A Shared Community Vision

Electoral Area 'A' OCP Review,

Citizen's Committee Speaker Series

Environmental Protection, Sustainability, and Community Sewer

April 20, 2009

Submit Your Response

This workbook includes a compilation of information and covers a broad range of topics within the general scope of what is included when we think of environmental protection. This workbook is divided into four topics including ecosystem protection, costal shoreline protection and uses, greenhouse gas emissions reduction targets, and community sewer.

Nanaimo River

Ecosystem protection includes information on a number of different topics including the role of various agencies and stakeholder groups, threatened and endangered plant and animal species , a summary of the Electoral Area 'A' Groundwater Vulnerability Assessment, sensitive ecosystems, and rainwater management.

Coastal shoreline protection and uses includes information on coastal shoreline development considerations, shoreline protection, and potential uses of foreshore lands.

Greenhouse gas emission reduction targets includes background information on the Local Government Act requirement to include greenhouse gas emission reduction targets, policies, and actions in the new Official Community Plan.

Community sewer includes information on the status of and potential for community sewer in Electoral Area 'A'.

Each of the above topics includes the following:

Background information: this is where background information is provided about the topic(s).

The role of an Official Community Plan with respect to the topic: this section provides an overview of what on Official Community Plan's role is with respect to the topic as well as its limitations.

An overview of how the Official Community Plan addresses the topic: this section provides a summary of the current policies in the Official Community Plan and how they address the topic.

Policy options for how the new Official Community Plan could address the topic: this section presents some options for the community to consider on how the new Official Community Plan could address each topic.

Space is also provided to obtain community input on each policy option.

There are hyperlinks to various other sources of information throughout this document. Online users can click on underlined text to be redirected to additional information.

Vesper Sparrow

Sustainability and Environmental Protection

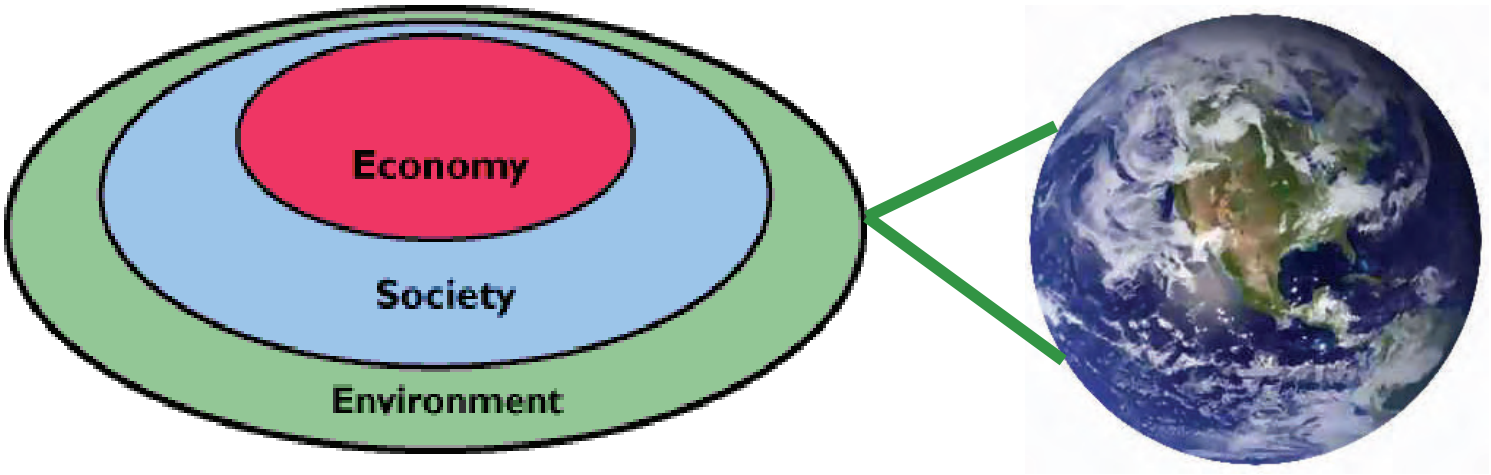
As a result of input from the community very early on in the process, the Electoral Area 'A' Official Community Plan will be based on a set of sustainability principles. However, the term sustainable is a very subjective term with many different definitions.

In 1983, the General Assembly of the United Nations World Commission on Environment and Development released a groundbreaking report titled 'Our Common Future' which looked at the state of the global environment and global issues to the year 2000 and beyond. The report recognized 'sustainable development' as:

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The Regional District of Nanaimo 2006-2009 Board Strategic Plan, which provides overall direction to the Regional Growth Strategy states:

"Sustainability is about recognizing the inter-relationships between our environment, our society, and our economy. It is about recognizing that people are part of the ecosystem, and that the economic and social lives of people should be integrated into the environment in ways that maintain or enhance the environment, rather than degrade or destroy it. Put another way, sustainability seems to be about recognizing that our economy exists within society, that society is much more than economy, that society exists within the environment, and that the environment surrounds society."



The diagram above also illustrates that everything is interconnected and nothing happens in isolation. If the economy is allowed to collapse, then society will react, causing unknown impacts on the environment. Vice versa if the environment is allowed to be degraded, it may no longer be able to support society or the economy. What the diagram doesn't show is that the lines between the economy, society, and the environment are not, in actuality, clearly defined making it difficult to understand the true relationship.

The concept of environmental protection is enshrined in all levels of Regional District of Nanaimo policy and regulation from the highest level, the Board Strategic Plan, through the Regional Growth Strategy, the Official Community Plans, and the Zoning Bylaws.

The environment is not a finite resource. Planet Earth shown above defines the limits of our environment. Clearly no aspect of our society or economy can exist outside of these limits. Although physically immense from a human perspective, there are limits, which some would argue that humans have surpassed, or at least are challenging. No other living organism has ever had such a large impact on our planet.

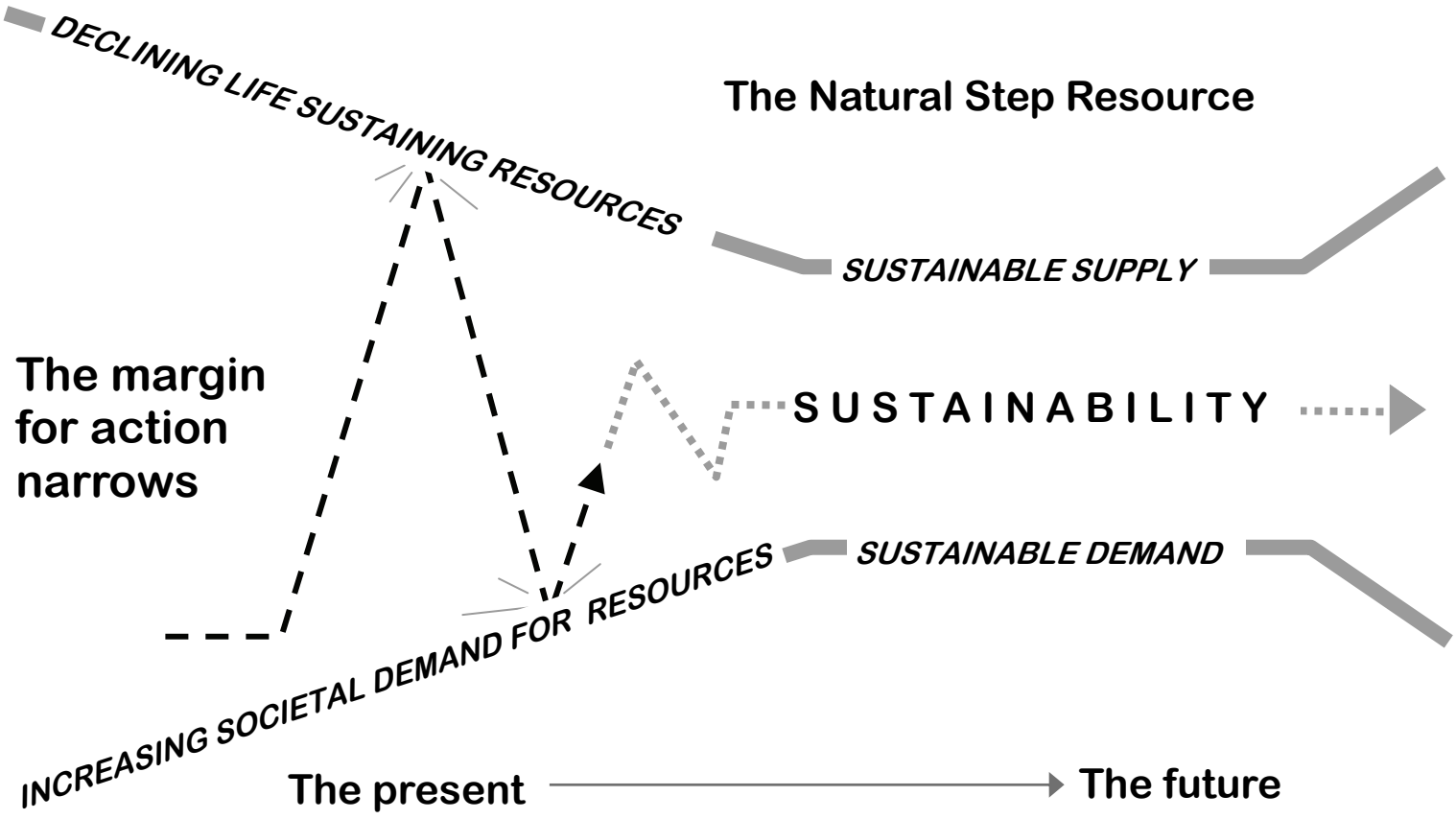
Why it is important to act now

The earth is a robust self-sustaining system adapted to a range of naturally-occurring disturbance, change, and natural disasters. However, the cumulative impacts of human activities over the past two centuries have introduced disturbances and change beyond this natural range, which now threaten our continued well-being. According to The Natural Step (online users can click the link for more information), an international network of scientists have unanimously and publically concluded that human society is damaging nature and altering life-supporting natural structures and functions.

Evidence of this damage is all around us. In the environment, the global climate is changing, biodiversity is disappearing from our oceans and forests, sea levels are rising, while deserts expand, and fresh clean water is becoming more and more rare. In society we see increasing political instability, and the world economy has been thrown into crisis.

Although this sounds like a doom and gloom scenario, there are things we can do today to steer towards becoming a more sustainable community and mitigate and perhaps reverse some of the impacts of our previous activities. However, just as saving for retirement becomes more difficult and requires more effort as we age and the longer we wait, so does our opportunity to make the changes required to move towards becoming a more sustainable community.

The following diagram, from The Natural Step illustrates that along the path towards sustainability, the longer we wait to take action, the more difficult it will become. This is because we are faced with ever declining resources and life-sustaining ecosystem services while at the same time experiencing an ever increasing demand. The diagram illustrates that as we move towards the future, there is a funnel effect that decreases the margin for taking action that will eventually force change upon us as the environment can no longer sustain our current activities. Sustainability requires there be a balance between supply and demand, meaning that we must learn to use resources in a more efficient way. The sooner we take action, the easier it will be.



Environmental Protection

Who is involved in environmental protection?
With respect to environmental protection, we all have a role to play. Individual property owners, non-profit conservation organizations, business, Local Governments, Provincial Government, First Nations, and the Federal Government all have a role to play. The following provides an very general overview of each of the stakeholders.

Individual Property Owners
Property owners have a very important role to play in environmental protection at the site level, especially in combating the cumulative impacts of development and human activity. Property owners can have a major impact on the environment by the actions they choose to take. Simple actions such as minimizing or eliminating the use of herbicide and pesticides, controlling invasive species, choosing not to drive as much, minimizing disturbance to riparian and aquatic habitat, and conserving water and energy can make a big difference.

Non-profit conservation organizations
Conservation organizations provide many important services such as proving information and public education on sensitive ecosystems and how to protect them. Conservation organizations also fundraise and purchase or otherwise acquire and manage lands with an environmentally sensitive ecosystem or significant feature on behalf of the community.

Business
Businesses have a responsibility to ensure that their activities are done in a responsible manner. As the environment and sustainability become more and more front and centre in the media and on peoples minds, there is more pressure placed on businesses to ensure that their activities respect the environment. We are beginning to see this as more and more consumers are starting to demand green products and services.

Local Government
Local Government plays a key role in environmental protection as they are the body who is given the authority to regulate the use of land. Local Governments can adopt environmental protection policies and Development Permit Areas in their Official Community Plans as well as legislation such as a zoning or waste stream management bylaw.

Provincial Government
A number of Provincial Government Ministries are involved in environmental protection. The Ministry most involved in environmental protection during an Official Community Plan review is the Ministry of Environment. In general, the Ministry of Environment sets the general direction for how the environment should be protected through a number of different initiatives such as new legislation, enforcement, conservations programs, water management, and policy.

A major shift in the role of the Ministry of Environment has occurred over the last few years. In lieu of being actively involved in the development referral and community planning process, the Ministry has published a document titled 'Develop With Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia',(online users can click to view the document). The purpose of the document is to provide province-wide guidance to people who are involved in planning, implementing, reviewing and/or approving land developments in British Columbia's urban and rural areas to minimize disturbance to sensitive ecosystems.

First Nations
First Nations are a recognized level of government who must be consulted during the Official Community Plan review process. First Nations not only have a lot at stake, but also have an important role to play to ensure that their traditional territories, cultural sites, and sites of historical significance are preserved.

Federal Government
With respect to the Official Community Plan review, the Federal Department most involved in the process is Fisheries and Oceans Canada. Their role primarily involves salmon-bearing waters, or water that flows in to salmon habitat.

Sensitive Ecosystems in Area ’A’

Ecosystems regulate our climate, clean our fresh water, regulate and clean atmospheric gases, maintain genetic diversity, sustain the water cycle, recycle nutrients, and pollinate our crops. Simply put, at no cost to us, ecosystems provide the services that allow us to live on the Earth.

The Georgia Basin, which includes the Regional District of Nanaimo, is one of the fastest growing areas in the Province and is also one of the most biologically diverse areas of North America. Electoral Area ‘A’ is home to many environmentally sensitive features which must be identified and preserved to ensure the long term environmental health of the area. The following is a very general overview of some the environmentally sensitive ecosystems and features in Electoral Area ‘A’, sources of additional information, and gaps in knowledge for further study.

Aquatic and Riparian Ecosystems

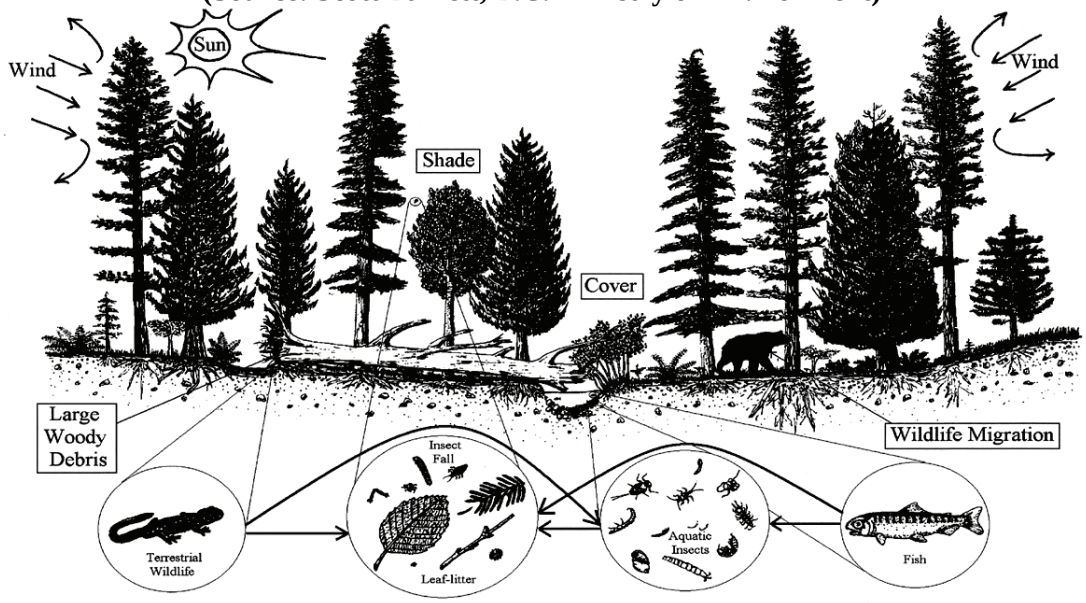
Aquatic ecosystems include both fresh and saltwater habitats which are either permanently or periodically inundated with water. Aquatic ecosystems are diverse and include lakes, wetlands, ponds, watercourses, estuaries, coastal areas, and vernal pools. Riparian ecosystems include lands upland of aquatic ecosystems and contain plant and animal species adapted to moist conditions and occasional flooding.

It is extremely important to maintain the ecological features and functions of these ecosystems to maintain biodiversity (a measure of environment health) and provide habitat and wildlife corridors for fish and many other terrestrial (land based) and aquatic species.

The following have been identified as the critical features and functions of aquatic ecosystems by Develop With Care:

- The forest and ground cover adjacent to streams. These moderate water temperatures; provide a source of food, nutrients, and organic matter to streams; establish root systems that minimize erosion by stabilizing soils and stream banks; and buffer streams from sedimentation and pollution in surface runoff;
- The organic debris that falls into the stream or riparian area. This includes leaves, twigs, logs, and root wads, which provide shelter and food sources for fish and other species;
- The exchange of nutrients between terrestrial and aquatic systems;
- Side channels, intermittent streams, seasonally wetted adjoining areas and floodplains;
- Natural sources of streambed materials;
- Areas for lateral channel migration (active floodplains);
- Subsurface flows that allow riparian vegetation to be maintained in permanently or seasonally dry gullies; and,
- Permeable surfaces that permit rainwater infiltration, which moderates water volume, timing, and velocity, and maintains sustained water flows in streams, especially during low (base) flow periods.

Ways in which healthy riparian areas help maintain healthy fish populations. (Source: Scott Barrett, B.C. Ministry of Environment)



Sensitive Ecosystems in Area 'A'

Sensitive Species
The Federal Government, through the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), identifies species that are Extirpated, Endangered, Threatened, or of Special Concern in Canada.

***Extinct*:**	means no longer exists anywhere in the world
***Extirpated*:**	means no longer exists in the specified area
***Endangered*:**	means could become extirpated if limiting factors are not reversed
***Threatened*:**	means could become endangered if limiting factors are not reversed
***Special Concern*:**	means may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

The Provincial Government also identifies species that are at risk of disappearing from the province. The British Columbia Conservation Data Centre (CDC) maintains a list of provincially-ranked species that include red-listed species and plant communities (i.e., they are Extirpated, Endangered, or Threatened) and blue-listed species and plant communities (i.e., they are not immediately threatened but their decreasing population size is of concern).

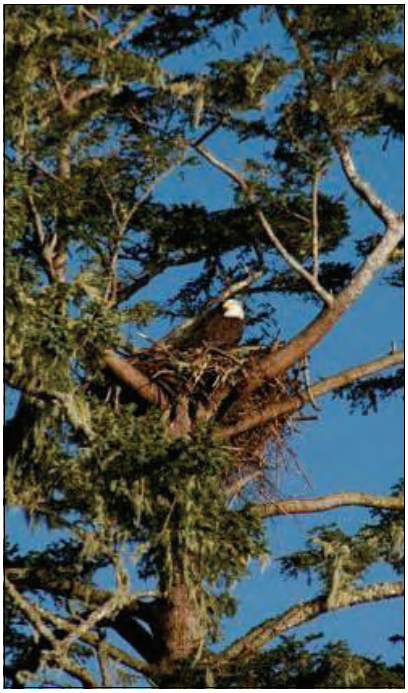
A species may have different 'at-risk' status internationally, federally, provincially, and regionally.

The CDC maps the known locations of sensitive species. In Electoral Area 'A' and in close proximity to its borders, the CDC identifies the following species:

Species	Species Type	General Location	Status
Vesper sparrow	Bird	Nanaimo Airport	BC red listed, COSEWIC Endangered
Propertius duskywing	Butterfly	Quenelle Lake	BC blue listed
Water marigold	Plant	Yellow Point	BC blue listed
Nuttall's quillwort	Plant	Near Harmac	BC blue listed
White-top aster	Plant	Near Joan Point (2 communities)	BC Red listed, COSEWIC Threatened
Awned cypernus	Plant	Near Joan Point	BC blue listed
Banded cord moss	Plant	Near Joan Point	BC blue listed, COSEWIC Species of Concern

Eagle and Heron nesting trees

Great Blue Herons are designated as species of special concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are blue-listed in British Columbia. Their nesting habitat is declining due to development pressures and human disturbances. The East Coast of Vancouver Island is home to the Pacific (or *fannini*) subspecies of great blue heron, which is found only on the west coast of North America. These large wading birds frequent shorelines, wetlands, and some upland areas where they feed on a variety of aquatic life as well as rodents. All great blue heron nest trees are protected (whether in use or not) by Section 34 of the B.C. *Wildlife Act*.



Although Bald Eagles are a common sight in our region, they require very specialized habitats. Gradual loss of large veteran Douglas Fir trees suitable for nesting, replacement trees for future nesting use, as well as perch trees used for hunting and resting are affecting the bird's long-term survival. Like Herons, nest trees are protected (whether in use or not) by Section 34 of the B.C. *Wildlife Act*. However, perch trees, regardless of their importance are currently not protected by legislation.

Sensitive Ecosystems in Area ’A’

Coastal Douglas Fir Ecosystem

Veteran Douglas Fir Tree

Due to its mild climate and flatter topography, the coastal lowlands, is historically where settlements have been established on the east coast of Vancouver Island. The Coastal Douglas Fir Zone attracts people as well as wildlife for the same reasons. As a result of forestry activities and land development, mature and old-growth Douglas-fir forests have become rare—less than one percent remain.

The Coastal Douglas-fir zone contains a wide diversity of ecosystems that provides critical habitat for many wildlife and plant species. This zone includes a range of ecosystem types including woodlands, rocky outcroppings, coastal bluffs and wetlands. The remaining natural ecosystems are mapped in the Sensitive Ecosystem Inventory, because of their sensitivity to disturbance and because of the species that they support.

The ongoing invasion of alien plant and animal species into this zone is a major concern. Invasive plant and animal species are second only to urbanization and other forms of land conversion in the threat they pose to natural ecosystems.

Most of this zone is under private ownership, as result of the E&N Railway land grants. This means that local governments and private landowners have especially important roles to play in the protection of ecosystems and species.

Sensitive Ecosystems Inventory

Older Forest

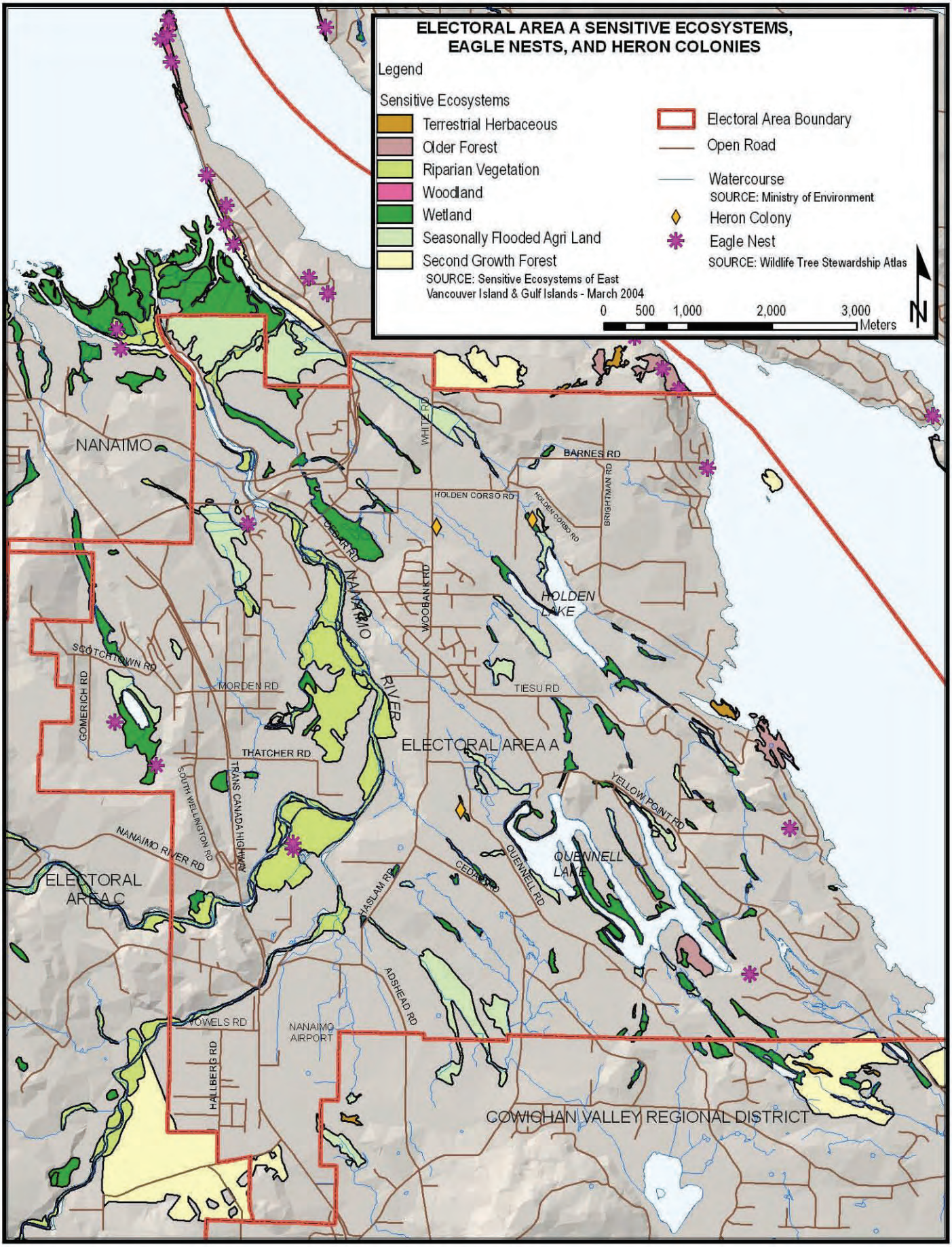
In 1997, the Regional District of Nanaimo, Ministry of Environment, Canadian Wildlife Service, and Department of Fisheries and Oceans Canada published an environmentally sensitive areas atlas which included lands in the Regional District of Nanaimo for the purpose of identifying aquatic and terrestrial habitats that are believed to be environmentally sensitive. The atlas is intended to be used as a guide to help trigger further detailed analysis and is not meant to be used as a site planning tool.

The Sensitive Ecosystem Inventory mapped areas of the east coast of Vancouver Island primarily within the Coastal Douglas Fir Zone. The area covered by the atlas includes seven sensitive ecosystem types: wetland, riparian, older forest, woodland, coastal bluff, terrestrial herbaceous, and sparsely vegetated. As part of this Sensitive Ecosystems Inventory, two additional ecosystem types (older second-growth forests and seasonally flooded fields) were also mapped because of their high biodiversity values.

Coastal Bluff Ecosystem

Electoral Area ‘A’ contains five of the seven sensitive ecosystem types as well as older second-growth forest and seasonally flooded fields. Please refer to the map on the next page, which shows the mapped sensitive ecosystem types in Electoral Area ‘A’.

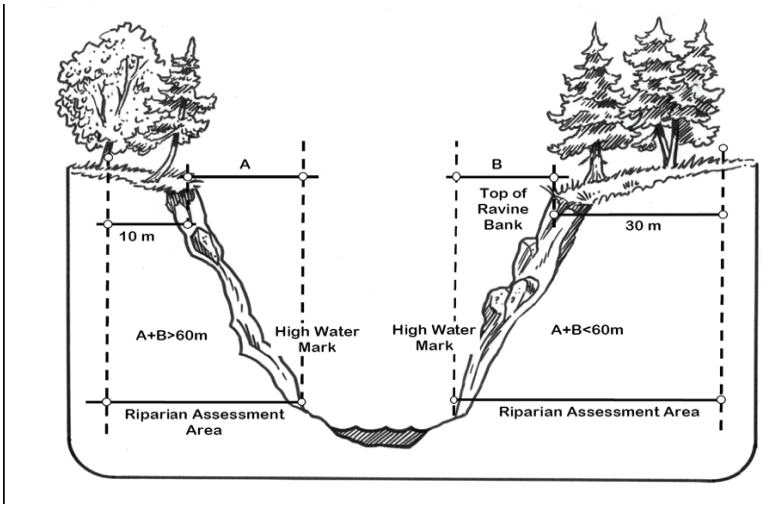
Please note, the Sensitive Ecosystem Inventory does not show the location of site-specific features such as vernal pools, and micro-climatic conditions which provide critical habitat for many plant and wildlife species. In addition, the mapping does not identify the location of any locally, provincially, or federally listed species.


ELECTORAL AREA A SENSITIVE ECOSYSTEMS,
EAGLE NESTS, AND HERON COLONIES
Legend
Sensitive Ecosystems
Terrestrial Herbaceous
Older Forest
Riparian Vegetation
Woodland
Wetland
Seasonally Flooded Agri Land
Second Growth Forest
SOURCE: Sensitive Ecosystems of East Vancouver Island & Gulf Islands - March 2004
Electoral Area Boundary
Open Road
Watercourse
SOURCE: Ministry of Environment
Heron Colony
Eagle Nest
SOURCE: Wildlife Tree Stewardship Atlas
0 500 1,000 2,000 3,000 Meters
N
NANAIMO
WHITE RD
BARNES RD
BRIGHTMAN RD
HOLDEN CORSO RD
CEDAR RD
NANAIMO RIVER
WOODBANK RD
HOLDEN LAKE
SCOTCHTOWN RD
GOMERICH RD
MORDEN RD
TIESU RD
THATCHER RD
ELECTORAL AREA A
SOUTH WELLINGTON RD
TRANS CANADA HIGHWAY
NANAIMO RIVER RD
YELLOW POINT RD
QUENNELL LAKE
QUENNELL RD
CEDAR RD
HASLAM RD
ELECTORAL AREA C
ADSHEAD RD
TOWELS RD
NANAIMO AIRPORT
HALLBERG RD
COWICHAN VALLEY REGIONAL DISTRICT

The Riparian Areas Regulation

In July 2004 the Provincial Ministry of Environment in cooperation with Fisheries and Oceans Canada enacted the ***Riparian Areas Regulation*** *(RAR)* under Section 12 of the ***Fish Protection Act***. The Riparian Areas Regulation requires Local Governments to protect all streams in accordance with the Regulations. For the Regional District of Nanaimo this means having Development Permit Areas that apply to all streams, lakes, wetlands, and ponds.

The RAR specifies that no development shall occur within the 'Riparian Assessment Area' (RAA) until an assessment has been complete by a Qualified Environmental Professional (QEP) and has been accepted by the Ministry of Environment. The RAR also includes detailed methodology that the QEP must follow in taking site measurements and preparing and submitting the report. The RAA includes the land within 30m of a stream measured from the high water mark and where there is a ravine, depending on the ravine width is the land within 10 or 30 metres from the top of the ravine bank as shown in the diagram below.



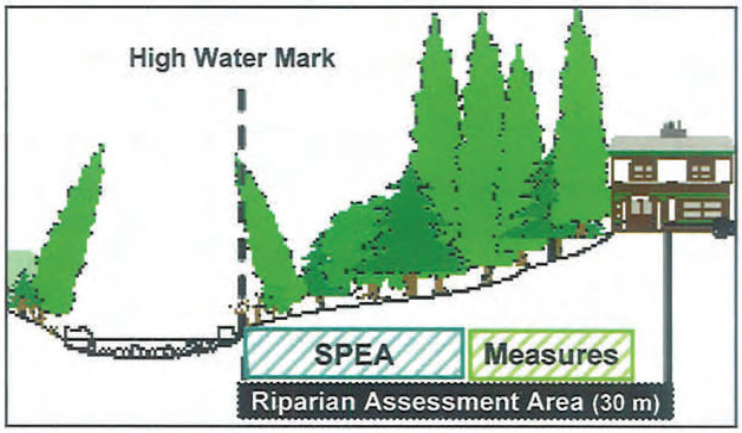
There are two levels of RAR reports accepted by the Ministry of Environment. A simple assessment and a detailed assessment. Both types of reports result in the establishment of a 'Streamside Protection and Enhancement Area' (SPEA) width. A SPEA is an area adjacent to a stream that links aquatic to terrestrial ecosystems and includes both existing and potential riparian vegetation and existing and potential adjacent upland vegetation that exerts an influence on the stream. No development or alteration is to occur within the SPEA without a special authorization from Fisheries and Oceans Canada. When development is conducted in full compliance with the RAR, in the opinion of Fisheries and Oceans Canada, it should not cause a harmful alteration, disruption, or destruction (HADD) of riparian fish habitat.

Simple Assessment

In a simple assessment, the QEP uses air photo interpretation, available stream data, as well as some simple on the ground measurements combined with a matrix to determine the width of the SPEA. The RAR provides the methodology that must be used to undertake the assessment. The result being a SPEA width of either 15 or 30 metres depending on whether the stream is fish-bearing and permanent.

Detailed Assessment

In a detailed assessment, the QEP takes a number of assessments and measurements looking at the features, functions, and conditions, important for fish habitat. These assessments and measurements allow the determination (the result being a measurement in metres) of the zone of sensitivity for each the five main features, functions, and conditions. These include: large woody debris for fish habitat and the maintenance of channel morphology, area for localized bank stability, area for channel movement, shade, and litter fall and insect drop. The SPEA width is the widest zone of sensitivity (i.e. the zone of sensitivity that has the largest measurement). The RAR provides the methodology that must be used to undertake the assessment.



In addition to defining the SPEA width, a detailed assessment also requires that the QEP provide measures to protect and maintain the SPEA. Measures are actions that a developer must do outside of the SPEA to ensure its long term health. The RAR defines what measures the QEP must provide recommendations on.

Rainwater Management

Traditionally runoff from impervious surfaces has been managed by collecting runoff water in an engineered storm water collection system, allowing it to settle, and piping it off site for disposal as quickly and efficiently as possible. What we are now learning is that, the traditional approach, no matter how efficient, is cause for concern. Today, we are shifting from run-off being treated as a waste product that must be moved off site to rainwater being a valuable resource managed onsite.

The Green Bylaws Toolkit provides the following overview with respect to rainwater management:

> *"The biological productivity of sensitive landscapes like wetlands and riparian areas depends on maintaining a natural regime of water flows throughout the watershed. Urban/village (i.e., non-rural) development changes this natural regime by introducing impervious surfaces that inhibit soil's natural ability to absorb water (infiltration). This can cause a dramatic increase in the volume and velocity of the rainwater that flows off a property. The increased rainwater creates erosion and sedimentation that can destroy natural features, kill fish, and fill in wetlands. Water that flows across pavement can also transport oils, heavy metals, and other car-related pollutants into down-slope ecosystems. Lack of infiltration also means that water is not recharging aquifers and saturating the soil to the extent necessary to ensure water flows from the ground into streams throughout the summer.*
>
> *There are ways to minimize changes to natural flow regimes that occur during development. Alternative design approaches can replace hard infrastructure with a system that is cheaper for local governments, mimics and retains natural hydrologic systems, and retains vegetation."*

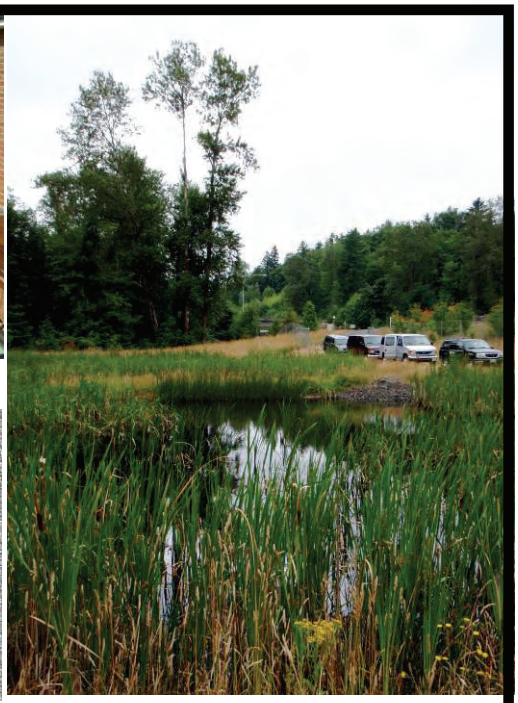
In addition to the above, there are economic benefits of green infrastructure that go beyond reduced cost. Some of these benefits include better community health and increased property values. The following provides some examples of green infrastructure that could be supported and/or required as a part of new development in the new Official Community Plan to help reduce the impact of development.

Vegetated Swale

Green Roof

Permeable Paving

Rainwater Reuse (purple tap is not for drinking)



Infiltration Pond

Highlights of the Area A Groundwater Vulnerability Assessment

As part of the Electoral Area 'A' Official Community Plan review, the Regional District of Nanaimo obtained a consultant to conduct an overview of the aquifer conditions and vulnerability, and to develop groundwater protection strategies and policies to be considered in the new Official Community Plan. The project was completed by a team comprised of GW Solutions Inc. and Vancouver Island University.

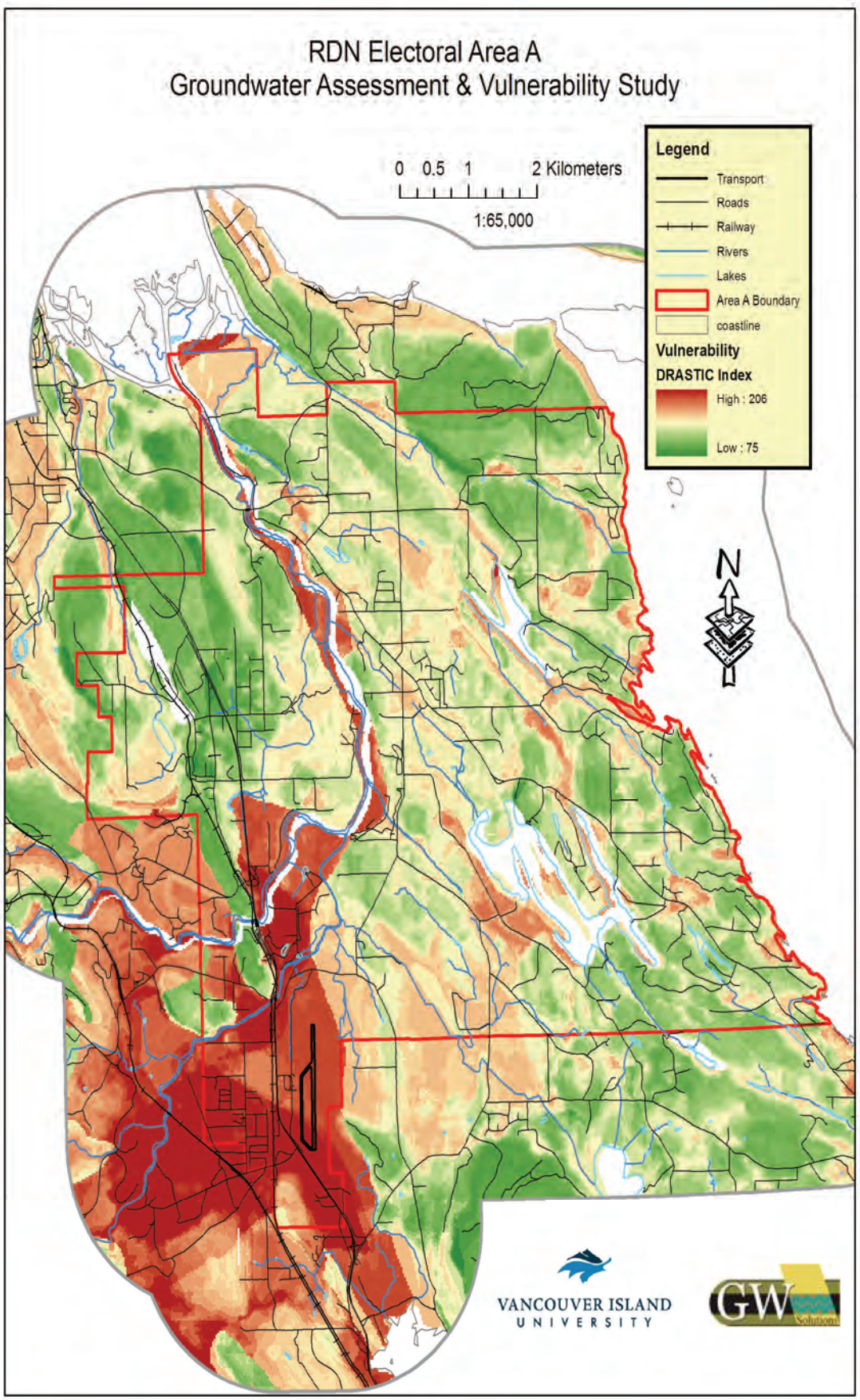
The following provides a general summary of the Electoral Area 'A' Groundwater Assessment and Vulnerability Study. Online users can click here to view the report and here to view the appendices.

Area 'A' contains three main groundwater sheds zone 1, 2, and 3, which are summarized as follows:

Zone	General Location	Water Dynamic	Water Use and Balance	Critical Conditions
1	Includes about 4500 ha and includes the Cassidy and Lower Cassidy Aquifers.	Both aquifers are sand and gravel and are collectively up to 30 metres thick and are very productive. This zone also includes the less productive South Wellington bedrock aquifers. The Cassidy Aquifers are closely connected to Haslam Creek and Nanaimo River. River Flow corresponds to 95% of the water transferring through zone 1.	Harmac is the largest water user in this zone extracting an estimated 136, 500m^3 per day from a well field and from a surface intake on the Nanaimo River. The volume of water extracted by Harmac is equivalent to the total amount of yearly precipitation over zone 1. The second largest water user in this zone is the North Cedar Improvement District (NCID), which extract approximately 1240 m^3 per day, which is about 0.03 % of the water output for zone 1 and 1% of the water extracted by Harmac. The total use from the remaining users is approximately equivalent to the amount used by NCID.	Critical Conditions take place during the late summer months when there is no precipitation, the evapotranspiration is high, and water use is high. During this critical time of year, the water output s estimated to be four times the water input (i.e four times more water is used than what is replaced). The water deficit in this zone will translate into a drop of the water table and low flows of the Nanaimo River and its tributaries. Some of the consequences may include: • Reduced capacity and increased cost of extracting water from production wells and residential wells • Reduced flow in the Nanaimo River • Stress on the vegetation and modification of the landscape.
2	Includes over 1700 ha comprised of the Cedar, Yellow Point, and North Oyster, North Holden Lake confined overburden aquifer.	In the uplands, water will move towards the lowlands otherwise water will flow towards the ocean mostly through fractures in the bedrock. The amount of water flowing through zone 2 is estimated to be only 1%-2% of the water transferring through zone 1.	Water input is solely precipitation, with the exception of water delivered by truck. Water used for residential purposes represents a small percentage (1%) of the water balance.	The summer and early fall are the critical periods in this zone. The bedrock aquifer has very little storage capacity and will drop quickly once precipitation stops. In mid summer bedrock wells will often be unable to meet demand of residents, requiring water to be trucked in. Also during the critical period saltwater intrusion risk is increased.
3	Includes about 1400 ha, with only a small portion within Electoral Area 'A'	Water drains to the south towards Ladysmith Inlet in this zone predominantly as groundwater through the Cassidy and Lower Cassidy Aquifers.	Natural inputs and outputs are the main elements of the water budget in this zone. Groundwater extraction attributed to human activities represent a small percentage (less than 1%) of the output.	No major critical situation has been identified.

Highlights of the Area A Groundwater Vulnerability Assessment Cont..

- Both point sources and non-point sources of contamination have been identified in Area A. These cover a wide range of organic, inorganic, and bacteriological contaminants. Sampling, chemical analyses, and monitoring are recommended to assess the impact of the identified sources of contamination on both surface water and groundwater.
- The management of the water resource in Area A in a sustainable way requires a better understanding of water use and water extraction during the summer and fall. This is a critical time of the year for water users as well as for sensitive ecosystems, such as the Nanaimo River Delta. Over pumping along the coast can produce seawater intrusion resulting in a deterioration of the residential water supply.
- Aquifer vulnerability mapping (as shown on the right) shows that areas corresponding to the Cassidy Aquifer are rated highly vulnerable. Otherwise, mapping shows that the remaining area is predominantly rated moderately vulnerable.
- Best Management Practices (BMPs) are recommended to minimize the risks of degradation of the water source and to promote its management in a sustainable manner.
- Low flows are critically important to ensure the sustainability of ecosystems in the Nanaimo River, its tributaries, and the surface water network in Area A. A specific effort should be made to define the vulnerability of the most sensitive ecosystems, and to manage the surface and groundwater resources accordingly.



The Role of an Official Community Plan in Environmental Protection

Part 26 of the *Local Government Act* grants Local Governments the authority to include policies and Development Permit Areas in Official Community Plans that impose restrictions on the use of lands which are considered environmentally sensitive. Therefore, environmental protection at the Local Government level is primarily provided by the Official Community Plan.

An Official Community Plan can play a significant role in environmental protection. As a policy document, the Official Community Plan can contain goals, objectives, and policies that state the community's desires and preferences with respect to a number of environmental objectives such as:

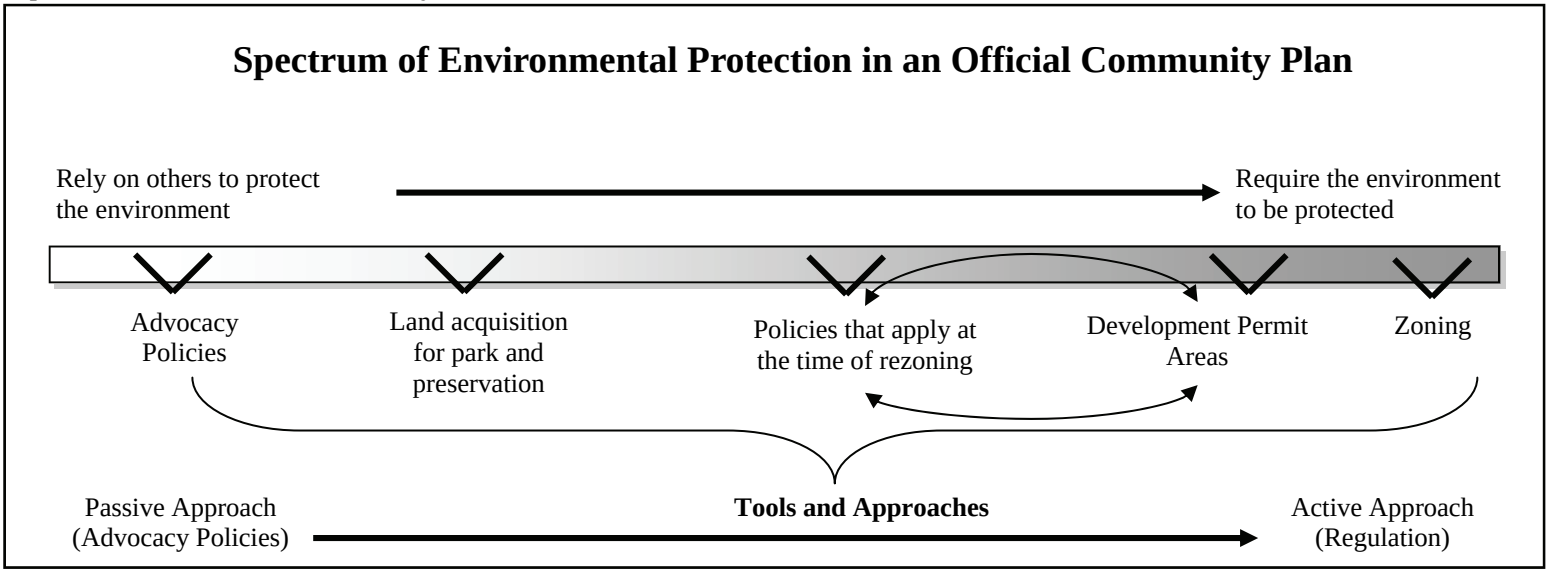
- how development and infrastructure are designed, managed, and installed;
- how lakes, wetlands, streams, and ponds are protected;
- what types of features are protected;
- how groundwater is protected; and,
- how sensitive ecosystems are identified and protected.

An Official Community Plan also provides the Regional Board with guidance on the community's expectations for how development should be conducted.

An Official Community Plan can protect the environment in two distinct ways, through policies and through Development Permit Areas. The role of the Official Community Plan in environmental protection also differs between policy and Development Permit Areas. Official Community Plan policies do not apply to the current use of land nor are they enforceable. For example, there is no way to force compliance with an Official Community Plan policy on a property owner who is not rezoning, subdividing, or making other development applications. Official Community Plan policies are typically used to provide guidance to the community, to developers, and the Regional District of Nanaimo in considering applications to rezone land, subdivide, relax a provision of the Zoning Bylaw, or make an application to the Agricultural Land Commission.

Unlike policies, Development Permit Areas apply to certain uses of land in areas within a Development Permit Area. Development Permit Areas are the only practical way to ensure that the majority of development, that which does not require rezoning, is conducted in a manner which respects the environment. If the community strongly supports environmental protection, it can not reject the idea of having Development Permit Areas because without them, we are unable to provide an acceptable level of protection.

An Official Community Plan can contain a spectrum of different approaches in environmental protection in terms of how Local Government is involved. The diagram below is a very general overview of the range Local Government involvement that can be specified in an Official Community Plan.



What is a Development Permit Area?

A Development Permit Area (DPA) is a set of development regulations pertaining to a specific area as specified by the Official Community Plan. The authority for local governments to establish DPAs is set out in the Local Government Act, Sections 919.1 and 920. A DPA is perhaps the most important tool used by Local Governments to ensure that the potential impacts of development are identified and addressed. In addition, DPAs ensure that development within a specified area is conducted in a responsible manner and is safe. This is especially important in areas that are environmentally sensitive and/or subject to hazardous conditions.

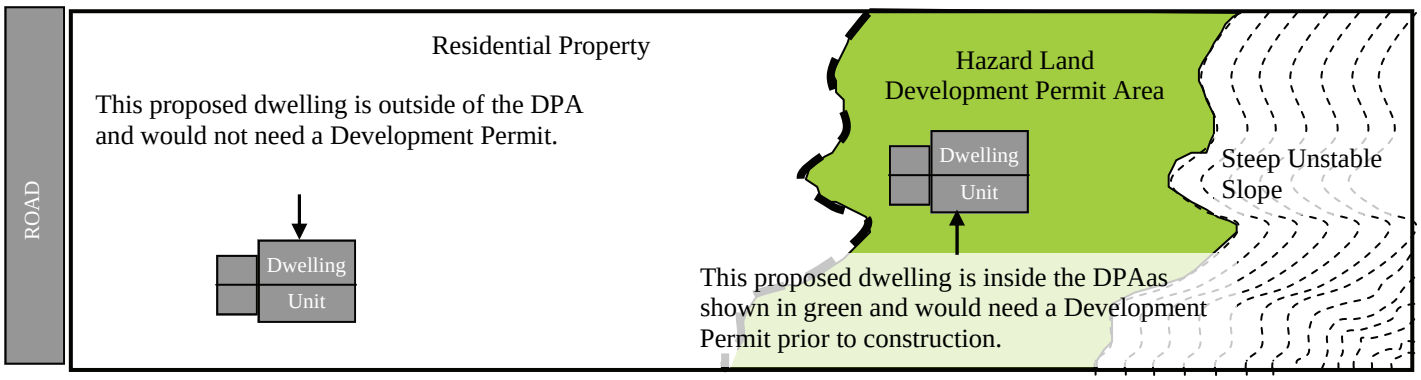
Development applications within DPAs are reviewed to ensure that the proposal is consistent with the DPA Guidelines. In some cases, a report from a professional biologist, engineer, or other professional may be required to assist staff in evaluating an application. The OCP specifies the information required in order to submit a Development Permit application.

A common misconception about DPAs is that they are setbacks or "no-go" buffer zones. ***This is incorrect***. Development may occur within a DPA provided the proposal satisfies the DPA Guidelines. In addition, certain types of development activities may be permitted within a DPA without a Development Permit. The DPA guidelines specify the types of development that can occur **without** a Development Permit which typically include activities such as minor additions to existing buildings, internal renovations, habitat restoration and enhancement, work required to address an immediate threat to life or property, and second storey additions to existing buildings.

In accordance with the Local Government Act, DPAs may be designated for the purpose of:

- protecting development from hazardous conditions;
- protecting agricultural land;
- protecting the natural environment, its ecosystems and biological diversity;
- revitalizing an area in which a commercial use is permitted;
- establishing objectives for the form and character of intensive residential development, and/or to establish objectives for the form and character of commercial, industrial or multi-family residential development.
- establishing objectives to promote energy conservation, water conservation, and reduce greenhouse emissions

The diagram below illustrates that development located outside of a DPA does not require a Development Permit. In the example below, there is a steep unstable slope on a residential property. An area upland of the slope has been designated by an Official Community Plan as the Hazard Lands Development Permit Area to protect development from hazardous conditions. The property owner is considering the construction of a dwelling on the property and has identified two potential locations. One location is close to the road and outside the DPA and the other is towards the top of the bank to take advantage of the views. To build within the DPA, the property owner would have to apply for a Development Permit and follow the DPA guidelines, which in this case would likely require that a report from a Geotechnical Engineer be provided to ensure that the property is safe for the intended use.



A Summary of Environmental Protection in the Area A OCP

Section 3 of the Electoral Area 'A' OCP is titled "Protecting the Natural Environment'. This section contains a general overview of the environmentally sensitive features in Electoral Area 'A'. It also includes the following 5 objectives:

i. ***Identify*** and ***protect*** environmentally sensitive features of the Plan Area.
ii. ***Encourage*** and ***support*** community stewardship of environmentally sensitive features.
iii. ***Protect, conserve***, and ***enhance*** surface water and groundwater resources.
iv. ***Recognize*** and ***protect*** the Cassidy aquifer and other aquifers in the Plan Area.
v. ***Identify*** the Nanaimo River floodplain as a natural hazard area.

Section 3 also includes 3 policies which are summarized below:

Policy 1 includes the Sensitive Ecosystem Inventory Map as Map No. 2.
Policy 2 includes the Ministry of Environment aquifer Map as Map No. 3.
Policy 3 designates Development Permit Areas for the protection of the natural environment which includes the following features: streams, wetlands, lakes, ponds, Bald Eagle and Great Blue Heron nesting trees, aquifers (in some locations), and the Nanaimo River Floodplain.
Policy 4 recognizes that Map No. 2 should be updated from time to time to respond to specific streamside protection regulations.
Policy 5 and 6 support environmental stewardship and tax incentives.
Policy 7 encourages the Ministry of Transportation to protect groundwater as part of the subdivision approval process.
Policy 8 encourages cooperation with the North Cedar Improvement District.
Policy 9 encourages the Provincial Government to enact groundwater legislation.
Policy 10 discourages development which has a negative impact on surface or groundwater.
Policy 11 supports the initiation of a stormwater management plan.
Policy 12 supports an investigation into the feasibility of creating a water conservancy designation.
Policy 13 supports aquaculture along the coastal foreshore only where a Board-approved public consultation process has been completed and the community supports such uses.

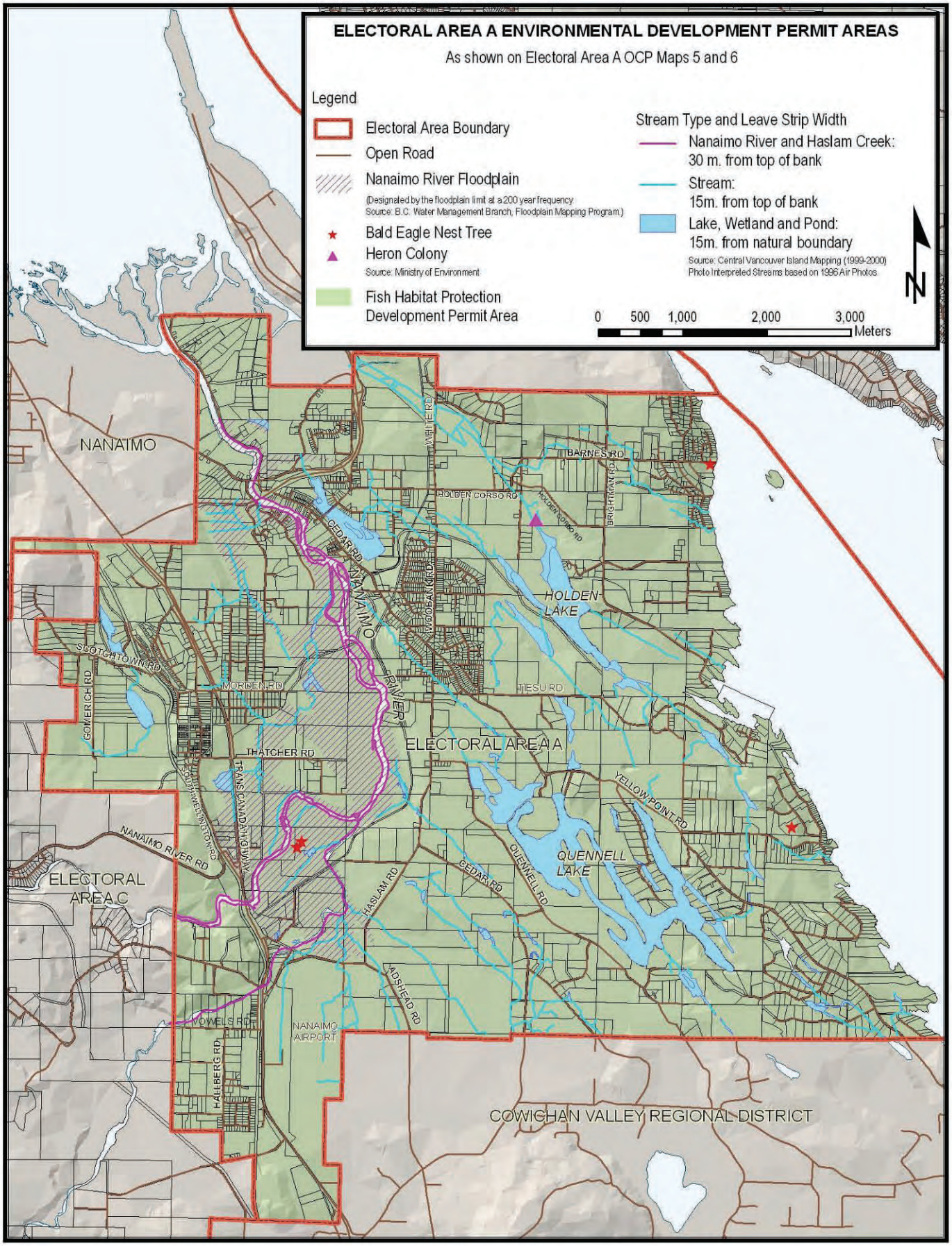
The Coastline is not designated within a DPA. With the exception of Electoral Areas 'A' and 'E', all other coastal Electoral Areas in the Regional District of Nanaimo designate the coast line a Development Permit Area for the protection of the natural environment and or hazardous conditions.

Although the OCP contains policies in support of environmental stewardship, there are no specific policies which require environmental protection and/or enhancement as a condition of rezoning. With respect to policy, the Official Community Plan supports a passive approach to environmental protection that mainly relies on the actions of individual property owners and other agencies rather than the Regional District of Nanaimo. However, as mentioned previously the OCP designates DPAs for the protection of the environment.

The South Wellington, Cassidy, and Airport Lands Development Permit Areas include very general guidelines primarily geared towards groundwater protection. These DPAs do not include guidelines on any other environmentally sensitive feature.

In addition to the above, the Streams, Nesting Trees, and Nanaimo River Floodplain DPA designates a number of environmentally sensitive features within the DPA. This DPA includes a number of guidelines. This DPA does not include any of the sensitive ecosystems identified by the Sensitive Ecosystem Inventory. Please refer to the following page for a map that shows the DPAs in Area 'A'.

All of Electoral Area 'A' is designated within the Fish Habitat Development Permit Area for the purpose of protecting fresh water streams in accordance with the *Riparian Areas Regulation.* As mentioned earlier, Local Governments are required to protect all streams in accordance with the RAR. This means designating all of Area 'A' within a DPA and providing exemptions for all development on properties without a stream or outside of the Riparian Assessment Area.


ELECTORAL AREA A ENVIRONMENTAL DEVELOPMENT PERMIT AREAS
As shown on Electoral Area A OCP Maps 5 and 6
Legend
Electoral Area Boundary
Open Road
Nanaimo River Floodplain
(Designated by the floodplain limit at a 200 year frequency
Source: B.C. Water Management Branch, Floodplain Mapping Program)
Bald Eagle Nest Tree
Heron Colony
Source: Ministry of Environment
Fish Habitat Protection
Development Permit Area
Stream Type and Leave Strip Width
Nanaimo River and Haslam Creek:
30 m. from top of bank
Stream:
15m. from top of bank
Lake, Wetland and Pond:
15m. from natural boundary
Source: Central Vancouver Island Mapping (1999-2000)
Photo Interpreted Streams based on 1996 Air Photos
N
0 500 1,000 2,000 3,000
Meters
NANAIMO
ELECTORAL AREA C
ELECTORAL AREA A
COWICHAN VALLEY REGIONAL DISTRICT
NANAIMO AIRPORT
HOLDEN LAKE
QUENNELL LAKE
NANAIMO RIVER
WHITE RD
BARNES RD
HOLDEN CORSO RD
HOLDEN CORSO RD
BRIGHTMAN RD
CEDAR RD
WOODBANK RD
TIESU RD
SCOTCHTOWN RD
MORDEN RD
GOWERICH RD
THATCHER RD
TRANS CANADA HIGHWAY
SOUTH WELLINGTON RD
NANAIMO RIVER RD
YELLOW POINT RD
QUENNELL RD
CEDAR RD
HASLAM RD
ADSHEAD RD
JOWELS RD
HALLBERG RD

What the Community Has Said So Far About Environmental Protection

At every stage in the process thus far, the community has continually indicated strong support for protecting the environment. In response to the community's position on the environment, both the Sustainability Principles and the Community Vision provide direction and emphasis on environmental protection.

Out of 15 sustainability principles developed by the community, the following five are directly related to environmental protection.

Principle 3 Consider the needs of future generations in today's decisions.
Principle 4 Adapt to nature's complexity, diversity, and unpredictability
Principle 5 Commit to environmental stewardship and conservation.
Principle 6 Nature has intrinsic value.
Principle 10 Economic, social and environmental factors are interdependent and must be considered together.

The Community Vision contains the following with respect to environmental protection:

The Official Community Plan is based on the concept of sustainability and 'smart growth, which seeks to minimize the impacts of human activities. This has been accomplished by managing natural resources, as well as economic environmental, and social systems in a way that enhances quality of life, yet does not diminish the ability of future generations to meet their needs.

Electoral Area 'A' has become a leader in local food production and sustainability and is often showcased as a model community due to its environmental stewardship and protection policies, growth management strategies, innovative use of alternative technologies, green building programs, recreational and sports opportunities, diverse culture, artistic talent, and excellent multi-modal transportation system.

There are opportunities for local employment, which contribute to the local economy and have minimal impacts on the environment

Growth is directed into well-defined village and neighbourhood centres. Growth and development outside these centres has largely been avoided as agriculture, resource use, and conservation of biodiversity have become the top priority for these areas.

The Following list includes some of the community input with respect to environmental protection received at the Community Workshop held on February 21, 2009. For more information please visit the project website at www.asharedcommunityvision.ca or click here.

- Support environmental stewardship and good governance.
- Encourage respect for the environment by establishing Area 'A' as a model of an environmentally
- friendly community.
- Support environmental education to get people on board and to do things different. There needs to be an appreciation for the wonder of nature.
- Preserve, protect, and enhance the environment.
- Maintain the local habitat for flora and fauna .
- Ensure that the environment is healthy (It is crucial above all else, social and economic needs are secondary).
- Retain a full range of habitat required to maintain and re-establish indigenous and endangered species.
- Adopt a tree cutting bylaw to protect habitat.
- Protect watersheds and groundwater (Only allow development [residential, commercial, and/or industrial] if they have demonstrated and sustainable water onsite.
- Ensure that development is held accountable.
- Establish incentives for green cottage industry.
- Establish a sustainability checklist to evaluate all development proposals based on environmental fiscal and socially responsible patters.

Policy Option: Continue to support the Fish Habitat Protection Development Permit Area

As mentioned earlier in this workbook, Local Governments **must** protect streams in accordance with the *Riparian Areas Regulation* (RAR). Therefore, this is less like an option and more like a requirement. However, the Official Community Plan can provide some flexibility on how this is done.

Currently all of the Regional District of Nanaimo Electoral Areas are designated within a Fish Habitat Protection Development Permit Area to fulfill the requirements of the RAR. Please refer to the Electoral Area 'A. Fish Habitat Protection Development Permit Area for more information available by clicking here or going to http://www.rdn.bc.ca/cms.asp?pID=402.

The reason that the whole Electoral Area is designated within the DPA is a direct result of how the RAR defines a stream. The definition is very broad and includes any of the following that provides fish habitat:

(a) a watercourse, whether it usually contains water or not;
(b) a pond, lake, river, creek or brook;
(c) a ditch, spring or wetland that is connected by surface flow to something referred to in paragraph (a) or (b);

The definition of a stream provided by the RAR is such that it requires a biologist or other qualified professional to determine if any water on a property is subject to the regulation. This coupled with the fact that the Regional District of Nanaimo does not have comprehensive stream data covering all potential water features within its boundaries requires that the whole Electoral Area be designated within the Development Permit Area and that exemptions be provided for properties with no water feature (as declared by the property owner) and development outside of the Riparian Assessment Area.

Policy Option: Provide incentives for green development

In order to encourage developers and property owners to make green choices in their development projects, the Official Community Plan could support providing incentives that encourage smart choices. The Official Community Plan could support the following incentives, although this is by no means an exhaustive list.

A revenue-neutral application fee structure could be supported whereas development which meets or exceeds certain standards for energy efficiency, water use, and/or environmental protection would pay less or nothing at all for application fees for rezoning, Development Permits, Development Cost Charges, and Building Permits. Status quo development not meeting this standard would pay more for each type of application justified by the increased impacts on the environment and society and the long term cost of servicing and maintenance.

The Official Community Plan could support fast-tracking of all application types where development is proposed which meets or exceeds certain standards for energy efficiency, water use, and/or environmental protection.

The Official Community Plan could support the waiving of rezoning and Development Permit fees for all new development within the UCB (UCB) or Village Centre where higher density and compact mixed use is proposed and which helps the create a more complete community.

The Official Community Plan could support rebate programs for retrofitting existing buildings and structures to improve energy and water efficiency.

The Official Community Plan could support the use of a sustainability checklist both as an educational tool as well as a way to evaluate development proposals.

Policy Options for Environmental Protection in Area A

Please use the space provided to tell us if you support the policy options below, which are described on the previous page. If you support the policy options, please tell us why you think they are important in achieving the Community Vision. If you do not support the policy options please tell us about your concerns and how you think the OCP could address your concerns while still achieving the an acceptable level of environmental protection.

Policy Option: Continue to support the Fish Habitat Protection Development Permit Area

Policy Option: Provide Incentives for green development

Policy Options for Environmental Protection in Area A

Policy Option: Protect Sensitive Ecosystems and rare species with both policy and Development Permit Areas
Although the OCP recognizes that there are environmentally sensitive features in Area 'A' and includes a map (based on the Sensitive Ecosystem Inventory) showing their location, the OCP does very little to ensure that they are protected. The OCP simply encourages landowners to protect environmentally sensitive features on their property by encouraging tax incentives and co-operation with conservation agencies. Therefore, if a property owner wishes to develop their property, there are no requirements and no ability to ensure that the sensitive feature is protected. It is up to the property owner to voluntarily protect these features.

In addition, the existing OCP does not recognize or mention species of concern in Electoral Area 'A' which have been recognized provincially or by the Committee on the Status of Endangered Wildlife in Canada.

In response, this option supports the establishment of Development Permit Areas to ensure that the impact of development on these features and species are minimized. This approach would be consistent with how other Electoral Areas in the Regional District of Nanaimo protect sensitive ecosystems. With respect to recognizing rare and sensitive species, Electoral Area 'A' would be first Electoral Area in the Regional District of Nanaimo to do so.

Policy Option: Encourage Environmental Stewardship
This option would support policy(s) being put in the OCP which encourage property owners through education and support to voluntarily protect the environment in a number of different ways which could include minimizing and/or eliminating pesticide and herbicide use, maintain native vegetation, controlling invasive species, encourage water conservation, minimizing impervious surfaces, limiting the amount of outdoor burning, etc.

Policy Option: Protect groundwater through policy and Development Permit Areas
Groundwater protection is an important issue which has been discussed on numerous occasions during the OCP review. This option supports using a multi-faceted approach to groundwater protection in the new OCP which includes using a number of policies and Development Permit Areas.

This option would result in a number of policies being included in the OCP to protect groundwater including:

- A number of policies which support the Best Management Practices for groundwater protection identified by the Electoral Area 'A' Groundwater Assessment and Vulnerability Study.
- The requirement for a groundwater assessment for all rezoning applications.
- Encourage the installation of groundwater monitoring equipment in new drinking water wells.
- Support a detailed groundwater assessment and vulnerability study to continue to gain knowledge on groundwater in Electoral Area 'A'.
- Require all new commercial and industrial development have measures in place to ensure that contaminants do not enter the aquifer.

This option would also support the use of a DPA for the purpose of groundwater protection. All lands within areas designated as moderate and high vulnerability by the Area A Groundwater Assessment and Vulnerability Study and all areas designated as having a moderate or high vulnerability by the Ministry of Environment would be included in the DPA. **The DPA would include the types of development which could occur within the DPA without a permit** and would likely include the construction of a dwelling unit or accessory building, subdivision where 3 or fewer lots are being created, landscaping, and minor additions to an existing building or structure. The DPA would require that before new development can proceed, a review is undertaken to ensure that the impacts to groundwater are identified and mitigated. This may require a report from a qualified professional to design and certify that proposed development will not adversely affect the quantity or quality of groundwater in Area A. The DPA would also contain guidelines for how water is to be managed on site and how potential contaminants are to be identified and prohibited from entering the aquifer.

Policy Options for Environmental Protection in Area A

Please use the space provided to tell us if you support the policy options below, which are described on the previous page. If you support the policy options, please tell us why you think they are important in achieving the Community Vision. If you do not support the policy options please tell us about your concerns and how you think the OCP could address your concerns while still achieving the an acceptable level of environmental protection

Policy Option: Protect Sensitive Ecosystems and rare species with both policy and Development Permit Areas

Policy Option: Encourage Environmental Stewardship

Policy Option: Protect groundwater through policy and Development Permit Areas

Policy Option: Manage rainwater as a resource rather than a waste product

This option recognizes that there is value in maintaining and enhancing natural drainage systems as part of a development rather than engineering man-made systems. Some of the benefits include lower installation costs, lower maintenance costs, increased community health, and increased environmental integrity and biodiversity. Therefore, this option supports the notion that rain water (aka stormwater) should be treated as a valuable resource to be maintained on site rather than a waste product that must be piped off site as quickly and efficiently as possible.

Therefore this option would result in a section in the new Official Community Plan being established that contains a number of policies that support the use of rain water as a resource including:

- A requirement that the drainage for all new development, including subdivision, be designed to replicate the function of a naturally vegetated watershed, maintain the hydrological regime of surface and groundwater and pre-development flow rates, minimize interference with groundwater recharge; not introduce contaminants into the aquifer, and not introduce or remove materials where it would cause erosion of or the filling in of natural watercourses and/or wetlands.
- A requirement to provide erosion control during demolition and construction.
- Support the concept of regulating impervious surfaces to reduce runoff rates and flows.
- Support the creation of an Electoral Area-wide Rainwater Management Plan.
- No support for development proposals which result in increases to the peak flow run off into adjacent lands.
- A requirement for rain water to be managed on site and require areas to be provided for water infiltration.
- Zoning amendment applications must demonstrate how impervious surfaces have been minimized.
- No support for development which proposes to release rainwater runoff containing sediments or other contaminants.
- Strongly encourage the use of green infrastructure and development such as green roofs, permeable paving, vegetated swales, etc.
- Strongly encourage water reuse and recycling

Policy Option: Encourage water conservation through policies and Development Permit Area Guidelines

In response to the fact that much of Electoral Area 'A' has a water deficit in the summer (i.e more is used that is replenished), the OCP could provide direction for how to conserve water. The OCP could use a variety of approaches including a number of policies that encourage water conservation, a policy that requires that water conserving measures be installed as a requirement for rezoning, and could incorporate guidelines into all of the Development Permit Areas.

This option would support a number of different policies including:

- The Regional District of Nanaimo perhaps in partnership with the North Cedar Improvement District could investigate the possibility of having a water conservation rebate program where property owners who choose to install a rain barrel or replace inefficient plumbing fixtures such as toilets, taps, and/or inefficient appliances with models that use less water would be reimbursed a certain percentage of the cost of the replacement.
- Require that all new landscaping be drought tolerant and that where irrigation is required it should be designed and installed by an Irrigation Association of British Columbia irrigation designer.
- Support and encourage the use of innovative proven technologies that make efficient use of water.
- Encourage gray water use and water recycling.
- Encourage green building.
- Discourage water intensive landscaping (i.e large expanses of lawn).
- When land is rezoned to allow for higher density or use, require that water conserving measures be incorporated into the design such as low flow fixtures, rainwater recycling, efficient irrigations, etc.

Policy Options for Environmental Protection in Area A

Please use the space provided to tell us if you support the policy options below, which are described on the previous page. If you support the policy options, please tell us why you think they are important in achieving the Community Vision. If you do not support the policy options please tell us about your concerns and how you think the OCP could address your concerns while still achieving the an acceptable level of environmental protection

Policy Option: Manage rainwater as a resource rather than a waste product

Policy Option: Encourage water conservation through policies and Development Permit Area Guidelines

Coastal Shoreline Uses

Why is it important to discuss uses of the coastal shoreline?

Coastal and marine environments provide essential services and goods from an ecological, economic, and social perspective. The form and dynamics of the physical shore help determine essential habitat conditions for coastal plant and animal communities. Coastal areas are also highly valued by property owners, the general community, and marine recreational users for their aesthetic qualities, recreational values, and viewscapes.

In addition, many coastal communities are experiencing unprecedented levels of growth. This is a critical time, which provides an opportunity to recognize the unintended consequences of past practices and identify ways reduce the impacts of development and to ensure that the benefits of having healthy marine ecosystems continue to be enjoyed for generations to come.

What are some of the issues associated with coastal shoreline uses?

The following provides a general overview of some of the more significant issues and considerations surrounding costal shoreline uses.

Environmental impacts of development and shoreline uses

Coastal development is recognized as one of the major threats to coastal ecosystems and fisheries. We all know that development can have long-lasting negative environmental impacts, both intentional and unintentional. Shoreline armouring, loss of shoreline vegetation, and disruption of coastal processes have often led to loss of ecological productivity, ecosystem functions, and social, cultural and natural resource values and services.

The types of uses and structures that are allowed to occur within the foreshore area can have an impact on its overall integrity. For example, boat ramps are typically wide impervious concrete structures, which can destroy eelgrass beds and habitat for fish and other wildlife. Where a private mooring boy or floating dock if designed properly can have much less impact and can achieve the same objective.

Aesthetic quality of the foreshore

Property owners, community members, and passersby all enjoy the aesthetic quality that is provided by the coastal shoreline. It can provide a serene natural experience which puts us in touch with nature. However, the types of uses, buildings, and structures which are permitted on the foreshore can have a detrimental affect on its aesthetic quality and can detract from its natural experience.

Public access

Land which located below the natural boundary in most cases belongs to the Crown. Therefore, the public has the right to access and enjoy these lands. Notwithstanding the above, this does not give a right to the general public to trespass or to cross private property to access public lands. The primary public access to the coastal shoreline is public road right-of-way. In Area ‘A’ there are many public road right-of-ways leading to the shoreline, however, most remain undeveloped.

Public access can be negatively affected by uses and structures which are located at or below the natural boundary such as gangways, boat ramps, private docks, retaining walls, and rock groynes. These structures can make it difficult or impossible for the public to travel on and enjoy the foreshore.

View corridors

Among other things, people are attracted to waterfront properties because of the stunning views of the marine environment they provide. The siting and height of buildings and structures on the foreshore can have a negative affect on the views from adjacent properties. Dwelling units, gazebos, garden sheds, flagpoles, boat houses and launches, and beach access stairs being placed in high visibility locations generally in front of existing dwelling units can result in unwanted ocean view obstructions.

This issue can be exasperated when property owners register an accretion with the Land Titles Office. An accretion is where sediments and other materials have over time been deposited in an area below the surveyed natural boundary. This deposition, in essence, creates new land with a new natural boundary generally further out towards the ocean than the original natural boundary. In some cases, a property owner can apply to have the newly formed land added to their property, which gets registered at the Land Titles Office.

Since the minimum setback requirements are measured from the natural boundary (in this case the new natural boundary which is a result of the registered accretion), it is possible that the resulting development could be in front of the existing development, which could obstruct ocean view corridors.

Erosion and sediment control

Other than shoreline that is naturally protected by large bedrock formations, the shoreline is constantly moving, changing, and evolving in response to natural forces such as waves, tides, winds, and currents. The form and dynamics of the physical shoreline help determine essential habitat conditions for BC's coastal plant and animal communities. The shoreline is dynamic and includes areas where materials are continuously being eroded and areas where materials are being deposited. This process is called shoreline migration and is a natural process which is an important to maintain shoreline health.

Human activities, particularly development which has occurred close to the oceanfront, results in shoreline hardening, the installation of concrete or other hard-surfaced retaining walls or other structures, which seek to immobilize shoreline processes in order to provide protection from a real or perceived threat of erosion. Unfortunately, as mentioned earlier, shoreline hardening disrupts the natural process of shoreline migration and results in a loss of as ecological productivity, ecosystem functions, and social, cultural and natural resource values and services.

There are ways to protect private property from the real or perceived impacts of erosion and that do not require shoreline hardening and that have a lesser impact on the environment. Some examples are to maintain native vegetation, develop with erosion in mind and allow adequate separation distance between all buildings and structures and the shoreline, let organic debris like beach logs and fallen trees act as a natural sea wall, redirect gutter runoff into porous or vegetated areas away from the shore, and share beach accesses with neighbours.

The Regional District of Nanaimo Board has approved a marine retaining wall policy that provides guidelines and sets out the procedures for consideration of Development Permits, Development Variance Permits, and applications to amend the Floodplain Bylaw to allow the construction of a seawall adjacent to the ocean.

The purpose of the policy is to reduce the environmental impacts of seawalls, to reduce the impacts on adjacent properties, and to protect public access. The policy encourages using softer approaches rather than flat faced walls and ensures that retaining walls over 1.0 metre in height are designed by a qualified engineer who, among other things must certify that the retaining wall is necessary and that the site is safe for the intended use.

Coastal Shoreline Uses

Sea level rise as a result of global warming

According to a report released in December 2008 by the Ministry of Environment titled "Projected Seal Level Change for British Columbia in the 21st Century", the 21st century is expected to witness a continued rise in global average sea level as a result of the melting of continental glaciers and ice caps, and warming (expansion) of the upper ocean. Estimates of most probable seal level rise range from 11cm at Nanaimo to more than 50 cm in parts of the Fraser River Delta, but because of the uncertainties in measuring sea level, the possible range of sea level rise could be much greater. For example, applying a possible, but extreme global warming rate, sea level could rise 80 cm for Nanaimo and 120 cm for the Fraser River Delta by 2100. This is further complicated by the fact that Vancouver Island is rising due to tectonic processes.

Sea level rise could have significant consequences in areas where coastal erosion is already an issue or where existing development is close to high tide limits. Global warming is also expected to increase the frequency and severity of extreme weather events. Storm surges combined with high sea levels can add as much as 1 metre to sea levels, regardless of local shoreline features and waves.

Property owners access to the water

Property owners buy waterfront property for many reasons, including the ability to have access to the water for recreational purposes, and in some cases to launch a boat. Shoreline access can be broken into two categories, access from a waterfront property to the shoreline which may include stairs, paths, and gangways and access from the shoreline into the water for boating and other water-related uses which may include boat ramps, boat launches, and docks.

Beach and water access can have impacts on shore vegetation and can disrupt coastal processes, lead to loss of ecological productivity, ecosystem functions, and social, cultural and natural resource values and services. In addition, large obtrusive structures can impede ocean views and detract from the natural beauty of the coastal environment. Therefore, it is important to ensure beach access, boat ramps, boat launches, docks, and wharfs are designed in a way that minimizes their impacts on the environment and aesthetics of the shoreline.

What is allowed now by the Official Community Plan and the Zoning Bylaw

The Electoral Area 'A' Official Community Plan is silent on the issue of public access to the shoreline as well as the types of uses which should be permitted.

"Regional District of Nanaimo Land Use and Subdivision Bylaw No. 500, 1987" (Bylaw 500) designates zoning on all land and water surface in Electoral Area 'A'. In Area 'A' there are 2 zones which apply to uses which occur on the surface of the water. These zones begin at the natural boundary and extend outwards away from the shoreline. With the exception of the Boat Harbour basin, which is zoned Water 2, the remaining ocean surface in Area 'A' is zoned Water 1. The Water 1 Zone permits aquiculture and boat ramp. The maximum height for buildings and structures in this zone is 1.0 metre above the surface of the water measured from the natural boundary. Other than a restriction on the maximum height and minimum setbacks requirements, there are no design requirements and no environmental protection standards.

Uses which occur upland of the natural boundary must comply with the zoning requirements of the applicable zone. However, there are no specific requirements other than maximum height and minimum setbacks requirements contained in the Zoning Bylaw with respect to beach access stairs or structures. This means that there are no specific size or height restrictions, no restrictions on the types of materials used, no requirement to protect the environment.

What types of uses and buildings and structures should be allowed on the coastal shoreline?

This is a question for the community to consider in terms of what is an appropriate use of the foreshore and what types of structures should be allowed to provide beach access both above and below the natural boundary.

There are many different types of structures and methods for providing beach access. Each has its advantages, disadvantages, limitations, and impacts. Some types of structures are more appropriate than others from an aesthetic and environmental perspective. The information on the following page provides a brief overview of some of the typical types of structures associated with providing beach access both above and below the natural boundary and their associated benefits and impacts.

Beach Access Stairs

Beach access stairs provide direct access to the water on properties with steep slopes. Beach access stairs may require the removal of native vegetation to install footings. Most will likely shade native species, which may negatively impact growing conditions. Beach access stairs may also destabilize steep slopes and may pose a safety concern if not properly constructed . Most stairs require a building permit. Some are large and include oversized landings and viewing platforms, which may impede public access along the shoreline and ocean views from adjacent properties. Stairs can be designed to fit into the landscape to minimize impacts on the views from adjacent properties. Materials, if chosen carefully, may blend over time with their surroundings.

Beach Access Pathway

A formalized path which takes advantage of the natural topography as much as possible to provide direct access to the beach. Pathways are typically narrow (less than 1.5 metres in width) and constructed using native soils or compacted permeable natural materials such as gravel or bark mulch. Other than stair rungs dug in to the ground and in some cases rails for safety, no structures are typically visible from adjacent properties. Beach access pathways can, if designed and constructed appropriately, have less impact on the environment then beach access stairs, but if done improperly can lead to increased slope stability and erosion.

Boat Ramps

Boat ramps come in many shapes and sizes. The Zoning Bylaw defines ‘Boat Ramp’ as a structure located on a shoreline to accommodate vehicles or trailers for the purpose of launching and hauling boats out of the water. This has been interpreted to include the traditional concrete slab leading in to the water, floating docks with gangways for launching kayaks and other small vessels, and well as other methods for launching boats from shore.

The traditional boat ramp is a concrete slab or slabs which allows a vehicle towing a trailer to launch a boat. This approach has a large footprint and greater environmental impact compared to other methods as the concrete slab blankets the shoreline displacing native species. Although cured concrete is generally harmless to fish, wet concrete poses a risk to fish because of its high pH.

Other Boat Launching Systems

There are many other boat launching systems available on the market today that go beyond the traditional boat ramp. In particular lifting devices are available that lift and lower a boat in to the water from shore. Many of these systems have a much smaller footprint and environmental impact than traditional methods, but are highly visible and could impede ocean views from adjacent properties if installed in highly visible locations.

Docks

Docks are floating structures anchored or otherwise attached to the sea floor. As with any structure that protrudes into navigable waters, approval from Transport Canada is required. Access to docks from the shore is typically provided by a gangway. Docks and their associated gangway can shade the seafloor, which can have an affect on native marine plant and animal species, while at the same time providing artificial habitat for others. Docks can also impede public beach access. Docks can be designed to reduce their impact by choosing non-polluting construction materials and by allowing natural light to pass through them.

Boat Houses

Boat houses are structures typically located very close to the natural boundary which allow property owners to store their boats when not in use. They are usually used in conjunction with some form of boat launching system, where by a boat can be removed from the water and moved directly in to the boat house. Boathouses, like other man-made objects on can result in loss of shoreline vegetation, disruption of coastal processes, loss of ecological productivity, ecosystem functions, and social, cultural and natural resource values and services. Boathouses, because of their location and size can also have a detrimental impact on ocean views from adjacent properties.

Coastal Shoreline Uses

Please refer to the information provided on the previous pages and use the space provided to respond to the following question:

What types of uses, buildings, and structures should be allowed on the coastal shoreline?

Policy Options for Shoreline Uses in Area A

Based on the issues discussed on the previous pages the following policy options have been identified for the community to consider as part of the new OCP.

Policy Option: Designate the Coastal Development Permit Area to maintain native vegetation and ecological function.

As with other Electoral Areas in the Regional District of Nanaimo, this option supports designating the coastline within a DPA. Please refer to page 14 for more information on DPAs. The purpose of the DPA would be to protect and enhance native vegetation and ecological function by ensuring that new development is designed and constructed in an appropriate way. The DPA would apply to all land within 15 metres of the present natural boundary, both inland and seaward.

This option would support providing exemptions within the DPA guidelines so the following types of development could proceed within the DPA without a Permit.

- internal renovations;
- second storey and minor additions to existing buildings and structures provided they do not further encroach into the DPA;
- external maintenance where the footprint of the building or structure is not being increased;
- emergency works to protect property;
- the installation of a fence;
- removal or invasive species and reestablishment of native species;
- trail building;
- wildlife habitat restoration and enhancement;
- work conducted and/or approved by the RDN, DFO, and MOE, and,
- maintenance of lawn, trees, and shrubs, and introduction of landscaping in previously disturbed areas, excluding retaining walls and other structures.

The Development Permit Area would contain guidelines to ensure that the impacts of development are minimized and would specify the information which is required to submit a Development Permit application.

Policy Option: Provide guidelines for beach access stairs and boat launches

This option supports providing design guidelines in the OCP for the construction of new beach access', boat ramps, and other boat launching systems. The guidelines could be incorporated into a DPA that applies to the coastline, could be policies that specify the community's preference, or could be used as the basis for a Board Policy and/or an amendment to the Zoning Bylaw to provide regulations for uses which occur on the foreshore.

This option could specify the communities preference with respect to a number of factors such as:

- how public access is to be protected;
- height of buildings and structures;
- setbacks;
- the types of structures that are appropriate;
- the size and width of beach access stairs;
- how shoreline uses are to protect the environment;
- the types of building materials that are preferred; and,
- the types of uses that are acceptable.

Policy Options for Shoreline Uses in Area A

Please use the space provided to tell us if you support the policy options identified below.

Policy Option: Designate a Coastal Development Permit Area to maintain native vegetation and ecological function. If you support this option what guidelines should be included, what information do you feel is important for a developer to provide? If you do not support this option, how should the Official Community Plan protect the coastal foreshore?

Policy Option: Provide guidelines for beach access stairs and boat launches. If you support this policy, please tell us what limitations (height, setbacks, size, etc.) you feel should be placed on buildings, structures, and uses that occur on the shoreline. How should these guidelines be used (specify community preference, Board Policy, amendments to the Zoning Bylaw)?

Policy Options for Shoreline Uses in Area A

Policy Option: Discourage hardening of the foreshore

This option supports the Regional District of Nanaimo Board Marine Retaining Wall Policy. In addition, this option encourages landowners who are considering the installation of a marine retaining wall to take a green approach. This option would indicate that the community values the protection of the marine foreshore and encourages that all new marine retaining wall structures be designed in a manner reduces their environmental impacts and minimizes disturbance to natural shoreline process.

Please use the space provided to tell us if you support this option and why you think it is important. If you do not support this option, please tell us what your concerns are and how they could be addressed.

Policy Option: Maintain ocean view corridors

This option involves having a policy(s) in the new OCP which supports the maintenance of ocean view corridors by protecting them from the detrimental impacts of development. The policy would support further investigation into options for ensuring that new development does not unreasonably impact the views from adjacent properties.

Please use the space provided to tell us if you support this option and why you think it is important. If you do not support this option, please tell us what your concerns are and how they could be addressed.

Policy Options for Shoreline Uses in Area A

Please use this space to provide any additional ideas, comments or concerns you have with respect to shoreline uses in Electoral Area 'A'.

Greenhouse Gas Emissions and Global Warming

Greenhouse gases (GHG) in the atmosphere absorb and emit solar radiation back to earth. Thus, GHGs trap heat within the atmosphere which results in a an increase in the temperature of our planet as less heat is radiated back to outer space. This process of trapping heat within the atmosphere is called the 'Greenhouse Effect'. GHGs include water vapour, carbon dioxide, methane, nitrous oxide, ozone, and CFC's (an ozone depleting substance). Not all GHGs are equal in their contribution to the Greenhouse Effect. The contribution to the Greenhouse Effect by a gas is affected by both the characteristics of the gas (radiating properties and lifespan within the atmosphere) and its abundance. As the concentration of GHGs in the atmosphere increases so does the rate of global warming attributed to the Greenhouse Effect. Therefore, it is important to reduce GHG emissions as they are major contributing factor in global warming.

The three main sources of GHG emissions in our region are transportation, solid waste, and buildings.

The Intergovernmental Panel on Climate Change (IPCC) has published its fourth series of reports on climate change and adaptation and mitigation. The IPCC is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). Its role is to assess on a comprehensive, objective, open and transparent basis the latest scientific, technical, and socio-economic literature produced worldwide relevant to the understanding of the risk of human-induced climate change, its observed and projected impacts and options for adaptation and mitigation.

The following provides some of the key findings and observations contained in the IPCC 2007 Climate Change Synthesis Report.

- Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.
- Observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases.
- Global GHG emissions due to human activities have grown since pre-industrial times, with an increase of 70% between 1970 and 2004.
- There is *high agreement* and *much evidence* that with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades.
- Continued GHG emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would *very likely* be larger than those observed during the 20th century.
- Anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks, even if GHG concentrations were to be stabilised.
- Altered frequencies and intensities of extreme weather, together with sea level rise, are expected to have mostly adverse effects on natural and human systems.
- There is also *high agreement* and *medium evidence* that changes in lifestyle and behaviour patterns can contribute to climate change mitigation across all sectors. Management practices can also have a positive role.
- Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG products, technologies and processes.
- In order to stabilise the concentration of GHGs in the atmosphere, emissions would need to peak and decline thereafter.
- Mitigation efforts over the next two to three decades will have a large impact on opportunities to achieve lower stabilisation levels.
- Making development more sustainable can enhance mitigative and adaptive capacities, reduce emissions, and reduce vulnerability, but there may be barriers to implementation.
- Sustainable development can reduce vulnerability to climate change, and climate change could impede nations' abilities to achieve sustainable development pathways.
- A 1 to 2°C increase in global mean temperature above 1990 levels poses significant risks to many unique and threatened systems including many biodiversity hotspots.

Greenhouse Gas Reduction Targets, Policies, and Actions

GHG reductions requires an integrated approach involving all levels of government as well as local citizens. Everyone has an important role to plan and must work together to make sound decisions and choices. No one level of government nor single technology will provide the solution. Therefore, cooperation at all levels is critical and is the key to success. GHG emissions reductions requires that we also take an integrated approach to community planning as GHG reductions are closely tied to land use decisions at all levels. Everything from rural uses to affordable housing all have implications for GHG emissions.

Although Local Governments have historically influenced GHG emission levels through the OCP and zoning, their role has recently changed as a result of an amendment to the *Local Government Act*. Local Governments must now play a more active role and must include targets, policies, and actions for how GHG emissions will be reduced in their OCPs.

Section 877 of the *Local Government Act* states the following with respect to GHG reduction: '*an official community plan must include targets for the reduction of greenhouse gas emissions in the area covered by the plan, and policies and actions of the local government proposed with respect to achieving those target*s'.

An OCP can achieve GHG emission reductions in a number of ways, which mainly involve providing guidance on how land is used, how the environment is protected, the types of new programs that should be encouraged, new regulations that would result in GHG reductions, support for energy and transportation projects that would result in reduced GHG emissions, and support for best management practices for developed.

As a policy document, an OCP has a limited sphere of influence. In general an it can address GHG emissions reductions with policies and DPAs. Policies can provide general direction in a number of ways including conditions of rezoning, how GHG emissions should be reduced, preferences for development practices, and how land should be used. DPAs can contain specific requirements that ensure that GHG emissions from new development are minimized.

There are a number of different options for identifying targets for reducing GHG emissions. Similar to goals, targets set the general direction for how GHG emissions will be reduced. Each target may have a number of policies and actions associated with it. The policies and actions specify how each target will be achieved. Polices and actions can generally be grouped into two categories direct and indirect.

Direct polices and actions are required as part of a new development or redevelopment which result in a direct reduction in GHG emissions. This approach is regulatory in nature and requires the use of DPAs and policies that apply when property is rezoned. Some examples of direct policies and actions include:

- A Development Permit Area that requires all new residential development to meet or exceed Energuide 68 energy efficiency standards and be sited to take advantage of passive solar gain (maximizes sun exposure in winter and shade in summer).

- Policies that apply when a property is being rezoned that require new development to be meet or exceed Energuide 68 or other energy efficiency standard and be sited to take advantage of passive solar gain .

Indirect policies and actions are programs or services which result in GHG emissions reductions only if people choose to take advantage of them. This approach is more passive and mainly relies on citizen's making good decisions. The downside is if people choose not to participate or take no action, then no GHG emissions reductions will be achieved. Some examples of indirect actions include:

- Support additional transit service.
- A residential rebate program for energy efficiency upgrades to retrofit existing buildings.
- Support waiving of development applications fees and faster processing times for developments which prove a significant GHG reduction compared to conventional construction.
- Increase the application fees for conventional construction.
- Encourage eco-industrial networking (using the waste of one process as the input to another i.e using waste fibre to create heat or bio-fuels).

Greenhouse Gas Reduction Targets, Policies, and Actions

Targets for GHG emissions should be simple, achievable, and measurable so that they can be monitored to undetermined if progress is being made towards achieving the target. For example simply stating that the community will reduce GHG emissions by 20% below 2009 levels, does not, due to the number of variables involved, provide us with a target that is simple, achievable, or measurable. We need to take this a step further and think about what could be done to reduce GHG emissions, which is easier to understand, is achievable, and allows for ongoing monitoring.

Some examples of tangible targets which clearly result in GHG emissions reductions are:

- Increase the number of kilometres of cycling and walking paths.
- Decrease the average number of vehicle miles travelled per year.
- Increase the area of land being farmed organically in Area A.
- Increase the amount of locally grown food which is consumed locally.
- Increase the number of existing dwelling units and other buildings upgraded to higher energy efficiency standards.
- Increase the number of people using transit, especially for commuting to work and school.
- Increase the amount of mixed use development occurring in the village centres.
- Increase the amount of locally produced renewable energy (co-generation, solar, wind, geothermal).
- Decrease the amount of solid waste going to the landfill.

Each of the above targets could have a number of associated policies and actions which would help achieve the target.

A Study done by the Sheltair Group as part of the implementation of the Regional District of Nanaimo's *Green Building Action Plan*, which looked at the type and extent of environmental benefits of promoting green buildings and more compact land use patterns in the Regional District of Nanaimo, provides the following with respect to GHG reductions:

- Regardless of how efficient buildings are or become and how compact communities become, we will continue to see an increase in GHG emissions as the population and number of dwellings continues to rise.

- If 100% of new construction takes the form of green buildings which meet EnerGuide 85 for energy performance and Built Green–Gold for non-energy related issues (e.g. water use), the region could see a 16% reduction in GHG emissions by the year 2031 when compared to conventional construction (this continues to represent an increase in overall GHG emissions, however, at a lower rate of increase than conventional construction).

- If all new development after 2011 occurs within the UCB, and all new residential development takes the form of multi-family dwelling types. This includes redevelopment of 30% of the existing single family detached dwelling stock into higher density forms. The result is 83% of the population residing inside existing UCBs by 2031, compared to 67% today. This would result in a 36% reduction in GHG emissions by 2031 when compared to conventional construction. (this continues to represent an increase in overall GHG emissions, however, at an even lower rate of increase).

As indicated above, green building and compact forms of development result in less GHG emissions than conventional construction and low density development. However, of equal importance, is that green building and compact development alone will not result in overall GHG reductions. More must be done to address the other sources of GHGs.

An OCP is an important tool in reducing GHG emissions as it can support the types of changes required to make a significant contribution towards GHG emissions reductions.

GHG emissions reduction targets cover all aspects of an OCP. In other words all sections of an OCP will in some way be integrated with GHG emissions reductions. For example, a section dealing with transportation will include targets for GHG reduction as would a section on parks and recreation. The following pages provide some options for GHG emissions reduction targets for the new OCP.

Target Option: Develop an eco-industrial network in Area A.

Eco-industrial networking is using the waste of one process as the input to another. For example, using waste fibre to create heat or bio-fuels. Eco-industrial networking can result in GHG reductions through energy savings as well as through a reduction in the use of fossil fuels. This target would require that there be policies in support of eco-industrial networking.

Target Option: Increase the number of kilometres of cycling and walking paths by 5% per year.

In addition to the health and social benefits, walking and cycling can result in GHG emissions reductions as transportation is one of the biggest contributors to GHGs on Area A. This target would require that the OCP set priorities for construction of cycling and pedestrian pathways as well as a timeline for construction. Funding for the ongoing program would have to be secured either through grants, the Electoral Area 'A' Community Parks budget, or funds may be required to be borrowed and approved through a referendum. This target would be easy to measure and monitor over time.

Target Option: Increase the land area organically farmed in Area A by 5% per year.

Organically grown food uses less non-organic pesticides. In addition insecticide and herbicide use is greatly restricted and only used as a last resort. Organic livestock is reared without the routine use of antibiotics and without the use of growth hormones, and generally fed a healthy diet. Organic farming also helps sustain and enhance the health of the soil, plants, and animals. Organic farming relies much less on fossil fuels than conventional agriculture leading to a reduction in GHGs. This target would support the creation of policies in support of organic farming and may include incentives that encourage it over other forms of farming.

Target Option: Increase the proportion of locally grown food which is consumed locally by 10% per year.

In 1960, Vancouver Island grew, raised and produced 60% of the food we consumed. Today less than 6% of the food we consume is grown locally. This means 94% of our food is imported. In addition to leaving us vulnerable to a myriad of outside factors affecting our food security and sustainability, importing food is also dependant on fossil fuels for production and transportation. Therefore, if we can encourage local food production, we are also encouraging a reduction in GHGs. This target would include the establishment of policies and incentives that made agriculture the priority use in the rural areas, especially on land in the Agricultural Land Reserve. This is consistent with the Community Vision as well as the Sustainability Principles developed earlier in the OCP review process.

Target Option: Increase the number of existing dwelling units and other buildings upgraded to higher energy efficiency standards.

Significant GHG emissions reductions can result from retrofitting existing dwelling units and other building types to become more energy efficient. Upgrades like new windows, thicker insulation, new lighting, more efficient heating systems, and more efficient appliances can increase household energy efficiency by 20% to 30%. This option could be implemented by using policies and a DPA. Policies would support providing incentives for energy efficiency upgrades. The OCP could specify a target number of homes to retrofit on an annual basis. The OCP could support the Regional District of Nanaimo taking an active role in securing funding on behalf of property owners wishing to retrofit their homes or perhaps those wishing to replace an older less efficient mobile home with a new highly efficient one.

A DPA could be designated on all land within Area A which requires that all new residential development meet or exceed Energuide 68, Built Green Bronze, or other equivalent energy efficiency standards and be sited to take advantage of passive solar gain (maximizes sun exposure in winter and shade in summer). The DPA could exempt all new residential construction that meets these standards. Construction which did not meet these standards would require a Development Permit to introduce energy efficiency upgrades into the project.

GHG Emissions Reduction Targets in Area A

Please use the space provided to tell us if you agree with the following targets and how each target will be achieved. If you agree with the targets, please tell us why you think they are important in helping us achieve the Community Vision. If you do not agree with the targets, please tell us what your concerns are and how they could be addresses.

Target Option: Develop an eco-industrial network in Area A

Target Option: Increase the number of kilometres of cycling and walking paths by 5% per year.

Target Option: Increase the land area organically farmed in Area A by 5% per year.

Target Option: Increase the proportion of locally grown food which is consumed locally by 10% per year.

Target Option: Increase the number of existing dwelling units and other buildings upgraded to higher energy efficiency standards.

Target Option: Increase transit ridership by 5% per year, double commuters every 5 years.

Transit can be a much more efficient form of transportation that the private automobile in terms of GHG emissions. This option would include a number of policies that support the provision of transit services targeting commuters going to work and school. In addition, policies would be included that ensure that transit is a consideration of all rezoning applications as well as Development Permit applications involving new subdivisions, commercial and industrial uses, and multi-residential.

This option could also support having additional residential density close to transit routes to provide a higher level of demand for transit services.

Target Option: Increase the amount of mixed use development occurring in the village centres.

Mixed use development is an efficient land use pattern which provides an opportunity for people to live close to where they work and close to services resulting in less need to drive. Mixed use development can also include more efficient building types than standard single dwelling units. This option would include policies in the new OCP which encourage mixed use development within the village centres.

Target Option: Increase the amount of locally produced renewable energy (co-generation, solar, wind).

With the exception of hydrogeneration and nuclear power, most other forms of electrical generation are powered by burning fossil fuels which results in GHG emissions. Technology which generates renewable, non-fossil-fuel-burning clean electricity or improves the efficiency of heating systems are readily available including solar voltaic cells, wind turbines, and geothermal. Other methods which use waste products to produce electricity and heat are also available and can be used as an efficient electricity source. These technologies can be scaled to suit everything from providing power to a few items within a dwelling to powering an entire subdivision to powering an entire community. This option would include policies and incentives in the new OCP which would support and encourage low-impact locally produced renewable energy including solar, wind, micro-hydro, co-generation, and other methods.

Target Option: Decrease the amount of solid waste going to the landfill.

The manufacture, distribution and use of products – as well as management of the resulting waste – all result in GHG emissions. The disposal of solid waste produces greenhouse gas emissions in number of different ways. The anaerobic decomposition of waste in landfills produces methane, a GHG 21 times more potent than carbon dioxide. Transporting the waste to disposal sites produces GHG emissions from the combustion of the fuel used in the equipment. The disposal of materials indicates that they are being replaced by new products; this production often requires the use of fossil fuels to obtain raw materials and manufacture the items.

Waste prevention, organics diversion, and recycling reduce GHGs associated with these activities by reducing methane emissions, saving energy, and increasing forest carbon sequestration (using less resources).

The RDN was among the first local governments in Canada to adopt a Zero Waste approach to eliminating garbage and creating a more sustainable region. Since 1998 the region has increased the amount of waste reused or recycled by 75%, keeping GHG-emitting materials out of the landfill and conserving resources. In addition, the Regional District of Nanaimo has other ongoing programs which include a program that diverts commercial food waste from the landfill to a licensed composting facility in the region and a landfill gas collection and power generation program that captures and utilizes GHGs generated at the regional landfill.

This option would include policies in the new OCP that support the Regional District of Nanaimo's current initiatives as well as supporting residential organics diversion and new developments to provide facilities for organics diversion and recycling.

GHG Emissions Reduction Targets in Area A

Please use the space provided to tell us if you agree with the following targets and how each target will be achieved. If you agree with the targets, please tell us why you think they are important in helping us achieve the Community Vision. If you do not agree with the targets, please tell us what your concerns are and how they could be addresses.

Target Option: Increase transit ridership by 5% per year, double commuters every 5 years.

Target Option: Increase the amount of mixed use development occurring in the village centres.

Target Option: Increase the amount of locally produced renewable energy (co-generation, solar, wind).

Target Option: Decrease the amount of solid waste going to the landfill.

Please use this space to provide any additional ideas, comments or concerns you have with respect to GHG emissions reductions in Electoral Area 'A'.

Community Sewer in Electoral Area 'A'

Background

Currently, the RDN provides sewer servicing from the Duke Point Pollution Control Centre (DPPCC) to the Cedar Community Secondary School and there are plans to extend the sewer line to accommodate a proposed 'Cedar Estates' development located at the intersection of Cedar and Hemer Roads and a limited number of properties adjacent to the proposed sewer extension route.

The DPPCC has limited capacity. At this time it is estimated that there is capacity for approximately 530 person equivalents. If a limited number of properties adjacent to the proposed sewer line extension hook up to sewer servicing, the capacity of the DPPCC would be fully allocated. Therefore, additional development in Cedar requires a sewer servicing strategy, including a potential expansion of the DPPCC.

The balance of the Plan Area is not serviced with community sewer. Therefore, until the proposed sewer extension is operational, with the exception of the Cedar Senior Secondary School, all lands within the Plan Area will continue to be serviced with private on-site sewage disposal systems. Please refer to the following page showing the approximate location of the sewer line in Cedar.

In 1998 a sewer predesign study was conducted looking at the feasibility of constructing a sewage collection system in the Cedar Village Area to connect to the DPPCC.

The Study Area included the lands along Cedar Road from MacMillan to Hemer Roads including the Cedar Secondary School, Cedar Estates, and the Wheatsheaf Pub. The study also identified a larger catchment area, which included the remaining lands inside the UCB as well as the adjacent developed lands. The future population was estimated based on the future residential build out by using the minimum parcel size supported by the Zoning Bylaw ($2000m^2$).

The study found that the estimated cost to extend the sewage collection system within the study area (not including the larger catchment area) was approximately $3,412,984 in 1997 dollars.

In 2001, an additional sewer pre-design study was done, based on the previous 1998 study, looking at the feasibility of constructing a sewage collection system for properties within the Cedar UCB and discharging the collected sewage to the DPPCC. The Study estimated that the cost of extending the sewage collection systen throughout the UCB was $5,608,078 in 2001 dollars.

The costs indicated above were only for the expansion of the sewage collection system. The required expansion to the DPPCC to accept additional capacity is a significant additional cost.

As part of this OCP review, a sewer servicing study will be conducted. In addition, the cost of providing sewer could be updated to reflect current values.

Liquid Waste Management Plan

The *Environmental Management Act* allows municipalities and regional districts to develop Liquid Waste Management Plans for approval by the Minister of Environment. The Liquid Waste Management Plan (LWMP) consists of operational certificates, which replace waste discharge permits; a strategy to ensure liquid waste disposal conforms with Ministry objectives; an implementation schedule; and measures to accommodate future development. In effect, a LWMP is a planning document that describes the RDN's long term, region wide strategy for the management of liquid waste. It outlines the RDN's current and future commitments to wastewater infrastructure.

The LWMP is in the process of being reviewed. Online users can click here to get more information on the review.


CEDAR SEWER LINE
Legend
2007 Aerial Photography
Open Road
Cedar Sewer Line
(Approximate Location)
0 100 200 400
Meters
N
TO DUKE POINT
MACMILLAN RD
CHARTWELL RD
GORDON RD
HARMAC RD
HARMAC RD
DUKE POINT HIGHWAY
HUDDINGTON RD
WOODRIDGE RD
HOLDEN CORSO RD
CEDAR RD
TORBER RD
LEGACY PL
MACMILLAN RD
ELM RD (Cedar)
CANIN RD
WALSH RD
RIVERSIDE RD (Cedar)
GERRAND RD
YORK RD
MACMILLAN RD
NAIRN RD
QUAIL GROVE PL
WILKINSON RD
MEYNELL RD
STARLING RD
BURCHELL RD
BOSWELL RD
MEADOWLARK CRES
HUMMINGBIRD DR
NANAIMO
BRAY RD
BLUE JAY WAY
RIVER
HEMER RD
RADZIUL PL
ARA AVE
NEVAN BRAE DR
LAZY SUSAN DR
EMMA WAY
MORLAND RD
FURN RD
WOOBANK RD
STOREY RD

Alternative sewage treatment options

Due to a number of factors such as increased cost of construction, environmental awareness, and advances in small-scale sewage treatment technology, there are options for sewage treatment that go beyond the traditional approach where all sewage goes to a central facility for treatment and disposal.

As a result of low density development and large separation distances throughout most of the Electoral Areas in the RDN, providing sewer services in the traditional method has, in many cases, become cost prohibitive. As a result, not only do property owners not have access to sewer but, it becomes increasingly more difficult to accommodate and encourage growth within the urban containment boundaries and to create compact forms of development, which is the goal of many of the village centres in the RDN.

In addition, there are areas which are experiencing septic system failures on small (less than 2000m^2) properties without backup field locations, meaning that these property owners may have to install new more elaborate and expensive septic systems, treatment plants, or go on pump and haul service.

In response to the challenges associated with providing traditional sewage treatment, the new OCP could support the use of onsite sewage treatment systems that produce very high quality effluent. These systems could be accepted for use to allow for additional density within the UCB where additional growth is encouraged and to address public health and environmental concerns.

The role of the urban containment boundary

Lands within the UCB are areas where additional growth is supported and area areas intended to be serviced with community sewer. Lands outside of the UCB can be provided with sewer to address health and environmental concerns, but not to allow for additional development.

Funding for sewer maintenance, upgrades, and expansions

Services in a Regional District are based on a user pay system predicated on the notion that only those who benefit from a service pay for it. There are a number of sources of funding for community sewer projects which are summarized below.

Funding for operations, maintenance, or upgrades to existing sewage collection and treatment systems is generally paid by the users of the system. Infrastructure grants may also be available to cover a portion of the projected capital costs provided that they do not result in system expansions.

New development can also contribute to upgrades and expansions through Development Cost Charges applied when property is subdivided and when a building permit is issued. Development cost charges are monies that Local Governments collect from land developers to offset a portion of the costs related to additional capacity or services that are incurred as a direct result of new development.

New development can also contribute when a property is rezoned, as a requirement of rezoning. A developer can be required to pay for or install excess or extended services with enough capacity to service properties that are situated near their development. The developer can then recover a portion of the costs from the owners of properties beyond their development that will benefit from the works in the future (latecomers).

The Ministry of Community Development no longer provides grants for sewer system expansions where the minimum parcel size outside of areas intended to be provided with sewer is less than 1.0 hectare. This means that for Electoral Area 'A', no sewer grants from the Ministry of Community Development will be available for extending the sewer system until and unless the minimum parcel size outside of the UCB throughout all Electoral Areas is increased such that the smallest parcel allowed is 1.0 hectare.

Policy Options for Community Sewer in Area A

Policy Option: Support onsite sewage treatment systems

This option would support the use of onsite sewage treatment options which provide a high level of treatment. This option would support the use of these systems to allow for higher density and higher use of land within the UCB and village centres in lieu of traditional treatment options. This option would also support the RDN investigating the feasibility of operating these systems once installed.

This option would include a number of policies that support and encourage the use of onsite sewage treatment systems and policies in support of oversizing collection and treatment systems as part of large-scale rezoning applications to serve the greater community.

Policy Option: Increase the minimum parcel sizes for properties outside of the UCB such that the smallest minimum parcel size is 1.0 hectare

This option is in response to the concern that by allowing small lots (less than 1.0 hectare) in rural areas which are not intended to be provided with community sewer services, increases the risk and cost associated with providing community sewer at a later date if septic systems start to fail. **This option is required in order to gain access to community sewer grants for extending sewer within the UCB.**

This option would result in a land use designation, policy, and implementation action which would support increasing the minimum parcel size to a minimum of 1.0 hectare by amending the minimum parcel size supported by the Zoning Bylaw. This would only apply to properties outside of the UCB where the current zoning supports a minimum parcel size of less than 1.0 hectare.

Properties which have historically been created based on the minimum parcel size (typically 2000m^2) would be included in the zoning amendment, but their subdivision potential would not be affected as the properties could not be further subdivided because they are already at the minimum parcel size. Properties having enough land area to subdivide based on the current zoning (typically 2000m^2) may no longer be subdividable. Having an existing property less than the minimum parcel size has no affect on the ability to use and enjoy the property and is not considered legal non-conforming.

Policy Option: Continue to support community sewer within the UCB.

In accordance with the Regional Growth Strategy, this option would support the provision of community sewer services within the UCB. In addition, sewer service would be supported outside of the UCB to address health and environmental concerns, but not to facilitate additional development.

Should a village centre be supported in South Wellington, the OCP would support the provision of alternative onsite sewer treatment which provides a high quality effluent subject to soil suitability for disposal.

This option would designate a Community Sewer Service Planning Area and a Restricted Community Sewer Service Planning Area.

The Community Sewer Service Planning Area is the area of land that **may** be provided with community sewer service for the purpose of facilitating increased development. This Planning Area would only be supported on lands within the UCB and village centres.

The Restricted Community Sewer Service Planning Area is the area of land that may be provided with community sewer service to service areas of existing development in order to mitigate or prevent environmental and health concerns, but not allow for additional development. The OCP would also recognize that there may be other areas that are experiencing or are likely to experience septic failure and these areas may be considered for inclusion into the Restricted Community Sewer Service Area at a later date.

Policy Options for Community Sewer in Area A

Please use the space provided to tell us if you agree with following policy options. If you agree with the options, please tell us why you think they are important in helping us achieve the Community Vision. If you do not agree with the options, please tell us what your concerns are and how they could be addresses.

Policy Option: Support alternative sewer systems

Policy Option: Increase the minimum parcel sizes for properties outside of the UCB such that the smallest minimum parcel size is 1.0 hectare

Policy Option: Continue to support community sewer within the UCB.

Policy Options for Community Sewer in Area A

Please use this space to provide any additional ideas, comments or concerns you have with respect to community sewer in Electoral Area 'A'.

Submit Your Response

Electoral Area 'A' OCP Review
Citizen's Committee
Temporary Revised Meeting Schedule

All meetings start at 6:30 pm at the North Cedar Improvement District Fire Hall located at 2100 Yellow Point Road.

Month	Date	Year	Topic	Guest Speakers
March	9	2009	Regional Growth Strategy (RGS review, purpose of the RGS, village centres)	Paul Thompson, Manager Long Range Planning, Regional District of Nanaimo Lynnia Clark, North Cedar Improvement District Administrator: Community Water Servicing
March	23	2009	Agriculture	Roger Cheetham - Agricultural Land Commission Wayne Haddow – Ministry of Agriculture and Lands
April	6	2009	Transit and Parks and Recreation	Laura Kiteley, Manager of Transit Projects and Planning Regional District of Nanaimo Joan Michel, Regional District of Nanaimo Parks and Trails Coordinator Greg Keller, Regional District of Nanaimo Senior Planner
April	20	2009	Environmental Protection, Sustainability, and Community Sewer	Maggie Henigman – Ministry of Environment Jack Anderson – Official Community Plan Review Citizen's Committee Sean DePol, Regional District of Nanaimo Manager of Liquid Waste and Lindsay Dalton, Regional District of Nanaimo Liquid Waste Coordinator Gilles Wendling, GW Solutions Greg Keller, Regional District of Nanaimo Senior Planner
May	4	2009	Community Diversity and Affordability	Chris Midgley, Regional District of Nanaimo Sustainability Coordinator

It's for you to decide.

Possible changes to our Regional Growth Strategy have been identified, and we need your comments.

Visit the website to learn about the issues and complete a survey.

Prizes available too!

REGIONAL DISTRICT OF NANAIMO

www.shapingourfuture.ca