

March 11, 2009

Honourable Ron Cantelon
Minister of Agriculture and Lands
PO Box 9043
STN. PROV. GOVT.
Victoria, BC V8W 9E2

Re: #NWP File #8200-06-8949 (Victoria International Marina)

Dear Mr. Cantelon

I have been following with great interest the developments of the Victoria International Marina proposed for the Songhees region of the Victoria Inner Harbour. It was gratifying to FINALLY participate in a public forum held on February 17th at City Hall and on Saturday (March 7th) to see the background information presented by the proponents. There was a large attendance of people from all over the Capital City Region at the City Hall meeting and the Victoria International Marina presentation. Clearly many people do not want a marina development on the north shore of our harbour and are seriously concerned about this project, including hundreds of paddlers who appeared in truly miserable weather on Saturday. Victorians throughout the region make heavy use of the Songhees walkway – to walk to work, walking or jogging for exercise, families wanting to go for a beautiful Sunday stroll, tourists who want to enjoy the Victoria shoreline and views, people who sit or park near Cooperage Place or Paul Kane to watch the activity in the harbour. Individuals I talk to along the Westsong Walkway are truly shocked when they realize the size of this project, that it will be almost as large as Fisherman's Wharf, and they almost invariably express their disapproval. Recently I had the opportunity to collect signatures for a petition against the marina. Of the few hundred people I spoke to, only about 5% expressed any kind of support for the project. Even tourists were signing the petition.

You are probably aware that Denise Savoie, the MP for Victoria, has been active in opposition to this project. I want to assure you that unhappiness with the Victoria International Marina project is widespread and non-partisan. I am a staunch Liberal supporter. Other people who are vigourously opposing the marina have been tireless campaigners for Liberal and Conservative party candidates in the past and one marina opponent I know is a former conservative MP. For me this is not a NIMBY affair. I listen to the seaplanes in the harbour, 65,000 times per year apparently, and heartily support their presence in the harbour because they are good for Victoria.

This Victoria International Marina project conflicts dramatically with my vision of Victoria, but also I have serious technical and economic reservations about this project:

- altered wave patterns due to the marina breakwater and the resultant danger to aircraft, boaters (canoes, kayaks, etc.) and the facilities at Fisherman's Wharf,
- ecological impact in the Songhees,
- negative impact on the tourism not related to mega-yachts,
- degradation of the visual beauty of the harbour,
- negative repercussions on residents located within metres of the marina,
- impediments to the use of the north shore of the harbour by other users,
- uncertain economic outcome of the project.

It is an unconscionable failure on the part of the governing authorities to have permitted the developer's proposal to proceed as far as it has without significant public input. Information has

appeared in dribs and drabs, but the marina design seems to be a moving target. Be assured that, any claims by the developer to the contrary, no meaningful opportunity has been WIDELY PUBLICISED for the public to see firm details of the project and give significant informed input on it to the authorities who are part of the approval process.

In the main body of this letter I will concentrate on the first item above, *the effect of altered wave patterns in the harbour*, since my professional background makes me well qualified to assess and criticize the information that has been provided by the developer.

I am sure other citizens will elaborate on some of my other concerns. I have added more comments in an addendum to this letter that I hope you will read.

1. Effect of the Breakwater - Wave Attenuator

At the public meeting at City Hall, Lachlan MacLean, the representative of the developer, made the statement that waves reflected from the breakwater-attenuator were minimal and would only add 1 to 7 cm to the waves in the region of Alpha runway parallel to the Westsong walkway. The implication was that the reflected waves would not have any detrimental effect on seaplane or kayak activity in the harbour. **This was the first time I had heard this information.** As a professional physicist who has been teaching wave motion theory to engineers for many years, those numbers and the optimistic conclusion seemed unrealistic.

After the City Hall meeting and prior to the public presentation by the developer on March 7 I researched the probable wave reflection characteristics of breakwaters similar to what has been proposed. I reached the conclusion that a reflection coefficient of 70% was probable. Upon questioning the wave motion expert present at the developer's public presentation this was confirmed. In fact he admitted that the attenuator will have a 75% reflection coefficient. This number requires some explanation.

For the sake of discussion, picture a wave that has a 100 cm difference in height between the bottom of the wave to the top of the wave. This is the peak to trough HEIGHT of the wave and is what the layman is used to talking about. When this wave is incident on the breakwater part of the wave passes 'through' the breakwater with decreased size (attenuated) and will be about 20 cm high. The reflected part of the wave will be 75 cm high if the reflection coefficient is 75%. The important point is that the incoming and reflected waves combine and the heights ADD and can create peak waves 175 cm high. Waves are not 'destroyed' when they meet each other. The reflected waves will move out towards the centre of the harbour and will combine with any other waves they encounter adding to the height of those waves.

How did the developer arrive at the misleading statement that the breakwater would change the wave heights by only 1 to 7 cm?

1. Their calculations assume 20 cm waves. On questioning the 'expert', he acknowledged that this is too small under windy conditions.
2. Their results assume that there are no well-defined wave patterns directed at the breakwater. The technical jargon for this is that "the waves have a *broad spectral distribution*".
3. Further discussion revealed that all their calculations refer to the wave AMPLITUDE, which is one-half of the peak to trough to wave HEIGHT.

Under those conditions, the statement that there will be an AVERAGE increase of 1 to 7 cm in the wave amplitude may be realistic. Using numbers that people conventionally talk about, the developer's calculations assume waves with a height of 40 cm and the increase in wave heights range from 2 to 14 cm (waves 42 - 54 cm high).

There are two reasons why those numbers should not be accepted at face value. First, if you look at a body of water and can see a clear pattern of evenly-spaced waves, those waves have a "*narrow spectral distribution*". This was the situation in the harbour on Saturday afternoon during the presentation. Reflection of these waves back into the seaplane runways would dramatically increase the choppiness of the water. Fifty cm waves (peak to trough) are not uncommon in the Victoria Harbour. With the breakwater one localized wave heights would be 85 cm instead of 50 cm. The developer's calculations would predict only 53 - 67 cm wave heights if you assume 50 cm high incoming waves. So, for coherent wave patterns, they probably underestimate the effect of the reflected waves.

The second reason one has to interpret the developer's conclusions carefully goes back to the statement that their calculations are based on waves that have a broad spectral distribution. The numbers they quote are the AVERAGE increases in wave heights. However, the "choppiness" of the water where the reflected waves are seen will also have a broad spectral distribution, which means that if you look at one place in the water it might not seem very rough but then a few seconds later there could be dramatic change in the local roughness of the water. It all depends on if two larger waves happen to cross each other. If some of the waves incident on the breakwater are 50 cm high, then some of the time the roughness of the water could show quasi-unpredictable 85 cm waves.

The danger caused by the presence of the marina depends on maximum localized roughness that can occur in the wave pattern. I believe the developer's calculations underestimate that risk. For safety reasons take-offs and landings along runway Alpha may be forced closer to the narrows at Laurel Point to avoid the rough water near the marina, or perhaps periods when the runway is too unsafe to use could increase. The former would certainly mean more noise complaints from residents all along the harbour from Songhees Point. The latter would have an economic impact of seaplane operations in the harbour.

The orientation of the marina is such that waves coming into the harbour from the Strait of Juan de Fuca will tend to be reflected directly towards Fisherman's Wharf. It is unclear what the fraction of the reflected wave height will remain after transit of the harbour because there will be some dispersion, but it may be possible for as much as 50% of the reflected wave amplitude to persist. In extreme wave conditions with south winds, Fisherman's Wharf could see waves of 20 cm or more under situations when they otherwise might have had rather calm water. Is this acceptable for houseboat owners at Fisherman's Wharf? It is a question that deserves further investigation.

Last summer, while walking near Songhees Point, I personally observed a near-disastrous incident involving a floatplane landing along runway Alpha in an E to W direction. The touch-down point was just east of the Mariner's Landing row of townhouses. The plane bounced twice off the wave crests and on the third contact one of the pontoons bit hard into the water. The plane almost capsized and veered sharply at nearly a 90° angle towards Fisherman's Wharf. It travelled 80 -100 metres towards Fisherman's Wharf before the pilot was able to redirect the plane back along an E-W direction. If that plane had veered to the north side of the harbour it would have come very close to shore and certainly would have ended up into the space occupied by the proposed marina. This landing was so severe that I am certain it must have been reported. Passengers would surely

have suffered some kind of whiplash and perhaps head contact with the cabin wall. I have heard anecdotally of similar incidents, but this one I can attest to personally.

A final comment regarding the wave reflection characteristics presented by the developer. The 1 to 7 cm increase in wave amplitude looks minor, and would probably not raise concern upon a casual reading of documents. However even their calculations, using favourable assumptions, indicate that wave heights (choppiness) will be increased up to 30% over present levels. **This 30% increase in water roughness is the figure you should concentrate on.** It is my belief that their calculations probably underestimate by up to a factor of 2 what would happen. As an aside, I was also concerned that the 'expert' I spoke to made assertions to me that were just plain-and-simple errors of physics which makes me wonder what other factual errors he may have made in presentations regarding the effects of the breakwater.

The effect of waves reflected from the breakwater, even under calmer conditions, would be felt more seriously close to the marina. The increased choppiness of the water could easily pose significant problems for boaters and kayakers using the proposed path between the marina and the seaplane taxiway.

Some residents in the Songhees 'support' the marina ONLY in the hope that it will make the seaplanes disappear from the harbour, not because it has any benefit to the economy or tourism in Victoria. I support the presence of the seaplanes in the Victoria Harbour. They have a definite positive economic impact, and if my own fascination is typical, they are a real tourist attraction. Who wins if the presence of the marina has a negative influence on seaplane activity or, even worse, results in fatalities in a floatplane or kayak accident? Certainly not the City of Victoria.

To me it is clear that the Victoria International Marina does not belong on the north shore of the Victoria harbour. There are many important unanswered questions which should be resolved before approval of the marina can be considered. My comments on some of these questions are included below in the Addendum. However, the most important fundamental consideration for people who love Victoria, a city blessed with great natural beauty and charm, is that it should be preserving the shoreline and enhancing it with facilities that accentuate the qualities that make Victoria famous. Adding the equivalent of a parking lot in this location is a huge error.

Sincerely,

Gordon Greeniaus
Professor Emeritus of Physics
University of Alberta

Addendum

2. Ecological Questions

I live in the area, and use the Westsong walkway almost on a daily basis, so I am amazed at the inconsistency of the information presented concerning the ecological impact of the marina. In my experience there is little difference in the visible birdlife and other wildlife along much of the Songhees. There are many ducks, geese and herons using the area around Lime Bay and into the artificial cove between the Royal Quays. Yes, there are fewer birds and animals on shore where the marina would be located because the walkway is so close, but the water area is fully used by local wildlife. In the spring we see geese leading their goslings all the way from Lime Bay to Songhees Point. The whole length of the Songhees is used by resident otters (their den is in Lime Bay) and they are often seen directly in front of the Royal Quays. ***How convenient for the developer*** that the assessed ecological impact of development is HIGH all along the shoreline west of Cooperage Place, then miraculously becomes LOW just where the marina is to be located, and becomes HIGH again just before Songhees Point. What is clear to me is that the ecological continuity of the north shore will be destroyed by the construction of the marina.

In a recent news article significant changes in sea level due to melting of polar ice sheets is reported. Even a casual reading of news reports over the past several years shows that we expect the disappearance of the arctic summer ice coverage and probable use of a North-West passage after 2013 during the summer months.

An excerpt from <http://news.bbc.co.uk/2/hi/science/nature/7935159.stm>

“The global sea level looks set to rise far higher than forecast because of changes in the polar ice-sheets, a team of researchers has suggested.

Scientists at a climate change summit in Copenhagen said earlier UN estimates were too low and that sea levels could rise by a metre or more by 2100.

The projections did not include the potential impact of polar melting and ice breaking off, they added. “

Measurements over the period 1993-2003 show that sea level rises 1 cm every three years. Recent evidence suggests that that rate may have tripled. Has the impact of a 20 cm mean sea level rise been considered? This change might easily be observed over the next 20 years – not a long time for the life of a marina. At the highest tides the Songhees walkway is only about one metre above sea level in front of the Royal Quays. At high tide and rough conditions waves already cause wash onto parts of the walkway in that area. What would the situation be if mean sea level was 20 cm higher? Does this need to be addressed in the planning for the Victoria International Marina?

3. Economics and Tourism

The proponents claim that the marina will have a major tourism impact, but it is hard to justify the claim for a major contribution to the economy year-round. One only needs to look at the low occupancy of the existing slips at the inner harbour to realize this new mega-yacht marina is likely to be empty or inactive a large part of the year. The Victoria International Marina website is offering slips for sale, for \$60,000 I have heard. Victoria and the Victoria International Marina is the guinea pig in attempting to generate increased mega-yacht traffic in the Pacific Northwest. What do I fear will happen – especially if most of the slips are sold and the developer disappears into the moonlight with his costs covered?

- Victoria will be competing with Vancouver and Seattle to provide services to these mega-yachts. What guarantee is there that local industries will actually see a lot more activity, especially if the yachts move to warmer climates over the winter?
- Charter yachts will supposedly take tourists all along the Pacific West Coast. If fuel and provisions are less expensive at other ports would not good businessmen take advantage of opportunities to save money? Is Victoria really the best place?
- Owners may park their yachts in the marina and take them to tour elsewhere. What benefit to local tourism is there in this?
- Some owners may leave boats there that are in ill-defined states of disrepair. If we suddenly find unsightly boats in the marina how attractive will that be for locals or other tourists?
- If the slips are owned by individuals how can we be sure that there will never be houseboats where people are living permanently or quasi-permanently? Is this even going to be allowed?
- There have not been a large number of comings and goings of mega-yachts in the Victoria Harbour in recent years. Assume the Victoria International Marina results in 200/year – probably ten times what we see now. Optimistically this might add \$2M to the local tourism economy, but at what cost?
- Assume the developer is correct and many yachts will use the Victoria International Marina as a base of operations. Is there really adequate infrastructure to manage this, or will Cooperage and Paul Kane become commercial zones with trucks coming and going all the time?
- The developer claims the public will have free access along the piers to view the yachts up close. One only has to look at the security barriers for the yacht slips at Ship Point to realize that free access to the yachts is a pipe dream. The yacht owners will not permit it. The boats are too expensive.
- Finally, these are difficult financial times. Does the developer have the resources to survive 3-5 years of poor economic conditions? If the Victoria International Marina goes bankrupt what will be the repercussions on the city, the harbour, and the Songhees neighbourhood?

Negative tourism impacts have been neglected. The marina and buildings between the walkway and the water destroy the views along the Westsong walkway for large stretches. I moved to Victoria in 2005 and the beauty and serenity of the Westsong walkway was one of the decisive factors in making that decision. Even in March nearly 10% of the users of the walkway are tourists. I was at the Inn at Laurel Point recently. The presence of the marina will definitely not enhance the views from their garden restaurant and patio. A benefit for a few mega-yacht owners will have a negative influence on the enjoyment of the harbour by many tens of thousands of tourists who arrive by other means.

Will the restaurant be successful economically? Unlike world-renowned brewpubs like Spinnakers, which are a tourist magnet, I personally see nothing about this marina complex that I would find compelling. The views from the restaurant are partly ruined because they will be blocked by the very size and proximity of the yachts using the slips. It is not close enough to view the evening lights on the inner harbour, nor will it be a particularly attractive venue for diners in the winter months as it is so exposed to the elements. Given the very wide opposition to the marina by residents of the area, I would not expect much support from the immediate neighbourhood.

Finally, the developer envisages the marina as a focal point for the Vic West region. Unfortunately, the developer of the Roundhouse/Bayview complex also sees the Roundhouse as being the neighbourhood focal point. Can both succeed? The Roundhouse complex is relatively well-conceived. The Victoria International Marina has such a narrow focus and support base it will likely have financial difficulties. I would note that the main proponent of the Victoria International Marina does not have a very good track record as some previous projects have had financial difficulty. Will this be another example?

4. Impact on the Region

There are many negative impacts on residents of the Songhees/Esquimalt region.

- Construction of the marina will cause considerable inconvenience to users of the Westsong Walkway. Will the walkway be blocked during construction of the restaurant and marina? If yes, for how long?
- Will the dredging affect the stability of the shoreline?
- Will the dredged material be removed by barge? What disruption is expected to users of Paul Kane and Cooperage. The testing last summer produced foul odours. What will happen if there is more substantial disruption of the seabed?
- Unlike other marinas around the harbour, the Victoria International Marina and restaurant will be only about 15 metres from the nearest residences. The nearby buildings are also much closer to sea level than, for example, Shoal Point so there is little separation between residences and the yachts. Noise from the marina, which can occur at any time, will be a bigger problem.
- Some of the bigger yachts are very tall, equivalent to a 3-story building and will be capable of looking into the windows of units on the 2nd floor of the Royal Quays.
- The restaurant is supposed to be limited to one story. The artist's renditions seem to show a building that is about 8 metres high on the water side. Does this not exceed the height of a conventional one story building?
- Many residents are directly downwind of emissions from the restaurant and the yachts. They will be affected by odours in spite of the developer's statement that the vents are covered. The artist renditions do not seem to show services on the rooftop. What height will they add?
- There is likely to be increased night-time traffic and noise in the residential area. Will the restaurant have a lounge with very late night closing?
- Property values will be reduced, dramatically for some owners

At the developer's presentation the displayed artist renditions of views over the marina show that all water-side residents of the Royal Quays will have rooftops as the major feature seen out their windows. Lower units will have their water views seriously reduced. If the Victoria International Marina is built the city can expect significant reductions in assessments for neighbouring properties. The Royal Quays, Mariners Landing, The Legacy, Ocean Towers and Park Towers and Pebble Beach are all affected negatively to some extent by the marina

- An unrestricted water view is generally considered to be worth \$100,000
- Probably more than 100 units are affected

Would I buy a unit with a marina and restaurant so close to my windows? – not likely! What property tax revenue would the city of Victoria potentially lose if the marina is built, and would taxes on the marina property compensate for this loss?

The developer did indeed create some of the local amenities in the area – in particular the little bay between the Royal Quays and the artwork. However one can claim that he has been adequately compensated for those amenities. The developer claims that Paul Kane and Cooperage were built oversized to accommodate the marina development. These are self-serving arguments. It is almost certain that the road width was required for access by fire emergency vehicles as the road allowance is typical of all streets in the neighbourhood.

4. A Marina has Always been Planned

The developer claims, correctly, that a marina has always been part of the Songhees development plan. However, what he fails to state is that the concept of the original marina was completely different from what is presently proposed. The image at right, taken from the Victoria International Marina website, shows the scope of the original marina concept. Of course the details of the Royal Quays buildings are different, but what do we see



- the marina is for small boats – no mega-yachts here
- the marina stops at the artificial bay in front of the Royal Quays
- the breakwater is smaller, which reduces the region affected by reflected waves

Note also that the Songhees model does NOT show any buildings on the water lot at the east end of the 'Royal Quays' complex. City council in the past eliminated the possibility of constructing multistory buildings on the two water lots owned by the developer. It is time to put this baby to rest completely and stop any construction of buildings on the two water lots in front of the Royal Quays.