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8 December 2011

Mr. Peter Kerr
Chariman
Whangamata Harbour Committee
Whangamata

Dear Peter

Re: Update of Our Understanding of the Conditions Whangamata Bar

I have put together this brief report for you to present at your upcoming Committee Meeting at 5:30 pm on Monday 12 December 2011. I would like to extend apologies on behalf of both Dr. Vernon Pickett and I, as prior commitments and the usual pre-Xmas pressures have prevented our attendance.

The Committee requested:

- Whether there were any further findings to report from the monitoring and analysis since presentation at the last Committee meeting, and;
- Discussion as to whether or not there was any correlation between the dredging of the Whangamata Harbour and wave-quality on the bar.

Briefly in response:

- The recent bathymetry surveys indicate that the bar has been moving towards a pre-marina morphology, and;
- Anecdotal evidence suggests that dredging of the harbour in some instances results in negative impacts on wave quality, however, until the video monitoring system is installed there is no data to ascertain the correlation or magnitude of impacts.

Bathymetry Monitoring of the Bar
Bathymetry surveys of the bar have been undertaken by both DML and ASR, and date from July 2007 through to August 2011. Significant changes to the bar were evident in the monitoring data following the opening of the marina tidal basin and dredging of the access channel (June-Sept 2009). The impacts on surfing amenity due to the differences in the bar's configuration were detailed in the letter to the Surfbreak Protection Society, 15 December 2010 (attached). Figures 1 and 2 below present the February 2009 and May 2010 bathymetry surveys, where the differences between pre and post-marina development[1].
The most recent surveys (April and August 2011) indicate that the bar has been moving towards a configuration close to the pre-marina morphology, as shown in Figure 3. These changes are supported by reported improvement in surfing wave quality. However, there is anecdotal evidence

[1] Note, there is no data to support that the development of the marina caused the changes to the bar, the evidence is anecdotal, however, the bathymetry monitoring show that there were large differences in the bar pre and post-marina development.

(observations and basic bathymetry surveys) that indicate dredging of the access channel can result in reduction of surfing wave quality.

Correlation Between the Dredging of the Access Channel and Wave-Quality on the Bar
At present, correlation between access channel maintenance dredging and wave quality on the bar is anecdotal, and until the video monitoring system is installed there it is difficult to ascertain a correlation or the magnitude of any associated impacts. The observations of wave quality on the bar and occurrence of access channel dredging lead to the present concepts:

- Following 'lift and drift' dredging episodes, the wave quality of the bar is reduced, which is thought to be due to a shallowing and lengthening of the terminal lobe and the consequential development of deeper area inshore (this formation is similar to that shown in Figure 1 above – May 2010 – with the consequences described in the attached letter of 15 December 2010);
- Impacts are reduced if the 'lift and drift' dredging is undertaken during periods when there is a swell running, and;
- Dredging and placement of sand on the beach has less impact on wave quality then 'lift and drift' dredging.

Basic bathymetry survey of the access channel pre and post-lift and drift dredging suggest that at least 1,200 m^3 is being moved from the access channel floor (see attachment "Channel Surveys"), which has the potential to cause changes of the bar configuration. It is noted that the August 2011 bathymetry survey is trending closer to pre-marina configuration, however, following the August 'lift and drift' campaign, reduction in wave quality was observed.

The aim of the Surfbreak Protection Society is to develop a good understanding of the causes and effects of on-going maintenance dredging to the wave quality of Whangamata Bar so that it can work with the Whangamata Harbour Committee to develop strategies to mitigate any negative impacts on this locally important and nationally significant asset. A camera site has now been secured, although there is a requirement of ~$2K to install the camera into the ceiling space of a private home. I strongly recommend that these funds are made available by WRC, TCDC or the WHC, or through smaller matching funds contributions by all parties.

I can be contacted to discuss any of the above at any time on 021 423 224.

Yours sincerely

Dr. Shaw Mead

c.c. Mr. Sam Marshall (Thames Coromandel District Council)
Mr. Paul Shanks (President of the Surfbreak Protection Society)
Dr. Vernon Pickett (Coastal Earth Scientist, Waikato Regional Council)

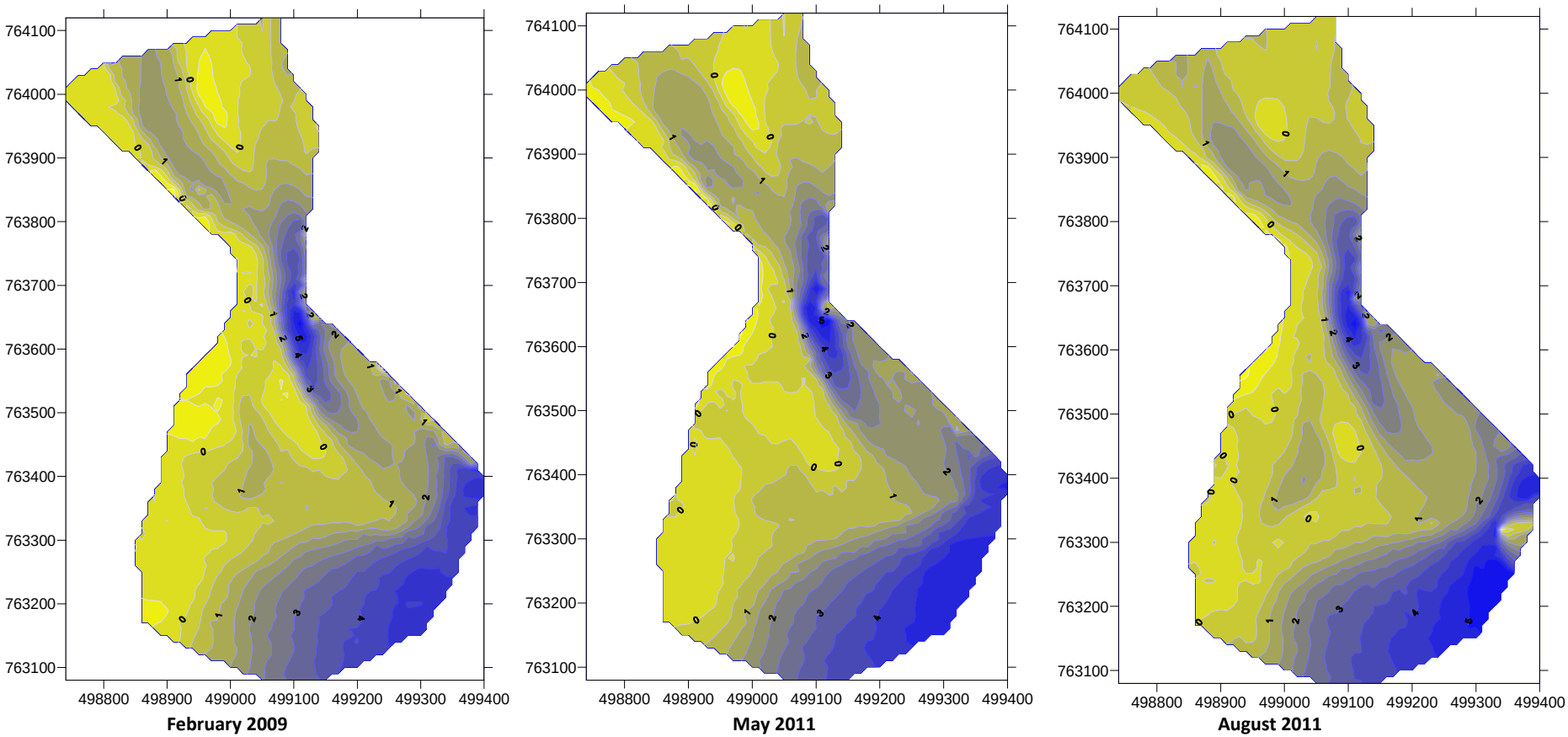

Figure 1. Whangamata Bathymetry Surveys.

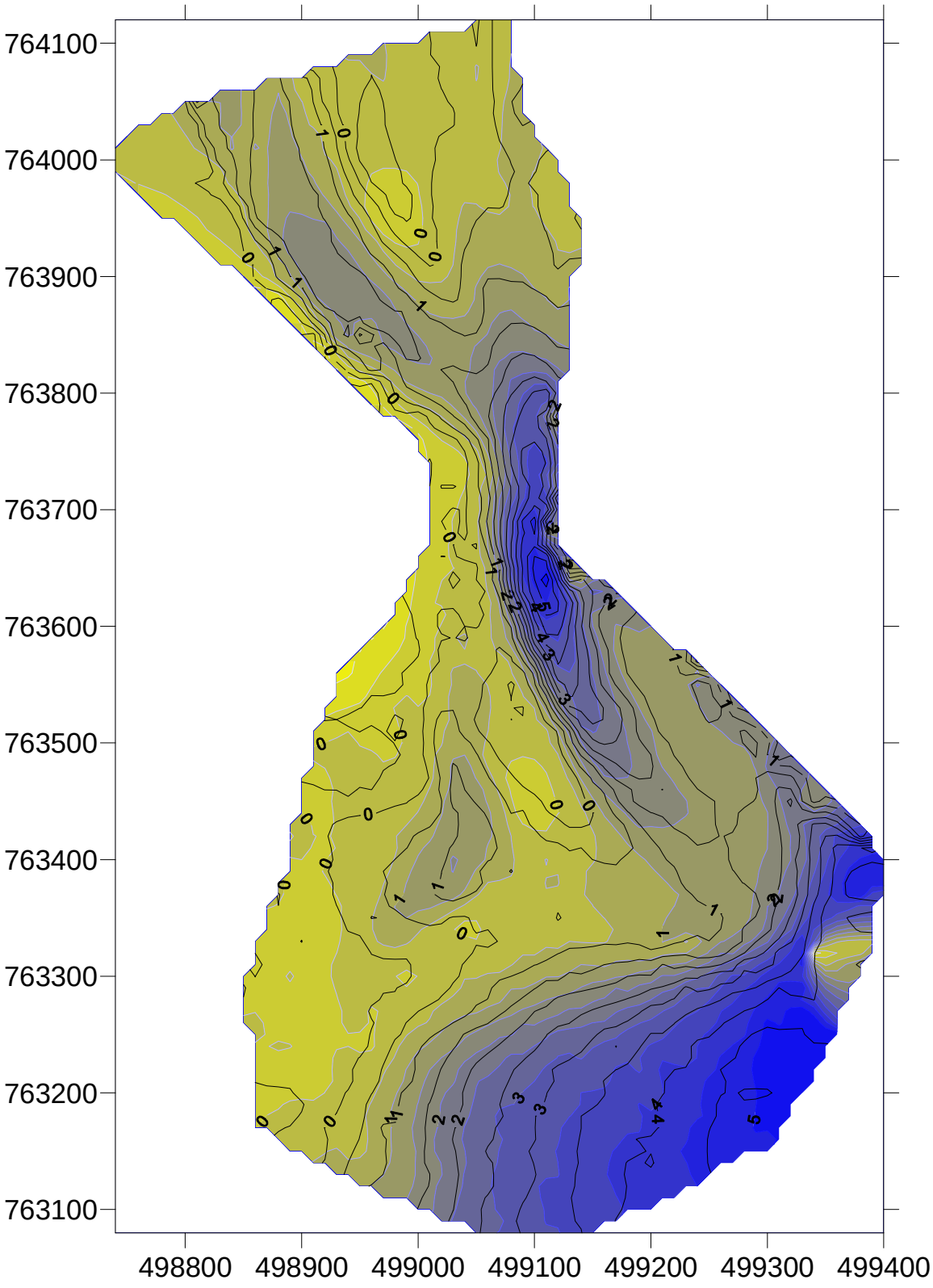

Figure 2. Survey May 2010 (black contour lines) overlaid on Survey February 2009 (blue lines and blue/yellow fill). The large gap forming a channel/hole in the 0.5 m contour of the May 2010 survey leads to poor wave quality (as described in the letter of 15 December 2010).

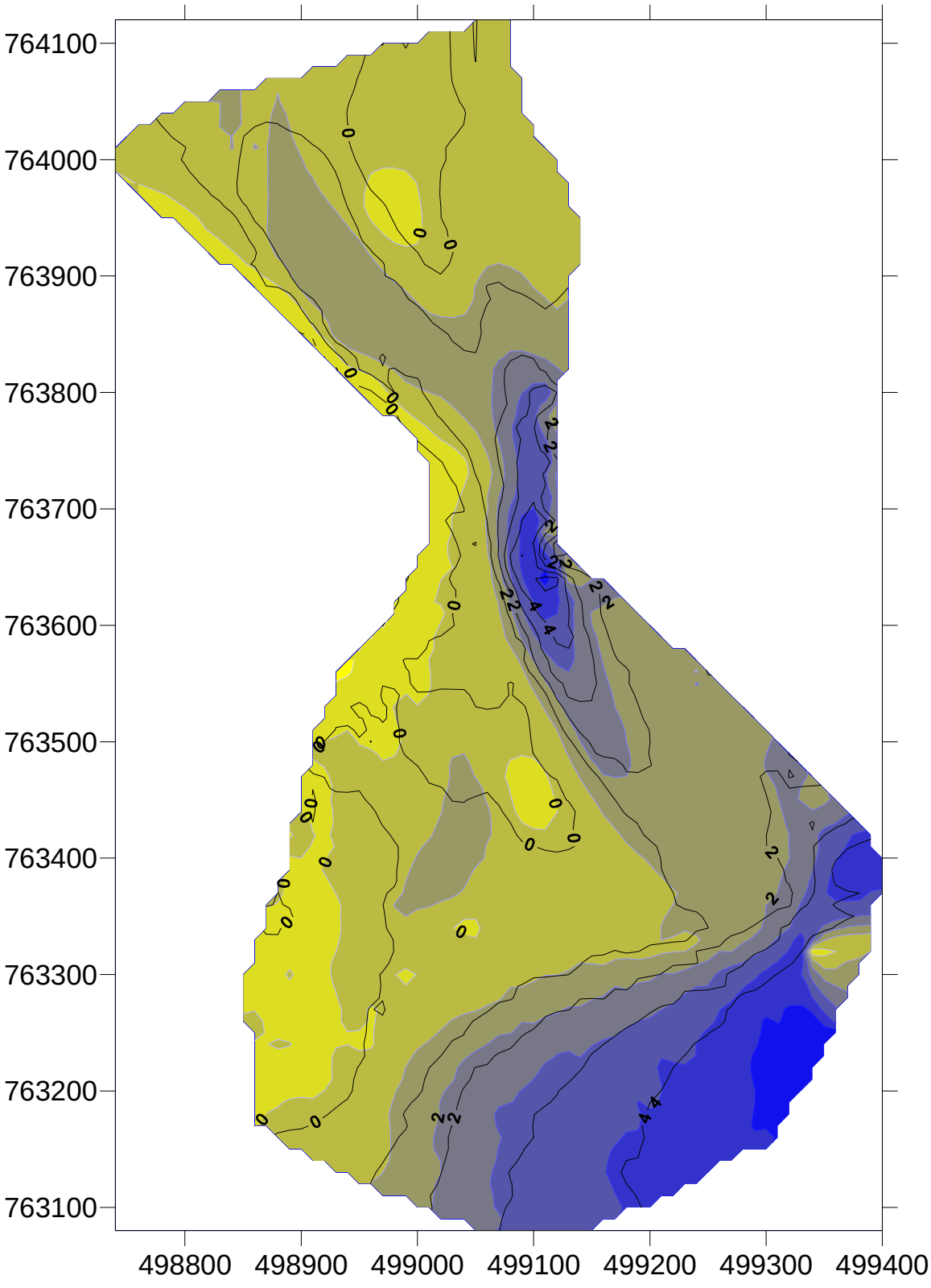

Figure 3. Survey August 2011 (black lines) overlaid on Survey February 2009 (blue lines and blue/yellow fill).