



# The Sea-to-Sky Highway Improvement Project

## Technical Background: Ecosystem Compensation

### Introduction

During the environmental review of the Sea-to-Sky Highway Improvement Project, the Ministry of Transportation pledged to compensate for the loss of dry arbutus habitat in the Horseshoe Bay area as well as any losses of red and blue-listed ecosystems throughout the corridor at a replacement ratio of 1:1. This commitment can be found in the Environmental section of the Project website [www.seatoskyimprovements.ca](http://www.seatoskyimprovements.ca), under "Table of Commitments", section 4.14.

This compensation is being made in two parts. The first outlined here, addresses loss of dry arbutus habitat. The Sea-to-Sky Highway Improvement Project has exceeded its commitment to compensate for the loss of dry arbutus habitat in the Horseshoe Bay area by protecting in perpetuity two new sites of ecological importance, one at Tunnel Point and the other at Doodson Corner, for a total of 4.4 hectares (ha).

To compensate for loss of red and blue-listed ecosystem habitat, a total of approximately 22.9 ha will be protected in perpetuity through conservation of a red- and blue-listed ecosystem area adjacent to the arbutus area at Doodson Corner and through legislative amendments to the Murrin and Brandywine Falls provincial park boundaries. Complete details of this package will be made in a separate announcement.



*Arbutus/hairy manzanita plant community protected in perpetuity*

## Technical Background: Ecosystem Compensation



*Dry arbutus growing on rock bluff protected by Sea-to-Sky Highway Improvement project ecosystem compensation plan*

### Minimizing the Project Impacts to Dry Arbutus Habitat In The Horseshoe Bay Area

During the environmental review, four habitat types were identified as having the potential to be impacted by highway construction at Eagleridge Bluffs: herbaceous rock, arbutus dominated forest, mixed arbutus forest and disturbed areas\*.

The Project has met its commitment to reduce impacts to the plant communities at Eagleridge Bluffs by shifting the highway into already disturbed areas and away from the higher value ecological areas.

During the Request for Proposal stage of the Project, the Ministry of Transportation specified that construction must not impact more than 1.41 ha of Douglas-fir/arbutus woodland-rock outcrop ecosystem in the Horseshoe Bay area. The successful proponent, S2S Transportation Group (S2S) reduced the area impacted by the highway to 0.96 ha. The final highway design lessens the impact to the sensitive habitat types in the following manner:

- The Project shifted the alignment into Eagleridge parking lot and well away from the high value herbaceous rock outcrop along the parking lot's northeastern edge. The result is the rock outcrop and the small cluster of hairy manzanita within it are unaffected by the highway footprint, and highway construction will affect only 0.15 ha of the ecologically lower value herbaceous rock outcrops north of the north-western end of the Eagleridge parking lot.
- By shifting the alignment into the Eagleridge parking lot, the design will impact less of the arbutus dominated forest

between the parking lot and the herbaceous rock outcrop. A total of only 0.04 ha of arbutus dominated forest will be lost as a result of the highway construction.

- Highway construction will result in the loss of 0.77 ha of mixed arbutus forest.

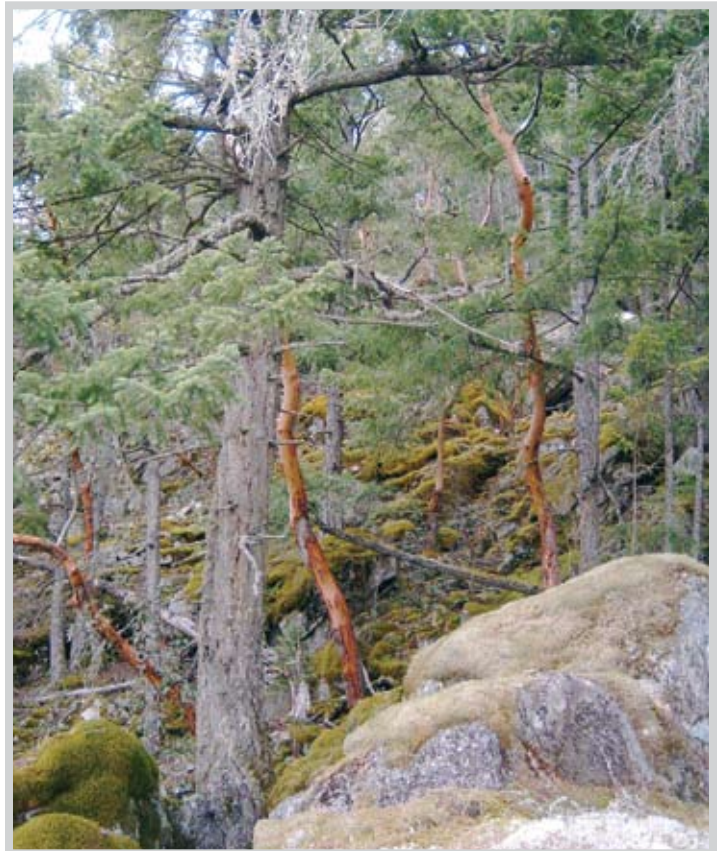
*\* See glossary for description of these four types of habitat*

### New Protected Arbutus Sites

The Ministry of Transportation is moving to protect two areas of arbutus habitat in perpetuity by a Section 106 Land Act transfer to the Ministry of Environment. The Ministry of Environment will administer the land for ecosystem conservation purposes. The parcels are located at Tunnel Point and Doodson Corner, approximately 3 and 6 kms north of Lions Bay respectively.

#### Tunnel Point

The Tunnel Point protected area, approximately 1.56 ha in size, fronts onto Howe Sound. Approximately 1/3 of the site consists of scattered arbutus and hairy manzanita interspersed with Douglas-fir, shore pine and arbutus. The arbutus/hairy manzanita plant community type is red-listed and under-represented in B.C.



*Dry arbutus habitat on rock cliffs within the newly protected areas is similar to that found on Eagleridge Bluffs*

- This plant community is the same as that found north of the highway route at Eagleridge Bluffs. It will be protected in perpetuity despite the fact that the final highway route avoids any footprint impacts to this plant community on Eagleridge Bluffs.

Approximately 1/3 of the site is herbaceous rock outcrop with herbaceous vegetation, moss and lichen typical of drier rock outcrops on Eagleridge Bluffs. The remaining 1/3 of the site is mixed arbutus forest—a Douglas-fir dominated forest with scattered arbutus throughout.

- The site has a noteworthy occurrence of the uncommon *Arctostaphylos x media*—a hybrid between hairy manzanita and kinnikinnick. This hybrid was not observed at Eagleridge Bluffs but is of conservation value. A combination of arbutus and hardack occurs at the site, similar to the plant community at Eagleridge Bluffs.

During 2004 surveys of this compensation site an alligator lizard and three snakes were observed on the rock outcrops. Berries on the arbutus likely provide a fall food source for band-tailed pigeon and other fruit eating species such as American robin and cedar waxwing. Fruits on the ground will provide a forage source for both ground feeding avian species (e.g., dark eyed junco, various sparrow species) and small mammals (squirrels and mice). A range of songbirds use this site.

### **Doodson Corner**

The Doodson Corner site is approximately 5.17 ha in size. The southern 2.82 ha serves to protect mixed-arbutus and herbaceous rock outcrop habitats. The site was classified as red-listed in the Ecosystem Mapping completed for the

environmental assessment phase of the STSHIP (see Project Application, Volume 2 Map and Drawing Folio, August 2003). The site consists of large herbaceous rock outcrops interspersed with mixed arbutus forest. Arbutus occurs as scattered trees on rock outcrops and in gullies intermixed with Douglas-fir and shore pine. Non-native species are relatively low in numbers. The seven main open rock outcrops vary in vegetation and moisture status and vary from gently sloping to sheer rock faces.

- This type of rock outcrop is similar to that which will be impacted by highway construction at Eagleridge Bluffs. The vegetation on most of the rock outcrops is typical of drier sites. Mosses and lichens dominate and the cover of herbaceous species is relatively low. Towards the northern end of the site, there is a large bedrock face, with seepage at its base. Associated plant species include goldenback fern, Alaska saxifrage, yellow monkey-flower and chickweed monkey-flower. All but Alaska saxifrage occur on the wetter rock outcrop at the northeastern edge of the Eagleridge Bluffs parking lot, which will remain unaffected by the highway route.

During the environmental review, the old growth forest component of this site was assigned a high capability for marbled murrelet nesting habitat and northern goshawk nesting and foraging habitat. In addition to these two species, passerines likely use both the forest and rock outcrops for nesting and band-tailed pigeon will likely forage on the arbutus berries. The mosaic of open rock outcrops and forest will provide habitat for garter snake, northern alligator lizard, squirrels and chipmunk. Bear and deer sign were observed at the site and both species likely use this area for foraging and cover.



*Arbutus on rock outcrops intermixed with Douglas-fir and shore pine*

## Technical Background: Ecosystem Compensation

### Glossary

Arbutus (*Arbutus menziesii*)

Goldenback fern (*Pentagramma triangularis*)

Alaska saxifrage (*Saxifraga ferruginea*)

Chickweed monkey-flower (*Mimulus alsinoides*)

Hairy manzanita (*Arctostaphylos columbiana*)

Douglas-fir (*Pseudotsuga menziesii*)

Western hemlock (*Tsuga heterophylla*)

Western red cedar (*Thuja plicata*)

Red alder (*Alnus rubra*)

Kinnikinnick (*Arctostaphylos uva-ursi*)

Yellow monkey-flower (*Mimulus guttatus*)

- Herbaceous rock outcrops support a diversity of herbaceous plants, many of which are identifiable only during the spring and summer. This habitat is found at the northeastern and northwestern ends of the Eagleridge parking lot. The herbaceous rock outcrop along the northeastern edge has major areas of seepage that contribute to a high variety of plants and mosses. It is within this rock outcrop that a small

cluster of hairy manzanita is found. The high plant diversity makes this rock outcrop of higher ecological value than the smaller herbaceous rock outcrop at the northwestern end of the parking lot.

- Arbutus dominated forests are dominated by arbutus, and are found between the Eagleridge parking lot and the northeastern rock outcrop. The arbutus dominated forest transitions into a mixed arbutus forest upslope of the parking lot, towards the start of the Baden Powell Trail.
- Mixed arbutus forest describes forests with a component of arbutus in the canopy. Mixed arbutus forest is relatively common in the area and considered the dominant habitat type. The dominant species include Douglas-fir and western hemlock with lesser amounts of western red cedar. Red alder and other deciduous species also occur.
- Disturbed areas describe habitats that have been disturbed through rock cuts and/or fill placement during previous works such as the Eagleridge parking lot.

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