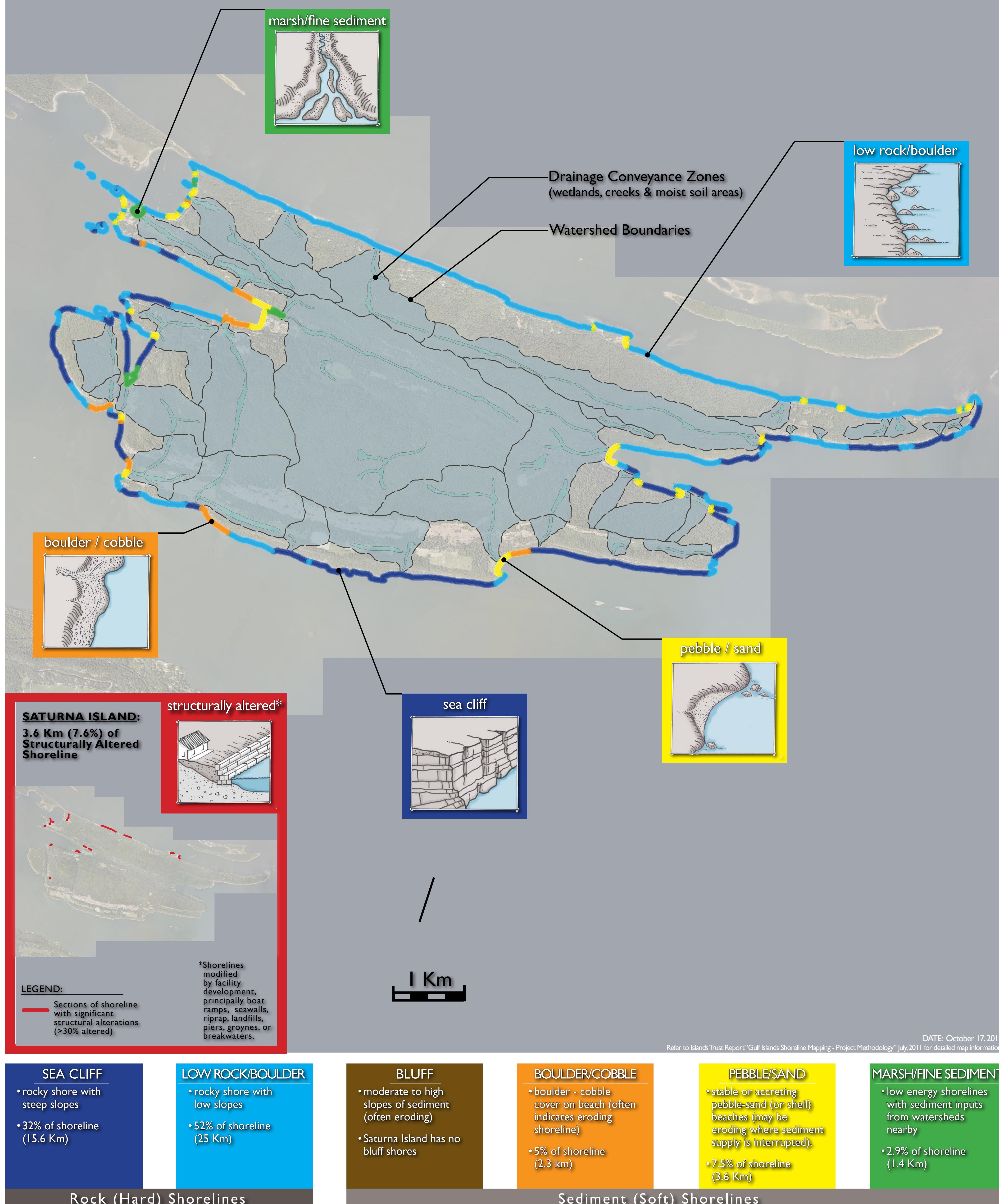


SATURNA Is.

MAP I of 3: Distribution of Shoreline Types

The Saturna Island shoreline is largely bedrock and resistant to erosion. There are several sand and shell pocket beaches that are very important recreationally. The southeast end of Saturna Island is exposed to south-easterly storm winds and waves. The north side of Saturna Island is partially exposed to northwesterly winds and waves; the northwest side of Saturna Island is protected from northwesterly wind and waves by Mayne Island. There are a few areas of tidal sand or mudflats, which are sensitive to human disturbance; these are located in Boot Bay, the head of Lyall Harbour, and Winter Cove. There are several areas of saltmarsh, particularly Winter Cove and Lyall Harbour. Boot Bay is shallow, with fine sediments, constrained at the entrance, and has poor water circulation.

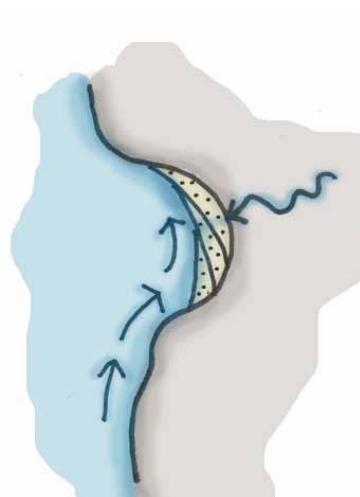
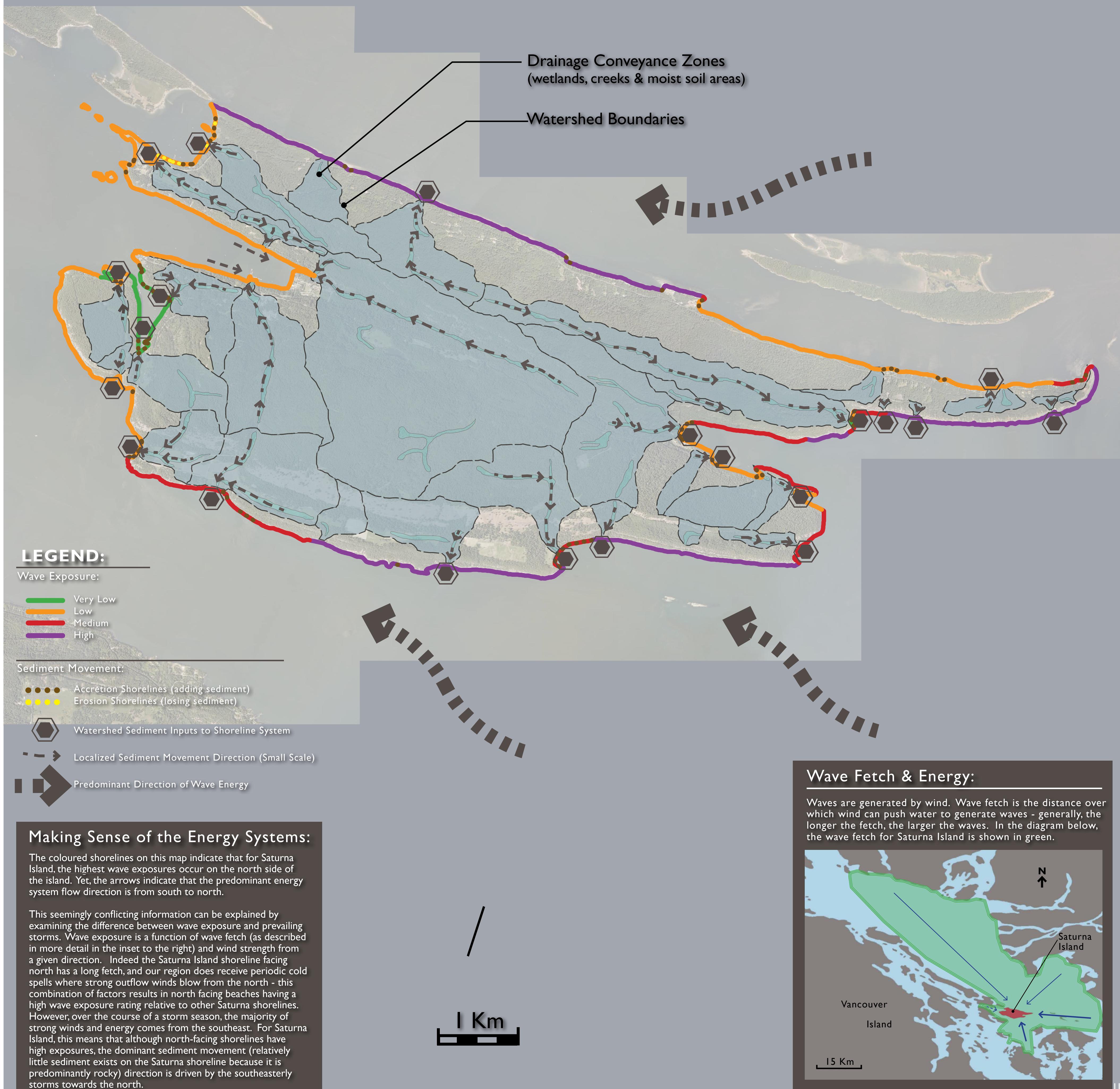


ISLAND ENVIRONMENTS are shaped by two primary or formative systems:

- 1) watershed systems; and
- 2) longshore systems.

Watersheds are driven by runoff, and longshore systems are driven by waves and ocean currents. Any attempt to understand the islands, including discussions about land use planning, must be framed by these systems. Within this framework all other systems (natural systems like forests, wetlands, eelgrass beds etc, and human systems like roads, buildings, etc) are organized and structured.

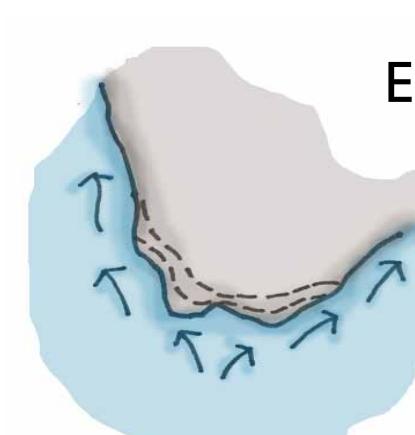
SATURNA ISLAND belongs to a class of sea coast known as sheltered shoreline because it is not exposed to the open sea. Nevertheless, wind wave and current activity remains the controlling force along the island's perimeter. The strength of this system, however, varies appreciably depending on the orientation and form of the shoreline, near shore water depth, and other factors. For example, headlands facing storm waves are subject to the greatest wind and wave force, whereas bays and estuaries are subject to the least. Not surprisingly, headlands are prone to erosion and damage caused by strong winds, whereas bays and estuaries are prone to sediment deposition.



Accretion Shorelines:

Sediment accumulation (accretion) is typically associated with lower energy environments along the shorelines.

Accretion features include sandy beaches, beach berms, pocket beaches or storm berms, and are often high value recreation features or wildlife habitats.



Erosion Shorelines:

Eroding shorelines are typically associated with higher energy environments along the shorelines, like headlands, high exposure sediment shores or points of land.

Eroding shorelines feed the sediment transport system and halting erosion can have severe impacts on the shoreline sediment movement system and 'downstream' beaches. Adequate setbacks for buildings and facilities are critical.



Trees and vegetation damaged or shaped by the wind along shorelines are good indicators of high wind exposure.

Caution should be exercised when siting buildings and facilities in these locations to ensure they are adequately set back from the shoreline.

Wave Exposure & the Sediment System



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Preserving island communities, culture and environment

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A SUSTAINABLE APPROACH TO COASTAL DESIGN AND DEVELOPMENT



STEWARDSHIP CENTRE FOR BRITISH COLUMBIA



PACIFIC CLIMATE IMPACTS CONSORTIUM



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SATURNA Is.

MAP 3 of 3: Shoreline Values & Vulnerability

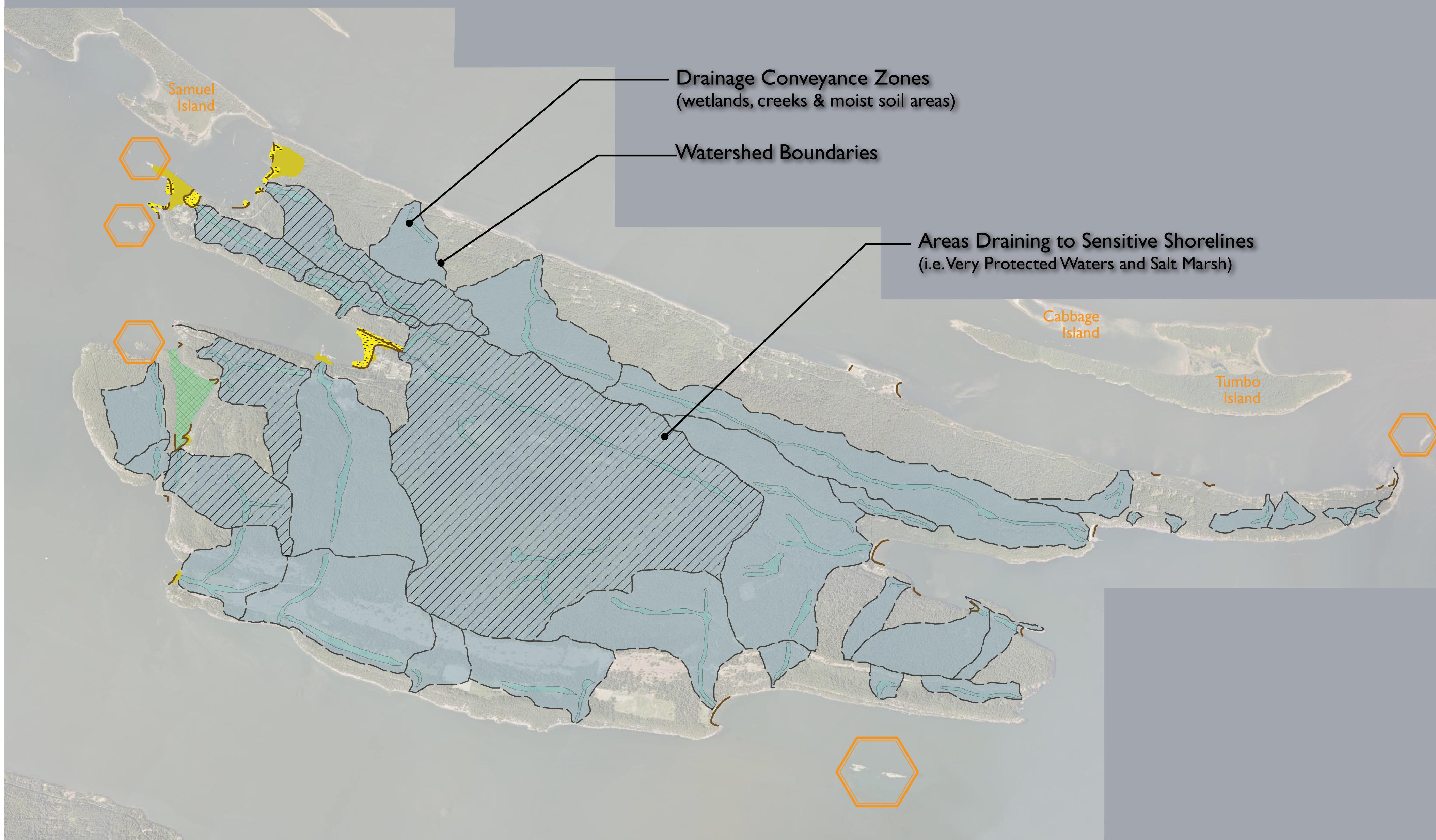
This map is intended to give a general impression of areas along the Denman Island shoreline that are considered valued and/or vulnerable to change.

Value refers to areas or features of high ecological or recreational significance.

Vulnerability refers to:

- 1) Natural areas or features vulnerable to human disturbance; or
- 2) Buildings or facilities, vulnerable to disturbance from natural or human-altered system processes.

It is important to note that the various features highlighted on this map are in many cases both vulnerable in some way, and valued. Saltmarshes for example are of high ecological value, and are also vulnerable to accumulation of pollutants potentially contained in island runoff.

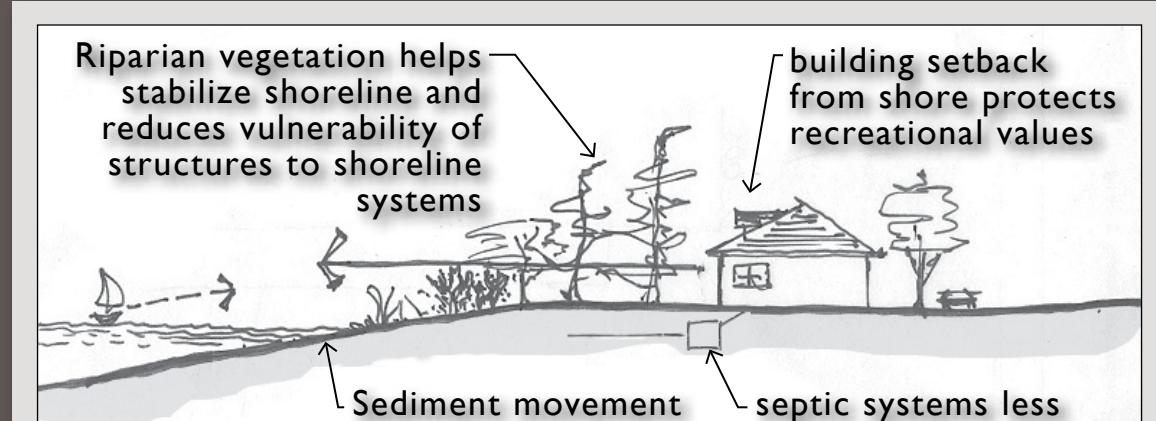


COMMUNITY INPUT

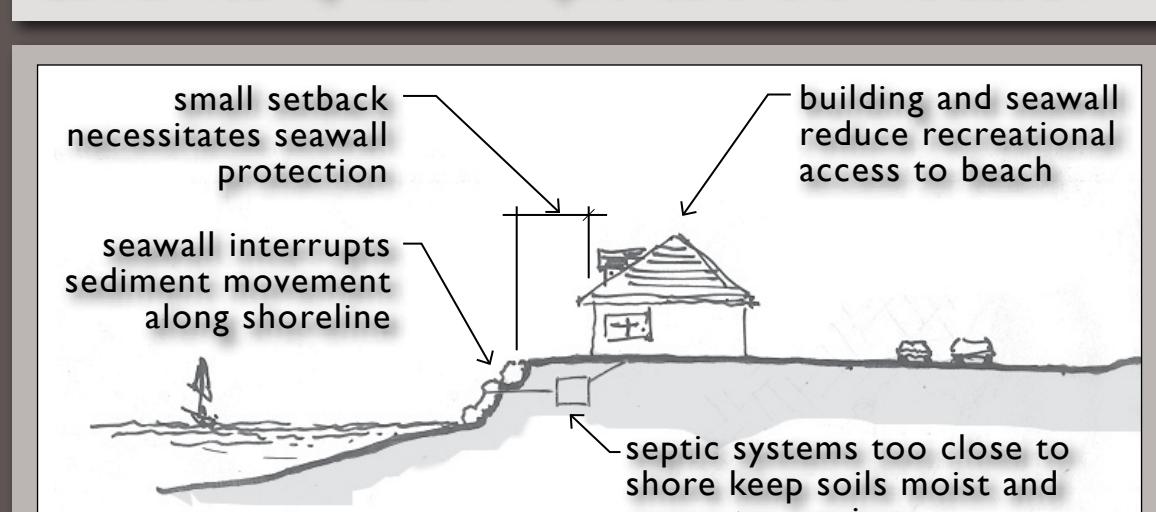
THIS IS YOUR SPACE - tell us what we have missed or where you think the mappers have erred to help us build a more comprehensive values and vulnerability resource! Feel free to make notes right on the map also.

1 Km

FACILITY SITING & SETBACKS



Lower Facility Risk - Improved Shore Protection



Higher Facility Risk - Loss of Shore Values

DATE: October 17, 2011

Refer to Islands Trust Report "Gulf Islands Shoreline Mapping - Project Methodology" July, 2011 for detailed map information.

LOW LYING AREAS

- Areas 0-4 m in elevation above existing Mean Sea Level and greater than 50 m of width from the shore are mapped as 'vulnerable' to sea level rise.

Current BC Provincial Government guidelines suggest up to 1 metre of sea level rise over the next 100 years (www.env.gov.bc.ca). Sea level rise may cause increased shoreline vulnerability to land-based activities by causing such effects as increased flooding in low lying areas or softening of sediment shorelines and increased shoreline erosion. These effects could be further exacerbated by storm surges and changing climatic conditions.

SOFT SHORELINES

- Sediment shorelines are typically associated with high recreational values and high ecological values (pocket beaches, estuaries, etc.).

VERY PROTECTED WATERS

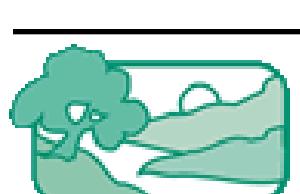
- Shorelines highly protected from wave exposure
- Poor water circulation increases vulnerability to water pollution

SALT MARSH

- Valued ecological features
- Vulnerable to pollution from land-based activities

ISLETS

- Often important ecologically, islets can be vulnerable to disturbance from recreational users



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