



DATE OF MEETING: May 27, 2021

TO: North Pender Island Local Trust Committee

FROM: Narissa Chadwick, Island Planner
Southern Team

COPY: Kim Stockdill, Island Planner
William Shulba, Senior Freshwater Specialist
Robert Kojima, Regional Planning Manager

SUBJECT: Groundwater Sustainability Project: Phase 3 Implementation

RECOMMENDATIONS

1. That the North Pender Island Local Trust Committee request staff to organize a community information in July 2021 to share the results of the 2020 Southern Gulf Islands Groundwater Recharge Potential Mapping and Regional Groundwater Availability Assessments .
2. That the North Pender Island Local Trust Committee request staff to organize special meeting of the Local Trust Committee in September 2021 to review in detail proposed amendments to the OCP and LUB.

REPORT SUMMARY

This report provides an update on progress related to the *Groundwater Sustainability Strategy Project Phase 3: Implementation and Planning*. It identifies a preliminary list of proposed amendments to the Official Community Plan (OCP) and Land Use Bylaw (LUB) informed by data collected through *Phase 1: Groundwater Recharge Potential mapping* and *Phase 2: Regional Groundwater Availability Assessments* (water budgets).

BACKGROUND

At the February 25, 2021 meeting the LTC endorsed a project charter for the implementation phase (Phase 3) of the Groundwater Sustainability Project (See Attachment 1). At the April 29, 2021 meeting the LTC, after considering a number of options agreed to continue with this phase. .

The project was initiated in 2019 as an initiative of five Southern Local Trust Committees. The phases of the project are as follows:

Phase 0: Data and Information

Phase 1: Groundwater Recharge Potential Mapping

Phase 2: Regional Groundwater Availability Assessments (Water Budgets)

Phase 3: Implementation and Planning

A [summary report](#) providing details on project was provided at the November 26, 2020 LTC meeting. As indicated in the February 1, 2021 staff report the use of the data and mapping will be integrated into the development review procedures for all local trust areas as final mapping data becomes available.

Staff are integrating the mapping into the Islands Trust TAPIS mapping system. The options for OCP and LUB amendments identified in this report are informed by draft outcomes from the project.

ANALYSIS

What will the maps tell us?

Groundwater recharge potential and groundwater protection zones- Groundwater recharge potential refers to potential of the island to replenish water within groundwater regions. This potential is dependent on factors such as the capacity of soils to retain water, interaction of the watershed ecosystems, changes in topography, geology, biogeography, land-use, and precipitation distribution. Understanding groundwater recharge potential assists in the estimation of the amount of groundwater available for groundwater well users and watershed ecosystems.

Groundwater recharge potential can be classified into significant or vulnerable areas that can be represented as groundwater protection zones. Groundwater protection zones are mapped polygons as a unit to establish planning tools, such as development permit areas, to protect groundwater recharge potential and other sensitive groundwater-dependant-ecosystems.

The availability of groundwater in each Groundwater Region (water budget) - Groundwater regions are based on a rule-based delineation that considers natural elements, watersheds, well density, geology, and historical aquifer mapping (Figure 1). Groundwater regions have been used for water allocation planning in the Southern Gulf Islands by the Province since the 1970s; therefore, are considered as an appropriate water management unit for the purposes of planning (Figure 2). To quantify the amount of groundwater available within groundwater regions, climate variables, groundwater recharge potential, estimated water demand/usage, and three dimensional island hydrogeological models were considered. A groundwater budget is determined by the estimated rate of domestic water well use, allocated water licenses, ecosystems use, estimated agricultural use, and estimated discharge to the ocean. . Each groundwater region for North Pender has a water balance calculation (Figure 3).

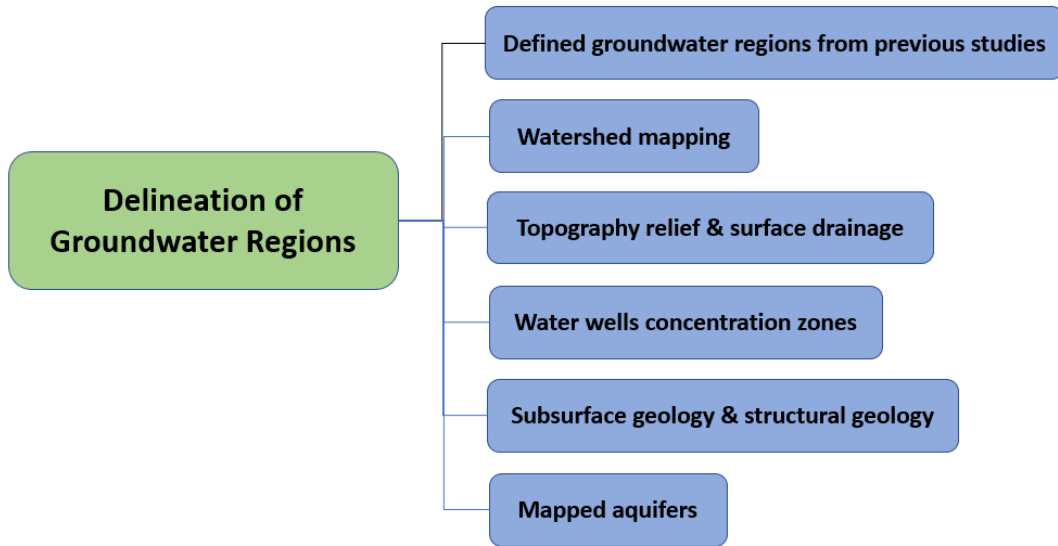


Figure 1: Delineation of Groundwater Regions



Figure 2: Groundwater Regions of North Pender Island

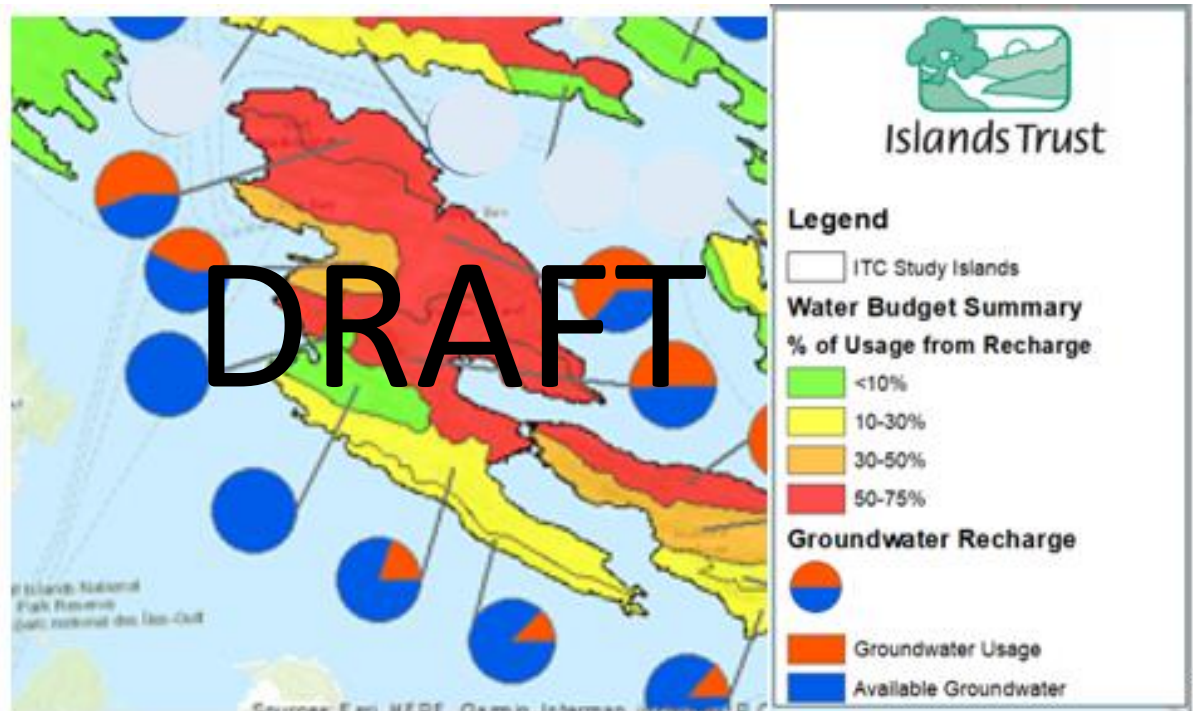


Figure 3: Draft Water Budget Summary for Groundwater Regions of North Pender Island

How can groundwater recharge potential mapping and regional groundwater budgets inform changes land-use policy and regulation?

Spatially determining groundwater recharge potential and regional groundwater availability can help refine the Local Trust Area’s policies and regulations to better support groundwater sustainability.

The groundwater mapping of North Pender Island provides an opportunity for a tiered approach to OCP and LUB amendments supporting groundwater sustainability by classifying priority area of the island. Factors that will influence the classification of groundwater regions include:

1. Spatial delineation of significant groundwater recharge potential identifies critical areas of the island for the purposes of sustaining existing groundwater users and areas that may be vulnerable to changes in climate, development, and land use changes.
2. Domestic, agricultural, and commercial groundwater use. .
3. Data gaps and the identified need for further analysis of water use, such as agricultural water demand, community water systems use, and differences between estimated water use (precautionary principle), actual use (real-time data), and deemed water rights (complete build-out). Regional groundwater budgets were based on the precautionary average usage per lot related to land use designation and registered water license amounts. Domestic supply was estimated at 650L/d, much less than the deemed domestic water right of 2000L/d as per the *Water Sustainability Act*.
4. Build-out potential and the existence of undeveloped land that has the potential to be developed over time. This includes private managed forest lands.

5. Influences of climate change on groundwater systems and the direct connection of groundwater to surface water bodies, streams, and watershed ecosystems.

A tiered approach, as introduced in the April 29, 2021 staff report, to protect groundwater recharge and regional groundwater availability focussed on four (4) classifications in two (2) subgroups: 1) groundwater protection areas 2) groundwater region availability (water budgets). The tiers/classes that are being considered are identified below.

Class 1- Areas of high vulnerability where the need for focus is critical to the sustainability of groundwater resources and there is high confidence in existing data.

Class 2 –Areas of high vulnerability where the need for focus is critical to the sustainability of groundwater resources however there is low confidence in existing data or more analysis is identified to confirm vulnerability.

Class 3 – Areas of moderate vulnerability where the need for focus is less critical to the sustainability of groundwater resources however could become critical from buildout or licensed potential (typically agriculture).

Class 4 – Areas of low vulnerability where the need for focus is the lowest in terms of sustainability of groundwater resources. This includes protected areas and forest lots, or areas with limited development potential and low groundwater use. In these areas there is high confidence in existing data.

Islands Trust Council initiatives to be considered in OCP and LUB Amendments

Trust Council is currently engaged in the final stages of development of a revised Policy Statement and the development of a Freshwater Sustainability Strategy. In addition to using groundwater mapping, Local Trust Area OCP and LUB amendments should also consider policies in the proposed Islands Trust Policy Statement amendments and proposed actions in the Trust Council Freshwater Sustainability Strategy (FWSS). It is likely that the Policy Statement amendments and the FWSS will both be endorsed by Trust Council before new bylaw and regulations related to NP's Groundwater Sustainability Implementation Project are approved.

Relevant policies proposed in the Policy Statement include:

- Groundwater regions as the defining water management unit across the Islands Trust Area
- The recognition of the need to integrate both scientific knowledge and Indigenous cultural knowledge into decision making with the precautionary principle in mind.
- Prohibiting desalination plants in the Trust Area.
- Protecting watershed ecosystems, freshwater networks, groundwater recharge areas, and freshwater aquatic species at risk
- Not allowing density nor intensity of land use to be increased in groundwater regions where the quality or quantity of the supply of freshwater is likely to be inadequate or unsustainable
- Considering existing, anticipated, and seasonal water demand and supply projections
- Supporting islands to be self-sufficient in their supply of freshwater.
- Ensuring that freshwater use is not to the detriment of in-stream uses such as: fish and fish habitat uses; Indigenous cultural and spiritual use; aesthetic and recreational uses; and, the maintenance of water quality in lakes, streams, and wetlands.

Relevant draft actions in the draft Trust Council Freshwater Sustainability are:

- Integrating water availability and vulnerability information into land-use policies and regulations
- Using planning tools to protect Indigenous cultural heritage and values, vulnerable aquifers, and sensitive aquatic ecosystems

- Implementing new or enhanced proof-of-water-supply requirements for subdivision and rezoning applications in all local trust areas
- Improving the availability of water-related information to support development application review
- Continue to explore the viability of rainwater harvesting to supplement domestic, multi-family, and other water supplies

Existing Policies and Proposed Amendments

Based on a preliminary review of existing policies and regulations and considering the information provided in the draft groundwater mapping data, proposed Policy Statement and draft FWSS staff have identified a number of potential OCP and LUB amendments ranging from simple updates to language to the identification of critical areas for groundwater protection. Note that policies related to rainwater capture have also been included as the use of rainwater can help reduce the quantity of groundwater used, contributing to groundwater sustainability.

Current OCP Policies - Section 4.1 (Groundwater Resources) is the primary place in the OCP where groundwater sustainability is considered. There are a number of policies in this section that address watershed health and the protection of groundwater supply. There are policies in other parts of the OCP that encourage the water collection and water storage and water conservation, and acknowledge the need to consider quality and quantity of water and impacts to streams with rezoning and subdivision. New buildings are encouraged to incorporate water conservation measures, including rainwater catchment systems.

Potential OCP Amendments: There are a number of potential amendments that would strengthen the OCP's policies to encourage and support groundwater sustainability. These options are summarized below.

1. Include a map of groundwater regions highlighting critical areas (Class 1 some Class 2 and 3).
2. Incorporate information related to critical Coastal Douglas-fir (CDF) ecosystem preservation when identifying critical areas. (Note that North Pender may be the first LTC to consider incorporating this integrated analysis into OCP and LUB amendments.)
3. Identify through evidence-based processes, critical areas that cannot support additional density (e.g, Class 1 particularly those areas that overlap with critical CDF preservation areas as first focus)
4. Update introduction, statement of principles, objectives for sustainable communities and other relevant sections of the OCP to include reference to groundwater regions, groundwater recharge potential, regional groundwater balance, and other related freshwater mapping data.
5. Update definitions to as required.
6. Update policies related to subdivision regulations.
7. Coordinate with the Province on improving water-licensing requirements.
8. Add policies related to preservation of groundwater sustainability for each land use designation.
9. Update groundwater resources section to reflect information provided by mapping and support amendments to Land Use Bylaw regulations based on mapping information.
10. Policies supporting required rainwater catchment for non-potable outdoor uses in critical areas.
11. Consideration of Indigenous knowledge and cultural and spiritual value of water.
12. Consider development permit areas to address groundwater management and Coastal Douglas-fir preservation in areas where the likelihood of vulnerability is critical to groundwater resources. .
13. Update advocacy policies based on recommendations from the Islands Trust Freshwater Sustainability Strategy.

14. Develop groundwater sustainability analysis criteria for rezoning.

Potential LUB Amendments: Amendments to the LUB implementing existing and potential OCP groundwater sustainability policies could include:

1. The creation of groundwater protection zones for critical areas (Class 1, some areas in Class 2 and 3).
2. Changes to zoning in some critical areas that reduce or transfer current density or development potential (focus on Class 1).
3. Zoning regulations that limit existing uses, place restrictions on size and siting (e.g. setbacks for wells, setbacks from community water system wells).
4. Consideration of potable water requirements as a condition of certain uses and/or increases in density.
5. Limiting impermeable surfaces.
6. Development of rainwater capture and cistern regulations.
7. Updating subdivision servicing regulations related to potable water requirements, cistern requirements, stormwater management, and wastewater requirements. Address potential multi-unit residential development.
8. Requiring non-potable rainwater capture for building permits for new construction in critical areas.
9. Requiring non-potable rainwater capture and storage system of as a condition of building permit if the building is to contain a secondary suite.

Other Considerations

- Updates to bylaw enforcement policies
- Development Approval Information (DAI) bylaw amendments
- Development of a terms of reference for professionals required to provide reports for proof of water
- Consideration of administrative requirements related to development permits, TUP, covenants and monitoring.
- Consider monitoring programs

ALTERNATIVES

The LTC may consider the following alternatives to the staff recommendation:

1. Identify another approach

The LTC may identify an approach that is not identified in this report.

2. Request further information

The LTC may request further information prior to supporting the staff recommendation.

3. Reconsider the project

The LTC may reconsider proceeding with the project, either entirely or could defer initiation.

4. Receive for information

The LTC may receive the report for information and defer consideration to a future meeting.

NEXT STEPS

- Staff will finalize groundwater mapping, incorporating a build-out analysis and integrate it into the Islands Trust TAPIS mapping system.
- Staff will identify overlaps between areas that need critical attention related to groundwater and those that need critical attention related to Coastal Douglas-fir preservation.
- Groundwater regions are being reviewed by provincial staff.
- Staff will focus first on policy development for Class 1 and use build out overlays to identify what areas in Class 3 could become critical if not addressed through policy amendments.
- Methodology to address areas in Class 2 is being developed.
- Staff will schedule a community meeting in July to share Phase 1 and 2 results and discuss potential implications from Phase 3.
- Staff will schedule a special meeting of the Local Trust Committee in September to discuss proposed amendments once mapping is finalized and more detailed analysis has been done.

Submitted By:	Narissa Chadwick, Island Planner	May 14, 2021
Concurrence:	Robert Kojima, Regional Planning Manager	May 18, 2021

ATTACHMENTS

1. Project Charter

GROUNDWATER SUSTAINABILITY - IMPLEMENTATION – Project Charter v1

North Pender Island Local Trust Committee

Date: January 2021

Purpose: To implement results of Phases one and two of the Southern Gulf Islands Groundwater Sustainability Project through community engagement and education, policy, and changes to regulations.

Background: The Southern Gulf Islands Groundwater Sustainability project was initiated in early 2019 and consisted of data collection, mapping and analysis of groundwater regions in the southern gulf islands. The results of the first phases of the project will be incorporated into Islands Trust development review processes. The Local Trust Committee has identified further implementation of the results through public engagement and potential bylaw amendments as a Top Priority project.

Objectives

- Identify implementation options
- Analyze and assess options
- To update bylaws to provide to greater protection of groundwater resources

In Scope

- Analysis of options for bylaw amendments to implement groundwater protection measures based on earlier phases of the project
- Community engagement on phases I and II
- Community, First Nations, and agency consultation
- Recommendations on potential amendments
- Support for legislative process to amend bylaws

Out of Scope

- Unrelated regulatory amendments
- Unrelated amendments to the OCP

Workplan Overview

Deliverable/Milestone	Date
Preliminary report and review of Project Charter by LTC	February 2021
Staff report on implementation options, LTC direction	May 2021
Community Groundwater Workshop to present findings of Phases 1 and 2	June 2021
Early First Nations Consultation and Targeted Agency referrals	May – Sept 2021
LTC review of potential options	September 2021
Community consultation	October – Dec 2021
LTC direction to prepare draft bylaws	January 2022
LTC review of draft bylaws, First Nations referrals, agency referrals and First Reading	Feb – April 2022
Public Hearing	May 2022
Post-hearing legislative process	May – Sept 2022
Implementation: educational materials, DAI Bylaw amendments, BVN Bylaw amendments, procedure bylaw amendments, application processing procedures revised	June – Dec 2022

Project Team

Est.
Hours/
annum

Robert Kojima	<i>Project sponsor</i>	50
Narissa Chadwick	<i>Project planner</i>	200
William Shulba	<i>Professional advisor</i>	200
Maple Hung	<i>Admin support</i>	30
Jas Chonk	<i>Legislative Clerk</i>	10
Jackie O'Neill	<i>IS support</i>	10
		400
RPM Approval: Name of RPM Date: Feb 25/21	LTC Endorsement: Resolution #: Date: Feb 25/21	

Budget

Budget Sources:

Fiscal	Item	Cost
21-22	Community consultation	\$1000
21-22	Legal review contingency	\$2000
21-22	First Nations consultation	\$2000
22-23	Public Hearing	\$2000
22-23	Contingency	\$1000
	Total	\$8000