass and forest

Land Use	Area (ha)	Impervious Area		Pervious Area	
		Roads and Parking Lots	Rooftop	Grass	Forest
Single Family	117	25%	30%	45%	n/a
Urban	66	45%	30%	25%	n/a
Multi-Family	66	20%	20%	45%	15%
Open Space	51	10%	n/a	10%	80%

The soil in the Maple Ridge Centre is generally a combination of shallow (less than 450mm) Webster and Whonnock soils. These are silty, clayey soils that drain moderately well to moderately poorly. The rate at which water moves through this soil when it is saturated is 2.3mm per hour.

Application of the Water Balance Model, to simulate what happens when rain falls on this mix of land use, impervious area, and soil types, indicates that about 55% of the annual rainfall volume that falls on the Centre becomes surface runoff.

Storm System

The storm system in the Centre is a conventional system of underground pipes with the occasional exposed ditch flowing into open stream channels. North of the Dewdney Trunk Road, the system drains into Latimer Creek, a tributary to the Alouette River. South of the Dewdney Trunk Road, the system empties directly into the Fraser River (Figure 7). From the standpoint of rainwater management this north-south divide is very important, and suggests that the 10% target should perhaps be applied only to

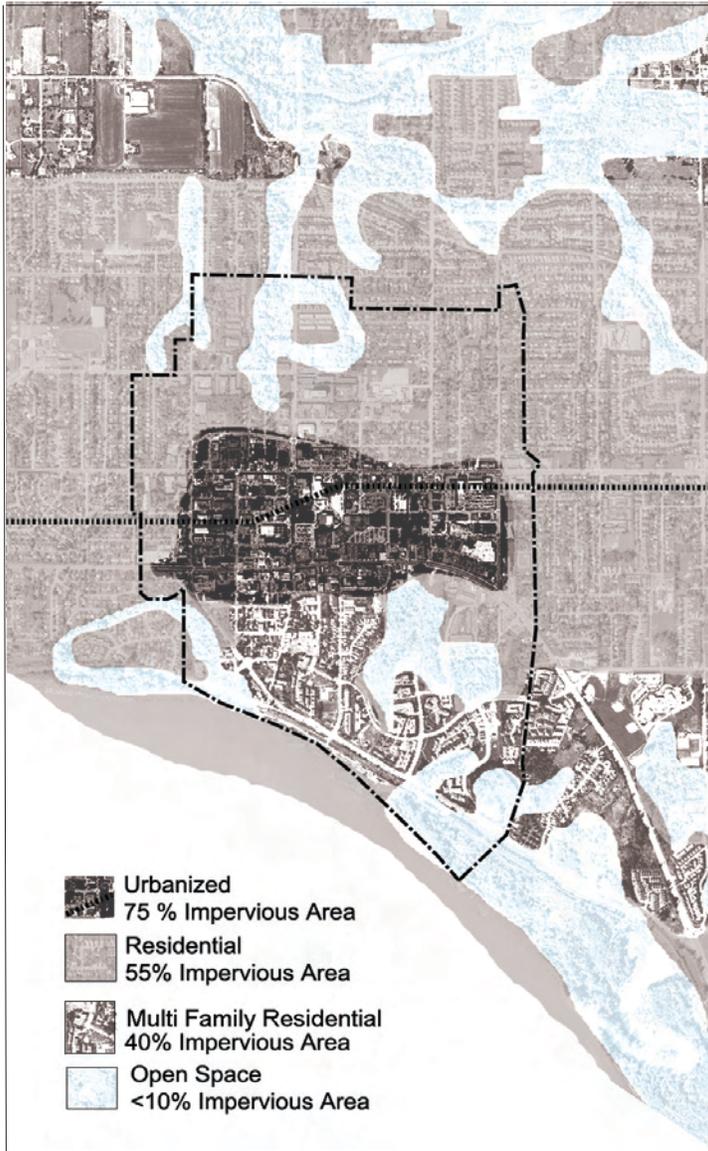


Figure 6: Land Use and Cover in Maple Ridge

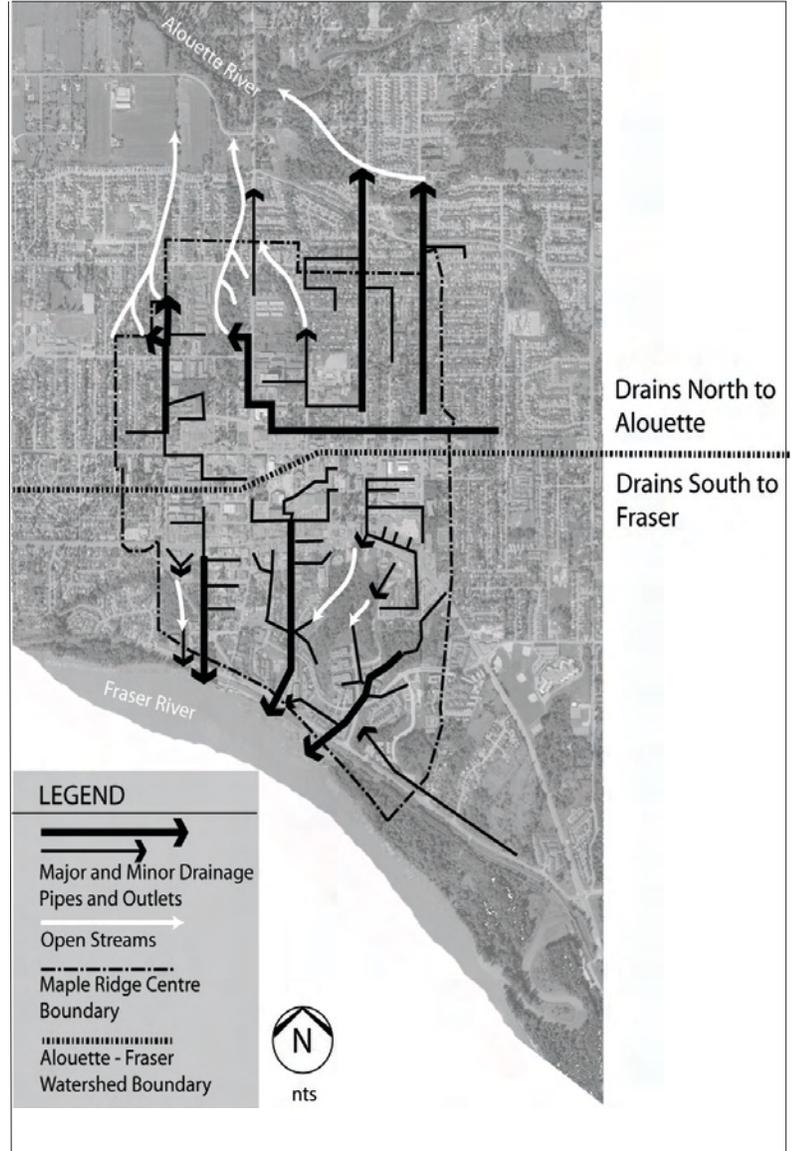


Figure 7: Maple Ridge Storm System

the north half of the Centre. Of relevance, the Alouette River is a BC Heritage River that has undergone significant restoration. Increasing salmon stocks are now being observed after almost 10 years of work. In order to ensure that this encouraging trend continues, the volume and quality of runoff entering the Alouette River need to be carefully controlled and protected, respectively.

By contrast, only the quality of runoff entering the Fraser River must be controlled. The reason is that the volume of all the runoff from the entire south half of Maple Ridge Centre will have a negligible impact on a tidally influenced body of water as large as the Fraser River, though quality at any scale has an impact.

4.0 A Scenario for Source Control

There are many ways to manage the volume and quality of runoff from residential, commercial, and industrial development sites. What follows is one scenario that illustrates how the 10% Water Balance performance target could be achieved in the north half of the Maple Ridge Centre using a natural systems approach to rainwater management on private property and along public roadways.

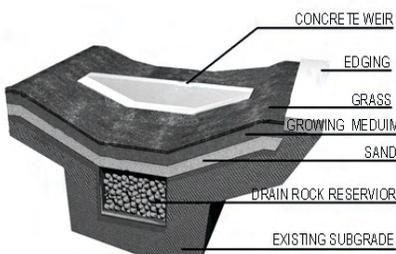


Figure 8: Infiltration trench



Figure 9: Disconnected downspout



Figure 10: Rain garden / infiltration swale

Source control measures that have been considered for the overview purposes of this technical bulletin include on-lot absorbent landscaping, roadside swales and green roofs. The analysis assumes two types of swales: open vegetated swales for curb-less roads, and a subsurface infiltration trench and underdrain in more urbanized areas.

The scenario modeling has established that the 10% target for runoff could be potentially achieved in the study area by removing runoff from the storm sewer system through an integrated strategy as follows: direct road and parking lot runoff to swales occupying 10% of road rights-of way; direct all residential rooftop runoff to 10% of yards; and capture half of all urban rooftop runoff in green roofs, with the other half diverted to vegetated swales and grass areas on 10% of the lot area.

Along roadways, rainwater management will be a bonus benefit if and when integrated with community enhancement strategies that are designed to achieve safer and greener streets - for example, rainwater management integrates well with many traffic calming features. Because green streetscaping enhances liveability and quality of life, rainwater management in conjunction with an overall 'green roads' strategy could encompass practical 'small steps' such as these:

- Reduced pavement widths to make a tree canopy achievable
- Pull sidewalks back from curb edges to create a landscape strip beside the roadway
- Plant appropriate tree types within the landscape strip to promote tree canopy growth over the roadway
- Utilize landscape features along roadways to create rain gardens and infiltration swales
- Construct percolating catch basins connected to infiltration trenches within boulevard areas

Considering the area south of the Dewdney Trunk Road that drains directly to the Fraser River, strategies that focus on water quality could be emphasized - for example a simple curb cut that allows water to seep into a small garden at a curb bulge before entering the existing storm system will effectively remove the metals, hydrocarbons, and other suspended solids that are typically found in road runoff.

5.0 Conclusion

Rainwater management is best achieved through practical, incremental 'small steps' that combine to ultimately create a greener community through a landscape and infiltration-based approach to source control that is integrated with streetscape enhancement. Guided by the overview-type results of the Water Balance Model simulation, this technical bulletin assesses one scenario for demonstrating how the natural water balance could eventually be substantially restored in the Maple Ridge Centre. The major change lies in a new look for public infrastructure and the open space around private development, and a new attitude towards managing rainwater as a resource, recognizing its role in maintaining regional environmental quality and liveability. Over time, the progressive 'greening' of neighbourhoods will occur naturally as landscaped areas and trees mature. This greening will result in cumulative benefits that further mitigate the original changes to the natural water balance.

Notes:

¹ "The Liquid Waste Management Plan was prepared by the GVRD, adopted by all municipalities and the Greater Vancouver Sewerage and Drainage District Board in 2001, and approved by the Province of B.C. under the Waste Management Act in 2002," (<http://www.gvrd.bc.ca/sewerage/plans.htm>).

² GVRD. 2002.

³ Condon, Teed, Muir, Midgley (2002). *Sustainable Urban Landscapes: Neighbourhood Pattern Typologies*. <http://www.sustainable-communities.agsci.ubc.ca/projects/typology.htm>

⁴ These numbers were estimated using orthographic aerial photography in order to substantially simplify use of the Water Balance Model Tool.



Smart Growth on the Ground

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

BC Hydro's provincial supply grid is 94% hydroelectric but is near its maximum capacity. And unstable natural gas prices have been driving consumers toward more electric heating. As population within the GVRD increases, greater strain will be placed on these supplies.



Figure 1: PV's integrated into the glass of classroom walls at Red River College's new Princess St. Campus in Winnipeg.

TECHNICAL BULLETIN

No. 4
June 2004



Energy Management in Maple Ridge

1.0 Introduction

The GVRD Sustainable Region Task Force on Energy states:

"The future is one where urban form and business processes:

- *require minimum energy inputs and maximize energy recovery;*
- *derive all of the region's energy supply from clean, low impact sources; and*
- *rationalize energy usage so that high-grade forms of energy such as electricity are directed for high-grade purposes (e.g. computers) and low-grade forms such as waste heat are directed towards low-grade purposes such as space-heating."*¹

This technical bulletin examines the energy situation within the Greater Vancouver Regional District. An overview of current and future energy supplies, the potential for renewable energy sources and a breakdown in energy use within the GVRD sets the context for the need to incorporate energy conservation measures where they can have the most impact – within buildings. Opportunities to reduce energy use within residential and commercial buildings are highlighted by increasing order of effectiveness and design strategies that can ease the transition to anticipated new technologies, such as fuel cells and photovoltaics, are included. Also explored are methods to conserve energy and prepare for new technology on a block and district scale.

Energy Supply in the GVRD

BC Hydro's provincial supply grid is 94% hydroelectric but is near its maximum capacity. Additional electrical loads in the lower mainland have, for some time, been supplied by natural gas fired turbines at the Burrard Thermal Plant. This is an expensive supply with substantial greenhouse gas emissions. To accommodate increased demand, BC Hydro is becoming aggressive about conservation and is looking for new supplies. Many new sources are likely to be thermal (gas fired generation), or large hydro dams, both of which have high environmental impacts.

Natural gas in the lower mainland comes from northwest BC and Alberta via pipelines. Prices are subject to market pressures and have doubled (from 21.8 C /M3 to 44.5 C/M3) between 1997 and 2002.² Gas price instability has been driving more consumers toward electric heating, aggravating existing regional supply problems. High gas prices and instability are likely to be new facts of life for the future.

A new renewable supply initiative from the province sets a target of 50% renewables for new sources. This could be a combination of small hydro, wind and possibly tidal energy.³

The Potential for Renewable Energy in the GVRD

Within the GVRD, solar potential is limited during the winter months, however, incorporating the basic elements of passive solar design, including careful orientation and choice of insulation levels are always worthwhile. Photovoltaic electricity (PV) is an emerging technology that will someday become cost competitive. PV electricity costs are now around \$0.30 - \$0.80/kWh, or from 5 to 13 times the cost of Hydro in 2004, even when PV are "building integrated" to offset some of the high cost of the technology

(i.e. the PV replaces some roofing, wall covering or glazing materials). Major PV developments in Europe are financially driven by green energy purchase subsidies from governments that are not in place on this continent.⁴

The City of Calgary purchases enough wind energy from suppliers in the foothills to completely power its C-Train electric transit system.

The potential for wind energy is being explored for the west coast and will become an important part of renewable supplies for the future. Wind generators must be carefully located where the resource is available, and large scale “wind farms” capable of contributing major amounts of power take up a great deal of area and involve very high towers. The most likely installations will be on high mountain ridges and offshore. An urban wind power installation can make a strong visual statement, but cannot truly contribute much to urban power needs. Another option is for municipalities and individuals to enter into green power purchase agreements that support off-site wind power systems (usually at a small premium over the basic utility price).

Small scale hydro in the GVRD is another likely source of modest amounts of new electricity supply. Though municipalities and individuals may not be directly involved, they can support the efforts of independent power producers who need sites and approvals for environmentally benign installations.

Energy Use in the GVRD

In the GVRD, the building sector accounts for 25% of total energy use, comprised of 15% residential and 10% commercial. Transportation accounts for 33% of all energy use and business and industry accounts for 42%. *Of the transportation factor, 24% of that energy is used in residential commuting.* Therefore, building use and commuting together account for 33% of total energy use.^{5 6}

Building energy use and commuting together account for 33% of total energy use in the GVRD.

With one-third of the energy used within the Lower Mainland consumed by buildings or associated transportation, improving the energy efficiency of building infrastructure and building complete communities that reduce the need for travel will help Maple Ridge achieve its energy targets.

An Approach to Energy Conservation in Buildings

Generally the most effective priorities for energy conservation in buildings are:

- Energy demand reduction by building design
- Advanced technology and equipment
- Energy recovery and recycling

These priorities will shift and different strategies emerge depending on the building type and site. They will also vary between the building scale or block and district scale.

In the mild climate of the lower mainland it is relatively easy to use building design to achieve low energy use.

In the mild climate of the lower mainland it is relatively easy to create buildings that consume less energy through the use of natural ventilation, effective insulation and daylighting.. Synergistic energy opportunities can be uncovered by looking at buildings, blocks and districts as integrated systems (for example, energy can be captured from commercial buildings and used in residential).

Furthermore, there are design approaches and present technology choices that will make buildings and district utilities more adaptable to future technologies. These “future ready” solutions ease the transition to solar devices, fuel cells and co-generation (combined heat and power).

2.0 Residential Buildings

Energy Use Profiles

Even in the mild climate of the lower mainland, space heating and ventilation account for the largest energy use in homes. Water heat is the second largest and appliance use the third, dominated by the refrigerator. Lighting and electronics make up a relatively small energy use factor in homes, but it has been growing steadily as consumers acquire more devices, while space and water heating equipment has become more efficient. The second residential chart shows an R-2000 standard home designed to use

— about 30% less energy than the code home. In this home the space heating and lighting are smaller factors due to better insulation and more efficient equipment, but this shift makes water heating and refrigeration & appliances more prominent. These are more difficult to improve because they are highly dependent on consumer behaviour and preferences.

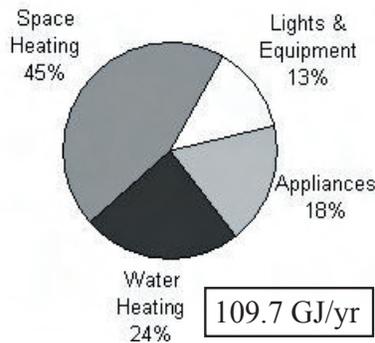


Figure 2: Code Residential Energy Use Profile ⁷

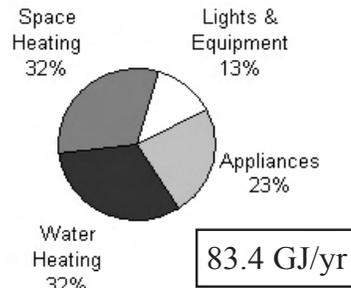


Figure 3: R-2000 Residential Energy Use Profile ⁸

One third of space heating in older homes can be lost through windows. By upgrading old single glazed windows to modern sealed units, it is reasonable to reduce total energy use in the Lower Mainland by 20%.

It is estimated that within Vancouver it is possible to achieve a 43% savings on energy used for water heating through the installation of a solar water heater.

Energy Reduction Strategies for Residential Buildings

← Increasing Priority

Strategy	Feature 1	Feature 2	Feature 3	Feature 4
Demand Reduction	Insulation	High perform. windows & draft sealing	Solar design & orientation	Hot water conservation (1)
Advanced Technology & Equipment	High efficiency heating and hot water systems	Combined heating systems (2) & efficient lighting and motors	Solar water heat devices	Solar electrical devices (PV's)
Energy Recovery	Energy recovery ventilation	Wastewater heat recovery		

↑ Increasing priority

- 1). Though hot water is a major component of residential energy use, it is highly dependent on occupant habits and is therefore less amenable to conservation through design and technology improvements.
- 2). Combined systems are very compact units that use the same high efficiency components to produce both space heat and hot water. They may also provide ventilation and heat recovery.

Residential New Technology Readiness

New heating technologies like Ground Source Heat Pumps (GSHP's), also called geothermal systems, are likely to become cost effective soon as energy prices rise and system prices fall. These systems extract heat from groundwater or moist soils using advanced refrigeration equipment. They are capable of replacing a forced air furnace for a single dwelling, but are much more likely to find application as a multi dwelling system where the capital cost is distributed widely. In these applications, circulating low temperature hot water is the preferred means of distribution. Residential buildings that use low temperature heating systems, such as radiant heated floors, are highly adaptable to any type of heating supply. This also includes other nascent technologies such as stationary fuel cells, bio-fuel systems etc., many of which produce both heat and electricity.

Solar system readiness can be provided by allocating south facing wall areas and roofs for future solar devices, including the pre-installation of pipes and wiring conduits. An approximate allocation is:

- An opaque, unobstructed wall area oriented within 45 deg. of south, with an area equal to at least 7% of

the dwelling floor area.

- A roof area oriented within 60 deg. of south, with an area of at least 10 m² (110 sq.ft.)

3.0 Commercial Buildings

Energy Use Profiles

A small (1000 m²) C-2000 commercial building saves enough energy to operate more than nine R-2000 detached homes.

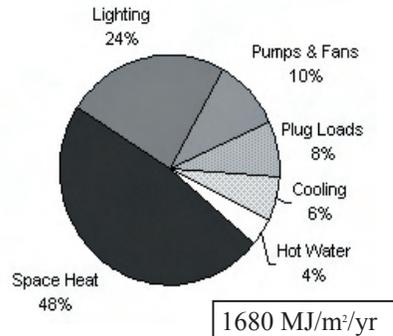


Figure 4: Code Commercial Energy Use Profile⁹

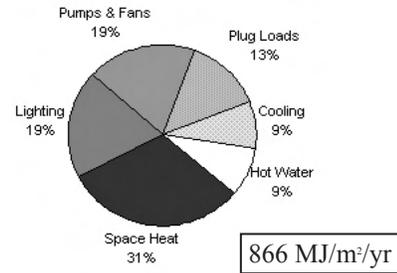


Figure 5: C-2000 Commercial Energy Use Profile¹⁰

Natural ventilation and daylighting strategies used at Terasen Operations Centre saves \$150,000/yr in operating energy.

Commercial buildings use almost twice the energy per unit of area of residential. This is primarily due to the large lighting loads, pumps and fans, and computers. The large glass area of many commercial buildings can also lead to high heating and cooling loads. A C-2000 commercial building is designed to use 50% less energy than a code building. This is primarily achieved by better solar control, insulating glass, more efficient lighting, energy recovery ventilation and efficient motors. Natural ventilation and cooling may also be an effective energy measure in the lower mainland. But this shift makes the energy use by computers, office equipment, fans, elevators etc much more prominent. These are more difficult to improve because they require larger capital investment and changes to workplace behaviour and expectations.

Solar heat rejection strategies and efficient lighting have reduced energy costs by 42% at Crestwood Corporate Centre Building 2 in Richmond, BC.

Energy Reduction Strategies for Commercial Buildings

Table 2. Commercial Building Scale Energy Strategies

← Increasing Priority

Strategy	Feature 1	Feature 2	Feature 3	Feature 4
Demand Reduction	Solar heat rejection by shading and glass selection	Daylight utilization and advanced lighting control (1)	Natural cooling and ventilation	Insulation (2)
Advanced Technology & Equipment	High efficiency lighting and office equipment (1)	High efficiency cooling equipment	High efficiency motors, e.g. pumps, fans, elevators.	Building-integrated renewable energy systems
Energy Recovery	Heat collection and transfer from chillers (3)	Energy recovery ventilation (4)	Wastewater heat recovery (5)	

↑ Increasing Priority

Richmond City Hall saves 2,850 GJ of energy a year by using efficient lighting and HVAC systems, resulting in cost savings of \$32,700 a year.

- 1). Improved lighting system and office equipment efficiency reduces both cooling demand and direct electricity usage.
- 2). Though thermal insulation is generally not a high priority for commercial buildings in a mild climate, reflective (radiant type) insulation can help reduce cooling demand, especially for small buildings.
- 3). Cooling of building areas is a major energy use in large office buildings. Food and beverage retail services use product coolers. Heat rejected from both can be collected and distributed as hot water.
- 4). Pools and spas have a large capacity to benefit from energy recovery exhaust systems since ventilation is necessary for humidity control. Office buildings can reduce cooling loads by using energy transfer between supply and exhaust air streams.

5). Most commercial-office buildings use very little hot water. However specialized uses such as fitness and recreation centres and laundries have high usage.

Commercial New Technology Readiness

Medium to large scale commercial buildings have the capability to use Combined Heat and Power (CHP) systems, also called co-generation. These systems use gas turbines (and may use fuel cells in future) to produce electricity and heat. Since heating is usually a minor demand in this occupancy type, it may be best transferred to an adjacent user. However with the current high cost of gas and low cost of electricity, they are not economical.¹¹ Ground Source Heat Pumps, are also highly effective cooling systems applicable to commercial uses. If heat is exchanged between cooling uses and heating uses in the building or adjacent buildings, the size and cost of the earth collection system can be reduced.

Building Integrated Photovoltaics (BIPV's) are electricity-generating elements installed in the roof or walls of buildings. The price is still high and the efficiency low, so these are not currently economical, but the progress of the technology is steady. Roof and wall areas can be allocated now for future installations, and service conduit installed.

4.0 Energy Opportunities at the Block and District Scale

Several possibilities for energy efficiencies, energy recovery and innovative technology exist at the block and district scale.

- Some occupancies, such as food service and commercial offices, produce constant heat rejection from cooling equipment. This heat can be used for seasonal space heat and hot water by adjacent residential uses.
- Local energy systems are possible at a particular scale. The capital cost and distribution costs must be rationalized against more centralized systems.
- Innovative systems such as ground source heat pumps and fuel cells have a high capital cost that makes them prohibitive for small buildings. However at a larger scale serving several buildings, the capital cost per unit drops substantially.

Three conventional detached homes use the same energy as five R-2000 townhouses

Urban form is an essential factor in energy efficiency measures. Energy transfer between buildings and occupancies as well as the internal efficiency of buildings are highly dependent on compact development. This is because the resource use per unit for buildings and utilities increases rapidly as development spreads, and because local energy distribution systems are costly to install and difficult to insulate over long distances. Furthermore, *compact development* and *complete community design* reduce commuter trips that account for one quarter of the energy used in buildings and related transportation. that account for one quarter of the energy used in buildings and related transportation.

Urban form is an essential factor in energy efficiency measures. Compact development is inherently more energy and resource efficient. It also makes district energy supply and exchange more feasible.

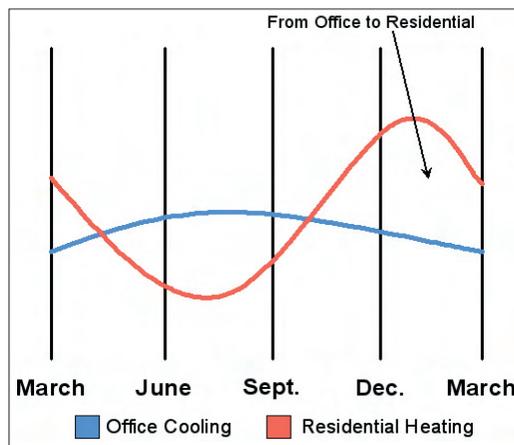


Figure 6: Annual space heating profiles for commercial and residential, showing opportunities for heat transfer

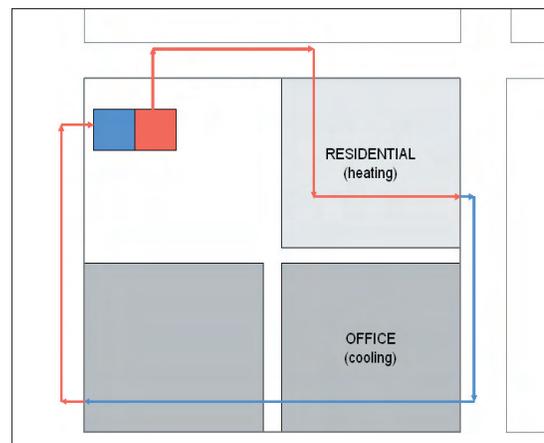


Figure 7: Schematic of a block scale energy exchange system that transfers heating and cooling between commercial and residential buildings.

Energy Reduction Strategies at the Block and District Scale

Table 3. Block and District Scale Energy Strategies

← Increasing Priority

Strategy	Feature 1	Feature 2	Feature 3
Demand Reduction	Compact development	Building form and landscape design for residential solar access and commercial shade	
Energy Recovery	Mixed use; adjacent commercial and residential uses	District hot water and chilled water loops (1)	
Advanced Technology & Equipment	High efficiency heat pump cooling	Central CHP designs	District renewable energy systems

Increasing priority →

1). These may combine heat pump technology with earth collection and storage systems and high-efficiency boilers to produce a complete energy system. Also CHP systems and district loops can be combined.

New Technology Readiness

Block and district scale systems require good access for future flexibility. Designing a “utility corridor” into the block, using a service tunnel system, or a shallow, linear “utility room” attached to buildings is an effective strategy. Generally the most flexible distribution methods are, again, low temperature hot and chilled water since they are adaptable to any kind of energy supply. In addition to heat pumps, both combustion equipment and fuel cells should be planned for, allowing for fuel choices including natural gas, liquefied gases, liquid bio-fuels (e.g. methanol and bio-diesel) and hydrogen.

Notes:

¹ Greater Vancouver Regional District Sustainable Region Initiative, Phase 2 Energy Task Group Framework, GVRD, 2003 <http://www.gvrd.bc.ca/sustainability/SRI-IssueGroupReports/reports/Energy%20Report.pdf>

² Natural Resources Canada and Statistics Canada, Residential Energy End Use Database, 2003, Ottawa, http://oee.nrcan.gc.ca/neud/dpa/data_e/Handbook/chapter2.cfm

³ See BC Hydro’s 2004 Integrated Electricity Plan (IEP) at: <http://www.bchydro.com/info/epi/epi8970.html>

⁴ Natural Resources Canada, Photovoltaics for Buildings: Opportunities for Canada, CANMET Energy Diversification Research Laboratory, 2000, Varennes Que.

⁵ Environment Canada, Canada’s National Greenhouse Gas Emissions 1990-1999, http://www.ec.gc.ca/press/2001/010711_b_e.htm

⁶ Greater Vancouver Regional District Sustainable Region Initiative, Phase 2 Energy Task Group Framework, GVRD, 2003 <http://www.gvrd.bc.ca/sustainability/SRI-IssueGroupReports/reports/Energy%20Report.pdf>

⁷ Cooper, Ken, Life Cycle Assessment of House Assemblies. Natural Resources Canada, CANMET Buildings Group, 2004, Ottawa

⁸ Natural Resources Canada & Canadian Home Builders Association, The R-2000 Technical Standard. http://oee.nrcan.gc.ca/r-2000/english/standard_tofc.cfm

⁹ Natural Resources Canada, Commercial and Institutional Building Energy Use Survey (CIBEUS), 2000, Ottawa <http://www.statcan.ca/english/sdds/2943.htm>

¹⁰ Natural Resources Canada, Commercial Building Incentive Program (CBIP) <http://oee.nrcan.gc.ca/newbuildings/buildings/casestudies-etudesdecas/>

¹¹ Urban Environmental Institute, Resource Guide for Sustainable Development, 2002, Seattle, Summary at at: http://www.slufan.org/projects_plans/uei.htm

Natural Resources Canada, Renewable Energy Technologies project screening calculators (RETSscreen), 2000, Ottawa <http://retscreen.gc.ca/>



TECHNICAL BULLETIN



Smart Growth on the Ground

No. 5
June 2004

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

Residential Development Opportunities in Maple Ridge

1.0 Population and Household Growth in Maple Ridge

The combined population of Maple Ridge and Pitt Meadows is about 87,547, with 71,399 in Maple Ridge and 16,148 in Pitt Meadows. Maple Ridge experienced population growth of about 3.1% per year between 1998 and 2003, but growth in the core area of Maple Ridge was much lower. Over the same time frame, the overall GVRD average growth was 1.4% per year.

Population projections indicate that Maple Ridge will continue to grow at a relatively rapid rate to 2021, reaching about 93,700 people by 2021. The rate of household growth will exceed the rate of population growth as the average household size is expected to continue to decline.

2.0 General Residential Market Demand in Maple Ridge

Residential development in Maple Ridge has been comprised primarily of single-family housing over the past several years. Between 1999 and 2003, about 85% of all housing starts were single-family, 7% were ground oriented multifamily units and 8% were apartments units. All of the apartment units were in projects catering to the senior's market.

However, changing demographics mean that townhouse units and apartment units are expected to make up an increasing share of housing development in Maple Ridge over the next 10 years, with townhouse accounting for about 20% to 30% of total demand and apartment accounting for about 20% of total demand. Apartment demand should continue to increase in the following decades. Thus, estimated Maple Ridge housing demand from 2004 to 2021 is roughly as follows:

Year	Average New Units Per Year in Maple Ridge District		
	Single-Family	Townhouse/ Attached	Apartment
Between 2004 and 2011 (8 years)	400 to 500	150 to 250	150 to 200
Between 2011 and 2021 (11 years)	200 to 300	200 to 300	200 to 250
Total New Units in Maple Ridge 2004 to 2021	5,400 to 7,300	3,400 to 5,300	3,400 to 4,350
Total all unit types	12,200 to 16,950		

3.0 Residential Opportunities in the Maple Ridge Centre

It is intended that the Centre should absorb approximately 50% of new dwelling units, in response to public support for increased density, and also in response to the GVRD's Livable Region Strategic Plan. This is generally supported by market projections. *The study area should capture all of the District's*

Townhouse units and apartment units are expected to make up an increasing share of housing development in Maple Ridge over the next 10 years.

estimated apartment demand as it is an attractive apartment location and there are no other competing areas in the District. The study area should also capture a significant share of the District's townhouse demand. However, there are competing locations in the District that will also attract a share of the townhouse market. For planning purposes, it is reasonable to assume that with current policy and demand that 25% of future townhouse demand could be captured in the study area. However, given the need to increase density in the Centre we will project that *the study area could capture about 50-65% of future townhouse demand.*

Therefore, average annual multifamily residential demand in the study area will be roughly as follows:

Year	Average New Units Per Year in Maple Ridge Centre	
	Townhouse/ Attached	Apartment
Between 2004 and 2011 (8 years)	113 to 188	150 to 200
Between 2011 and 2021 (11 years)	150 to 225	200 to 250
Total New Units in Maple Ridge Centre 2004 to 2021	2,554 to 3979	3,400 to 4,350
Total all unit types	5954 to 8329 (approx. 6000-8000 units)	

4.0 Financial Viability of New Residential Development

Significant development in the study area will only occur if it is financially viable for developers to proceed with new projects. Based on financial analysis for new apartment and townhouse projects in the study area, the following observations can be made:

- Concrete construction is not financially viable in the study area and will not be until apartment prices increase substantially. Therefore, apartment projects over 4 storeys in height are not likely to be developed in the foreseeable future.
- Both lowrise woodframe apartment projects and townhouse projects are financially viable in the study area, if vacant sites can be acquired at a reasonable cost. If landowners price development sites at appropriate levels, developers should be interested in proceeding with new apartment and townhouse projects on vacant sites. Townhouse projects could also be financially viable on some of the larger single-family lots (that are not large enough for apartment use) that have houses in poor condition. However, the cost of assembling a series of single-family houses for a large redevelopment project will be prohibitive in the short term.
- Mixed-use retail and residential (4 storey maximum) also appears to be financially viable, so there may be an opportunity for housing on upper floors of new commercial developments in the study area. However, this is a relatively untested market in Maple Ridge and the market acceptance for this kind of housing is uncertain.
- Assembly of existing single-family houses for redevelopment to apartment use will not be financially attractive in the short term. However, as condominium prices continue to rise in the GVRD, redevelopment of the single-family houses in the study area will begin to be financially attractive.
- There may be an opportunity to subdivide the large single-family lots in the study area into smaller single-family lots. This will likely occur on a lot-by-lot basis over time if small single-family lots are permitted in the study area.

The study area should capture all of the District's estimated apartment demand

Both lowrise woodframe apartment projects and townhouse projects are financially viable in the study area, if vacant sites can be acquired at a reasonable cost.

5.0 Implications for the Planning Process

- Woodframe townhouse and apartment development are both viable in the study area. However, apartment densities that require concrete construction will not be viable until the longer term.
 - Townhouse and lowrise apartment development will primarily occur on vacant sites in the short term. In the longer term, redevelopment of existing houses should begin to take place.
 - Any smart growth initiatives that reduce development costs will improve the opportunities for townhouse and apartment development in the study area in the short term. By contrast, smart growth initiatives that increase development costs could prevent townhouse and apartment development in the short term as development currently supports very low land values.
-
- The planning process should assume that much of the single-family housing remains in place for the foreseeable future.
 - There is an opportunity to demolish the older single-family houses and subdivide into smaller lots (likely on a lot by lot basis). If this is permitted, these sites will remain in single-family use for a very long time. Thus, the planning process should determine whether the District is interested in encouraging higher density forms of housing, rather than small lot single-family.

Resources

Demographic Analysis and Population and Housing Projection for Maple Ridge, 2001-2031, The Sheltair Group and Kelly & Associates, March 2004.

Summary of Preliminary Market and Financial Analysis, DRAFT, Coriolis Consulting Inc., May 2004.

Essential Housing Resources from CMHC, Canada Mortgage and Housing Corporation, May 2004.



TECHNICAL BULLETIN



Smart Growth on the Ground

A Partnership of:
Real Estate Institute of BC
SmartGrowth BC
Sustainable Communities
Program, University of
British Columbia

**Almost all of
recent retail
growth has
occurred in
the Lougheed
Highway corridor
to the west.**

No. 6
June 2004

Commercial Development Opportunities in Maple Ridge

1.0 Retail and Service Market Review

Overall Retail and Service Market

The entire Maple Ridge-Pitt Meadows area includes about 2.9 million sq.ft. of retail and service¹ space, or about 34 sq.ft. per capita. This is slightly below the regional average of about 41 sq.ft. per capita, meaning the community is exporting retail spending to other larger nearby retail locations, such as Coquitlam. Total retail development has averaged about 75,000 sq.ft. per year in Maple Ridge and Pitt Meadows since 1991. Almost all of this growth has occurred in the Lougheed Highway corridor to the west of the study area, including significant development in Pitt Meadows.

Roughly 1.1 million sq.ft. of the community's retail and service space is located in the Maple Ridge Centre, or almost 40% of the space in the entire Maple Ridge-Pitt Meadows area. In recent years, there have been a few projects built in the study area that include small amounts of retail space. Overall however, the study area has captured a low share of the community's retail growth over the past 10 years or so. In fact, occupied retail space may have declined recently as the Safeway at Haney Place Mall relocated to the Lougheed corridor.

While there is not much vacant retail space in the study area, most buildings offer relatively low rents, suggesting there is not much demand from new tenants wanting to locate in the area.

Based on anticipated population growth, we estimate that total retail and service demand in Maple Ridge-Pitt Meadows will increase by about 700,000 to 1.0 million sq.ft. by 2011. This demand will continue to be focused in the Lougheed corridor to the west of the study area and in locations to the east of the study area that serve the growing residential population to the east. All of this potential demand could easily be accommodated at:

- Vacant sites planned for retail development on the Lougheed Highway in Pitt Meadows near the planned Fraser Crossing road network. In fact, a project containing 450,000 sq.ft. is currently under construction in this area.
- Sites to the east of the Maple Ridge Centre that are planned for community scale retail development to serve the residential areas to the east.

Therefore, opportunities for retail growth in the Maple Ridge Centre area will likely be limited over the next 10 years or so.

Retail Development Opportunities in the Maple Ridge Centre

The study area will continue to be an attractive location for retail businesses that serve nearby residents. In addition, it is a convenient shopping location for the residential neighbourhoods to the east of the study area. However, given the potential for additional retail space in Pitt Meadows and in community scale locations to the east, the Maple Ridge Centre will face increasing competition over the next ten years.

As the nearby population grows, retail sales should increase, the mix of businesses should improve, and the quality of buildings should improve.

Without attracting a major new anchor tenant, the opportunity for significant retail growth in the study area is limited. Population growth in the study area will help improve the retail situation in the study over the next several years, but will probably not lead to substantial growth. As the nearby population grows, retail sales should increase, the mix of businesses should improve and the quality of buildings/storefronts should improve.

At some point, the owners of Haney Place Mall will likely be interested in re-configuring or redeveloping the mall. Based on trends in the GVRD, redevelopment may involve reformatting the project so that it no longer includes interior mall space (as tenants in smaller malls are increasingly reluctant to pay for the higher operating costs associated with interior mall space) and using part of the site for high-density residential development. However, the plans for the mall will be highly dependent on the financial viability of renovating or redeveloping the mall.

Financial Viability of New Retail Development

Stand-alone retail development in the study area is financially viable on vacant sites if tenants are willing to rent space at the upper end of the current range of rental rates. The difficulty is that many local businesses are accustomed to rents near the lower end of the range.

Existing lease rates for newer buildings are high enough for a developer to acquire a vacant site, construct a building and generate a reasonable return on costs. However, retail rents for new space are not high enough to make it attractive to demolish existing buildings and build new space (due to the higher cost of acquiring a site with existing improvements). In the short term, retail demand in the study area will be met via existing vacant space or from development of vacant sites, but probably not from redevelopment. However, there may be exceptions where the existing improvements are in very poor condition and/or the space is chronically vacant

Retail and Service Planning Implications

The District should encourage large retailers to locate in the study area whenever possible.

The District should discourage development of any additional regional-scale shopping centres (other than in the area to the west along Lougheed) outside of the Maple Ridge Centre for the foreseeable future. In particular, any new retail to the east should only be of a scale that serves the day to day needs of the residential areas to the east. A new regional scale shopping area to the east would likely have significant negative impacts on the study area.

The District should encourage large retailers to locate in the study area whenever possible. Potential sites could include the existing lumber yard, redevelopment/expansion of Haney Place Mall, or the older strip malls along Dewdney Trunk.

The types of retail businesses that are willing to pay rents high enough to make development attractive (typically national or international chains) tend to be interested in retail locations that offer very high visibility and offer convenient parking for customers. This will influence the locations that are viable for retail use and the form of development. New development will likely only occur on the major retail streets in the study area and businesses will prefer projects that offer convenient parking for customers.

Three potential future retail development scenarios could be considered in the planning work for the study area:

1. Maintain the existing retail and service space. Under this scenario, the Maple Ridge Centre will continue to include roughly 1.1 million sq.ft. of retail and service space. As the study area population increases, improvements to the existing space and possibly redevelopment of some of the existing properties will occur.
2. Reduced retail and service space. Under this scenario, portions of the study area that are not highly desirable retail locations could be considered for an alternate use, such as multifamily residential. Streets that are candidates for alternate uses include 223rd, 227th, and possibly 226th (depending on the future of Haney Place Mall). The amount of retail and service space in the study area would

depend on the streets that are converted to an alternate use, but it would likely result in less than 1.0 million sq.ft. of retail and service space in the study area in the longer term.

3. Increase retail and service space. This scenario would likely require attracting an additional new anchor retail business into the study area, which may be difficult in the short term. For this to occur, the District will need to restrict major retail development to the east and work with any prospective businesses to help identify suitable sites in the study area. This might increase retail and service floor space to about 1.3 million sq.ft. or more over time (although this would be lower if some of the side streets are allowed to convert to residential).

2.0 Office Market Review

Overall Office Market

The entire Maple Ridge-Pitt Meadows area contains about 650,000 sq.ft. of office space, or about 8 sq.ft. per capita. Roughly, 450,000 sq.ft., or about 70%, is located in the study area. The remainder is primarily located in the Lougheed corridor to the west of the study area.

Total office development has averaged about 20,000 to 25,000 sq.ft. per year in Maple Ridge and Pitt Meadows since 1991. About 50% of the office floorspace growth since 1991 has occurred in the study area, or about 12,000 sq.ft. per year.

Since 1991, about half of office floor space growth in Maple Ridge - Pitt Meadows has occurred in the Maple Ridge Centre.

We estimate that total office demand in Maple Ridge-Pitt Meadows will average about 15,000 to 20,000 sq.ft. per year from 2004 to 2011. This could increase following the opening of the Fraser Crossing (2007 or 2008) if Maple Ridge and Pitt Meadows allow office use in the business park locations near the Crossing.

Business parks tend to attract companies that are interested in low lease rates, large floor plates, high parking ratios, easy access to the regional highway system and ample opportunities for expansion. In addition, many require some warehouse/service/manufacturing space in their building. If office users are permitted in the Maple Meadows business park, most will be businesses that would not have been interested in a Maple Ridge Centre location.

Businesses that have a regional or national orientation could likely be permitted in Maple Meadows without a negative impact on the study area. In fact, regionally oriented office tenants in the business parks may increase the demand for the services provided by the business professionals in the study area.

Office Development Opportunities in the Maple Ridge Centre

The study area will continue to be the main office location in Maple Ridge for the foreseeable future.

The study area will continue to be the main office location in Maple Ridge for the foreseeable future. It will continue to attract businesses that serve the local Maple Ridge and Pitt Meadows market. The main types of businesses that will be attracted to the study area include: government tenants, medical offices, dental offices, real estate companies, legal firms, accounting firms, financial institutions, insurance agents, and investment companies. Firms will be relatively small as they will be serving the local market.

Demand for office space in the study area should average about 5,000 to 10,000 sq.ft. per year for the next ten to twenty years. In the short term, this will be met by existing vacant space. Higher demand in the Maple Ridge Centre is only possible if Maple Ridge can attract regionally oriented (or national) office tenants. This will be difficult in the foreseeable future as Maple Ridge is not a major regional business centre.

Financial Viability of New Office Development

Stand-alone multi-storey office development is not financially viable in the study area. Existing lease rates are not sufficient to allow a developer to acquire a site, construct a building and generate a reasonable return on costs. Office demand will need to be met via existing vacant space or in grade level retail and service space until lease rates increase significantly.

Office Planning Implications

The plan should anticipate an average of 5,000 to 10,000 sq.ft. of additional office space per year in the study area over the next ten to twenty years.

If office uses are permitted in the Maple Meadows business park, the District should be careful about the types of office tenants allowed.

One of the major issues that the District may need to consider is whether to allow increased office use in the Maple Meadows business park. This area will be attractive for regionally oriented office users after the Fraser Crossing opens. Most of the businesses that locate at Maple Meadows will probably not be good candidates for the Maple Ridge Centre because business parks tend to attract companies that are interested in low lease rates, large floor plates, high parking ratios, easy access to the regional highway system and ample opportunities for expansion. In addition, many require some warehouse/service/manufacturing space in their building. The lease rates in the study area will be too high to attract business park tenants.

If office is permitted in the Maple Meadows business park, the District should be careful about the types of office tenants allowed. For example, it may want to exclude office users that serve the local market (such as medical offices, real estate companies, dentists, insurance agents, investment companies) from the business park so these firms will continue to concentrate in the study area.

Notes

¹ Service includes businesses such as restaurants, cafes, video rentals, hair salons and other firms that offer a service rather than a retail good. These businesses tend to occupy space that would otherwise be occupied by retailers.

MAPLE RIDGE TOWN CENTRE

Concept Plan

Appendix E Goals & Objectives

Prepared by:

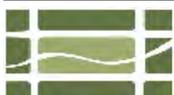
The Sustainable Communities Program

Centre for Landscape Research

University of British Columbia

Vancouver, British Columbia

March 2005



Goals & Objectives

Building on the SGoG principles, the following information is a record of the goals and objectives which came from the public workshops and meetings to date, with supporting policy references.

Principle:

Each Neighbourhood is Complete^{i ii}

Goal:

Increase density and distribute a range of uses throughout the Centre^{iii iv v vi vii}

Objectives:

- Increase density for residential and non-residential land uses
- Incorporate a range of densities
- Incorporate mixed use development opportunities
- Ensure opportunities for living, working, shopping, and service provision
- Integrate waterfront development into the Centre
- Develop on currently undeveloped lots
- Create links between the Centre and other hubs within Maple Ridge

Goal:

Enhance opportunities for personal development and recreation^{viii ix x xi xii}

Objectives:

- Provide educational / training facilities
- Enhance technological capabilities so people can take advantage of world opportunities
 - Develop cultural facilities
- Improve recreation opportunities, particularly for youth
- Improve and secure public access to natural places, including streams and waterfront
- Provide more public green space within the core
- Promote the social integration all ages and groups through shared or adjacent facilities and spaces
- Design easily accessed public spaces
- Ensure public safety and security, and accessibility throughout the Centre

Principle:

Options to our cars exist

Goal:

Acknowledge and respect pedestrian needs^{xiii xiv xv xvi xvii xviii}

Objectives:

- Prioritize the safety of pedestrians
- Enhance pedestrian experience
- Designate pedestrian-only areas / no-car zones
- Enhance connectivity of pedestrian and other non-vehicular routes
- Utilize and upgrade laneways, sidewalks, and other existing paths for pedestrians, bikes
- Design for short walking distances to reach daily needs

Goal:

Increase transit modes, availability and destinations^{xix xx xxi xxii xxiii xxiv xxv xxvi xxvii xxviii}

Objectives:

- Establish an internal transit system for the Centre
- Increase the frequency of transit service both internally and to out-lying areas
- Consider other transit modes
- Link new Abernethy crossing to transit
- Increase and improve access from river to Centre
- Provide water transportation options
- Ensure public safety for all transportation modes

Principle:

Work in harmony with natural systems

Goal:

Preserve, enhance and capitalize on natural amenities and create new ones ^{xxix xxx xxxi xxxii xxxiii xxxiv xxxv}

Objectives:

- Respect and enhance riparian areas and water resources
- Maintain views of mountains
- Maintain access and views to Fraser River
- Protect and enhance a range of wildlife habitats
- Reinststate historical streams

Goal:

Protect natural systems from the impacts of development ^{xxxvi xxxvii xxxviii xxxix xl xli xlii xliii xliv xlv xlvi}

Objectives:

- Increase quality and amount of green space in the Centre
- Establish a green system that is linked throughout the Centre and beyond
- Reduce the generation of water pollution, air pollution, and waste
- Manage pollution and waste with Best Management Practices (BMPs)

Principle:

Buildings and infrastructure are greener and smarter

Goal:

Make it easier to be environmentally friendly ^{xlvii xlviii}

Objectives:

- Identify and act on appropriate urban ecology opportunities
- Provide incentives for the development of environmentally friendly buildings
- Have municipality adopt green building and infrastructure standards
- Educate on environmental benefits of growing smarter
- Increase quality, function and amount of mandatory public / open / green space built by developers

Goal:

Combine new technologies with rediscovered approaches ^{xliv l li lii liii}

Objectives:

- Incorporate alternative methods of power generation
- Require sustainable buildings and building systems
- Design buildings to adapt to future technologies and uses
- Minimize environmental impacts of erosion and waste disposal during construction
- Adaptively reuse existing buildings, including heritage buildings
- Manage urban stormwater with green infrastructure methods
- Develop green infrastructure that provides for multiple land uses

Principle:

Housing serves many needs

Goal:

Increase housing options to provide for all ages, economic status, and life stages ^{liv lv lvi}

Objectives:

- Integrate housing for all demographics
- Ensure a variety of housing types and tenures that are fully accessible and accommodate special needs
- Integrate affordable housing / low-cost housing with market housing
- Improve rental housing stock and options

- Improve housing quality and range of housing types
- Design housing for flexibility of use over its lifetime
- Design housing to strengthen social relationships
- Provide housing for people in transition

Goal:

Increase density in the Centre by integrating housing with other uses ^{lvii lviii}

Objectives:

- Increase residential density and identify density limits
- Integrate housing with other uses at the scale of both building and block
- Establish attractive form and character, and mitigate noise, to make housing in the centre desirable

Principle:

Jobs are close to home

Goal:

Encourage all types of jobs, including new and non-traditional businesses and workplaces ^{lix lx lxi}

Objectives:

- Provide an educational centre to train for jobs and to provide teaching and other jobs
- Increase civic development and retail development for job creation
- Incorporate high tech, internet, home businesses
- Incorporate live/work and work/live developments
- Welcome unique industries / business opportunities
- Make zoning and bylaws less restrictive for location and form of business premises, while retaining a positive sense of community
- Promote the film industry
- Promote the tourism industry

Goal:

Attract investment by supporting business needs ^{lxii lxiii lxiv lxv lxvi}

Objectives:

- Attract investment in housing and business ventures
- Densify the Centre to provide a customer base for businesses
- Identify and promote niche markets for business
- Develop the industry potential already present in Maple Ridge and support local businesses
- Pre-install technological infrastructure in buildings to attract businesses
- Streamline development approval processes and provide incentives
- Provide venues to support arts and crafts businesses

Principle:

The Centre is distinctive, attractive and vibrant

Goal:

Cultivate an identity that grows from the heart of the community <sup>lxvii lxviii lxix lxx lxxi lxxii lxxiii lxxiv lxxv lxxvi
lxxvii lxxviii lxxix lxxx lxxxi lxxxii</sup>

Objectives:

- Develop the “caring” identity of Maple Ridge
- Ensure that historical and cultural assets are respected and celebrated
- Feature the natural beauty and amenities of the place
- Establish development guidelines that respect local heritage, natural settings and attributes
- Support the arts in the community
- Use names that reflect the community identity
- Encourage art in public and private spaces

- Enhance the urban public environment

Goal:

Establish the Centre as a hub of activity ^{lxxxiii lxxxiv lxxxv lxxxvi lxxxvii}

Objectives:

- Increase tourism
- Provide opportunities for festivals and community events
- Provide more entertainment and education venues
- Encourage evening activities that cater to a broad demographic while benefiting the community
- Utilize park space for daily activities as well as special events
- Create easily accessible routes to key destinations
- Encourage symbiotic relationships among and between lands and land users
- Support and encourage the vitality of small business

Principle:

Everyone has a voice

Goal:

Create safe spaces and opportunities for all members of the community ^{lxxxviii lxxxix xc xci}

Objectives:

- Create spaces and opportunities for all age groups and social stratas
- Integrate spaces to foster social relationships
- Empower the least powerful
- Ensure safety

Goal:

Create opportunities for open dialogue among members of the community

Objectives:

- Establish ongoing public evaluation of smart growth strategies
- Provide public gathering spaces
- Ensure economic development office advocates for local business, and interacts effectively with all levels of government

Policy / Regulatory Resources

Local, provincial and federal policies for sustainable development which have been examined to date are:

Federal

Canadian Environmental Protection Act (1999), Department of Justice, Canada.

Land Development Guidelines for the Protection of Aquatic Habitat (1993), Fisheries and Oceans, Canada.

Parks Canada Guiding Principles and Operational Policies (October 2003), Parks Canada.

National Action Plan to Encourage Municipal Water Use Efficiency (2002), Environment Canada.

Pollution Prevention – A Federal Strategy for Action (2003), Environment Canada.

Provincial

Appendix A: BC Provincial Park System Goals (n/d), Government of BC

Bill 11 – 1995, Growth Strategies Amendment Act (1995), Government of BC
Provincial Municipal Legislative Act.

Energy for our Future: A Plan for BC (2002), The Ministry of Energy and Mines,
Province of BC.

Fish Protection Act, Streamside Protection Regulation (1997), Ministry of Water,
Land and Air Protection, Province of BC.

Heritage Conservation Act (1996), Revised Statutes and Consolidated Regulations of
British Columbia.

Multiculturalism Act (1996), Province of British Columbia.

Regional and Municipal

Liquid Waste Management Plan (February 2001), Greater Vancouver Regional District
(GVRD).

Livable Region Strategic Plan (1996), Greater Vancouver Regional District (GVRD).

Air Quality Management Plan – Overview (December 1994), Greater Vancouver Regional District
(GVRD).

[Arts and Cultural Plan, Policy No. 4.13](#) (November 1996), Corporation of the District of Maple
Ridge.

District of Maple Ridge Transportation Plan: Issues and Future Base Conditions (May, 2003), District of Maple Ridge.

[Filming in Maple Ridge, Policy No. 9.04](#) (2002), District of Maple Ridge.

Maple Ridge: A Community of Communities, 2003 Official Community Plan Review, Heritage Discussion Paper (Draft October 2003), Maple Ridge Community Heritage Commission.

Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture (April 2001), District of Maple Ridge.

Maple Ridge Downtown Action Plan (February 1998), District of Maple Ridge.

Maple Ridge Official Community Plan Bylaw No. 5434-1996 (1996), District of Maple Ridge.

Other

Canadian Tourism Commission, Corporate Plan Summary 2003-2007 (March 19 2003), Canadian Tourism Commission.

Creating Safer Communities: An Introduction to Crime Prevention through Environmental Design (CPTED) for Architects, Planners, and Builders (1998), Canada Mortgage and Housing Corporation.

Transportation

[Maple Ridge / Pitt Meadows Area Transit Plan](#) (March 2004), Translink.

A Long-Range Transportation Plan for Greater Vancouver (September 1993), TRANSPORT 2021 Report: A joint project of the GVRD and the Province of British Columbia.

Three Year Plan and Ten Year Outlook 2005-2007: Strategic Transportation Plan Amendment (December 2003), Greater Vancouver Transportation Authority (GVTA).

For more information on SGoG initiatives and for updates on projects, please see www.sgog.bc.ca

ⁱ **Livable Region Strategic Plan, GVRD**, 1996, p.23 "In order to achieve more complete communities throughout the region, the GVRD Board will:

7. enter into partnerships with GVRD member municipalities, the provincial and federal governments, and other organizations for the achievement of more complete communities throughout Greater Vancouver."

ⁱⁱ **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (1), "...to promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources." Also 942.11, (2).

ⁱⁱⁱ **Livable Region Strategic Plan, GVRD**, 1996, p.24 "In order to achieve a compact metropolitan region, the GVRD Board will:

-
11. seek through partnerships on a compact metropolitan region:
11.1 achievement of the population and employment growth targets for 2006 and 2021;
11.4 achievement of adequate population and employment densities in centres and transportation corridors to support planned transit services.”
- iv **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide parks and open space in all areas of the municipalities, particularly where residents are concentrated.”
- v **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(a) avoiding urban sprawl and ensuring that development takes place where adequate facilities exist or can be provided in a timely, economic and efficient manner.”
- vi **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Land Use and Development:
1) Development of vacant sites and redevelopment of sites with appropriate uses or buildings.
2) Development of high density residential uses in the downtown.
3) A mixture of complimentary uses.
4) Methods to achieve land assembly.”
- vii **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 4. Transport Supply Policies, 4.3 “Transit providers should place priority on improving local transit services in designated urbanized and denser-developed areas within the compact metropolitan area.”
- viii **Livable Region Strategic Plan, GVRD** (1996), p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:
8. seek through partnerships on complete communities:
8.3 an equitable distribution of public social and cultural services and facilities.”
- ix **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, “To provide parks and open space which can serve all sectors of the communities (e.g. age groups including youths and the elderly, those with special needs for access); to provide a variety of parks and open space, including recreational parks, natural open spaces, and urban spaces such as plazas and special streets.”
- x **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, “To provide parks and open spaces which accommodate opportunities for a wide variety of pursuits; to provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas; to improve access to the river front, with the objectives of increased parks and open space and a continuous waterfront route, which could include portions of trail, boardwalk and beach.”
- xi **B.C. Parks System Goals**, n/d, under the recreation mandate of the *Park Act* – “Goal 4: Local Recreation-to ensure access to local outdoor recreation opportunities for all residents of this province.”
<http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/callaghan/appendices.pdf>
- xii **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(l) preserving, creating and linking urban and rural open space including parks and recreation areas.”
- xiii **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #1 – Access & Mobility, “Provide for safe, convenient, and accessible movement of people, goods, and services throughout the District.”
Objectives:
• Move people, goods & services
• Promote accessibility
• Develop multi-modal network
• Enhance safety
• Support regional connections

-
- Develop efficient roadways
 - Support goods movement
 - Maintain emergency access

xiv **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #3 – Choice, “Provide transportation infrastructure and services in a manner that offers more travel choices to District residents.”

Objectives:

- Integrate modes
- Promote transit
- Promote cycling
- Support pedestrians
- Encourage ridesharing

xv **Livable Region Strategic Plan, GVRD**, 1996, p.25 “In order to increase transportation choice, and to implement the GVRD Board’s decisions on June 29, 1994 to approve the Transport 2021 Long-Range and Medium-Range Plans, the Board will:

16. seek through partnerships on increasing transportation choice:

16.4 to enhance and/or retrofit local streets and infrastructure to favour transit, bicycle and pedestrian uses.”

xvi **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, “To provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas.”

xvii **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

(b) settlement patterns that minimize the use of automobiles and encourage walking, bicycling and the efficient use of public transit.”

xviii **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Movement and Circulation:

- 5) In the management of movement and circulation, assign priority to the movement of pedestrians, cyclists, transit and motor vehicles, in that order.
- 6) Smooth traffic circulation in and through the downtown.
- 7) Streets that serve as links rather than barriers to pedestrian activity.”

xix **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #2 – Quality, “Provide transportation infrastructure and services that support long-term municipal and regional land use and economic policies and actions.”

Objectives:

- Complement local policies & plans
- Support regional & provincial initiatives
- Support urban design objectives
- Provide flexibility

xx **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #3 – Choice, “Provide transportation infrastructure and services in a manner that offers more travel choices to District residents.”

Objectives:

- Integrate modes
- Promote transit
- Promote cycling
- Support pedestrians
- Encourage ridesharing

xxi **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #5 – Affordability, “Provide transportation infrastructure and services in a cost-effective and efficient manner that make the best use of existing resources.”

Objectives:

- Minimize infrastructure
- Maximize efficiency

-
- Manage congestion
 - Prioritize transit and goods movement
 - Identify alternative revenue sources

xxii **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:
8.7 development of transportation services and facilities that support local access to centres.”

xxiii **Livable Region Strategic Plan, GVRD**, 1996, p.24 “In order to achieve a compact metropolitan region, the GVRD Board will:

11. seek through partnerships on a compact metropolitan region:
11.3 provision of transportation services and facilities required to support the population and employment growth targets, with priority given to areas identified for above trend population and employment growth.”

xxiv **Livable Region Strategic Plan, GVRD**, 1996, p.25 “In order to increase transportation choice, and to implement the GVRD Board’s decisions on June 29, 1994 to approve the Transport 2021 Long-Range and Medium-Range Plans, the Board will:

16. seek through partnerships on increasing transportation choice:
16.1 to plan and implement a transit-oriented and automobile-restrained transportation system for the region based on intermediate capacity transit facilities (including light rail transit, SkyTrain and high-capacity busways) within the identified corridors;
16.2 to provide a variety of local transit services and networks with the flexibility to serve different demands in support of the complete communities and the compact metropolitan region.”

xxv **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:

- (b) settlement patterns that minimize the use of automobiles and encourage walking, bicycling and the efficient use of public transit; (c) the efficient movement of goods and people while making effective use of transportation and utility corridors.”

xxvi **2005-2007 Three-Year Plan & Ten-Year Outlook: Strategic Transportation Plan Amendment**, December 2003, Executive Summary: Overall Goals, “The 10-year outlook will consider transit services for future needs in the context of the GVRD Liveable Region Strategic Plan (LRSP). The Outlook proposes a balanced approach with a mix of strategies that will meet a number of objectives including:

- Make transit a real option
- Reduce gridlock especially for goods movement
- Maximize economic potential
- Maintain and enhance the environment
- Share benefits and costs equitably”

xxvii **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.6 “Municipalities should provide a transit-friendly local street pattern allowing transit routes to pass within walking range of a large proportion of dwellings, job sites, schools, shops and other activity centres.”

xxviii **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.7 “Municipalities should develop bylaws and guidelines to help attain long range transport goals at both regional and local levels, including retrofitting neighbourhoods which currently have street patterns which are difficult to serve by transit;
4.1 Transit providers should add high quality, fast, frequent services linking facilities linking regional town centres;
4.2 Transit providers should offer a family of local transit services, including para-transit and flexible-route transit services, to serve demand for different time periods and different markets;
4.3 Transit providers should place priority on improving local transit services in designated urbanized and denser-developed areas within the compact metropolitan area;
4.4 To make best use of existing investment, the government should re-allocate existing roadway capacity to maximize people-carrying capacity, not vehicle-carrying capacity, and take into account the expected number of passengers per vehicle rather than the number of seats;

xxix **Livable Region Strategic Plan, GVRD**, 1996, p.22 “In order to protect Greater Vancouver’s Green Zone, the GVRD Board will:

-
2. enter into partnerships with GVRD member municipalities, the provincial and federal governments, First Nations, and private organizations for the establishment of Greater Vancouver's Green Zone.
 4. seek through partnerships on the establishment of the Green Zone:
 - 4.5 the viability of the region's ecology through such measures as an interconnected system of wetlands, upland habitats and wildlife corridors."

xxx **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To protect environmental resources, "To secure, protect and enhance natural features, including streams with their riparian corridors, forested areas, special wildlife areas and wetlands; to protect corridors of natural areas to promote use by fish and wildlife; to maintain environmental resources in the communities as a whole, through tree management and other initiatives."

xxxi **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space To Accommodate Outdoor Recreational Pursuits, "To provide educational opportunities related to natural resources, (e.g. programs, interpretive signs)."

xxxii **Canadian Environmental Protection Act**, 1999, Duties of the Government of Canada, 2. Including 2.(a) "take preventive and remedial measures to protect, enhance and restore the environment."

xxxiii **B.C. Parks System Goals**, under the conservation mandate of the *Park Act* – "Goal 1: Protection of Representative Landscapes – to conserve British Columbia's natural diversity by protecting viable, representative examples of our different landscapes." Also, "Goal 2: Protection of Special Features – to protect British Columbia's key natural and cultural features, including outstanding examples of our wildlife, old-growth forests, waterfalls and cultural artifacts." <http://wlapwww.gov.bc.ca/bcparks/planning/mgmtplns/callaghan/appendices.pdf>

xxxiv **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), "Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(d) protecting environmentally sensitive areas."

xxxv **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 6. Water conservation, "Reduced water use helps to preserve and protect surface waters for fish and wildlife habitat and our natural attractions. These are essential to the economic health of Canada's tourism and outdoor recreation industries."

xxxvi **District of Maple Ridge Transportation Plan: Issues and Future Base Conditions**, May 2003, Goal #4 – Community & Environment, "Provide transportation infrastructure and services that enhance quality of life in Maple Ridge and the quality of the natural environment."

Objectives:

- Maintain road network hierarchy
- Integrate communities
- Coordinate with land use planning
- Preserve historical and natural environments
- Minimize pollution
- Support healthy lifestyles

xxxvii **Energy For Our Future: A Plan For BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, "Controlling Air Emissions, Policy Action #24 (new/ongoing): the government is developing strategies to manage B.C.'s greenhouse gas emissions and air quality in threatened airsheds."

xxxviii **Livable Region Strategic Plan, GVRD**, 1996, p.22 "In order to protect Greater Vancouver's Green Zone, the GVRD Board will:

2. enter into partnerships with GVRD member municipalities, the provincial and federal governments, First Nations, and private organizations for the establishment of Greater Vancouver's Green Zone.
4. seek through partnerships on the establishment of the Green Zone:
 - 4.6 minimization of pressure on the Green Zone through management of urban areas;
 - 4.7 limitation of the extent and impact of transportation corridors in the Green Zone."

xxxix **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To accommodate outdoor recreational pursuits, "To provide a network of accessible, multi-use trails throughout the area to accommodate pedestrians, bicycles, equestrians and related modes (e.g. wheelchair, scooter), connecting major parks and open spaces, and including loops and trails through natural areas."

^{xl} **Land Development Guidelines for the Protection of Aquatic Habitat**, 1993, Section 1, Purpose and Scope, “The purpose of these guidelines is to protect fish populations and their habitat from the damaging effects of land development activities.”

^{xli} **Fish Protection Act, Streamside Protection Regulation**, 1997, Purpose of regulation, “The purpose of this regulation is to protect streamside protection and enhancement areas from residential, commercial and industrial development so that the areas can provide natural features, functions and conditions that support fish life processes including, but not limited to, the following natural features, functions and conditions....”

^{xlii} **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(g) reducing and preventing air, land and water pollution; (j) protecting the quality and quantity of ground water and surface water; (l) preserving, creating and linking urban and rural open space including parks and recreation areas.”

^{xliii} **Air Quality Management Plan-Overview**, December 1994, GVRD AQMP Goals, “The GVRD will, in all air quality management activities, proactively encourage clean air lifestyles and business practices in the community by:

- Applying equitable and effective strategies to minimize emissions from all sources under its jurisdiction, and
- Cooperatively supporting reduction strategies of other regulatory authorities and members of the community”

^{xliv} **Liquid Waste Management Plan**, February 2001, Policies, p.1. Designated Water Uses will be Protected, “The District and member municipalities will manage wastewater and stormwater to protect receiving water uses which have been designated by the Ministry of Environment, Lands and Parks (MELP); P19. Promotion of Water Conservation. The District will encourage water conservation initiatives by recognizing reductions in water usage and wastewater generation; C.32 Recognition for Water Conservation. The District, in conjunction with the Greater Vancouver Water District (GVWD), will evaluate implementation of a recognition program that acknowledges reductions in water usage and wastewater generation.”

^{xlv} **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 2. Environmental quality improvements, “Increased water use efficiency reduces the volume of water used by consumers, and of wastewater going to treatment facilities.”

^{xlvi} **Pollution Prevention—A Federal Strategy for Action**, 2003, Working towards results – the action plan, “With the private sector—Achieve a climate in which pollution prevention becomes a major consideration in industrial activities.”

^{xlvii} **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 1. Capital cost saving on the infrastructure to deliver water and treat wastewater, “Water efficiency has the potential to delay or eliminate the public funding required for additional facilities needed to meet future demand for water and wastewater treatment, by reducing the demand. It also will reduce the cost of collecting and treating wastewater as flows are subsequently reduced (over and above reductions in inflow and infiltration).”

^{xlviii} **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 4. Urban intensification, “Water efficiency allows more intensive development on existing water and sewer infrastructure, as less water is required per household or business. Water conserved is generally cheaper than water provided through building a new water plant.”

^{xlix} **Energy for Our Future: A Plan for BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, “Alternative Energy Development, Policy Action #20 (new): Electricity distributors will pursue a voluntary goal to acquire 50 percent of new supply from *BC Clean Electricity* over the next 10 years.”
 (“BC Clean electricity refers to alternative energy technologies that result in a net environmental improvement relative to existing energy production. Examples may include small/micro hydro, wind, solar, photovoltaic, geothermal, tidal, wave and biomass energy, as well as cogeneration of heat and power, energy from landfill gas and municipal solid waste, fuel cells, and efficiency improvements at existing facilities.”)

^l **Energy For Our Future: A Plan For BC**, 2002, Solutions, Environmental Responsibility and No Nuclear Power Sources, “Conservation and Energy Efficiency, Policy Action #22 (new): The Province will update and expand its Energy Efficiency Act, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings.”

-
- li **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(m) planning for energy supply and promoting efficient use, conservation and alternative forms of energy.”
- lii **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Infrastructure:
21) Adequate infrastructure to service future development of the downtown.
22) Efficiently constructed infrastructure.
23) Infrastructure that is well designed, improves the appearance of the downtown, remains unobtrusive, and accommodates future technological change.”
- liii **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 3. Energy conservation, “Water efficiency also means being more efficient with the use of energy. Less energy is used to heat water, and to pump potable water and wastewater.”
- liv **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:
8. seek through partnerships on complete communities:
8.2 a diversity of housing types, tenures and costs in each part of the region in balance with job distribution.”
- lv **Livable Region Strategic Plan, GVRD**, 1996, p.24 “In order to achieve a compact metropolitan region, the GVRD Board will:
11. seek through partnerships on a compact metropolitan region:
11.2 the identification of further opportunities for the location of ground-oriented housing, with particular emphasis on the Growth Concentration Area.”
- lvi **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(h) adequate, affordable and appropriate housing.”
- lvii **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Land Use and Development:
8) Development of vacant sites and redevelopment of sites with appropriate uses or buildings.
9) Development of high density residential uses in the downtown.
10) A mixture of complimentary uses.
11) Methods to achieve land assembly.”
- lviii **A Long-Range Transportation Plan for Greater Vancouver, Transport 2021 Report**, September 1993, Consolidated List of Recommended Policies, 1. Land Use Policies, 1.5 “Near and within all activity centres... a range of housing, within a pedestrian- and bicycle-friendly urban design, both by construction of new centres and by re-development of existing ones.”
- lix **Filming in Maple Ridge, Policy No. 9.04**, 2002, “The use of Maple Ridge as a production location by the film industry is to be nurtured, encouraged and supported provided: citizens’ rights to safety, quiet, and convenience are protected; direct costs and expenses are recovered; the District is saved harmless from claims and liabilities.”
- lx **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:
8. seek through partnerships on complete communities:
8.1 a better balance in jobs and labour force location throughout the region”
- lxi **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 5. Development opportunities, increased competitiveness and job creation, “The move to water efficiency will trigger new economic activities for water-related manufacturing and service sectors, encouraging new business opportunities and job creation. Increased efficiency also means lower costs to business, leading to increased competitiveness.”
- lxii **Livable Region Strategic Plan, GVRD**, 1996, p.23 “In order to achieve more complete communities throughout the region, the GVRD Board will:
8. seek through partnerships on complete communities:
8.5 development of telecommunications services and infrastructure that facilitate a reduction in travel demand, remove barriers to job location within the region, and support growth of a modern economy;

8.6 promotion of private sector investment in the business growth of centres.”

lxiii **Canadian Tourism Commission, Corporate Plan Summary 2003-2007**, March 2003, 9.1 Long-term Goal “To achieve its goal of increasing tourism revenue from its target markets by \$4.1 billion by 2007, the CTC must maximize return on all investments.” Also, 9.3 Key Objectives “...strengthen the Canadian brand in designated markets; optimize industry performance; surpass competing markets; and achieve overall excellence in Canada’s tourism sector.”

lxiv **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), “Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(f) economic development that supports the unique character of communities.”

lxv **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, “Business and Finance:
24) On-going encouragement and coordination of downtown revitalization initiatives.
26) Stimulation of commerce.
27) Increased re-investment in the core.”

lxvi **National Action Plan to Encourage Municipal Water Use Efficiency**, 2002, Expected Outcomes, 5. Development opportunities, increased competitiveness and job creation. “The move to water efficiency will trigger new economic activities for water-related manufacturing and service sectors, encouraging new business opportunities and job creation. Increased efficiency also means lower costs to business, leading to increased competitiveness.”

lxvii **Maple Ridge: A Community of Communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Executive Summary, Natural Heritage, “Cliff Falls; trees and plants on Haney House grounds planted by the Haney family; trees of “Shady Lane” 124 Avenue between 216 Street and Laity Street; Copper Beach Tree, on 124 Avenue; and the original stand of Maple Trees at 20818 Golf Crescent.”

lxviii **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council adopt design guidelines for the future development and redevelopment of the downtown core to give the area an overall, coherent sense of design, including the preservation of heritage structures and spaces.”

lxix **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council encourage and support in whatever ways it can the planning and organization of festivals and special events involving the arts as a way of celebrating community.”

lxx **Arts and Cultural Plan, Policy No. 4.13**, November 1996, “That Council acknowledges the role of and include youth in planning the future of the arts in our community.”

lxxi **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Executive Summary, Education, Heritage Awareness, “Public awareness of heritage resources within the District could be improved. Both the Maple Ridge Heritage Management Plan (1998) and the Maple Ridge Heritage Strategy (1995) identify public awareness as a key component to increasing heritage conservation activities.”

lxxii **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Two – Municipal Context, Haney Historic Community Profile. (See list of inventoried heritage resources, p.43-46.)

lxxiii **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Three – Heritage Conservation, Maple Ridge Community Heritage Commission Bylaw (No. 5908-2000). The bylaw outlines the terms of reference and duties of the Community Heritage Commission: 5.2, “The commission may a) develop and implement educational and public awareness programs related to heritage conservation in the District.”

lxxiv **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Three – Heritage Conservation, Community Heritage Commission 2003-2005 Business Plan Overview, “Vision: to live in a community where all residents and organizations value, celebrate and support heritage conservation. Heritage is understood to include all natural, built and other cultural resources.”

lxxv **Maple Ridge: a community of communities, 2003 Official Community Plan Review, Heritage Discussion Paper, Draft**, October 2003, Section Four – Issues, Lessons and Recommendations, Education, “Recommendation: specific programs should be developed in collaboration with the Community Heritage Commission, other local organizations, and the general public in order to raise the profile of the District’s heritage resources, and increase public interest and support.”

lxxvi **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, "To raise the profile of parks and open space in the communities."

lxxvii **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To protect environmental resources, "To identify and protect heritage sites, including minimizing use of sensitive sites."

lxxviii **Parks Canada Guiding Principles and Operational Policies**, October 2003, Part III – Cultural Resource Management Policy, 1.2 Principles of Public Benefit, 1.2.2, "To understand and appreciate cultural resources and the sometimes complex themes they illustrate, the public will be provided with information and services that effectively communicate the importance and value of those resources and their themes."

lxxix **Parks Canada Guiding Principles and Operational Policies**, October 2003, Part III – Cultural Resource Management Policy, 1.5 Principles of Integrity, 1.5.2, "Cultural resources should be distinguishable from, and not overwhelmed by, efforts to conserve, enhance and present them."

lxxx **Heritage Conservation Act**, 1996, Part1-2 Purpose of Act, "...encourage and facilitate the protection and conservation of heritage property in British Columbia."

lxxxii **Bill 11 – 1995, Growth Strategies Statutes Amendment Act**, 1995, Division (1), Purpose of Regional Growth Strategy, 942.11, (2), "Without limiting subsection (1), to the extent that a regional growth strategy deals with these matters, it should work towards but not be limited to the following:
(n) good stewardship of land, sites and structures with cultural heritage value.

lxxxiii **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Built Form and Design:

- 12) Excellence in the design of all development.
- 13) A pleasant streetscape composed of well-designed buildings, landscaping and public space.
- 14) Safety and crime prevention through environmental design principles in all development.
- 15) Human scale of the built environment and a people oriented environment.
- 16) An effective design management system for development in the downtown."

lxxxiiii **Arts and Cultural Plan, Policy No. 4.13**, November 1996, "That Council encourage and support in whatever ways it can the planning and organization of festivals and special events involving the arts as a way of celebrating community."

lxxxv **Livable Region Strategic Plan, GVRD**, 1996, p.23 "In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:
 - 8.3 an equitable distribution of public social and cultural services and facilities."

lxxxvi **Livable Region Strategic Plan, GVRD**, 1996, p.23 "In order to achieve more complete communities throughout the region, the GVRD Board will:

8. seek through partnerships on complete communities:
 - 8.4 development of a network of high-quality, mixed activity urban centres supported by an appropriate level of public transit and a range of community services and cultural facilities for residents and employees."

lxxxvii **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space, To enhance livability, "To provide a variety of parks and open space, including recreational parks, natural open spaces, and urban spaces such as plazas and special streets; to provide parks and open spaces which add to the visual character of the city."

lxxxviii **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Public Realm:

- 17) A focus for the downtown.
- 18) Public space which is pleasant to be in and look at.
- 19) A central place for people to meet, rest and visit.
- 20) Green space and landscaping in the public realm."

lxxxix **Maple Ridge and Pitt Meadows Master Plan for Parks, Recreation and Culture**, April 2001, 7.0 Public Open Space to enhance livability, "To develop the parks and open space system with consideration for safety and security."

^{lxxxix} **CPTED** principles see *Creating Safer Communities: an Introduction to Crime Prevention through Environmental Design (CPTED)* for architects, planners, and builders.

^{xc} **Multiculturalism Act, 1996**, Purposes of the Act, 2 "The following are the purposes of this Act: (a) to recognize that the diversity of British Columbians as regards race, cultural heritage, religion, ethnicity, ancestry and place of origin is a fundamental characteristic of the society of British Columbia that enriches the lives of all British Columbians; (b) to encourage respect for the multicultural heritage of British Columbia; (c) to promote racial harmony, cross cultural understanding and respect and the development of a community that is united and at peace with itself; (d) to foster the creation of a society in British Columbia in which there are no impediments to the full and free participation of all British Columbians in the economic, social, cultural and political life of British Columbia.

^{xc1} **Maple Ridge Downtown Action Plan**, February 1998, 4.0 Goals and Objectives, "Built Form and Design:
21) Safety and crime prevention through environmental design principles in all development.
22) Human scale of the built environment and a people oriented environment.

