

Submission No: \_\_\_\_\_



P.O. Box 20717 Glen Eden Auckland 0641

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## Submission Form 13

File No: RM11.153

**This is a Submission on a publicly notified resource consent application pursuant to the Resource Management Act 1991.**

### Applicant Details:

Name of Applicant:	<b>Port Otago Limited</b>
Application Number:	<b>RM11.153.01</b>
Type and Description of Application:	<b>Coastal Permit</b>
Location:	}
Legal Description:	}
NZMS 260 Map Reference:	}

**See Appendix One**

### Submitter Details:

**NAME OF SUBMITTER:**

**SURFBREAK PROTECTION SOCIETY INCORPORATED ("SPS")**

### Full Postal Address:

Surfbreak Protection Society Inc.  
PO Box 20717  
Glen Eden  
**AUCKLAND 0641**  
Telephone: 09 8185588  
Fax/email: [surfbreak.protection@gmail.com](mailto:surfbreak.protection@gmail.com)

Submission No: \_\_\_\_\_



Attention: Monique Olivier, Secretary

\_\_\_\_\_  
**Signature/s of submitter/s** (or person authorised)  
**SIGNED** on behalf of

9 September 2011  
(Date)

Please tick one of the following submission types regarding the application,

Do you:

- Support
- Neutral

**Oppose** ✓

Do you:

**Wish to be heard** ✓

Not wish to be heard

in support of my/our submission.

If others make a similar submission, I/we will consider presenting a joint case with them at a hearing.

**Yes** ✓

No

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***The specific parts of the application that my submission relates to are:***

the proposal/proposed activity in its entirety.

***Our submission is:***

SPS seeks that the Otago Regional Council asks for further information from the applicant, and is opposed to the proposal/proposed activity in its entirety. SPS also submits that the application is a Restricted Coastal Activity under the New Zealand Coastal Policy Statement 2010, and also under the Otago Regional Coastal Plan pursuant to the Resource Management Act 1991.

SPS is dedicated to the conservation of surf breaks and the water quality of those surf breaks. Surf breaks (and their water quality) are a natural characteristic, and part of the natural character, of the New Zealand coastline/coastal environment/CMA, of which there are few when compared to the total length of the New Zealand coastline<sup>1</sup>.

The Otago Harbour ("The harbour"), and the dredging proposed and associated activities etc, are within the CMA and the coastal environment and immediately adjacent to and within the vicinity of three world class, internationally renowned surf breaks (as well as other regionally significant surf breaks such as from Potato Point to Karitane). These surf breaks are protected by Policy 16 of the New Zealand Coastal Policy Statement 2010 (NZCPS); they are The Spit, Whareakeake and Karitane listed within Schedule 1 the NZCPS of the nationally significant surf breaks under Policy 16 of the NZCPS. The surf breaks are part of the natural character and landscape of the coastal environment and CMA within which the proposal/proposed activity will take place. The harbour, the surf breaks, the beaches in this area generally (i.e. in the harbour and outside the harbour), and the coastal environment/CMA in the area in

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<sup>1</sup> Scarfe (2008) states that there is only: "one surfing break every 39km to 58km. Many of these surfing breaks are only surfable a few days per month or year when the tide, wind and wave conditions are suitable."  
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which the proposed activity may take place generally, is an area/place of very high amenity values/recreational amenity/ecological values and natural character and landscape values; the harbour, the surf breaks and beaches are part of, and contribute to, that existing environment. Surf breaks and surfing enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety. During the Board of Inquiry process into the NZCPS, the board recorded that the economic and social values of surf breaks should not be underestimated.

The Spit or Aramoana as it is known to surfers, Whareakeake (known to surfers as Murdering Bay) and Karitane are some of the 470 listed surf breaks in Wavetrack's New Zealand Surfing Guide<sup>2</sup> ("Wavetrack guide"). This publication is a recompilation of the original "A guide to surfing in New Zealand". First published in the 1970's the new Wavetrack guide is a must have for surfers touring New Zealand, both national and international. The three above mentioned protected surf breaks subject to this application in particular, for example, as surfing destinations, are rated very highly. They are world class and sacred to those who surf them. They are iconic sites for users on a local level, and on a regional, national and international level. . The following excerpt from the Wavetrack guide adequately sums up some of these values. It is noted that out of a possible 30 points on the stoke meter tally, the aforementioned surf breaks score 28, indicative of how well they align to the values of the surf riding experience in New Zealand.

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<sup>2</sup> Wavetrack New Zealand Surfing Guide, P.B. Morse, P.Brunskill, Greenroom Surf Media Limited, November 2004;  
www.newzealandsurfingguide.com  
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The introduction to the guide states on page 5:

*“...we do have an array of world-class breaks providing incredible consistency. New Zealand is one of the last few remaining surf destinations able to offer large, uncrowded water to surfers. Not only this, but the scenery is spectacular and the unique shape of the land presents many options to those wishing to take advantage of all it has to offer – one of which is that the drive from coast to coast rarely takes longer than three hours. This guide only scratches the surface of all that is available in this beautiful country”.*

Surfing is unique in that it is considered both a sport and recreation; most participants view it as the latter, and travel the globe seeking the “perfect wave”. Surfing and surf breaks provide high amenity value and attract high numbers of both national and international tourists, and surfing as a sport and recreational pursuit contributes significantly to local, regional and national economies and enhances peoples health.

In regards to the level of protection afforded to the aforementioned surf breaks the NZCPS, inter alia, states that:

**Policy 16 Surf breaks of national significance**

Protect the surf breaks<sup>8</sup> 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 breaks.

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This affords the highest level of protection to the natural feature of a surf break that is defined in the NZCPS in avoidance of adverse effects to the surf breaks. The reason that these unique natural features are afforded such a high level of protection is that they are finite resources. It is also that mitigation or remediation of surf breaks is not feasible, at this point in time. This was recognised by the Board of Inquiry into the NZCPS, hence the reason why protection has been afforded to Policy 16.

SPS understands that these surf breaks cannot be mitigated for, and is concerned that the Applicant has responded to a request for further information to Peter Christopher's of the Otago Regional Council dated 28<sup>th</sup> of July 2011 in a manner that does not instil confidence in regards to industry best practice relating to surfing science that is now well established globally. And in this regard, please find **attached** a statement from ASR Ltd commenting on the science that the applicant has produced, in support of the SPS submission (referred to also further below).

For example, the response to Question 13 on page 7:

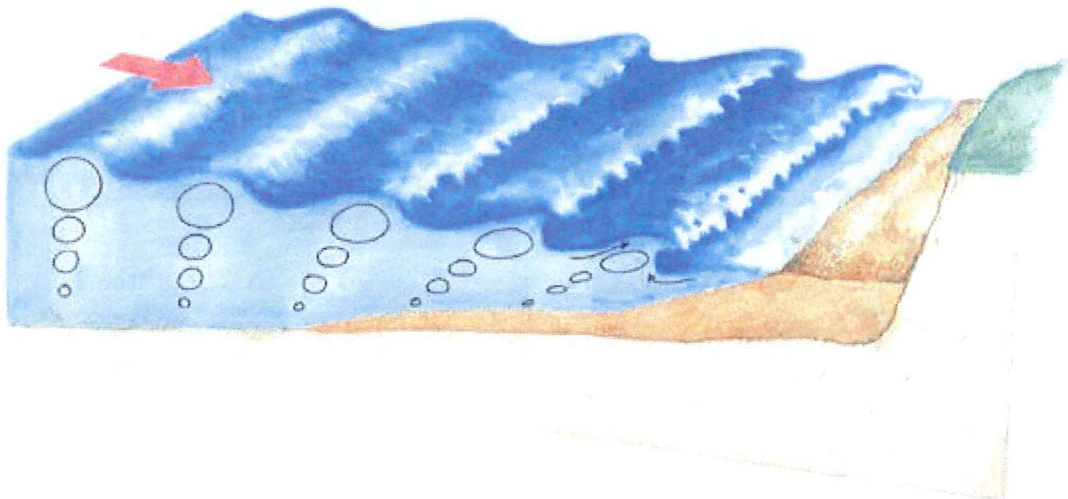
*“ Please explain how deposition is to be managed to ensure the surf break is not compromised during this consent term as a result of deposition patterns at Aramoana.”*

The applicant suggests they will rely on feedback of local surfers by way of online survey. SPS submits that is not industry best practice. SPS submits that proper independent objective numerical wave modelling at The Spit surf break (and other potentially effected breaks noted) must be conducted in conjunction with mapping of the terrain by appropriate independent experts before any changes are considered to the seabed. This would enable the applicant and the consent authority (and submitters such as SPS) to determine the level of effects on the natural features (protected by Policy 16 of the NZCPS under the Act, and under the Act itself), as opposed to an online survey that may well be conducted by unqualified individuals. This in the opinion

of SPS would be a gross indiscrepancy upon the applicant's behalf, if this type of practice was to occur.

SPS are concerned that, inter alia, adverse effects on the wave quality has not been adequately assessed, and the applicant Port Otago has not engaged the correct science to ascertain adverse effects on the surfbreaks wave quality in its Assessment of Environmental Effects report. While Aramoana is a pre-existing dumpsite much smaller amounts than the currently consented volumes has been dumped. Approximately 50,000 cu meters in total has been dumped at Aramoana over the last five years. Port Otago is now looking to dump up to 600,000 cu meters over the next 3 years. The impacts of this massive amount of spoil has not been scientifically assessed to provide, inter alia, a firm and agreeable outcome of no adverse effect on the surf breaks.

In a study by David Kilpatrick in 2005 "**Determining Surfing Break Components at Aramoana Beach, Dunedin**" Kilpatrick stated that: **The fact that waves have been observed to break on the spoil ground suggests that the spoil ground may in fact be reaching its maximum size if is to continue to enhance surf conditions at Aramoana. Once the spoil grounds reach a level where the waves break continuously on the spoil mound, only degenerative effects will be observed in the inshore surf conditions.**



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This graphic suitably describes the effects of a raised seafloor dragging at the base of a swell, similar effects happen over the mound at the spit currently.

The Aramoana site already retains a significant amount of the spoil dumped historically, and SPS is concerned that excessive loading within a short timeframe will increase the size of the mound and dissipate much of the incoming swells energy, along with other possible adverse effects and cumulative effects.

Sufficient particulars must be given with an application to enable those who might wish to make a submission to assess the effects on the environment, and on their own interests, of the proposed activity<sup>3</sup>. The applicant must provide the details and information necessary to enable that to be done. It is submitted that the applicant has failed to do so; for example, the applicant has provided no particulars, or an inadequate assessment of, regarding the likely effect of the proposal generally on the surf breaks of The Spit, Whareakeake and Karitane within the coastal environment and CMA in the relevant existing environment of Otago Harbour and surrounding surf breaks generally. Again, industry best practice in Surfing Impact Assessment (SIA) is well documented and established within institutions and in practice.

The proposal could have significant adverse effects on natural character, landscape and amenity values, ecological values, water quality and the Otago Harbour and surrounding surf breaks environment. This would, inter alia, compromise Policy 16 in achieving the purposes of the Resource Management Act 1991 (the Act), and other provisions in the relevant plans and policy statement prepared under the Act.

The material prepared and given by the applicant is not proportionate to the potential effects of the proposed activity and, moreover, does not allow those who might wish to make a submission (such as SPS) to assess the effects on the environment, and on

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<sup>3</sup> See: AFFCO New Zealand Limited v Far North District Council [1994] NZRMA 224  
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their own interests, of the proposed activity<sup>4</sup>. For example, there is no analysis of the effects on surf break/wave peel angle, vortex ratio, breaker intensity. These are basic principles of wave quality that contribute to the use and enjoyment of the three surf breaks.

In order to assess the effects on use and enjoyment in accordance with Policy 16, it is therefore submitted by SPS that the applicant has inadequately assessed the effects on the use and enjoyment of the natural features (The Spit, Whareakeake and Karitane and other surrounding surf breaks). Use and enjoyment of surf breaks is directly related to the vortex ratio, breaker intensity, peel angle and other basic scientific principles. The applicant has not assessed these aspects in their expert assessment within their application, making it inadequate for the purposes of a hearing that considers what level of use and enjoyment is being gained or lost in regards to a policy (Policy 16) that requires adverse effects on use and enjoyment to be avoided. However, the advice of SPS's experts is that as it is currently proposed, there will be significant adverse effects on the environment. SPS has taken its own independent expert advice from ASR, Dr. Shaw Mead, dated 9 September 2011 which adds weight to our submissions and further develops our reasons for our submission – a copy of which is **attached** hereto.

Therefore, in the opinion of SPS it would be irresponsible for the application to proceed to a hearing in its current state.

Therefore, in order for submitters and the Council to understand the potential effects of the proposal, it is submitted to the Council that further information is required. This would include a Surfing Impact Assessment that addresses the correct science in a way that displays to all of those concerned, the actual and potential effects of the

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<sup>4</sup> Ibid

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proposal on the three natural features (identified as nationally significant surf break under Schedule 1 of the NZCPS and defined in the NZCPS) within the CMA and coastal environment. To date it is considered by SPS that it is not possible to establish the level of effects for the purposes of section 104 of the Act, rather that the current application does not avoid adverse effects as these impacts may be “positive or negative” according to the applicants expert. This displays a lack of scientific understanding. Therefore the principles and purposes of the Act under Part 2, could not be properly assessed, therefore not properly achieved in accordance with the Act, as this application is a discretionary activity, as lodged and notified by the applicant and the Otago Regional Council under section 88 and section 95 of the Act respectively.

It is therefore SPS’s submission that pursuant to section 92 of the Act, further information must be requested by the processing officer of these coastal permit applications in order to carry out the due diligence required by the Act. This will allow transparency throughout the hearings process for all of those concerned, and provide for a much more constructive outcome in regard to the harbour, the surf breaks and the surrounds.

It should be pointed at out at this time that these surf breaks themselves are internationally renowned and are not just frequented by local surfers. People from all over the country and around the world visit these places to use and enjoy them as a recreational resource. In this regard, they have very strong intrinsic value, and they provide for the social, economic, cultural values of people all over the globe. As well as providing for the health and well-being of these users. Surfing New Zealand conducted a recent survey indicating these statistics. In 2005 it was recorded that 70% of New Zealand surfers said they surf for their mental well-being. This proves the social value of surfing. This can be directly related to surfing within the Blueskin Bay area, as SPS has already pointed out, surfing is of high value in this area.

The surf breaks themselves are venues that are pictured in publications regularly that go on sale within several national and international publications. They have been covered this way for decades with the advent of competitive and professional surfing. It is therefore reminded that the breaks do not just concern "local surfers", as the applicants AEE that seeks to consult local surfers. This is another inadequacy in the application. SPS submits to the Otago Regional Council that how can a surf break of international recognition just concern "local surfers". The breaks are known to surfers throughout the country and overseas; this was acknowledged by the Board of Inquiry, this is why they are protected by Policy 16 that was later gazetted by the Minister of Conservation, on the 8 December 2010. It is submitted by SPS that to not assess the scheduled surf breaks accurately (and that the current application does not so this) that this would not achieve that purposes of the Act.

SPS is highly concerned about the actual and potential adverse effects that will or are likely to arise if consents are granted for the proposal; SPS submits that the 'Precautionary Principle' has been overlooked in regard to these issues and to this high public amenity factor, and that the 'Precautionary Principle' must be adopted and applied by the consent authorities in the circumstances of this case.

SPS is concerned that the proposal/proposed activity will result in significant adverse affects on the 'environment' and 'amenity values' (as defined in section 2 Resource Management Act 1991 ("the Act")), ecological, natural character and landscape values.

The relevant, objectives, methods, policies, rules and standards in the relevant District Plan and Regional Policy Statement and Plans were developed and promulgated with a purpose to avoid adversely effecting amenity and landscape values, the character of areas, the natural character of the coastal environment and the environment generally;

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and to protect the quality of all those things and the environment from adverse effects caused by inappropriate subdivision, use and development.

If consents are granted, the proposal/proposed activity will have significant adverse effects on amenity and landscape values, ecological values, the character of the relevant area and the Otago Harbour and surrounding surf breaks environment generally; and will not protect the quality of all those things and the environment. Neither will the proposal maintain and enhance amenity values and/or the quality of the environment. The proposal is inappropriate particularly (but not limited to) in terms of scale and will not achieve sustainable management should consents be granted.

The actual and potential adverse effects of the proposal (that can in fact be ascertained and assessed) cannot be adequately mitigated by the applicant, nor, it is submitted, have they been in the proposal. The proposal will have significant adverse effects on amenity and landscape values, ecological values, the character of the area within which the proposal/proposed activity is situated, the coastal environment and CMA and the Otago Harbour and surrounding surf breaks environment generally in terms of scale, actual and potential effects and cumulative effects that cannot be adequately avoided or mitigated. The adverse effects of the activity on the environment will be more than minor.

The proposal is contrary to and inconsistent with the purpose and principles in Part 2 of the Act and the provisions of the Act generally; the proposal is contrary to and inconsistent with the provisions/objectives/policies of the New Zealand Coastal Policy Statement 1994, the New Zealand Coastal Policy Statement 2010; the proposal is contrary to and inconsistent with the provisions of the relevant plans and proposed plans including (but not necessarily limited to) the Otago Regional Policy Statement and the Otago Regional Coastal Plan.

The proposal fails to achieve the purpose of the Act: the sustainable management of natural and physical resources.

### Activity Status

The applicant has stated the following:

Policy 29 of the recently gazetted New Zealand Coastal Policy Statement 2010 (NZCPS) revokes the requirement for all restricted coastal activities. The NZCPS requires that the RCP be amended to reflect this and where the regional plan has not been updated (as in this case) provides interim effect in removing the RCA status for existing rules within the RCP. Accordingly, only the discretionary activity status applies to this proposal.

Policy 29 of the NZCPS 2010 states the following (bold for emphasis):

### Policy 29: Restricted Coastal Activities

1. The Minister of Conservation does not require any activity to be specified as a restricted coastal activity in a regional coastal plan.
2. **Local authorities are directed under sections 55 and 57 of the Act to amend documents as necessary to give effect to this policy as soon as practicable**, without using the process in [Schedule 1](#) of the Act, with the effect that:
  - a. any activity specified as a discretionary activity and a restricted coastal activity becomes a discretionary activity only;
  - b. any activity specified as a non-complying activity and a restricted coastal activity becomes a non-complying activity only.
3. Any application for a coastal permit for an activity specified as a restricted coastal activity that has been publicly notified before the date the amendments in clause (2) are made **shall continue to be treated as an application for a restricted coastal activity for the purposes of section 117 of the Act**.
4. Any other application for an activity specified as a restricted coastal activity made before the date of the amendments in clause (2), shall be considered as

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a discretionary or non-complying activity in accordance with the regional coastal plan or proposed regional coastal plan's classification and section 117 of the Act does not apply.

Guidance from the Department of Conservation website ([www.doc.govt.nz](http://www.doc.govt.nz), accessed 8 September 2011) states: (bold for emphasis)

*Policy 29 provides that applications publicly notified before a council amends its plan to remove RCAs **must continue to be processed as RCAs**. Applications lodged, but not publicly notified before a council amends its plan to remove RCAs shall be treated as discretionary or non-complying activities.*

The applicant states that the NZCPS revokes Restricted Coastal Activities (RCA). SPS submits this is not accurate in relation to this application. Rather, Policy 29 (as per the guidance from the Department of Conservation website) states that applications publicly notified before a council amends its plan to remove RCAs must continue to be processed as RCAs. In this case, as the applicant has stated, the relevant plan has not been amended. Therefore although the applicant and council may have *treated* the application as a Discretionary activity, the application has been publicly notified, therefore must be *processed* as an RCA.

In light of this, notification by the Otago Regional Council under section 95 of the Act as a Discretionary activity is incorrect, as the Otago Regional Council have not given effect to the NZCPS Policy 29 by amending the coastal plan. Therefore SPS submits that the status quo remains and the proposed activity is a Restricted Coastal Activity. This is in regard to the disposal of 450,000cu per year of dredged material being proposed in and about the Otago Harbour.

***We seek the following decision from the consent authority:***

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That the consent authority places the application on hold under section 95 for the purposes of further information that assesses the use and enjoyment of the surf breaks at The Spit, Whareakeake and Karitane and their surrounds. This information is required for the purposes of section 104 of the Act. This further information request should include an integrated analysis of the CMA, the coastal environment, that includes the swell corridor, and the surfable waves at the scheduled sites in Blueskin Bay (The Spit, Whareakeake and Karitane). This further information is consistent with the definition of 'Surf break' within the Glossary section of the NZCPS. This work should be undertaken by a suitably qualified expert and peer reviewed by the Otago Regional Council to ensure that industry best practice is carried out in relation to the actual and potential effects on the relevant natural features identified in Schedule 1 of the NZCPS. This would be consistent with the approach adopted by Independent Commissioners in the prior application by the Port of Otago for a variation to coastal permits for Project Next Generation, because in the coastal permits issued by Commissioners "industry best practice" was required in monitoring Nationally Significant Surf breaks for the purposes of resource management and accurate application of the Act. In this instance, a fresh application has been lodged. Therefore, to ensure the cases result in consistent case law, it is submitted by SPS that industry best practice must be applied to the assessment of environmental effects for this application.

That the if the consent authority proceeds to a hearing without the above mentioned further information that it refuses, in its overall broad judgement (applicable to a discretionary activity application) to grant consents for the application in its entirety.

That the application be processed as a Restricted Coastal Activity pursuant to 117 of the Resource Management Act 1991. Section 117 of the Act is set out below:

**117 Application to carry out restricted coastal activity**

- (1) An application for a coastal permit to carry out an activity that a regional coastal plan describes as a restricted coastal activity must be made to the regional council for the region concerned, except if the application is made to the EPA under section 145.*
- (2) The regional council is the consent authority in relation to the application for the coastal permit.*
- (3) Any provisions of this Act that apply in relation to an application for a resource consent apply in relation to the application for the coastal permit, except as provided in this section.*
- (4) The consent authority must, after receiving the application, promptly provide a copy of it to the Minister of Conservation and the relevant territorial authority.*
- (5) The consent authority must publicly notify the application.*
- (6) Section 100A does not apply in relation to the application for the coastal permit.*
- (7) The consent authority must delegate, under section 34A, its functions, powers, and duties required to hear and decide the application to 1 or more persons permitted by section 34A(1), including 1 person nominated by the Minister of Conservation.*
- (8) The consent authority must ensure that a notice of its decision on the application is served on the Minister of Conservation under section 114.*



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**Date submissions close:** **5pm Friday 9<sup>th</sup> September 2011**

A copy of your submission must be served on the applicant as soon as reasonably practicable after the service of your submission on the Otago Regional Council

**Address for Otago Regional Council:**

**Otago Regional Council, Private Bag 1954, Dunedin, 9054**

**Address for Applicant:**

**Port Otago Limited, PO Box 8, Port Chalmers, Dunedin 9050  
Attention: Lincoln Coe**

**Application No:** RM11.153.01 – Coastal Permit

**Location:** Pacific Ocean, adjacent to the coast at three sites:

- Heyward Point;
- Aramoana Beach; and
- Shelly Beach.

**Map reference:** At and about the following locations:  
In New Zealand Transverse Mercator 2000 (NZTM 2000)

- Heyward Point - 1420972E 4931573N
- Aramoana Beach – 1421967E 4929934N
- Shelly Beach – 1422203E 49280325N

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Dr. Shaw Mead ASR Report **attached**

9 September 2011

Matt Skellern  
Surfbreak Protection Society Inc

Dear Matt

**Re: Application to Renew Resource Consent for the Disposal of Dredged Material at Aramoana Spit.**

I have reviewed the Application and supporting technical appendices that pertain to potential impacts on the Nationally Significant Surfing Break, Aramoana Spit. My expert opinion follows, with my relevant qualifications attached as an addendum below this.

1. Given the Nationally Significant status of Aramoana Spit, it is very surprising to find that the few references to the surfing break and potential impacts on the surfability of the waves at the break total less than one page. The application refers to “research” and “monitoring” which indicate “positive effects” to the surfing wave quality at the Spit, although neither is presented in the supporting technical documents. In addition, there is no quantification of the surfing wave characteristics that make this break Nationally Significant, no quantification of the physical parameters (e.g. seabed features, wave events, tidal phases, etc) that contribute to make this a Nationally Significant surfing break, and no adequate monitoring proposed – the latter is not possible without first quantify the parameters that make this break Nationally Significant, i.e. baseline data. The large deficiencies in assessing the environmental impacts of continued nearshore dumping at this site and lack of a monitoring regime on which to base the proposed adaptive management are very concerning since there are a number of current issues that could lead to negative impacts on this Nationally Significant surfing Break:
  - a) As described in SPS’s submission in consideration of the capital dredging of the Port, during larger swells waves are already breaking on the nearshore disposal ground, which leads to reduced inshore wave heights;
  - b) Due to uncertainties about the capital dredging for the Port, the nearshore disposal grounds will be utilized first, greatly increasing the volumes of spoil put just offshore of the break (i.e. it would be reasonable to expect that the maximum of 200,000 m<sup>3</sup> will be placed per year, while only 162,293 m<sup>3</sup> has been placed here in the past 5 years);
  - c) A sediment transport pathway out of the Aramoana Spit region has not been identified and it is expected that sediment deposited here will have a long residence time, and;
  - d) There opposing views amongst the surfing fraternity – some are concerned that the break is already overfilled with sand and while in the early years nearshore disposal improved the break, it has been degraded in the last decade with continued nearshore dumping, while others believe it is making little impact, i.e., you cannot base a monitoring programme on the opinion of surfers as proposed in the application.

While there is no doubt that maintenance and expansion of the Ports operations are very important to the city of Dunedin, it should not come at the potential expense of a Nationally Significant surfing break. The research, monitoring, AEE and proposed monitoring citing and described in the Resource Consent renewal application are not sufficient and do not support the claims of positive impacts on the surfing break. The following provides more detail on the parameters of a surfing break, concerns with respect to the current application, and investigations/monitoring that could be applied to develop base-line data and measure changes to the break should Resource consent be granted.

2. The Spit surfing break at Aramoana is designated as protected under Policy 16 of the New Zealand Coastal Policy Statement 2011 (NZCPS). The wave is an asset of significant amenity value because of the high quality of surfing waves breaking there. Primarily, there are 2 fundamental aspects of breaking that determine the quality of a wave in regard to surfing. The first is peel angle, which is related to the rate at which the wave breaks along its crest. The lower the peel angle the faster the wave breaks. If the peel angle is too low the wave breaks faster than the down the line speed achievable by the surfer. If the peel angle is too high the ride is slow which is undesirable. Secondly is the breaking wave shape. It can be quantified by the vortex ratio or described qualitatively by one of four terms: spilling, plunging, collapsing and surging. Wave shape largely determines the range of surfing manoeuvres possible on the wave. Novice surfers are more suited to spilling waves. Advanced surfers generally prefer plunging waves, with steep faces.
3. For anyone with an innate understanding of wave breaking ideal for surfing, the necessity of adequate peel angle and wave shape is quite clear. It is imperative that any assessment of surfing wave quality incorporates both of these wave breaking aspects. Both of these surfing wave parameters are determined by the local bathymetry and the offshore bathymetry that “conditions” waves before they arrive at the break. The shoaling observed at Aramoana is a two phase process. The ebb tide delta of Otago Harbour focusses wave height centrally to Aramoana Beach, as observed by MetOcean Solutions Ltd (2011). Near the shore, the Aramoana dump site again acts as a focus, although the majority of focussing occurs on the ebb tide delta. The result of the focussing of wave energy is longshore gradients in wave height that provide suitable peel angles, the gradients of the nearshore bathymetry are reflected in the shape of the waves observed at the Spit, with both contributing to the high wave quality observed at the Spit.
4. In POL’s AEE (Chpt 6, pg 23) it is stated that “the research undertaken to date indicates that the disposal activity has positive effects in terms of Aramoana surf break”. The research undertaken is with reference to Single’s (2011) report, Appendix C of the AEE. The reference made by Single to surf quality is that “shoaling within the disposal sites has resulted in an improved wave break for surfing at Aramoana” (Appendix C, Chpt 7, pg 22). However, the AEE presents no evidence alongside this statement. If there is no current, detailed baseline information available about the processes acting to create high quality surfing waves at Aramoana, how can future assessments be made of the disposal activities in a comprehensive manner? Single (2011) suggests “observations related to the

resource use of the beaches will provide a means to further assess the sustainability of the disposal operation”. Surfers surf at breaks suited to their personal ability. Surfing wave quality is subjective and ability dependent. If the waves at a given break are not desirable to advanced surfers they may be ideal for novices. Observing the number of users in the water is not a sufficient method for assessing the impacts of spoil disposal on surfing wave quality. To put the issue of wave quality into perspective, New Zealand has a longer coastline than the USA, however, only 17 surfing breaks have been recognized as nationally Significant, including The Spit (Aramoana) and Whareakeake (Murder’s Beach, inshore of the Hayward Point dump site).

5. “Port Otago intends to work with local surfers during the 3 year consent to get a better understanding of the relationship between disposal and surfability at Aramoana, in order to develop a management plan which minimizes any long term negative effects on this surf break.” (Chpt 6, pg 27). As stated previously, surfing wave quality is subjective and does not provide quantitative details of how wave are breaking. The MetOcean Solutions Ltd document states that, with reference to the Aramoanan spoil site, “it is likely that the dredged sediments deposited here will have long residence times. Significant transport beyond this immediate area is likely to occur infrequently and only during high storm conditions”. These points represent the combination of a subjective monitoring programme and the potential slow reversal of negative impacts, that may be compounded by a 5-fold increase in the rate of disposal that has been carried out in the past 5 years. If disposal at Aramoana does take place, and the effects are detrimental, there is potential that the existing high quality, NZCPS-protected standard waves will be lost of a prolonged periods. This approach is not precautionary and does not provide a basis for adaptive management of impacts.
6. Single (2011) states that MetOcean Ltd (2011) provides information about wave shoaling and the surfability of the waves at Aramoana. There is only one paragraph concerning surfing wave quality in any detail in the MetOcean document (Chpt 4, pg 57), and it is done so without reference to any scientific literature or quantification of characteristics that comprise surfability. The effects on focussing creating longshore height gradients are discussed and it is postulated that the focussing process is dependent on seabed mound shape. There is no detailed assessment of surfing wave quality, and no dedicated modelling to determine spoil mound effects. The fundamental aspects of wave shape and peel angle are not discussed.
7. From POL’s AEE, “The effect of continued disposal activity at the Spit Beach disposal ground on wave generation at Aramoana could be both positive and negative” (Chpt 6, pg 27). This statement summarizes the situation at POL and effectively nullifies any dredge disposal activities involving the Spit spoil site, and also indicates that the Environment Effect are unknown. The author appears not to be an authority on nearshore processes as “wave generation” does not relate to the subject matter, and without an adequate assessment of the impacts on surfability is left floundering. Any effects deemed negative are prohibited by Policy 16 as it requires that adverse effects on the use and enjoyment of the surf break be avoided.

8. This exert is from page 27 of the AEE, "In the meantime, on the basis of the specialist work undertaken, the effects on surfing from the on-going disposal activity will not be adverse and is expected to continue to be a positive effect within the term of the consent sought" (POL, AEE, 2011). "In the meantime", is simply not good enough when considering a nationally significant asset. There has been **no** specialist work regarding surfing wave quality on which to base anything. It is not correct to state that the disposal activity will not be adverse and actually have a positive effect. This is because not a single, indicative piece of evidence has been presented.
9. The deposition of dredge spoil will raise the seabed level offshore of The Spit. The shoaling process would be modified and breaking could possibly occur. The reduction in wave height due to breaking would compromise the longshore wave height gradients that provide the surfable peel angles at the Spit. Preliminary modelling that we have recently undertaken indicates that if 60% of material remains onsite (at maximum dumping volumes of 200,000 m<sup>3</sup>), breaking on the nearshore disposal mound will be a regular occurrence within 3 years. That is, there will be significant impacts, however, how these relate to surfability has yet to be determined.
10. The focus has been on The Spit at Aramoana, where the spoil ground is closer to the beach and is easily observed. However, the same concerns can be applied to Whareakeake. It is possible that spoil deposition could have no impact on the break, or enhance wave quality at The Spit. However, there has been no data collection, data analysis and application of empirical and numerical models to consider existing conditions and potential impacts, nor has anything close to an adequate monitoring programme been put forward. As a result, the areas of the AEE pertinent to impacts on Nationally Significant surfing breaks have made with any degree of confidence or substance. Without undertaking an adequate AEE to consider the impacts on the breaks, a precautionary approach should taken and consent to dispose of 200,000 m<sup>3</sup> of material just offshore of Nationally Significant Surfing Breaks should not be granted; further information is required. At present there is insufficient information to discern what the impacts will be on the quality of the surfing waves resulting in no understanding of ways to avoid, remedy or mitigate any adverse effects of disposal activities on the surfing environment.
11. It is recommended that a thorough baseline investigation is undertaken, an adequate AEE of the impacts of continued nearshore disposal on the surfing wave quality is undertaken, and should these studies indicate that there will be insignificant to minor impacts, a monitoring be developed and undertaken to ensure that deterioration in wave quality is prevented should the study's conclusions be wrong. There are a range of surf quality monitoring programmes being applied world-wide that could be utilized following the identification and quantification of the existing wave-quality parameters at the two Nationally Significant surfing breaks that could be effected by nearshore dumping, should the AEE indicate that these impacts will be minor or less. The most obvious and cost-effective monitoring would utilize remote video monitoring that can be used to assess wave breaking parameters of peel angle and breaking intensity.

Yours truly,



Dr. Shaw Mead  
(Technical Director)

**ASR Marine Consulting and  
Research**

**New Zealand Office:**  
1 Wainui Road, PO Box 67,  
Raglan, New Zealand.  
Ph. .+64 7 825 0380  
Fax. .+64 7 825 0386

**Los Angeles Office:**  
1212 Abbot Kinney Blvd. STE C  
Venice, CA 90291  
United States  
Ph. +1 310 664 883

**Indian Office:**  
House No. 316, AKG Nagar,  
Peroorkada,  
Trivandrum - 695005,  
Kerala, India  
Ph: +9194 4612 5731

**UK Office:**  
[b.sullivan@asrltd.com](mailto:b.sullivan@asrltd.com)  
Direct Line: +4420 8123 8881  
Mobile: +4479 4913 4659  
Skype: ben.sullivan\_asr



**I, Shaw Trevor Mead, of Raglan, Environmental Scientist, swear:**

1. I hold BSc and MSc (Hons) degrees from the University of Auckland (School of Biological Sciences), and a PhD degree from the University of Waikato (Earth Sciences). I am currently an environmental scientist and Technical Director at ASR Ltd, which is a marine consulting and research organisation. I have 18 years experience in marine research and consulting, have 40 peer-reviewed scientific papers, and have solely or jointly produced over 200 technical reports pertaining to coastal oceanography, marine ecology and aquaculture. I have undertaken over a thousand research and consulting SCUBA dives around the coast of New Zealand and led many comprehensive field investigations that have addressed metocean, biological and chemical components of the coastal environment. I am affiliated to the New Zealand Marine Science Society and the New Zealand Coastal Society (IPENZ).
2. I have a background in coastal oceanography, marine ecology and aquaculture. I studied for my MSc degree at the University of Auckland's Leigh Marine Laboratory, undertaking subtidal research there from 1994 to 1996 directed at the fertilisation success of sea urchins as a basis for the sustainable management and development of the commercial market. The marine ecological components of my Doctorate were directed towards subtidal habitat enhancement of marine structures, while the physical oceanography component was focussed on understanding the effects of coastal bathymetry on surfing-wave breaking characteristics using field measurements and hydrodynamic numerical modelling. More recently, I have been involved in a wide range of coastal consulting and research projects that have included the design of coastal structures and developments, and assessments and monitoring of physical and ecological effects of marine construction, coastal erosion control, marine reserves, dredging, outfalls, oil industry, aquaculture ventures and various other coastal and estuarine projects that have included hydrodynamic (waves and currents), sediment transport and dispersion modelling (including contaminants, suspended sediments, freshwater, hypersaline water, nutrients and petro-chemicals).