



P.O. Box 20717, Glen Eden Auckland 0641

## THE WHANGAMATA BAR

### Dredging of the Moana anu anu Stream and Observed Adverse Effects on the Whangamata Ebb Tidal Delta



Aerial View of "The Whanga Bar"



*The Whangamata Bar in all its glory 2007*

***A report published by the Surfbreak Protection Society Inc. to the  
Hauraki Gulf Forum***

6<sup>th</sup> of June 2012

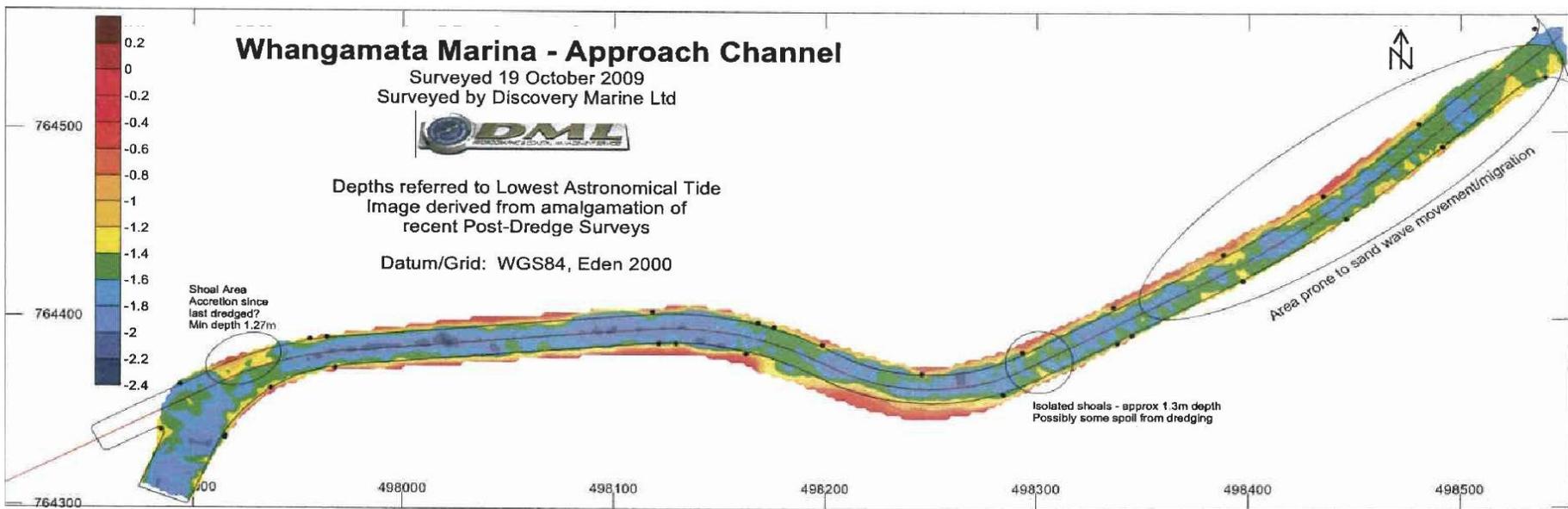


**Best Practice Calls For Transparency.**

*“Best practice would mean that when you make a significant change or major modification to a project, and especially prior to implementation, begin a new round of social, economic, environmental and cultural impact assessments....”*

*“...Someone who has lived on the bank of the river as a subsistence fisherman, even when he or she is illiterate, is the expert on fish at that point in the river. He will always know (sic) more than the departmental scientist from Bangkok and the World Bank consultant from Cornell.”*

(Quotes from Address by previous crown minister, Dr Marilyn Waring to SOLGM 2001: Absolutely Positively Local Government: Best practice for local government in the new millennium Wellington. September 10, 2001



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*Note: in this digital version of the document all appendixes (1 -12) are hyperlinked (able to be downloaded from the internet) the page to which they are referenced to is listed on the right.*

*This document itself will soon be hosted on [www.surfbreak.org.nz](http://www.surfbreak.org.nz) A full version of the report with all appendixes attached will also be available from the surfbreak website*

## 1 Introduction

Whangamata is on the southeastern boundary of the Hauraki Gulf Marine Park (HGMP) which finishes at the Otahu estuary located at the southern end of the Whangamata beach. At the northern end of the sandspit is the entry to the Whangamata estuary, which in part diverts into the Moana anu anu estuary on the western side of the sandspit. The Whangamata township is built on the sandspit formed approx 7000 years ago lying between these two waters.

Whangamata is small, a summer Bach holiday town that benefited greatly from the World-famous Surfbreak - the Whangamata Bar. The Bar generated surfing tourism, both nationally and internationally.

At the entrance of the Whangamata estuary is the ebb tidal delta that is kept in dynamic equilibrium by the ebb and flood tides. The ebb tidal delta is a world-renowned surf break known respectfully and affectionately as "The Whanga-Bar" and is graded by the surfing fraternity as "10 out of 10". The socio - economic impact on the town of Whangamata from this significant landscape feature (both nationally and internationally) cannot be understated.

The legendary Hawaiian Pipeline master Gerry Lopez labelled the Whangamata Bar "**A jewel of the South Pacific**" in the 1970's.

Until this day, international surfing tourists American, Australian, South African and European, being highly mobile and wanting to surf the best surfbreaks in the world as part of their "life experience," would venture here. Whangamata is a "surf town." Mundaka in Spain, is another example.

Whangamata was built largely on surfing – beach tourism appeal because of the Whangamata ebb tidal delta, the "Whanga Bar."

It has been referred to as one of the top three left hand sand surfing breaks in the world.

The Bar has been recognised by the Crown and given some credence by the Courts.

Three years ago, for the first time in modern Surfing history, this "Wave of Distinction" started to deteriorate and become unstable and is no longer producing world-class Surfing waves for which it has been famous, for more than half a century.

The Surfers knew that the Whanga-Bar is part of a finely-balanced chaotic system and believed that the dramatic changes had reached a tipping point. Therefore since that time they monitored the destabilisation of the sand bar and disintegration of the wave and searched for reasons.

The only new factor that has been brought into the environmental equation at the same time as the heart-breaking observed deterioration is the opening of, and the new dredging regime for, the 2009 marina access channel.

Anecdotal evidence says that there is a very close correlation between the timing of the dredging and the deterioration of the wave quality on The Whanga Bar, but we need more science to back up the observations, which means that we need more data, thus more monitoring

Because of the problem, a concerned surfer called a public meeting on the 6<sup>th</sup> of May 2012 held at the Whangamata Surf Club ([Appendix 1](#) minutes of 6 May public meeting).



*Coastal Scientists, Dr Shaw Mead (left) and Mr Jim Dahm (right), presenting information at the meeting.*

From the public meeting a new trust is to be formed called “The Whangamata Bar Association Inc” that will act as a kaitiaki for this famous Surfbreak.

The Surfbreak Protection Society (SPS) is a Society formed in 2006 dedicated to the conservation of the "treasures" of the New Zealand Surfing Community - our surfbreaks - through the preservation of their natural characteristics, water quality, marine eco systems and low impact access for all. We strive to be Aotearoa's Kaitiaki "Guardians - Trustees" of our surfbreaks and the natural environments that compliment them.

The Surfbreak Protection Society has decided to approach the HGMP Forum for assistance.

## **2 Purpose of this Report**

The purpose of this report is to bring to the attention of the Hauraki Gulf Forum why SPS and the Surfers of Whangamata believe there may be a link to the maintenance dredging for the Whangamata marina access channel and an obvious degradation of the Whangamata Bar (the Whangamata ebb tidal delta) surfing wave quality.

SPS believes that the Hauraki Gulf Forum as the statutory body responsible for the integrated management of the Hauraki Gulf and charged with the interpretation of the Hauraki Gulf Marine Park Act, could be of assistance to the surfers of Whangamata and Aotearoa, as we continue to lobby the Waikato Regional Council (WRC) to take a more robust approach to monitoring the Marina Company's dredging regime, and for WRC to recognise the need to use **surfing science** to do so.

SPS notes that the Waikato Regional Council conditions for the maintenance dredging consent 121398 “may” come up for internal review in September 2012. And we encourage the Hauraki Gulf Forum to request WRC to open this review up to all stakeholders so that meaningful consultation can take place and a true consensus can be reached.

### 3 Legal protection

The Hauraki Gulf Forum generated a set of guidelines in 2009. WRC, Thames Coromandel District Council (TCDC) and the Department of Conservation (DoC) are forum members, and signatories to the guidelines outlined in **Governing the Gulf: "Giving effect to the Hauraki Gulf Marine Park Act through Policies and Plans."** In the Guide, page 79 states:

#### **Policy and Planning section (F) .3**

*"Identification of natural and physical resources of recreational importance and methods to protect them,....including surfbreaks by activities such as dredging which have the potential to modify seabed contours and sediment dynamics"*

At various stages throughout the court and consents process about the marina, the Hauraki Gulf Marine Park Act was mentioned by many participants in the court process.

**As well as being in the Hauraki Gulf Marine Park, The Whangamata Bar is listed in schedule one as one of the 17 Nationally Significant Surfbreaks in the New Zealand Coastal Policy Statement 2010 (NZCPS).**

#### ***Policy 16 Surf breaks of national significance***

*Protect the surf breaks of national significance for surfing listed in Schedule 1, by:*

- (a) Ensuring that activities in the coastal environment do not adversely affect the surf breaks; and*
- (b) Avoiding adverse effects of other activities on access to, and use and enjoyment of the surf break.*

The Whangamata Bar has been given a value on the "stoke meter" of ten out of ten in the New Zealand Wavetrack Guide, as presented in evidence to the New Zealand Coastal Policy Statement Board of Inquiry. The Whangamata Bar on a good day is the magical perfect wave. Surfers have not witnessed perfect Whangamata Bar in all its glory for weeks on end for nearly three years...

## 4 The “Morphing” of The Bar

In August 2008, a bund was built so that the marina could be constructed inside. This was the start of the changing of the hydrodynamics of the estuary.



In July 2009 the bund surrounding the construction of the marina development (possibly up to 3,000 m<sup>3</sup>) one kilometre upstream from the Whangamata Bar was deconstructed and the contents were exposed to the outgoing tide towards the Bar. As far as surfers are concerned, this provided another shock to the Whangamata Bar.

The Moana anu anu stream that historically accepted waters from the Wentworth valley and the fresh-water-fed wetland, has now become an access channel for the new marina, just several hundred meters upstream from the world famous Whangamata Bar. The stream, once “*a natural depth of 0.5 of a metre at low tide*” (Airey report TCDC 1999), providing easy access to rich kaimoana beds, has been converted to a point where it now has a minimum depth of 1.9 metres at low tide. This new confluence requires constant dredging.

With the deconstruction of the bund and the widening of the channel and its maintenance, Surfers have noticed dramatic changes, reaffirmed by Dr Mead who made the following observations:

*“Anecdotal evidence from long-time local surfers (some of which have lived and surfed in Whangamata since the 1960’s), describes the way the wave broke pre-October 2009 and how it is described at present, as follows:*

*Historically, at low-tide, the left-hand (southern) wave on the Bar peeled 300m--500m, lasting between 45--60 seconds. Following the hollow take-off section, the wave then peeled through up to 4 sections with a steep-face, allowing the surfer to get high surfboard speed and perform a full range of manoeuvres. The right-hander (northern side of the Bar) provided only a short ride before becoming slow and less steep. Up until 1990, the occasional hole cut through the Bar (between the 2nd and 3rd sections) during heavy rain, however, the Bar would form back into its previous shape within a number of weeks. In 1990 the boat-ramp groyne was built, and very likely due to the increased stability of this local at the base of the Bar, holes did not again appear in the Bar over an 18 year period, until October 2009.*

Post October 2009, the waves breaking on the Bar lost their form, as described above. The take-off moved further out to sea and moved some distance (15-25 m) south of normal take-off point. The fast take-off section is now a lot faster peeling, leading to slow and less intense following sections that back-off into deeper water rather than continue to peel towards the beach – “a take-off that basically flops over and then goes into a big fat section, hardly walling through to the beach like it used to”. The left-hander is now better to ride on the mid- to high-tide, rather than low tide and a strong rip developed going out to sea on south side whilst tide was coming in. The right-hander is now increased in length, but is not a good surfing wave.”

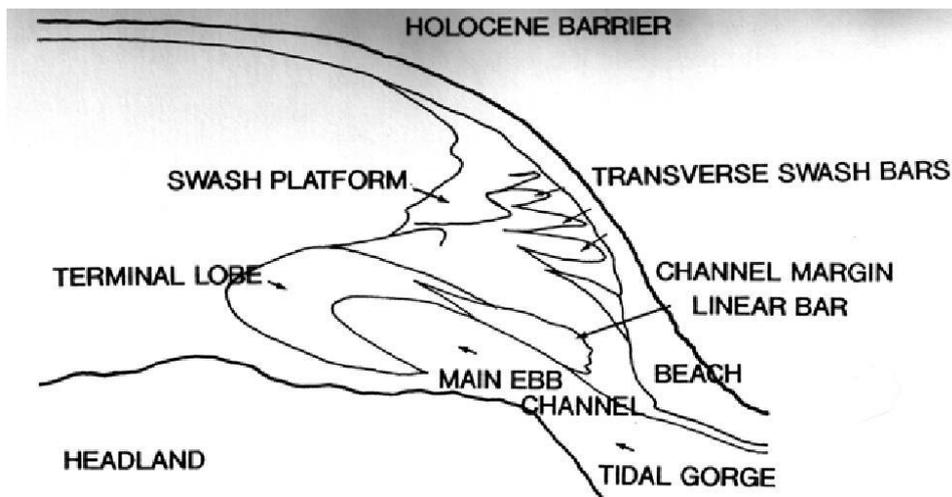
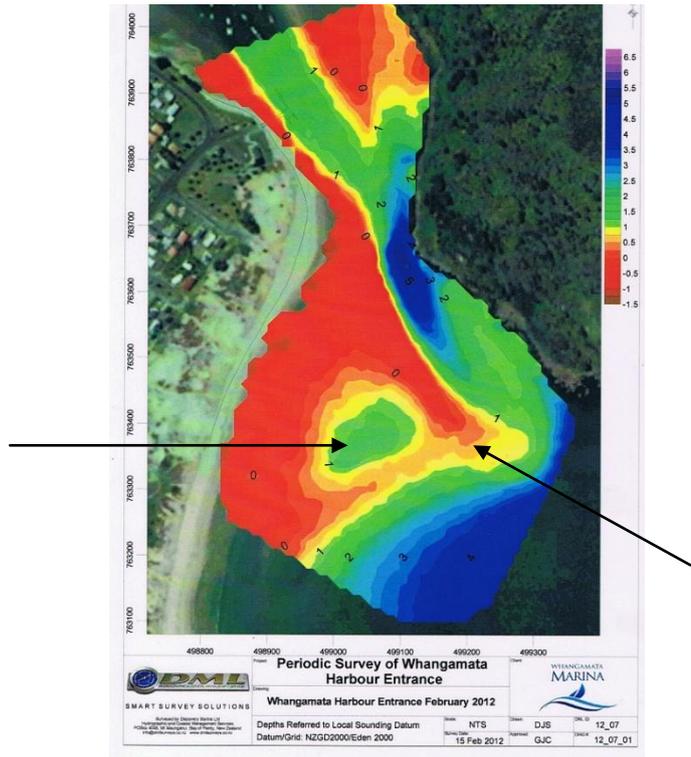
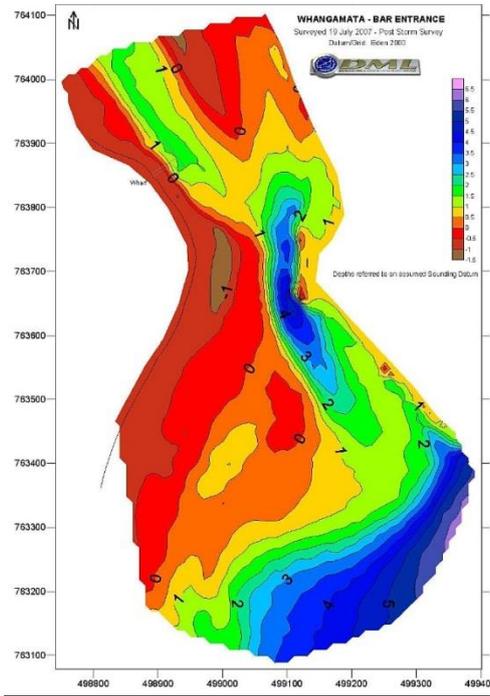


Figure 2.8: The diagrammatic form of the ebb-tidal delta.

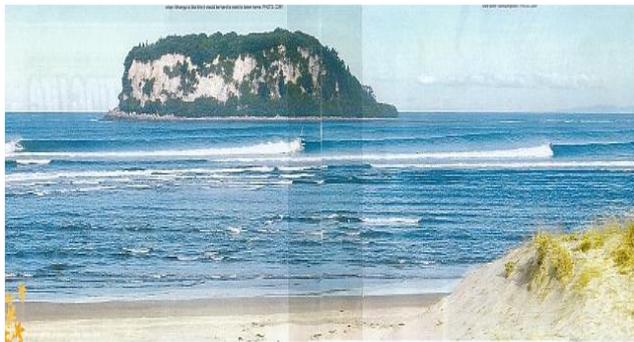
Fig3

A diagram of The Bar from Angela Sheffield's thesis *Sedimentology and Hydrodynamics of the Whangamata Harbour 1991*

The coloured charts below are bathymetric surveys carried out by DML Ltd as defined as the monitoring programme for the marina by WRC. The one on the left is before the marina construction in 2007, the one on the right was completed post construction February 2012.



July 2007 before marina construction and epic Bar with long vortexed walls as in the photo below



February 2012 (note the green hole, and the extended finger) subsequent low-wave-energy bar and the wave fading into the hole, as in the photo below



After a significant meeting between The Waikato Regional Council (WRC) and the Surfbreak Protection Society (SPS) on March 27<sup>th</sup> 2012 it was agreed that the Whangamata Bar has degraded. The Council asserts however that without further science it would be hard to define the cause.

## 5 Crown conditions and RMA

Since 1998 there have been four Ministerial interventions in the consent process, one during, and three after.

The Whangamata Marina Company has enjoyed the unwavering support of both the WRC, and Thames Coromandel District Council (TCDC) by way of significant non-notified consents. Furthermore, the TCDC has, through imposed parking levies on small boat users, partly funded the marina company's dredging regime.

While it has been said by some that the Whangamata Marina consents were tested through the New Zealand judicial system, the effects of continued maintenance dredging for the boat access channel certainly were not.

The Environment Minister, The Rt Hon David Benson-Pope granted the marina consents under delegation from the Minister of Conservation the Rt Hon Chris Carter in December 2006, the construction works for the marina began in September 2008 and the development was opened on the 21<sup>st</sup> November 2009.

Several scientists, including those from DoC, Hauraki Maori, locals and surfers lobbied Chris Carter to decline the consents. At the same time, Surfing Scientists Dr Mead, Dr Black and Dr Phillips wrote a letter to Mr Carter titled *Re: Potential Negative Impacts of the Whangamata Marina*. ([Appendix 2](#))

David Benson Pope was concerned enough about the surfing issue during his reconsideration imposed by the High Court on Chris Carters decline of the consents, that he corresponded with the Environment Court for greater clarification, and inserted condition 10.7 into the marina consent. Below is the full wording of the Environment Minister's monitoring conditions that were put on the marina consent:

***"10. The consent holder shall retain appropriately qualified and experienced persons to develop a plan detailing procedures to be put in place to minimise the potential for sediment discharge from the site during construction of the works. This plan shall address among other things the following:***

- i. means of containing sediment in the dredge basin;*
- ii. means of containing construction debris to the work site;*
- iii. measures to be employed to reduce odours associated with disposal of dredged material;*
- iv. means of ensuring contractor compliance with this plan;*
- v. staff responsibilities and procedures to ensure compliance with the plan;*
- vi. sampling sites and means of measuring suspended solids and turbidity;*
- vii. monitoring of the sand bar at the harbour entrance to ascertain if the dredging and construction has any long term adverse effect.***

*This plan shall be to the satisfaction of the Waikato Regional Council and forwarded for Council's written approval at least one month prior to the commencement of construction. At least one month prior to forwarding the plan to the Waikato Regional Council, a draft will be sent to the Iwi representatives, which may suggest amendments to the plan, which must be submitted to the consent holder within one month of receipt of the plan by the Iwi representatives. If those amendments are not accepted by the consent holder, the consent holder shall forward the suggested amendments to the Council at the same time as it submits the plan for the Council's approval. The consent holder shall comply with the*

*plan approved by the Council and construction shall not commence until Council has provided its written approval.”*

However the reality was that Iwi appellants were not consulted on the monitoring of The Bar although Iwi had called an expert surfing witness during previous court proceedings.

On the 16<sup>th</sup> of April 2007, a prior request by the Surfbreak Protection Society led to a meeting with the Waikato Regional Council to discuss the methodology of the Bar monitoring program.

Although the condition above requires “*appropriately qualified and experienced persons*” to be retained, WRC decided not to include surfing scientists, as Brent Sinclair from WRC has insisted that they are only required to monitor the bar and that “*the condition is quite vague*”.

Mr Sinclair’s interpretation of 10.7 is not correct, as the Crown inserted condition 10.7 out of concern for the **amenity value** that the Whangamata Bar provides.

The word “environment” has a statutory meaning under section 2 of the RMA, which includes “amenity values”; amenity values also have a statutory definition under section 2 of the RMA:

*“Amenity values*

*Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes”*

To argue that the Council / consent holder are only required to monitor the volume of the Whangamata Bar and not the shape of The Bar and the amenity value of the waves it provides, writes off the Crown’s **strict** condition 10.7 as meaningless.

The condition was all about the amenity value.

When the Minister released the consent, Mr Gunson wrote to the Minister, again voicing the surfing community’s concerns that not enough science had been conducted to discount any harm to the Whangamata Bar, to which the minister replied:

*“I specifically asked the Environment Court about the **surfing issue** and the courts response is attached.”*

*“In response to your questions, condition 10 of the coastal permit granted to the Whangamata Marina Society incorporated includes that the consent holder shall retain appropriately qualified and experienced persons to develop a plan to monitor the sandbar at the harbour entrance to ascertain if the dredging and construction has any long term effects. This plan shall be to the satisfaction of the Waikato Regional Council and completed at least one month prior to commencement of construction. The costs of meeting this condition will fall on the society.”*

[\(Appendix 3 DPB Court Q A.pdf\)](#)

Appendix 3 has been widely circulated amongst the surfing community, and it has been used in correspondence at least twice with WRC.

SPS has attempted to engage WRC with relation to previous Environment Minister David Benson Pope’s condition regarding the Monitoring of the Whangamata Bar.

As far as New Zealand’s surfing community is concerned there are two critical points about condition 10 that have not been interpreted well by the marina company or by our Waikato Regional Council.

Condition 10 starts off with the wording:

*“The consent holder shall retain appropriately qualified and experienced persons to develop a plan.”*

In an attempt to engage WRC and the marina company constructively regarding condition 10, SPS contacted the other parties and initiated a meeting on the 16<sup>th</sup> of April 2007.

SPS invited Dr Scarfe (currently employed by the new Auckland Council) to attend; Brad is a world leading scientist in the field of surfing science, a coastal sciences discipline which studies optimum wave conditions for the sport of surfing.

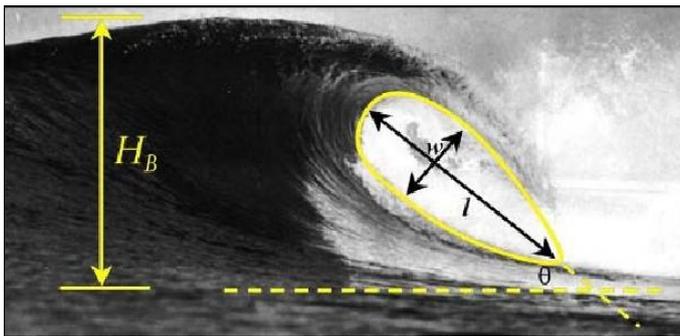
As the monitoring of the Whangamata Bar was to ascertain any possible adverse negative effects on the sport of surfing at the Bar, Dr Scarfe, as any scientist in his field, is most appropriately qualified to consult over developing a plan to monitor the Bar. WRC has decided that this is not the case.

While WRC have heard SPS and the experts the organisation has introduced, no recommendations from these surfing scientists have been taken up.

To monitor the effect of dredging for the marina construction, WRC have chosen to rely simply on one tool: sporadic bathymetric surveys which have not been coordinated to take place before and after dredging activities, in particular the continued maintenance dredging which may displace up to 350,000m<sup>3</sup> of sediment during the marina's 35 year consent for maintenance dredging.

## 6 Surfing Science

Regarding surfing science it is best to quote this description from the [ASR website](#)<sup>1</sup>:



*“In order to evaluate the impacts that a coastal engineering project may have on existing surf breaks, it is necessary to apply the concepts of surfing science that have been developed and recognised by the coastal engineering community. The key parameters in surfing science are the peel angle, which dictates ride speed and length, and the vortex ratio, which dictates wave*

*breaking intensity.”*

The Waves that broke at the Whangamata Bar up till three years ago, although breaking to the left, (opposite profile to the photo above) would hold this perfect shape consistently for 500 metres, with rides lasting over one minute. This would entice surfing tourists both nationally, and internationally.

At the April 2007 meeting, Dr Scarfe pointed out that some science exists (held by the Waikato University) that could be used for monitoring but this has not been accessed to date by Marina Company consultants (example: Tonkin & Taylor bibliography in their Mundaka-Whangamata comparative surfing study does not cite one of the 100+ references on surfing and coastal science)

Dr Scarfe said that there is a need for a baseline study and hydrodynamic models and especially the need for LIDAR and multibeam surveying of the topography and bathymetry.

Brent Sinclair, the WRC Divisional Manager for Consented Sites had suggested that nourishment of the beach with suitable dredged material has been discussed.

Dr Scarfe stated that this is one activity that is **guaranteed to modify surfing wave formation.** There are numerous locations around the world where surf has been improved and destroyed by

<sup>1</sup> ASR Ltd a firm of coastal processes scientists. [http://blog.asrltd.com/storage/Surfability\\_Impact\\_Assessment\\_White%20Paper\\_ASR.pdf](http://blog.asrltd.com/storage/Surfability_Impact_Assessment_White%20Paper_ASR.pdf)

nourishment and therefore their effects need to be considered. ([appendix 4 SPS WRC meeting notes](#))

## 7 Dredging and Beach Nourishment

The original approved marina consent 953758 (2006) authorises maintenance dredging of the channel but there were no limits set as to how much or how it was achieved. However the general discussion in the court was 3,000m<sup>3</sup> or up to a maximum of 6000 m<sup>3</sup> per annum

Subsequent to this, consent 121398 for maintenance dredging, as well as beach nourishment consent 121399 were granted both non-notified on the 1<sup>st</sup> September 2010.

The WRC released a consent notification report ([Appendix 5](#)) in November 2010 dated 1<sup>st</sup> September 2010 (WRC Doc #1757046 file number 61 01 65A) in relation to maintenance dredging and Beach nourishment consents and notes on page 10 that the original approved marina consent 953758 authorises maintenance dredging of the channel *"I therefore consider it reasonable to conclude that resource consent 953758 allows for dredging volumes sufficient to maintain the channel to its design dimensions."*

The new **"design dimensions"** were not assessed by the Environment Court and have not been scrutinised or consulted on by the public or concerned stakeholders. This is because in the original consent, the channel was going to be lined with a rock wall.

An excerpt from an email regarding the unlining of the channel by Consent officer Brent Sinclair.

*"Vernon has noted that in his view the rock lining of the access channel is not necessary to control overall channel stability (although ongoing maintenance dredging will be likely), and its removal from the project may have potential benefits both in terms of navigation (i.e. the removal of a relatively narrow hard structure) and natural amenity. We do not see this as a change to the consent, rather the Marina Society will be not exercising its consent to the extent that is authorised."*

At the April 2007 meeting, Dr Scarfe, raised concerns that because of the subsequent decision to unline the channel, the amount having to be dredged for maintenance could be several times that predicted for the lined channel.

What was presented to the Environment Court was that 3,000 m<sup>3</sup> per year would be dredged, as the WRC notification Decision Report for consent applications 121398 and 121399 quotes:

WMS further states in its application report that the most likely annual volumes being dredged would be in the order of 3,000m<sup>3</sup> per annum. This estimate is supported by an assessment of the coastal processes by Jim Dahm of Eco Nomos Ltd, who was commissioned by WMS to provide evidence on coastal processes. Mr Dahm's assessment on coastal processes indicates that the vast majority of the channel is stable with the exception two sections of the channel which cut through an active sediment transport pathway. It is these sections that would be subject to the vast majority of maintenance dredging. More significant volumes may be necessary following extreme weather events, hence the reason why WMS has sought a maximum dredge volume as opposed to the average volume likely to be dredged.

Historically, the Whangamata marina company have underestimated dredging volume predictions. While the above figure of 3,000 m<sup>3</sup> was emphasised in court, this morphed into 6,000 m<sup>3</sup> to the current 10,000 m<sup>3</sup> granted. On page 16 para 43 of the Environment Court decision A173 2005 granting the marina consents, the Judge states;

*“In the 2004 hearing we were satisfied from further evidence received from Mr Caldwell that the dredging of the basin and channel, (estimated at no more, and expectedly less, than 6,000cu per annum), could be readily undertaken.” (appendix 6) and from the court decisions same paragraph: “the marina basin and channel will require periodic dredging in the future to avoid sedimentation build-up, liable to prevent ready entry/exit via the channel and use of the marina in **varying tidal conditions**”*

While the marina company’s maintenance dredging consent application 2010 ([consent application \(Appendix7\)](#))<sup>2</sup> states on page 4: *“The larger volumes of dredging sought in this consent **reflect the considerably larger dimensions of the access channel and the need to maintain all tide access all year round.**”* And on page 7: *The dominance of marine derived sands in the lower harbour has significant implications for disposal of sediments dredged from the access channel. In particular, the marine sands dredged from the channel need to be returned to the active coastal environment. Otherwise significant net loss of sands could occur over time, potentially impacting on beaches and other environments (including potentially the ebb tide delta, a popular area for surfing).*

An earlier 2003 Marina Company’s report by EcoNomos Ltd<sup>3</sup> cautions that: *“A “suck it” and see approach is not appropriate in these very dynamic environments.” (Appendix 8)*

Without public consultation or regard to Dr Scarfe’s warnings, WRC released consent number 121399 for “Beach Nourishment” simultaneously with the maintenance dredging consent on September 1<sup>st</sup> 2010 **non – notified.**



During this sequence of photos below, you may use the stand of pohutukawa as a reference point. The trees are also visible in this photo above extracted from the WRC non-notified report, as the green line along the beach front in the lower right hand corner.

“Beach Nourishment” can be a misleading term because often nourishment of the beach is not the prime reason required, but is convenient as the closest dumping ground to a dredging activity. In some cases it is used instead of rock walls to protect properties built inappropriately to close to the coast. This is not the case in Whangamata, as no properties were in danger, despite TCDC recalling some historical minor events in the area ([appendix 9](#)). The secluded little strips of beach

<sup>2</sup> Page 4 appendix 2 AEE Economos report for the Whangamata marina society’s consent application June 2010 to WRC (consents 121398 and 121399 )

<sup>3</sup> Comment on sedimentation issues: Whangamata Harbour by EcoNomos Ltd 2003

had fine white sand that provided families, tourists and locals an enjoyable and safe beach environment at all tides, as an alternative to the main surf beach.



Sifting fine grains of sand through his fingers, A.k. anniversary weekend 2011.



by April 2011 the marina co had dumped **10500** m<sup>3</sup> of sediment.

By our estimates at least 90% of it is above Mean High Water Spring. The pohutukawa trees demonstrate the scale of the exercise, note the high tide mark. Under the consent 121399 there is a possibility of depositing up to **10,000** m<sup>3</sup> of dredged material **per annum** on inner harbour beaches.



The purpose, according to the marina developers is to “reintroduce the deposits back into the sedimentary cycle by providing ‘Nourishment’ ” to these inner harbour beaches, the marina co is promoting the perception of a generous social contribution, and responsibility<sup>4</sup>

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<sup>4</sup> (Whangamata) page3 Coastal News Thursday April 14 2011.



*“The ability of the beaches to absorb sediment each year may decrease if the volumes placed exceed the natural rates of removal. If this occurs, the society will seek consent for other placement options – such as a placement at depth off the main ocean beach. The beach profile monitoring will enable any need for alternative placement sites to be identified at least two years ahead.”*

Quote from AEE Eco Nomos report.

The SPS is concerned about the future locations of dumping sites for this heavy grade sediment, and whether this practice is sensible or sustainable



This type of changed Beach profile, with “obvious grain size difference as you can see in the photos above and below is not what is recommended under internationally recognised guidelines for Beach Nourishment<sup>5</sup> Note the channelling from rain events, the dredged material is full of shell, and has a hard concrete-like texture underfoot. How efficiently will these sediments recirculate?

The beach is no longer suitable for the previous amenity value, e.g. family beach recreation.



Also of concern is the removal of large quantities of sediment from the coastal marine area and passed on to private addresses like the one in the above right photo, and the storing of the reported amount of 750 m<sup>3</sup> of sediment in the Wentworth Valley.

<sup>5</sup> Professor Don Barber, Bryn Mawr College <http://www.brynmawr.edu/geology/geomorph/beachnourishmentinfo.html>

In an email to Paul Shanks Ruben Wylie from the WRC said:

*“The marina society has advised that muddy sediment has accumulated at the base of the drop structure situated immediately upstream of the marina entrance. I understand material consists predominantly of fine silts and muds and so is not suitable for beach nourishment. The marina society is consequently disposing of the sediment on a property at Wentworth Valley Road in accordance with 5.2.5.4 Permitted Activity Rule of the Waikato Regional Plan”*

In summary, in the dredging consent, it is implied that all sediment will stay in the natural sediment cycle for the benefit of the Bar but this is not the reality, if it is placed on private land and on beaches above high tide.

## **8 Lift and Drift Dredging Method**

The WRC is responsible for monitoring, the dredging and Beach Nourishment consents 121398 and 121399 respectively. By means of an official Information Request it was learnt from WRC that the Marina Company:

*“has also been undertaking what it terms as “channel disturbance” at the confluence between the Moanaananu channel and the main harbour channel. This activity is undertaken on a no more than monthly basis and involves disturbing less than 100 m<sup>3</sup> by dragging a purpose built blade behind a launch on an outgoing tide. That activity is permitted under rule 16.6.10 of the Waikato Regional Plan.”*

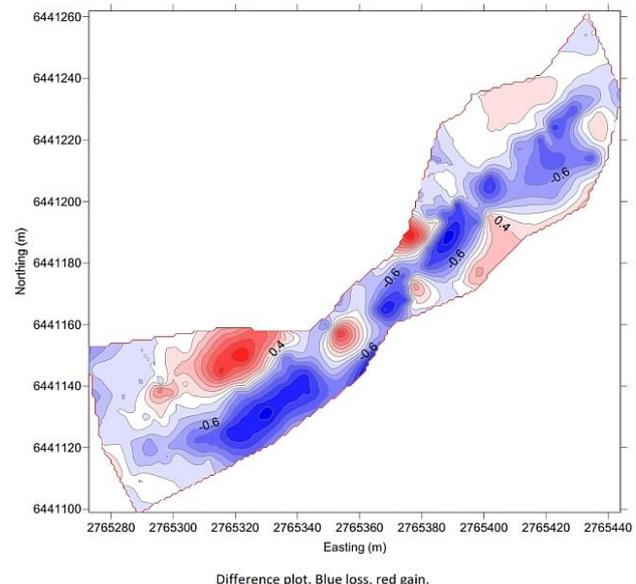
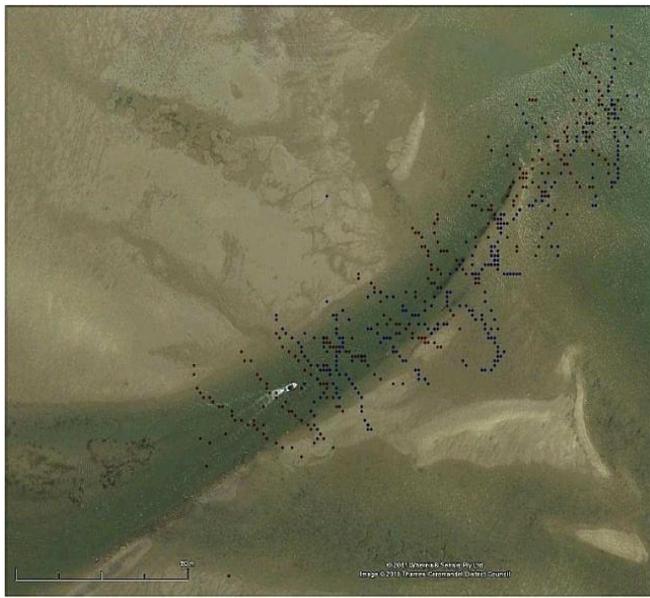


Rule 16.6.10 is actually in the Waikato Coastal Plan, the rule is classed as “Recreational Activities” and no more than 100 m<sup>3</sup> is allowed to be disturbed within a 30 day period. The method employed by the marina company is referred to as the “Lift and Drift method”. The marina company is in fact using a purpose-built plough dragged behind a trawler.

Members of SPS, and concerned citizens have also been observing the dredging and Lift and Drift method. They believe it is possible that the Marina Company is removing and disturbing much more sediment than has been authorised.

The Lift and Drift activity bears no resemblance to a “recreational activity.” According to the figures supplied to SPS, for the activity to stay within the Rule 16.6.10 guidelines over the lift and drifted area, 100 m<sup>3</sup> disturbed equates to about 30mm shaved off an area 250 metres long by 15 meters wide, the Channel confluence area. There is no way they would spend 5-6 hours for two days to remove such a pitiful amount.

To try and ascertain volumes moved during the lift and drift method, a survey was carried out directed and analysed by Dr Mead before and after the L&D dredging in August 2011.



**Difference plot. Blue loss, red gain.**

Data was gridded at 1m spacing intervals with search radii of 25X25 m. due to the lack of coverage, the gridded data had to be blanked. This leaves a significant portion of the left bank of the Moanu anu anu channel left out of the volume calculations.

However the difference between survey 2 and survey 1 is approximately **1200 m<sup>3</sup>**. This means that 1200 m<sup>3</sup> has been disturbed using the Lift and Drift method.

Note that survey 2 misses a significant section of the northern part of the channel, so this volume could be greater again.

## 9 Dredging volumes

### Existing channel (2008) at low tide

Length	750 metres
Width	5 metres
depth	0.5 metres=1875m <sup>3</sup>

WRC was given a figure of 32,000 m<sup>3</sup> that was dredged to create the new channel size

### New channel (2009) at low tide

Length	750 metres
Width	15 metres
Depth	1.9 metres=21,375 m <sup>3</sup>

19500 m<sup>3</sup> difference in volume or 11.5x larger

The marina company were given consent (non-notified) by WRC for dredging up to a depth of 1.5 meters below lowest astronomical tide and removing up to 10,000m<sup>3</sup> (note the marina company dredge up to a depth of 2 meters per year, DML bathymetric survey 2009) . They currently achieve this by using two methods:

Dredging Method 1 (Lift and Drift) :

From the confluence of main channel and the Moana anu anu channel, back 250 metres (4 poles), this area is ploughed by a boat using a specialised plough to disturb / lift sediment, and then left to drift downstream on the outgoing tide toward the Whangamata Bar, this is referred to as the lift and drift method (L&D.) The L&D method under section 16.10.1 of the Waikato Coastal Plan allows for no more than 100 m<sup>3</sup> per 30 days.

They dredge periodically (anything between 6 weeks and three months) the Moana anu anu channel when the depth becomes as shallow as 1.2m at low tide. They dredge up to a depth of 1.9 m (ie a difference of 0.7m). Only one third of the channel, from the small boat ramp to the main channel, ( 250m long of a total 750m)

Length	250 metres
Width	15 metres
Depth	0.7 metres, thus giving a dredging volume of up to 2625 m <sup>3</sup>

This appears to be way outside of the allowed 100 m<sup>3</sup> per 30 days of rule 16.10.1. The volume of this section of the channel after the dredging is completed would be:

Length	250 metres
Width	15 metres
Depth	1.9 metres=7125 m <sup>3</sup>

Method 2 (Digger, barge and truck)

Using the method 2 dredging dates for the new channel, SPS calculated an estimate of the volumes. We used a bucket size given by WRC of 0.5-0.8 m<sup>3</sup> and that is in line with what a quantity surveyor would expect:

*“30-40 m<sup>3</sup>. per hr. which usually comes out at 1.2-1.4 and settles at 1.1 m<sup>3</sup>, so in a 10 hour day, 300-400 m<sup>3</sup> would be removed”.*

This corresponds well with the WRC volumes given to SPS of 300-400 m<sup>3</sup> per day in Feb 2010. They also said that on 7-8 & 9<sup>th</sup> Dec 2011 (2.5 days) the marina company removed a total of 740 m<sup>3</sup> (which equates to ~300 m<sup>3</sup> per day).

Marina co consent volumes from method 2 are assessed by RMS surveyors (a company owned by the chairman of the marina co). Dredging and trucking is carried out by a company called EPL contractors (which is owned by a marina co berthholder) and EPL confirms RMS's volumes. These figures are passed onto WRC.

Note that dredging volumes using the L&D method have not been assessed by WRC, other than assuming it will be within consent limits of 100 m<sup>3</sup> per 30 days

Probable Dredging Volumes for the year 2010

The figures SPS has used in the table below are conservative by using the lower figure of 300 m<sup>3</sup> per day with the barge and 1200 m<sup>3</sup> per two days for the Lift and Drift (as calculated by Dr Mead and described in section 9 above):

5th Feb	dig/barge	300 m <sup>3</sup>
2 <sup>nd</sup> – 3 <sup>rd</sup> Mar	L&D	
3 <sup>rd</sup> - 4 <sup>th</sup> April	L&D	
18 <sup>th</sup> - 19 <sup>th</sup> May	L&D	
22 <sup>nd</sup> – 23 <sup>rd</sup> July	L&D	
10 <sup>th</sup> - 11 <sup>th</sup> Aug	L&D	
8 <sup>th</sup> - 9 <sup>th</sup> Sept	L&D	1200m <sup>3</sup> x 6
7 <sup>th</sup> - 17 <sup>th</sup> Dec	barge/digger&trucks	300m <sup>3</sup> x11 *
<b><u>TOTAL for year 2010(conservative estimate)</u></b>		<b><u>10800 m<sup>3</sup></u></b>

So for 2010 a very conservative figure would be 10800 m<sup>3</sup>.

\*Note that the marina co said that during the period from the 7-17<sup>th</sup> Dec they only removed 1038 m<sup>3</sup> in total which is very unlikely. This is why there needs to be bathymetric surveys before every dredging regime so that all figures are clear and accurate.

Probable Dredging Volumes for the year 2011

Feb 28 <sup>th</sup> —??	barge/digger/truck	2500 m <sup>3</sup> (marina co fig)
17 <sup>th</sup> -18 <sup>th</sup> May	L&D	1200 m <sup>3</sup>
20 <sup>th</sup> -21 <sup>st</sup> Aug	L&D	1200m <sup>3</sup> (Dr Mead actual survey)
15 <sup>th</sup> -16 <sup>th</sup> Nov	L&D	1200m <sup>3</sup>
Nov 23 <sup>rd</sup> -Dec 9 <sup>th</sup>	barge/digger/truck	<del>300 m<sup>3</sup> x11 = 3,300m<sup>3</sup></del>

Recently released figures from the [marina company Appendix 10](#): **3,500m<sup>3</sup>**

**TOTAL for year 2011(conservative estimate)** **9600m<sup>3</sup>**

Probable Dredging volumes for the year 2012 to date

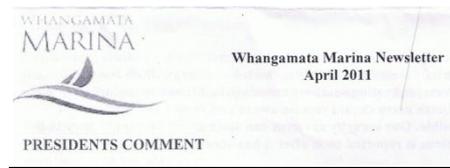
Feb 14 <sup>th</sup> –15 <sup>th</sup>	L&D	
Mar.17 <sup>th</sup> –18 <sup>th</sup>	L&D	
April. 26 <sup>th</sup> – 27 <sup>th</sup>	L&D	1200 m <sup>3</sup> x3

**Running total for 2012** **3600 m<sup>3</sup> so far**

From the dredging figures given and calculated for the last three years, it is clear that the dredging volumes of 3000 m<sup>3</sup> per annum and possibly up to 6000 m<sup>3</sup> offered to the court were grossly underestimated.

Currently they are dredging up to their new consented maximum of 10,000 m<sup>3</sup> even using very conservative estimates. Also note that the lift and drift has a maximum consent level of 100 m<sup>3</sup> in 30 days but they are doing at least 1200 m<sup>3</sup> per dredge.

These increased volumes are even highlighted in the marina company's own documentation as quoted below:



“The current La Nina weather pattern with predominantly easterly weather appears to have contributed to excessive siltation of the confluence of the of the marina access channel with main harbour channel over the summer months. This has required dredging to be carried out in December and February with a significant increase in dredging costs over budget. It is possible this weather pattern may not repeat itself for another 5 or 6 years, however the Management Committee is acutely aware of the costs of maintaining the channel to design depth and is actively exploring maintenance dredging alternatives in an effort to contain costs....”

Also;

*“The La Nina weather pattern this year has caused some significant sand movements into the harbour this year. Consequently, the planned dredging which I referred to in my previous newsletter became an extended affair with more than double the amount of expected material having to be removed at a cost more than double what was budgeted. We can only hope that similar conditions stick to their pattern of one year in five.”*

However from the figures, it looks like the 10,000m<sup>3</sup> per year is the norm for three years running. It must be pointed out that to date; none of the official figures include dredging volumes done by the L&D method. Furthermore, from the newsletter quote above, SPS would like to highlight the type and direction of sediment movement – “*significant sand movements INTO the harbour*”, therefore the marina co have admitted to sand coming from the estuary entrance, i.e. The Bar. We believe that the La Nina weather pattern is not relevant here, and has not been mentioned in any other official document or literature.

As the sand is coming *from* the ebb tidal delta, (the Whangamata Bar) *Governing the Gulf* (p79) becomes relevant.

## 10 Bar Monitoring

**Within the resource consent 121399, (maintenance dredging consent) in the AEE there is no inclusion of any type of monitoring to indicate effects on the Whangamata Bar.**

In January 2008, Tonkin and Taylor produced a report titled Numerical Model: Development and Reporting; this quote from page 31 of the report states:

- Following marina construction, numerical modelling results showed negligible change in existing sedimentation dynamics on the Whangamata ebb delta bar as a result of modifications to the harbour hydrodynamic regime.

Yet in the peer review of the report by Willem De Lange, Senior lecturer in Earth and Ocean sciences, the professor states:

*“as far as I can tell from your results, at the harbour entrance it will not be possible to distinguish any impacts from the marina.”*

And:

*"I suspect the BSS for the harbour entrance will show that the model will not have any predictive skill over the baseline condition (no change). This would raise the question as to what could be monitored to assess the marina impact on the harbour entrance."*

The peer reviewer is saying that the current monitoring programme will not be able to predict the full impact of the dredging to the Bar, and SPS agrees that it is not enough, but it is already indicating the problem.

The Surfbreak Protection Society Inc had, under its own initiative, been advising WRC that Surfing Science needs to be included in the Bar monitoring program, in line with dredging events and beach nourishment to no avail.

## **11 Independent Bar Monitoring**

In late 2010 it became apparent to the Surfbreak Protection Society that the Waikato Regional Council had decided that Surfing Science was not being considered, and that the parameters of the Bar monitoring plan would not be robust enough to reflect any impacts, adverse or otherwise, on the Bar.

SPS decided to contact Dr Mead and investigate what it would take to set up a monitoring plan that would be capable of monitoring changes to the Whangamata Bar and correlate that data with dredging events.

As well as more bathymetric surveys at suitable times, what was needed was a surveillance camera favourably located that could be GPS coordinated with points on the Whangamata Bar, then the imagery would be 3D-modelled to illustrate the wave breaking characteristics over the Bar, which could then be extrapolated to calculate the bottom contours.

After some period of time SPS located residents who were receptive to placing the camera monitoring system.

Under the guidance of Dr Mead, SPS are in the process of buying the specified equipment.

The one-off cost for the purchase of the equipment is close to \$10,000, and there will be ongoing costs of analysing the data which is about \$7,000 to \$8,000 every six months.

The Surfbreak Protection Society, realising its obligations to protect this nationally significant surfbreak as listed under the NZCPS, has reluctantly decided to take on the initial cost of monitoring the Bar through the camera system, because WRC and WMS are failing in their duty regarding condition 10.7 of the conditions set by the Crown.

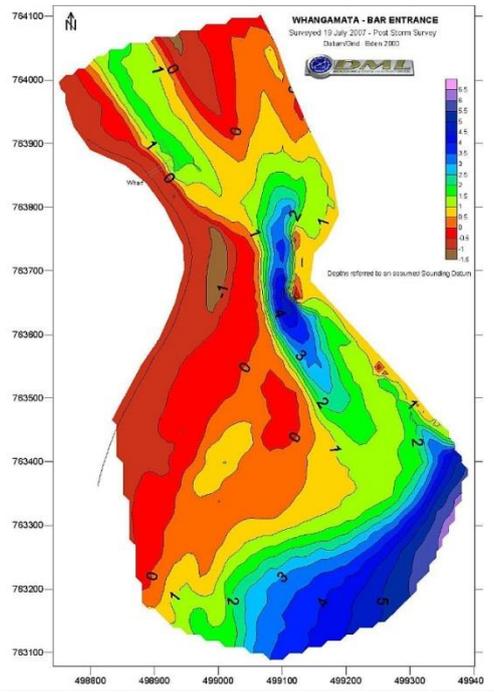
## **12 DML Bathymetric Surveys**

WRC was charged with setting the parameters of the Bar monitoring plan, and the Whangamata Marina Company had contracted DML to conduct bathymetric surveys of the bar; the first survey conducted was in July 2007. There have been 11 Bathymetric surveys carried out by DML (all of which are in the following section).

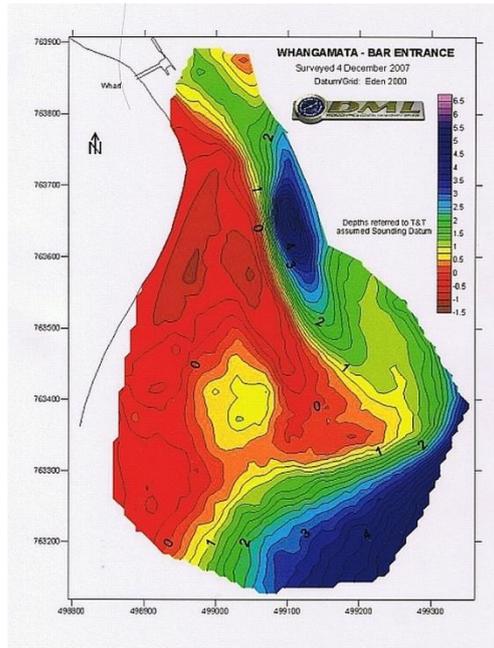
Shown below are bathymetric surveys performed as part of the Crown's consent condition 10.7 that show the change of the "Whanga Bars" morphology in chronological order since 2007 before and after construction of the marina and the development of the marina's maintenance dredging regimes.

The first two pictures shown were taken well before any marina development. The bar was 10/10.

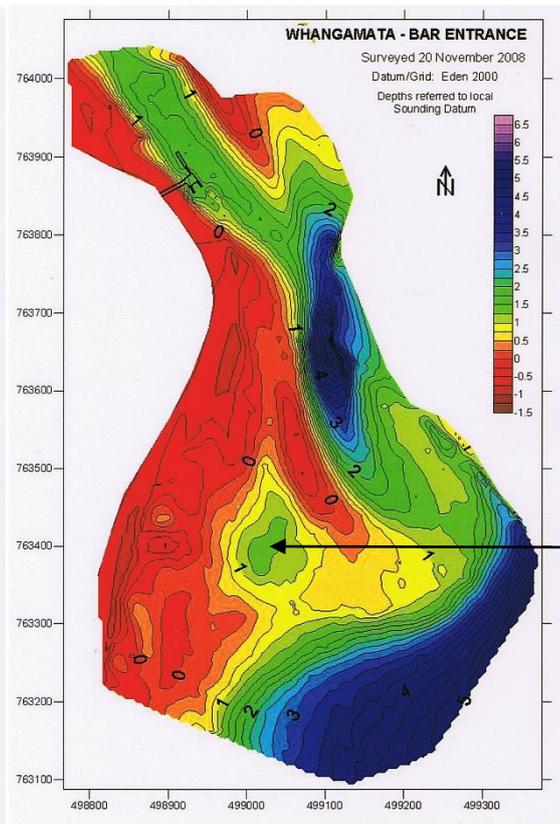
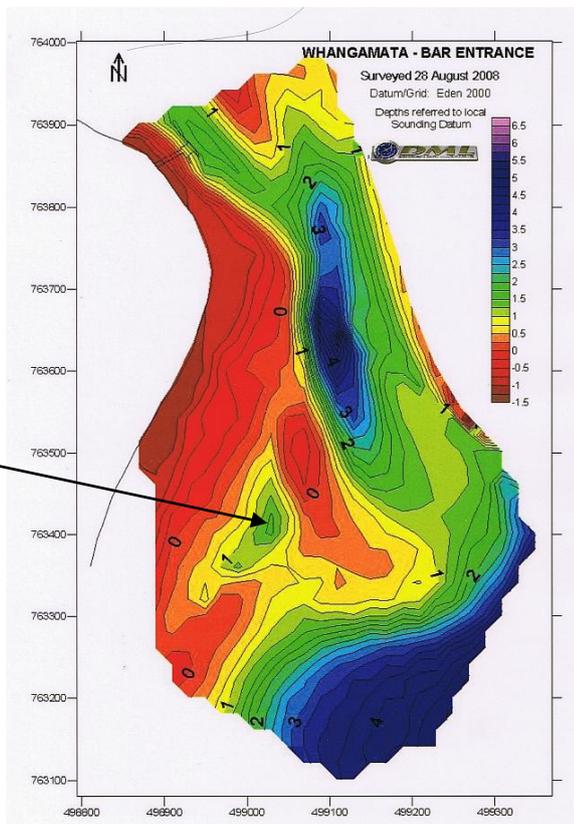
July 2007



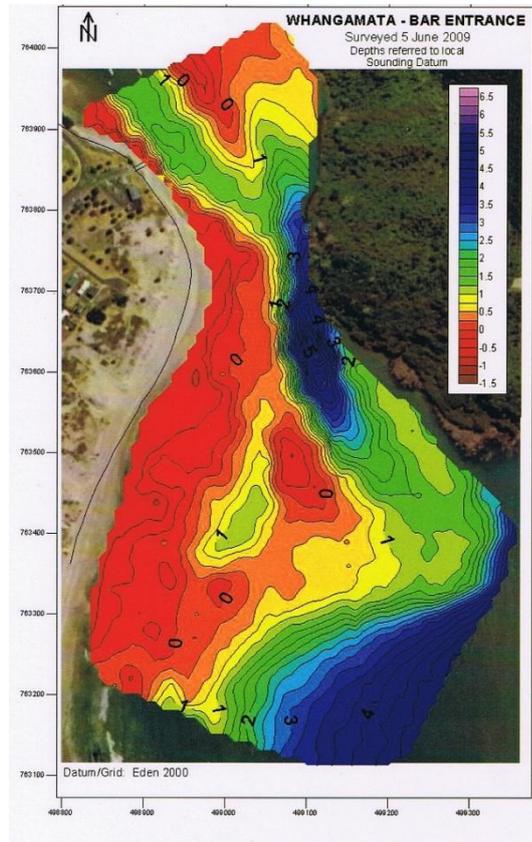
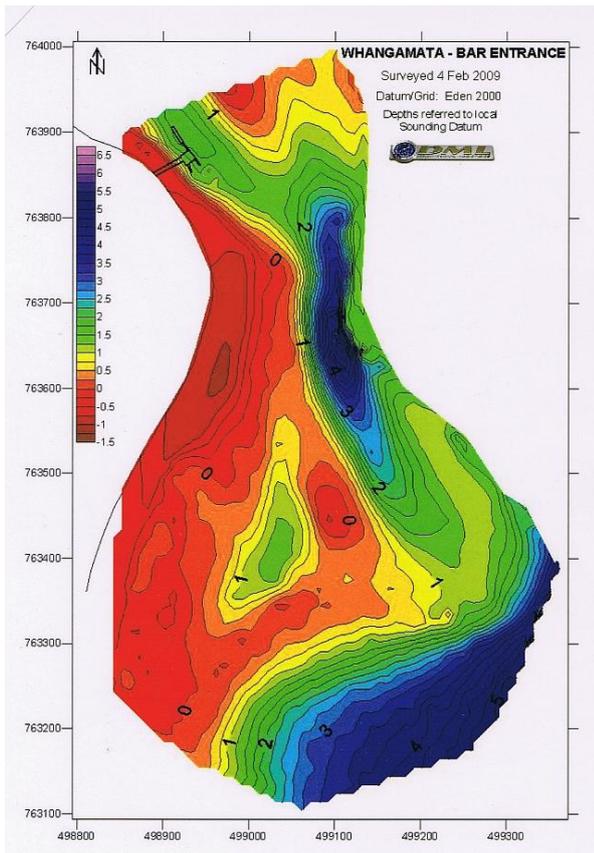
December 2007



Marina construction begins August 2008. Already one can start to see the evolving hole in the bottom left (green area)



Excavation of channel, 750 m. X15m. X 1.9 recorded 32,000m<sup>3</sup> removed.  
And channel opened to inner harbour and sea



Marina Bund deconstructed by letting go in to the outgoing tide, by November new marina channel is six months old. Note that there is a finger developing in the terminal lobe.

Dredging schedules before each bathymetric survey

05 Feb 2010 400cu<sup>3</sup>. Digger and Barge

2<sup>nd</sup> - 3<sup>rd</sup> March Lift & Drift

3<sup>rd</sup> - 4<sup>th</sup> April Lift and Drift.

18<sup>th</sup> - 19<sup>th</sup> May Lift & Drift

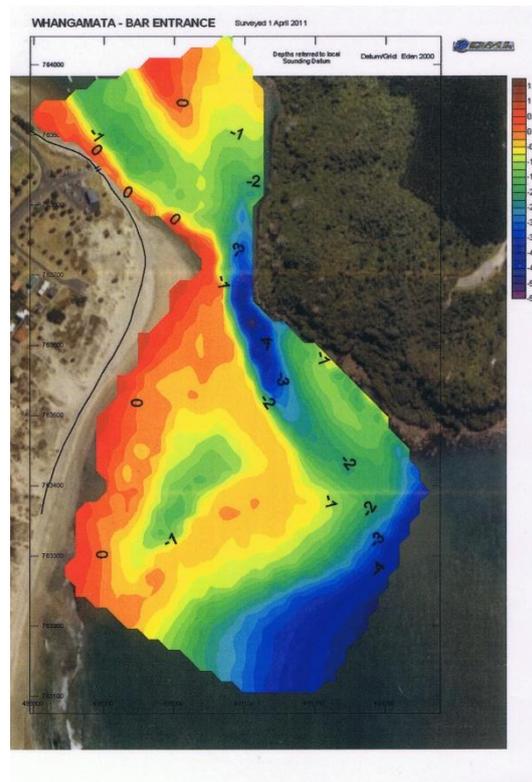
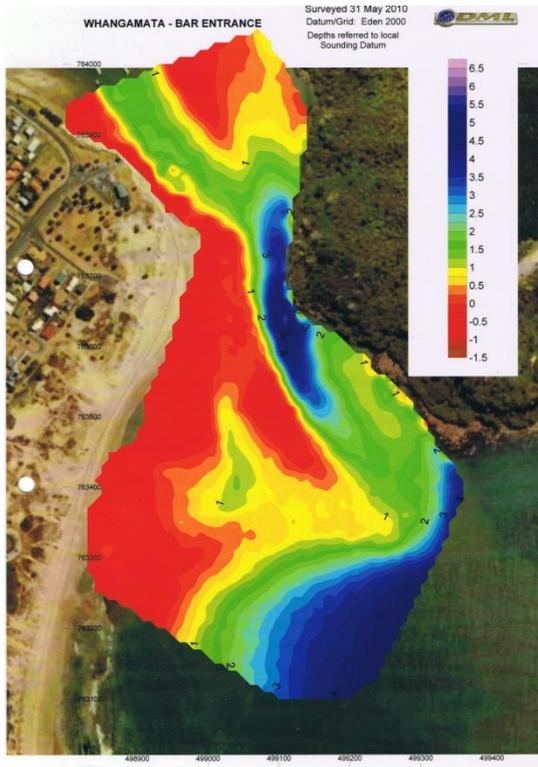
22<sup>nd</sup> - 23<sup>rd</sup> June 2010 Lift and Drift

10<sup>th</sup> - 11<sup>th</sup> Aug 2010 Lift and Drift

8<sup>th</sup> - 9<sup>th</sup> Sep 2010 Lift and Drift

3<sup>rd</sup> to 16<sup>th</sup> December 2010 Major Dredge, barge diggers and trucks.

27<sup>th</sup> Feb 2011 Major Dredge, Barge Diggers and Trucks,



As can be seen there are so many dredging events and so few surveys, so it cannot be called comprehensive monitoring.

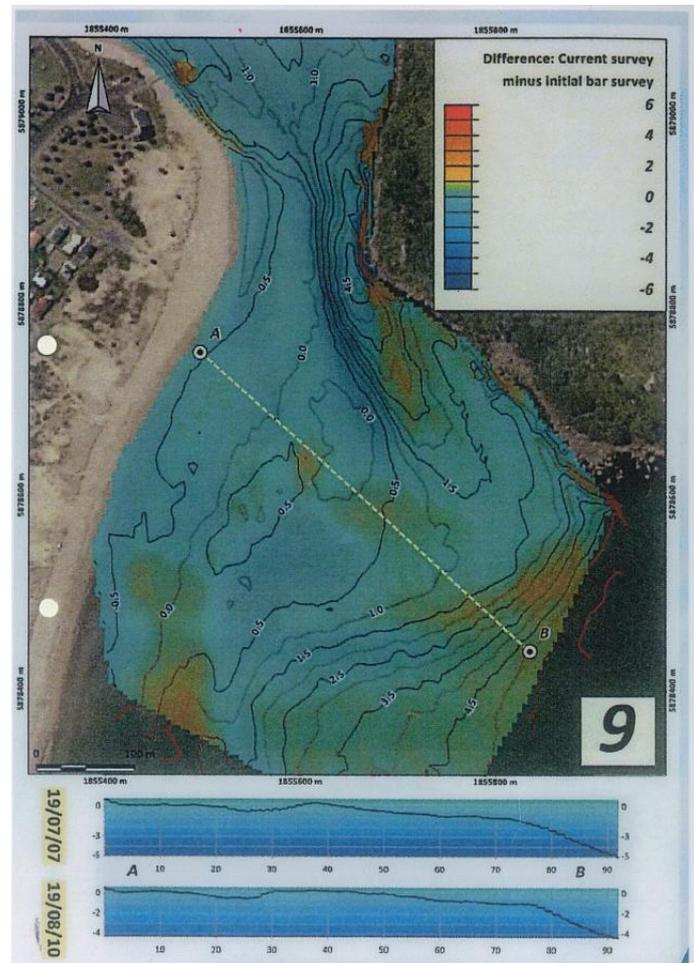
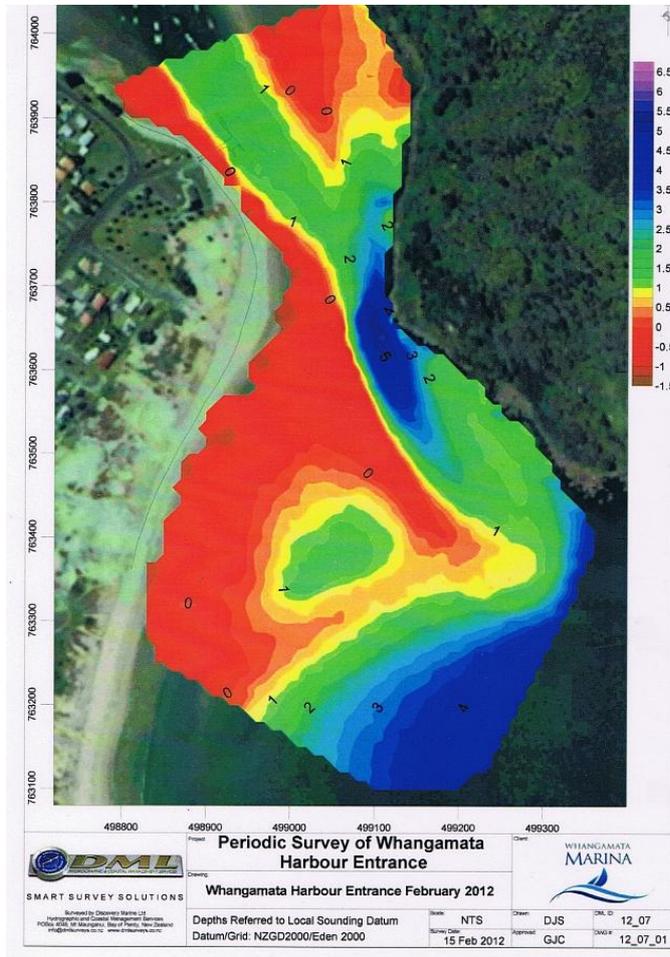
17<sup>th</sup> - 18<sup>th</sup> May 2011 Lift and Drift

20<sup>th</sup> - 21<sup>st</sup> Aug 2011 Lift and Drift

15 and 16<sup>th</sup> November 2011 Lift and Drift

23<sup>rd</sup> November 9<sup>th</sup> December 2011 Barge Digger & Trucks

14<sup>th</sup> and 15<sup>th</sup> of Feb 2012 Lift and Drift.

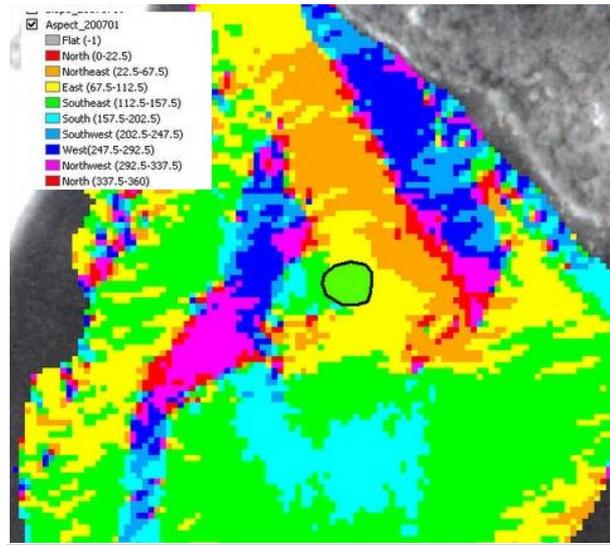
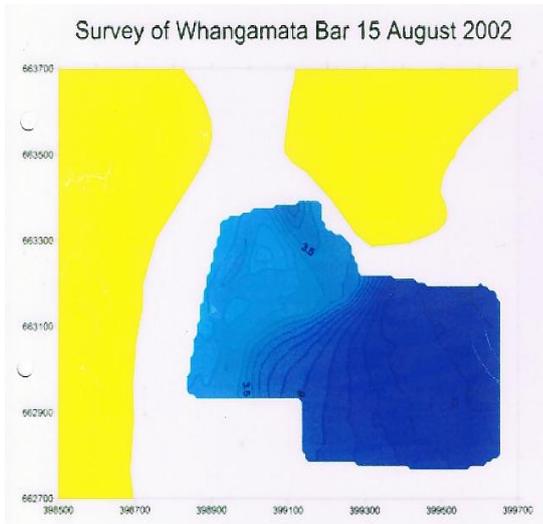


Note the super extended finger and the huge hole. The quality of the waves right through the summer period was very poor right after that heavy dredging regime since November.

The last part of the figure above are sea floor contour depths from east to west, and show changes before and after the marina. These changes are even more obvious in the figures following:

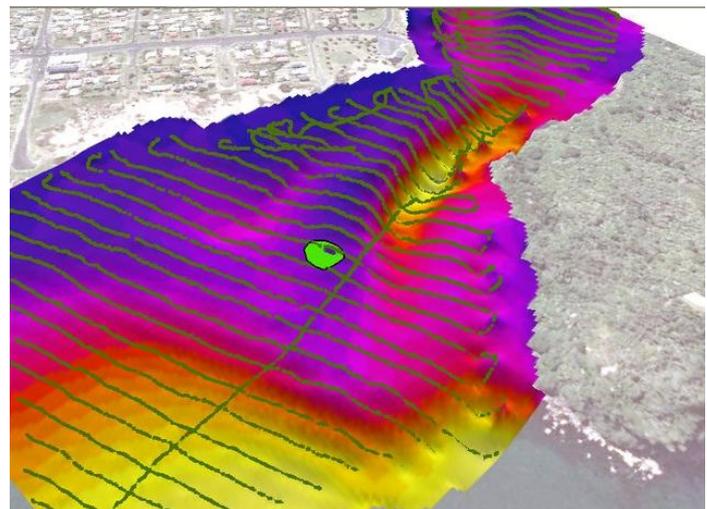
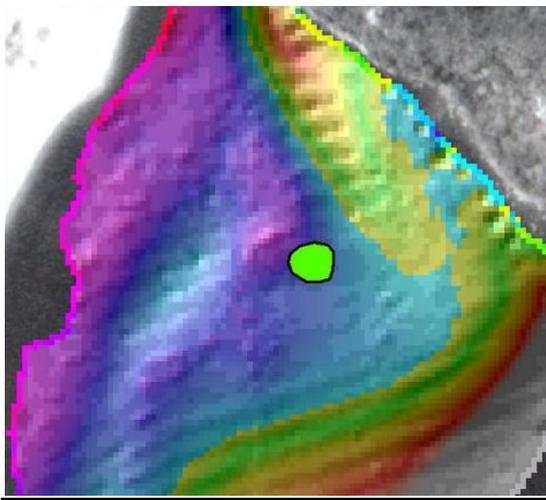
Also, Dr Mead has carried out three of his own surveys and armed with all that information, Dr Mead made a verbal presentation to the Whangamata Harbour committee (WHC) at a special meeting convened by the committee. Dr Mead subsequently presented a report saying that anecdotal evidence says there is a correlation between the dredging events and noticeable observed wave quality deterioration on the Whangamata Bar, and therefore believes more science is needed. ([Appendix 11 Dr Mead Bar evaluation](#)).

### 13 3D-Bathymetric surveys and interpretation



Garth Vaughan conducted a survey in 2002 as part of his master's thesis at Waikato University.

After performing GIS processes and layers from the DML data Dr Scarfe formulated the following three extrapolations above and below



The bright green circle is the rough surfing take off area from Gareth Vaughns PhD, 2002

Dr Mead reviewed the results and came to the following conclusion:

*“From Dr Shaw Mead on Dr Brad Scarfe’s extrapolations of DML surveys;*

*The aspect angle to the north shows the problem very well – to the west of the “take-off” area, the aspects are predominantly sloping to the west, a large amount of northwest, and some southwest, when they should be sloping to the south to south east along the path of the ride. Rather there is a big hole and channel through what used to be the main section of the Bar (3D soundings.jpg), and fat waves dribbling into deeper water. There was often a small hole here, but it has been a large hole with a breach to the south (across the main section of the bar) for well over a year now.”*

## 14 Conclusion

We the surfers of the Whangamata Bar, know that something is wrong with our Taonga, our surfbreak.

Since the granting of the Whangamata Marina Consents under delegation with **strict** conditions by the Crown Environment Minister David Benson Pope in December 2006, The Whangamata Marina has received numerous new consents or variations, all non-notified.

During the construction phase, a renowned Coastal Processes scientist Dr Scarfe, raised concerns that because of the subsequent decision to unline the channel, the amount having to be dredged for maintenance could be several times that predicted for the lined channel.

The new maintenance dredging consents and the increased dredged volumes, were never scrutinised by the Environment Court. SPS believes that the rules of Best Practice must be taken in to account.

The Bar is now unstable and we believe the natural equilibrium in this chaotic system has now reached its tipping point. This is due to the change of the morphology of the Bar and its “*delicate terminal lobe*” (Angela Sheffield, morphologist 1999).

We have come to the Hauraki Gulf Forum because of the protection of the surfing Bar in the NZ Coastal Policy Statement and, as the Bar resides in the Gulf Park. We believe our scenario is included in “*Governing the Gulf*” guidelines p 79.

The monitoring to date, although not thorough enough, has supported the anecdotal evidence of the surfers that the Bar’s amenity value has been seriously damaged. We now need to get a comprehensive monitoring plan to meet the needs of all stakeholders in this estuary.

We are aware that WRC are considering having an internal review of the maintenance dredging of the marina access channel (the Moana anu anu stream) consent in July - September 2012. We are asking for a decision of this forum to direct WRC to conduct this review and to involve all the stakeholders in establishing a monitoring plan, with a true consensus outcome.

Some of the requirements of SPS are:

1. Surf scientist involvement
2. All surveys to be independent
3. Bathymetric surveys of the “marina access channel” before and after any method or type of dredging to calculate dredging / disturbance volumes.
4. Better timed bathymetric surveys to monitor The Bar
5. Camera system for filming The Bar (as advised by scientists Dahm, Aarsen, Mead & Hume)
6. Some method of ascertaining where the sediment travels
7. Review of the beach nourishment from dredgings
8. Independent analysis of content of dredgings

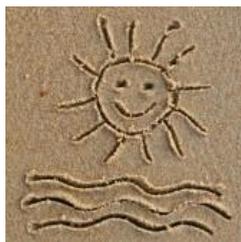
Not only were the marina company obligated by the consent, but the president of the marina developers Mick Kelly gave an assurance in a radio interview in 2008 (on Kool Fm before marina construction ) that they would do all they can to fix the Bar if the marina development caused any adverse effects. From the transcript of that interview:

**Collin;** *“And obviously it’s you know, how long is a piece of string, I can understand that the answer to it is, but obviously what they are looking for is some sort of surety that umm .. and he also believes by the way that he felt that the fraternity of surfers would be well on the way to being appeased if the marina society said yes we will do everything in our power to put things right.”*

**Mick** *“ Well we certain.. okay I give.. I certainly give that assurance; we would do everything in our power to put things right, yes.”.....*

( [Appendix 12 kelly transcript.pdf](#) ) the appendix file also has the web link to the youtube audio / video commentary.

Thank you very much for taking the time to read this. We hope that we can work together to repair what has been lost.



The Committee and Members of the Surfbreak Protection Society.

#### Acknowledgements

Dr Rosemary Segdin, Dr Shaw Mead, Dr Brad Scarfe, The Iwi, hapū and Whānau of the Hauraki Maori Trust Board, Mr Karl Arsen, Mr Grant McIntosh, Mr Malibu Hamilton, Mr Dave Simms. Save The Waves USA. Angela Sheffield, Mr Paul Shanks, Mr Michael Gunson

The digital version of this document contains hyperlinks to the Appendixes listed.

[www.surfbreak.org.nz](http://www.surfbreak.org.nz)