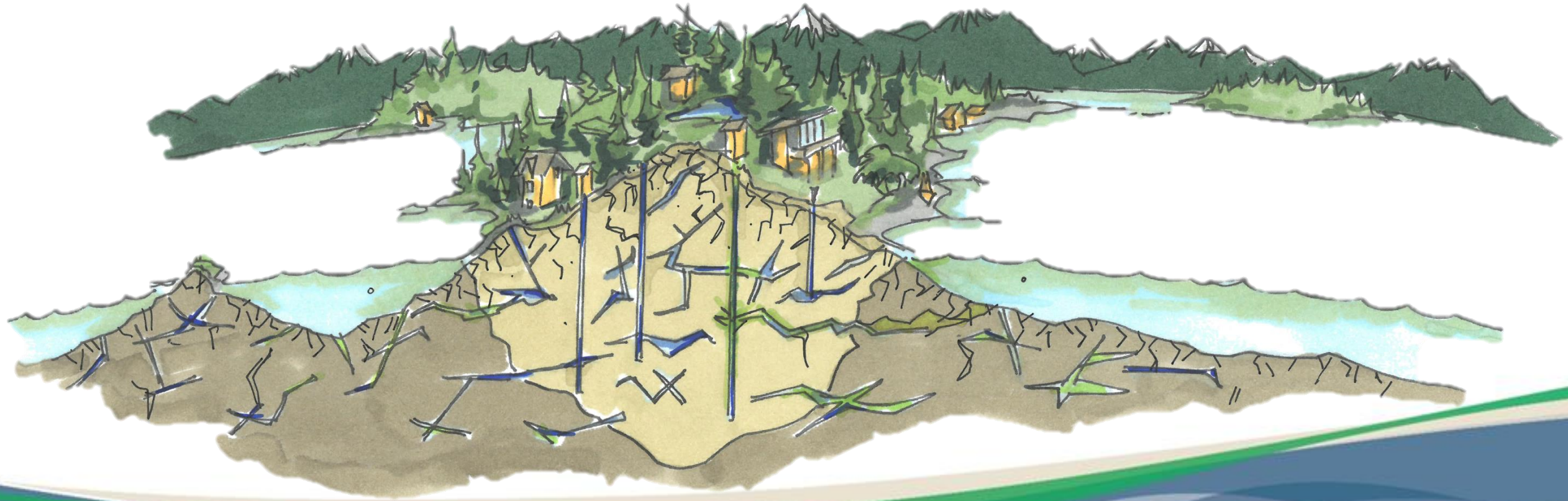
ISLANDS TRUST
SUITABLE LAND ANALYSIS

Islands Trust

Hornby Local Trust Committee
Special Meeting

07 February 2025



To preserve and protect the Trust Area and its unique amenities and environment for the benefit of the residents of the Trust Area and of British Columbia in cooperation with municipalities, regional districts, improvement districts, First Nations, other persons and organizations and the government of British Columbia.

Islands Trust

The Suitable Land Analysis (SLA) Tool is designed to evaluate and prioritize areas across the Islands Trust region for sustainable development while emphasizing environmental conservation and community resilience.

The tool integrates data on ecological sensitivity, freshwater sustainability, transportation, infrastructure, and slope stability to support informed land-use decisions.

Objectives of the Suitable Land Analysis is to:

- Identify areas suitable for additional residential density while prioritizing environmental conservation.
- Support evidence-based land-use decisions using geospatial analysis.
- Integrate ecological, social, and economic factors into planning.
- Align with Official Community Plans (OCPs) and Land Use Bylaws (LUBs).

The methodology involved collating and processing datasets related to:

- Ecological Sensitivity: critical habitats, protected areas, biodiversity zones.,
- Freshwater Sustainability: Groundwater vulnerability, recharge zones.
- Watershed Resiliency Mapping,
- Transportation & Infrastructure: Accessibility, road networks, service availability.
- Slope Stability & Geohazards: Identifying landslides, erosion-prone areas.
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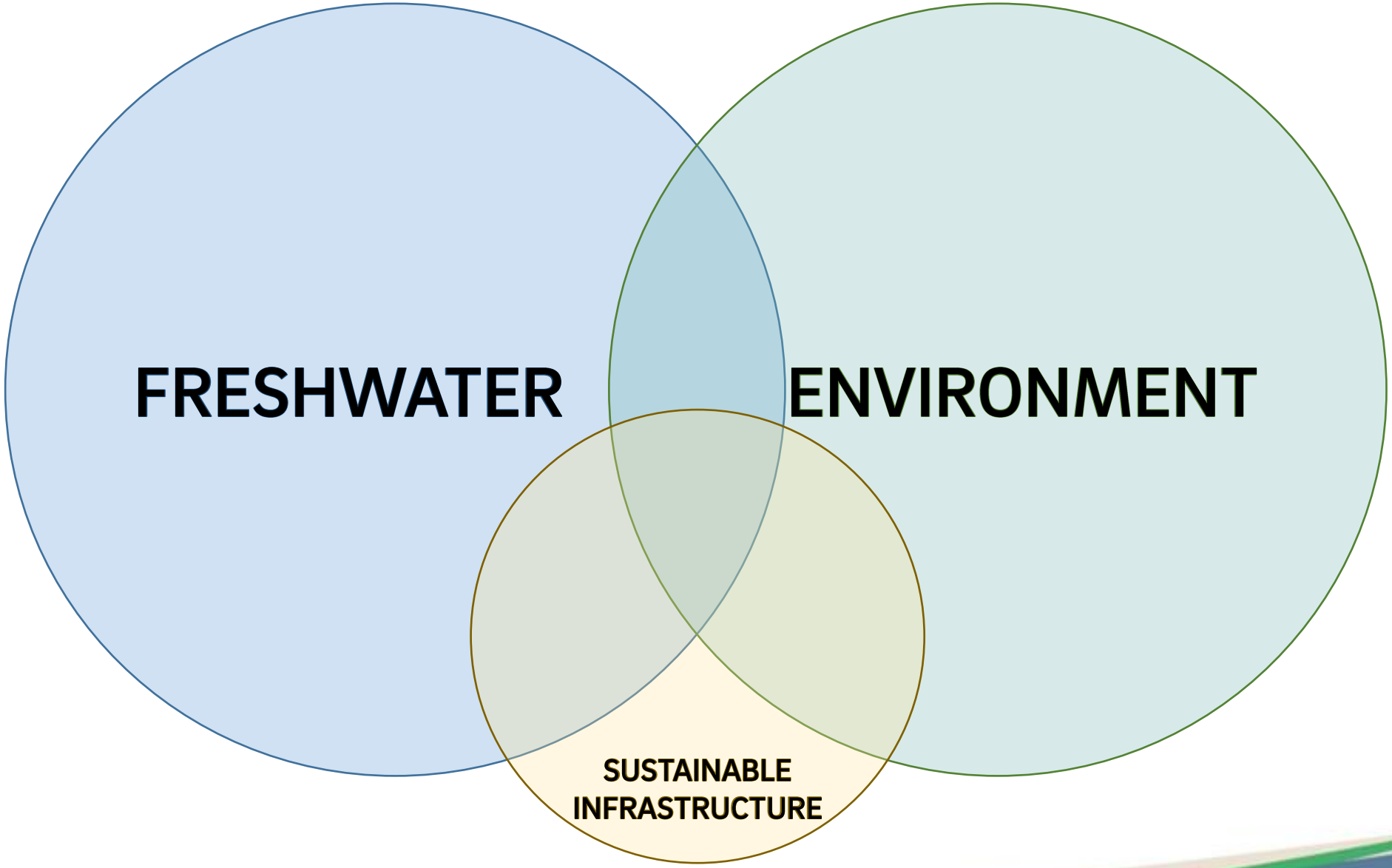
The methodology involved using existing maps and spatial information:

- Use of ArcPro's Suitability Modeler Tool to apply weighted scoring systems.
- Application of Multiple-Criteria Decision Analysis (MCDA) for prioritization.
- Overlaying datasets to assess suitability for residential expansion.


FRESHWATER
ENVIRONMENT
SUSTAINABLE
INFRASTRUCTURE

Themes and Layers

Protect Environment

- Marine Shore Adjacency
- Sensitive Ecosystems
- At Risk Ecological Communities
- Dominant Age of Forests

Preserve Freshwater

- Groundwater Recharge
- Groundwater Well Density
- Watershed Resiliency
- Saltwater Intrusion Risk

Sustainable Infrastructure

- Road Access
- Steep Slopes and Geohazards

SUITABLE LAND ANALYSIS

Suitability Weighting

THEME	OVERALL THEME WEIGHTING	SUITABILITY WEIGHTING	LAYER	REFERENCE NAME
PROTECT ENVIRONMENT	40	10	Marine shore adjacency	Methods for Determining High Value Biodiversity Areas and Identifying Land Securement Options Within the Islands Trust Area
		10	Sensitive Ecosystems	Howe Sound Terrestrial Ecosystem Mapping to Sensitve Ecosystem Mapping
		10	At Risk Ecological Communities	Methods for Determining High Value Biodiversity Areas and Identifying Land Securement Options Within the Islands Trust Area
		10	VRI Dominant Age	Forest Inventory Strategic Plan
PRESERVE FRESHWATER	40	10	Groundwater Recharge Potential	Islands Trust Area Groundwater Recharge Potential Mapping Report
		10	Watershed Resilliency	Watershed Resilliency Mapping in the Islands Trust Area
		10	Groundwater Well Density	GIS process Kernel Density of the BC Groundwater Wells Registry (GWELLS)
		10	Risk of Saltwater Intrusion	GIS Modelling of Sea Water Intrusion Risk Along British Columbia's Coast
SUSTAINABLE INFRASTRUCTURE	20	10	Road Adjacency	Digital Road Atlas geodatabase
		10	Steep Slopes	Processed LIDARBC Digital Elevation Model

Suitability Weighting

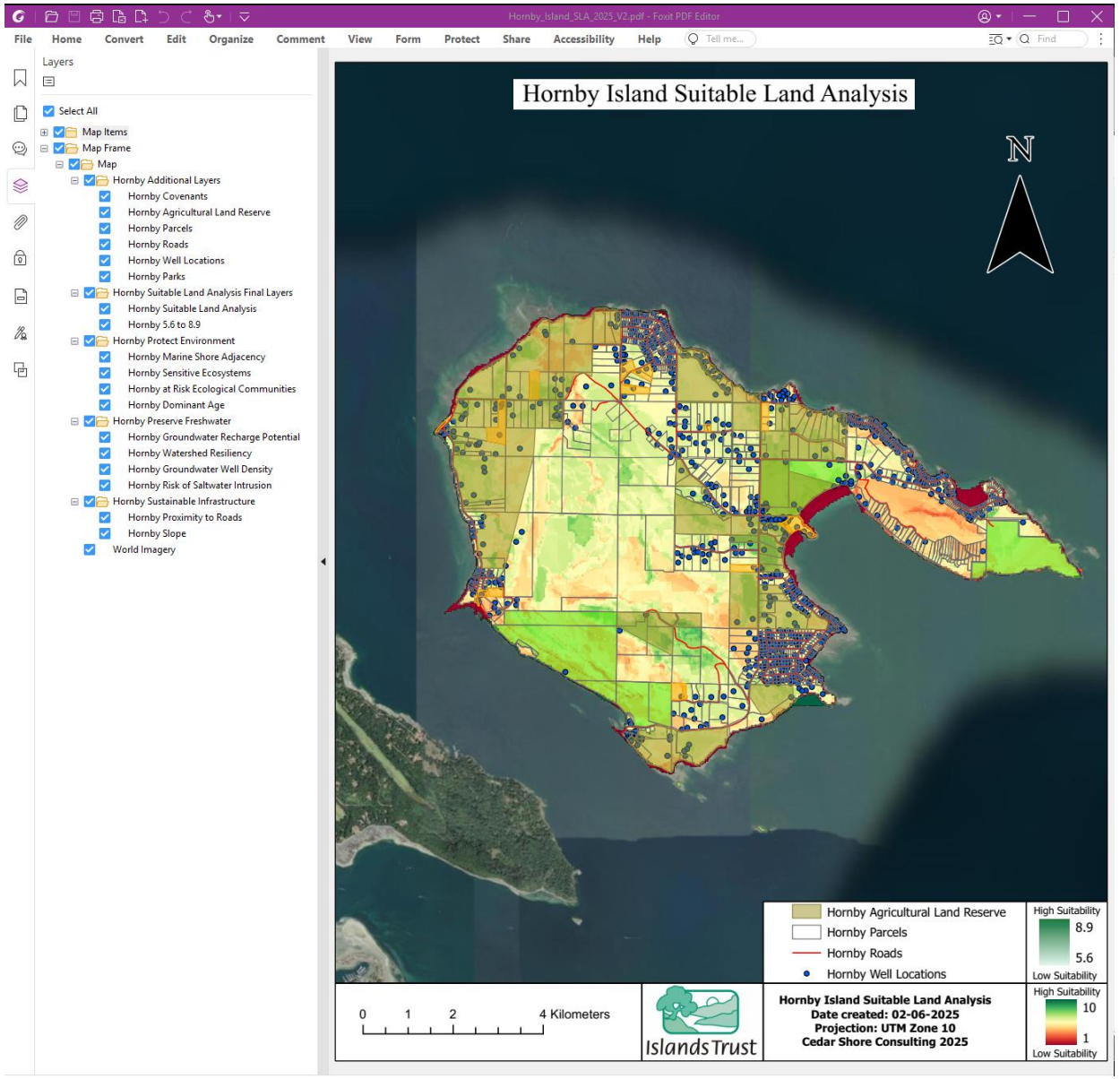
THEME	LAYER	OVERALL SUITABILITY WEIGHTING	LAYER UNITS	ORIGINAL CLASSIFICIATION	CLASSIFICATION VALUE	SUITABILITY	SUITABILITY FACTOR
PROTECT ENVIRONMENT	Marine shore adjacency	5	SHORE ZONES IMPORTANCE SCALE	Man-made	0.5	MODERATE	5
				Unknown	0.5	MODERATE	5
				Rock Cliff	0.6	LOW	3
				Channel	0.7	LOW	2
				Mud Flat	0.7	LOW	2
				Gravel Flat	0.9	VERY LOW	1
				Gravel Beach	0.9	VERY LOW	1
				Rock with Gravel Beach	0.9	VERY LOW	1
				Sand Beach	1	VERY LOW	1
				Estuary, Marsh or Lagoon	1	VERY LOW	1
				Rock with Sand Beach	1	VERY LOW	1
				Sand Flat	1	VERY LOW	1
				Rock Platform	1	VERY LOW	1
				Sand and Gravel Beach	1	VERY LOW	1
				Sand and Gravel Flat	1	VERY LOW	1
				Rock, Sand and Gravel Beach	1	VERY LOW	1
	Sensitive Ecosystems (PRIMARY, SECONDARY, AND TERTIARY)	15	SENSITIVIY IMPORTANCE SCALE	NA	0	VERY HIGH	10
				YOUNG FOREST	1	VERY LOW	1
				SEASONALLY FLOODED	1	VERY LOW	1
				MATURE/OLD FOREST	1	VERY LOW	1
				HERBACEOUS	1	VERY LOW	1
				CLIFF	1	VERY LOW	1
				SAND	1	VERY LOW	1
				WETLAND	1	VERY LOW	1
				WOODLAND	1	VERY LOW	1
				OLDER FOREST	1	VERY LOW	1
				RIPARIAN	1	VERY LOW	1
				FRESHWATER	1	VERY LOW	1
	At Risk Ecological Communities	10	RISK SCALE	NONE	0	VERY HIGH	10
				YELLOW	.33	HIGH	6
				BLUE	.66	MODERATE	3
				RED	1.0	LOW	1
	Dominant Age	10	AGE SCALE PERCENTAGE	Cleared	0	VERY HIGH	10
				Pole/Sappling	10-20	HIGH	8
				Young Forest	40-60	MODERATE	5
				Mature Forest	60-100	LOW	2
				Old Forest	>100	VERY LOW	1

Suitability Weighting

THEME	LAYER	OVERALL SUITABILITY WEIGHTING	LAYER UNITS	ORIGINAL CLASSIFICIATION	CLASSIFICATION VALUE	SUITABILITY	SUITABILITY FACTOR
PRESERVE FRESHWATER	Groundwater Recharge Potential	10	POTENTIAL RASTER SCALE	HIGH DISCHARGE	0.0-0.1	LOW	5
				LOW	0.1-0.2	HIGH	8
				MODERATE	0.2-0.4	HIGH	8
				HIGH	0.4-0.8	LOW	2
				VERY HIGH	>0.8	VERY LOW	1
	Watershed Resilliency	10	RESILLENCY RASTER SCALE	VERY HIGH	0.8-1.0	VERY LOW	1
				HIGH	0.5-0.8	LOW	1
				MODERATE	0.3-0.5	MODERATE	5
				LOW	0.1 - 0.3	HIGH	9
				VERY LOW	0 - 0.1	VERY HIGH	10
	Groundwater Well Density	10	WELLS per Km^2	VERY LOW	<1	VERY HIGH	10
				LOW	1-10	HIGH	8
				MODERATE	10-20	MODERATE	4
				HIGH	20-30	LOW	2
				VERY HIGH	>30	VERY LOW	1
	Risk of Saltwater Intrusion	10	RISK CLASS	VERY LOW	VERY LOW	VERY HIGH	10
				LOW	LOW	HIGH	8
				MODERATE	MODERATE	MODERATE	5
				HIGH	HIGH	LOW	2
				VERY HIGH	VERY HIGH	VERY LOW	1

THEME	LAYER	OVERALL SUITABILITY WEIGHTING	LAYER UNITS	ORIGINAL CLASSIFICIATION	CLASSIFICATION VALUE	SUITABILITY	SUITABILITY FACTOR
SUSTAINABILE INFRASTRUCTURE	**Road Adjacency**	10	DISTANCE (m)	VERY NEAR	<200	VERY HIGH	10
				NEAR	200-400	HIGH	8
				MODERATE	400-600	MODERATE	5
				FAR	600-800	LOW	2
				VERY FAR	800-1000	VERY LOW	1
	Steep slopes	10	DEGREE SLOPE	VERY LOW	0-5	VERY HIGH	10
				LOW	5-9	HIGH	9
				MODERATE	9-15	MODERATE	5
				HIGH	15-30	LOW	1
				VERY HIGH	>30	VERY LOW	0

Planning PDF DEMO



- The results of the Suitable Land Analysis have been compiled into a layered PDF for presentation and review by Planning Staff
- This is a static tool, thereby desired changes in suitability weighting cannot happen dynamically.
- The project team has addressed the need for an online dynamic approach to this tool that can be an engaging tool for planners, LTCs, and the public. If requested the project team can submit a business case for such a tool.

Role of the Suitable Land Analysis in **Freshwater Sustainability**

- Integration with the Islands Trust Freshwater Sustainability Strategy.
- Protection of watersheds, recharge zones, and drinking water sources.
- Supporting equitable and sustainable water resource management.

Role of the Suitable Land Analysis in **Policy Integration**

- Supporting Land-Use Planning
  - Official Community Plans (OCPs): Aligning zoning & density allocations.
  - Land Use Bylaws (LUBs): Ensuring sustainable regulations.
- Collaboration, Partnerships, and Community Engagement
  - Use of third-party government information and academic research
  - Potential for Collaborating with First Nations, local interest groups, and other agencies.
- Enhancing access to data and public transparency in planning decisions.

Challenges

- Data Availability & Accuracy
  - Inconsistent or incomplete spatial data from island to island can limit the tool's effectiveness.
  - Standardizing data collection especially with environmental data
  - Working with data source agencies can improve accuracy.
- Complex Ecosystem Interactions
  - Environmental factors like groundwater, biodiversity, and climate resilience are interdependent.
  - Dynamic models and adaptive strategies may enhance analysis.
- Balancing Conservation vs. Development
  - Growth pressures may conflict with ecological protection.
  - Transparent, science-based planning may help mitigate conflicts.

Opportunities

- Improved Data-Driven Decision-Making
  - GIS and MCDA create objective, evidence-based land-use assessments.
  - Structured data management supports better planning and policy decisions.

- Proactive Conservation Planning
  - Early identification of sensitive areas helps prevent environmental degradation.
  - Specific focus on a certain value or theme may support long-term sustainability.

- Facilitating Climate Resilience & Sustainability
  - The tool helps align development with climate adaptation needs.
  - This promotes resilient communities and ecosystems.

- Collaborating with First Nations
  - Increased housing density should not impact First Nations' interests, rights, and cultural sites.
  - Early engagement ensures respectful and equitable planning.

Development Questions

1. How can the SLA Tool be used alongside existing land-use regulations to support decision-making while maintaining community-driven planning approaches?

2. Where does First Nation's engagement fit into the process of developing and using the SLA?

3. What factors should be prioritized in weighting the SLA Tool's criteria to better reflect the unique ecological and social values of Hornby?

4. How can the SLA Tool ensure that increasing the opportunity to build more secondary dwelling units and affordable housing aligns with the unique cultural and environmental values of Hornby Island?

5. How can local community groups contribute island-specific environmental and cultural data to enhance the accuracy of the SLA Tool?

6. What challenges exist in applying regional-scale modeling tools like SLA to islands with highly localized environmental conditions, and how can we address them?

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