Environmental Impact Assessment

Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans

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Executive Summary

Fairwinds Real Estate Management Inc. (Fairwinds) is proposing two Neighbourhood Plans for its lands in The Lakes District and Schooner Cove areas of Nanoose Bay in the Regional District of Nanaimo (RDN), BC. The Fairwinds lands are designated as an urban area within existing Urban Containment Boundaries in the RDN Regional Growth Strategy. A key benefit of the Neighbourhood Plans is the avoidance of sprawl outside the Urban Containment Boundaries.

The Lakes District is a 287ha (709-acre) undeveloped property around Enos Lake that would be developed into a community of single-family homes, multi-family homes, commercial areas, and a large regional park. Schooner Cove is a partially developed 5.2ha (12.8-acre) coastal property that is proposed for a village centre and residential development. The Schooner Cove Neighbourhood Plan area also includes 6.4ha (15.8-acre) of water lots leased from the provincial and federal governments.

This environmental impact assessment (EIA) of The Lakes District and Schooner Cove Neighbourhood Plans was conducted by Pottinger Gaherty Environmental Consultants Ltd. (PGL) for review by the RDN, provincial and federal agencies, and interested stakeholders. The EIA is based on work completed by the Fairwinds Project Team, including biophysical, archaeological and socioeconomic studies.

The purpose of this EIA is to:

- Provide a structured compilation and summary of the environmental and socioeconomic work completed to date as a third party audit of any limitations in scope and methodology;
- Conduct an assessment of the key issues related to the project; and
- Identify future commitments required by Fairwinds to develop this project with minimal impacts.

The approach presented in the EIA to evaluate the potential impacts from the proposed project consisted of the following tasks:

- Scope the environmental issues of concern to be addressed;
- Describe the project, with a focus on those activities that have potential to impact the ecological or socioeconomic environment;
- Describe the current environmental and socioeconomic attributes of the site and surrounding area;
- Assess the potential effects of the proposed project;
- Prescribe an environmental management program to mitigate any potentially significant effects; and
- Provide guidance on the implementation of the environmental management program.

SCOPE OF THE ASSESSMENT

The Fairwinds Project Team has been conducting a comprehensive community consultation process as part of the planning and design of the neighbourhood plans. To enhance the opportunity for input, Fairwinds consulted periodically with a Community Advisory Group formed

of community stakeholders, and a Technical Advisory Committee formed of regulators and technical advisors. Design workshops and three public open houses were conducted to develop and discuss the neighbourhood plans and to solicit public feedback.

A review of the input collected during Fairwinds' consultation identified the key issues to be addressed in this EIA. Scoping the key issues helped to define the EIA's Valued Ecosystem Components (VECs) that represent the ecological, social, economic, or cultural elements of key concern. The VECs for this assessment are:

- Water quality and quantity;
- Aquatic ecology;
- Terrestrial ecology;
- Archaeology;
- Community and recreation;
- Transportation; and
- Local economy.

RESULTS OF THE ASSESSMENT

The assessment of potential effects addressed the key issues pertaining to each VEC, with a focus on identifying mitigation measures where needed to limit the risk of potentially significant effects. The proposed avoidance, mitigation, and enhancement measures are detailed in the Environmental Management Plan (EMP) section of the report. The following table provides a summary of the predicted environmental impacts, proposed mitigation measures, and the resultant overall residual effects of the project.

MONITORING AND FOLLOW UP

The implementation of the EMP will require careful planning and commitment on behalf of the proponent and design team. The report provides guidance on the preparation and implementation of management measures.

Based on the mitigation and management measures identified in the EIA, the resulting recommended commitments from Fairwinds are listed in Table H in section 8.1.

Specific guidance is provided for developing:

- Environmental Homeowner's Manual;
- Construction Environmental Management Plan;
- trail management practices;
- Garry Oak Meadows Management Plan; and
- Enos Lake Protection and Monitoring Program.

Environmental Component	Potential Effects Mitigated Through Design	Potential Significant Adverse and Likely Effects	Summary of Recommended Mitigation Measures (more in the EMP)	Overall Residual Effect of the Project
Water quality and quantity	• Impacts to water quality due to vegetation removal within the project footprint. • Alterations to surface and subsurface hydrology • Impacts to water quality from recreational use of the lake • Impacts to marine water quality due to sewage discharge	• Impacts to water quality from construction near waterbodies • Impacts to water quality due to post-construction stormwater run-off • Impacts to water quality from community pesticide and fertilizer use • Impacts to regional water supply from community water use • Impact to water quality in Enos Lake and wetlands due to introduction of invasive species (plants and animals)	• Design a clear span bridge for the crossing of Enos Creek following the Fisheries and Oceans Canada (DFO) Operational Statement, or use another DFO-approved design • Develop and implement a Construction Environmental Management Plan (CEMP). • Retain an Environmental Monitor throughout the construction period. • Develop a Stormwater Management Plan (SMP) that follows DFO's best management practices (BMPs). • Implement an Enos Lake Monitoring Program. • Provide future residents with an Environmental Homeowner's Manual (EHM). • Prepare and implement integrated pest management practices for maintenance of common lands. • Include water conservation practices in landscaping guidelines.	**Not significant** Potential impacts to water quality and quantity have been addressed in project design and the proposed mitigation. A SMP, EHM, construction BMPs, and invasive species management will protect water quality in natural waterbodies.

Environmental Component	Potential Effects Mitigated Through Design	Potential Significant Adverse and Likely Effects	Summary of Recommended Mitigation Measures (more in the EMP)	Overall Residual Effect of the Project
Aquatic ecology	• Loss of riparian function through vegetation removal or disturbance	• Impacts to waterbodies during construction and upgrade of roads over or adjacent to waterbodies • Impact to the marine ecology of Schooner Cove from shoreline redevelopment • Degradation of riparian vegetation and instream integrity through physical disturbance from humans and pets	• Design a clear span bridge for the crossing of Enos Creek (or use another DFO-approved design) and use clear span bridges or open-bottomed culverts for other stream crossings. • Develop and implement a CEMP including specific approaches for works in fisheries sensitive areas. • Retain an Environmental Monitor throughout the construction period. • Post-construction habitat restoration of disturbed areas. • Design the shoreline development of Schooner Cove to have a net enhancement to shoreline ecology, following the advice from a marine biologist on low-impact shoreline structures. • Construct the Lakes District trail system following BMPs in "Access Near Aquatic Areas." • Include directions on protecting riparian areas in the EHM.	**Not significant** Potential impacts exist, mainly by select works in sensitive areas, though mitigation and enhancement measures will ensure that effects are temporary. A low-impact trail system and EHM for residents will serve to protect aquatic habitat in The Lakes District, and green shoreline development practices will protect marine habitat in Schooner Cove.

Environmental Component	Potential Effects Mitigated Through Design	Potential Significant Adverse and Likely Effects	Summary of Recommended Mitigation Measures (more in the EMP)	Overall Residual Effect of the Project
Terrestrial ecology	• Avoidance of Garry Oak meadows and 90+% of Environmentally Sensitive Areas	• Impacts to Garry oak ecosystems • Impacts to plant species at risk • Impacts to eagles, herons and other breeding birds • Impacts to wetland-dependent wildlife	• Implement protection measures in the CEMP for construction adjacent to Garry oak meadows. • Construct the trail system to control access to sensitive areas defined in the Neighbourhood Plan • Prepare and implement a Garry Oak Meadows Management Plan. • Work with biologists to define a suitable protection strategy which may include photopoint monitoring and restrictive covenants. • Conduct plant species at risk surveys in specified areas. • Conduct vegetation clearing outside of bird nesting season, or conduct nest surveys according to Canada Wildlife Services/Ministry of Environment protocol. • Maintain as many existing wildlife trees and snags as possible, recognizing fire hazard limitations. • Salvage amphibians prior to construction in wetland/riparian habitats. • Design road underpasses at two specified locations (see Appendix 6) for passage of beavers and other small wildlife.	**Not significant** Although there will be loss of forested habitat, the most valuable habitats have been preserved in the neighbourhood plans and additional measures have been recommended that will further minimize impacts on key plants and wildlife species.

Environmental Component	Potential Effects Mitigated Through Design	Potential Significant Adverse and Likely Effects	Summary of Recommended Mitigation Measures (more in the EMP)	Overall Residual Effect of the Project
Archaeology		• Impacts to archaeology sites during vegetation clearing, grubbing and excavation	To comply with the Heritage Conservation Act, an Archaeological Impact Assessment (AIA) will be required prior to construction for areas having significant potential, as identified by a detailed Preliminary Field Reconnaissance (PFR) of areas identified in the Archaeological Overview Assessment (AOA). Any identified significant sites would require an archaeology management plan to mitigate impacts.	**Not significant** The project will conduct due diligence to avoid impacts to archaeological sites.
Community and recreation	• Changes to recreational opportunities in The Lakes District • Changes to amenities in Schooner Cove • Construction noise and visual impact			**Positive** The neighbourhood plans will enhance amenities and recreational opportunities of the Fairwinds area, and standard construction methods will comply with RDN noise restrictions and limit the visual impact during construction.
Transportation	• Effects on vehicle traffic			**Neutral** A traffic impact study concludes that the roads are capable of handling the increased population, with the implementation of specified road improvements.

Environmental Component	Potential Effects Mitigated Through Design	Potential Significant Adverse and Likely Effects	Summary of Recommended Mitigation Measures (more in the EMP)	Overall Residual Effect of the Project
Local economy	• Effects to the local economy			**Positive** There will be significant economic benefits to the mid-Island economy, including capital investment, job creation and funds for RDN services, hospitals, police and schools

ACKNOWLEDGEMENTS

PGL would like to acknowledge the help and input provided by the following individuals in conducting and preparing the EIA:

- Russell Tibbles and Rebekah Sax of Fairwinds;
- Karly O'Connor, Paul Fenske, Edward Porter and Monty Friesen of EKISTICS; and
- Thomas Roy of Cascadia.

We greatly appreciated your help, and the use of your work in the EIA.

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List of Acronyms

AIA	-	Archaeological Impact Assessment
AOA	-	Archaeological Overview Assessment
BEC	-	Biogeoclimatic Ecosystem Classification System of BC
BMP	-	best management practices
CAG	-	Community Advisory Group
CDC	-	BC Conservation Data Centre
CEA Agency	-	Canadian Environmental Assessment Agency
CEAA	-	*Canadian Environmental Assessment Act*
CEMP	-	Construction Environmental Management Plan
COSEWIC	-	Committee on the Status of Endangered Wildlife in Canada
CWS	-	Canadian Wildlife Services
DFO	-	Fisheries and Oceans Canada
EHM	-	Environmental Homeowner's Manual
EIA	-	Environmental Impact Assessment
EM	-	Environmental Monitor
EMP	-	Environmental Management Plan
ESA	-	Environmentally Sensitive Area
ESCP	-	Erosion and Sediment Control Plan
GOERT	-	Garry Oak Ecosystem Recovery Team
MOE	-	BC Ministry of Environment
MOTI	-	BC Ministry of Transportation and Infrastructure
PBT	-	persistent bio-accumulative toxic chemicals
PFR	-	Preliminary Field Reconnaissance
PGL	-	Pottinger Gaherty Environmental Consultants Ltd.
RAR	-	Riparian Areas Regulation
RDN	-	Regional District of Nanaimo
RISC	-	Resources Information Standards Committee
SARA	-	*Species at Risk Act*
SMP	-	Stormwater Management Plan
SPEA	-	Streamside Protection and Enhancement Area
VEC	-	Valued Ecosystem Component

1.0 INTRODUCTION

Fairwinds Real Estate Management Inc. ("Fairwinds" or the "Proponent") is developing Neighbourhood Plans for its lands in The Lakes District and Schooner Cove areas of Nanoose Bay in the Regional District of Nanaimo (RDN), BC (Figure 1). The Fairwinds lands are designated as urban growth areas within existing Urban Containment Boundaries in the RDN Regional Growth Strategy.

Pottinger Gaherty Environmental Consultants Ltd. (PGL) was retained to conduct an environmental impact assessment (EIA) of the proposed development as defined by The Lakes District and Schooner Cove Neighbourhood Plans (the "Project"). The Lakes District is a 287ha (709-acre) undeveloped property around Enos Lake that would be developed into a community of single-family homes, multi-family homes, commercial areas, and a large regional park. Schooner Cove is a partially developed 5.2ha (12.8-acre) coastal property that is proposed for a village centre and residential development. The Schooner Cove Neighbourhood Plan area also includes 6.4ha (15.8-acre) of water lots leased from the provincial and federal governments.

The purpose of this EIA is to:

- Provide a structured compilation and summary of the environmental and socioeconomic work completed to date as a third party audit of any limitations in scope and methodology;
- Conduct an assessment of the key issues related to the Project; and
- Identify future commitments required by Fairwinds to develop this Project with minimal impacts.

The EIA has been prepared for review by the RDN, provincial and federal agencies, and interested stakeholders.

The Fairwinds Project Team is a complete and diverse group of qualified professionals. The team includes:

- EKISTICS Town Planning Inc. – *Land Use Planning*
- Brook + Associates Inc. – *Public Consultation*
- Ear to the Ground Planning – *Video Planning*
- Arris Architecture Inc.– *Architecture*
- Cascadia Biological Services – *Environmental Consulting, Terrestrial and Freshwater Aquatic*
- Koers & Associates Engineering Ltd. – *Civil Engineering (water, sanitary and stormwater)*
- Opus International Consultants Ltd. – *Transportation Planning*
- EYH Consultants Ltd. – *Strategic Parking Analysis*
- I.R. Wilson Consultants Ltd. – *Archaeological Consulting*
- Trow Associates Inc. – *Geotechnical Consulting*
- Archipelago Marine Research Ltd. – *Environmental Consulting, Marine*
- GP Rollo & Associates Ltd. Land Economists – *Economic Impact Analysis*
- InterCAD Services Ltd. – *Road Engineering*

1.1 Key Contacts for EIA

Project Development	Russell Tibbles VP, Development and Operations – Fairwinds Bentall LP Fairwinds Community & Resort 3455 Fairwinds Drive Nanoose Bay, BC V9P 9K6 (250) 339-1777 rtibbles@bentall.com
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Environmental Impact Assessment	Matt Hammond Pottinger Gaherty Environmental Consultants Ltd. (PGL) 1200 – 1185 West Georgia Street Vancouver, BC V6E 4E6 (604) 895-7644 mhammond@pggroup.com

1.2 Regulatory Process

The Project is being designed to comply with federal, provincial, and regional government requirements pertaining to environmental issues. While there is no federal, provincial or local government requirement for an EIA at this time, Fairwinds has requested that this EIA report be prepared to apply the same environmental diligence to this Project as would be formally required of larger or more complex projects. The EIA has been prepared to support environmentally responsible development practices, the stakeholder consultation program, and the RDN's neighbourhood planning process.

Fairwinds is preparing Neighbourhood Plans for The Lakes District and Schooner Cove lands, which are designated areas for urban growth in the RDN's Regional Growth Strategy. Fairwinds has submitted two Official Community Plan amendment applications to the RDN for The Lakes District and the Schooner Cove lands with the intent of developing and seeking approval for Neighbourhood Plans for these areas.

The RDN website provides the following summary:

> "The Nanoose Bay Official Community Plan Bylaw No. 1400, 2005 (Official Community Plan) designates the Fairwinds and Schooner Cove areas within Urban Containment Boundaries (UCBs) where new growth is expected and encouraged. Schooner Cove is recognized as a Neighbourhood Centre and the creation of a future neighbourhood centre is encouraged within Fairwinds. The Official Community Plan provides a number of objectives and policies for creating these centres as well as the urban style development of Fairwinds. The development of a Neighbourhood Plan will provide a comprehensive approach to the planning of these areas."

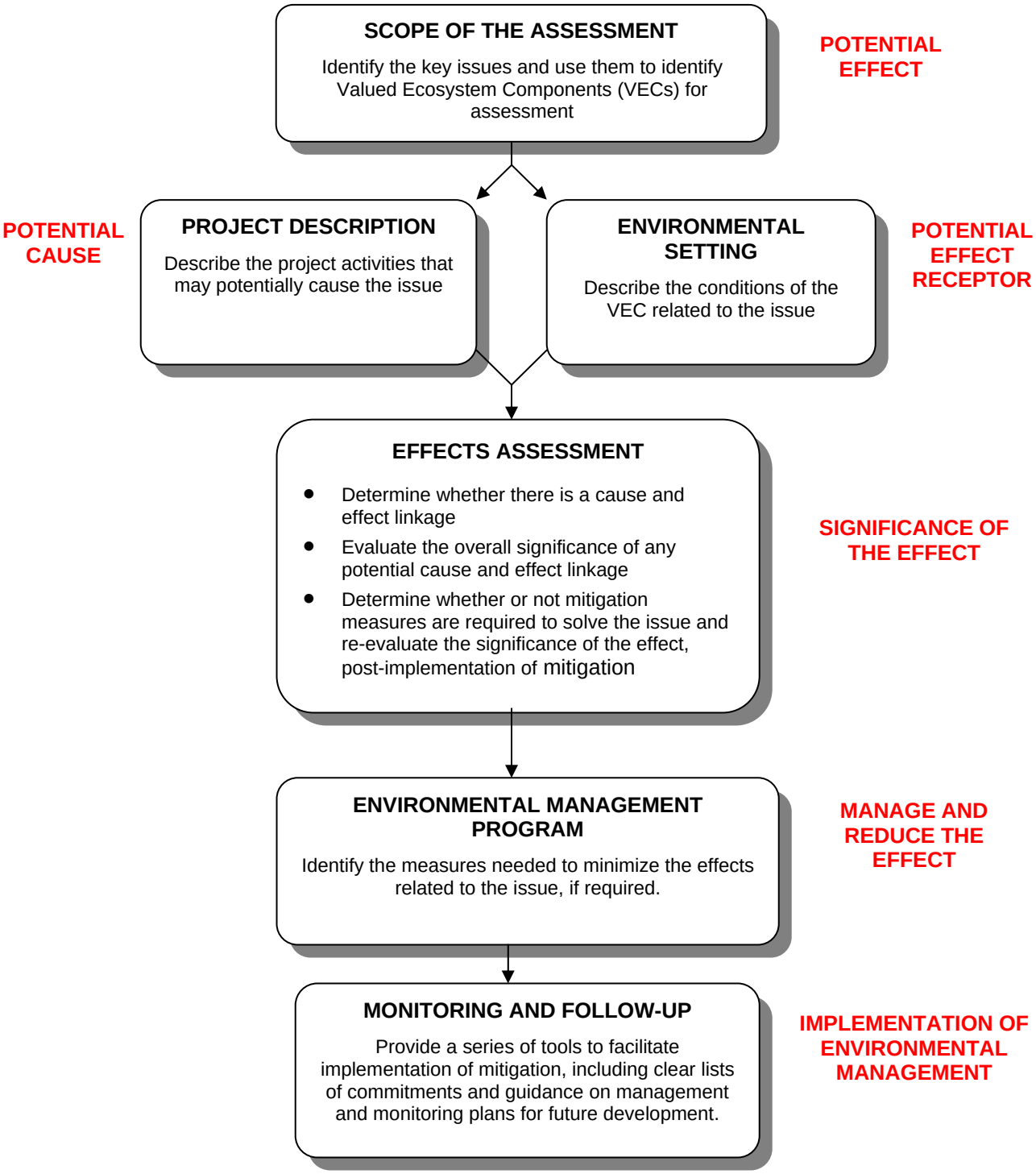
1.3 EIA Design

The objectives of this report are to:

- Identify and refine the environmental issues of concern to be addressed;
- Describe the project, with a focus on those activities that have potential to impact the environment;
- Describe the current environmental attributes of the site and surrounding area;
- Assess the environmental effects of the proposed project;
- Prescribe an environmental management plan (EMP) to mitigate any potentially significant effects; and
- Provide guidance on the implementation of the EMP though the documentation of Fairwinds' commitments and use of other management and monitoring tools.

Figure A shows how an issue is addressed in this report, and how the sections of this report interrelate.

Figure A: Environmental Assessment Flow Chart



2.0 CONSULTATION

The Fairwinds Project Team has been conducting a comprehensive community consultation process as part of the planning and design of the neighbourhood plans.

To partly achieve its goal of an inclusive, transparent consultation process, Fairwinds created a Community Advisory Group (CAG) which has the mandate for reviewing, commenting and advising on work proposed by Fairwinds' Project Team, including public consultation materials. The member groups of the CAG include:

- Fairwinds Community Association;
- Fairwinds Golf Society;
- Fairwinds Real Estate Management;
- Nanoose Naturalists;
- Nanoose Property Owners & Residents Association;
- Parks & Open Space Committee;
- Schooner Cove Yacht Club; and
- Other community members at large.

The Nanoose First Nation and the Nanaimo First Nation have both been invited to join the CAG and have so far declined participation.

A compendium of consultation reports and summary documents is in Appendix 1.

To date, the following consultation events have occurred:

- Three full-day design workshops in October of 2008 with members of the public, interest groups, and community associations to discuss and solicit input on neighbourhood plans for Lakes District and Schooner Cove (summary in Appendix 1);
- Nine CAG meetings to discuss various issues and opportunities related to both development areas, and review work prepared by Fairwinds' Project Team; and
- Three public open houses (May 2008, November 2008, and May 2009) to present planning progress and engage in discussion to solicit public feedback (summaries in Appendix 1).

In addition to public consultation, the planning process has included considerable consultation with regulatory agencies and technical advisors. A Technical Advisory Committee was established to review early comprehensive draft plans and to conduct technical review of the current more detailed draft plan. Parties that have been involved thus far include:

- BC Ministry of Environment (MOE) – Environmental Stewardship Division;
- BC Ministry of Transportation and Infrastructure (MOTI);
- Regional District of Nanaimo – Planning, Engineering, Waste Water Services, and Recreation and Parks staff;
- Garry Oak Ecosystem Recovery Team (GOERT); and
- Fisheries and Oceans Canada (DFO) – Oceans, Habitat and Enhancement Branch.

3.0 SCOPE OF THE ASSESSMENT

The scope of the assessment identifies the elements of the Project to be assessed, key issues of concern, and the spatial and temporal boundaries of the assessment. The scope provides the focus required to address the key issues.

3.1 Scope of the Project

An EIA must scope and focus the assessment on a well-defined project description. As it pertains to this EIA, the proposed Fairwinds Project consists of the following major components under three phases:

Pre-Construction Phase

- Detailed design of the Neighbourhood Plans including the refinement of the development footprint.

Construction Phase

- Clearing and grubbing of the development areas; and
- Construction of infrastructure (roads, pathways, water, sanitary, stormwater, and other public realm), buildings and landscape.

Operations Phase (Operating Community)

- Community amenities including marine waterfront at Schooner Cove and community facilities in The Lakes District area;
- Recreational use of trails and Enos Lake;
- Car traffic, parking and transit;
- Sewage treatment and disposal;
- Water use;
- Landscape maintenance;
- Stormwater management; and
- Solid waste disposal and recycling.

Activities that will be undertaken to construct and operate these project elements are also scoped into the assessment. These elements are further detailed in the Project description (Section 4.0).

3.2 Issues of Concern and Valued Ecosystem Components

We conducted a thorough scoping exercise to capture the major environmental and social concerns in the scope of the assessment. Using the considerable amount of information and input collected during the Fairwinds consultation process with various participating organizations, agencies, and public members during the Project design process, we identified the key issues to be addressed in this EIA. Through further review of the detailed field studies and other research conducted for the site, we were able to refine this list of issues to focus the assessment on the issues that could cause potential effects and thus require the greatest attention. These issues were then used in defining the Valued Ecosystem Components (VECs), which represent the elements of the environment of key concern for ecological, social, economic, or cultural reasons.

A VEC is defined by the Canadian Environmental Assessment Agency (CEA Agency) as:

> "Any part of the environment that is considered important by the proponent, public, scientists, or government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern."

We interpret the CEA Agency definition of "environment" to include socioeconomic elements (e.g., human society, economy and culture) as part of the natural ecosystem and all its organic and inorganic components. So, our VECs consist of components from physical, biological and human-based systems.

A series of VECs was chosen to represent the concerns that have been raised. This scoping of the issues is not done to place more value on certain components of the environment than others. Rather, it is done to ensure that the most important concerns expressed by the parties involved are addressed.

The VECs for this assessment are:

- Water quality and quantity;
- Aquatic ecology;
- Terrestrial ecology;
- Archaeology;
- Community and recreation;
- Transportation; and
- Local economy.

The assessment of potential effects on these VECs may focus on particular elements of a VEC, such as indicator species that are believed to be representative of a healthy habitat type and/or are locally valued. Using this approach, we will further drill down to address the elements of the VECs that are of highest concern.

General issues of concern can be better understood by examining a linkage between a project activity and the VEC that it may affect. Table A shows the proposed Project activities and identifies the VECs that they may affect. Each shaded box represents the results of a scoping exercise to identify the potential cause and effects that will be addressed in the effects assessment.

Table A: Project Activities and Valued Ecosystem Components

A shaded box indicates that the potential cause-and-effect linkage has been scoped into this assessment.

Project Activity	Valued Ecosystem Component						
	Water quality and quantity	Aquatic ecology	Terrestrial ecology	Archaeology	Community and recreation	Transportation	Local economy
Pre-Construction Phase							
Detailed design of development footprint	■	■	■	■	■	■	
Construction Phase							
Clearing and grubbing	■	■	■	■	■		
Construction of infrastructure and buildings	■	■	■	■	■	■	■
Operations Phase							
Community amenities (waterfront and Lakes area)		■			■		■
Recreational use of trails and lake	■	■	■		■		
Car traffic and parking	■	■	■		■	■	■
Sewage production	■	■					
Water use	■						
Landscape maintenance	■	■	■				
Stormwater management	■	■	■				

3.3 Assessment Boundaries

The spatial and temporal boundaries that contain the area and timeframe to be considered in the EIA are discussed below.

3.3.1 Spatial Boundaries

The EIA will address potential project effects within the Fairwinds' Lake District and Schooner Cove Neighbourhood Plan boundaries (Figure 1) and the neighbouring properties or marine waterfront that may be anticipated to be affected by project activities. This area defines the spatial boundaries of the assessment.

3.3.2 Temporal Boundaries

The EIA considers effects that may be caused during the detailed design stage to construction phase and for the foreseeable life of the community. These phases of the project comprise the temporal boundaries of the assessment.

4.0 PROJECT DESCRIPTION

The Project description is provided as context before the environmental setting (Section 5.0) and effects assessment (Section 6.0) are presented. The Project, as defined here, is the subject of the EIA and has evolved through the planning process with input from stakeholders and professional advice on environmental impact mitigation.

4.1 Site Location

The Project site is located within the Fairwinds lands in Nanoose Bay on Vancouver Island, about 30km north of Nanaimo (Figure 1). The Lakes District is a 287ha (709-acre) undeveloped property focused around the inland Enos Lake area. The Schooner Cove coastal property is 5.2ha (12.8-acre) and is currently partially developed with a cafeteria, store, former hotel building (vacant), marina access, parking lot, and tennis courts.

4.2 Project Background and Rationale

Fairwinds is undertaking this neighbourhood planning process to update previous master planning conducted for the property in 1983 (Figure 2).

Planning for new neighbourhood plans has involved:

- Re-examination of past planning,
- Identification of the community's core values,
- Commitment to meeting the community's long-term goals as identified by the RDN in the current Nanoose Bay Official Community Plan and through neighbourhood plan consultation, and
- Integrating sustainable design principles

In developing new plans for The Lakes District and Schooner Cove, Fairwinds is seeking to "balance the ecological, social, and economic needs of our future neighbourhood and community." A key component of developing a new land use vision has been the use of environmentally responsible practices as identified in *Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia* (MOE 2006) (see Sections 4.3 and 9.0).

The Fairwinds community consultation and planning process has focused on maximizing the following community values:

The Lakes District

- Public Parks, Trails, Open Space and Habitat Protection
- Future Growth Potential
- Housing Choice and Diversity
- Affordability (relative)
- Community Amenities
- Transportation Options and Mobility
- Community Vitality

Schooner Cove

- Public Access and Enjoyment of the Waterfront
- Neighbourhood Shops and Village Amenities
- Residential Housing Choices, Diversity and Character
- Access and Quality of Sidewalks, Trails and Open Space

4.3 Sustainability Principles

To guide the planning of the Fairwinds community, the design team adopted the following nine sustainability principles for a complete community design:

1. Conserve ecological integrity

- Identify and protect both significant and sensitive terrestrial and aquatic habitats.
- Design an interconnected network of wildlife corridors to secure habitat and ensure functional ecology at a landscape scale.
- Minimize future disturbance of natural systems through comprehensive master planning.
- Promote stewardship of natural systems through interpretive programs and outdoor educational opportunities in cooperation with local stakeholder groups.

2. Design compact, pedestrian-friendly neighbourhoods

- Create a sense of place within each neighbourhood that is defined by the land.
- Provide a coherent neighbourhood pattern of streets and pathways with a variety of home and lot sizes.
- Design people-friendly streets and ensure an enjoyable pedestrian experience.
- Encourage walking by integrating parks and trails within a five-minute walking distance of each home.
- Promote neighbourhood safety by designing homes that address the public realm with “eyes on the street.”

3. Employ green infrastructure

- Foster local food systems through support of local farms and markets, greenhouses, community gardening and outdoor educational opportunities.
- Utilize innovative best practices for rainwater and stormwater management.
- Explore alternative energy solutions, such as geo-exchange and passive solar design.
- Design greener streets that minimize the visual, environmental and physical impacts from conventional road building.
- Promote native plantings in landscape design, with special attention to xeriscaping and water conservation.

4. Create an integrated network of parks and green spaces

- Provide public parks and natural spaces within a five-minute walking distance of each home.
- Link neighbourhoods and natural areas with a pedestrian pathway network.
- Program spaces for both active and passive community parks for gatherings and recreation.
- Create a variety of types and sizes of parks and natural spaces to accommodate different activities and age groups.
- Plan shared recreational facilities to ensure maximum community use and cost effectiveness.

5. Celebrate local art and culture

- Design opportunities to live, work and sell in the community.
- Educate residents and visitors about local cultural history.
- Incorporate local culture and sense of place in the design of new developments.
- Plan for the integration of art, theatre, and other local cultural activities into the programming of community gathering spaces.
- Rekindle the spirit of the public realm, especially local streets, parks and plazas for the celebration of local art and culture.

6. Support an economically viable community

- Create a walkable village centre serving as a focal point for employment, shopping, education, recreation and social gathering.
- Incorporate residential density to support local businesses and community facilities.
- Plan compact communities to reduce infrastructure networks and maintenance costs.
- Develop a mix of uses within the community to foster local business, provide employment and increase the local tax base.
- Establish a varied mixture of land uses, household types and building forms for a variety of residents.

7. Foster a vibrant and diverse age-mixed community

- Provide a variety of housing choices, from compact homes to ridge-top estates.
- Accommodate a range of lifestyles and life-stages.
- Plan for “aging in place” through encouraging the “Safer Home” standards in response to a maturing population.
- Promote a variety of housing tenures (i.e., fee simple and strata ownership).
- Provide a range of amenities for all age groups throughout the neighbourhood.

8. Plan for alternative transportation

- Encourage all modes of transport, especially walking, cycling and public transit.
- Provide dedicated neighbourhood bike and pedestrian pathways to link community destinations.
- Explore future alternatives, such as community cars, to reduce auto dependence.
- Establish a transit-friendly street network, with future opportunity for full service transit.
- Reduce vehicle trips by locating basic neighbourhood services close to home.
- Explore use of electric car charging.
- Include small car stalls.

9. Celebrate the natural heritage

- Promote active education and appreciation of our west coast natural history.
- Integrate community uses into the landscape, celebrating the unique views and vistas, landforms and natural character.
- Retain the natural qualities and character of the landscape in the public realm.
- Nurture community history and memorialize local people, places and events.
- Design public spaces that reflect the sense of place through regional design and the use of local materials.

The Fairwinds neighbourhood planning process has already followed much of the guidance provided in the MOE "Develop With Care" document. Specifically, key elements of the Fairwinds planning process that have already accomplished objectives in "Develop With Care" include:

- Completion of preliminary and detailed site surveys by qualified biologists to identify sensitive areas and candidate areas for conservation;
- Integration of priority areas for protection into the Project design;
- Consideration of hazards such as terrain stability;
- Provision of wildlife corridors in the lot layout and road design; and
- Implementation of many Smart Growth principles.

Section 9.0 presents the results of a thorough consideration of the Develop With Care principles based on a generic checklist for developers.

4.4 Project Elements

This section describes the specific elements of the Schooner Cove and The Lakes District Neighbourhood Plans that will be the focus of the EIA.

4.4.1 Schooner Cove

The Schooner Cove property contains existing development, including the Schooner Cove Marina and office, a cafeteria, a liquor and convenience store, former hotel building (vacant), gravel and paved parking lots, tennis courts, and fragments of forest on undeveloped land. Schooner Cove is designated as a neighbourhood centre for the surrounding community including the Fairwinds urban containment area. As a result, the new vision for Schooner Cove plans for an almost complete redevelopment.

4.4.1.1 Site Plan and Lot Layout

The proposed neighbourhood plan for Schooner Cove is shown in Figure 3. The plan contains three distinct areas: the village centre (the Village), a waterfront residential area (the Waterfront), and a high-density residential area along Dolphin Drive (the Commons).

There is a mix of condominium and apartment units in approximately 12 multi-family buildings ranging from two to six storeys with a total of 395 residential units.

The proposed land use for the commercial and office space is shown in Table B.

Table B: Schooner Cove – Proposed Commercial Land Uses

Planned Land Use	Planned Area	
	m^2	ft^2
Market	700	7,534
Business Centre	156	1,679
Beer and Wine Store	145	1,560
Bakery / Cafe	145	1,560
Restaurant and Pub	394	4,241
Take Away Restaurant	78	840
Multi-Purpose Room	172	1,851
Discovery Centre	167	1,798
Boutique Spa and Salon	244	2,626
Professional and Medical Offices	102	1,098
TOTAL	**2,303**	**24,787**

Note: Excludes Marina Office and related amenities

4.4.1.2 Community Amenities

New community amenities in Schooner Cove are focused on enhancing the waterfront experience (Figure 4). The following public waterfront amenities are proposed:

- Waterfront boardwalk trail with connection to residential areas of Schooner Cove Village, existing Fairwinds neighbourhoods, and The Lakes District neighbourhoods;
- Marina wharf with potential enhancement of shoreline ecology;
- Marine activity dock;
- Village Point foreshore community gathering place with opportunities for marine enhancement;
- Shoreline access at Heron Point and the Breakwater Landing;
- Possible enhancements to the breakwater to provide a pathway and marine habitat enhancement;
- A sheltered Breakwater Pavilion; and
- Waterfront commons for small social gatherings.

Other publicly accessible amenities within the Village include:

- Commercial businesses (beer and wine store, bakery café, Dockside pub, restaurant, market post office, and salon and spa);
- Outdoor paths, plaza and seating near water feature;
- Professional offices and fitness centre;
- Boat and trailer access to a launch site; and
- Marina office and amenities.

4.4.1.3 Parking

Opus International Consultants Ltd. conducted a benchmark study of the application of parking requirements from other jurisdictions to the proposed commercial and marina portions of the Village program. Building on this, EYH Consultants prepared a strategic shared use parking study (Appendix 2). The shared use report determines that the proposed development can meet parking demand and also recommends sustainability measures to manage transportation demand. The recommended parking requirement for Schooner Cove Village is 160 spaces, composed of: 74 spaces for Schooner Cove commercial uses and 86 spaces for the Marina.

4.4.1.4 Stormwater Management

The Schooner Cove Existing Servicing Inventory Report by Koers & Assoc. Engineering Ltd. (Appendix 3) describes the existing stormwater infrastructure for the Schooner Cove development, which is owned and maintained by the Ministry of Transportation and Infrastructure (MOTI). The existing small and localized stormwater flows for the site discharge to the ocean via roadway catch basins to storm sewer mains and culverts, or overland discharge.

The future development at Schooner Cove will aim to improve stormwater management on the site with detailed stormwater engineering designs that follow DFO's *Urban Stormwater Guidelines and Best Management Practices for Protection of Fish and Fish Habitat* as much as possible given terrain constraints. Specifically, the site plan offers an opportunity to use the proposed water feature for stormwater treatment. A Schooner Cove Stormwater Management Plan will follow DFO best management practices (BMPs) to manage for:

- Volume reduction;
- Water quality; and
- Detention and rate control.

4.4.1.5 Water Supply System

The Schooner Cove Existing Servicing Inventory Report by Koers & Assoc. Engineering Ltd. (Appendix 3) describes the existing water supply infrastructure in the area. This report also determines that additional well sites in the area could support new development of The Lakes District and Schooner Cove neighbourhoods.

To meet the requirements of the Neighbourhood Plans, the RDN will ultimately supply potable water through a combination of groundwater from wells and surface water from the Arrowsmith Water Service (AWS), which is currently not fully developed. Initial phasing in the Lakes District and Schooner Cove Neighbourhoods will be supplied by the existing drilled wells on the Fairwinds-owned Wall Brook well site.

Land use planning, site design and land conservation for the Neighbourhood Plan supports water conservation measures, and future detailed design will achieve reduced water consumption by integrating low impact stormwater control measures for quality and quantity.

Fairwinds is committed to meeting the Water Management objectives and policies identified in section 2.3 of the Nanoose Bay Official Community Plan.

4.4.1.6 Sanitary Sewage System

The Schooner Cove Existing Servicing Inventory Report (2009 draft) (Appendix 3) explains that future Schooner Cove sanitary facilities would connect to the trunk sewer on Dolphin Drive for delivery to the Nanoose Water Pollution Control Centre at the west end of Dolphin Lake. A review

of sanitary sewage infrastructure upgrades and possible relocation (to a less urban area) to accommodate future development in the area is underway. The Nanoose Official Community Plan has recommended a secondary level treatment plant for the area, and the RDN is undertaking a Liquid Waste Management Plan for Nanoose to better determine future needs and suitable locations.

4.4.1.7 Hazard Management

A Preliminary Geotechnical Terrain Assessment for Schooner Cove has been prepared by Trow Associates Inc. (Appendix 5) to provide guidance for avoiding potential geologic hazards during the conceptual design of the development layout. The report identifies a single area of potential slope stability and rockfall hazard to the east of Schooner House. Overall, the report concludes that geologic hazards such as rockfall and slope stability issues, given application of appropriate avoidance or mitigation measures, have a low to very low probability of occurrence. The detailed design of the Schooner Cove Neighbourhood will include careful consideration of geologic hazards.

4.4.2 The Lakes District

The Lakes District neighbourhood planning process has been focused on preserving the natural values within the Enos Lake area and creating a community that emphasizes the nature-based recreational opportunities in the area.

4.4.2.1 Site Plan and Lot Layout

The Lakes District Neighbourhood Plan is presented in Figure 5. The proposed land use areas are estimated as shown in Table C.

Table C: Land Use Summary for The Lakes District Neighbourhood Plan Area

Land Use	Hectares	%
Traditional Single Family	66.80	23.3
Lakes Single Family and Duplex	35.30	12.3
Lakes Multi-Family	6.98	2.4
Community Mixed Use	1.39	0.5
Lakehouse Community Centre	0.92	0.3
Proposed Regional Park	92.14	32.1
Proposed Community Park (Natural Area)	42.50	14.8
Proposed Community Park (Programmed)	1.85	0.6
Civic Infrastructure	0.56	0.2
Future Development Reserve	8.42	2.9
Road right-of-way	30.44	10.6
TOTAL	**287.30**	**100**

The project layout has evolved with input from biological surveys of the site to identify environmentally sensitive areas that require protection. As a result, the present plan has been designed to maximize avoidance of special natural areas and connectivity between these areas.

4.4.2.2 Conservation Planning and the Parks Plan

Using data collected early in the design process to describe the existing ecology on the site, a conservation planning exercise was conducted to overlay the spatial ecology information with early community designs. This process enabled a redesign of specific areas to meet the dual objectives of: (a) proposing a viable community design, and (b) preserving the areas of highest environmental value. As a result, the merits of this conservation planning approach have been inherited through subsequent designs.

Specifically, the conservation planning focused on protecting Enos Lake, the Terrace Wetlands, Gary Oak Meadows, Ridge Lookout and Notch Hill. Figure 6 provides the following details of four elements of the conservation plan:

<u>Water and Wetlands</u>

With 8% of The Lakes District occupied by lakes, streams and wetlands, the protection of these features creates an opportunity to maintain natural function as well as character. Setbacks from water bodies ("buffers") follow provincial Riparian Areas Regulation requirements.

<u>Garry Oak Ecosystem</u>

Several pockets of the sensitive Garry Oak Ecosystem have been identified, comprising about 4% of The Lakes District area. Through sensitive design and monitoring, 100% of these areas will be preserved and protected.

<u>Wildlife Corridors</u>

Protecting wildlife movement and habitat, including Blue- and Red-listed species, through wildlife corridors is a provincial and regional goal. Wildlife corridors of 30–50m serve to maintain healthy habitat while linking to the recreation network.

<u>Environmentally Sensitive Areas</u>

Approximately 12% of The Lakes District area was classified as Environmentally Sensitive Area (ESA), as identified through ecological studies by Cascadia (Appendix 10)[1]. These are prime areas for conservation and enhanced recreation opportunity such as bird watching, hiking and environmental stewardship.

The conservation framework proposes to retain 90% of ESAs through park protection of 85% and conservation covenants of 5%.

The Neighbourhood Plan designates these areas as park to ensure the protection of natural values, recreational opportunities and landscape character of the Enos Lake area.

1 Cascadia's studies considered past work (e.g., *Sensitive Ecosystems Inventory (SEI) of East Vancouver Island and Gulf Islands*) to identify site sensitivities and produced detailed delineation of ESA based on site-specific studies.

The "Future Development Reserve" on Notch Hill has not been included in the park protected areas at this time, although Fairwinds has the intent that this developable land would be approved for residential use while being set aside for a period of years to facilitate the potential acquisition by the RDN for protection as a public park. Notwithstanding this area having been identified as legitimately developable land, Fairwinds recognizes the community's preference for this land.

The parks plan and restrictive covenant areas (Figure 7) are proposed to protect almost all of the environmentally sensitive features as indicated in Table D.

Table D: Park Protection of Environmental Features in The Lakes District

Type	Candidate Area (ha)	Proposed Park (ha)	Within Proposed Park (%)
Garry Oak meadows	14.1	14.1	100
ESAs	35.6	31.0	85 (90*)
Streamside Protection and Enhancement Area (SPEA)	19.2	17.6	92 (95*)
TOTAL	68.9	62.7	91% (93%)

*Up to an additional 5% of identified ESA and SPEA can be protected within restrictive covenants

4.4.2.3 Community Amenities

The Neighbourhood Plan aims to provide comprehensive community amenities. Recreational opportunities, community gathering places, natural parks, and open spaces are central to the set of amenities in The Lakes District community. Community amenities include:

- Lakehouse Community Centre on eastern shore of Enos Lake;
- Non-motorized boat access to Enos Lake;
- Potential for a community mixed-use commercial and Neighbourhood Centre development along Fairwinds Drive at the future intersection with Schooner Cove Drive; and
- Walking, hiking and bicycle path networks that are integrated with the surrounding areas.

4.4.2.4 Transportation

The road layout design is presented in the proposed development plan (Figure 5). Designing the road network faced challenges due to topographic and environmental constraints. The road design had the objective of crossing as few ESAs as possible while providing safe access to the developable lands and connectivity between urban areas for cars and cyclists. A strata street crossing of Enos Creek north of the causeway at the Enos Lake outlet is proposed (Figure 8). The design of the creek crossing will follow DFO's *Land Development Guidelines* and *Pacific Region Operational Statement – Small Clear-Span Bridges* as guidance to meet DFO requirements. The alignment of the major access road (Schooner Cove Road) between the two wetlands west of Enos Lake has been thoroughly reviewed and revised to minimize impact to the wetlands and wildlife (Appendix 6).

Opus International Consultants Ltd. conducted a traffic impact study (Appendix 13) that reviewed the traffic demands on the road network from future Fairwinds development and regional growth. The Opus study concludes that the proposed roads within Fairwinds have sufficient capacity to accommodate additional residential development as contemplated under the current Official Community Plan, and also suggests potential intersection improvements.

Regarding pedestrian and cycling networks, Opus stated:

> "The road network and allowances within Fairwinds generally provide pedestrian and cycling connections within the community. There is an expectation within Fairwinds, however, that as more development occurs in The Lakes District and Schooner Cove, roads constructed to urban standards can further add to the existing pedestrian and cycling facilities to support active living, healthy lifestyles, an alternative to automobile travel, and linkages to the larger network as per the RDN's Regional Parks and Trails Plan."

Fairwinds is pursuing an agreement with MOTI on "Project Specific Street Standards" which would improve the safety, efficiency and efficacy of road networks for urban developments with hillside conditions (Appendix 7). The proposed standards include the following benefits:

- Improved driver and pedestrian safety through reduction of design speed and greater "fit" of street alignments to existing landform;
- Reductions to construction and maintenance costs through minimization of required road platform widths and their associated cut and fill;
- Minimized scarring of hillsides through the reduction of cut and fill slopes;
- Improved water quality through the reduction of impervious surfaces and the minimization of stormwater discharge;
- Improved pedestrian safety (and experience) through the separation of vehicular and non-vehicular traffic; and
- Improved neighbourhood experience through the development of a more pedestrian-friendly streetscape.

4.4.2.5 Water Supply System

The Lakes District Existing Servicing Inventory Report by Koers & Assoc. Engineering Ltd. (Appendix 4) describes the existing water supply infrastructure in the area. This report also determines that additional well sites in the area could support new development of The Lakes District and Schooner Cove neighbourhoods.

To meet the requirements of the Neighbourhood Plans, the RDN will ultimately supply potable water through a combination of groundwater from wells and surface water from the Arrowsmith Water Service (AWS), which is currently not fully developed. Initial phasing in the Lakes District and Schooner Cove Neighbourhoods will be supplied by the existing drilled wells on the Fairwinds-owned Wall Brook well site.

Land use planning, site design and land conservation for the Neighbourhood Plan supports water conservation measures, and future detailed design will achieve reduced water consumption by integrating low impact stormwater control measures for quality and quantity.

Fairwinds is committed to meeting the Water Management objectives and policies identified in section 2.3 of the Nanoose Bay Official Community Plan.

4.4.2.6 Sanitary Sewage System

The Koers & Assoc. report (Appendix 4) explains that existing Fairwinds sanitary sewage is treated to a primary level at the Nanoose Water Pollution Control Centre at the west end of Dolphin Lake, before sewer mains direct it to the north side of Schooner Cove where it is released through a deep ocean outfall with an end diffuser on the ocean floor. As stated above, the Nanoose Official Community Plan recommends a secondary level treatment plant for the area, and the RDN is undertaking a Liquid Waste Management Plan for Nanoose to better determine future needs and suitable locations. Expansion (and possible relocation) of the Water Pollution Control Centre to secondary treatment is expected to include capacity for the new Schooner Cove and Lakes District Neighbourhoods.

4.4.2.7 Stormwater Management

The Koers & Assoc. report (Appendix 4) also presents the existing stormwater system. Key components of the current drainage system to outlets in the Strait of Georgia include: Dolphin Lake, the constructed Fairwinds Golf Course drainage and ponds system, Enos Lake and its ponds and northern outlet, and a piped outlet into Schooner Cove.

A particularly important component of the existing and future storm drainage to the southeast of Enos Lake is a constructed detention pond between the end of the piped system and the discharge into the existing natural pond upstream of the entrance into Enos Lake. Flow is first directed into an engineered wetland on the south side of Fairwinds Drive before discharging to the pond at the south end of Enos Lake. Construction of this engineered wetland was completed in the fall of 2008. As aquatic and semi-aquatic vegetation propagates, this wetland will provide capacity and treatment for drainage from a portion of existing and future planned development southeast of Enos Lake.

Fairwinds currently employs BMPs and stormwater management strategies as part of the Fairwinds Rainwater Management Strategy, which includes:

- Minimization of overall development footprints
- Minimization of impervious surfaces to reduce runoff
- Retention of native vegetation to absorb & infiltrate rainfall
- Constructed wetlands as an alternative to conventional, piped stormwater infrastructure
- Ongoing environmental monitoring to ensure proper function and overall health of natural systems

At the detailed design stage, an engineered Lakes District Stormwater Management Plan (SMP) will be designed following DFO's BMPs wherever feasible to manage for:

- Volume reduction;
- Water quality; and
- Detention and rate control.

Koers (Appendix 4) has described the conceptual SMP and has identified preliminary sites for onsite stormwater detention (Appendix 19). Given the site's generally rocky topography, there will be limited opportunities to rely on onsite stormwater infiltration, and it is expected that the SMP will include a number of engineered wetlands similar to existing detention ponds.

To further improve stormwater management in The Lakes District, Fairwinds is proposing the "Project Specific Street Standards" to MOTI (Appendix 7) to include BMPs in the road ROW and additional stormwater ponds. This initiative focuses on the first two of DFO's stormwater BMPs by reducing the volume of stormwater discharge, and improving water quality through the reduction of impervious surfaces.

The water management objectives and policies identified in section 2.3 of the Nanoose Bay Official Community Plan focus on the protection and conservation of water resources. Fairwinds plans to meet the requirements of these policies through the development of a detailed SMP following environmental best practices.

4.4.2.8 Hazard Management

A Preliminary Geotechnical Terrain Assessment for The Lakes District was conducted by Trow Associates Inc. (Appendix 8) to provide guidance for avoiding potential geologic hazards during the conceptual design of the development layout. The report identifies certain areas that are unsuitable for residential development due to geologic hazard, and certain areas that require mitigative works prior to construction. The proposed Neighbourhood Plan has been designed to avoid potential hazards and the detailed design of the lots and building envelopes will avoid or mitigate hazard occurrence.

5.0 ENVIRONMENTAL SETTING

The environmental setting presents information on the current condition of the physical, biological and socioeconomic components of the Project area. This information is used as the baseline for predicting any project-induced environmental effects.

Biophysical and socioeconomic information for this section was collected from various sources including:

- Geotechnical terrain assessments for Schooner Cove and The Lakes District by Trow Associates Inc. (Appendix 5 and 8);
- Biophysical assessments for Schooner Cove and The Lakes District by Cascadia Biological Services (Appendices 9 and 10);
- Nearshore Marine Assessment in Schooner Cove by Archipelago Marine Research Ltd. (Appendix 11);
- Archaeological Overview Assessment for The Lakes District by I.R. Wilson Consultants Ltd. (Appendix 12);
- Fairwinds Traffic Impact Study by Opus International Consultants Ltd. (Appendix 13);
- Fairwinds – Schooner Cove Parking Review by Opus International Consultants Ltd. (Appendix 14);
- Schooner Cove Neighbourhood Plan – Parking Study by EYH Consultants (Appendix 2);
- Economic Analysis by GP Rollo & Associates (Appendix 15);
- Comments in Public Open House summary reports (Appendix 1) and other consultation documents; and
- Observations made by PGL biologists during an October 2009 field visit.

The existing conditions are described below for Schooner Cove (Section 5.1) and The Lakes District (Section 5.2) study area.

5.1 Schooner Cove Existing Conditions

Schooner Cove's existing conditions are described in physical, biological and socioeconomic sections.

5.1.1 Physical Conditions

The following sections describe the physical characteristics of the terrain, hydrology and marine foreshore on the Schooner Cove site.

5.1.1.1 Terrain

Trow Associates reports that the terrain on the Schooner Cove property includes:

> "…a raised knoll in the central east portion with gently inclined side slopes connecting to the shoreline to the north and a relatively flat lying infilled ravine area to the south. The north and south flanks of the knoll contain numerous bedrock outcrops. This indicates a bedrock controlled topography with thin soil veneers in the area of the knoll." (Appendix 5)

The Trow report also describes the considerable man-made changes to the natural topography including significant fill in the areas of current development at the tennis courts, marina building and parking areas, and rock cuts along the road to the east side of the Schooner House. Test pits and boreholes indicate that fill in the parking areas consists of earth fill overlying bedrock or blasted boulder fill overlying bedrock. At the tennis courts, subsurface investigations found earth fill overlying native silt.

5.1.1.2 Hydrology

The Schooner Cove biophysical report by Cascadia (Appendix 9) identifies two small first order drainage ditches in the southeast part of the property that do not meet the definition of a stream, are not fish-bearing, and are not subject to the Riparian Areas Regulation. The courses of the drainage ditches appear to have been highly influenced by the local development of the adjacent Dolphin Road, the tennis courts and a gravel access road to the courts. Flow from these ditches leaves the property via underground flow for 50m before discharging into the ocean. See Appendix F of the Cascadia report for the mapped locations.

5.1.1.3 Marine Foreshore

The developed foreshore between the breakwater and the boat ramp has been highly altered by development of the marina, the Schooner Cove Hotel, and the Schooner House. The Trow geotechnical report (Appendix 5) indicates that large boulder fill has been placed along the foreshore from east of the breakwater to the western boundary of the property, creating gentler slopes along the foreshore.

The Archipelago Marine Research nearshore assessment (Appendix 11) notes the significant modifications of the shoreline west of the breakwater, and describes the small cobble beach to the west of the existing boat ramp. The breakwater is made of large riprap and extends about 250m into the ocean to protect the marina. East of the breakwater, the shoreline is natural bedrock for about 90m to the east boundary of the property.

5.1.2 Biological Conditions

The ecological values on the Schooner Cove site have been highly influenced by current development on the site and adjacent to the site. No freshwater fish habitat exists. The following sections review the marine and terrestrial ecology for the site.

5.1.2.1 Marine Ecology

In the short stretch of natural bedrock shoreline between the eastern boundary of the property and the breakwater, the Archipelago assessment (Appendix 11) observed the shoreline ecology as follows:

- Splash zone lichen, barnacles in the upper intertidal;
- Rockweed, barnacles, green algae in the intertidal; and
- Scattered bladed kelps in the nearshore subtidal.

The breakwater ecology features:

- Splash zone lichens, barnacles and *Porphyra* (dulse, a red alga) in the upper intertidal on the east side (outside) of the breakwater, while upper intertidal was bare on the inside; and
- Rockweed, barnacles, green algae, *Mastocarpus* (red alga), oysters, periwinkle snails, amphipods, purple sea star in lowermost intertidal.

The small beach west of the boat ramp contains scattered rockweed, barnacles and oysters in the intertidal zone. The artificial riprap shoreline between the boat ramp and the breakwater contains low habitat value, though the subtidal zone includes scattered bladed kelp, leather stars and sunflower stars.

Eelgrass is a valued habitat feature and was observed during the boat survey along the northwest area of Schooner Cove. The proposed Schooner Cove Neighbourhood Plan will not infringe on this section of the cove.

Wildlife that has been observed using the breakwater includes river otters, cormorants, and great blue herons. It is likely that these animals use the breakwater as a safe refuge or resting site.

5.1.2.2 Terrestrial Ecology

Terrestrial ecology studies of the Schooner Cove property (Appendix 9) were conducted by Cascadia Biological and focused on identifying vegetation and wildlife values of the site.

<u>Vegetation</u>

Cascadia conducted a vegetation assessment that resulted in the identification of over 30 plant species in four different types of vegetation communities (Appendix 9):

- Coastal bluffs;
- Douglas fir/Arbutus forest;
- Riparian; and
- Garry Oak/Arbutus.

The report identifies small patches of Garry Oak/Arbutus communities on the east side of the property, and two smaller patches of coastal bluff vegetation polygons on the point east of the Schooner House and along the shoreline on the east side of the property. This polygon on the east shoreline bluff is undeveloped though it has been highly impacted by invasive species such as Scotch broom. The fragmented patches of Garry Oak were determined to be of limited ecological value since they are small and not interconnected. The Douglas fir/Arbutus community was observed to have the greatest plant diversity on the site.

Wildlife

Cascadia biologists performed amphibian, bird and mammal surveys in the study area. The surveys observed the following:

- Two amphibian species (Pacific tree frog and roughskin newt);
- 18 bird species (songbird, diurnal raptor and nocturnal owl surveys); and
- Six mammal species (all common and expected).

The surveys focused on the detection of wildlife species at risk that may potentially occur on this site. No highly sensitive wildlife habitat was observed and no species of special conservation concern were observed.

Refer to Section 2.2.2 of Appendix 9 for the details of the wildlife surveys.

5.1.2.3 Species at Risk

The British Columbia Conservation Data Centre (CDC) is a part of the Wildlife Inventory Section of the Resources Inventory Branch of BC. This organization is responsible for collecting and storing information on rare and endangered plants and animals in BC. Species have been ranked by the CDC as either Red-, Blue-, or Yellow-listed. Red-listed species are considered extirpated, endangered, or threatened in BC. Blue-listed species are considered species of special concern, and Yellow-listed species are not at risk. The federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC) also lists species at risk as Endangered, Vulnerable or Special Concern.

Prior to conducting the ecology surveys, Cascadia queried the CDC database for the species at risk that occupy the region and presented the list in its report. The species were then reviewed considering the habitat available in the study area. During the field assessment, Cascadia focused on the species at risk that may potentially occur in the habitat types on the Schooner Cove property.

Cascadia observed one CDC Red-or Blue-listed species, or species on the federal COSEWIC list. The Pacific Great Blue Heron is Blue-listed in BC and Special Concern federally, and was observed in Schooner Cove. The shoreline habitat within the property does not contain good foraging habitat for this species and Cascadia confirmed that the forested areas do not contain potential heron nesting sites. The breakwater is a suitable resting site for herons. Double-crested Cormorants may also use the breakwater as a roosting site, and this species is also Blue-listed by the CDC.

No listed plant species were observed on the site during Cascadia's vegetation assessment. See Section 5.2.2.3 – Species at Risk for The Lakes District for further information on potential plant species in the area.

5.1.3 Socioeconomic Conditions

Socioeconomic elements are considered in the plans for a new development to establish modes of living that are compatible with the existing and anticipated future socioeconomic environment. The EIA includes socioeconomic considerations to ensure that there are no significant impacts to cultural, community, and economic values. Socioeconomic impacts may be a direct effect of the proposed project or an indirect effect of a physical or biological impact. Current socioeconomic conditions are presented under the headings of land use, local economy, archaeology, community and recreation, and transportation.

5.1.3.1 Land Use

Current land use of the Schooner Cove property includes the Schooner Cove Marina and office, a cafeteria, a liquor and convenience store, gravel and paved parking lots, tennis courts, and roadway (Outrigger Road).

Future land use planning for Schooner Cove is guided by the RDN Regional Growth Strategy and Nanoose Bay Official Community Plan. The Regional Growth Strategy designates Schooner Cove as a Neighbourhood Centre and Urban Containment Area.

5.1.3.2 Archaeology

The Schooner Cove area is within the asserted traditional territory of the Snaw-Naw-As (Nanoose) First Nation and the Snuneymuxw (Nanaimo) First Nation. I.R. Wilson Consultants Ltd. conducted an Archaeological Overview Assessment (AOA) and Preliminary Field Reconnaissance (PFR) of Fairwinds' neighbourhood planning area including Schooner Cove (Appendix 12). No archaeological sites are currently recorded in the Schooner Cove study area, though previously recorded sites are located in the general vicinity of the study area. No other documented archaeological assessments have been conducted within the proposed development area.

First Nations traditional use sites have been considered in the AOA in consultation with Chief David Bob of the Snaw-Naw-As (Nanoose First Nation). The general area south of Enos Lake and the Notch Hill area have been identified as areas that were traditionally used.

Based on the Project area's topographic and hydrological attributes, its proximity to numerous previously recorded archaeological sites, and its cultural significance as held by local First Nations, the AOA determines that certain undeveloped portions of the Schooner Cove property may have archaeological potential (Figure 2 of Appendix 12). This area may be further refined by a focused PFR, which is recommended to identify areas of perceived archaeological potential that require an Archaeological Impact Assessment (AIA). An AIA is performed to determine the presence of cultural deposits.

5.1.3.3 Community and Recreation

Existing community values, recreation opportunities and amenities on the Schooner Cove property include:

- Marina access;
- Boat launch;
- Parking;
- Convenience store and cafeteria;
- Tennis courts; and
- Small waterfront greenspace for gathering.

5.1.3.4 Local Economy

The local economy is currently limited to existing businesses in Schooner Cove. The Schooner Cove Regional Growth Strategy designates Schooner Cove as a Neighbourhood Centre and encourages redevelopment to sustain a strong neighbourhood commercial centre. The current Official Community Plan caps the residential units at 188, though an analysis by GP Rollo and Associates (Appendix 15) determined that this would not provide the sufficient critical mass to sustain a neighbourhood centre intended by the Regional Growth Strategy. More details are provided in Section 6.2.7 and Appendix 15.

Regarding local population trends, GP Rollo reports that:

- The population of the RDN is aging rapidly, and there is an increasing demand for apartment-type residential units;
- The combined population of the Schooner Cove and Lakes District is projected to increase 94% from 2009 to 2014; and
- The Lakes District and Schooner Cove today account for 22% of Nanoose Bay's population.

5.1.3.5 Transportation

Opus International Consultants Ltd. conducted a transportation study (Appendix 13) that reviewed the current road network in the local and regional area. The regional network is cohesive and efficient, forming connectivity with adjacent urban centres via the two main access roads into Fairwinds: Dolphin Drive and Powder Point Road. The local Nanoose Bay road network is made up of several main roads that connect to the main highway (Highway 19) allowing for access to communities north and south of the area. All of the major roads in Nanoose Bay are two-lane roads that are efficient and sufficient for existing and expanded traffic use.

Transit service in Nanoose Bay is operated by the RDN in partnership with BC Transit. Transit service is operated daily on Northwest Bay Road but does not currently service Schooner Cove. The RDN has reviewed transit access to Fairwinds and to Schooner Cove in the past and it is understood that they are continuing to explore ways to provide bus service to the area.

5.2 The Lakes District Existing Conditions

The existing conditions in The Lakes District study area are described in physical, biological and socioeconomic sections.

5.2.1 Physical Conditions

The topography of the 287ha study area is characterized by Notch Hill in the southwest corner of the site, Lookout Hill at the southeast corner, and various lower lying wetlands to the west of Enos Lake.

5.2.1.1 Terrain

A Preliminary Geotechnical Terrain Assessment for The Lakes District was conducted by Trow Associates Inc. (Appendix 8). The report described the terrain in the study area as characterized by bedrock-controlled undulating hills with some steep slopes and rocky outcrops. In general there is a thin soil layer over bedrock in steep areas with limited rockfall.

5.2.1.2 Hydrology

Enos Lake is the main hydrological feature that is fed by drainage from inputs from Enos Marsh at the south end and creeks draining several wetlands on the west side of the lake. Enos Lake drains northward under the existing causeway for the gravel access road and into wetlands that drain into a short Enos Creek that is culverted under Dolphin Drive to its outlet in the Strait of Georgia.

The biophysical assessment for The Lakes District by Cascadia Biological Services (Appendix 10) describes the watercourses and wetlands on the site and provides a water bodies map in Appendix F of the report. According to this map, there are ten watercourses that exist within the Neighbourhood Plan area. The watercourses range from primary watercourses to small first order channels that are likely ephemeral. There are nine wetlands/ponds of varying sizes scattered across the site.

Most of the water input to Enos Lake is from two creeks along the northwest end of the lake as well as from a newly constructed stormwater detention area feeding into Enos Marsh providing stormwater control for newly developed areas along Bonnington Drive.

Intensive field surveys of the watercourses in the watershed have led to a solid understanding of their characteristics and relative value to the Enos Lake hydrologic regime. See Table 14 in Appendix 10 for details of watercourses in and adjacent to the Neighbourhood Plan area.

5.2.2 Biological Conditions

Detailed biological studies of aquatic habitat, vegetation ecology, wildlife, and species at risk provide a comprehensive review of the current biological environment in The Lakes District. Cascadia's ecological studies focused on identifying sensitive areas considering past work (e.g., *Sensitive Ecosystems Inventory (SEI) of East Vancouver Island and Gulf Islands*) and the results of detailed site-specific studies for a refined delineation of the sensitivities on the property.

5.2.2.1 Aquatic Ecology

Based on studies conducted by Cascadia, fish presence in the study area is limited to the stickleback in Enos Lake and Enos Creek. Steep topography and numerous barriers to upstream fish migration explain the absence of salmon in the watershed. Tributaries streams to Enos Lake are non-fish-bearing as a result of barriers at their outlets to Enos Lake, though they are considered fish habitat as they provide flow and nutrients to downstream fish habitat in the lake.

Cascadia conducted an assessment on the water bodies in the study area following methodologies consistent with provincial Riparian Areas Regulation (RAR) legislation. This RAR assessment determined the required setback, or streamside protection and enhancement area (SPEA) for each watercourse. SPEA determinations are included in the Environmental Constraints Map in Appendix H of the Cascadia report (Appendix 10).

The Stickleback Species Pair Recovery Team has recently concluded that the species pair in Enos Lake has hybridized and is considered extinct. Historically, the Enos Lake Stickleback was two species—a limnetic and benthic stickleback—which were valued for their uniqueness and scientific interest regarding evolutionary biology. Unique stickleback pairs are known to have existed in four other low-elevation lakes in the Georgia Basin. Both the Enos benthic and limnetic species were listed as Endangered by COSEWIC and protected under the federal *Species at Risk Act* (SARA) because their existence was restricted to Enos Lake and recent surrounding land uses threatened their survival. The Stickleback Species Pair Recovery Team was formed to develop a recovery strategy pursuant to SARA. A study by Rosenfeld of MOE (Rosenfeld et al., 2009) concludes that the extinction of the Enos species to a “hybrid swarm” was likely caused by habitat alteration due to an introduced crayfish population. There is currently no protection for the hybrid species under SARA, as this determination rests with the federal government.

5.2.2.2 Terrestrial Ecology

Mapping of the site’s vegetation and terrestrial ecology provides a description of the existing plant communities and their classification according to the Biogeoclimatic Ecosystem Classification System of BC (BEC). The baseline ecological conditions have been used to assess the Project impacts on valued vegetation components, wildlife habitat, and species at risk, and to guide potential impact mitigation and enhancement measures.

Vegetation

Cascadia conducted a vegetation assessment of The Lakes District area that resulted in the identification of five different types of vegetation communities (Appendix 10):

- Douglas Fir/Arbutus Woodland Open Canopy Ecosystem;
- Douglas Fir Woodland Ecosystem;
- Riparian Ecosystem;
- Garry Oak Meadow Ecosystem; and
- Garry Oak/Arbutus Woodland Ecosystem.

The five ecosystem types were delineated and mapped (see “Ecosystem Map” in Appendix E of Appendix 10). The ecosystems of highest sensitivity that were added to the overall Environmental Constraints Map (Appendix H of Appendix 10) were:

- Riparian areas (as SPEAs);
- Garry Oak meadows; and
- Garry Oak/Arbutus Woodland (as "sensitive environmental polygons").

The study area is within the Moist Maritime subzone of the Coastal Douglas Fir zone according to the BEC. According to the Cascadia report, the CDC lists 35 rare and endangered plant communities in the South Island Forest District within the Coastal Douglas Fir zone, including 28 Red-listed and seven Blue-listed plant communities. There are no legal requirements currently to protect Red- or Blue-listed plant communities; however, best management practices include making efforts to retain as many of these areas as possible.

Based on the field assessment, three Red-listed communities were identified (Appendix E of Appendix 10):

- Douglas fir/Arbutus in the majority of the site;
- Garry Oak/Arbutus on rocky outcrops; and
- Garry Oak meadows (California Brome subdominant).

Cascadia ranked the relative sensitivities for the listed ecosystems and determined that the Douglas fir/Arbutus ecosystems are low-moderate and the Garry Oak/Arbutus and Garry Oak meadows are high because they are in a mature seral stage. As well, the Garry Oak meadows and Garry Oak/Arbutus woodlands would have the highest likelihood of containing plant species at risk.

The Garry Oak meadows are of highest priority for protection and the Fairwinds team worked with the GOERT to ensure the correct identification and avoidance of Garry Oak meadows polygons in the Project design (Figure 2 of Appendix 10).

Wildlife

Cascadia biologists conducted amphibian, bird and mammal surveys in the study area with a special focus on detecting the species at risk that may occur in the area. The surveys observed the following (Appendix 10):

- Three amphibian species (roughskin newts, red-legged frogs and pacific tree frogs);
- Two reptile species (northern alligator lizard and garter snake spp.);
- 62 bird species (songbirds, diurnal raptors and owls);
- Three small mammal species (red and grey squirrels, and deer mouse);
- Four medium-sized mammal species (raccoon, Eastern cottontail, beaver, river otter); and
- Two large mammal species (cougar and black-tailed deer).

No heronry/rookery sites were noted within the study area. Bald eagles were observed nesting in the area with an eagle nest located near the north end of Dolphin Lake. Eagle and heron nests are protected year-round from disturbance by the BC *Wildlife Act*.

Other key wildlife observations include:

- Red-legged frogs (Blue list) were caught in minnow traps at wetlands in four locations across the site. Given the distribution, it is likely that red-legged frogs could occur in parts of most wetlands on this property;
- No Vancouver Island water shrews (Red list) were caught during the small mammal trapping or minnow trapping surveys;
- No sharp-tailed snakes (Red list) were observed during surveys using artificial covers (T. Roy, *pers. Comm.*);
- No Western Screech-owls (Blue list) or Northern Pygmy Owls (Blue list) were observed during nocturnal call-playback owl surveys; and
- Beavers were observed in the two large wetlands west of Enos Lake.

Refer to Section 2.2.2 of Appendix 10 for the details of the wildlife surveys.

Species at Risk

Prior to conducted the biology field study, Cascadia queried the CDC database for potential or known occurrences of rare and endangered species for the study area to scope the priorities for the investigation. The vegetation fieldwork included coarse-level survey and assessment of plant species at risk with a particular focus on development areas. During the vegetation assessment, no plant species at risk were identified, and the Cascadia report lists the species identified during the field quadrants in each ecosystem type.

The overview plant species at risk survey indicates that the occurrence of these species in development areas may be low, though the CDC indicates that there are approximately 37 plant species at risk that may occur in and around the habitats identified on this site (Appendix 16). Many of these species are associated with habitat types that are almost entirely protected within the Neighbourhood Plans: Garry oak ecosystems, rocky bluffs, and riparian areas. The Project proposes to protect over 90% of these habitat types, including all of the Garry oak meadows.

While there are no known occurrences in the study area, plant species at risk are known to have occurred in adjacent areas in the Garry oak ecosystems on the south side of Nanoose Hill (Notch Hill) on Department of National Defence land to the south of the Fairwinds property. As a 'best practice' approach for the construction of the Project, detailed plant species at risk surveys are recommended in specific areas of highest risk to identify and mitigate impacts (see Section 6.2.3 for the assessment of impacts on plant species at risk).

The wildlife surveys focused on the detection of wildlife species at risk that may potentially occur on this site and identified four Blue-listed species:

- Barn swallow;
- Great Blue Heron;
- Olive-sided flycatcher; and
- Red-legged frog.

Together, these species rely on wetland habitats and mature riparian forests. Barn swallows rely almost exclusively on human-made structures to build their nests but will forage in open wetland areas. Great Blue Herons do not have good nesting habitat on the site but will forage in the wetlands. Olive-sided flycatchers may occur in the summer breeding season and prefer mature riparian forest near natural openings near water. Red-legged frogs inhabit wetlands and riparian forest.

As described above (Section 5.2.2.1), the Enos Lake stickleback pair species are extinct in the wild.

5.2.3 Socioeconomic Conditions

Information on existing socioeconomic conditions is presented for land use, water use, archaeology, community and recreation, local economy, and transportation.

5.2.3.1 Land Use

Historical land uses of the study area included forestry, cordite manufacturing and gravel mining, and First Nations traditional use of the area for deer hunting and collection of plants and herbs. The dam (causeway) at the Enos Lake outlet was built in 1958 for water management purposes. The dam and causeway was reconstructed in 1994 at the request of MOE.

Presently, the area is used primarily for recreational purposes such as trail hiking and nature observation. There is little to no recreational use of the ponds or Enos Lake on the property.

5.2.3.2 Water Use

Historical use of the water body includes a rainbow/cutthroat trout stocking program in 1948, and as a source of freshwater (facilitated by the dam) for local residents. Fairwinds holds the only current water licences (two) in The Lakes District for the water storage and watering use of water in Enos Lake that is pumped to Dolphin Lake in the summer months for golf course irrigation.

5.2.3.3 Archaeology

The Lakes District area is within the asserted traditional territory of the Snaw-Naw-As (Nanoose) First Nation and the Snuneymuxw (Nanaimo) First Nation. I.R. Wilson Consultants Ltd.'s AOA and PFR of Fairwinds' neighbourhood planning area (Appendix 12) revealed that the boundary of one archaeological site is located in the study area. This site is also a recorded historical site related to the operations of the Giant Powder Company between 1911 and 1925 which is focused on Department of National Defence lands to the south, with the northernmost portions of the site extending onto Fairwinds' property at the eastern base of Notch Hill. No other documented archaeological assessments have been focused within the proposed development area.

First Nations traditional use sites have been considered in the AOA in consultation with Chief David Bob of the Snaw-Naw-As (Nanoose First Nation).

Based on the Project area's topographic and hydrological attributes, its proximity to numerous previously recorded archaeological sites, and its cultural significance as held by local First Nations, portions of the study area are considered to have "moderate" archaeological potential. Based on the AOA, if sites are present, they are expected to be relatively small.

To address the potential impact to possible archaeological sites, an AIA is recommended to determine the presence of cultural deposits where proposed land disturbance overlaps with the areas of archaeological potential, which may be refined through focused PFR work once the detailed locations of buildings are determined. The AIA would be undertaken at the detailed design stage (subdivision and building permit) once boundaries of footprint impacts can be identified in the field.

5.2.3.4 Community and Recreation

Currently, The Lakes District is primarily valued for its existing recreational opportunities related to trail hiking and biking, and nature appreciation. Of special interest to nature observers are the Garry Oak meadows and viewpoints on Lookout hill and Notch Hill, the wetlands west of Enos Lake, the Enos Creek wetlands, and Enos Lake itself. Apart from a trail network and two trailhead parking lots on Fairwinds Drive, there are no other community amenities within The Lakes District area.

5.2.3.5 Transportation

Opus International Consultants Ltd. conducted a transportation study (Appendix 13) that reviewed the current road network in the local and regional area. The regional network has already been described in Section 5.1.3.5.

Transit service in Nanoose Bay is operated by the RDN in partnership with BC Transit. Transit service is operated daily on Northwest Bay Road but does not currently service Fairwinds Drive. The RDN has reviewed transit access to Fairwinds lands in the past and is continuing to explore providing bus service to the area.

6.0 EFFECTS ASSESSMENT

This section addresses potential environment effects of the Project. The goal is to determine whether or not any potential effects are adverse, significant and likely, and if environmental management measures are needed to minimize the effect.

Under the *Canadian Environmental Assessment Act* (CEAA), the environmental effects of the project must be assessed. CEAA defines “environmental effect” as:

(a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*,

(b) any effect of any change referred to in paragraph (a) on

  (i) health and socioeconomic conditions,

  (ii) physical and cultural heritage,

  (iii) the current use of lands and resources for traditional purposes by aboriginal persons, or

(iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or

(c) any change to the project that may be caused by the environment, whether any such change or effect occurs within or outside Canada

This section contains:

- The methodology used in the assessment; and
- An effects assessment of:
  - Each VEC;
  - Accidents and malfunctions;
  - Effects of the environment on the Project; and
  - Cumulative environmental effects.

Our effects assessment is based on the requirements of both CEAA and the BC *Environmental Assessment Act*.

6.1 Effects Assessment Methodology

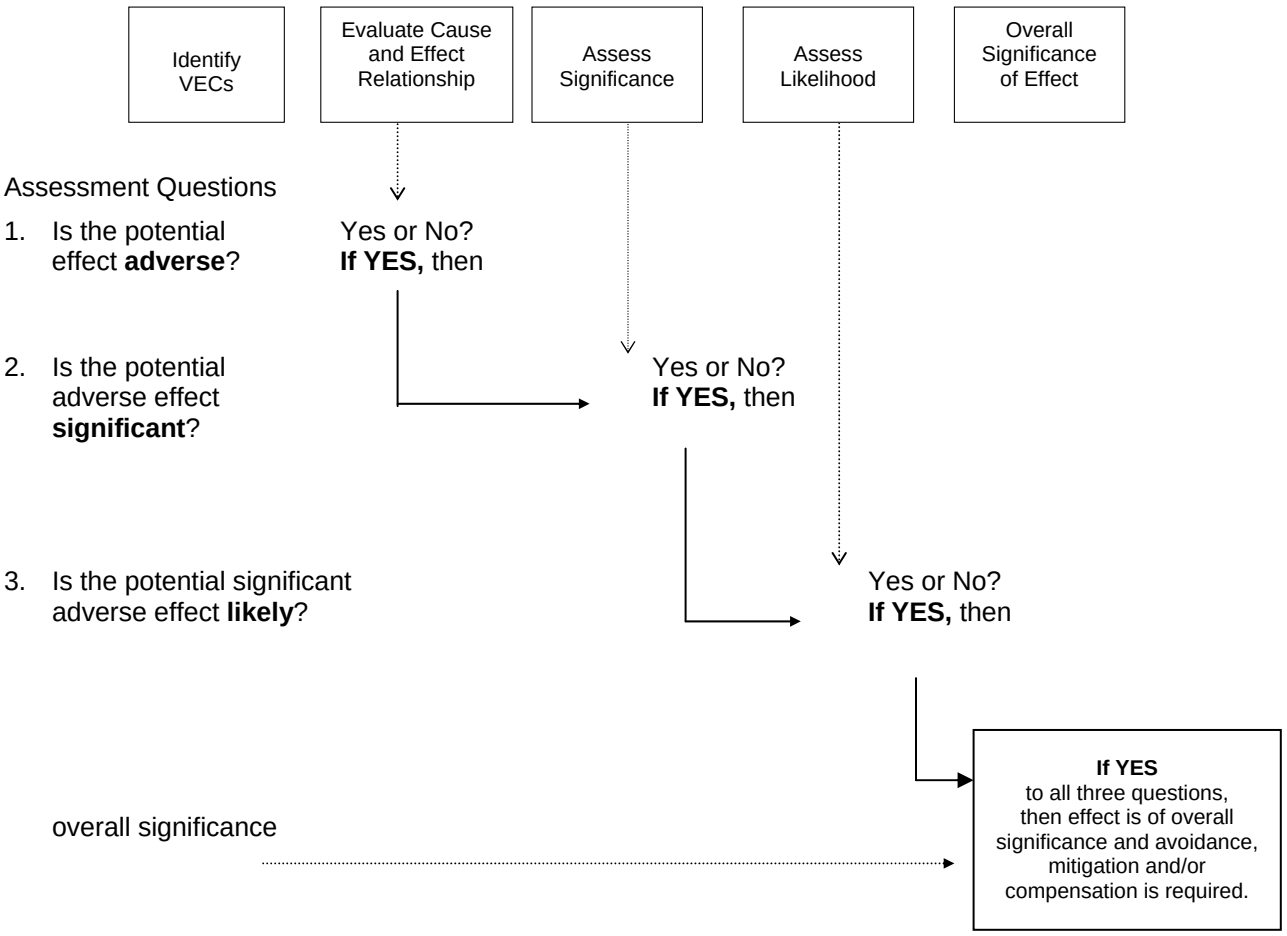
The effects assessment focuses on identifying Project activities with the potential to cause effects on VECs. An evaluation of the adversity, significance and likelihood for the effects related to each VEC leads to an assessment of the overall significance of the effect. Effects that are adverse, significant and likely are of overall significance and are addressed in the proposed environmental management plans that are designed to avoid or mitigate Project effects.

The effects assessment plays an integral role in identifying the mitigation measures. The methodology for the effects assessment is framed by three questions:

- Are the environmental effects adverse?
- Are the adverse environmental effects significant?
- Are the significant and adverse environmental effects likely?

For an effect to be considered of overall significance, the answer to all three questions must be "YES," as illustrated in Figure B. This methodology has been adapted from the CEAA guidebook (CEAA, 1994) and represents a transparent and consistent method for the assessment of environmental impacts.

Figure B: Flow Chart of Effects Assessment Process



6.1.1 Determining Adverse Effects

The first step in the effects assessment process is to determine if there is a potential adverse effect. This involves examination of the possible cause and effect relationship between a project activity and an effect on a VEC. Where there is reason to believe that there is a causal relationship, it is decided whether or not the effect is adverse (i.e., produces a negative effect on the environmental condition of the VEC). Adverse effects are considered at the next stage (Determination of Significance). Effects that are not adverse or not believed to be related to project-induced causes are excluded from the remaining assessment. Those effects that have been avoided completely through project design are also excluded.

6.1.2 Determination of Significance

Determination of significance involves a blend of scientific analysis and professional judgement. In an attempt to bring some precision to the term, a set of measures of significance has gained general acceptance (CEAA, 1994). The measures of significance typically considered in an EIA include:

Geographic extent *Over how large an area does the adverse effect occur?*

Temporal extent
Duration *Once triggered, how long does the adverse effect last?*
Frequency *How often does the adverse effect occur?*
Reversibility *Is the adverse effect reversible or is it permanent?*

Magnitude *How severe is the effect?*

In this assessment, duration, frequency and reversibility will be considered part of the temporal extent of the effect. The framework for the significance assessment and how several measures of significance are considered is shown in Table E. Along with determinations of adversity and likelihood, significance is considered in the evaluation of overall significance.

Table E: Eight Potential Outcomes of the Test for Significance (showing the four that are considered significant)

Geographic Extent	Temporal Extent	Magnitude	Description of the Potential Effect	Significant?
H	H	H	A strong effect that is long-lasting and/or frequent, and covers a large area.	YES
H	H	L	A weak effect that is long-lasting and/or frequent, and covers a large area	YES
H	L	H	A strong effect that covers a large area, but does not last long or occur frequently	YES
L	H	H	A strong effect that is long-lasting and/or frequent, but does not cover a large area	YES
H	L	L	A weak effect that covers a large area, but does not last long or occur frequently	NO
L	H	L	A weak effect that is long-lasting and/or frequent, but does not cover a large area	NO
L	L	H	A strong effect that is not long-lasting and/or frequent, and does not cover a large area.	NO
L	L	L	A weak effect that is not long-lasting and/or frequent, and does not cover a large area.	NO

Note: H = High L = Low

Definition of Terms

For this assessment, the terms used to rate the potential effects are defined below. To rate an effect in these terms, we use a combination of:

- Scientific site-specific evidence;
- Available information from similar observed effects; and
- Professional judgement, using precaution whenever necessary.

Geographic Extent

Over how large an area does the adverse effect occur?

Term	Definition
High	The effect occurs in an area ≥ 25% of the area of concern for the VEC.
Low	The effect occurs in an area < 25% of the area of concern for the VEC.

Temporal Extent

Once triggered, how long does the adverse effect last, and how often does it occur?

Term	Definition
High	The effect is long-lasting, and/or occurs frequently.
Low	The effect neither lasts long, nor occurs frequently.

Magnitude

How large is the effect relative to the geographic area?

Term	Definition
High	The effect causes a ≥ 25% change in the VECs abundance/function/ process/value.
Low	The effect causes a <25% change in the VECs abundance/function/ process/value.

6.1.3 Determination of Likelihood

The determination of likelihood uses probability data, where available, to predict the chance that a particular effect might occur. Where probability data are not available, professional judgement is applied based on an understanding of past scenarios that are similar to those presented here.

6.1.4 Overall Significance

The assessment determines if the effects are adverse, significant, and likely. Those effects that are found to meet all three criteria are judged to have an effect with an overall significance and will be subject to environmental management measures. Effects that are not found to be adverse/significant/likely will be eliminated from further consideration. Management measures are proposed to reduce the overall significance of the potential effects.

6.1.5 Residual Effects

Once the determination of overall significance of effects is complete, then management measures that may reduce the effects are considered. Appropriate measures are chosen as the basis for the Project's EMP. The goal of the mitigation measures is to reduce the effects to insignificant levels. The mitigation proposed must be directly related to the predicted effects, or they will not have the desired goal of eliminating or reducing the overall significance. The effectiveness of the mitigation is judged by reassessing the significance of residual effects assuming successful application of the management measures.

6.2 Effects Assessment per VEC

Based on an assessment of the key issues related to each VEC, no significant residual effects are anticipated for the Project. Each VEC's effects assessment is presented in a table that shows the results of the methodology described above for each potential effect of concern. These assessment tables are compiled in the attached 'Tables' section, and should be reviewed with each of the sections below.

For each VEC, a number of specific potential effects are examined. The identification of these effects is the result of the scoping exercise to focus the assessment on the potential impacts of concern (Section 3.2).

6.2.1 Water Quality and Quantity

The water quality and quantity values for this study area focus on the natural waterbodies in The Lakes District area and the marine environment near Schooner Cove. The effect of the proposed community's water demand on the regional water supply has also been a concern of some local residents.

Nine potential effects on water quality and quantity are evaluated in this assessment. The results of these assessments are summarized in Table 1, and the following potential effects are assessed:

- Impacts to water quality due to vegetation removal within the Project footprint;
- Impacts to water quality from construction near waterbodies;
- Alterations to surface and subsurface hydrology;
- Impacts to water quality due to post-development stormwater runoff;
- Impacts to water quality from community pesticide and fertilizer use;
- Impacts to water quality from recreational use of the lake;
- Impacts to regional water supply from community water use;
- Impacts to marine water quality due to sewage discharge; and
- Impact to water quality in Enos Lake and wetlands due to introduction of invasive species (plants and animals).

The overall residual effects on water quality and quantity are expected to be negligible based on the implementation of proposed environmental mitigation measures. Refer to Section 7.1 of the Environmental Management Plan (EMP) for more details on proposed mitigation. Key mitigation measures to protect water quality and quantity include:

- Design a clear span bridge for the crossing of Enos Creek following the DFO Operational Statement for clear span bridges, or another design suitable for DFO approval;
- Develop a Stormwater Management Plan (SMP) that follows DFO's BMPs for reducing water quality impacts. The primary mitigation measures will include volume reduction and rate control strategies. A Hydrological Impact Assessment will be completed in conjunction with the SMP to assess detailed impacts to the area's hydrologic regime and meet the expectations of Policies 6 and 8 section 2.3 (Water Management) of the Nanoose Bay Official Community Plan;
- Following detailed design and prior to construction, develop and implement a Construction Environmental Management Plan (CEMP), including an engineered erosion and sediment

control plan, that will be monitored by a qualified professional Environmental Monitor. A specific section to address environmental protection during shoreline works in Schooner Cove will be required;
- Implement a post-construction Enos Lake Protection and Monitoring Program that includes water quality sampling, and observations for invasive species presence and proliferation;
- Prepare and provide future lot purchasers with an Environmental Homeowner's Manual that describes nearby environmentally sensitive areas and prescribes environmentally friendly practices for landscape maintenance to reduce chemical pesticide and fertilizer use, and maximize water conservation following guidance from the RDN WaterSmart program;
- Prepare and implement integrated pest management practices for maintenance of common lands following environmentally friendly practices without the use of toxic chemicals; and
- Develop invasive species management practices as part of the Enos Lake Protection and Monitoring Program that includes methods to minimize the risk of introduction of invasive aquatic plants and animals to Enos Lake.

Significant design elements have already been incorporated into the project to reduce impacts on water quality and quantity with emphasis placed on preserving riparian setbacks as a natural means of protecting water quality. Provision of suitable riparian setbacks further provides opportunity for the absorption of stormwater before it reaches a water body. Residents will also be encouraged to use best practices in and around water bodies. The extent of the residual adverse impacts to water quantity and quality as a result of the development is expected to be low.

6.2.2 Aquatic Ecology

The primary freshwater ecosystems of the Enos Lake watershed consist of Enos Lake, Enos Creek (and wetland) and the three main wetlands that flow into Enos Lake including the interconnecting creeks. The marine ecosystem of Schooner Cove is another component of the study area's valued aquatic ecology.

Due to the project's proposed work in and about aquatic habitat, impacts to aquatic ecology could potentially occur as a result of project activities. Fisheries sensitive areas can be found both in the riparian and instream portions of watercourses in the project area, as well as the marine foreshore, intertidal and subtidal areas. Riparian areas surrounding both ephemeral and permanent watercourses provide cover habitat and a source of nutrients for fish habitat. Foreshore, intertidal and subtidal areas provide habitat for a wide variety of fish and other marine species.

Nine potential effects on aquatic ecology are evaluated in this assessment. The results of these assessments are summarized in Table 2, and the following potential effects are assessed:

- Loss of cover habitat and nutrient sources due to removal or disturbance of riparian vegetation;
- Impacts to waterbodies during construction and upgrade of roads over or adjacent to waterbodies.
- Impact to the marine ecology of Schooner Cove from alterations to foreshore, intertidal and subtidal habitat; and
- Degradation of riparian vegetation and instream integrity through physical disturbance from humans and pets.

Issues related to impacts to water quality and quantity have already been addressed in Section 6.2.1. Appropriate mitigation measures to protect water quality and quantity are proposed to avoid significant impacts to aquatic habitat as a result of project activities. Impacts from physical disturbance to aquatic habitat, including riparian areas, are covered in this section.

6.2.2.1 Riparian Areas

The retention of riparian areas is a critical aspect of preserving aquatic habitats. To provide input to project design, Cascadia conducted a RAR assessment on the water bodies in the study area to define the SPEA for each water body (Appendix 10). The SPEAs were then used to define the conservation areas and the project lot layout and road network were designed around these areas (see Figure 6 and Figure 7). Specific attention was given to the alignment of the main road (Schooner Cove Drive) to avoid impacting riparian habitat between the two large wetlands west of Enos Lake. As a result of this focus on preserving riparian habitat, the proposed plan protects 92% of SPEAs and would be able to protect 95% with the addition of restrictive covenants on lots backing onto riparian areas. This will be a particularly valuable achievement in environmental protection.

Figure 8 shows how the proposed project layout relates to the SPEAs as defined by the RAR assessment. A detailed examination of this map to support an assessment of potential impacts identified that the SPEAs around all the significant water bodies are protected, but that four small watercourses would need to be altered by the proposed plan. These non-fish-bearing ephemeral watercourses are not critical aquatic habitats though they do contribute nutrients and flow during the wet months to downstream habitats. Three of these watercourses are located at the north edge of the property: one flows north at the northwest corner of the property (Stream #2 in the Cascadia report); one flows north about 100m east of the Enos Creek wetlands and presumably contributes to the stormwater drainage from the developed properties on Harlequin Crescent; and the last one is a short drainage course at the northeast corner that passes towards developed properties on Dolphin Drive. Cascadia's assessment determined that none of these streams meet the requirements for RAR protection. In this case, developments are advised to ensure that these drainages are incorporated into a SMP that maintains the quality of water draining off the site. The fourth watercourse (Stream #4 in Cascadia's report) currently drains into the east side of Enos Lake (Figure 8). This non-fish-bearing watercourse provides flow (likely only during wet months) and nutrients to the downstream Enos Lake. The project plan proposes to re-orient this small (<1m width) creek into a vegetated corridor, if necessary, that is part of the protected greenspace network and/or restrictive covenants on specific properties. This drainage will also be integrated into the SMP. At the detailed design of this phase of the development, the redesign of Stream #4 should involve the advice of an aquatic biologist to ensure that current function is maintained post-development. So long as the watercourse realignment results in no-net-loss of aquatic habitat, the impact is insignificant.

As the project design is detailed (over many years of phased development), RAR assessment reports will be submitted to the MOE and RDN for approvals of SPEAs. At this stage, commitments will be made to incorporate measures to protect SPEAs during all stages of the development. These measures may include further detailed field assessments, an arborist's assessment of the interfaces between clearing areas and SPEAs, and other measures related to stormwater management, slope stability, encroachment, sediment and erosion control and floodplain concerns. Fairwinds is considering applying restrictive covenants on lots immediately adjacent to SPEAs, and should be defined so that tree retention and vegetated buffers upland of SPEAs can be maximized.

6.2.2.2 Road Crossings

Other specific riparian loss will occur as a result of necessary road crossings of watercourses. Where possible, clear span bridges and open-bottomed culverts should be used for stream crossings to maintain the natural stream substrate. Clear span bridges should be constructed in accordance with DFO measures to protect fish and fish habitat. Careful construction planning and adherence to a detailed CEMP will ensure that vegetation clearing in and around SPEAs is minimized for the constriction of the crossings. Following construction, riparian areas will be rehabilitated with native plant species to re-establish riparian function for the aquatic habitat.

6.2.2.3 Marine Shoreline Development

The proposed redevelopment of Schooner Cove will include shoreline alterations and potential impacts to the marine ecology. The project concept incorporates for shoreline works that include pilings to build the jib crane and marina access gangway. Fairwinds' team is in discussion with DFO about specific impacts related to the shoreline works and is committed to developing this area with no net habitat loss. In the remainder of the shoreline fronting the proposed village centre, there is considerable opportunity to restore the currently low-productive artificial shoreline to recreate a more natural intertidal habitat, including tidal pools. Overall, this shoreline development can be designed to have net benefits for the aquatic ecology.

The Green Shores program is a project of the Stewardship Centre for BC (http://www.greenshores.ca/). The Green Shores Technical Working Group has developed a variety of tools for shoreline developments to achieve environmentally sustainable development. Specifically, Green Shores facilitates project design that:

1. Recognizes the natural features and functions of coastal ecosystems;
2. Connects people with the shore environment;
3. Delivers triple bottom line (environment, social and economic) benefits; and
4. Recognizes that site-specific, cost-effective solutions can only be achieved by using an integrated design approach.

Fairwinds should use the BMPs in the Green Shores program (accreditation is not applicable to a redevelopment site). *Shorelines Structures Environmental Design – A Guide for Structures along Estuaries and Large Rivers* by DFO and Environment Canada also provides design guidelines for shoreline enhancement.

6.2.2.4 Direct Impacts from Humans and Pets

During the life of the community, the use of greenspace near aquatic habitats by humans and their pets may result in increased physical disturbance to instream habitat and riparian vegetation and shoreline stability. Poorly planned trails within or near a riparian buffer can encourage the unsustainable use of environmentally sensitive areas and increase disturbances around the riparian area. To minimize these impacts, final detailed plans for the trail system should carefully incorporate concepts outlined in *Access Near Aquatic Areas: A Guide to Sensitive Planning Design and Management* by DFO and MOE. Fairwinds should engage in resident and trail user education initiatives to enhance the care for natural areas and promote the control of domestic pets in sensitive habitats (through signage and other education). This should be a key element of local residents' Environmental Homeowner's Manual (EHM).

Avoidance of sensitive areas already included in the project design, the use of BMPs during construction and the implementation of further measures to protect aquatic habitats during the life of the community are expected to avoid and/or minimize significant aquatic habitat impacts. Environmental mitigation is outlined in the EMP (Section 7.0).

6.2.3 Terrestrial Ecology

The sensitive terrestrial species and habitats in the Fairwinds neighbourhood planning areas are primarily located in The Lakes District. Based on the information gathered by the Cascadia terrestrial ecology studies, the Neighbourhood Plans have implemented strategies to avoid impacting key habitats as part of the design process. This assessment will focus on the species and habitats that are of prime concern based on regulatory requirements, conservation concern and/or community concern to identify any further mitigation measures that may be required.

Impacts to wildlife may be directly or indirectly related to project activities. Sources of direct impacts include human activities and domestic pets that may cause disturbance or mortality to wildlife. Indirect impacts may be felt through the permanent loss or temporary alteration of habitat. For example, the loss of vegetation for the development of roads, parking areas and homes has habitat consequences. A key impact of vegetation loss is the loss of wildlife habitat, so vegetation alterations are considered in the assessment of impacts on wildlife. The effects on aquatic ecosystems due to impacts on riparian areas were already assessed in the previous section, but indirect effects on wildlife species of concern are addressed in this section.

The removal and occupation of habitat and construction of roads always affects local animal numbers, but regional populations of species occurring on the site should not be severely impacted. Species less tolerant of human disturbance might gradually withdraw from the area. In general, a project's impacts to wildlife habitat are of greatest concern in areas that are restricted, sensitive and/or limiting. On the Fairwinds site, key habitats are represented by:

- Garry Oak meadows;
- Garry Oak/Arbutus forest; and
- Wetlands, creeks and Enos Lake.

The presence and habitat use of wildlife species at risk, plant species at risk, and other species of concern were assessed by Cascadia in the Neighbourhood Plan area. The species (or groups) that require an assessment of impacts are:

- Plant species at risk;
- Eagle and heron nests (as per the *Wildlife Act*);
- Breeding birds (and other forest-dwelling wildlife); and
- Red-legged frogs (and other small wetland-dependent wildlife).

The results of these assessments are summarized in Table 3 attached.

6.2.3.1 Garry Oak Ecosystems

The main Garry oak polygons in the study area are the meadows identified by the GOERT and confirmed in the field by Cascadia's studies at The Lookout and Notch Hill (Figure 9). These two sites are valued for the size of the meadows. Other smaller areas of Garry Oak meadows are located in three adjacent areas in the northwest portion of The Lakes District. All these areas are presented, showing how the proposed project would relate to the meadows. The Fairwinds planning team, in consultation with the GOERT, has excluded these ecosystems from development footprints, as shown in this figure. In addition, the polygons have been provided with considerable buffers on the more significant patches while smaller patches have lesser buffers though still in the range of 10m average. Restrictive covenants on lots bordering all Garry Oak meadows would be expected to improve these buffers and avoid edge effects at these interfaces.

The proposed multi-family residences at The Lookout are an example of clustering development to focus development in areas of least sensitivity. This practice of focusing density to protect the adjacent sensitive Garry oak meadows is a much preferred approach from an environmental perspective to a sprawling development. The general practice of clustering development to the least sensitive areas is encouraged in MOE's "Develop With Care" (sec 3.4.2).

Considering the value of The Lookout meadows and the proximity with multi-family residential buildings, feedback through public consultation and the CAG have identified this specific area as a specific area of concern. As a result, mitigation has been prepared with particular attention to avoiding significant impacts in this area.

Further to avoiding the meadows entirely with physical structures, measures to manage edge effects such as tree retention, influx of invasive species, and use of the area by humans and pets are valid concerns when dealing with a sensitive and rare ecosystem. To address these potential impacts, the following mitigation and follow-up measures are described in the EMP (Section 7.3):

- Strict adherence to the protective measures during construction;
- Conduct an arborist survey to maximize tree retention at the interface between the Garry oak meadows and the development footprint;
- Design permanent fencing or other restrictive vegetation/structure wherever practicable to prevent the entrance of humans or pets in the meadows, except on defined trails;
- Carefully design a trail system through the Garry Oak meadow that uses existing trails. We believe that it is important for people to be able to experience these meadows and the views from this point to be able to appreciate the value in preserving them. For this reason, we recommend a tightly controlled design that permits trail users to have constrained access to the meadows and the most desirable viewpoints. We believe that, without controlled permanent routes to guide greenspace users, people would create braided trails across the meadows, which is what we currently observe in the Lookout meadows today. Retaining the preferred routes and effectively decommissioning others will have a net benefit to the meadow;
- Create landscape designs that consider Naturescape BC guidelines and use non-invasive native plants;
- Design waste management and control measures that limit exposure of exotic plants/seeds to sensitive areas;
- Prepare a Garry Oak Meadows Management Plan that focuses on:
  - invasive species management;
  - establishing a decision framework and adaptive management procedure; and

  - implementing a monitoring program.
- Implement an educational initiative for residents that encourages stewardship.
- Provide the *Garry Oak Gardener's Handbook* to homeowners.

The Garry Oak/Arbutus forest polygons are also sensitive areas that the Neighbourhood Plan has strived to avoid. The environmentally sensitive areas (ESA) for the site are identified as the Garry Oak meadows and the Garry Oak/Arbutus polygons in The Lakes District and overlaid on the project layout in Figure 10. As presented in the Parks Plan, the project proposes to retain 85% of ESAs within parks or greenspaces, and an additional 5% of ESAs through the supplemental protection possible through the implementation of restrictive covenants on properties containing patches of ESAs. On examination of Figure 10, the ESAs that would be lost are relatively small scattered patches that would have lesser value than the larger contiguous areas. Given the significant proportion of ESAs designated for preservation and the implementation of measures to ensure future protection, it is anticipated that the loss of small portions of Garry Oak/Arbutus forest would not be a significant impact.

There are small patches of Garry Oak/Arbutus forest on the east side of the Schooner Cove property that will not be preserved in the development (Figure 11). The ecological assessment determined that these disconnected fragments of Garry Oak/Arbutus are of lesser ecological value than the Douglas fir/Arbutus forest that was observed to have the greatest plant diversity on the site. The Schooner Cove plan proposes to preserve a more contiguous, larger and biologically richer stand of Douglas fir/Arbutus forest.

6.2.3.2 Plant Species at Risk

During the vegetation assessment, no plant species at risk were identified, though there is potential that some plant species at risk occur in select habitats in the development area. In general, these species are associated with Garry Oak ecosystems, rocky bluffs, or streams and wetlands. Almost all of these habitats types are preserved under the Neighbourhoods Plans so the risk of significant impact on species at risk is minimal. In addition to these avoidance measures, pre-construction 'due diligence' plant species at risk surveys should be completed by a qualified vegetation ecologist to identify plants that can be salvaged and relocated to adjacent protected areas. These surveys should focus on these specific areas:

- Development areas where disturbance is within 30m of a Garry Oak meadows polygon; and
- Development areas of the marine shoreline rocky bluff (identified sensitive ecosystem) on the Schooner Cove property (Figure 12).

The requirement for these surveys will be a component of the CEMP, the implementation of which will be independently reviewed and reported on by a qualified Environmental Monitor.

6.2.3.3 Eagles, Herons and Other Breeding Birds

Due to the removal of vegetation required to construct the proposed project, the clearing activities may pose a risk to breeding birds in the area. The project should aim to avoid harming breeding birds to: (a) minimize the impact on bird populations in the area, and (b) comply with the BC *Wildlife Act* that prohibits destruction of eagle and heron nests (active or not), and other bird nests if they are occupied by a bird or egg. The federal *Migratory Birds Convention Act, 1994* also protects migratory birds and occupied nests from harmful activities. The common BMP to avoid this impact is to clear vegetation outside of the breeding period for birds.

Specifically for the Neighbourhood Plans, mitigation includes:

- Conducting vegetation clearing outside of the April 1 to July 31 general bird breeding season, or conducting pre-clearing nest surveys by qualified biologists according to Canadian Wildlife Service or MOE protocols to identify and protect active nests if clearing is undertaken during the breeding season;
- Conducting vegetation clearing outside of the raptor nesting period of February 1 to July 31, or conduct raptor nest surveys and owl (nocturnal call-playback) surveys to identify and protect active nests if clearing is undertaken during the breeding season; and
- Conducting a pre-clearing survey for eagle and heron nests to identify and protect any nests in or within 50m of the clearing boundary. In the event that a nest is discovered, a construction buffer and clearing window would be implemented, in accordance with the draft *Best Management Practices for Raptor Conservation during Urban and Rural Land Development in British Columbia* (Demarchi and Bentley, March 2005). An inactive nest may be relocated under the guidance of a professional biologist and under approval from MOE, if necessary.
- Maintaining as many wildlife trees as possible within the Project site, as these decaying trees provide food and habitat for birds, mammals and amphibians. For example, wildlife trees will provide habitat for foraging woodpeckers to create nest sites for birds that are secondary cavity-nesters.

Mitigation measures already identified to protect sensitive habitats are expected to maximize the retention of the most diverse bird habitats on the property. The riparian trees and shrubs in the SPEAs will retain habitat values for many common bird species. Additional retention of older trees at the detailed design level will provide a benefit to birds. Eventually, landscaped shrubs and young trees will have the potential to partially compensate for the loss of undergrowth. Landscape architecture plans should follow the Naturescape BC program for urban landscaping.

6.2.3.4 Wetland-dependent Wildlife

Through the protection of wetlands, watercourses and riparian areas, wetland-dependent wildlife has been provided with general habitat protection in the development plan. Red-legged frogs and other species that breed, forage and migrate in wetlands and riparian corridors will not be significantly impacted by the proposed habitat removal. Further protection of wetlands through mitigation measures already identified to protect water quality and riparian vegetation during construction activities and the life of the community will also protect those species that rely on healthy wetlands. Project planning has followed many of the recommendations in *Best Management Practices for Amphibian and Reptiles in Urban and Rural Environments in British Columbia* (MWLAP, 2004).

In the isolated areas where riparian removal is required to construct road crossings of creeks, pre-construction amphibian salvages should be conducted within a fenced-off construction area prior to vegetation clearing. Qualified biologists should collect amphibians under permit from MOE and relocate them to a safe area within the same creek system.

The project design has given special attention to ensuring the protection of wetlands and the provision of corridors for beavers in The Lakes District. Appendix 6 describes the rationale for the road alignment between the two wetlands and prescribes mitigation to preserve connected habitats. Connected areas of protected wildlife habitat provide the routes necessary for wildlife to access their required habitats. Vegetated corridors that connect diverse and/or productive habitat

serve this purpose for general wildlife use. American beavers are not of conservation concern and are designated by the provincial Conservation Data Centre as "demonstrably widespread, abundant, and secure." Since beavers are transient by nature, they would be expected to leave their current habitats once food sources became scarce. The project design has minimized its impact on their food source with protection of the riparian forest including patches of young alder. Further mitigation to preserve habitat connectivity for beavers includes providing underpasses of suitable size (1m to 1.5m diameter) for beavers under Schooner Cove Drive between the two large wetlands east of Enos Lake, and under the Schooner Cove Drive crossing of stream #6. At detailed design, a wildlife biologist should determine in the field the exact locations of the underpasses. These underpasses will also aid habitat connectivity for amphibians and small mammals. The use of wildlife underpasses to mitigate impacts on wildlife from roads is supported in *Wildlife and Roads* (2009), a resource by a focus group of ecologists and engineers from around North America. A web-based tool kit developed by wetland stewards and Environment Canada provides many guidance resources and techniques for discouraging beaver damming of culverts (WetKit, 2004). Our assessment of the Fairwinds' project concludes that the Project has demonstrated responsible stewardship with regards to mitigating impacts to beavers and other wetland wildlife.

The EHM will aim to educate future residents on wetland values and sensitivities and include information on careful trail use near wetlands and the harm of releasing exotic species into the wild, such as American bullfrogs, exotic turtles and invasive fish species.

Considering the implementation of identified mitigation measures, there will not be significant impacts on the valued elements of terrestrial ecology assessed in this section. Mitigation and habitat enhancement measures are further detailed in the EMP (Section 7.0). Furthermore, we anticipate that application of the recommended mitigation measures will minimize the risk of significantly harming species at risk and/or their habitat.

6.2.4 Archaeology

Fairwinds will comply with the *Heritage Conservation Act*, and will undertake due diligence to avoid or mitigate potential impacts to archaeological resources as required. Based on the AOA of Fairwinds' neighbourhood planning areas (Appendix 12), there is some potential of development activities (primarily land clearing and excavation) affecting currently unidentified sites. To address the potential impact to possible archaeological sites, an AIA is recommended to determine the presence of cultural deposits in areas identified as having archaeological potential (which may be further refined through a focused PFR) prior to construction. The AIA would be undertaken during the detailed design stage (pre-construction) once boundaries of footprint impacts can be identified in the field. If the archaeologist determines that there are specific areas that present a reasonable risk of impact, specific mitigation and avoidance measures will be part of the AIA. Based on the AOA, if sites are present, they are expected to be relatively small. Smaller sites would be relatively easy to avoid through project design and/or an archaeology management plan (developed if sites are found and may be impacted).

The result of this assessment is summarized in Table 4 attached.

6.2.5 Community and Recreation

Based on community consultation, the key community and recreation issues related to the development are:

- Changes to recreational opportunities in The Lakes District;
- Changes to amenities in Schooner Cove; and
- Construction noise and visual impact.

The results of these assessments are summarized in Table 5 attached.

6.2.5.1 Recreation in The Lakes District

The Lakes District Neighbourhood Plan aims to provide a variety of recreational opportunities while considering the protection of sensitive natural areas that, in large part, contribute to the enjoyment of outdoor recreationists. To balance the needs of different types of community recreationists in the Enos Lake area, the plan has combined different types of outdoor areas, including:

- Landscaped gathering places and open spaces;
- Natural parks containing natural habitats;
- Opportunity for access points to Enos Lake for non-motorized boats; and
- Walking, hiking and bicycle path networks that connect recreational opportunities and are integrated with surrounding areas.

The riparian areas, wetlands, and Garry Oak meadows have been protected to preserve their ecological values. Recreational access to these areas will be designed as part of a detailed trail plan in consultation with biologists to permit restricted access while controlling potential impacts of trail users.

An assessment of the planned changes to the existing trail system reveals a clear improvement in the diversity and accessibility of recreation opportunities in the area.

6.2.5.2 Schooner Cove Amenities

The redevelopment of Schooner Cove is focused on creating a community focal point by introducing new amenities and enhancing certain current amenities. The public shoreline access and facilities is expected to greatly improve current use. Enhancement of the marina wharf and foreshore ecological enhancement opportunities will greatly add to the appeal of additional outdoor areas for the residents and the general public to gain an improved waterfront experience. Commercial and professional businesses will be chosen to meet the needs of current and future residents.

Based on the public input on proposed plans for Schooner Cove, there are somewhat diverse opinions on specific future facilities associated with the functional aspect of the marina. During the Neighbourhood Plan consultation process, Fairwinds has sought a solution to balance the values of various interested users through extensive public and stakeholder consultation.

No specific improvements are recommended for the Schooner Cove Neighbourhood Plan based on this assessment since the planning objectives are clearly aimed at a balanced improvement of amenities through an inclusive process.

6.2.5.3 Construction Noise and Visual Impact

Construction noise and changes to the visual landscape are common and somewhat unavoidable temporary impacts associated with residential construction projects.

Fairwinds' construction activities will comply with the RDN noise bylaw that limits noise on construction sites to 7:00 a.m. to 10:00 p.m., every day of the week except Sunday which is between 9:00 a.m. and 9:00 p.m.

Standard construction site practices will include minimizing and containing construction debris. An Environmental Monitor will also routinely inspect the site for dirt and debris that may extend onto common roadways or other properties and will ensure that the site crew attend to a road sweep or other cleanup as required.

Based on an assessment of the Project plans and the public's community and recreational values expressed through consultation events, the Neighbourhood Plans are meeting expectations for developing a vibrant community that fosters a healthy lifestyle and diverse recreational opportunities. No significant adverse effects have been identified and we expect the plans to have an overall positive impact on the community and recreation in the area.

6.2.6 Transportation

A new residential development requires an assessment of the effect on the local and regional road network to identify the capacity of the road system for additional vehicles. Fairwinds engaged Opus International Consultants Ltd. to determine whether there would be a significant increase in road congestion as a result of the proposed community development study (Appendix 13). This assessment concludes that there should be a series of road improvements that the project will implement to avoid impacts to traffic. The improvements are identified in the Opus report.

Regarding the parking supply in Schooner Cove, EYH Consultants analyzed parking demand and requirements for the planned commercial and marina uses in Schooner Cove and developed parking supply strategies to minimize the parking footprint while providing sufficient parking supply (Appendix 2).

The result of this assessment is summarized in Table 6 attached.

6.2.7 Local Economy

The economic analysis conducted by GP Rollo (Appendix 15) looked at these questions:

1. Is the commercial floor area allocated for Schooner Cove Village in the draft Neighbourhood Plan warranted?

2. What is the optimal tenant mix, placement and phasing for commercial tenants at Schooner Cove?
3. Do planning policy, commercial analysis and comparable projects lend support for the development of 395 residential condominium units at Schooner Cove?
4. What are the likely impacts of commercial and residential development at Schooner Cove and The Lakes District?

The analysis concluded that:

- Development of a commercial village of approximately 25,000–30,000 square feet at Schooner Cove is warranted through policy, population, demographic and competition considerations, and comparables review.
- Trade area analysis revealed demand for 29,300 square feet of commercial floor area at Schooner Cove by 2014. This is consistent with the 27,000 square feet allocated for commercial usage under the draft Neighbourhood Plan.
- A commercial village with an area of less than 25,000 square feet would not be able to attract a sustainable and attractive tenant mix.
- Residential density of approximately 400 dwelling units at Schooner Cove is justified given the goals set forth in regional and community planning documents, the shifting age structure of the population, and best practices of comparable projects.
- Residential density of approximately 400 dwelling units at Schooner Cove is also necessary to support a sustainable commercial village. Without such critical mass within walking distance, it is unlikely that a sustainable commercial village will emerge.
- Residential density of approximately 188 units at Schooner Cove, while consistent with the current Official Community Plan policy, would not allow for the broader goals of that and other policy documents to come to fruition. It would not fulfill the affordability and choice requirements of a growing and aging population; it would not provide critical mass to sustain a viable commercial village; it would not allow for the emergence of new travel patterns and modes; and it would not move the neighbourhood, the community or the region towards a more sustainable future.
- Commercial uses at Schooner Cove should be oriented to provision of day-to-day goods and services for the local population. The commercial village should be anchored by a community grocer and a waterfront pub/restaurant. Tenants may be phased-in over two stages, with approximately 65% of floor area allocated to the first phase and the remainder to the second.
- An array of significant positive impacts will flow to the RDN through development at Schooner Cove and The Lakes District. Significant direct and spin-off benefits will be felt within the mid-Island economy, including significant capital investment and job creation. The RDN will benefit from revenues related to development cost charges, building and development permits, property taxes and funds for services, hospitals, police and schools. Commercial tenants at Schooner Cove will be complementary to those at Red Gap.

The result of this assessment is summarized in Table 7 attached.

6.2.8 Accidents and Malfunctions

Canadian environmental assessment legislation requires the consideration of impacts that may occur from accidents or malfunctions.

Accidents or malfunctions that may occur during pre-construction, construction, or long-term operation of the community are:

- Spills of potential contaminants such as oil, gas or lubricants that could harm soil, water quality or human health;
- Accidents during clearing or construction that causes release of sediment into aquatic habitat;
- Accidents during clearing or construction that could harm human health;
- Accidents during clearing or construction that could harm archaeological sites or artifacts;
- Tree windthrow, promoted during vegetation clearing, could create a hazard to human health and habitat from the tree itself, and increased erosion;
- Accidental disruption of protected habitat features (e.g., bird nests), vegetation designated for retention, and other designated environmentally sensitive areas; and
- Fires that could harm human health and safety, air quality or habitat.
- Table F presents a number of different practices and procedures to avoid or mitigate the impacts of one or more of these accidents.

Table F: Accident / Malfunction Management Procedures

Accident or Malfunction / Management Procedures	Spills	Sediment release	Human health and safety	Archaeology	Tree windthrow	Disruption of protected habitat	Fire
occupational health and safety measures	■		■				■
material handling and management practices	■		■				■
emergency response procedure (per: BC MOE Guidelines for Industry Emergency Response Contingency Plans)	■		■				■
spill contingency practices	■						
terrain management practices		■	■	■	■	■	
tree retention practices					■	■	
emergency archaeological impact guidelines				■			
Construction Environmental Management Plan	■	■				■	
wildfire hazard assessment							■

Each of these procedures minimizes the likelihood of an accident and/or prescribes immediate response activities to minimize any impact to humans and the environment. Implementation of the procedures will mitigate the environmental effects of potential accidents and malfunctions to an acceptable level. See Appendix 17 for appropriate reporting responsibilities related to particular environmental incident responses.

6.2.9 Effects of the Environment on the Project

This section examines the potential effects of the environment on the Project, and how these impacts might affect the environment. These effects of the environment are generally caused by large-scale forces of nature such as earthquakes or landslides.

6.2.8.1 Seismic Risk

Seismic zoning maps for Canada are derived from the analysis of tectonic and geological structure and past earthquakes. The Geological Survey of Canada determines seismic risk in various zones in Canada. The Project area is in the Cascadia subduction zone, and therefore the earthquake risk is moderate. The National Building Code for each region of Canada sets guidelines for construction that consider seismic risk. Construction according to National Building Code guidelines will mitigate the risk of seismic events to a reasonable level.

6.2.8.2 Landslide Risk

Building on unstable terrain is a potential geologic hazard that has been considered and avoided in the conceptual neighbourhood design. Clearing of land and the construction of buildings on steep slopes would increase the risk of landslide and the potential impact to downslope habitats. On The Lakes District site, these areas may include the slopes above Enos Lake or the other wetlands. Following typical hazard management practices, the Fairwinds project layout was designed with input from a Preliminary Geotechnical Terrain Assessment by Trow Associates Inc. (Appendix 8). The report identifies certain areas that are unsuitable for residential development due to geologic hazard, and certain areas that require mitigative works prior to construction. The proposed Neighbourhood Plan has been designed to avoid potential hazards and the detailed design of the lots and building envelopes will avoid or mitigate hazard occurrence. As a result, the risk of environmental damage due to landslides will be minimal.

6.2.9 Cumulative Effects

Cumulative effects are changes to the environment that are caused by an action in combination with other past, present and future human actions. The goal of a cumulative effects assessment is to determine whether or not project activities are combining with other activities to produce significant effects.

A cumulative effects assessment is required under CEAA, as stated in paragraph 16(1)(a):

> "Every screening or comprehensive study of a project … shall include a consideration of the environmental effects of the project, including ... any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out."

6.2.9.1 Past, Present and Reasonably Foreseeable Projects and Activities

Past and future land development in Nanoose Bay may also have potential effects on the VECs considered in this assessment. While the extent of past land development is evident from an aerial photo, future planned development will likely consist of additional infilling of developable private land outside of the Fairwinds lands, provincial Crown lands and the federal Canadian Forces lands.

6.2.9.2 Scoping and Analysis of Cumulative Effects

Effects in this assessment that have potential for contributing to cumulative effects are:

- Water quality effects on Enos Lake; and
- Effects on Garry Oak ecosystems.

6.2.9.3 Cumulative Effects on Enos Lake

The proposed Fairwinds development in the surroundings of Enos Lake has been designed to limit effects on Enos Lake ecology through the avoidance of watercourses and riparian areas, and a focused objective to design stormwater management to minimize water quality impacts. Stormwater inputs from past land development to the south of Enos Lake and the introduction of crayfish from unknown sources has altered the natural conditions of Enos Lake. This assessment recommends the development of an Enos Lake Protection and Monitoring Program (Section 8.3.5) that would establish baseline water quality data and define parameters for post-development monitoring. The program would identify targets for the preservation and potential enhancement of the ecological values of the lake, and would include the management of cumulative effects of future projects or activities that could affect the Enos Lake ecosystem. Based on the implementation of a program to adaptively manage the ecology of the lake, the Fairwinds' contribution to a cumulative effect is minimal and could have net benefits.

6.2.9.4 Cumulative Effects on Garry Oak Ecosystems

Past developments in Nanoose Bay and other areas of southeastern Vancouver Island have removed significant portions of Garry Oak meadows and associated ecosystems. As reflected in the proposed Neighbourhood Plans, all future developments in areas with Garry Oak meadows should be expected to protect these increasingly rare and diverse ecosystems. While Fairwinds has avoided direct impacts through design, indirect impacts will be monitored by the proposed Garry Oak Meadows Management Plan (Section 8.3.4) which should be completed by the RDN. Cumulative effects have therefore been avoided.

6.2.10 Sustainability Assessment

An EIA incorporates elements of a sustainability assessment, as it considers environmental, social and economic parameters. However, sustainability is also evaluated as to how well the project elements are integrated and the three types of values are balanced. The project design has been guided by Sustainability Principles (Section 4.3), which will be considered alongside comprehensive sustainability definitions and parameters. To better convey the use of sustainability in this document, we have used the following:

> "'Sustainability Science' refers to the cultivation, integration and application of knowledge about Earth systems gained especially from the holistic and historical sciences (such as geology, ecology, climatology, oceanography) coordinated with knowledge about human interrelationships gained from the social sciences and humanities, in order to evaluate, mitigate and minimize the consequences, regionally and world-wide, of human impacts on planetary systems and on societies across the globe and into the future – that is, in order that humans can be knowledgeable Earth stewards." (Kieffer et al. 2003).

As this project is of a community scale, the evaluation must consider the completeness of the community and the lifecycle costs. As sustainability has a somewhat limitless scope, this review will focus on identifying the strengths and weaknesses of the Project using the following sustainability parameters:

Environmental Quality and Human Health

- Use of clean renewable sources of energy in place of fossil fuels.
- Increased efficiency of energy and elimination of waste.
- Increased efficiency of water and elimination of waste.
- Return of wastes to productive uses.
- Elimination of the use and release of persistent bio-accumulative toxic chemicals (PBTs).
- Protection of biological diversity.
- Valuation of natural systems functions.

Economic Vitality

- Contribution to local economy diversity.
- Use of local materials.
- Provision of employment opportunities within the community.
- Full cost/lifecycle accounting (all of the costs of implementing the project).
- Not dependent on long-term monitoring for protection of human health and the environment.
- Creation of economic incentives to reward sustainable behaviour.

Social and Community Well-being

- Long-term planning horizon that considers availability of choices for future generations.
- Encourages the collaboration of all directly or indirectly affected community members.
- Fairly shares its benefits and burdens within the affected community.
- Eliminates potential negative impacts to the community rather than shifts them from one community to another.
- Creates an awareness of the impacts on long-term environmental, economic and social wellbeing.
- Identifies products, plans or goals so the public recognizes them as sustainable.
- Increases the opportunities to consume less or choose more environmentally friendly products and services.
- Contributes to the long-term quality of life of the community.

Table G details how the development currently measures up against the stated sustainability parameters.

Table G: Sustainability Strengths/Weaknesses

Parameters	Strengths	Weaknesses
Environmental Quality and Human Health		
Use of clean renewable sources of energy in place of fossil fuels	Connected to provincial grid for electricity. The plans provides walking/cycling paths to promote active transportation and reduced reliance on automobile	The project requires a lesser though continued reliance on automobiles as currently there is no public transit. The development would encourage future plans for transit in the area.
Increased efficiency of energy and elimination of waste	The development will follow Green building guidelines, including the capture of solar heat and efficient heating systems.	
Increased efficiency of water and elimination of waste	There are plans to reduce water demand through a variety of measures, including low-flow fixtures, water meters, high-efficiency irrigation systems, smaller lawns and drought resistant landscaping. Encourage the capture and reuse of rainwater, particularly for landscape uses.	
Return of wastes to productive uses	Support the waste reduction, reuse and recycling initiatives, and plan for recycling and composting facilities.	
Elimination of the use and release of persistent bio-accumulative toxic chemicals (PBTs)	The project aims to encourage limited use of toxic chemicals.	
Protection of biological diversity	Housing footprints and other development features have been designed and located to minimize impact to aquatic systems and reduce impacts to valued wildlife habitat. Habitat enhancement measures are planned.	Existing ecosystems will be altered. Density within the Urban Containment Boundaries facilitates reduced sprawl and protection of biodiversity elsewhere within the region.
Valuation of natural systems functions	Housing property boundaries and building footprints have been set back from creeks, wetlands, and other areas of high ecological productivity. Valuable habitat functions have been maintained.	Parts of the existing ecosystem function will be altered by the development.
Economic Vitality		
Contribution to local economy diversity	Medium-term economic benefits are expected during construction. Long-term commercial opportunities will be provided as a result of population increases and commercial development at Schooner Cove.	
Use of local materials	There are plans to use materials that are sourced onsite or in the immediate area wherever possible, including stone, topsoil, gravel, backfill and wood.	

Parameters	Strengths	Weaknesses
Provision of employment opportunities within the community	The provision of a community amenity area will enable some job creation. Jobs in local area to supply goods and services and potential home-based businesses. Retail, and other commercial opportunities, will be located within the project area.	
Full cost/lifecycle accounting (all costs of implementing the project)	Review of the benefits vs. the unmitigable impacts shows greater benefits to the community.	
Creation of economic incentives to reward sustainable behaviour	While no incentives have been defined, there are opportunities for incentives to include: parking policies at Schooner Cove, or a security deposit for compliance with design guidelines, etc.	
Social and Community Wellbeing		
Long-term planning horizon that considers availability of choices for future generations	The project provides housing choice, recreational opportunities, and planning for transportation alternatives. Opportunities for additional home-based business, and community-scale retail also exist.	
Encourages the collaboration of all directly or indirectly affected community members	Community participation in project design and decision making has been significant.	
Fairly shares its benefits and burdens within the affected community	The new development will fit into the surrounding community and will share new community amenities and community trails with neighbouring residents, including waterfront access.	
Eliminates potential negative impacts to the community rather than shifts them from one community to another	Impact mitigation occurs onsite, with lot layout changes, road placement changes, housing density changes, and amenity changes.	
Creates an awareness of the impacts on long-term environmental, economic and social wellbeing	The planning process and community consultation considers compatibility with longer-term community planning and sustainability education. The proposed Environmental Homeowner's Manual is a directed effort to educate residents.	
Identifies products, plans or goals so the public recognizes them as sustainable	Transparent process in working towards sustainability, with the provision of a Sustainability Strategy that is reflective of RDN policy, community vision and goals.	
Increases the opportunities to consume less or choose more environmentally friendly products and services	The project provides opportunity for reducing ecological footprint through multi-family residences, the provision of more local services, and incorporation of new green building technologies.	
Contributes to the long-term quality of life of the community	Provides parks and Village amenities focused on enhancing quality of life.	

To help the development become more sustainable, in addition to the recommendations provided in the EMP (Section 7.0), we have provided specific sustainability recommendations in Section 8.2 for use at the detailed design, construction and operation phases.

7.0 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) presents a compilation of the various recommended measures to minimize potential project impacts. The key elements of the proposed measures are presented in Table H of Section 8.1 (Recommended Commitments and Assurances).

The mitigation measures used to manage impacts of the proposed development are designed to avoid or alleviate potential effects on specific VECs. In general, measures may include design specifications, specific strategies, and detailed activities to contain an impact within acceptable limits of space, time and magnitude. Where appropriate, the effectiveness of the mitigation measure may be monitored to provide input to adaptive management strategies and to future impact assessments.

Habitat enhancement activities are common measures to replace lost habitat and minimize overall ecosystem impacts. These typically include removal of invasive species and the provision of physical habitat features and native plantings that support restoration of native habitats. The general goal is 'no-net-loss', or net gain, of a particular environmental attribute.

A summary of Fairwinds' commitments is included in Section 8.0 along with additional tools and advice regarding the implementation of the EMP.

Various mitigation measures are discussed for four VECs in this section.

7.1 Water Quality and Quantity

The assessment of potential adverse, significant and likely effects on water quality and quantity identified that specific mitigation measures are required to prevent or manage impacts that may occur during the construction or operational phase of the community. Specifically, potential effects that are targeted by the proposed mitigation are:

- Impacts to water quality from construction near water bodies;
- Impacts to water quality due to post-development stormwater runoff;
- Impacts to water quality from community pesticide and fertilizer use;
- Impacts to regional water supply from community water use; and
- Impact to water quality in Enos Lake and wetlands due to introduction of invasive species (plants and animals).

7.1.1 Mitigation Measures During Construction

To mitigate and manage potential water quality effects from construction activities near aquatic habitats, the following measures are recommended:

1. **Develop and implement a Construction Environmental Management Plan (CEMP)** including an engineered erosion and sediment control plan (ESCP) at the time of subdivision. The CEMP should be developed jointly by an experienced Environmental Monitor (EM), a Certified Professional in Erosion and Sediment Control, and the project engineers following the detailed design of the project component under construction. The CEMP will include

BMPs consistent with DFO's *Land Development Guidelines* and spills contingency procedures for accidents and emergencies. A specific section to address environmental protection during shoreline works in Schooner Cove will be required. Specifically, the CEMP should achieve the following:

- Incorporate current best practices in sediment and erosion control, and stormwater BMPs;
- Meet or exceed recommendations outlined in the Land Development Guidelines;
- Ensure that stringent sediment and erosion control measures are implemented during construction;
- Include vegetation replacement/restoration measures, including salvage and replanting wherever possible;
- Include an environmental monitoring program that identifies the role and responsibilities of the EM;
- Provide input to construction tender documents that will require construction contractor adherence to environmental objectives as part of their contractual obligations;
- Schedule construction activities to avoid or limit time spent working in or around waterbodies during the rainy season (period of highest risk of sediment mobilisation to surface water); and
- Include spill contingency procedures to deal with the accidental release of substances (e.g., hydrocarbons) that are harmful to the aquatic environment.

2. **Monitor the use of the CEMP** and adherence to water quality guidelines during construction. A qualified professional EM will monitor construction activities and provide advice to "field fit" sediment and erosion control plans and resolve environmental issues onsite. The EM should have the authority to modify construction practices or, if needed, halt construction to protect the environment. The EM will be onsite during all works in or near environmentally sensitive areas to ensure that:

   - The ESCP is properly implemented and water quality targets are adhered to;
   - Vegetation loss is kept to an absolute minimum (e.g., as much of the existing native riparian vegetation as possible is retained, or salvaged and replanted); and
   - Construction activities do not significantly impact sensitive aquatic or terrestrial habitat.

3. **Design a clear span bridge** for the crossing of Enos Creek following the DFO *Operational Statement for Clear Span Bridges* (Appendix 18), or another design suitable for DFO approval, at the subdivision stage. An EM will monitor the construction of all creek crossings to ensure that they follow DFO guidelines and BMPs to mitigate impacts from vegetation removal, soil disturbance and possible exposure of cement and petrochemicals to aquatic habitats. Low-impact creek crossings need to be designed to minimize the amount of riparian vegetation removal and possible changes to natural channel function and processes. Clear span bridges and open-bottomed culverts should be used for stream crossings to maintain the natural stream substrate.

7.1.2 Mitigation Measures for Stormwater Impacts

To mitigate and manage potential water quality effects from stormwater runoff during the life of the community, the following measures are recommended:

1. **Develop a Stormwater Management Plan (SMP)** at the time of subdivision that follows DFO's BMPs for reducing water quality impacts wherever feasible.

Koers (Appendices 4 and 12) has described the conceptual SMP and identified preliminary stormwater structures. Given the site's generally rocky topography, opportunity for stormwater infiltration is constrained, and it is expected that the SMP will include a number of engineered wetlands similar to existing detention ponds.

The primary mitigation measures will include volume reduction, water quality and rate control strategies. The most effective strategy to meet the design criteria of maintaining predevelopment surface hydrology will be to maximize pervious areas. This will include retaining forested and riparian areas, reducing building footprints and using pervious pavements and building construction where possible. Volume reduction strategies will involve maintaining riparian forest integrity, minimizing the amount of impervious area, and implementing Low Impact Development strategies to the design. These measures will use a system that is disconnected from the neighbourhood stormwater system during small frequent rainfall events, capturing water onsite to be released at predevelopment levels. Larger rain events will be safely conveyed to roadside ditches or storm sewer systems. Design of road networks will mitigate resultant increases in the quantity, rate and frequency of runoff, as well as increases in runoff sediment and pollutants. Reduced road widths, roadside bioswales and oil and grit separators will serve to achieve this goal.

The following three strategies should be the focus of the SMP:

(i) **Volume Reduction –** Where pervious ground conditions permit, volumes from impervious areas corresponding to the six-month storm event may be infiltrated to ground. Where impervious ground conditions exist, a significant portion of the rainfall should be detained and released at pre-development rates.

(ii) **Water Quality –** Roadside bioswales, energy dissipation pools, detention ponds and infiltration fields can permit infiltration of smaller storm events in pervious soils and detention over impervious ground conditions. With these measures, a significant volume of the 24-hour rainfall from impervious areas (especially roads, driveways and parking lots) should be collected and treated.

(iii) **Rate Control –** Post-development flows in watercourses should be modelled as part of the SMP to demonstrate that post-development flows generally match the shape, volume and peak flows of pre-development flows. Post-development peak flows and runoff volumes should not be significantly greater than pre-development flows.

The essence of this approach has already been adopted by Fairwinds in their Rainwater Management Strategy (described in Section 4.4.2.7).

A Hydrological Impact Assessment will be completed with the input of a hydrological engineer in conjunction with the SMP to assess detailed impacts to the area's hydrologic regime and identified sensitive habitats based on the detailed designs and SMP. This task will meet the expectations of Policies 6 and 8 Section 2.3 (Water Management) of the Nanoose Bay Official Community Plan.

Minimizing building footprints will mitigate the changes in the quantity, rate, and frequency of runoff water, and so the Fairwinds' commitment to implement restrictive covenants on many properties will also aid in reducing stormwater volumes. These strategies outlined by the water quality BMPs should be considered for building sites:

- Impervious area reduction;
- Porous pavement;
- Green roofs;

- Rain barrels;
- Rain gardens or absorbent landscaping;
- Infiltration trenches or fields; and
- Cisterns with low flow in winter months.

The preparation of effective spill prevention and clean-up procedures on roadways as well as a resident education program regarding appropriate use of storm drains and the ecological value of riparian areas will also contribute to meeting stormwater objectives.

2. **Implement a post-construction Enos Lake Protection and Monitoring Program** that includes on-going water quality sampling. The water quality sampling program for Enos Lake is already underway and the future monitoring program will consider past data and confirm the specific locations and parameters to appropriately monitor for changes in the lake chemistry that: (a) may represent important effects to the lake's ecological function, (b) may be reasonably attributed to changes caused by the Fairwinds development, and (c) may provide meaningful input to an adaptive management framework. To conduct a meaningful comparison of pre-development to post-development effects, it will be essential to establish reliable baseline conditions for the key parameters. A thorough review of existing lake chemistry data is required to determine if sufficient data exists or additional pre-development data is required. An adaptive management framework is a key element of the monitoring program to identify when a specific parameter has exceeded an established threshold and thereby triggers a specific action to mitigate a potential effect to the lake's valued functions. A framework for the Enos Lake Protection and Monitoring Program is proposed in Section 8.3.5.

7.1.3 Mitigation Measures for Chemical Use in Landscaping

To mitigate and manage potential water quality effects from pesticide and herbicide use during landscape maintenance for the life of the community, the following measures are recommended:

1. **Provide guidance on environmentally friendly garden maintenance** for property owners with the Environmental Homeowner's Manual (EHM) that describes nearby environmentally sensitive areas and prescribes environmentally friendly practices for landscape maintenance to reduce chemical pesticide and fertilizer use, and maximize water conservation. The RDN WaterSmart program should be used to provide guidance on minimizing domestic water use. Fairwinds should promote the use of Naturescape BC guidelines and the GOERT Garry Oak Gardener's Handbook to property owners through resource kit/brochures and seminars at community events. The use of native pest- and weed-resistant vegetation in landscaping of private lots will help to reduce the overall use of fertilizers, pesticides, and water for irrigation.

2. **Prepare and implement integrated pest management practices** at the time of subdivision for the landscape planning and maintenance of common lands following environmentally friendly practices to control pests without the use of toxic chemicals. The development's public greenspaces should be designed to minimize the need for pesticides and herbicides through the use of pest- and weed-resistant vegetation, limits on irrigation, and design features to maximize stormwater infiltration. The result will be a development that uses few chemicals for landscaping purposes and ensures that most runoff that may contain these compounds is filtered through swales and other stormwater features before being released to aquatic habitats. Environmentally friendly park maintenance and design, through maximizing

the retention of natural features such as trees and vegetation, will limit the need for chemicals and irrigation. Guidance for integrated pest management practices can be obtained from:

- *Integrated Pest Management Manual for Landscape Pests in British Columbia* (Gilkeson and Adams, 2000); and
- *Integrated Pest Management Manual for Home and Garden Pests in BC* (Adams and Gilkeson, updated 2001).

Integrated pest management practices will detail a decision-making process that includes: (a) identification and inventory of invasive plants, (b) assessment of the risks, (c) development of control options, (d) site treatment, and (e) monitoring. Control methods vary with species, severity of the plant invasion, and site considerations. Site-specific mechanical, chemical, or biological control methods may be applied based on input from a regional invasive plant expert. The integrated pest management practices can be developed in consultation with the Coastal Invasive Plant Committee (http://www.coastalinvasiveplants.com) and using resources from the Invasive Plant Council of BC (http://www.invasiveplantcouncilbc.ca) and Weeds BC (http://www.weedsbc.ca).

7.1.4 Mitigation Measures for Water Supply

To mitigate and manage potential effects on the water supply through excessive community water use, the following demand management measures are recommended:

1. **Implement water conservation practices** at subdivision including: (a) landscaping guidelines that aim to design public landscaping that does not require excessive irrigation demands (following Naturescape BC principles), (b) designing private lots with limited lawn areas, and (b) green building measures (water efficient fixtures).
2. **Provide water conservation guidance to residents** through the EHM. Work with the RDN and Team WaterSmart to Consider encouraging water conservation through water metering, limiting irrigation and lawn watering and encouraging planting of native vegetation with low-water demands

7.1.5 Mitigation Measures for Aquatic Invasive Species

To mitigate and manage potential effects on the water quality and ecology from introduction and proliferation of aquatic invasive species, the following measures are recommended:

1. **Develop invasive species management practices** as part of the Enos Lake Protection and Monitoring Program (see item 2 in Section 7.1.1.2 Mitigation Measures for Stormwater Impacts) that includes methods to minimize the risk of introduction of invasive aquatic plants and animals to Enos Lake. Implement and enforce rules (e.g., no motorized crafts) for lake users and provide educational resources to limit the risk of introduction of exotic species. The practices should include measures for:

   - Prevention;
   - Early detection and rapid response;
   - Controlling spread; and
   - Monitoring.

   A variety of resources to guide planning are compiled by the US National Invasive Species Information Center (http://www.invasivespeciesinfo.gov/aquatics).

2. **Implement a post-construction monitoring program** that is linked to invasive species management procedures and includes observations for invasive species presence and proliferation. This program can be conducted by trained residents and other interested stewardship volunteers.

7.2 Aquatic Ecology

The assessment of potential adverse, significant and likely effects on aquatic ecology identified that specific mitigation measures are required to prevent or manage impacts that may occur during the construction or operational phase of the community. A variety of potential effects to aquatic ecology have already been addressed in the mitigation program proposed for protecting water quality in Section 7.1. Additional potential effects on aquatic ecology that require mitigation measures are:

- Impacts to waterbodies during construction and upgrade of roads over or adjacent to waterbodies;
- Impact to the marine ecology of Schooner Cove from shoreline redevelopment; and
- Degradation of riparian vegetation and instream integrity through physical disturbance from humans and pets.

7.2.1 Mitigation Measures During Construction Near Water Bodies

To mitigate and manage potential effects on aquatic ecology during construction activities in around aquatic habitats, the following measures are recommended:

1. **Design a clear span bridge** for the crossing of Enos Creek following the DFO *Operational Statement for Clear Span Bridges* (Appendix 18), or another design suitable for DFO approval, and use clear span bridges or open-bottomed culverts for other creek crossings to maintain the natural stream substrate. As already recommended for mitigation to water quality impacts, an EM will monitor the construction of all creek crossings to ensure that they follow DFO guidelines and BMPs to minimize and mitigate impacts from vegetation removal, soil disturbance and possible exposure of cement and petrochemicals to aquatic habitats. MOE's *Terms and Conditions for Changes In and About a Stream* indicate that there are no reduced-risk work windows for Enos Lake. For the construction of the Enos Creek crossing, we recommend that this be done during the driest part of the year (late summer) when risk of sediment mobilization will be minimized.
2. **Develop and monitor the use of a CEMP** including engineered erosion and sediment control. As already detailed for mitigation to water quality impacts, the CEMP should be developed jointly by an experienced EM, a Certified Professional in Erosion and Sediment Control, and the project engineers following DFO BMPs. A qualified professional EM will monitor construction activities and provide onsite advice to resolve environmental issues. The EM should monitor any vegetation removal from sensitive areas (i.e., SPEAs) and ensure that fisheries sensitive areas are temporarily fenced off during works in and around these areas. Fairwinds should ensure that construction tender documents require the construction contractor adherence to environmental objectives as part of their contractual obligations.
3. **Restore riparian habitat** to minimize recovery time for disturbed aquatic habitats following construction. A qualified vegetation ecologist should design and implement vegetation restoration measures for disturbed areas in accordance with the MOE's *Planting Criteria and Recommended Native Tree and Shrub Species for the Restoration and Enhancement of Fish and Wildlife Habitat* (1998) and Naturescape guidelines. The restoration will aim to maximize

the salvage and replanting of existing vegetation wherever possible and prescribe appropriate seed mixes, plant species and densities for disturbed areas that will maximize restoration success. In areas that have past disturbance, the program will include infilling of open areas within the riparian zone to encourage a more natural species mix. Remove non-native invasive species as much as possible in areas that are not scheduled for development. Salvaged native plants and topsoil can be used to rehabilitate these areas. An arborist will address the tree replacement requirements of any relevant tree retention/replanting policy. Revegetation success should be monitored for a period of three years following project completion to determine the need to conduct additional plantings in accordance with MOE guidelines that stipulate replanting will be undertaken if less than 80% of plantings survive within the first year.

7.2.2 Mitigation Measures for Shoreline Redevelopment

To mitigate and manage potential effects on marine aquatic ecology from the Schooner Cove shoreline development, the following measures are recommended:

1. **Design the shoreline development following advice regarding Greenshores directives.** During the detailed design of the shoreline redevelopment consider the marine habitat enhancement opportunities, use of low-impact shoreline structures and design directives provided by Greenshores to produce a net benefit for shoreline ecology. This design objective would include the proposed works on the breakwater.
2. **Develop and monitor the use of a CEMP** for marine shoreline construction works. As with works in and around freshwater habitats, implement DFO BMPs for shoreline work and engage an EM to monitor any foreshore works. For the South Coast, DFO defines the marine work window as June 1 to February 15, so foreshore work should be scheduled and conducted during this period.

7.2.3 Mitigation Measures from Human and Pet Use of Riparian Area

To mitigate and manage potential effects on aquatic ecology from the use of riparian areas by people and their pets, the following measures are recommended:

1. **Construct the detailed alignment of the trail system with careful consideration of sensitive areas**, existing trails and the principles in *Access Near Aquatic Areas: A Guide to Sensitive Planning, Design and Management* (DFO and MOE, 1996/1997). The final trail network has been reviewed by a qualified environmental professional to ensure adequate avoidance of sensitive areas has been implemented. Certain areas may require additional protection measures such as fencing or other barriers where there is risk of degradation of adjacent sensitive areas. For future protection of valuable habitat features, trail management procedures should be developed by the RDN to include specifications on:
    - Maintenance standards (responsibilities, maintenance schedule, garbage collection);
    - Trail use rules and guidelines (pets on-leash, bicycle use, etc.); and
    - Closures of seasonally sensitive or hazardous areas.
2. **Educate trail users** about the sensitive areas that need to be protected. The EHM and other trail signage should explain why people and their pets should stay out of riparian areas and other ESAs.

7.3 Terrestrial Ecology

The assessment of potential adverse, significant and likely effects on terrestrial ecology identified that specific mitigation measures are required to prevent or manage impacts that may occur during the construction or operational phase of the community. Some potential effects to terrestrial riparian areas have already been addressed in the mitigation program proposed for protecting aquatic ecology in Section 7.2. Additional potential effects on terrestrial ecology that require mitigation measures are:

- Impacts to Garry Oak ecosystems;
- Impacts to plant species at risk;
- Impacts to eagles, herons and other breeding birds; and
- Impacts to wetland-dependent wildlife.

7.3.1 Mitigation Measures for Garry Oak Ecosystems

To mitigate and manage potential effects on Garry Oak ecosystems from construction activities, trail use, and invasive species, the following measures are recommended:

1. **Implement protection measures in the CEMP** to mitigate construction impacts adjacent to Garry oak meadows. The CEMP will ensure strict adherence to the boundaries during construction activities, including the use of highly visible fencing to prevent infringement of equipment or workers. An arborist survey of the clearing border should precede the clearing when the clearing is within 30m of a Garry Oak meadows polygon. The arborist will prepare a tree retention strategy to advise on how to maximize tree retention in the buffer adjacent to the Garry Oak meadow.
2. **Design a trail system that protects the meadows** through measures to control access to sensitive areas. The trail through a portion of the Garry Oak meadow at the Lookout should be carefully designed with input from an environmental professional to make best use of existing disturbed trails. Consider a boardwalk or other control measures to discourage walking off the trail. Design permanent fencing or other restrictive vegetation/structure wherever practicable to prevent the entrance of humans or pets into the meadows from other entry points, except on defined trails. Plan to decommission existing trails that are no longer accessible and undertake restoration activities as directed by a Garry Oak Meadows Management Plan.
3. **Prepare a Garry Oak Meadows Management Plan** to protect the meadows during the life of the community. The plan should include invasive species management practices and monitoring program that are linked to an adaptive management decision framework. The decision framework and adaptive management procedures should prescribe a method to judge the risk of invasive species and a protocol for action (i.e., plant removal, habitat restoration, etc.), in consultation with the Invasive Plant Council of BC and based on "*Adaptive Management Strategy for the Decision Support Tool to Address Invasive Species In Garry Oak and Associated Ecosystems"* (Murray, 2002). A Garry Oak monitoring program needs to be developed in consultation with the GOERT that includes photopoint monitoring and invasive species monitoring (see section 8.3.4) for further guidance). Consideration should be given to coordinate the involvement of local naturalists to participate in monitoring activities under the program.
4. **Create a landscape design that considers Naturescape BC guidelines** within the areas adjacent to the meadows, and uses non-invasive native plants. The landscape design for areas adjacent to the meadows must be reviewed and approved by a qualified vegetation

ecologist to ensure that plant selection do not pose a risk to the Garry Oak plant community. Solid waste management should be designed to limit exposure of exotic plants/seeds to sensitive areas by locating house and garden waste disposal away from the borders of sensitive areas.

5. **Implement an educational initiative for residents** using the EHM to educate on the importance and the methods of caring for these special areas. Encourage the local residents to directly participate in stewardship activities, provide them with the *Garry Oak Gardener's Handbook*.
6. **Work with biologists to define candidate properties for restrictive covenants**. The size, shape and details of the covenants are important factors in maximizing protection of environmental values and should involve the input of a consulting biologist. The restrictive covenants will be part of the title of the land and are binding of future landowners. Albeit imperfect, well-designed restrictive covenants can be effective tools to supplement conservation. In certain cases, a third party covenant trustee can be an appropriate option.

7.3.2 Mitigation Measures for Plant Species at Risk

To mitigate and manage potential effects on plant species at risk from construction activities, the following measures are recommended:

1. **Conduct pre-construction plant species at risk surveys** to identify plants that can be avoided or salvaged in specific areas. A qualified vegetation ecologist or botanist should survey the following areas:
   - Development areas where disturbance is within 30m of a Garry Oak meadows polygon; and
   - Development areas of the marine shoreline rocky bluff (identified sensitive ecosystem) on the Schooner Cove property (Figure 12).
2. **Include the requirement for these surveys in the CEMP** to ensure that they are completed prior to any land disturbance. Survey results and recommendations will be subsequently incorporated into the CEMP prior to start of clearing activities to further ensure appropriate protection.

7.3.3 Mitigation Measures for Eagles, Herons and Other Breeding Birds

To mitigate and manage potential effects on breeding birds from construction activities, the following measures are recommended:

1. **Conduct vegetation clearing outside of bird nesting season** to avoid destruction of bird nests, which is standard protocol for land development projects. Most bird species and their active nests are protected by the federal *Migratory Birds Convention Act* and/or the BC *Wildlife Ac*t. Extensive natural areas will likely contain nesting birds during the spring and summer, so to avoid contravention of the federal or provincial acts, the policy of the MOE is that land clearing should occur outside of this period (April 1 to July 31). Should vegetation clearing be necessary within the nesting season, ensure that a qualified biologist completes nest surveys according to MOE/Canadian Wildlife Services (CWS) protocol and reports their findings to MOE/CWS. The surveys should provide a decision on areas that can and cannot be cleared during a specific timeframe.

Further restrict land clearing near raptor nests to avoid the period from January 1 to July 31. Raptor nests, protected by the BC *Wildlife Act,* may be active as early as January (Great Horned Owl), or February (some Bald Eagles). It is recommended, therefore, that clearing activities avoid the January to July period near any identified raptor nests. If clearing is proposed to take place outside of the August–December window, a nesting bird survey should be done to confirm the presence/absence of active nests. Trees with active nests will be left intact until the EM/project biologist authorizes their removal. Ideally, **the best time to clear is between August and October**, when the least impact will occur to both breeding and wintering wildlife.

2. **Maintain as many existing wildlife trees as possible** within the Project site, acknowledging fire protection constraints. These dead or dying trees provide food and/or habitat for many native species birds, mammals and amphibians. Dead trees provide roosting sites and nesting sites (e.g., for owls in old woodpecker holes). Large trees suitable for eagle roosting or nesting in particular should be left wherever possible. Educational signage indicating important wildlife trees should be installed to raise awareness of their value and identify them for future protection. During the landscape planning of greenspace, retain groups of trees to provide an interlocking canopy that is suitable bird nesting cover. Every attempt at protecting this type of habitat throughout the development should be made at the detailed design level, in consultation with a biologist and arborist. Install bird nest boxes throughout the protected forests and wetlands to replace lost wildlife trees. Many suitable wildlife trees can be preserved within the riparian areas of the ponds onsite, and may be of least risk for fire protection.

7.3.4 Mitigation Measures for Wetland Wildlife

To mitigate and manage potential effects on wetland-dependent wildlife from construction activities and habitat alteration, the following measures are recommended:

1. **Salvage amphibians prior to construction** in and around wetlands, creeks and riparian habitats. Under a *Wildlife Act* permit from MOE, a trained wildlife monitor will salvage animals in harm's way and release them in suitable, protected habitat.
2. **Design road underpasses** at two specified locations (see Attachment II of Appendix 6) for passage of beavers and other small wildlife. The underpasses (e.g., large >1m diameter arch culverts) should be designed to maintain moist substrate inside the passageway and provide fencing/berms along the road to encourage use of the underpass by amphibians (including red-legged frogs) and small mammals. To define exact locations for these underpasses, a survey should be conducted by a wildlife biologist to identify preferred routes. Concrete or PVC piping is preferable for the materials for the tunnel; steel is less desirable.

Note that mitigation measures already proposed for protecting water quality and riparian habitats will also protect wetland wildlife and their habitat.

7.4 Archaeology

The assessment of potential adverse, significant and likely effects on archaeological sites identified in the AOA that certain areas of the site have potential (though unconfirmed) archaeological value. Further investigation through a focused PRF may recommend that an AIA be conducted in specified areas to prevent or manage impacts that may occur during the construction phase. An AIA may be conducted in specific high risk areas prior to construction during the detailed design stage. Fairwinds is committed to comply with the *Heritage Conservation Act* and mitigate potential impacts to archaeological resources as required.

If there are significant sites that are vulnerable to the development, an archaeology management plan will be implemented to protect and/or salvage sensitive sites and artifacts. Based on preliminary work, no significant archaeological sites are expected and so it is expected that impacts will be easy to avoid through project design and/or an archaeology management plan if necessary.

8.0 MONITORING AND FOLLOW UP

The implementation of the EMP will require careful planning and commitment on behalf of Fairwinds and its project team. In this section, we have developed a few tools to help implement mitigation measures and monitor their success.

8.1 Recommendations

A table of commitments compiles specific mitigation and management measures that Fairwinds and others can use to ensure timely implementation of recommendations in this report. Table H presents our recommendations for Fairwinds' commitments for each major phase in the development of each project following the approval of the Neighbourhood Plans: (A) detailed design/pre-construction subdivision; (B) construction; and (C) post-construction. Note that no mitigation measures have been identified for completion before the Neighbourhood Plan approval step (OCP amendment and rezoning).

Table H: Recommended commitments for Fairwinds' The Lake District and Schooner Cove Neighbourhood Plans

Recommended Commitments	Responsibility to Prepare/ Register/ Distribute	Approving Agencies	Advisor
A) Detailed Design / Pre-construction Subdivision (Post Neighbourhood Plan)			
Environmental Considerations During Detailed Design of Each Development Phase			
1. For the **Enos Creek crossing**, design a clear span bridge, or other design approved by DFO, and design clear span bridges or open-bottomed culverts for other watercourse crossings.	Fairwinds	DFO, MOE	
2. Work with biologists, RDN and MOE to identify: (1) candidate lots for **restrictive conservation covenants**, (2) the dimensions and details of the covenants, and (3) a procedure for covenant monitoring.	Fairwinds	RDN, MOE	CAG – item (3) only
3. Design the **detailed marine shoreline** development in Schooner Cove with: (a) DFO to meet regulatory requirements and (b) a marine biologist to achieve a net enhancement of the shoreline ecology, considering Greenshores principles.	Fairwinds	DFO	Marine Biologist
4. Develop a **Stormwater Management Plan (SMP)** using DFO's BMPs wherever practicable. Based on the SMP and project detailed design, conduct a Hydrological Impact Assessment to meet Official Community Plan expectations.	Fairwinds	MOTI, RDN	
5. Complete a **detailed layout of the trail system** design in consultation with a professional biologist to limit impact on sensitive areas (SPEAs, Garry Oak meadows) following MOE guidance.	RDN		Technical Advisory Committee
6. Design **wildlife road underpasses** at locations noted in Appendix 6 for passage of beavers and other small wildlife, following the advice of a biologist's survey to identify the most suitable locations.	Fairwinds		CAG
Environmental Elements of the Fairwinds Values & Procedures Statement			
7. Develop an **Enos Lake Protection and Monitoring Program** including invasive species management practices	Fairwinds	RDN, MOE	CAG
8. Develop **integrated pest management practices** for the landscape planning and maintenance of common lands following environmentally-friendly practices to control pests without the use of toxic chemicals.	Fairwinds		CAG

Recommended Commitments	Responsibility to Prepare/ Register/ Distribute	Approving Agencies	Advisor
Garry Oak Meadows Management Plan			
9. Prepare a **Garry Oak Meadows Management Plan** including invasive species management practices and monitoring program that are linked to an adaptive management decision framework.	RDN	Fairwinds	GOERT
Environmental Protection Planning for Construction Phase			
10. Conduct and submit a pre-construction stage **RAR assessment** ("Construction RAR") to define the protection methods for the SPEAs. Conduct an arborist's assessment of tree retention and management in the SPEAs for input to the Construction RAR assessment	Fairwinds	RDN, MOE	
11. Conduct pre-construction **plant species at risk surveys** by a qualified vegetation ecologist/botanist to identify plants that can be avoided or salvaged in areas specified in the EIA.	Fairwinds	MOE	
12. Conduct an **Archaeological Impact Assessment** in areas of potential risk specified in the AOA (as may be refined through focused PRF work during the detailed design stage) based on the detailed design of the development phase to identify any required mitigation	Fairwinds	Nanoose First Nation, Nanaimo First Nation, BC Archaeology Branch	

Recommended Commitments	Responsibility to Prepare/ Register/ Distribute	Approving Agencies	Advisor
13. Develop a **Construction Environmental Management Plan (CEMP)** with an environmental professional that includes: • erosion and sediment control plan • spill contingency and response practices • terrain management practices • fire protection practices • tree management and vegetation restoration measures • protection measures for works near water, riparian areas and Garry oak meadows • any mitigation measures from plant species at risk surveys • any mitigation measures from the Archaeological Impact Assessment • construction schedule that avoids or limits activities during sensitive environmental periods (as set forth under 'B' below) • water quality parameters and targets for sediment control and other substances used around waterbodies • requirements for vegetation clearing to avoid destruction or disturbance of bird nests, including pre-clearing nest surveys if during applicable nesting season • practices for amphibian salvages where necessary • construction traffic management	Fairwinds	RDN, MOE, DFO	
14. Include the **CEMP in construction tender documents** and require construction contractor adherence to the CEMP as part of contractual obligations	Fairwinds		
B) Construction Phase			
1. Engage a qualified **Environmental Monitor** to monitor and report on the construction activities' adherence to the CEMP, regulations and other environmental best management practices.	Fairwinds	RDN, MOE, DFO	
2. **Salvage amphibians** prior to construction in and around wetlands, creeks and riparian habitats in areas identified by a wildlife biologist. To be conducted by a wildlife biologist under a *Wildlife Act* permit from MOE.	Fairwinds	MOE	

Recommended Commitments	Responsibility to Prepare/ Register/ Distribute	Approving Agencies	Advisor
3. **Avoid vegetation clearing outside April 1 to July 31** general bird nesting season, or conduct pre-clearing nest surveys by a qualified wildlife biologist according to MOE/CWS protocol to identify any mitigation (nest avoidance/protection) required	Fairwinds	MOE/CWS	
4. **Avoid vegetation clearing outside January 1 to July 31** raptor (owl, eagles, hawks, etc) nesting season of or conduct raptor nest surveys according to MOE protocol to identify any mitigation (nest avoidance/protection) required	Fairwinds	MOE/CWS	
5. Identify the number of **wildlife trees** (under supervision by a biologist) that are planned for removal and compensate in nearby protected areas with nest boxes and/or other wildlife habitat restoration (e.g., wildlife tree creation following advice from an arborist) based on a biologist's assessment of the highest and best use of restoration effort on a site-by-site basis.	Fairwinds		
6. **Restore disturbed riparian habitat** following a vegetation restoration procedure prepared by a qualified vegetation ecologist	Fairwinds		
C) Post-Construction			

• Prior to completion of construction, develop and promote an **Environmental Homeowner's Manual** which includes guidance for ecologically responsible:
  • landscaping (Garry Oak Gardener's Handbook),
  • water conservation,
  • recreation,
  • respect for local sensitive areas, and
  • participation in community-based stewardship
	Fairwinds		CAG

2. Implement the **Enos Lake Protection and Monitoring Program**	Fairwinds		Area residents
3. Develop and implement a **trail management plan** to identify sensitive areas and monitor use to inform any required post-development restoration and access restriction decisions.	RDN		Fairwinds + area residents
4. Develop an **environmental education initiative** for recreational users which includes education on the locally sensitive areas and their value, provides direction on methods of protection and promotes involvement in stewardship activities	Fairwinds		Area residents
5. Implement the **Garry Oak Meadows Management Plan**	RDN		GOERT

8.2 Recommended Sustainability Goals and Strategies

Based on the review of the sustainability principles of the project (Section 4.3) and an assessment (Section 6.2.10), further recommendations are presented to help increase the sustainability of the project through the detailed design, construction and operation phases (Table I). We have used elements of LEED Canada 1.0 for New Construction and Smart Growth principles to help develop specific goals.

Table I: Recommended Additional Sustainability Goals and Strategies

Goals	Strategies	Implementation
1. ENERGY		
Reduce total energy consumption of project (lighting and heating).	• Lighting: use lighting fixtures with energy-efficient, compact fluorescent lamps. • Review all energy plans prior to construction for energy efficiency. • Encourage all new homes to meet the efficiency requirements of 'Energy Star for Homes' and be fitted with 'Energy Star' appliances. • Encourage use of energy-efficient air or ground source heat pumps and explore district energy for multi-family buildings.	Building guidelines
Reduce air pollution and ozone depletion impacts of energy sources.	• Install HVAC and refrigeration equipment that do not contain HCFCs or Halon.	Building guidelines
2. TRANSPORTATION		
Encourage non-motorized transportation within the community for individual and community health benefits.	• Implement the planned paths and amenities to facilitate cycling, and walking as a means of movement within the community. • Design homes for potential telecommuting.	Detailed design Building guidelines
3. ENVIRONMENTAL PROTECTION		
Maintain or augment existing biodiversity.	• Follow measures identified in the EIA to maintain significant existing fish and wildlife habitat. • Support environmental stewardship initiatives	Detailed design Environmental Management Program of EIA
Reduce heat island effect.	• Encourage landscaping to shade at least 50% of sidewalks	Building guidelines

Goals	Strategies	Implementation
Minimize impacts to wildlife and vegetation.	• Follow measures identified in the EIA to maintain significant existing fish and wildlife habitat. • Outdoor lights should include types and accessories to be 'Dark Sky' compliant, and focus light onto ground surfaces (e.g., using lenses, baffles, and refractors). • Light pollution can be further minimized based on the 'Fatal Light Awareness Program', specifically: ▪ Implementing educational strategies that reduce bird collisions; e-mail migration alerts to occupants in spring and fall, educational displays, bulletins, Environmental Homeowner's Manual. ▪ Implementing lighting control strategies; program lighting systems to reduce interior and exterior night lighting from 11PM to 7AM. • Extinguish exterior vanity lighting where feasible and use lighting technologies that minimize light pollution for necessary street and safety outdoor lighting. Educate residents that, when indoor lights must be left on at night, options to minimize negative impacts should be implemented, such as: adopting lower intensity lighting, reducing perimeter lighting, using blinds and curtains, installing motion-sensitive lighting, using desk lamps and task lighting, and reprogramming timers.	Detailed design Environmental Management Program of EIA
4. WATER		
Conserve and/or reuse potable water.	• BC water efficiency standards for toilets should be followed with the maximum water usage of 6L/flush, with related infrastructure designed around water and potential pressure reductions. • Other water efficient fixtures (washing machines, low flow showerheads, etc.) should be required. • Install only high efficiency, controlled permanent irrigation systems. • Reduce lawn size on lots	Building guidelines

Goals	Strategies	Implementation
5. INDOOR AIR QUALITY		
Provide indoor environments for occupants that are physiologically and psychologically healthy. Provide the full range of supportive sensory conditions (olfactory, thermal, vibroacoustic, tactual, and visual) for occupants.	• Require a comprehensive set of indoor air quality measures be implemented though the Energy Star with Indoor Air Package (http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/IAPBuild508.pdf. • Use low-energy heat recovery ventilators (HRV) to improve air quality	Detailed design, building guidelines
6. MATERIALS		
Minimize consumption and depletion of material resources.	• Source locally manufactured materials wherever possible. • Source environmentally preferable products wherever possible (http://www.epa.gov/oppt/epp/) • Limit the maximum floor area of homes in the neighbourhood	Detailed design, building guidelines
Minimize the life-cycle impact of materials on the environment.	• Waste management should focus on reusing and recycling building materials, or quality, durable products, if new.	Detailed design, Construction Environmental Management Plan
7. WASTE MANAGEMENT		
Minimize use of resources.	• Homes should be designed for efficient material use and adaptability (future suites, home based business etc.).	Detailed design
Minimize waste generated from construction, renovation and demolition of buildings.	• Construction waste will be recycled wherever possible. • Any hazardous wastes generated or brought on site will be disposed of at the appropriate facilities.	Detailed design, Construction Environmental Management Plan
Encourage better management of waste and minimize waste generated during home occupancy.	• Design space allocated to storage and sorting of recyclables, with a minimum of paper, glass, plastic and metal separation to encourage good housekeeping practices by residents.	Detailed design

Goals	Strategies	Implementation
8. EDUCATION		
Provide information and objectives to home owners and community councils. Provide and promote good housekeeping initiatives and household practices to achieve sustainability and environmental protection goals.	• Use homeowner manuals to educate and provide guidance for residents to achieve environmental and sustainability objectives • Provide interpretive signage, e-mails, educational displays, and bulletins	Detailed design, Environmental Homeowners' Manual

8.3 Guidance on Preparing Environmental Procedures

The EMP recommends the development of a few specific management plans or procedures. This section reviews those plans to provide additional advice on the scope, objectives and focus for those plans to appropriately mitigate potential impacts.

8.3.1 Environmental Homeowner's Manual

The Environmental Homeowner's Manual (EHM) is prepared by environmental and communications professionals to provide a booklet, CD and/or website for educating future landowners and residents in The Lakes District and Schooner Cove areas on environmental best practices.

Specific objectives of the EHM include:

- Identifying the locally sensitive environmental features and the importance of their protection
- Providing practical advice on:
  - protecting (a) streams and fish; (b) sensitive vegetation; and (c) wildlife and their habitats;
  - environmentally sensitive recreation and low-impact use of greenspace with pets; and
  - sustainable living practices, including recycling and waste disposal practice, green transportation options, green landscaping methods, energy efficiency, preserving water and air quality, invasive species management, and water conservation.
- Encouraging participation in stewardship activities with other members of the community; and
- Providing residents with procedures for environmental emergencies.

Specific EHM documents may be developed for specific areas of the Fairwinds planning area to focus on the locally important issues.

8.3.2 Construction Environmental Management Plan (CEMP)

The following presents an overview of the contents of a CEMP. A CEMP document will be prepared following detailed design of each project phase and prior to commencement of construction.

The objective of the CEMP is to:

- Inform and direct the actions of the developer and all hired contractors and subcontractors in protecting sensitive fish and wildlife habitats, scheduling works, and generally upholding pertinent municipal, provincial, federal, and international guidelines that protect environmental features;
- Define the role of the EM in ensuring environmentally responsible construction practices during each phase of development, the mechanisms to achieve that goal, and methods the EM uses to perform and report monitoring efforts; and
- Define the Environmental Construction Specifications that must be adhered to during construction of all works.

The CEMP will be used as the primary management plan for all development relating to the construction works, and as development proceeds, the CEMP will be updated as necessary to address specific issues.

Environmental monitoring is a process that provides an independent environmental review of activities outlined in a contractual agreement between contractors, agencies, Fairwinds, and consultants. The EM inspects for compliance with environmental aspects of the contract. Findings are recorded and reported to Fairwinds or other designate through which the monitor is contractually bound. The EM is familiar with the regulatory and contractual requirements of the Project, and has the authority to report all non-compliant activities and halt work if necessary. Penalties may be levied for non-compliance with municipal, provincial and federal regulations.

The contents of the CEMP will include:

- Details of the role and responsibility of the EM including the communication protocol, work standards, general inspection practices, water sampling protocol, protocol for non-compliance, and reporting requirements;
- Environmental Construction Specifications including details of the relevant regulations, policies and guidelines, permits and approvals, construction timing, vegetation management plan, wildlife management plan, construction traffic management plan, protocol for activities on steep terrain, spill contingency and response practices, fuel and materials storage and disposal, sediment and erosion control, and methods for project-specific activities (e.g., clear-span bridge construction); and
- Contact numbers and reporting templates.

The preparation of the CEMP should be done by a team of qualified environmental professionals with experience in all the key disciplines (aquatic and terrestrial biology), and monitoring large construction projects. A professional in erosion and sediment control should also review the erosion and sediment control plan.

8.3.3 Trail Management Practices

The project plan proposes to create a walking, hiking and bicycle path network that is integrated with the surrounding areas. The EIA recommends that trail management practices be implemented to protect sensitive areas near trails and monitor use to inform decisions regarding restoration and access restriction. For the Fairwinds development, these practices would focus on

the sensitive areas identified in the EIA: riparian areas, Garry Oak meadows and coastal shoreline.

A variety of trail management frameworks have been implemented for specific purposes, and to varying levels of success. With the understanding that with any use comes some level of impact, the basis of best practices will focus on:

- Identifying the desired resource value and social conditions for the specific zones of concern (e.g., the Garry Oak meadows on the Lookout, and the riparian areas of Enos Lake);
- Setting resource and social indicators (specific, measurable variables to be monitored) for each zone (e.g., abundance of invasive species near trails in the Garry Oak meadows, or undergrowth ground cover in riparian areas);
- Setting standards for the minimum acceptable conditions for the indicators to guide management decisions;
- Monitoring the indicators to measure success in achieving and maintaining the desired resource conditions and visitor experiences; and
- Taking management action when resource or social conditions are “out of standard” or are deteriorating and likely to become “out of standard.”

The trail management practices should be developed at the time of dedication of the land to the RDN. Environmental professionals and the trail planners should continue to collaborate on producing a trail network that protects sensitive areas and can be managed effectively through the implementation of an efficient monitoring and management feedback scheme.

It is anticipated that RDN Parks will ultimately manage the greenspace and trail network in The Lakes District.

8.3.4 Garry Oak Meadows Management Plan

The Project will create an interface between residential and recreational land use and sensitive and rare Garry Oak meadow ecosystems. The Garry Oak Meadows Management Plan should be developed to focus on managing effects on the Garry Oak meadows from the introduction of invasive species. A framework for this plan should focus on:

- Establishing a decision framework and adaptive management plan;
- Identification of appropriate invasive species management actions; and
- Implementing a monitoring program to support the decision framework.

It is anticipated that RDN Parks will manage the Garry Oak meadows as part of the parkland in The Lakes District.

Decision Framework and Adaptive Management

The decision framework should follow guidance provided in *General Decision Process for Managing Invasive Plant Species in Garry Oak and Associated Ecosystems (GOEs)* (Murray, 2007). This excellent resource provides a breakdown of the decision making process as follows:

Part 1. Things to consider when deciding whether to engage in invasive plant species management in a GOE:

A. ECOSYSTEM CHARACTERISTICS

1. Is the ecosystem a "Garry oak or associated ecosystem"?
2. What are the characteristics of the ecosystem?
3. What invasive plant species are present?
4. What is their degree of invasion?

B. RISK ASSESSMENT

5. What are the risks of action versus no action?

C. DECISION

6. Proceed with management and control?

Part 2. Things to consider when deciding how to undertake invasive plant species management in the GOE:

7. Which invasive plant species are the highest priorities for management? (Tools exist to help answer this question, such as the Invasive Alien Plant Program Species Scoring Algorithm.)
8. Where, within the GOE, to take action?
9. What action to take, and when?
10. How to dispose of the dead plant material?
11. How to learn from management and control activities?

Another resource "*Adaptive Management Strategy for the Decision Support Tool to Address Invasive Species In Garry Oak and Associated Ecosystems"* (Murray, 2002) provides strategic direction on using an adaptive management approach to manage for invasive species.

Invasive Species Management Actions

GOERT has prepared a series of guidance documents for management actions related to the most common invasive plant species, including Best Practices for Invasive Species Management in Garry Oak and Associated Ecosystems for:

- Daphne (*Daphne laureola*);
- Orchard-grass (*Dactylis glomerata*);
- English Ivy (*Hedera helix*);
- Evergreen Blackberry (*Rubus laciniatus*) and Himalayan Blackberry (*Rubus armeniacus/discolor/procerus*); and

- Scotch Broom (*Cytisus scoparius*).

Each of these guidance documents cover:

- Deciding where to take action;
- Deciding what action to take, and when;
- Deciding how to dispose of dead plant material; and
- Recognizing uncertainty.

Monitoring

The management plan will need to identify a feasible method to monitor for the potential harmful effects that may need to be managed. Two options for monitoring specific areas are: photopoint monitoring and vegetation sampling.

Photopoint monitoring has been used in Garry Oak meadow restoration projects in other areas. Photopoint monitoring is a standard procedure for taking replicable photos of sites that require long-term management. The photos would need to be positioned to be able to detect changes to conditions in the meadow (e.g., an invasion of Scotch broom). Over time, the photos can be compiled and reviewed to note changes in the meadow. This information would be collected to provide input into a decision framework on possible management actions.

Vegetation sampling could be planned to establish a repeatable protocol with specific parameters that will provide meaningful results. The timing, frequency and duration of sampling should be decided at the outset with consideration of seasonality. The sampling would be conducted by a vegetation ecologist to detect potential unacceptable conditions that may trigger management actions.

For any method, monitoring sites should be selected purposefully with consideration of locations of highest risk for project-related effects (e.g., trails or interfaces with residences).

8.3.5 Enos Lake Protection and Monitoring Program

The EIA recommends the development and implementation of an Enos Lake Protection and Monitoring Program to mitigate potential effects from The Lakes District development. Specifically, the components involved in developing this program include:

- Compilation and review of past water quality data for Enos Lake;
- Ongoing implementation of a water quality sampling program; and
- Development of an adaptive management framework that provides guidance on management decisions.

Historical Water Quality Data

Water quality data exists for Enos Lake through programs associated with the research of Enos Lake stickleback, and stormwater monitoring by Fairwinds. An initial compilation and review of these data will be essential to establish historical background conditions for the parameters monitored. These data will enable an understanding of past changes in the Enos Lake limnology

and provide a baseline for comparison with future post-development monitoring. Compilation of past data will need to be done in cooperation with the Nanoose Naturalists who have been conducting recent biophysical research on Enos Lake. Based on a review of the data by an aquatic ecologist, additional pre-development sampling may be recommended to substantiate the baseline knowledge.

Water Quality Sampling Program

The water quality sampling program will need to consider past water quality data collected for Enos Lake and identify the specific locations and parameters to appropriately monitor for changes in the lake chemistry that will:

(a) Detect important effects to the lake's ecological function and value;

(b) Have a reasonable ability to link effects with causation (i.e., detect changes caused by the Fairwinds stormwater treatment, or other project-related effects); and

(c) Provide meaningful input to an adaptive management framework.

The sampling program should include typical water quality parameters following standard limnology study procedures. Designing the sampling program should follow guidelines set out in the BC Resources Information Standards Committee protocols:

- *Guidelines for Designing and Implementing a Water Quality Monitoring Program in British Columbia* (1998);
- Ambient Freshwater and Effluent Sampling Manual (1997); and
- Guidelines for Interpreting Water Quality Data (1998).

The sampling plan should also include observations for invasive species and their proliferation.

Adaptive Management Framework

An adaptive management framework is a key element of the monitoring program to identify when a specific parameter has exceeded an established threshold and thereby triggers action to mitigate a potential effect to the lake's valued functions. Based on the review of historical data and the determination of pre-development baseline conditions, critical thresholds for key parameters will need to be identified. The adaptive management framework should detail the types of actions that should be considered if an indicator of the lake's health exceeds a permissible range.

It is anticipated that RDN Parks and Fairwinds may each manage lands surrounding Enos Lake, so co-management of the Enos Lake Protection and Monitoring Program may be required.

9.0 FAIRWINDS "DEVELOP WITH CARE" SCORECARD

The Fairwinds planning process has already incorporated many of the applicable guiding principles recommended by the MOE's Develop With Care guidance document for land development. The EIA has identified future commitments that Fairwinds is recommended to undertake during the future detailed design, construction and post-construction phases. The Fairwinds Neighbourhood Plans and future commitments were compared to Develop With Care objectives using a checklist scorecard that is provided in Appendix B.2.2 of Develop With Care. The results provided in Table J demonstrate that Fairwinds' development proposal is consistent with Develop With Care best practices.

Table J: *Develop With Care* Scorecard for Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans

Site Development Checklist for Developers	Yes	No	Future Commitment	N/A	Comments
Inventory					
1. Has a preliminary site survey (bio-inventory) been completed and submitted to the local government?	✓				
2. Does the preliminary site survey (bio-inventory) identify environmentally valuable resources on or near (within 100m of) the development site?	✓				
3. Are the environmentally valuable resources set aside as 'no-development' areas?	✓				
Site concept and design					
4. Does the proposal identify AND avoid (or address) potential hazards such as:					
• Terrain stability (earthquakes, erosion)	✓				See geotechnical assessment
• Areas subject to flooding or tsunamis			✓		Detailed design of Schooner Cove will address sea level constraints
• Wildfires	✓				Emergency fire protection has been incorporated
• Wildlife conflicts	✓				
• Contaminated sites			✓		Contaminated sites assessment will be done at subdivision for Schooner Cove
5. Have Smart Growth options, alternative development standards, and LEED standards been considered and discussed with the local government?	✓				Discussions regarding green design options will proceed through detailed design
6. Will rainwater be managed onsite?	✓				Stormwater Management Plan under development
7. Are buildings sited to avoid air quality concerns?				✓	No known significant sources
8. Do septic systems meet or exceed provincial and local governments' requirements?				✓	Sewer system proposed

Site Development Checklist for Developers	Yes	No	Future Commitment	N/A	Comments
9. Have wildlife corridors been retained to link to nearby habitat reservoirs and refuges (offsite and onsite)?	✓				
10. Have roads been designed to minimize disruption to wildlife movements?	✓				Road underpasses will be strategically placed to facilitate wildlife movement
11. If the site is adjacent to a protected area, have protected area staff been consulted and any impacts mitigated?				✓	
12. Will the development avoid or mitigate offsite impacts (e.g., modified hydrology, impacts on neighbouring environmentally sensitive areas, potential for wildlife conflicts)?	✓				See proposed mitigation
13. Have opportunities for restoration been identified and incorporated into the plan?	✓				See proposed mitigation
Site concept and design: environmentally valuable resources present					
14. Has a detailed site inventory and conservation evaluation been completed by an appropriately qualified professional and submitted to the local government?	✓				
15. Have buffers around the environmentally valuable resources been identified?	✓				The design is in accordance with applicable legislated buffers, and the EIA assesses and mitigates impacts on SPEAs and ESAs
a. Do proposed buffers meet or exceed the Ministry guidelines?	✓				
16. Does the proposal follow the appropriately qualified professionals' recommendations?	✓				See EIA and proposed mitigation
17. Will the tentative site design retain the environmentally valuable resources?	✓				
18. Have shorelines and streambanks been protected?	✓				
Development and construction					
19. Has an onsite monitor been hired where needed, and given authority to halt work if necessary?			✓		
20. Have the permits and approvals required for construction been identified and obtained (e.g., for instream works)?			✓		
21. Is construction work scheduled ONLY during recommended timing windows?			✓		To be part of future CEMP

Site Development Checklist for Developers	Yes	No	Future Commitment	N/A	Comments
22. Are measures in place to protect surface and ground water?			✓		To be part of future CEMP
23. Is there an erosion and sediment control plan in place and being followed?			✓		To be part of future CEMP
24. Is air quality being protected during construction?			✓		To be part of future CEMP
25. Are there measures in place to prevent site contamination and spills?			✓		To be part of future CEMP and emergency preparedness
26. Have steps been taken to reduce construction waste?			✓		To be part of future CEMP
27. Are measures in place to protect environmentally valuable resources during construction (e.g., fencing, additional timing buffers, timing windows)?			✓		See proposed mitigation and this will be part of future CEMP
28. Is water quality being protected and erosion/sedimentation being prevented?			✓		To be part of future CEMP
29. Is restoration of degraded habitats being undertaken?			✓		See proposed mitigation and this will be part of future CEMP. See also the shoreline restoration in the Schooner Cove Neighbourhood Plan
30. Are trails located outside of environmentally valuable resources and their buffers?	✓				New trails have been designed to avoid sensitive areas, while making most use of existing trails in/near riparian areas (rather than creating new ones).
Post-development					
31. Are natural landscaping techniques being followed?			✓		Naturescape principles are recommended
32. Have any potentially invasive species been eliminated from landscaping choices?			✓		Naturescape principles are recommended
33. Has use of pesticides been minimized or avoided?			✓		Integrated pest management planning recommended
34. Have wildlife attractants been minimized?			✓		To be part of landscape guidelines
35. Are post-development impacts being monitored for future action as needed?			✓		See monitoring plans in EIA

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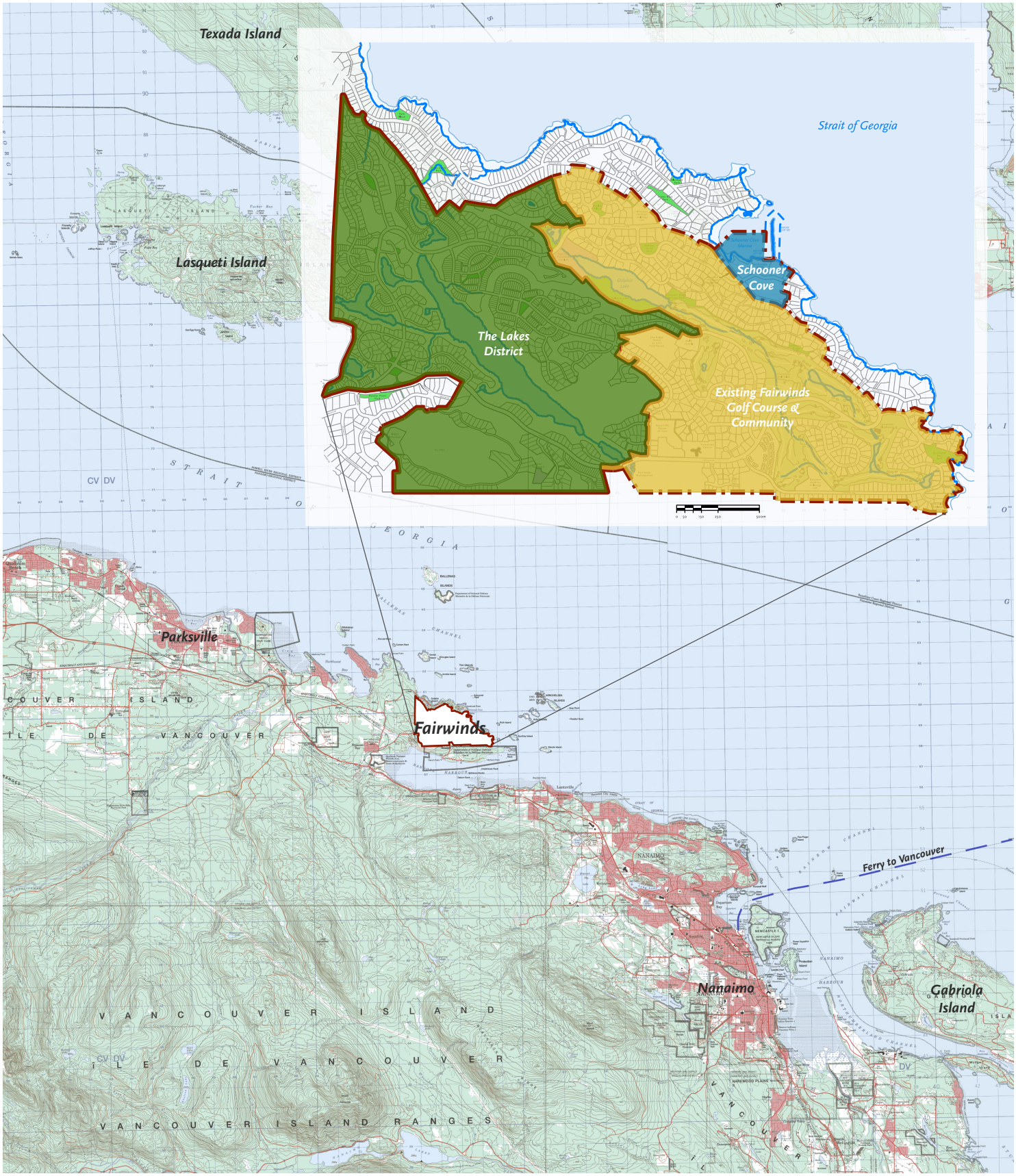
Figures

Figures



THE LAKES DISTRICT & SCHOONER COVE

Figure 1 - Project Location Map

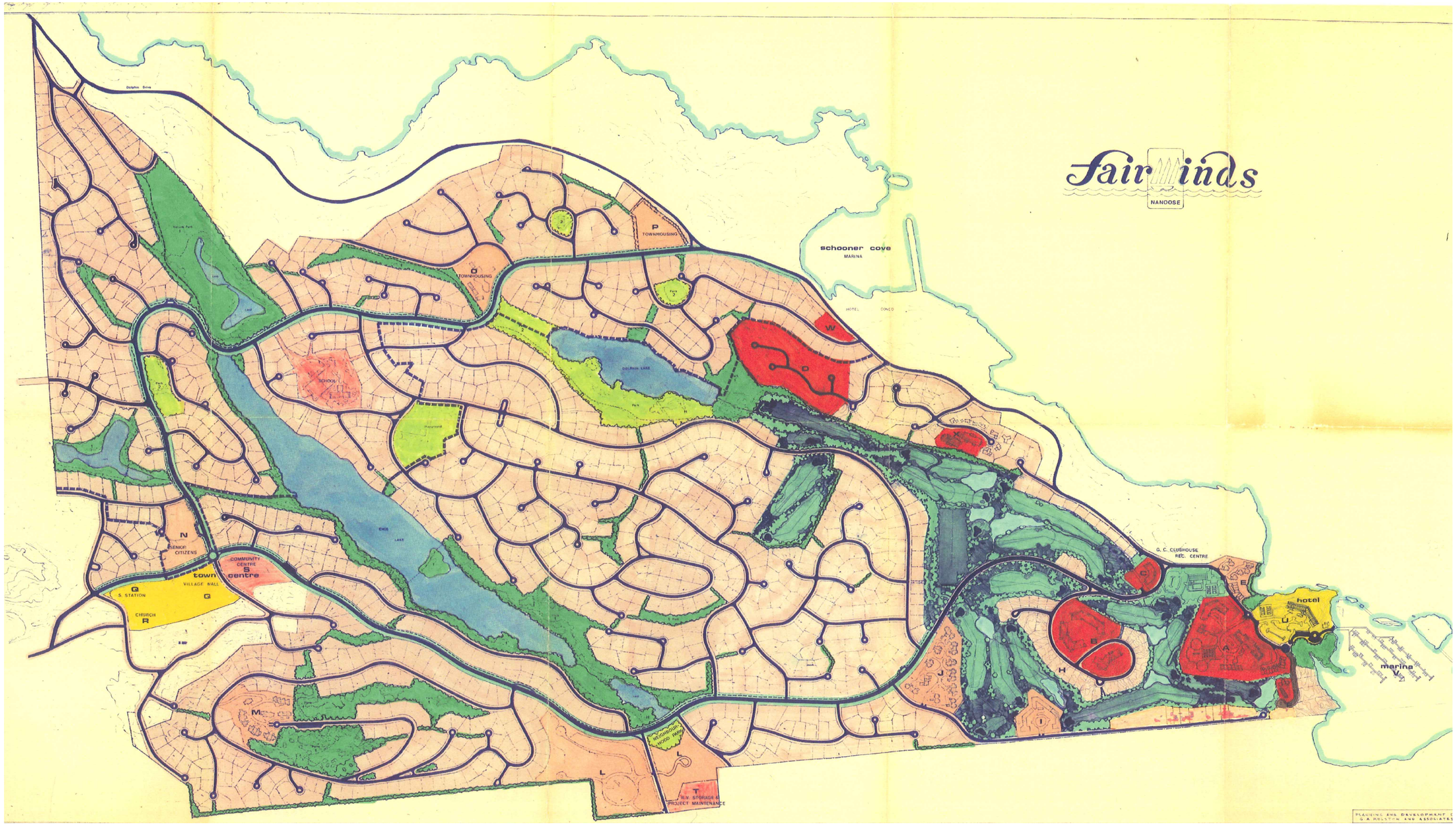


Figure 2 - 1983 Fairwinds Master Plan

Figure 3 - Schooner Cove Neighbourhood Plan

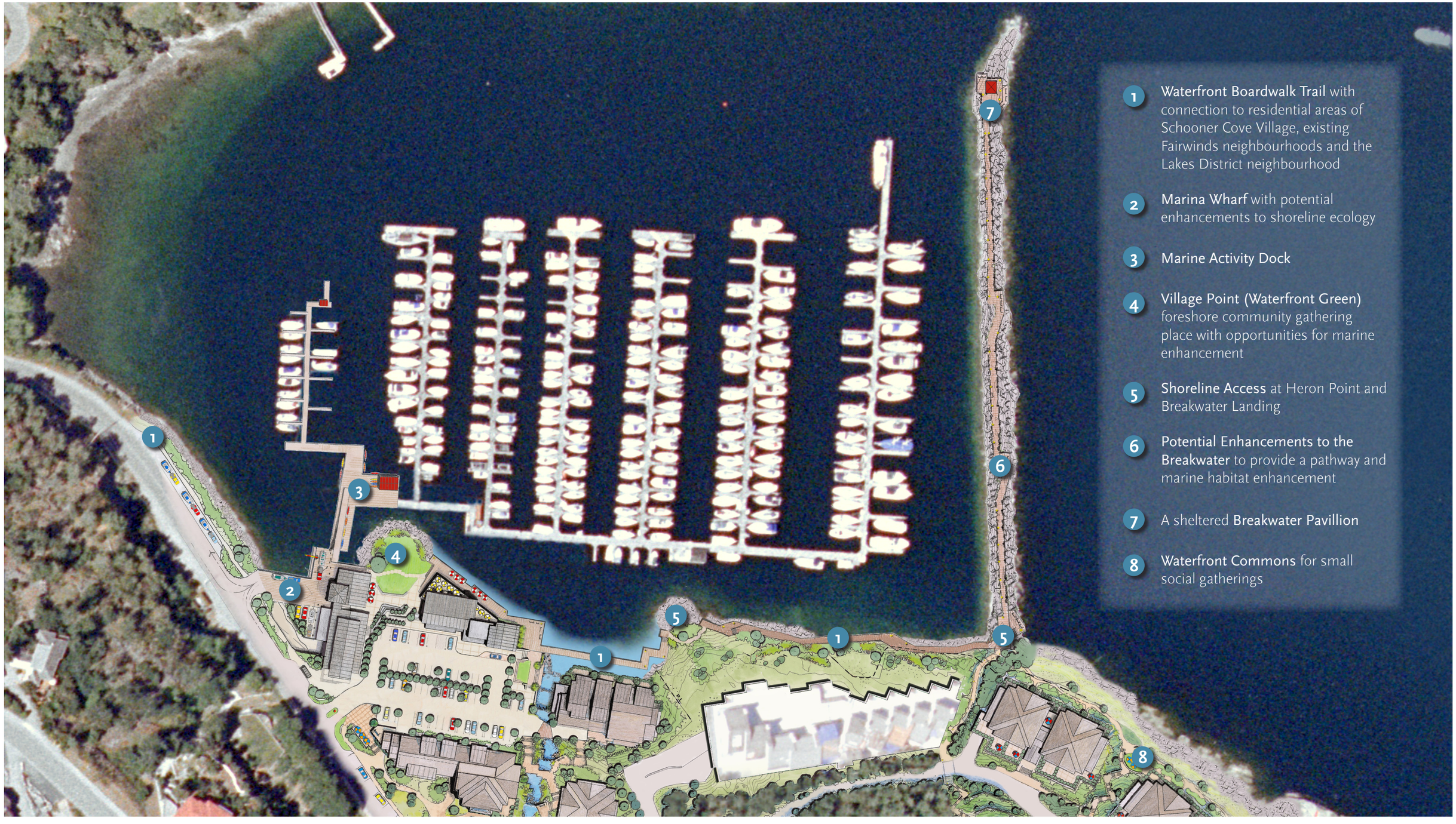
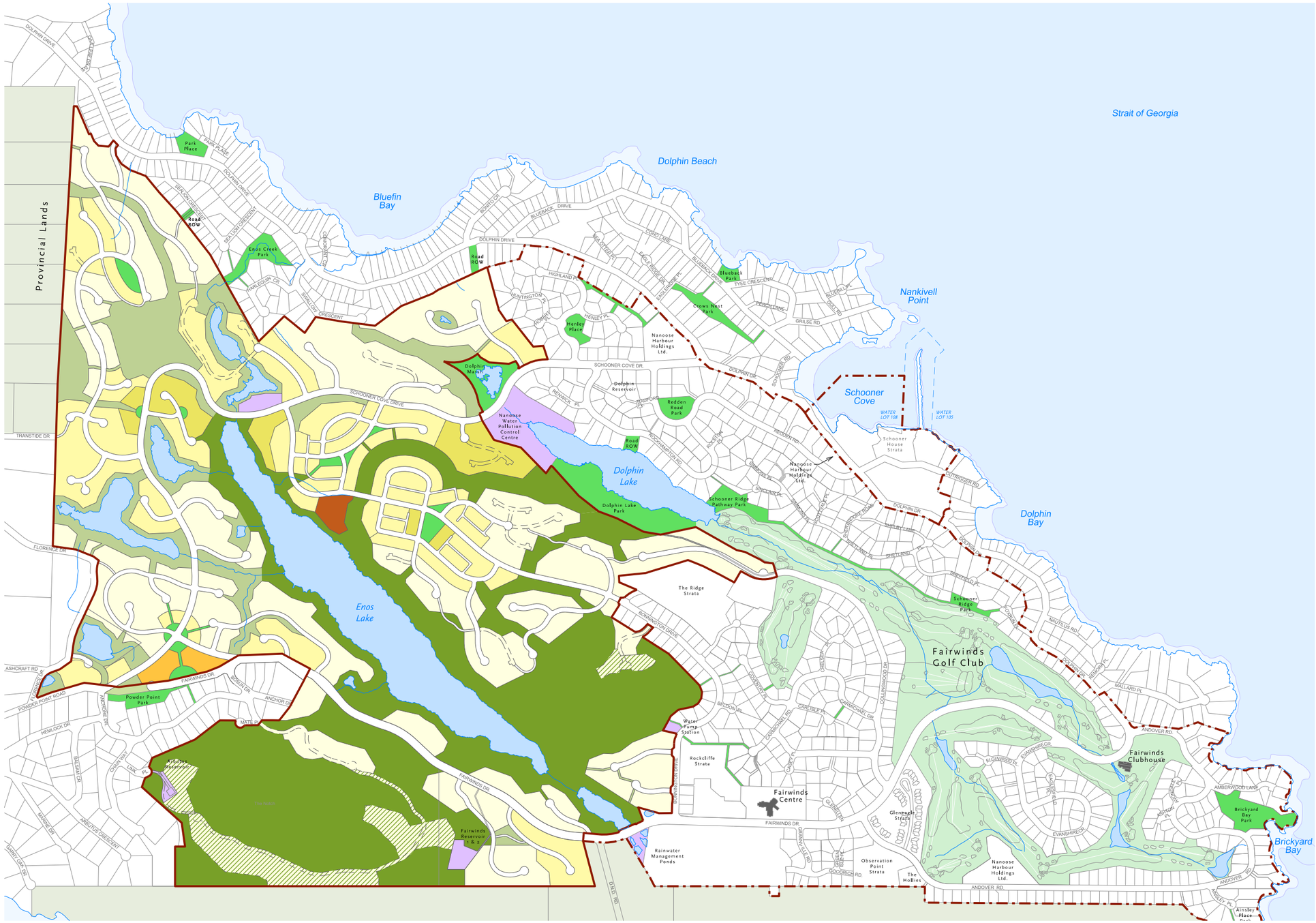


Figure 4 - Schooner Cove Waterfront Experience

LAND USE PLAN



LEGEND

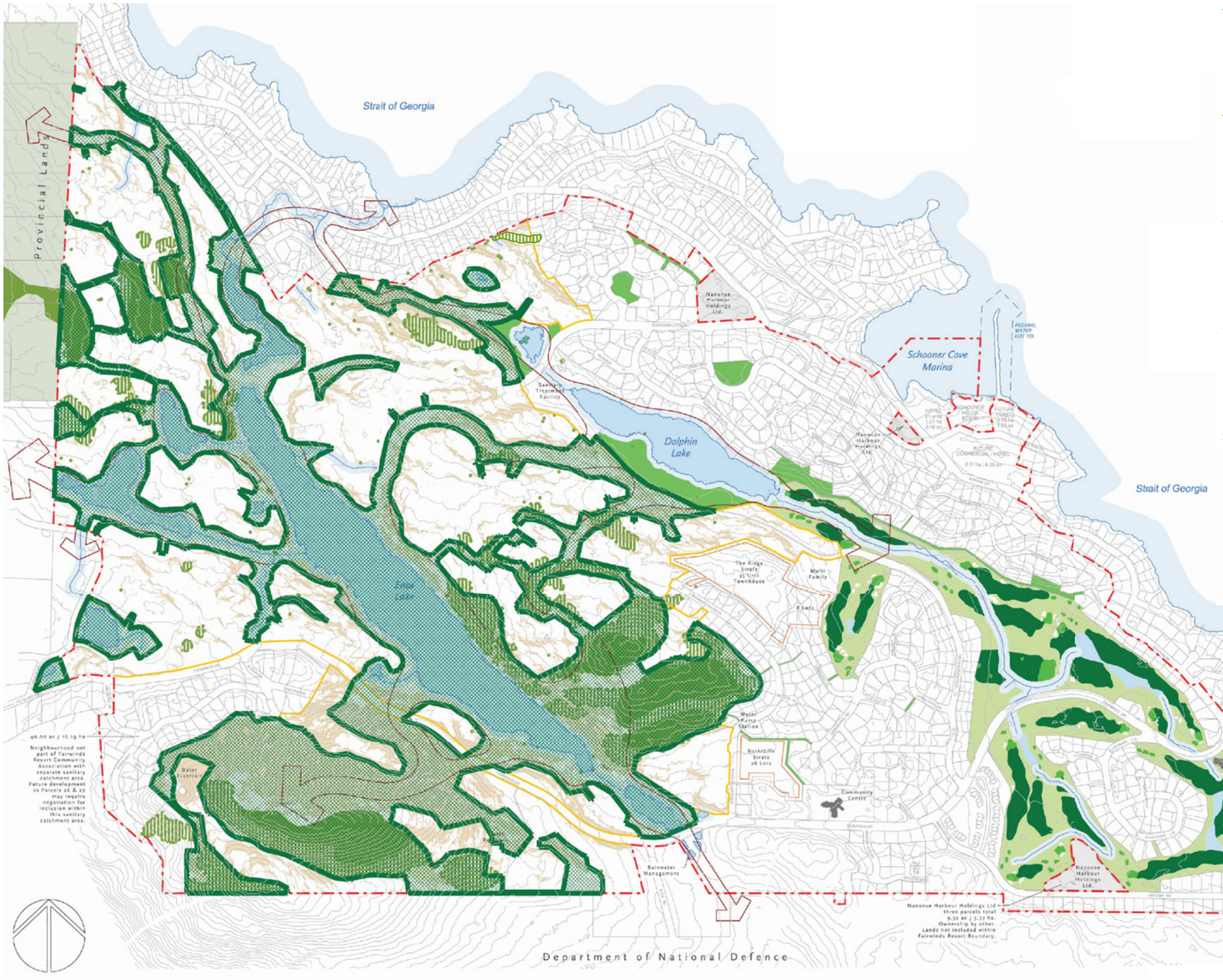
- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area within the OCP Urban Containment Boundary

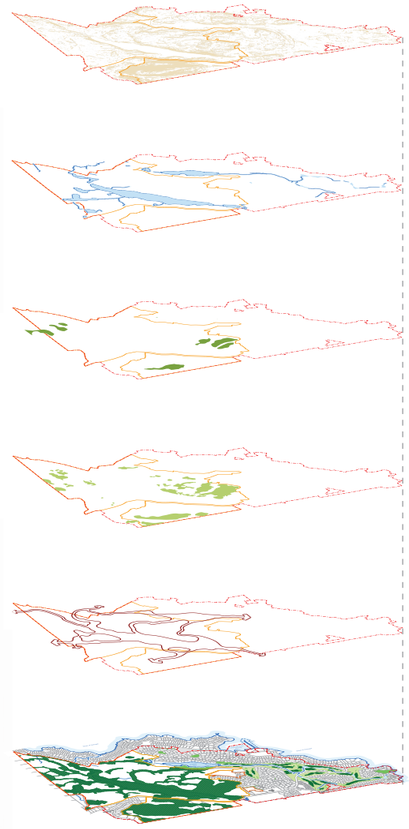
33.7%	Regional Park	96.81 ha (239.22 ac)
11.0%	Community Park	31.63 ha (78.16 ac)
0.7%	Community Park (Active)	2.00 ha (4.94 ac)
3.1%	Future Development Reserve	8.97 ha (22.17 ac)
25.0%	Traditional Single Family	71.82 ha (177.47 ac)
13.0%	Lakes Single Family & Duplex	37.36 ha (92.32 ac)
2.5%	Lakes Multi Family	7.25 ha (17.91 ac)
0.5%	Community Mixed Use	1.40 ha (3.46 ac)
0.3%	Lakehouse Community Centre	0.92 ha (2.27 ac)
0.5%	Civic Infrastructure	1.37 ha (3.39 ac)
9.7%	Public Road ROW	27.76 ha (68.59 ac)
100%		287.30 ha / 709.91 ac

SCALE 1:12500

0 50 150 250 500m

Figure 5 - The Lakes District Neighbourhood Plan





Steep Slopes & Rocky Outcrops

More than 20% of the lands have steep terrain, defined by slopes in excess of 30%. While these areas limit potential for some types of development, they create unique opportunities for design and help preserve landscape character.

Water & Wetlands

With 8% of The Lakes District occupied by lakes, streams and wetlands, the protection of these features creates an opportunity to maintain natural function as well as character. Setbacks from waterbodies ("buffers") follow provincial *Streamside Protection and Enhancement Areas* requirements.

Garry Oak Ecosystem

Several pockets of the sensitive Garry Oak Ecosystem have been identified, comprising about 4% of The Lakes District area. Through sensitive design and monitoring, 10% of these areas will be preserved and protected.

Environmentally Sensitive Areas

Approximately 12% of The Lakes District area is classified as Environmentally Sensitive Area (ESA). These are prime areas for conservation and enhanced recreation opportunity such as bird watching, hiking and environmental stewardship. The conservation framework proposes to retain 85% of ESAs, with ~5% identified for protection through land covenants.

Wildlife Corridors

Protecting wildlife movement and habitat, including blue and red listed species, through wildlife corridors is a Provincial and Regional goal. Wildlife corridors between 30-50 metres serve to maintain healthy habitat while linking to the recreation network.

The Conservation Plan

The result of considering all of the above elements in preparing the Neighbourhood Plan designates these areas as park, ensuring the natural systems, recreational opportunities and landscape character of The Lakes District are protected in perpetuity.

EKISTICS

Figure 6 - Planning for Conservation

PARK AND ENVIRONMENTAL NETWORK PLAN

LEGEND

- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area within the OCP Urban Containment Boundary

Regional Park	96.81 ha (239.21 ac)
Community Park	31.63 ha (78.16 ac)
Community Park (Active)	2.00 ha (4.94 ac)
Development Reserve for Potential Park Expans	8.97 ha (22.17 ac)
Multi-Use Pathway 3.0m Paved Surface	5,379 m
Sidewalk 1.8m Paved Surface	13,987 m
Existing Sidewalk 1.5m Paved Surface	
Multi-Use Trail 1.5m - 2.5m Crushed Surface	4,143 m
Walking Trail 1.0m - 1.5m Crushed Surface	8,004 m
Hiking Trail 0.75m - 1.0m Crushed Surface	6,921 m

- Lakehouse Community Centre
- Enos Lake 'Blue Way' & Docks
- Community Garden
- Park Staging Area
- Destination Viewpoints
- Designated Street Crossing

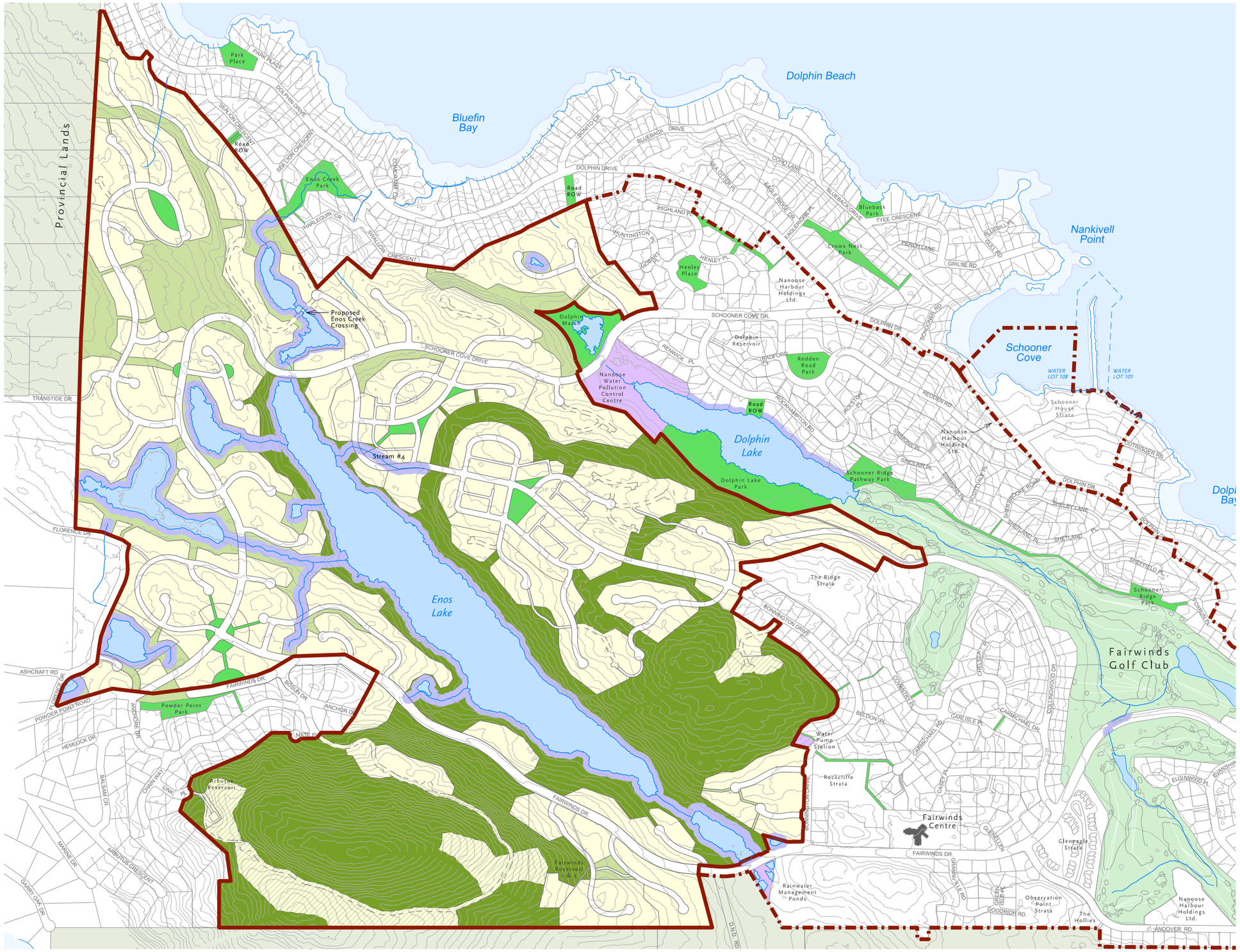
SCALE 1:12500

0 50 150 250 500m

Figure 7 - The Parks Plan

Figure 8
RIPARIAN AREAS IN LAKES DISTRICT

FEBRUARY, 2010



LEGEND

- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area
- Streamside Protection & Enhancement Area (SPEA)
- Development Areas
- Regional Park
- Community Park
- Community Park (Active)
- Lakes & Wetlands
- Fairwinds Golf Club
- Federal and Provincial Lands

SCALE 1:10000

0 40 120 200 400m

EKISTICS

Figure 9
GARRY OAK MEADOWS IN LAKES DISTRICT

FEBRUARY, 2010

LEGEND

- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area
- Garry Oak Meadows
- Development Areas
- Regional Park
- Community Park
- Community Park (Active)
- Lakes & Wetlands
- Fairwinds Golf Club
- Federal and Provincial Lands

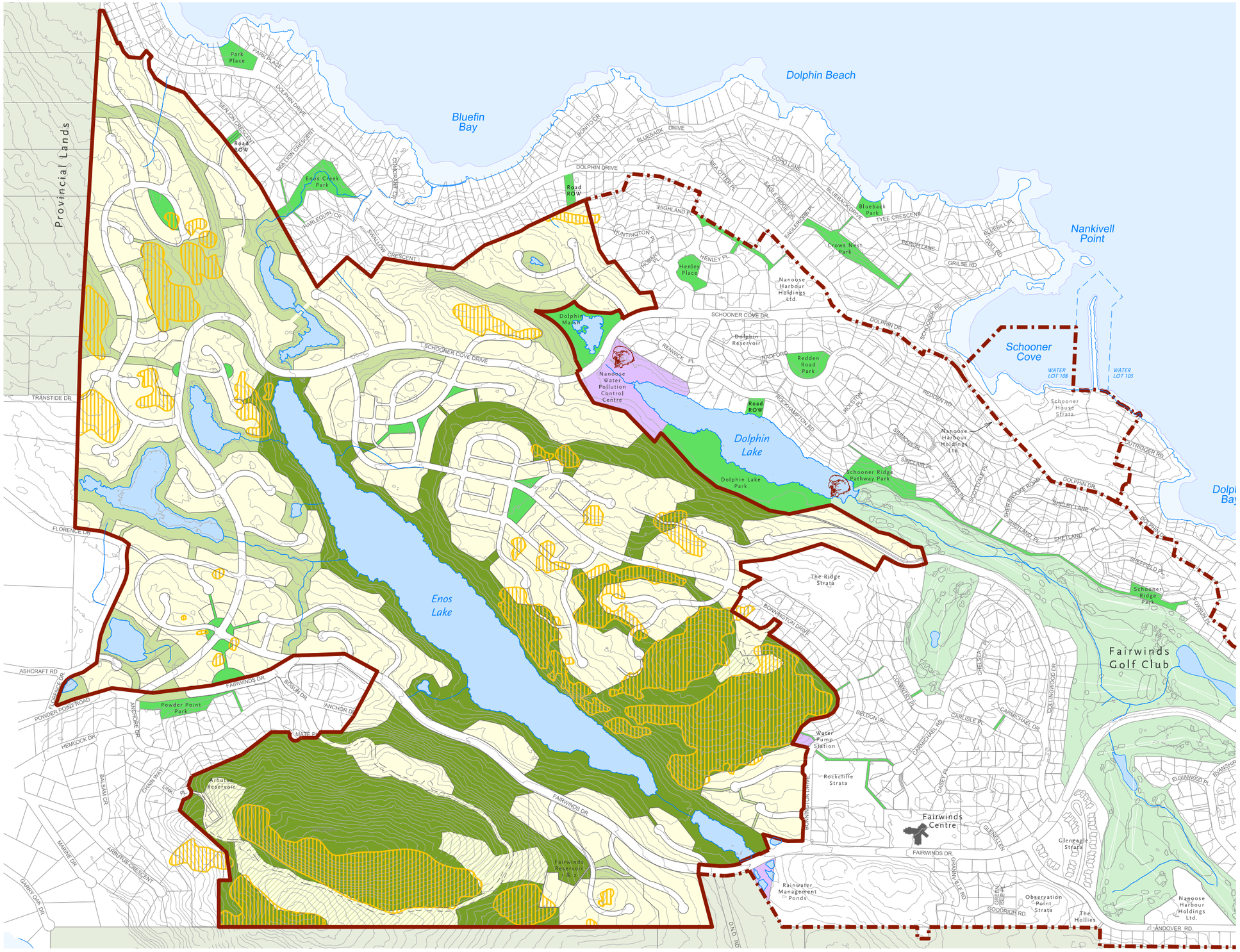
SCALE 1:10000

0 40 120 200 400m

EKISTICS

Figure 10
ENVIRONMENTALLY SENSITIVE AREAS IN LAKES DISTRICT

FEBRUARY, 2010



LEGEND

- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area
- Environmentally Sensitive Areas
- Eagle Nest Locations
- Development Areas
- Regional Park
- Community Park
- Community Park (Active)
- Lakes & Wetlands
- Fairwinds Golf Club
- Federal and Provincial Lands

SCALE 1:10000

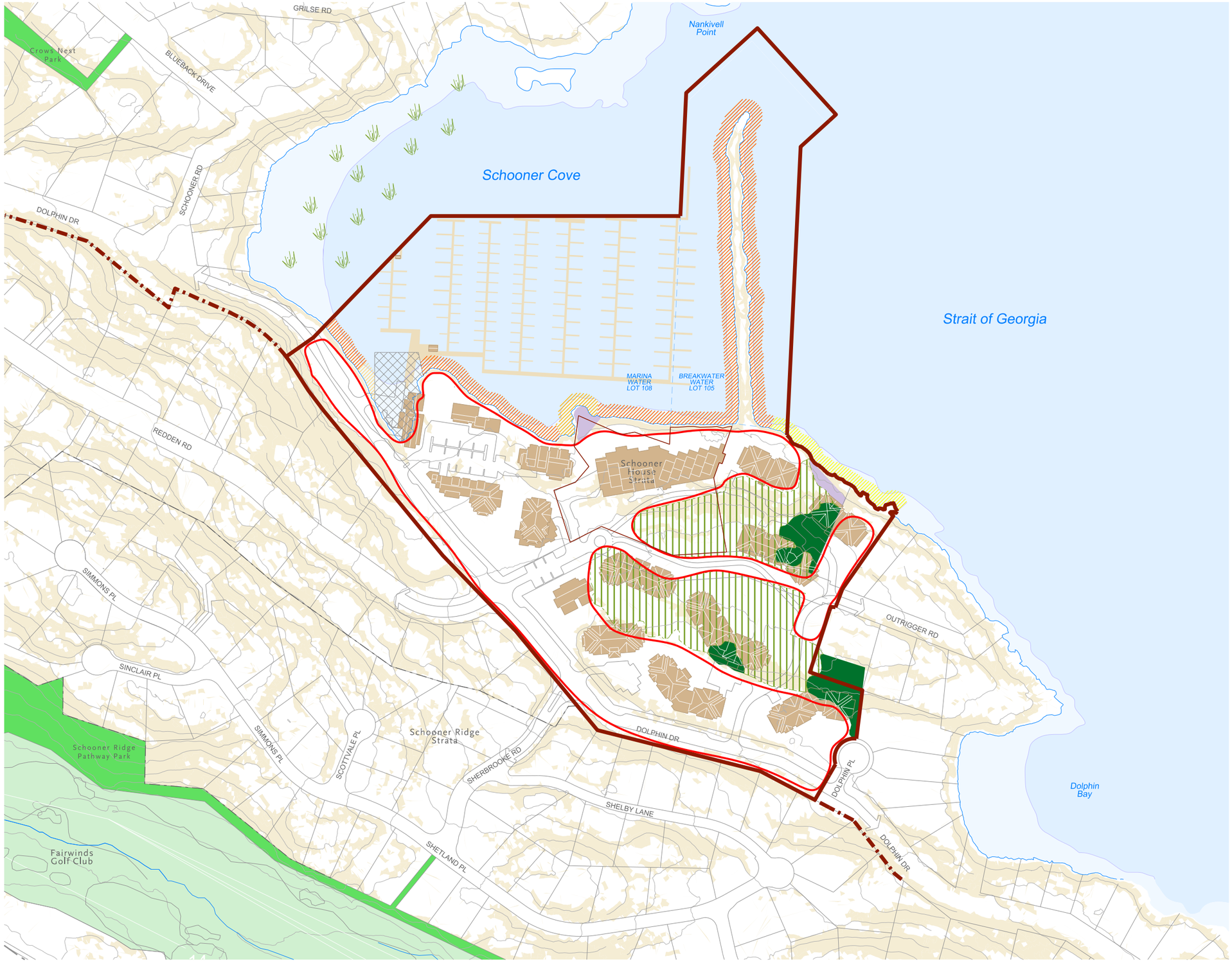
0 40 120 200 400m

EKISTICS

SCHOONER COVE NEIGHBOURHOOD PLAN

Figure 11
ENVIRONMENTALLY SENSITIVE AREAS IN SCHOONER COVE

FEBRUARY, 2010



LEGEND

- Schooner Cove Neighbourhood Plan Area
- Urban Containment Boundary (UCB)
- Steep Slopes (+30%)
- Garry Oak / Arbutus Ecosystem
- Second Growth Douglas Fir / Arbutus Ecosystem
- Coastal Bluff Ecosystem
- Disturbed Area
- Unmodified Shoreline (Natural Bedrock)
- Partially Modified (Cobble Beach)
- Partially Modified (Natural Bedrock)
- Modified (Riprap / Stone Wall / Fill)
- Marina Structures
- Salt Water Concrete, Paving & Pilings
- Scattered Eelgrass

SCALE 1:3000

0 12 36 60 120m

EKISTICS

Figure 12
PLANT SPECIES AT RISK AND TREE RETENTION SURVEY AREAS

FEBRUARY, 2010

LEGEND

- OCP Urban Containment Boundary
- The Lakes District Neighbourhood Plan Area
- Garry Oak Meadows
- Plant Species at Risk Survey Area (within 30m from Garry Oak Meadow)
- Arborist Survey Line
- Development Areas
- Regional Park
- Community Park
- Community Park (Active)
- Lakes & Wetlands
- Fairwinds Golf Club
- Federal and Provincial Lands

SCALE 1:10000

0 40 120 200 400m

EKISTICS

Tables

Table 1
Water Quality and Quantity Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Water Quality and Quantity	Impacts to water quality due to vegetation removal within the Project footprint.	Yes	L	L	L	No	-	No - the detailed design of the development will follow RAR requirements for riparian setbacks	-	**Not significant** Potential impacts to water quality and quantity have been addressed in project design and the proposed mitigation. A SMP, EHM, construction BMPs, and invasive species management will protect water quality in natural waterbodies.
	Impacts to water quality from construction near waterbodies	Yes	H	L	H	Yes	Yes	Yes - measures to control erosion and sedimentation are needed.	• Design a clear span bridge for the crossing of the Enos Creek wetlands following the DFO Operational Statement for clear span bridges, or another DFO-approved design • Develop and implement a Construction Environmental Management Plan (CEMP) including an erosion and sediment control plan, and spill contingency practices • During construction, retain an independent qualified Environmental Monitor to advise on site-specific environmental protection and prepare status reports for agencies throughout the construction period.	
	Alterations to surface and subsurface hydrology	Yes	L	L	L	No	-	No - the design has avoided alteration of significant flows and the Stormwater Management Plan will aim to mimic current input to the Enos Lake system	-	
	Impacts to water quality due to post-development stormwater run-off	Yes	L	H	H	Yes	Yes	Yes - an engineered stormwater management plan (SMP) is required to mitigate effects	• Develop a SMP that follows DFO's BMPs where practicable for reducing water quality impacts and conduct a Hydrological Impact Assessment • Implement an Enos Lake Protection and Monitoring Program that includes water quality sampling	
	Impacts to water quality from community pesticide and fertilizer use	Yes	H	H	L	Yes	Yes	Yes - measures to minimize use of chemicals are needed.	• Prepare and provide future lot purchasers with an Environmental Homeowner's Manual (EHM) that describes the environmentally sensitive areas and recommends that (a) pesticides not be used, and (b) natural composted material should be used instead of fertilizers. • Prepare and implement an integrated pest management practices for maintenance of common lands.	
	Impacts to water quality from recreational use of the lake	Yes	L	L	L	No	-	No - the Neighbourhood Plan proposes non-motorized boat use of Enos Lake	-	
	Impacts to regional water supply from community water use	Yes	H	H	L	Yes	Yes	Yes - while the Project intends on conducting detailed studies to identify a sustainable water source, additional water conservation measures are required	• Implement water conservation practices in the landscaping design and private landscaping guidelines • Include water conservation guidance in the EHM	
	Impacts to marine water quality due to sewage discharge	Yes	L	L	L	No	-	No - sewage treatment for the site will receive secondary treatment and meet provincial sewage regulations	-	
	Impact to water quality in Enos Lake and wetlands due to introduction of invasive species (plants and animals)	Yes	H	H	H	Yes	Yes	Ye s- the Project needs to implement measures to manage the risk of invasive species introduction to Enos Lake	• Include invasive species monitoring and management practices in the Enos Lake Protection and Monitoring Program to minimize the risk of introduction and proliferation of invasive aquatic plants and animals to Enos Lake. • Include specific guidance in the EHM	

Table 2
Aquatic Ecology Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plan
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Aquatic ecology	Loss of riparian function through vegetation removal or disturbance	Yes	L	H	L	No	-	No - the detailed design of the development will follow RAR requirements for riparian setbacks, including the replacement of flow and nutrient input from relocation of specific ephemeral watercourses. Restrictive covenants on properties bordering SPEAs will further preserve riparian function.	At specific locations where riparian areas are disturbed for construction of creek crossings, the vegetation will be restored with native species following the guidance of a vegetation ecologist.	**Not significant** Potential impacts exist, mainly by select works in sensitive areas, though mitigation and enhancement measures will ensure that effects are temporary. A low-impact trail system and EHM for residents will serve to protect aquatic habitat in The Lakes District, and green shoreline development practices will protect marine habitat in Schooner Cove.
	Impacts to waterbodies during construction and upgrade of roads over or adjacent to waterbodies	Yes	L	H	H	Yes	Yes	Yes - measures are required at the detailed design and construction stages to mitigate impacts to waterbodies	• Design a clear span bridge for the crossing of the Enos Creek wetlands following DFO guidelines, or another DFO-approved design • Use clear span bridges or open-bottomed culverts for other stream crossings • Develop and implement a Construction Environmental Management Plan (CEMP) including specific approaches for works in fisheries sensitive areas, an erosion and sediment control plan and spill contingency practices • During construction, retain an independent qualified Environmental Monitor to advise on site specific environmental protection and prepare status reports for agencies throughout the construction period. • Post-construction habitat restoration to include replacement of existing invasive vegetation at select areas with native plant species	
	Impact to the marine ecology of Schooner Cove from shoreline development	Yes	L	H	H	Yes	Yes	Yes - measures to ensure overall enhancement of marine ecology are required.	Design the shoreline development to have a net enhancement to shoreline ecology, considering the Green Shores principles and design guidance for low-impact shoreline structures	
	Degradation of riparian vegetation and instream integrity through physical disturbance from humans and pets	Yes	H	H	L	Yes	Yes	Yes - measures to protect these areas are required	• Construction of the trail system should incorporate concepts outlined in "Access Near Aquatic Areas: A Guide to Sensitive Planning Design and Management" • The Environmental Homeowners Manual and trail signage will explain why people and their pets should stay out of riparian areas and other ESAs.	

Table 3
Terrestrial Ecology Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Pland
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Terrestrial Ecology	Impacts to Garry oak ecosystems	Yes	L	H	H	Yes	Yes	Yes - mitigation is required to protect Garry oak meadows during construction and for the life of the community	• Implement protection measures in the CEMP for the construction adjacent to Garry oak meadows • Construct a trail system that protects the meadows through measures to control access to sensitive areas • Prepare and implement a Garry Oak Meadows Management Plan including invasive species management and monitoring • Implement an educational initiative for residents • Work with biologists to define candidate properties for restrictive covenants and size and shape of covenants to maximize protection of environmental values.	**Not significant** Although there will be loss of forested habitat, the most valuable habitats have been preserved in the neighbourhood plans and additional measures have been recommended that will further minimize impacts on key plants and wildlife species.
	Impacts to plant species at risk	Yes	L	H	H	Yes	Yes	Yes - due diligence measures are required to minimize risk of loss of plant species at risk	• Conduct plant species at risk surveys (by a qualified vegetation ecologist) to identify plants that can be salvaged or avoided in these areas: (a) Development areas where disturbance is within 30m of a Garry Oak meadows polygon; and (b) Development areas of the marine shoreline rocky bluff (identified sensitive ecosystem) on the Schooner Cove property (Figure 12). • Ensure that these surveys are mandatory components of the CEMP	
	Impacts to eagles, herons and other breeding birds	Yes	L	H	H	Yes	Yes	Yes - measures are required to avoid impacting the nests of these species	• Conduct vegetation clearing outside of prescribed nesting seasons for general birds (April 1-July 31) and raptors/owls (January 1-July 31), or conduct appropriate nest surveys according to CWS/MOE protocol to avoid destruction of nests. • Maintain as many existing wildlife trees and snags as possible	
	Impacts to wetland-dependent wildlife	Yes	L	H	H	Yes	Yes	No - Standard measures are required to minimize impacts to wetland wildlife	• salvage amphibians prior to construction in wetland/riparian habitats • design for road underpasses at two specified locations for passage of beavers and other small wildlife	

Table 4
Archaeology Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Archaeology	Impacts to archaeology sites during vegetation clearing, grubbing and excavation	Yes	L	H	H	Yes	Yes	Yes - additional diligence is required to avoid or mitigate impacts to potential archaeological sites	A focused Preliminary Field Reconnaissance may be required in areas identified in the Archaeological Overview Assessment. This work may require a pre-construction Archaeological Impact Assessment (AIA) be completed for certain areas within the development footprint. An AIA may require that an archaeology management plan be implemented to mitigate impacts.	**Not significant** The project will conduct due diligence to avoid impacts to archaeological sites.

Table 5
Community and Recreation Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Community & Recreation	Changes to recreational opportunities in The Lakes District	No	-	-	-	-	-	No - the plan for parks, trails and recreation is comprehensive and based on good planning principles and consultation input	-	**Positive** The neighbourhood plans will enhance amenities and recreational opportunities of the Fairwinds area, and standard construction methods will comply with RDN noise restrictions and limit the visual impact during construction.
	Changes to amenities in Schooner Cove	No	-	-	-	-	-	No - the changes proposed will have an overall improvement to creating a village centre and providing a diversity of amenities that balance the needs of various types of users	-	
	Construction noise and visual impact	Yes	L	L	H	No	-	No - standard construction methods and best practices will comply with RDN noise restrictions and limit the visual impact during construction	-	

Table 6
Transportation Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Transportation	Effects on vehicle traffic	No - a study on effects of future vehicle traffic concludes that the roads are capable of handling the increased population, with the implementation of specified road improvements	-	-	-	-	-	-	-	**Neutral** The project will not significantly affect existing transportation.

Table 7
Local Economy Effects Assessment Summary
Environmental Impact Assessment
Fairwinds' The Lakes District and Schooner Cove Neighbourhood Plans
Fairwinds Community & Resort, PGL File: 130-12.01

VEC	Potential Effects	Is the potential effect adverse?	Would the effect be significant without mitigation?				Is the effect likely?	Would the effect be adverse, significant and likely without mitigation?	Proposed Mitigation and Enhancement and/or Monitoring	Overall Residual Effect of the Project on the VEC
			Geographic Extent	Temporal Extent	Magnitude	Significant?				
Local Economy	Effects to the local economy	No - there will be significant positive impacts	-	-	-	-	-	-	-	**Positive** There will be significant economic benefits to the mid-Island economy, including capital investment, job creation and funds for RDN services, hospitals, police and schools

Appendix 1

Compendium of Public Open House Summary Reports and Other Consultation Documents

(Refer to Appendix II - Public Consultation Record for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 2

Schooner Cove Parking Study by EYH Consultants

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 3

Schooner Cove – Existing Servicing Inventory Report by Koers Engineering Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 4

The Lakes District – Existing Servicing Inventory Report by Koers Engineering Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 5

Preliminary Geotechnical Terrain Assessment for Schooner Cove by Trow Associates Inc.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 6

Letter from Cascadia Biological Services re: Beavers (Addendum to Biophysical Assessment)

Cascadia Biological Services
1442 White Pine Terrace
Victoria, BC
V9B 6J3

May 3rd, 2009

Fairwinds Real Estate Management
c/o Bentall LP
3455 Fairwinds Drive
Nanoose Bay, BC V9P 9K6

Attn: Mr. Russell Tibbles

Re: **Lakes District Study Area Detailed Biophysical Assessment dated February 2009 (the "Report") - Addendum #1**

This Addendum #1 represents our observations, analysis, conclusions and recommendations following a one-day expansion of the Report. The related fieldwork and assessment was completed in April of 2009 at your request and in response to concerns expressed by certain members of the Community Advisory Group (CAG) relative to the proposed alignment for the extension of Schooner Cove Drive set out in the Draft Plan and its potential impact on local species, including the American Beaver. CAG members indicated that a beaver colony was located within two large wetland ecosystems (refer to Stream #3 – S#3 and Stream #6 - S#6 in Attachment I for wetland locations) along the northwestern edge of the Study Area and requested further assessment of the hydrological connectivity (if any) between the two wetlands.

It is our understanding that a road is required by MoT and the RDN to connect to Fairwinds Drive across the northern half of the Study Area and above Enos Lake to the current end of Schooner Cove Drive, in order to service the proposed Lakes District neighborhood as well as Schooner Cove and the Nanoose community. Cascadia has determined that the current draft road alignment, as shown in Attachment II, will serve to minimize the overall impact to the environment. In reaching this conclusion, we reviewed two other possible road alignments including the most western route which was to cross through the wetland in Stream #6 (S #6) as well as the most eastern route which was to be located immediately east of the wetland forming part of the Stream #3 (S #3) watershed and found them both to be less favorable as they either cross through one of the wetlands or traverse other environmentally significant polygons. The proposed road alignment results in only one significant stream crossing and maintains adequate buffers along both of the identified wetlands. This alignment also retains the vast majority of the beavers' food source (pole sapling deciduous trees) as riparian areas (located within the 15-20m of the high water mark or HWM). As with all planned development, some

impact to the environment will occur, however the proposed alignment (as shown in Attachment II) is the best possible location taking all environmental considerations into account.

In addition, from our most recent assessment of the wetland ponds and associated riparian areas, Cascadia has determined that the wetlands are not hydrologically connected and are at different elevations (3.5m elevation change) as shown in Attachment II. Labelled Stream #3 (S#3) and Stream #6 (S#6) in Attachment I to this Addendum (and also Appendix F to the Report), the waterbodies are independent of each other prior to their inflow to Enos Lake and appear to have been under this hydrological regime for at least the last 150 years, given the structural stage and composition of trees located between the two waterbodies.

Beaver dams located at the waterbody outlets presently control the flows from each of the identified wetlands. The beaver dams as they are now, raise the water level approximately 0.4m - 0.8m above the geological natural high water mark of the wetlands. The beavers, originally observed and documented in the Report as historical, are currently utilizing both of the identified wetlands including foraging in the adjacent deciduous riparian areas. These riparian areas consist of deciduous pole sapling/young forest structural stages and are primarily used for food and as dam building materials. Forming colonies of 3-6 individuals, beavers will generally utilize an area similar to the one they are in now for 3-5 years before moving on as their primary food reserves are depleted.

On Vancouver Island, beavers are found from sea level elevations to alpine ponds (up to 3400m in elevation) as well as other large waterbodies including rivers etc. Beavers are currently not listed by the British Columbia Conservation Data Centre (BC CDC) on Vancouver Island as populations are considered stable. It is anticipated that once the beavers move on from this location, the eventual deterioration of the existing dams will not significantly impact the wetlands as the geological formation surrounding the ponds will ensure that the wetlands remain as there is adequate water storage available below the beaver dams.

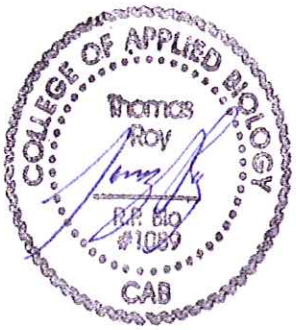
That being said, Cascadia has determined that the following recommendations should be adhered to in order to minimize the overall impacts associated with a proposed road alignment as well as future building pods identified in the area:

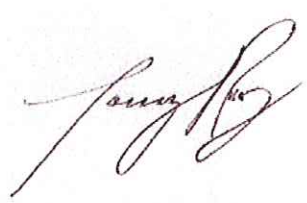
- Provide underpass(s) to ensure migration of select species is facilitated between the two wetlands. These should be designed for some of the smaller species living in and adjacent to the ponds including frogs, snakes, shrews etc.
- Monitor migration patterns between the two wetlands prior to construction as well as after road construction to determine suitable crossing location as well as provide for new recommendations once construction activities are deemed complete.
- Keep the cleared roadway width through the two wetlands as narrow as possible.
- Environmental monitoring of the area is required by a designated Qualified Environment Professional (QEP) prior to and after completion of the road to assess

If you have any questions, please contact me by means below.

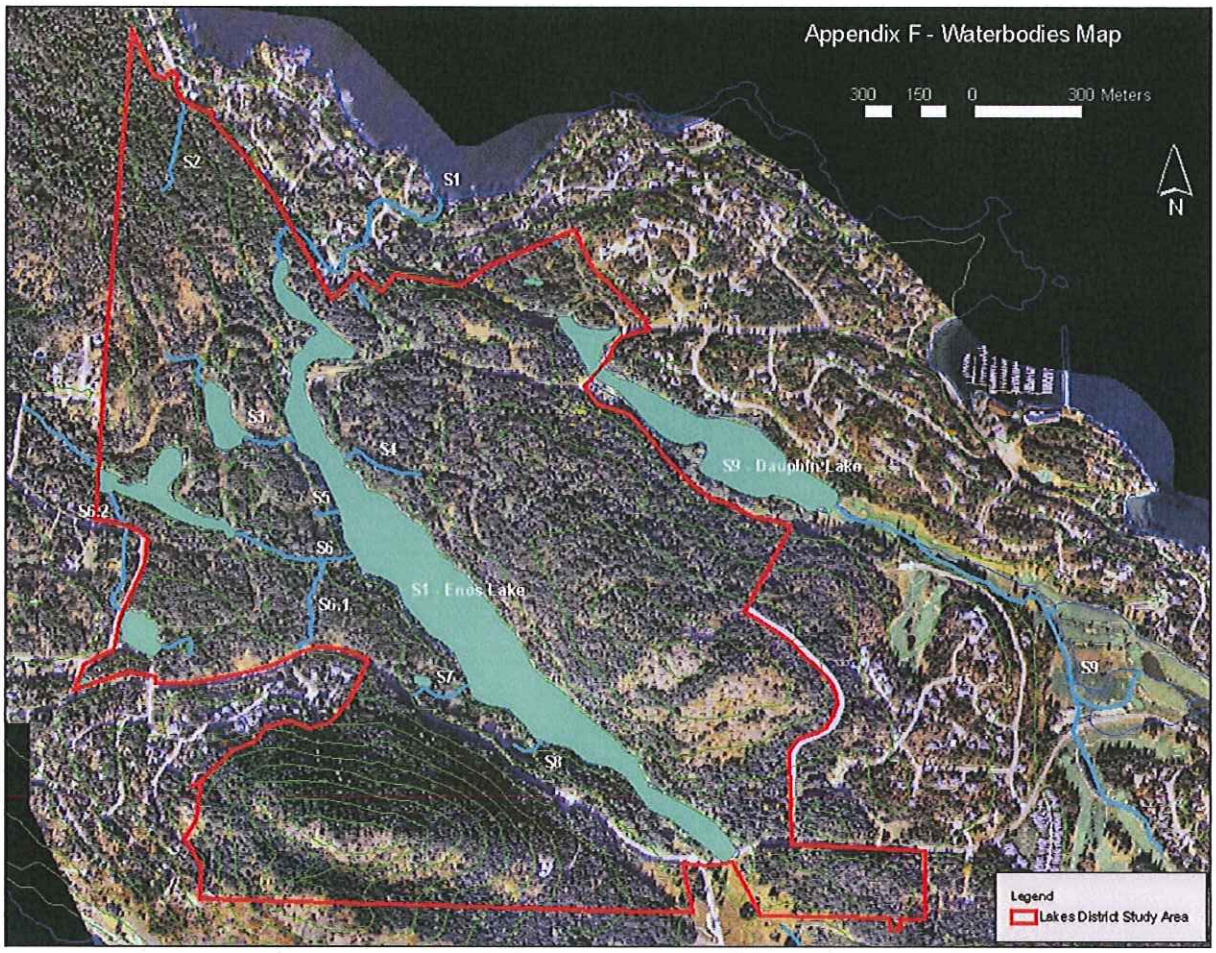
Thanks

Thomas Roy, R.P. Bio., QEP
Cascadia Biological Services
(250) 474-0102
Cell: (250) 888-4864
cascadiabiological@shaw.ca

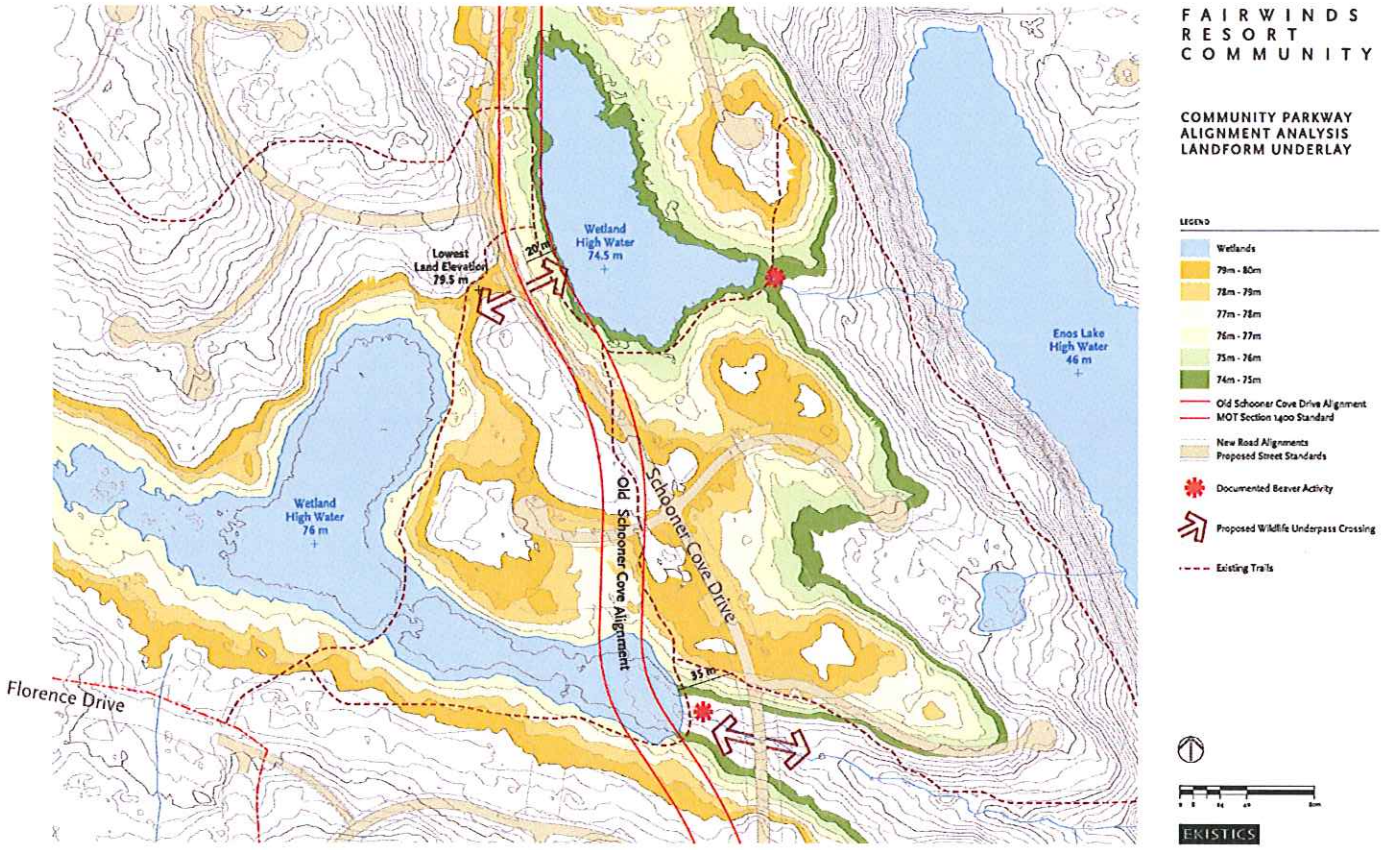




Attachment I



Attachment II



Appendix 7

Draft Project Specific Street Standards by EKISTICS

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 8

Preliminary Geotechnical Terrain Assessment for The Lakes District by Trow Associates Inc.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 9

Detailed Biophysical Assessment for Schooner Cove by Cascadia Biological Services

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 10

Detailed Biophysical Assessment for The Lakes District by Cascadia Biological Services

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 11

Nearshore Marine Assessment in Schooner Cove by Archipelago Marine Research Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 12

Archaeological Overview Assessment for The Lakes District by I.R. Wilson Consultants Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 13

Fairwinds Traffic Impact Study by Opus International Consultants Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 14

Fairwinds – Schooner Cove Parking Review by Opus International Consultants Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 15

Economic Analysis by GP Rollo & Associates

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)

Appendix 16

Plant Species at Risk Possibly Occurring in Specific Habitats that May Exist in the Fairwinds Study Area

Appendix 16
Plant Species at Risk Possibly Occurring in Specific Habitats that May Exist in the Fairwinds Study Area

Scientific Name	English Name	COSEWIC	BC Status	SARA	Preferred Habitat
Allium amplectens	slimleaf onion	-	Blue	-	Vernally moist rocky bluffs and meadows in the lowland zone
Allium crenulatum	Olympic onion	-	Red	-	Dry rock outcrops and rockslides in the lowland, montane and subalpine zones
Allium geyeri var. tenerum	Geyer's onion	-	Blue	-	Moist meadows, banks, and rock outcrops in the lowland, steppe and montane zones
Anagallis minima	chaffweed	-	Blue	-	Moist to wet river banks, salt marshes, vernal pools and pond margins in the lowland zone
Bartramia stricta	apple moss	Endangered	Red	1	Five occurrences of Bartramia stricta are known from BC: Nanoose Hill, limited to the extent of grassy rock outcrops associated with Quercus garryana
Bidens amplissima	Vancouver Island beggarticks	Special Concern	Blue	1	Moist to wet ditches, streambanks and pond edges in the lowland zone
Botrychium simplex	least moonwort	-	Blue	-	Moist to wet vernal pools and ephemeral seepages in the lowland and montane zones
Carex feta	green-sheathed sedge	-	Red	-	Ditches, marshes and wet meadows in the lowland and montane zones
Carex tumulicola	foothill sedge	Endangered	Red	-	Mesic Garry oak stands and dry, grassy meadows and rock outcrops in the lowland zone
Ceratophyllum echinatum	spring hornwort	-	Blue	-	Lakes and sloughs in the lowland and montane zones
Chamaesyce serpyllifolia ssp. *serpyllifolia*	thyme-leaved spurge	-	Blue	-	Dry, sandy or gravelly sites in the lowland and steppe vegetation zones

Scientific Name	English Name	COSEWIC	BC Status	SARA	Preferred Habitat
Cyperus squarrosus	awned cyperus	-	Blue	-	Moist to wet, often sandy sites in the lowland and steppe zones
Dryopteris arguta	coastal wood fern	Special Concern	Blue	1	Mesic forest margins and rocky sea cliffs in the lowland zone
Entosthodon fascicularis	banded cord-moss	Special Concern	Blue	1	periodically humid or damp earth of terraces of exposed outcrop knobs in open stand of Arbutus menziesii and Quercus garryana
Epilobium densiflorum	dense spike-primrose	Endangered	Red	1	Moist to dry meadows, roadsides and waste areas in the lowland zone
Githopsis specularioides	common bluecup	-	Blue	-	Moist seepage areas on rock outcrops in the lowland zone
Hydrocotyle ranunculoides	floating water pennywort	-	Red	-	Palustrine
Isoetes nuttallii	Nuttall's quillwort	-	Blue	-	Vernal pools and ephemeral winter seepages in the lowland zone
Juncus oxymeris	pointed rush	-	Blue	-	Wet meadows and riverbanks in the lowland zone
Limnanthes macounii	Macoun's meadow-foam	Threatened	Red	1	Wet depressions, vernal pools and seepage sites in the lowland zone
Lotus pinnatus	bog bird's-foot trefoil	Endangered	Red	1	Wet to moist meadows, streambanks and clearings in the lowland zone
Malaxis brachypoda	white adder's-mouth orchid	-	Blue	-	Moist forests, mudflats, fens and streambanks in the lowland and montane zones
Meconella oregana	white meconella	Endangered	Red	1	Vernally moist rocky or grassy slopes in the lowland zone
Megalodonta beckii var. *beckii*	water marigold	-	Blue	-	Lakeshores and ponds in the lowland, steppe and montane zones
Microseris bigelovii	coast microseris	Endangered	Red	1	Moist, open, grassy coastal bluffs in the lowland zone

Scientific Name	English Name	COSEWIC	BC Status	SARA	Preferred Habitat
Microseris lindleyi	Lindley's microseris	Endangered	Red	-	Mesic grassy, rocky bluffs in the lowland zone; rare in SW BC; known only from and disjunct in the Gulf Islands
Myriophyllum quitense	waterwort water-milfoil	-	Blue	-	Large lakes and rivers in the lowland zone
Psilocarphus tenellus var. *tenellus*	slender woolly-heads	Not at Risk	Blue	-	Moist vernal pathsides and roadsides in the lowland zone
Ranunculus alismifolius var. *alismifolius*	water-plantain buttercup	Endangered	Red	1	Wet ponds and shorelines to moist meadows in the lowland zone
Rupertia physodes	California-tea	-	Blue	-	Mesic open forests in the lowland zone
Schoenoplectus americanus	Olney's bulrush	-	Red	-	Saline or alkaline marshes and wet meadows in the lowland and montane zones
Senecio macounii	Macoun's groundsel	-	Blue	-	Dry open forests, disturbed areas and rock outcrops or limestone quarries in the lowland zone
Sericocarpus rigidus	white-top aster	Special Concern	Red	1	Dry meadows, woodlands and rocky slopes in the lowland zone
Toxicodendron diversilobum	poison oak	-	Blue	-	Dry to mesic rocky slopes (often climbing trees) in the lowland zone
Trifolium dichotomum	Macrae's clover	-	Blue	-	Mesic to dry slate cliffs or talus, sandstone shale, and open, grassy sites in the lowland zone
Viola praemorsa ssp. *praemorsa*	yellow montane violet	Endangered	Red	1	Dry grassy slopes and oak woodlands in the lowland zone
Yabea microcarpa	California hedge-parsley	-	Red	-	Moist vernal sites and streambanks in the lowland zone

Appendix 17

Environmental Incidents Statutory Reporting Requirements

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Spills or discharges of solid, liquid or gaseous polluting substances[1] Spills and other irregularities at hazardous waste facilities, as defined in s. 1 of the *Hazardous Waste Regulation*	Section 79(5) of the *Environmental Management Act* (British Columbia)	Provincial Emergency Program (PEP) Phone: 1-800-663-3456 or, where not practical to report to PEP within a reasonable time, contact the local police or nearest detachment of the RCMP Immediately report any irregularities to a director of waste management designated under the *Environmental Management Act*	*Spill Reporting Regulation* Section 10 of the *Hazardous Waste Regulation*
Spill or imminent danger of spill of a deleterious substance into water frequented by fish, when damage or danger to fish habitat may reasonably be expected to result	Section 38(4) of the *Fisheries Act* (Canada)[2]	- an inspector under the *Fisheries Act*; - PEP (numbers above), or - nearest office of Environment Canada or Department of Fisheries and Oceans	None
Discharge into land, water or air of a substance that is or may be a health hazard	Section 55 of the *Health Act* (British Columbia)	Nearest Medical Health Officer (in writing) (General inquiry line: (250) 952-3456)	Section 70.1 of the *Sanitary Regulations*
Damage to the environment (i.e. trespass)	Section 46(2) of the *Forest and Range Practices Act*	The District Manager (Forest Service Office)	None
Release of a toxic substance into the environment	Section 212 of the *Canadian Environmental Protection Act*	An enforcement officer under the *Canadian Environmental Protection Act*	None

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Workplace accident involving the major release of a toxic or hazardous substance Workplace accident resulting in death or serious injury to a worker	Section 172 (1)(c) of the *Workers Compensation Act* (British Columbia) Section 172(1)(a) of the *Workers Compensation Act* (British Columbia)	Immediately to nearest Workers Compensation Board office, or 1 888 621-SAFE (7233) Accidents outside of normal business hours to: 1-866-WCB-HELP (922-4357) Critical incident response Seven days a week, 9:00 a.m. - 11:00 p.m. 1 888 922-3700 Written report to Board to follow without undue delay	None
Workplace accident involving a major structural failure or collapse of a building, bridge, tower, crane, hoist, temporary construction support system or excavation	Section 172(1)(b) of the *Workers Compensation Act* (British Columbia)	Immediately to nearest Workers Compensation Board office, or 1 888 621-SAFE (7233) Accidents outside of normal business hours to: 1-866-WCB-HELP (922-4357) Written report to Board to follow without undue delay	None

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Discharge, emission, explosion, outgassing or other escape of dangerous goods or any component or compound evolving from dangerous goods, or Emission of ionizing radiation that exceeds a level or limit established under the *Nuclear Safety and Control Act* Where an accident is involved or the occurrence takes place at an aerodrome or at an air cargo handling facility adjacent to an aerodrome, the Regional Aviation Regulations Office of the Aviation Group of the Department of Transport and, if the aerodrome is an airport, the airport operator The owner or the consignor of the consignment of dangerous goods	Section 18 of the *Transportation of Dangerous Goods Act* (Canada)	- the local police; - the employer of the person making the report; - the owner or consignor of the dangerous goods; - where a railway is involved: Canadian Transport Emergency Centre (CANUTEC): (613) 996-6666; - where a ship is involved: nearest Canadian Coast Guard Ship Safety Office, and regulatory authority of the nearest port, harbour, wharf or place; - where a road vehicle is involved: its owner, lessee or charterer.	Section 9.13, Part IX, of the *Transportation of Dangerous Goods Regulation*, SOR/85-77.
Spillage, defined as oils or solids escaping, leaking or spilling from a pipeline or any source apparently associated with a pipeline	Section 38(2) and (3) of the *Pipeline Act* (British Columbia)	Oil and Gas Commission: (250) 261-5700	None

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Spillage of petroleum, natural gas, brine or other substances from a well, field flow lines or production facility or any associated source	Section 107(2) and (3) of the *Petroleum and Natural Gas Act* (British Columbia)	Oil and Gas Commission: (250) 261-5700	None
Situation in which a ship or person is in serious and imminent danger by reason of an occurrence while dangerous goods are being loaded, unloaded or transported on a ship	None	Nearest Coast Guard, Ship Safety Office or steamship inspector	Section 11 of the *Dangerous Goods Shipping Regulations*
Major accidents, dangers, and other specified occurrences involving railways	None	Engineering and Inspection Branch of the Ministry of Municipal Affairs: (604) 660-6295	Sections 3, 4 of the *Notification and Reporting of Rail Transit Accidents Regulation*
Failure to comply with the *Water Act Regulation* when making a change in and about a stream	*Water Act* (British Columbia)	Closest regional office of the Ministry of Environment, Lands & Parks	*Water Act Regulation*, s. (1)(a)
Discharge, emission or escape of dangerous goods from any container, packaging, road vehicle or rail vehicle	Section 21 of the *Transport of Dangerous Goods Act* (British Columbia)	Manager, Dangerous Goods ICBC Compliance Programs & Standards: (250) 414-7845	*Transport of Dangerous Goods Regulation*

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Accidents involving equipment to which the Act applies, per s. 2	Section 36(1) of the *Safety Standards Act* (British Columbia)	If an incident occurs in a plant which causes injury or death, a written report must be submitted to the provincial safety manager within 30 days of the incident. The contact number is 1.866.566.7233 and there are 30 branches to report to throughout B.C. refer http://www.safetyauthority.ca/contact/index.html for branch addresses.	Section 66(2) of the *Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation* (British Columbia)
Situation in which a person is in serious and imminent danger by reason of an occurrence while dangerous goods are being loaded, unloaded or transported on a ship	None	Nearest Coast Guard, Ship Safety Office or steamship inspector	Section 11 of the *Dangerous Goods Shipping Regulations* (regulations under the *Canada Shipping Act*)
Discharge or danger of discharge of a pollutants (as defined in the Act) from a ship or other vessel	Section 657(1) of the *Canada Shipping Act*	Nearest *Canada Shipping Act* pollution prevention officer	Section 5 of the *Pollutant Discharge Reporting Regulations*
Shipping casualties, accidents, or dangerous occurrences involving a ship or a vessel being towed by a ship	None	A Canadian radio ship reporting station	Section 4 and 5 of the *Shipping Casualties Reporting Regulation*

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Any accident causing loss of life or a dangerous occurrence as defined in s. 1.7.3 of the Code	Section 1.7.3 of the *Health, Safety and Reclamation Code for Mines in British Columbia* (under s. 34 of the *Mines Act*)	Mining Operations Branch: General line: 250-952-0471, as well as the Occupational Health and Safety Committee (OHSC) and the union. Must provide written notification to the inspector within one week.	
Any accident resulting in a worker seeking medical aid	s. 1.7.3	Must provide a monthly report to an inspector, the union, the OHSC or the employee association.	
Careless acts with explosives or detonators	s. 8.2.6	Report to district inspector	
Dangerous occurrence in the workplace involving explosives, whether or not personal injury occurs	Section 172(1) of the *Workers Compensation Act* (British Columbia)	Workers' Compensation Board immediately, followed by written report without undue delay	Section 21.3 of *Occupational Health and Safety Regulation* (British Columbia)
Killing of "wildlife" (as defined in s. 1 of the Act) accidentally or for the protection of property	Section 75(1) of the *Wildlife Act* (British Columbia)	B.C. Environment Conservation Officer: (250) 751-3190; or police; or a director, assistant director or regional manager of the Ministry of Environment (General Ministry of Environment Line: (250) 953-3802	None
Fire in a building, other premises, motor vehicle, vessel or railway rolling stock	Section 11 of the *Fire Services Act* (British Columbia)	Local assistant to the fire commissioner (Office of the Fire Commissioner: (250) 356-9010); or police	

ENVIRONMENTAL INCIDENTS: STATUTORY REPORTING REQUIREMENTS

INCIDENT	STATUTORY REPORTING REQUIREMENT	CONTACT	RELATED REPORTING REGULATION
Fire	s.2 of the *Wildfire Act* (British Columbia)	Pursuant to s.2 – a person must immediately report an open fire burning within 1 km of forest or grass land that appears to be burning unattended or uncontrolled. Report to: o An official employed with the ministry; o A peace officer; or o Fire emergency response telephone number.	

[1]*The Spill Reporting Regulation under the Environmental Management Act specifies the minimum quantities of specific substances which, if spilled, must be reported. These reportable levels are determined by the Transportation of Dangerous Goods Regulations made under the Transportation of Dangerous Goods Act (Canada) and by the Hazardous Waste Regulations made under the Environmental Management Act. Of particular interest are spills of waste oil; the specified amount for reporting is 100 litres or more. The amount for flammable liquids (e.g. gasoline) is 100 litres. Tthe grinding aid (96-10-23) in use at Delta is MTDA; a spill of 200 kg or more must be reported. For propane, acetylene, liquefied nitrogen, natural gas, and liquefied carbon dioxide, a spill of 10 kg or more must be reported.*

Since it is time-consuming and often difficult to interpret the definition of substances under the Federal Regulations, compliance managers should make a list of all potentially harmful substances which are regularly used in their operations, and determine in advance the specified amounts for the purposes of spill reporting. Where there is uncertainty, a spill report should be made.

[2]*Note that unlike the provincial Spill Reporting Regulation, the Fisheries Act (Canada) does not specify reportable levels for any substances. Instead, any spill or imminent danger of spill of a deleterious substance into water frequented by fish which may reasonably be expected to result in damage or danger to fish habitat must be reported.*

Appendix 18

DFO Operational Statement for Clear Span Bridges

CLEAR SPAN BRIDGES

Fisheries and Oceans Canada
Pacific Region Operational Statement

Version 3.0

This Operational Statement applies to the construction of small-scale bridge structures that completely span a watercourse without altering the stream bed or bank, and that are a maximum of two lanes wide. The bridge structure (including bridge approaches, abutments, footings, and armouring) is built entirely above the **high water mark** (HWM). A clear-span bridge is preferred to a culvert as no structures are placed on the stream bed and therefore there is no alteration of natural channel processes.

Clear-span bridge construction has the potential to negatively affect riparian habitat. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover and areas for spawning and food production. Only the vegetation required to accommodate operational and safety concerns for the crossing structure and approaches, within the right-of-way, should be removed. Stormwater run-off and the use of machinery can introduce deleterious substances to the water body and result in erosion and sedimentation.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat and maintain passage of fish. You may proceed with your clear-span bridge project without a DFO review when you meet the following conditions:

- the bridge is placed entirely above the high water mark (**HWM**), (**http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/definitions_e.htm**),
- there is no alteration of the stream bed or banks or infilling of the channel,
- the bridge is no greater than two vehicle lanes in width, does not include sidewalks and biking lanes and does not encroach on the natural channel width by the placement of abutments, footings or rock armouring below the **HWM**,
- the work does not involve the clearing of riparian vegetation – removal of select plants with the road right-of-way can occur to meet operational and/or safety needs,
- your project does not require multiple bridge crossings over the same watercourse, and
- you incorporate the *Measures to Protect Fish and Fish Habitat* when *Constructing Clear-Span Bridges* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to comply with all municipal, provincial, territorial and/or federal legislation that applies to the work being carried out in relation to this Operational Statement. In British Columbia, please contact the Water Stewardship Division, Ministry of Environment (**http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/index.html**) for information on the Provincial *Water Regulation* notification requirements when planning to construct clear-span bridges in or around BC waters.

The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (**http://www.speciesatrisk.gc.ca**). For general information on aquatic SARA species visit the following web site: **http://www.dfo-mpo.gc.ca/species-especes/actMeans/actMeans_criticalHabit_factsheet_e.asp** and/or contact DFO by email at: **SARA@pac.df-o-mpo.gc.ca**.

If you have questions regarding this Operational Statement, please refer to the list of **Frequently Asked Questions** (**http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/os-faq_e.htm**) or contact DFO Regional Headquarters at 1-866-845-6776.

Please notify DFO 10 working days before starting your work by filling out and sending the Pacific Region Operational Statement **notification form** directly to DFO Regional Headquarters. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement. It is recommended that you keep a copy of the Operational Statement at the work site to demonstrate to Habitat and Fishery Officer staff that the conditions and measures, as outlined in the OS, are being followed.

Area of Application
This Operational Statement applies to the province of British Columbia and Yukon Territory freshwater systems only.

Measures to Protect Fish and Fish Habitat when Constructing Clear-Span Bridges

1. Minimize the riparian area temporarily disturbed by access activities along the adjacent upland property. Use existing trails, roads, or cut lines wherever possible to avoid disturbance to the riparian vegetation.

Canada

2. Avoid building on meander bends, braided streams, alluvial fans, active flood plains, or any other area that is inherently unstable and may result in the alteration of natural steam functions or erosion and scouring of the bridge structure.

3. While this Operational Statement does not apply to the clearing of riparian vegetation, the removal of select plants within the road right-of-way (ROW) may be required to meet operational and/or safety concerns for the crossing structure and the approaches. This removal should be kept to a minimum and within the road right-of-way. When practicable, prune or top the vegetation instead of uprooting.

4. Ensure that the clear span bridge is properly designed to address river and channel processes at flows above the ordinary high water mark.

5. Design and construct approaches so that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.

6. Design the bridge so that stormwater runoff from the bridge deck, side slopes and approaches is directed into a retention pond or vegetated area to remove suspended solids, dissipate velocity and prevent sediment and other deleterious substances from entering the watercourse.

7. Generally there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt sensitive fish life stages (e.g., crossing of watercourse by machinery), these should adhere to appropriate fisheries **timing windows (http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/timing_e.htm)**.

   Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Ford Stream Crossings* Operational Statement is also available.

   7.1. To exercise this option, the stream bed at the fording site must be comprised of stable gravel or bedrock and the stream banks must be low and stable.
   7.2. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
   7.3. Grading of the stream banks for the approaches is not permitted.
   7.4. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
   7.5. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries **timing windows**.
   7.6. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

8. Install effective sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.
9. Operate machinery on land (above the **HWM**) and in a manner that minimizes disturbance to the banks of the watercourse.

   9.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks, invasive species and noxious weeds.
   9.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.
   9.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.
   9.4. Restore banks to original condition if any disturbance occurs.

10. Use measures to prevent deleterious substances such as new concrete (i.e., it is pre-cast, cured and dried before use near the watercourse), grout, paint, ditch sediment and preservatives from entering the watercourse.

11. No debris to remain within the high-water mark or placed into a stream.

12. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.

13. Vegetate any disturbed areas by planting and seeding with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. All seeding and/or planting trees should follow the DFO guidance on **Riparian Revegetation** (**http://www-heb.pac.dfo-mpo.gc.ca/decisionsupport/os/riparian-reveg_e.htm**). If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

   13.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

DFO REGIONAL HEADQUARTERS

Fisheries & Oceans Canada
Regional Habitat Manager
200-401 Burrard Street
Vancouver, BC V6C 3S4.
Toll Free: 1-866-845-6776
Fax: (604) 666-7907
Email: dfo_epmp@pac.dfo-mpo.gc.ca

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1283

NOTIFICATION FORM

Fisheries and Oceans Canada
Pacific Region Operational Statement

Version 3.1

PROPONENT INFORMATION

NAME:	STREET ADDRESS:	
CITY/TOWN:	PROVINCE/TERRITORY:	POSTAL CODE:
TEL. NO. (RESIDENCE):	TEL. NO. (WORK):	
FAX NO:	EMAIL ADDRESS:	

CONTRACTOR INFORMATION (provide this information if a Contractor is working on behalf of the Proponent)

NAME:	STREET ADDRESS:	
CITY/TOWN:	PROVINCE/TERRITORY:	POSTAL CODE:
TEL. NO. (RESIDENCE):	TEL. NO. (WORK):	
FAX NO:	EMAIL ADDRESS:	

PROJECT INFORMATION

Select Operational Statements that are being used (check all applicable boxes):

- ❒ Aquatic Vegetation Removal in Lakes
- ❒ Bridge Maintenance
- ❒ Culvert Maintenance
- ❒ Directional Drilling
- ❒ Dock and Boathouse Construction in Fresh Water Systems
- ❒ Dry Open-Cut Crossings
- ❒ Ice and Snow Fill Bridges
- ❒ Isolated Pond Construction
- ❒ Maintenance of Riparian Vegetation in Existing Rights-of-Way
- ❒ Overhead Line Construction
- ❒ Public Beach Maintenance
- ❒ Punch and Bore Crossings
- ❒ Routine Maintenance Dredging for Navigation
- ❒ Small Moorings
- ❒ Small Clear-Span Bridges
- ❒ Temporary Ford Crossings
- ❒ Underwater Cables in Fresh Water Systems

Select the type of water body or watercourse at or near your project:

- ❒ River, Stream, Creek
- ❒ Lake (8 hectares or greater)
- ❒ Marine (Ocean or Sea)
- ❒ Estuary
- ❒ Pond or wetland (pond is less than 8 hectares)

PROJECT LOCATION (S) (fill out this section if the project location is different from Proponent Information; append multiple project locations on an additional sheet if necessary)

Name of water body or watercourse Nearest Town to site	Coordinates of the Project (UTM co-ordinate or Degrees, Minutes, Seconds), if available Easting: Northing: Latitude: Longitude:
Legal Description (Plan, Block, Lot, Concession, Township, Section, Range)	Directions to Access the Project Site (i.e., Route or highway number, etc.)
Proposed Start Date (YYYY/MM/DD):	Proposed Completion Date (YYYY/MM/DD):

Please notify DFO, preferably 10 working days before starting your work, by filling out and sending in, by mail, email or by fax, this notification form to the DFO Regional Headquarters. This information is requested in order to evaluate the effectiveness of the work carried out in relation to the Operational Statement.

I, _____ (print name) certify that the information given on this form is, to the best of my knowledge, correct and complete.

Signature _____ Date _____

Note: If you cannot meet all of the conditions and cannot incorporate all of the measures in the Operational Statement then your project may result in a violation of Subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act.*

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act* for the purpose of administering the fish habitat protection provisions of the *Fisheries Act*. Personal information will be protected under the provisions of the *Privacy Act* and will be stored in the Personal Information Bank DFO-SCI-605. Under the *Privacy Act*, Individuals have a right to, and on request shall be given access to, any personal information about them contained in a personal information bank. Instructions for obtaining personal information are contained in the Government of Canada's Info Source publications available at **www.infosource.gc.ca** or in Government of Canada offices. Information other than "personal" information may be accessible or protected as required by the provisions of the *Access to Information Act*.

This Notification Form (Version 3.1) may be updated as required by Fisheries and Oceans Canada. It is your responsibility to use the most recent version. Please refer to the Operational Statements web site at **http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp** to ensure that a more recent version has not been released.

DFO REGIONAL HEADQUARTERS

Fisheries and Oceans Canada
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200 – 401 Burrard Street
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Email: dfo_epmp@pac.dfo-mpo.gc.ca

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1283

Appendix 19

Conceptual Stormwater Management Plan by Koers & Associates Engineering Ltd.

(Refer to Appendix 1 - Technical Reports for The Lakes District & Schooner Cove Neighbourhood Plans)