

A wave attenuator can be visualized as hollow concrete (or other solid material) box with a hole in the bottom. When in place, much of the box is filled with water that cannot easily escape. When a wave reaches the attenuator, some of its energy is dissipated through lifting the water-filled box, some is reflected off the front face of the attenuator and the balance passes through to the other side.

The developer's study submitted in support of his application states that the reflection coefficients of the proposed design in a range 0.843 – 0.902. (A reflection coefficient indicates the proportion of the wave energy that is reflected from the face of the attenuator.) This means that a 1 m. wave colliding with the face of the attenuator would produce a reflected wave 83.3 -90.2 cm. high. These reflected waves interact with the incoming waves – sometimes decreasing incoming wave height and at other times reinforcing it – generating sea condition that can best be described as “chaotic”. (Contrary to popular belief, the two sets of waves don't cancel each other.)

While small boats and floatplanes can safely manage reasonably large waves in a regular pattern, sea conditions of the type that exist close to a wave attenuator in windy conditions are another matter. Remaining with the example of a 1m incoming wave train, the energy reflected from the propose wave attenuator could result in wave heights in the vicinity of the attenuator of 1.902m.

When the wave energy is reflected directly back into the incoming wave train, it is dissipated reasonably quickly by the opposing wind. But, if the reflection is at right angles to the incoming wave train - which will be the case in strong southwest winds of concern - the wind will have little such effect. Hence, the reflected wave train travels much further – perhaps all the way across the harbour to the float-home community at Fishermans' Wharf.

The proposed location of the marina is the most exposed location on Victoria Harbour. Winter and summer, frequently, it is the recipient of gale-force winds pushing waves that have been building all the way from the Olympic Peninsula. While the waves in the harbour have been attenuated somewhat due to the shallowing depth, 60-75cm waves at the north shore location proposed for the marina are not uncommon. Hence, wave heights of well over 1m would result.