Management Plan for the Deep Ridge Nature Reserve

Salt Spring Island

prepared for

Islands Trust Fund Board
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Island Trust Fund Board Management Plan for the Deep Ridge Reserve on Salt Spring Island

A.INTRODUCTION

A.1Trust Fund Purpose

The object of the Islands Trust is

". . . to preserve and protect the trust area and its unique amenities and environment for the benefit of the trust area of the Province generally, in cooperation with municipalities, regional districts, improvement districts, other persons and organizations and the government of the province."

The *Islands Trust Act* establishes an Islands Trust Fund, "for the purposes of carrying out the object of the Trust." The Act also establishes a Trust Fund Board, "to administer the trust fund and to manage the real and personal property assets of the trust fund." The Board is authorized to acquire and hold money, land, and interests in land within the Trust area for purposes of carrying out the object of the Islands Trust. The Trust Fund Plan, prepared by the Board and approved by the Minister of Municipal Affairs, Recreation and Housing in accordance with the requirements of Section 40(1) of the *Islands Trust Act*, outlines the vision, priorities goals, and policies of the Board and actions which will be taken to support the object of the Islands Trust.

The Vision of the Islands Trust Fund is to create a legacy of special places, protecting both natural and cultural features in perpetuity, in order to help sustain the unique character and environment of the Islands Trust Area (Islands Trust Fund Plan (ITFP) 2003).

Lands with characteristics of interest to the Trust Fund Board have one or more of the following features of significance:

- rare, threatened, vulnerable, exceptional or representative plants and plant communities,
- Garry oak, Arbutus, Douglas-fir and Western hemlock woodlands or forests,
- wildlife habitat or corridors,
- streams, lakes, wetlands, marshes or land associated with a body of fresh water,
- watershed or groundwater recharge values,
- shorelines, including beaches, rock outcrops and islets,
- coastal and inland cliffs,
- buffer areas adjacent or in close proximity to protected lands,
- unusual features or anomalies within the Islands Trust Area,
- archaeological sites,
- historic or cultural landscapes of significance,
- mixed rural landscapes such as farms or other rural areas that contain a mix of woodlands, creeks, wetlands, heritage orchards and cleared lands,

- opportunity for nature study or nature education programs,
- opportunity for low intensity, low-impact nature-related recreation, or
- scenic amenities or outstanding views.

Management plans will be developed for all lands owned by the Trust Fund Board and will be used to provide long term direction and guidance for the protection of values and features of significance and for public use (ITFP 2003).

A.2Background Summary

Project History
The Deep Ridge Reserve was donated to the Island Trust Fund by Jonathon and Evelyn Oldroyd and Robert and Rosemary Trump in 1992.

It is Trust Fund Board policy to prepare and approve a management plan for properties it acquires. Generally, management plans will address the following matters:

- purpose and objectives for the site,
- background information including the site history and local and regional context,
- environmental inventory,
- management issues such as the extent and nature of protection required, appropriate uses and level of use, research guidelines, risk management, special needs at the site, and
- strategies and actions to achieve the purpose and objectives for the site and to address management issues and needs.

This document presents a management plan for the Deep Ridge Reserve.

General Visual Description
The Deep Ridge Reserve is 14.2 hectares in size and consists of a 1.6 kilometer, 100 to 150 meter wide, strip of forested ridge above the Cusheon Creek Valley. The property drops steeply to the beach approximately two hundred meters south of Cusheon Creek. The property is forested with dense second-growth Douglas-fir.

Value to the Community
Part of the original intent for the Deep Ridge Reserve was to provide a link in the Salt Spring Island trail network which would connect Peter Arnell Park with Ruckle Park via a route along the shore to the south. However, the extreme steepness of much of the reserve makes trail construction impractical and undesirable.

The Deep Ridge Reserve serves as greenspace, protects a view-scape, and provides a buffer to Peter Arnell Park. Much of the property is forested with dense second growth Douglas-fir. Over time this forest will develop into a more complex stand and, if left undisturbed over the long term (250+ years), may develop some old growth attributes. While the reserve itself is fairly small its adjacency to Peter Arnell Park will give it higher value than a property of the same size might otherwise have.

B.PROJECT DESCRIPTION

B.1 Purpose

The purpose of the Deep Ridge Reserve is the conservation of view-scape, greenspace, and natural vegetation. The reserve also acts as a buffer for Peter Arnell Park. Although the property possesses only one category of the key characteristics of interest to the Trust Fund Board (i.e. ridge tops, escarpments, and rocky outcrops), the importance of the property is enhanced by its connection to Peter Arnell Park.

Development of trails or other recreational uses on the reserve is not recommended due to the physical characteristics of the site. Slopes over much of the property are around 35% to 45% and increase to between 75% and 100% over the rest. As well dense second growth forest and large amounts of woody debris make walking difficult.

B.2 Goals and Objectives

The goals of the Deep Ridge Reserve are to conserve viewscapes and vegetation, allow natural ecological processes to continue, and to provide a buffer for Peter Arnell Park.

B.3 Project Partners

There are no project partners at this time.

B.4 Limitations

This management plan has been developed with information and input from a review of existing information, conversations with Islands Trust staff and local residents, and six site visits done for annual monitoring purposes.

C. PHYSICAL AND NATURAL FEATURES DESCRIPTION

C.1 Location

The Deep Ridge Reserve is located just south of Cusheon Creek on the southeast coast of Salt Spring Island.

C.1.1 Legal Description

The Deep Ridge Reserve is 14.2 hectares in size and is described in the land registry as:

Parcel Identifier: 018-031-552
Lot 3, Sections 75 and 76, South Salt Spring Island, Cowichan District, Plan VIP 55669.

A development variance permit (EF122838) has been granted under Part 29 (Management of Development) of *The Municipal Act*. to exempt the property from requiring a road frontage. The Islands Trust Fund Board holds easement EF17032 over Lot 1, Plan 13496. The easement allows public access (foot traffic only) to the property through Peter Arnell Park.

Three undersurface rights charges appear on the title search print as of May 1993. BC Hydro holds statutory right of way EF93078 over the property. BC Telephone Company holds statutory right of way EF93079 over the property. The Ministry of Transportation and Highways and the Capital Regional District hold a covenant EF170381 under Section 215 of *The Land Title Act.*

C.1.2 Map Location
Map sheets 92B 083 and 094 (1:20,000) and 92B/14 (1:50,000).

Latitude: 48° 45' Longitude: 123° 26' UTM Coordinates: 685 055.

Aerial Photo Line BC 85013 Photo Numbers 196 and197. Scale: 1:15,000

C.1.2 Directions to Site
From the ferry landing at Fulford Harbour, turn right almost immediately on Beaver Point Road and then left at Stewart Road. After a short distance, a sign identifies Peter Arnell Park. A parking lot is located on the opposite side of the road from the sign.

Currently foot access to the Deep Ridge Reserve is through Peter Arnell Park via easement EF17032. A short trail would need to be constructed to formally link the property with the existing trail system in Peter Arnell Park. Access is possible through an existing informal trail from the park and it is not recommended that any more formal access be developed at this time.

C.2 Site Description

C.2.1 Climate
The climate of the Gulf Islands has been described by Kerr (1951) and Chilton (1975) and reviewed by Eis and Craigdallie (1980) and van Vliet *et al.* (1987). While there is some minor local variation, climatic averages are relatively consistent throughout the area. Since Gulf Island weather stations record only temperature and precipitation, the similar but more comprehensive records from Victoria International Airport are used to describe the climate of the region.

Climate in the southern portion of the Straight of Georgia exhibits a characteristic pattern of warm dry summers and mild wet winters. The maritime influence tends to moderate the effects of elevation, latitude, and aspect on local temperature and precipitation.

Temperature can range from 35°C to -15°C but is generally much more moderate. The mean temperature of the warmest month is about 16°C and in the coldest month is about 3°C. The frost free period is just over 200 days.

Annual precipitation is approximately 870 mm. Precipitation generally increases from sea level to hilltops, and about 80 percent falls between October and March. Less than six percent of winter precipitation falls as snow, which rarely lasts more than a few days on the ground. July is the driest month.

Warm temperatures and low precipitation in the summer months lead to a pronounced drought or moisture deficit. Moisture deficits are influenced by aspect, slope, vegetation cover, and the ability of the soil to retain moisture. The moisture deficit usually begins in May and ends with the autumn rains in early October.

C.2.2 Physiography
The Reserve is a long narrow property following the top of a generally east-west trending ridge before dropping steeply to the sea. Elevation decreases gradually from about 200 meters above sea level (asl) in the western portion of the property to 100 meters asl just before the property drops to the shoreline. Slopes in the western portion of the property are around 30%-45%, but increase to between 70% and 100% over the rest. The ridge has a northern aspect.

C.2.3 Geology and Soils
The Deep Ridge Reserve is underlain by sedimentary rock dating from 80 million years before present (van Vliet *et al.* 1987). The adjacent valley has eroded from less resistant mudstones and shales, likely along a fault line. Beddis soil on the westernmost portion of the property developed on deep (>150 cm) marine, water or wind borne deposits of

loamy sand to sandy loam (van Vliet *et al.* 1987). This soil type is well to rapidly drained with a very low (0%-10%) coarse fragment content. Beddis soils remain moist during winter months but quickly dry in the summer. The majority of the property is underlain by Rumsley soils. This soil type has developed on more shallow (<100 cm) fallen rock or glacial deposits over bedrock. These sandy loam to loamy sand soils are well drained with a coarse fragment content of 20% to 50%. Although these soils are dry in summer, they are subject to subsurface water flows when saturated. Rumsley soils in the eastern portion of the property may only be 50 cm deep. Exposed bedrock is common in hummocky upland terrain.

Relatively steep slopes and poorly developed soils reduce the range of uses the property is able to support. Soil erosion potential should be considered high due to steep slopes. Generally, well-drained sandy loams with a coarse fragment content below 50% present little impediment to either concentrated or dispersed recreational use (Block and Hignett 1982). However, steep slopes, a high percentage of coarse fragments, and shallow soil make trail construction difficult.

C.2.4 Hydrology

Water flows downslope to the Cusheon Creek Valley. There are no streams on the property, although a description of the property by the previous owner mentions a spring. Surface and subsurface runoff may collect in hollows and seepage areas at the base of rock faces. Groundwater recharge may occur through faults and contact zones between rock types in underlying bedrock.

C.2.5 Vegetation and Landscape Classification

The Deep Ridge Reserve occurs within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone (B.C. Ministry of Forests 1988, Klinka *et al.* 1979). This zone is characterized by forests dominated by coast Douglas-fir (*Pseudotsuga menziesii* var *menziesii*) with a shrub understory of salal (*Gaultheria shallon*) and dull oregon grape (*Mahonia nervosa*). Vegetation communities are most strongly differentiated by available soil moisture, depth, and nutrient status. Western red cedar (*Thuja plicata*), grand fir (*Abies grandis*) and red alder (*Alnus rubra*) occur on moister sites. Garry oak (*Quercus garryana*) and arbutus (*Arbutus menziesii*) are most often restricted to dry rocky sites on hilltops and along the coast.

Eis and Craigdallie (1980) have integrated topography, exposure, slope, soils, drainage and vegetation to designate eight landscape units or categories for the outer Gulf Islands. This landscape unit framework is extremely useful in assessing site activity and development limitations and can be easily applied to Salt Spring Island. There are two landscape units present on the Deep Ridge Reserve: broken rock, and shallow soil.

C.2.6 Flora

The natural vegetation of Salt Spring Island has been mapped by Clements and van Barneveld (1985). The vegetation descriptions provided in this section are based on this map, the landscape descriptions of Eis and Craigdallie (1980) and a site visit in October 1993. .

The logging and fires associated with human settlement of Salt Spring Island have resulted in a mosaic of different forest age classes and structures. Early logging typically removed only the most valuable and accessible Douglas-fir, although a number of later 'passes' may have resulted in the removal of the majority of mature trees on the site. This selective or patch logging 'released' the small western red cedars and grand fir growing beneath the Douglas-fir canopy and provided gaps in the forest canopy to facilitate Douglas-fir regeneration. Standing dead trees (snags) and trees with broken tops or curved trunks were often not cut. Where felled trees exhibited rot or imperfections they were left on the ground.

The forest on the Deep Ridge Reserve is dominated by Douglas-fir although western hemlock (*Tsuga heterophylla*) is also present. Arbutus are present in shallower soils and around broken rock in the eastern portion of the property above the shoreline. A few moss and lichen-covered bedrock outcrops occur in this portion of the property. A number of spring-flowering wildflower species likely occur on and around these outcrops.

Most of the Douglas-fir forest is so densely stocked with young (approximately 15-45 year old) trees that understory shrub and herbaceous growth is inhibited. Where sufficient light is available, the understory is dominated by salal, dull oregon grape, trailing blackbery (*Rubus ursinus*) and sword fern (*Polystichum munitum*). There are large numbers of small diameter standing dead trees (snags) and large amounts of small diameter woody debris on the forest floor.

C.2.7 Fauna

The dense forest and low habitat variability likely support little wildlife. Standing dead trees (snags) may provide perches for birds of prey, foraging habitat for woodpeckers, and nesting habitat for bird species which rely on cavities in dead trees. There is evidence of red squirrel (*Tamiasciurus hudsonicus*) activity on the property.

C.2.8 Ecological History and Processes

Fluctuating climate since the last glacial advance has shaped the recolonization rates and species composition of plant and animals in the Gulf Islands. Each climatic period in the last 10,000 to 15,000 years has favoured specific species mixes over others. Present vegetation associations have located along a general gradient of moisture and nutrients, but natural disturbances, such as fire and windthrow also play a major role. Most animal species have specific habitat requirements and are often associated with more than one habitat type over their life cycle. Human alterations to natural disturbance regimes, the extensive landscape alterations, and the introduction of exotic species have substantially changed the composition and character of remnant natural and semi-natural areas.

Forest development is centred around disturbance regimes, which provide sites for tree establishment as a result of overstory mortality. Prior to European settlement, fire was perhaps the prominent disturbance in the CDFmm biogeoclimatic zone, although windthrow and mortality from insects and disease also affect forest stands. Most Douglas-fir forests exhibited an moderate fire regime characterized by infrequent (25-100 year) fires which partially replaced the forest stand (Agee 1990). The effect of these fires varies with wind patterns, forest structure, topography, and moisture. Some trees are killed immediately, others die slowly. Small trees are particularly vulnerable to fire.

After fire, or disturbances such as logging, tree establishment occurs in the newly available growing space, often for decades after the event. Smaller established trees not killed by the disturbance may be 'released' from the shading of the canopy and become the new site dominants. Once regenerating trees are large enough for the forest canopy to close, competition for light and nutrients becomes intense. Overtopped trees become stressed and may be killed by shading, insects, or disease. Standing dead and fallen trees from all sources play an important role in the ecology of the forest as sources of nutrients, soil stabilization, sites for plant establishment, and wildlife habitat. However, where stands are dense and there is little vertical separation between woody debris and the forest canopy, the risk of a major fire increases. This risk gradually decreases as the density of the stand decreases and the trees grow taller.

C.2.9 High Visibility and Sensitive Resources

Wildflowers, mosses, and lichens on bedrock outcrops are very sensitive to damage from trampling.

C.2.10 Key Environmental Factors

Key environmental factors are the susceptibility of densely stocked forest stands to fire and steep slopes.

C.2.11 Studies/Inventories

Although the biophysical resources of Salt Spring Island have been mapped, no detailed studies or inventories specific to the Deep Ridge Reserve have been undertaken.

C.3 Special Features

C.3.1 Rare/Endangered/Threatened Species

There are no documented records of species of provincial significance on the Deep Ridge Reserve (B.C. Conservation Data Centre 1993). Some rare species of wildflowers or grasses could occur on open bedrock outcrops.

C.3.2 Biodiversity
The relatively uniform terrain, aspect, and vegetation types substantially limit biodiversity on the property.

C.3.3 Scenic/Aesthetic
There are good views of the outer Gulf Islands and the B.C. mainland from a few spots on the property.

C.3.4 Historical/Archaeological
There are no known historic or archaeological sites on the Deep Ridge Reserve.

C.3.5 Cultural
There are no known features of cultural significance on the property.

D. LAND STATUS AND USE

D.1 Land Tenure and History

The Deep Ridge Reserve was transferred to the Islands Trust Fund in 1992 by Jonathon and Evelyn Oldroyd and Robert and Rosemary Trump.

D.2 Past and Present Land Use

The only information currently available on past land use is the evidence of logging and fire. Large high cut stumps in the western portion of the property indicate some selective harvest of easily accessible trees in the late 1800's. Logging and/or fire likely occurred over much of the property approximately 45 years ago. There are no improvements on the land.

D.3 Community Plan Policies

Two "Goals and Objectives for Land Use and Development" in the Salt Spring Island Official Community Plan (OCP) (Bylaw No. 200, 1991) are relevant to these lands. These include:

.To preserve Salt Spring Island's rural and unspoiled character, natural beauty and views . . .; and

.To preserve forest land and the sensitive use and maintenance of trees on public . . . land.

D.4 Zoning, Registered and Unregistered Encumbrances

The Deep Ridge Reserve is zoned Uplands and Forests. This is primarily land which "is above 800 feet in elevation and has enduring value as wildlife habitat, water catchment, recreational areas." (OCP 1991). This land is generally remote and unsuitable for residential development. A development density of one lot per 8 hectares is permitted. Section 4.1 of the OCP permits public service uses, structures and buildings accessory and compatible to that use, and parking in any zone (Zoning Bylaw 200, 1991). In addition to these uses, the Uplands and Forests designation permits a wide variety of residential, agricultural, recreation and forestry use.

D.5 Water Management/Licences

There is no known use of the spring on the property. There is one well head for a drilled well located near the west end of the northern boundary.

D.6 Surrounding Land Uses

Peter Arnell Park is located to the west and south of the western most portion of the property. There is low density residential and agricultural use in the Cusheon Creek Valley. A nearby gravel pit is used by off-road motorcycists. The parcel of land upslope of the majority of the property has been recently logged.

E. NATURAL RESOURCE MANAGEMENT ISSUES

Management of the Deep Ridge Reserve is hampered by the dense forest and steep slopes. A number of natural resource management issues have been identified for the property. These include:

- steep slopes;
- trail design and construction;
- fire risk; and
- falling trees.

Steep Slopes
Steep slopes occur all along the ridge and the descent to the shoreline. Due to the dense forest vegetation, downed wood and steepness of terrain, these slopes are not accessible for walking.

Trail Design and Construction
The steep slopes on the property and the large number of dead and downed trees would make trail construction difficult.

Fire Risk
There is a relatively high risk of fire in the dense forest stands during the summer drought. Fuel loads are high and there is no vertical separation between downed wood and the forest canopy. This fire risk will diminish as the forest stands open up and the vertical distance between the ground and tree canopy increases.

Falling Trees
The high tree density of the forest stands on the property have resulted in considerable tree mortality. Many small diameter dead and dying trees are still standing. The logging of the adjacent upslope forest stand may result in wind throw of trees on the property.

F. OBJECTIVES AND MANAGEMENT STRATEGIES

F.1 Objectives

The objectives for the Deep Ridge Reserve are to:

- conserve viewscapes and vegetation;
- allow natural ecological processes to continue; and
- maintain a buffer for Peter Arnell Park.

F.2 Management Strategies

To achieve these objectives, the following strategies **may be** undertaken:

- discourage the creation of trails and access points;
- discourage activities that present a fire risk; and
- minimize interference with natural biological and hydrological processes; and
- monitor annually to identify unauthorized use of, or damage to, the site.

G. INSURANCE

Reserve lands are included under Islands Trust public liability insurance coverage.

H. MANAGEMENT AGREEMENT

The Trust Fund Board may contract with a management group approved by the Board, to enter and be on, and manage the Reserve for Reserve purposes when needed. This plan will form a Schedule to the Agreement.

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