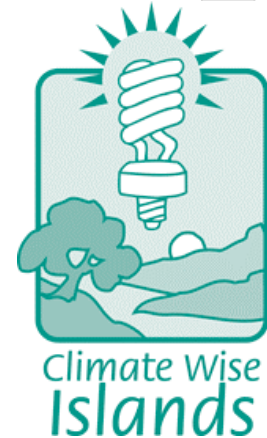




# Best Practices For Building & Living on Lasqueti Island

This document is a compilation of ideas from people who have built and lived on Lasqueti, and attempts to summarize what we've collectively learned about building and developing property sustainably in this unique place. We hope that these ideas can help Lasqueti to continue working towards being a sustainable community. The document also includes information about financial incentives and other resources that can help you achieve these goals.



We hope you find these ideas useful - we want you to be curious and skeptical, and to question the assumptions behind typical development patterns. Most of all, we want you to benefit from and contribute to the collective wealth of experience and innovation on building and living in this special place. If you have any input as to how these Best Practices do or do not assist you, or how this document can be changed to make it better, please contact the Islands Trust at 250-247-2063 or by e-mail at [northinfo@islandstrust.bc.ca](mailto:northinfo@islandstrust.bc.ca).

We thank the (unknown to us) authors of the Salt Spring Sustainability Checklist, which was used as our inspiration and starting point.

## ***Why on Lasqueti?***

Lasqueti's unique geography and land-use patterns present a host of unique challenges for building in relative isolation from municipal infrastructure and amenities. Many of the "standard approaches" to residential construction simply don't work well here, and certainly are not in harmony with Lasqueti's rural character and rugged wildness - characteristics that presumably, at least in part, drew you to Lasqueti in the first place.

### **Who should consider using these Ideas?**

All current and prospective Lasqueti Island landowners who are preparing to build a new house, a cottage, or an accessory building, or planning to remodel or add to an existing dwelling, or to build or reroute a driveway, or to install or retrofit their power, water, or waste water systems. These best practices are specific to our unique geography, climate, and culture, yet general enough to be applied to all residential construction projects.

### ***How should I use these Ideas?***

This is an educational document, so the earlier you consult it, the easier it will be to include its ideas in your project. Review these ideas with your architect, designer and contractor, or use it yourself before drawing your plans. Initiatives you take at the planning stages of your building project can dramatically reduce any negative impacts and help to create a truly sustainable homestead and a more healthy, viable community in the long term.

The Practices are organized by phase in a typical building project, from planning to site clearing through to construction and maintenance. For each phase, a set of Best Practices is given, along with some additional explanatory notes. An asterisk (\*) indicates that additional resources are listed in the Resources section at the back of the document.

We hope these Best Practices will help you build a lower-impact, lower-energy-using and more-sustainable home and homesite, and help you to protect and preserve the natural ecosystems on your property, in your neighbourhood, on our island and in our region.

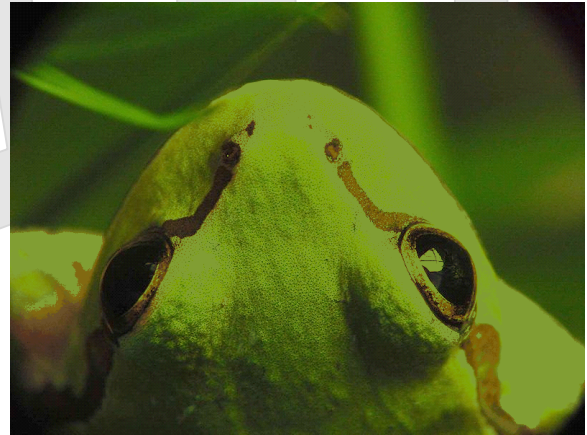
### **Islands Trust contact:**

**Islands Trust Northern Office**  
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Phone: 250-247-2063  
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E-mail: [northinfo@islandstrust.bc.ca](mailto:northinfo@islandstrust.bc.ca)

## ECOSYSTEM APPROACH TO SITE PLANNING - KNOW THE LAND

- Take time to know your neighbours and land well as a first step.
- Identify environmental and archaeological values, including habitat for threatened or endangered species and First Nations sites, *before* planning access, site clearing and design.
- Locate proposed development – your driveway, waste disposal, house and outbuildings – away from areas with high environmental values like shorelines, streams, rare plants, and wildlife trees. Place natural buffers between the development and sensitive features.
- Cluster development in one area of the property to minimize site disturbance.



### ECOLOGY TIPS

Local experience and expertise can save time, effort, and money. The longer you take to know your land (ideally at least 4 seasons), the more benefits you will reap. Look for where the sun rises and sets at different times of year, where water runs, collects, and drains; which direction prevailing winds blow, etc.

Plan ahead and walk the land with your contractor and a local biologist to find environmental benefits and cost savings.

Certain types of First Nations sites are protected under federal and provincial law and must not be disturbed. Avoid the accidental destruction of an ancient burial site and costly delays and fines by walking the land with an archaeologist\* before work begins.

Don't site buildings on, dig in, or drain even small wetlands, which are an important habitat for amphibians and birds.

Clustering buildings and planning short driveways helps the environment and saves money. One clearing is better than several.

Conservation covenants are registered on title and protect the special aspects of the land that you wish to preserve. They can also give you significant tax benefits

## TREE REMOVAL - THINK TWICE BEFORE YOU CUT

- Minimize tree cutting and soil disturbance.
- Consult with a local forester\* and/or arborist\* when planning clearings and tree removal.
- Clear brush and trim branches on large trees around the building site or build on rock or in natural clearings to provide fire protection.
- Protect any eagle or heron nests on your property.
- Retain and protect significant trees like older growth Douglas-fir, Cedar, Arbutus, Juniper, and Yew.
- Replant cleared areas with smaller deciduous species that will bear fruit and/or nuts, along with providing shade and bird habitat.



### TREE TIPS

Our island's trees and soils have ecological value and represent important carbon sinks, critical in addressing climate change. When land is cleared for development, its ability to sequester carbon is lost.

Trees are water pumps - clearing large numbers of trees can affect the flow and recharge of ground water aquifers.

Very few old growth trees remain on Lasqueti. The dominant coastal Douglas-fir and Juniper-Arbutus ecosystems on Lasqueti are very rare in the rest of the province.

Standing dead trees provide important wildlife habitat; leave them standing unless they pose a hazard. Topping is better than felling, but leaving them alone is best.

Eagle and heron nests are Provincially protected and the Lasqueti Land Use Bylaw No. 78 requires a protective screen of natural vegetation to be retained within 30 metres (100 feet) radius of the trunk of a tree bearing nests of herons, eagles, ospreys, falcons, hawks and owls.

You can create views by limbing taller trees instead of removing them. If you feel trees must be removed to open up a view, cut trees selectively

## **WATER MANAGEMENT - FRESH WATER IS A PRECIOUS RESOURCE**

- Observe the way water flows through and collects on your property in different seasons.
- Site buildings well back from the high water mark, and protect trees and vegetation within 30 m of the water.
- Plan to store rainwater on site by constructing a cistern, dug well, pond or wetland. Avoid drilled wells.



### **WATER MANAGEMENT TIPS**

Lasqueti typically has wet winters and dry summers.

Good water management involves collecting and retaining the winter rains to recharge groundwater supplies, lakes, ponds, cisterns & shallow wells.

Be sure to assess your water supply in both wet and dry seasons and design your development, landscaping, water collection, and waste water systems accordingly.

Lasqueti has limited ground water resources, and experience\* here and on adjacent Gulf Islands has proven drilled wells to be unpredictable and short lived. Salt water incursion, septic contamination, and aquifer draw down are among the negative impacts of drilled wells.

Forested slopes, fractured bedrock, and deep organic soils hold moisture. Bare rock and non-permeable surfaces do not. Ensure sufficient uncompacted topsoil remains on the property after construction.

The Lasqueti Land Use Bylaw requires buildings and structures to be setback 30 m from all fresh water bodies and at least 15 metres from the ocean's high water mark.

Removing trees can result in increased runoff and stormwater damage to properties below. Landowners can be liable for damages caused to a neighbour's property. Plan stormwater retention ponds, drainage swales and wetlands to retain stormwater on site, and maintain existing drainage patterns.

## LANDSCAPING - GO NATIVE, AVOID TURF

- Landscape with native, drought-hardy vegetation rather than lawns and water-demanding ornamentals. Consider ground covers other than turf grass.
- Avoid impervious surfaces like asphalt and concrete.
- Don't use synthetic pesticides and fertilizers.
- Don't plant invasive ornamental species, and control invasive plants on your property.
- Plan to re-use greywater to irrigate trees and gardens.
- Plant an organic fruit and vegetable garden, and landscape with edible plants and trees.



### ECOLOGICAL LANDSCAPING TIPS

Avoid non-native plants that spread into and alter our natural ecosystems. The highly invasive scotch broom originated from three seeds brought from Scotland a century ago. Other typical invasive species on Lasqueti include holly, ivy, honeysuckle, and blackberry.

Turf grass typically requires a lot of irrigation. Choose drought-hardy species instead (often called Xeriscaping\*).

Use permeable surfaces for roads and paths, rather than conventional asphalt or concrete.

Pesticides and chemical fertilizers decrease the biological diversity of the soil and are counter-productive to a healthy landscape. Many plant “pest” problems can be addressed by feeding the soil with organic material such as compost.

Growing organic food (or buying local organic food) is one of the best ways to reduce carbon emissions.

Source: concrete, greywater, and use it to irrigate... see Oasis book\*

## CONSTRUCTION SITE MANAGEMENT

- Have a construction waste recycling plan and a no-burn policy on site.
- Avoid outdoor burning of slash and wood debris - utilize berming and/or chipping or trucking instead.
- Reduce soil disturbance and compaction wherever possible.
- Reduce run-off, erosion, and sedimentation during construction.



### SITE MANAGEMENT TIPS

Good management significantly reduces the amount of construction waste to be recycled or landfilled. Source separate plastics and other recyclables from waste that must go to the landfill.

Outdoor burning is strongly discouraged because of local air pollution and GHG emissions.

Branches may be piled densely in alternating layers with other clean wood debris to form a long, narrow mound or berm. The berm creates habitat for many creatures immediately, and will gradually decompose to form rich soil. Woody berms can be used to slow runoff from a sloping site and to create raised planting beds.

Plant cover crops on disturbed soils as soon as possible to reduce erosion and help control invasive plants that thrive in disturbed areas.

If you've had to cut down large trees, consider milling\* them on site to use in your project. Wood unsuitable for construction can be cut, split and stored under cover for use as firewood.

## HOUSE DESIGN

- Keep your design compact and resource-efficient to reduce the building's ecological footprint, construction, and operating costs.
- Visit houses and homesteads on Lasqueti for design ideas that work in our climate and with our rural lifestyle.
- Use passive solar design principles for space heating and cooling and plan for natural daylighting and natural ventilation.
- Build to code\* as a minimum standard - all construction is required to meet the BC building code.

### DESIGN TIPS

Your neighbours have a wealth of knowledge about what design features work on Lasqueti, and which don't. Ask them for a tour, and about the best (and worst) design features in their houses.

A compact design can yield significant savings over the life-span of your building - lower taxes, less materials, lower maintenance costs, less firewood to split each year, etc. These savings can be used to make further efficiency improvements in the design.

Think ahead about how you will access windows, chimneys, roof, gutter, water filters, etc. for cleaning and maintenance.

Good passive solar design\* is the key to an environmentally sustainable home. By taking the 'House as a System' approach and by setting energy and water consumption targets, you can create a healthy, comfortable and efficient sustainable home. Match south-facing window areas with interior mass (e.g. concrete or tile floors, masonry feature walls, plaster or thick drywall) to store passive solar gains and reduce temperature swings. Avoid large areas of non-south glazing and large skylights; they cause overheating and glare during the summer and lose heat during the winter.

Don't design in reliance on a gas or diesel generator, plan for a net zero energy house instead. CMHC found that in this climate it was theoretically possible to retrofit a 1969 bungalow to become a net zero energy home by adding insulation (R-50 ceiling, R-26 walls and R-10 slab), high-performance windows, high efficiency lighting and appliances, and a rooftop solar electric (PV) system - all easily accessible technologies.



## BUILDING MATERIALS

- Use foundation options that will provide good thermal performance and water resistance, and efficient resource use.
- Use resource-efficient framing and wall options that optimize structural and thermal performance and reduce environmental impact.
- Use more insulation, insulation with recycled content, and windows with a higher energy efficiency rating.
- Avoid asphalt-fiberglass roofs, especially for rainwater collection systems.
- Source and use local materials wherever possible.
- Use quality materials that are designed for durable service and long-life.

### BUILDING MATERIALS TIPS

Adding insulation reduces operating energy costs and increases comfort.  
*“You only insulate once, but you cut firewood and heat every year.”*

Various techniques and materials may be used to reduce a home’s ecological footprint, but determining the best solution is not always straightforward. Ask your designer / builder / neighbours which materials are appropriate for your home. Materials must be compatible with the design and with other building systems.

Air leakage through cracks, e.g. around beams and trim, significantly reduces energy performance. A blower door test towards the end of construction will identify unintentional air leakage paths.

Local materials, such as milled lumber, driftwood, clay / cob, and stone, have low embodied energy and will generally reduce your material costs and the buildings ecological footprint.

Natural, non-toxic and low VOC paints and coatings are now widely available and labeled as such.

Natural linoleum, bamboo and cork, local wood, and tiles are greener alternatives to vinyl flooring.

Many products are available with recycled content, for example, roofing, interior doors, ceramic tiles, and carpets. Ask your building supplier.

Materials eventually need to be disposed of. Consider disposal options when selecting materials - drywall, asphalt roofing, and styrofoam are examples of

## HEATING SYSTEMS

- Reduce heating requirements using passive solar and a compact design.
- Install a high efficiency wood burning appliance rather than a conventional fireplace.
- Draw combustion air for wood heaters from outside the building envelope.
- Combine heating, hot water, and cooking / baking sources.
- Firewood should be dried under cover for at least 12 months before burning.
- Don't burn beachwood.

### HEATING SYSTEMS TIPS

Modern air-tight and masonry stoves are very efficient and reduce your annual fire wood requirements.

A thermal mass around heating appliance helps to modulate house temperature.

Burning unseasoned wood is wasteful, inefficient, produces less heat, and more air pollution. Live trees for firewood are best cut from October to December because of lower moisture content (and its lighter to move!)

A conventional open fireplace wastes energy and creates air pollution. Low-emissions wood stoves and fireplaces not only produce less air pollution – they're more efficient, heating your house with less wood.

Smoke from your chimney should be nearly invisible - smoky fires indicate incomplete combustion, wasted energy, and air pollution.

Burning salt-impregnated wood releases highly carcinogenic and toxic dioxins, and corrodes cast iron, stainless steel, and masonry.

Consult with a local forester or arborist\* for help with selecting the best trees to cut for firewood.



## WASTE WATER SYSTEMS AND WATER CONSERVATION

- Use a composting toilet system rather than installing a flush toilet.
- Install low flow shower-heads and faucet aerators.
- Use greywater separation and treatment for irrigation or reuse.
- Only use ecologically friendly, biodegradable cleaning products.

### WATER CONSERVATION TIPS

Rainwater collected from a roof can be more than sufficient to meet annual household needs. 100 sq. m. of roof yields 86,000 litres, given 86 cm annual rainfall. Be sure to use suitable roofing materials for rainwater collection.

Flush toilets use up to 50% of household water. If you must have a flush toilet, dual flush toilets give the option of using only three litres per flush.

Low flow shower heads vary in water consumption from about two litres per minute to six litres per minute. Read the fine print before you buy.

Low household water pressure can lead to significant water savings.

Greywater from laundry, sinks, showers and baths can be filtered and treated for reuse to flush toilets or water gardens. See the Oasis book for home-built greywater systems. Commercial systems are approved for use in BC.

A waterless composting toilet\* is permitted and is the ultimate water saving device.

Septic systems, despite their many faults, are required to meet regulatory requirements. A registered practitioner is required to design and install residential wastewater systems in BC.

## RENEWABLE ENERGY SYSTEMS

- Install a solar water heating system and wood heated hot water.
- Install a PV (solar panel) system to produce your own electricity.
- Install a micro hydro system if you have suitable potential.
- Install a wind turbine, if your site has suitable wind potential.
- Don't run a generator as your primary power supply.



### RENEWABLE ENERGY TIPS

Your alternate energy system will be site specific, as each site has its own specific energy potential. Renewable energy systems are best planned at the design phase. Consult with a local alternate energy expert\* and your neighbours in assessing your site's potential.

Take time to carefully size and balance your alternate energy system, and learn how to use it effectively.

Photovoltaic (PV) panels can provide enough electricity from the sun to run an energy-efficient home or cottage during summer months. A single panel can pump water from a pond to a garden irrigation system, or power a computer and emergency lights.

A solar water heater can supply up to 100% of your annual domestic hot water energy needs. Provincial and federal grants are currently available to offset some of the initial costs.

If you must install a propane heater, use an efficient on-demand system rather than a hot water tank.

With renewable energy systems, it is most efficient to plan energy intensive activities (like laundry, vacuums, etc.) and re-charge electric and electronic devices during times when energy is being produced.

## ENERGY CONSERVATION

- Design your dwelling and systems to balance your energy use with the energy available from your renewable energy system.
- Install a clothesline and a drying rack.
- Design and build a cold storage area, such as a root cellar or a vented pantry situated on the North side of the house.
- Only purchase appliances that are really needed, and only high-efficiency units.
- Unplug un-used appliances to eliminate “phantom loads”
- Keep fridge (or freezer) in a cool or unheated space.
- Use human-powered tools, appliances, and machines in place of electrical devices.



### ENERGY CONSERVATION TIPS

Minimizing your energy use is the most efficient and least expensive way to meet your energy needs.

A clothesline and drying rack are one of the simplest solar technologies, and a good way to save energy and money.

High efficiency refrigeration is available, but not typically at normal appliance stores. Do some research, talk to your neighbours.

Many appliances and electronic devices continue to use power even when turned off. Put appliances on power bars or a dedicated switch and turn them off when not in use to avoid these “phantom loads”.

“Kill-a-watt” meters can be very helpful in tracking energy consumption.

Heat recovery systems can recover heat from the ventilation system or the hot water used in showers, bathtubs, sinks, dishwashers, and clothes washers.

## **MAINTENANCE & WASTE REDUCTION**

- Make time for inspecting and cleaning chimneys, stovepipes, and wood burning appliances, and emptying ash drawers on a regular basis.
- Regularly inspect and service mechanical equipment, including generators, vehicles, water, water treatment, and waste water systems.
- Inspect the outside of your home following heavy wind or rain storms to check for any damage or drainage problems.
- Don't purchase or use products with harmful chemicals. All products with warning signs (poisonous, explosive or corrosive) are harmful and/or dangerous.

### **HOME OPERATING TIPS**

Careful use can typically reduce energy and water consumption in a home by 50% or more. Remind family members, and especially visitors, about energy and water conservation and “turn it off”.

An “operating manual” or binder with equipment and materials information, along with a photographic record of construction and a contact list of trades-people used will be very helpful long after construction's done, and will be very valuable when selling or renting your home.

Schedule regular servicing activities, such as filter replacement and chimney and eaves trough cleaning, into the household calendar. Filters include air filters on heat recovery ventilator systems and screens on air intakes, and filters on home water purification systems.

Generators, vehicles, and other equipment will last longer, operate more efficiently, and cost less to operate when it is well maintained. Postponing maintenance tasks can lead to serious problems and major, expensive repairs.

Avoid products with explosive, corrosive, or poison symbols. Baking soda and vinegar work just as well as commercial cleansers for many household cleaning jobs and are better for the environment.

Greywater, septic, and composting systems are sensitive to chemicals - keep them out by not buying them! Look for “septic safe” products.

Use a closed container for composting kitchen scraps to avoid attracting rats and raccoons.

## **MAINTENANCE & WASTE REDUCTION (cont.)**

- Reduce! Avoid purchases that will end up in our landfill, including products with excess packaging.
- Re-use! Repair broken equipment and household items and use the Free Store
- Recycle! all household recyclables and compost garden and kitchen waste.

### **TIPS FOR GETTING AROUND ON LASQUETI**

Fuel is expensive, and, at times, difficult to obtain on Lasqueti. Use less and be as efficient as possible with what you do use.

Drive less. Automobiles are a major source of air and noise pollution on Lasqueti Island, and are the largest single contributor to Lasqueti Island greenhouse gas emissions. If you are considering a move, look for a location within easy walking or cycling distance. Combine trips and car-pool. Travel less.

Drive slowly. Distances are small and the roads are dangerous. Driving slowly reduces risks for all road users (not to mention dust and mud spray!). It's also easier on your vehicle and roads, and it significantly improves fuel efficiency.

If you need a truck or other heavy vehicle for work or hauling materials, consider owning a second fuel-efficient vehicle, like a scooter, a golf cart, or a compact car for day-to-day transportation needs. Electric golf carts are street-legal on Lasqueti, and with a "remote island policy", insuring a second vehicle is not prohibitive.

Most locations are within reasonable cycling distance on Lasqueti. Using bicycles eliminate emissions, saves fuel and money, and reduces wear-and-tear on our road - besides, it's healthy and fun.

Keep your vehicle and bicycle well maintained to operate at peak efficiency and increase its useful lifespan. Keeping your tires fully inflated greatly increases the efficiency.

## **POSSIBLE FUNDING SOURCES**

### **Solar BC**

offers \$1,000 point-of-sale discount  
(plus a further \$625 EcoEnergy/Live SmartBC rebate) towards a solar hot water system.

[www.solarbc.ca](http://www.solarbc.ca)  
1-866-650-6527

### **EcoEnergy / Live Smart BC**

provide grants to homeowners and landlords upgrading existing homes for energy efficiency and some renewable energy and water conservation measures.

[www.livesmartbc.ca/homes/h\\_rebates.html](http://www.livesmartbc.ca/homes/h_rebates.html)

## **INFORMATION**

### **ENERGY AND BUILDINGS**

#### **Canada Mortgage and Housing Corporation**

[www.cmhc-schl.gc.ca/en](http://www.cmhc-schl.gc.ca/en)

#### **Natural Resources Canada, Office of Energy Efficiency**

[www.oe.nrcan.gc.ca](http://www.oe.nrcan.gc.ca)

#### **City Green Solutions**

[www.citygreen.ca](http://www.citygreen.ca)

1-866-381-9995

#### **Solplan Review**

is the independent Canadian journal of energy conservation, building science and construction practice for residential construction.

604-689-1841

#### **BC Sustainable Energy Association**

[www.bcsea.org](http://www.bcsea.org)

#### **Lighthouse Sustainable Building Centre**

[www.sustainablebuildingcentre.com](http://www.sustainablebuildingcentre.com)

### **Passive Solar Design**

### **WATER AND WATERSHEDS**

#### **Capital Regional District Stormwater, Harbours and Watersheds program**

Residential tips to watershed protection, best practices, natural areas atlas and more.

[www.crd.bc.ca/watersheds](http://www.crd.bc.ca/watersheds)

#### **Dick Stubbs**

[www.islandstrustfund.bc.ca/currentprojects/rainwaterharvesting/publications.htm](http://www.islandstrustfund.bc.ca/currentprojects/rainwaterharvesting/publications.htm)



DRAFT – OCT, 2010 (J. Fall)  
Rev Nov 2010 (P. Johnston)

Rainwater Harvesting on the Gulf Islands - Guide for Regulating the  
Installation of Rainwater Harvesting Systems - Potable and Non-Potable  
Systems.

Islands Trust Fund, 2006.

## LAND DEVELOPMENT

BC Ministry of Environment “Develop with Care” March 2006 online manual  
[www.env.gov.bc.ca/wld/documents/bmp/devwithcare2006/develop\\_with\\_care\\_intro.html](http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare2006/develop_with_care_intro.html)

Islands Trust Fund/San Juan County “A Place in the Islands”  
<http://islandstrust.bc.ca/poi/apiti.cfm>

## CONSERVATION COVENANTS

Islands Trust Fund

[www.islandstrustfund.bc.ca](http://www.islandstrustfund.bc.ca)

The Land Conservancy of BC

[www.conservancy.bc.ca](http://www.conservancy.bc.ca)

NAPTEP

<http://www.islandstrustfund.bc.ca/naptep.cfm>

## LOCAL RESOURCES

### \*\*\*APC TO INCLUDE OTHER LOCAL RESOURCES\*\*\*

The following organizations have information and programs to assist residents in  
reducing our ecological footprints:

Island Natural Growers has information on organic farming and gardening

[www.cog.ca/ing/index.htm](http://www.cog.ca/ing/index.htm)

The Lasqueti Island Best Practices for Building Projects document is downloadable on  
the Islands Trust Website at

[www.islandstrust.bc.ca](http://www.islandstrust.bc.ca)

### *Foresters / Arborist*

Doug Hopwood

Sean McCooy

### *Archaeology*

Dana Lepofsky

### *Local Millers*

Don McDonald

Dennis Buchan

Morgan Runnings

Kristos Seiler

Craig McFeeley