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Opportunities for Improved Surfbreak Management in New Zealand

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Cover Photos



The Destruction of Ponta Delgada, Mederia, Portugal. Image from Henry, 2011



An example of the quality surfbreaks found in New Zealand. Image by author.

Acknowledgements

I would first like to thank my supervisor Ian Luxmoore. His analytical advice, guidance and encouragement was much appreciated. Also, I would like to thank the other BRP lecturers who have guided me not only in this research project but through my entire degree. Further I would like to thank all those who took the time to discuss my topic and help me better understand where I could aim the purpose of this report. Also those from the Surfbreak Protection Society who took the time to respond to my emails, I always received a welcoming and useful reply. I would also like to thank the Surfbreak Protection Society for their efforts in protecting surfbreaks from inappropriate coastal developments thus far. After completing this research project I appreciate the amount of work you have done so much more.

Abstract

Examples of surfbreak degradation show that surfbreaks in New Zealand are under threat from coastal development. This research project "*The Opportunities for Improved Surfbreak Management in New Zealand*" investigates how the current system of surfbreak management can be improved in New Zealand to prevent this surfbreak degradation. For this reason, the components of effective surfbreak management and international examples of these components in practise were identified then used to evaluate current surfbreak management in New Zealand. The findings show that there are opportunities to improve on the current system through improved integrated management structures, implementation of improved marine spatial data, increased awareness of the value of surfbreaks, improved monitoring practices, and ensuring access to surfbreaks. Also identified is the need for non-statutory surfbreak management to compliment statutory measures.

The coast is never saved; it is always being saved. Peter Douglas.

Contents

1. Introduction.....	1
2. Background.....	4
2.1. The complex nature of surfbreaks and the importance of protection.....	5
2.2. Threats to surfbreaks	6
2.3. Examples of surfbreak degradation and loss of access.....	7
2.3.1. Ponta Delgada, Mederia, Portugal.....	7
2.3.2. Whangamata Bar, New Zealand	9
2.3.3. Broadbench, Kimmeridge Bay, Britain.	9
2.3.4. Salsipuedes, Baja, Mexico	9
2.4. Surfing based literature	11
3. Method	13
4. Theory and Practice of Surfbreak Management	16
4.1. Integrated management structures.....	17
4.2. Surfer and community involvement and engagement	19
4.3. Proactive management	20
4.4. Awareness of the value of surfbreaks	20
4.5. Marine spatial data	22
4.6. Monitoring.....	23
4.7. Access provisions.....	24
5. Current Situation of surfbreak management in New Zealand.....	26
5.1. Surfbreak management in New Zealand.....	27
5.1.1. Legislative Surfbreak Protection in New Zealand	27
5.1.2. Non statutory and informal surfbreak protection in New Zealand.....	29
5.2. The performance of New Zealand surfbreak management.....	30
5.2.1. Components met.....	30
5.2.2. Components partially met	30
5.2.3. Components not currently being met	32
6. The opportunities for improved surfbreak management in New Zealand	34
7. Conclusion	39
References	41
APPENDIX 1.....	46
APPENDIX 2.....	48
APPENDIX 3.....	48

List of Figures

Figure 1: Components which comprise the bathymetry of high quality surfing waves.	5
Figure 2: A high quality "hollow" surfing wave.....	6
Figure 3: A "fat" wave breaking in deeper water.	6
Figure 4: Photos showing the destruction of the wave at Ponta Delgada on the island of Madeira, Portugal.....	8
Figure 5: Bathymetric evidence from the Surfbreak Protection Society	10
Figure 6: The number of citations for each research based surfing literature category.....	12
Figure 7: Surfbreak mapping for the Cronulla National Surfing Reserve, Australia	23
Figure 8: The main stages of the WSR programme.	24
Figure 9: An example of surfbreak mapping using community consultation	28
Figure 10: An example of marine spatial planning and surfbreak mapping.....	36

Abbreviations

AUD – Australian Dollar

ANSR – Australian National Surfing Reserve

ASR – Artificial Surfing Reef

BBSRCMP - Bells Beach Surfing Reserve Coastal Management Plan

ICM – Integrated Coastal Management

MoD – Ministry of Defence

NGO – Non Governmental Organization

NZCPS – New Zealand Coastal Policy Statement

RMA – Resource Management Act (1991)

SAS – Surfers Against Sewerage

SPARC – Sport and Recreation New Zealand

SPS – Surfbreak Protection Society

WSR – World Surfing Reserve

1. Introduction



Surfing has come from being a fringe sport to a billion dollar industry with over 10 million surfers worldwide (Buckley, 2002). Figures from a survey undertaken by Sport and Recreation New Zealand (SPARC, 2007/2008, p. 3) show that surfing/bodyboarding is ranked 24th for participation levels in New Zealand, just three places lower than rugby and comparable with hunting and four places higher than netball (as shown in APPENDIX 1). However, there is little doubt that surfing interests are rarely considered in the scheme of recreational activities in a manner such as rugby or netball. While these figures show that surfing is a popular sport, research also show how areas which provide surfers with quality surfing waves have associated economic benefits. Surfing can now be seen as a major economic activity where monetary value can be placed on surfbreaks (Lazarow, 2007). For example a popular surfbreak in Australia; South Stradbroke Island, is thought to add \$AUD 20 million to the local economy (Lazarow, 2007, p. 17). The focus of this research report is not surfers, although they are the interest group concerned, but rather the surfbreaks which are used by surfers. Surfbreaks are inherently formed by a very complex relationship between a number of varying factors and very sensitive to changes in environmental conditions and coastal infrastructure (discussed in section 2.1) (Eberlien, 2009). As the popularity of coastal living and development grows, so too does the pressure on coastal resources. Therefore, the protection from of surfbreaks inappropriate coastal activities and developments is an issue which requires increasing attention from decision makers.

Because surfbreaks are found exclusively within the coastal zone, it is the responsibility of coastal planners and managers to ensure that coastal development does not lead to the destruction of, or loss of access to, surfbreaks. Furthermore, because surfbreaks are natural features which are not “owned” they form part of the public realm for which planners are responsible. Along with this, surfbreaks can viewed as part of the natural character of the coastal environment, which are provided under S6 (a) of the Resource Management Act, 1991 (RMA). Policy makers have also specifically included surfbreak management into national level coastal policy through the inclusion of surfbreaks into section Policy 16 into the New Zealand Coastal Policy Statement, 2010 (NZCPS). Despite this, degradation and loss of access to surfbreaks is something which has occurred. Examples such as the Whangamata Bar and the degradation since the construction of the Whangamata Marina (as discussed in section 2.3 of this report) serve as a reminder that surfbreaks in New Zealand are still under threat from development under the current system of surfbreak protection. As a result, there may be opportunities for improvement on the current system of surfbreak management in New Zealand.

This research project will identify the opportunities for improved surfbreak management in New Zealand. In order to do so, this project is comprised of 6 main chapters. Chapter 2 gives a background of surfbreaks and the importance of their protection as well as providing examples of how surfbreaks have been destroyed, damaged or lost public access in the past. Chapter 3 outlines the method used to answer the research question, then chapter 4 identifies what the literature in identifies as crucial components to achieving effective surfbreak management. In addition chapter 4 identifies international examples of these components in practice. The 7 components and international examples of effective surfbreak management are then used to assess the current performance of surfbreak management in New Zealand in chapter 5. The components which can be improved on or are not currently being met can be seen as gaps where there is an opportunity to improve surfbreak management in New Zealand. Therefore, chapter 6 discusses the opportunities for improving on the current system of surfbreak management in New Zealand. The conclusions of this report are then given in chapter 7.

2. Background



2.1. The complex nature of surfbreaks and the importance of protection

There is an almost mystical combination of swell, wind, tide, ocean currents, and sea floor morphology which creates a surfbreak. Researchers have undertaken numerical and physical modelling of surfbreaks in order to quantify what makes a quality surfbreak and what impacts coastal engineering can have on these (e.g. Black and Andrews, 2001; Mead and Black, 2001; Black and Mead, 2009; Benedet *et al*, 2007) but thus far the design of a high quality artificial surfing wave has been unsuccessful.

In an attempt to recreate quality surfing waves researchers have developed a body of literature regarding the construction of Artificial Surfing Reefs (ARS's). At the most simple level, the peel angle of a surfing wave should be 45° on the basis that 30° is desirable for beginners and 60° is desirable for experienced surfers (Pattiaratchi, 1997). However this is argued by Black and Mead (2009), who state that simply placing a “boomerang” shaped reef in the ocean will not result in high quality wave, as high quality surfing waves depend on more than a simple seafloor morphology to form. Research into world class surfbreak seafloor morphology adds to this argument. The bathymetric configurations of high quality surfbreaks show this complexity, as well as the range of meso scale components which make a high quality surf break, as shown in Figure 1.

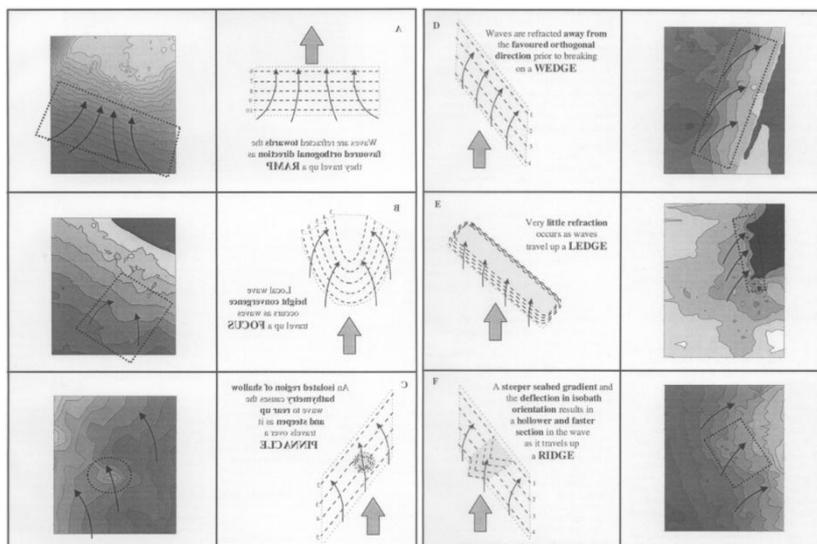


Figure 1: Components which comprise the bathymetry of high quality surfing waves. The isobaths of components become shallower in the direction of wave propagation and the large arrows show the wave direction. From Mead and Black, (2001).

Furthermore, it is not only the morphology of the sea floor which determines the quality of a surfing wave. Swell corridors, offshore features which focus swell, headlands which refract swell and sediment transport which shape the sandbars can also impact upon the quality of surfing waves. As such, the complexity of what makes a surfing wave is near endless. Different combinations also make different waves. High quality surfing waves are often shallow which makes the wave stand up

and become “hollow”, while waves more suited to beginners break in deeper water and are what surfers refer to as “fatter” waves. The different types of waves are shown in figures 2 and 3. The protection of both high quality surfing waves and “fatter” waves is important and they are both affected by inappropriate development and loss of access.



Figure 2: A high quality "hollow" surfing wave. This particular wave requires a combination of a river bar being open along with pristine conditions before it forms a quality wave. Photo credit: Paul McCurdy.



Figure 3: A "fat" wave breaking in deeper water. Note the lack of a steep face of the wave when compared to figure 2. Photo credit: Surf2surf (2012).

Because of the complex range of factors which must come together to make surfing waves, these are not easily replaced or recreated using coastal engineering projects such as ASR's. As a result, surfbreaks can be viewed as a resource that once damaged or lost will be at the very least extremely difficult to repair, if not impossible to recreate based on current knowledge. Therefore, protection of existing surfbreaks is critical to ensure they are able to be enjoyed by current and future generations of surfers.

2.2. Threats to surfbreaks

The popularity of sea views and coastal living has meant that urban coastal communities have needed to expand to cater for the growing population. The expansion of coastal settlements can negatively affect the environment if poorly managed. Humans have the ability to undertake major modifications to the natural character of the coastal environment. For example the construction of coastal structures such as groynes, or the straightening of a river upstream from the coast which impacts sediment yields can have unintended environmental effects (Eberlien, 2011; Kay and Alder, 1999). In the past there has been a trend of looking at single issues (e.g. erosion) or single sector (e.g. marine transportation) management applied to coastal engineering projects (Scarfe *et al*, 2009a; Scarfe, 2008). This approach means development may go ahead before full assessments of the negative impacts have been undertaken (Scarfe *et al*, 2009a). Furthermore, no peer reviewed methodological studies of the impact of coastal activities on surfbreaks have been published (Scarfe

et al, 2009a). This has been identified as a contributing factor to why surfbreaks are often overlooked as part of the assessment of affects from coastal development (Scarfe *et al*, 2009a). As a result, past developments have gone ahead without full consideration of the negative impacts they may have on surfbreaks. As discussed in the previous section, surf breaks are made of complex, dynamic systems, therefore they are very vulnerable to activities within the coastal zone. The following have been identified as the major threats to surfbreaks:

- Development of structures in the coastal zone such boat ramps, ports and marinas, seawalls etc. (Refer to section 2.3.1).
- Sediment transport or removal such as dredging, dumping of dredging spoil, artificial nourishment etc. (Refer to section 2.3.2).
- Coastal development and land use pressure impacting surfer's ability to access surfbreaks (Refer to section 2.3.3 and 2.3.4).

(Eberlein, 2011).

Because surfbreaks are not anything without surfers, the ability for surfers to access and use surfbreaks is just as important as their physical protection.

2.3. Examples of surfbreak degradation and loss of access.

This section gives examples of developments and access issues in the coastal zone which has led to the degradation and loss of access to surfbreaks. While a full list is outside the scope of this study, an extensive list of surfbreaks around the world which have been damaged or destroyed through coastal development can be found at the Save the Waves Coalition website.

2.3.1. Ponta Delgada, Mederia, Portugal

Madeira is an island located in the Atlantic Ocean which is governed by the Portuguese. The island has been well known for its high quality surfbreaks since the 1970's when it was first surfed (Henry, 2011). Madeira is also a place where examples of some of the most inappropriate and detrimental developments in regards to impacts on surfbreaks. The main way in which surfbreaks have been both damaged and destroyed on the island is through the construction of seawalls (Henry, 2011). While surfbreak protection campaigns helped to save some of the waves on the island there are examples of waves which have been damaged or destroyed; the most obvious is the wave which was formally found at Ponta Delgada. Here a seawall was constructed in order to protect a previously wave damaged swimming pool. The government gave no public warning that the project was going to go ahead or that it would destroy the wave, some suspect in order to prevent opposition (Save

the Waves Coalition, 2012a). Prior to the construction of the seawall the wave was known to be a world class point break, with 200m long rides running down the point. This is shown in the pre seawall construction photo in Figure 4. However, after the seawall was built, the wave was completely destroyed, as shown in post seawall construction photo in Figure 4.



Figure 4: Photos showing the destruction of the wave at Ponta Delgada on the island of Madeira, Portugal. The top photo shows the wave prior to the construction of the seawall and the bottom photo shows how the wave has been affected post seawall construction. The pool that the seawall was built to protect is can be seen to the left in each photo. Photos from Henry, (2011).

2.3.2. Whangamata Bar, New Zealand

The Whangamata Bar is a world renowned sandbar surfbreak formed by sediment which flows from the Moana anu anu stream and Whangamata edd tidal delta (Surfbreak Protection Society, 2012). The surfbreak received a 10/10 rating from the Wavetrack surfing guide, making it eligible for protection under the NZCPS 2010 where it is included as surfbreak of national significance. However, after fierce legal battles the construction of the Whangamata Marina commenced in 2008. This development included a resource consent that allowed the removal of 157,000 cu metres of mud and sand as well as the dredging of 6000 cu metres of material for the next 35 years (Surfbreak Protection Society, 2011). This sediment removal would occur within the Whangamata edd tidal delta, approximately 1km from the Whangamata Bar, which quality depends on the sediment being delivered from the tidal delta. Since the Whangamata Marina project has commenced, local surfers, scientists and the Waikato Regional Council are in agreement that the Whangamata Bar has lost its form (Surfbreak Protection Society, 2012). The wave is now even described by one individual as “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” (Surfbreak Protection Society, 2012, p. 5). Bathymetric surveys support this claim. A green hole is clearly shown in the middle of the break, as shown in Figure 5. This hole is what causes the wave to “fatten out” through this section, making for a lesser quality ride.

2.3.3. Broadbench, Kimmeridge Bay, Britain.

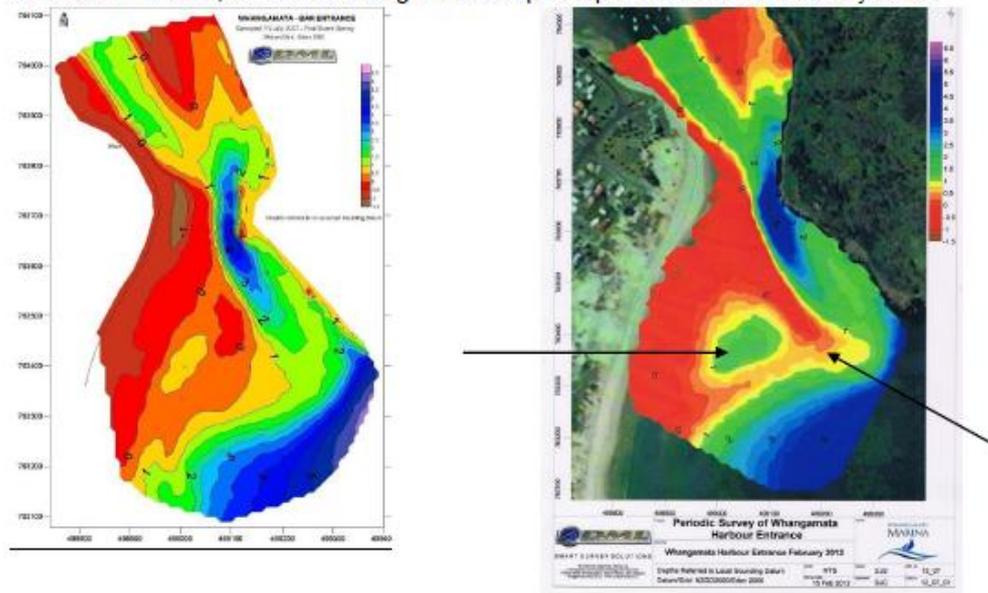
As discussed, it is not only the physical degradation of surfbreak which impacts upon surfer’s ability to use and enjoy surfbreaks. An example of loss of access to a surfbreak is the case of Broadbench, Kimmeridge, in the south east of Britain. The surfbreak, known as one if the beast in Britain, is located on the outer boundary of a Ministry of Defence (MoD) firing range (Save the Waves Coalition, 2012b). Due to a change in military manoeuvres the wave became in range of a training bombing run. As a result, access to the high quality surfing wave was closed to the public. Currently Surfers Against Sewerage are rallying for the MoD to change back to their previous military operations which did not restrict access (Cummins, 2012).

2.3.4. Salsipuedes, Baja, Mexico

Another case of lost access due to coastal development is Salsipuedes, Baja, Mexico, where surfers who are accustomed to giving the local family a few dollars to park and surf the waves are now being turned away by security guards. The area has been subject to huge coastal developments marketed to Americans as affordable coastal living (Save the Waves Coalition, 2012c). The development, once completed, “will have a boutique hotel and a mix of condos, homes and estate-size lots plus a

commercial village with stores, cafes and restaurant. Salsipuedes will become a retirement or vacation haven of 2,680 residences and guests in the five planned village hotels” (Save the Waves Coalition, 2012c, p.1). Although members of the Surfrider Foundation attempted to keep the development surfer friendly, public access was lost (Save the Waves Coalition, 2012c).

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

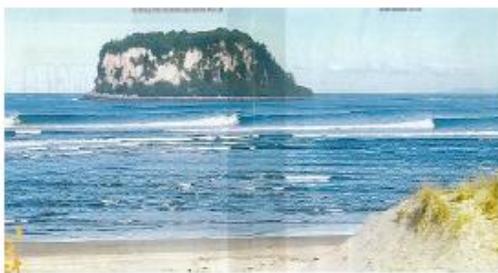


Figure 5: Bathymetric evidence from the Surfbreak Protection Society that the dredging of the Moana anu anu stream and Whangamata tidal eddy has had a negative impact on the Whangamata Bar. Note the green “hole” that has appeared in the February 2012 image. Image from Surfbreak Protection Society, (2012, p. 6.)

2.4. Surfing based literature

The body of literature regarding the existing framework of knowledge around surfing is deficient. No detailed methodological studies on the effect of coastal activities specifically on surfbreaks have been published (Scarfe *et al*, 2009a). While there are some examples of published reports which outline degradation of surfbreaks and how the government has failed to protect these (Surfbreak Protection Society, 2012; Eberlein, 2011, Scarfe *et al*, 2009a), much of the literature regarding surfing has a focus on the feasibility, construction and management of artificial reefs, rather than the protection of existing surfbreaks. For example, Mead and Black (2001) give a detailed account of the bathymetric configurations which result in high quality surfing waves. The work is a major component of the world surfbreak database and provides essential information regarding the design of manmade surfbreaks (Mead and Black, 2001). While the numerical studies add to the information available regarding surfbreaks (and therefore surfbreak protection) the quality of surfbreaks can only be monitored using empirical methods, i.e. the level of quality the surfers consider the wave to be (Battjes, 1974).

There is also very little in the way of literature regarding the economic value of surfing and the monetary value of surfbreaks (Lazarow, 2012). Research shows that a single popular surfbreak can generate \$20 million AUD per annum (Lazarow, 2007). Research into the economic value of surfing adds to the literature on surfbreak protection as this information is important for providing another aspect of surfbreak protection beyond environmental protection.

The lack of literature regarding surfbreak protection and management reflects how it is a new area of coastal research (Scarfe *et al*, 2009). The work by Scarfe *et al*, (2009a; 2009b) Peryman (2011a; 2011b, 2011c) and Skellern *et al*, (2009) make up the majority of the literature regarding surfbreak protection in New Zealand. Corne (2009) shows how globally, the protection of surfbreak from inappropriate development is still not widespread. While surfbreak protection management is in place, there is no apparent literature which critiques the effectiveness of each of these methods of protection.

Scarfe *et al*, (2009b) have recorded the number of citations for each research based surfing literature category between 1970 and 2007. This data clearly shows the concentration of ASR development in the surfing literature. Figure 6 shows an adapted version of the findings by Scarfe *et al* (2009b) which clearly shows the distribution of topics in the surfing literature.

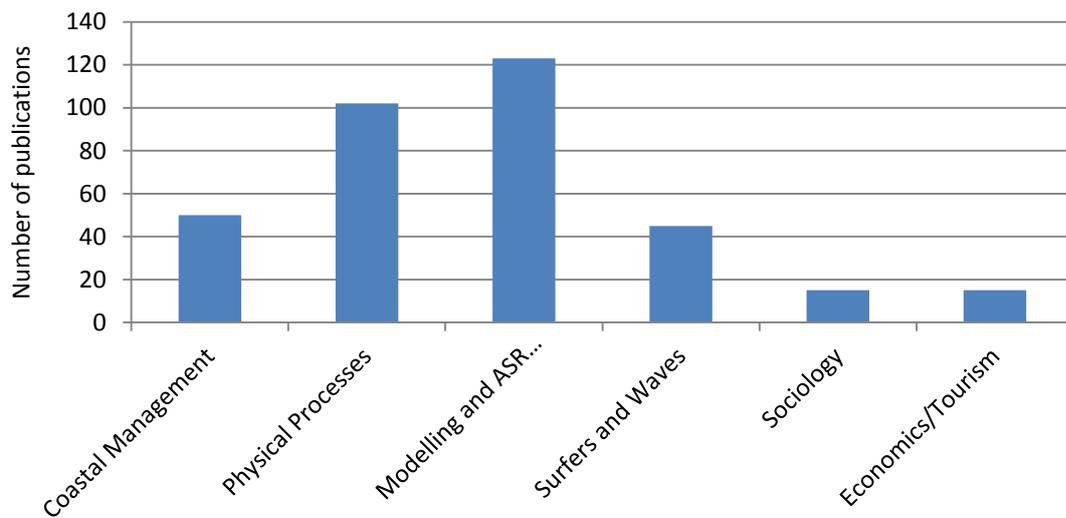


Figure 6: The number of citations for each research based surfing literature category between 1971 and 2007. Adapted from Scarfe *et al*, 2009b, p. 540.

While there limited literature about surfbreak management, there is no shortage of literature of coastal management and the importance of Integrated Coastal Management (ICM) (Peart, 2005; Peart, 2012; Kay and Alder, 1999). This literature helps to form a more detailed report as surfing is undertaken exclusively in the coastal zone, therefore falls under the scope of coastal management. For this reason, throughout this report coastal management is used to explain theories which can relate to surfbreak management. What is clear is that there is still room for further work towards complete surfbreak protection. The next step towards surfbreak management in New Zealand is to identify the opportunities that are in place for surfbreak management in the future. The purpose of this research, therefore, is to identify these opportunities and provide a way forward for continued surfbreak protection following the efforts made thus far.

3.Method



The purpose of this research project was to identify the opportunities for improved surfbreak management in New Zealand. To achieve this, the existing literature on surfbreak management was used to identify what key components make for effective surfbreak management. The international examples then helped to show how these components have been put into action overseas. The components of surfbreak management and the international examples were identified using document analysis. This method was chosen because it allowed for information to be extracted from a wide scope of resources. Also, the document analysis method allows for latent content to be identified within the existing literature (Krippendorff, 2004). This was important as the information regarding the effective components of surfbreak management was not always made apparent in the content analysed. The resources reviewed included:

- Books regarding coastal management.
- Journal articles regarding surfbreak management.
- Reports on surfbreak management.
- Online videos of seminars and presentations regarding surfbreak management from experts in the field.

The basic steps of this research report was to identify the components of effective surfbreak management, evaluate the current system of surfbreak management in New Zealand based on these components, identify alternative methods of surfbreak management from overseas, then finally to identify the opportunities for improvement based on the gaps in the current situation in New Zealand and the ways in which overseas examples meet these. The expected result was to identify a number of ways in which the current system of surfbreak management can be improved based on information from around the world on surfbreak management.

The first phase of research involved identification of the components of effective surfbreak management. As the information was reviewed, key were identified. The themes came from both emphasis and direct information, such as the need for ICM in Scarfe *et al*, (2009a), as well as themes which were frequently discussed. This included the need for community involvement in surfbreak management and the usefulness of marine spatial data in achieving improved surfbreak management. These then formed the components of surfbreak management, which are included in chapter 4 of this report.

The next stage of research was to identify international examples of surfbreak management. These were selected in order to provide information on how the components of surfbreaks management are being practiced. These were then analysed to identify opportunities to improve on the current

system. To be selected, the alternatives had to be compatible with New Zealand's institutional structures to ensure the capability of implementation into the New Zealand system. They also had to manage surfbreaks with similar geophysical and geographical characteristics to New Zealand. This was to ensure that surfbreak management structures which have been developed for specific types of surfbreaks such as coral reef surfbreaks, which are not found in New Zealand, would be omitted. Furthermore, the alternatives needed to have enough information on them available to determine how well they meet the components of effective surfbreak management identified in the following section.

The components of surfbreak management identified were then used as a basis on which to analyse the current system of surfbreak management in New Zealand. The information and data needed to assess the current situation came from the first two phases of research where the components of effective surfbreak management and examples of these in practise were identified. These then showed what components in the current New Zealand system were being met, what was being partially met and what wasn't being met. Those which were being partially met or not met then showed where there were opportunities to improve on the current system.

The final phase of this research project was to then show the opportunities for improved surfbreak management in New Zealand with both the information found from the components of effective surfbreak management as well as from the overseas examples.

Limitations

As mentioned in the literature review, the protection and management of surfbreaks is a relatively new topic in coastal research. Therefore there is not a lot of literature or other information regarding the management of surfbreaks. This meant that only the surfbreaks management structures which had sufficient information available could be used as alternative methods of surfbreak management. However, because it was only the components included within this literature that was being identified, this did not hinder the project.

4. Theory and Practice of Surfbreak Management



This section includes the 7 key components of surfbreak management identified within the literature. These are; Integrated management structures; surfer and community involvement, proactive management, awareness of the value of surfbreaks, marine spatial data, monitoring, and access provisions. Examples are then given to show how these components are being practised under international surfbreak management systems. It was identified that these components interrelate and the provision of one component will add to another. For example the use of marine spatial data will improve ICM. This chapter is the first phase of identification of the opportunities for surfbreak management in New Zealand.

4.1. Integrated management structures

It has been identified that past resource management has been narrowly focused and disjointed leading to dissatisfaction with environmental outcomes (Margerum and Born, 1995). As a result, approaches which provide a more holistic model for environmental management have come to change the way in which environmental and resource management is undertaken. While there are a range of more holistic environmental management approaches (such as those outlined in Margerum and Born, 1995; Slocumb, 1998 and Naveh, 1998), it has been identified that integrated management is vital to any coastal management structure and integration is the most common theme in the literature to achieving effective sustainable management of surfbreaks (Peart, 2008; Scarfe, 2008; Eberlein, 2011). Definitions for ICM are abundant (e.g. Hildebrand, 2002, p.3; Cicin-Sain and Knecht, 1998, p.4), and there is no universally accepted definition. However, all definitions imply that ICM is the alignment between government, coastal communities and science, as well as the inclusion of interacting natural processes which affect the coastal environment in order to plan for, manage and protect the coastal resources and environments. This is an alternative to the sector based approaches which fail to address complexities of coastal environments in the past (Kannen *et al*, 2008).

It is important when developing more pragmatic discussions about how surfbreak management can be improved to identify who and what needs to be integrated then analyse coastal and surfbreak management structures based on this. Integration should include the following dimensions:

- Horizontal integration which has regard to socioeconomic and ecological aspects.
- Vertical integration of various administrative bodies, at different levels of communication. This includes; international cooperation, national, regional and local level government as well as NGO's.

- Territorial integration taking into account the interrelations between the land and the sea, the terrestrial, estuarine, littoral and offshore components of the coastal zone. This means that there is recognition that activities undertaken in areas away from surfbreaks, such as estuarine environments and swell corridors, can still have major impacts on surfbreaks.
- Integration through public participation and education of the coastal environment.

Adapted from Cicin-Sain and Knecht, (1998); Peart, (2008).

International example – Bells Beach Surfing Reserve Coastal Management Plan

Bells Beach is arguably the home of surfing in Australia and therefore an iconic part of the Australian coast. Because of the status of the area, the Surf Coast Shire authorities have developed the Bells Beach Surfing Reserve Coastal Management Plan (BBSRCMP) under the Coastal Management Plan for the Surf Coast Shire. This management structure is a good example of integration between Federal, state and local government (which in New Zealand would equate to national, regional and local government) as well as being a good example of community involvement in a surfbreak management plan. Community involvement and consultation was a major part of the development stage of the management plan and community values are included within further adding to ICM. There are also cases of terrestrial integration. The BBSRCMP takes into account inland areas and the importance of these to surfbreaks in the area. These are included as designated areas under the plan.

The policies and strategies that form the BBSRCMP come from all levels of government to ensure vertical integration. The Bells Beach recreation reserve is included as a 'listed place' on the registrar of the national estate, meaning that the reserve is recognised at the national level. At the state level, the reserve is included under the Victorian Heritage Register due to its historical and social significance to the state of Victoria. Along with this, the reserve is included in a number of regional documents including the Victorian Coastal Strategy (2008) and the Central West Victoria Regional Coastal Action. The management responsibilities of the reserve belong to the Surf Coast Shire, who is required to manage the reserve in accordance with the Victorian Environment Assessment Council recommendations from 2004 and the Victoria Coastal Strategy 2008 (Surf Coast Shire, 2010). However, any use or development of the reserve requires consent from the Australian Department of Sustainability and Environment (Surf Coast Shire, 2010).

4.2. Surfer and community involvement and engagement

Surfer and community involvement has been identified as one of the most critical components of surfbreak management, especially for non-statutory surfbreak protection (Farmer, 2011; Lobo, 2011; Nelson, 2011; Guerra, 2011). In order for management of surfbreaks to be effective and achieve positive outcomes, the surfers within the community should be made part of the planning process for any activity which will affect surfbreaks. This is similar to how local iwi groups are consulted in regard to development projects which will affect their native land. This helps to inform surfers of proposed developments before they begin as well as incorporating information from local surfers into the decision making process. Local knowledge can be used from surfers within the communities to develop the best plans and planning outcomes for that area. Also, a high level of public engagement will ensure that if surfers notice a surfbreak is being affected by an activity they are able to report this and have the situation resolved (Cummins, 2012). The ultimate goal for surfer and community involvement is to become involved within the planning process before developments go ahead.

International example – United Kingdom and non-statutory surfbreak protection

While the UK may not be known as a surfing destination, there is a large local surf population and high quality waves in the area. The UK is unique to the other examples of surfbreak management as there is no overarching national coastal management legislation (Cummins *et al*, 2004). Management of the coastal zone falls under statutory and non-statutory instruments which are aimed at guiding the development of certain sectors, rather than geographical areas (Cummins *et al*, 2004). Due to the lack of legislative surfbreak protection in the UK, the main group involved in the protection of surfbreaks is Surfers Against Sewerage, or SAS (Cummins, 2011). While the name implies that they are concerned only with the water quality of surfbreaks, they have grown into a large organisation that is recognised as the people to go to if local communities' surfbreaks are threatened by development.

The UK is an example of how surfbreak management can be undertaken through community involvement and engagement. Community support is the main factor which is needed for non-legislative protection to be effective and this has been a critical factor in the successes of SAS in surfbreak protection. Non-statutory measures rely on community involvement and participation in order for their views to be considered. It has been identified that surfers are able to approach SAS if they think that a development is going ahead that will potentially affect a surfbreak. This shows there are high levels of public engagement with SAS and the surfers (Cummins, 2012).

4.3. Proactive management

Any surfbreak management needs to be proactive in the protection of surfbreaks. This is a very important factor in ensuring surfbreaks are not degraded. As mentioned in section 2.1 of this report, surfbreaks are extremely difficult, if not impossible to repair or replace if damaged as no artificial reef projects in New Zealand can be deemed completely successful in regard to creating high quality surfing waves. Therefore, the only way that surfbreak management will be effective is if it prevents any form of activity which may potentially affect a surfbreak before it happens, rather than attempting to stop or remedy the issues once they have occurred. Proactive management can include initiatives such as educating the public, ministers, and developers on the importance of surfbreaks to not only surfers to entire coastal communities. This proactive approach also means that the value of surfbreaks is recognised by the general public, further enhancing surfbreak management.

International example – Australian National Surfing Reserves

Australia is well known for its quality surfbreaks and remains a country where its people interact recreationally with the surf zone (Farmer, 2009). As such, there has been an effort to ensure that significant surfing areas of national importance are managed and protected from inappropriate development. The ANSR's have set out to redefine surfers as "anyone who interacts with the surf or surfzone for recreation". This broader definition helps to steer away the view that surfers are a fringe group in an attempt to gain maximum political leverage (Farmer, 2011). The ANSRs give the same level of protection as a marine park or a national park and have set the global standard for surfbreak protection. However, just like the WSRs, the ANSR do not in themselves provide laws or regulation for what activities can or cannot be undertaken within the reserve. Instead, there is reliance on the local authorities to develop laws, rules and policies which actively protect the waves within the ANSR (Farmer, 2011). Because of the weight that comes from areas being declared nationally significant, this is a proactive way of ensuring that inappropriate development is not undertaken within reserves.

4.4. Awareness of the value of surfbreaks

Awareness of the importance of surfbreaks is another crucial factor in ensuring they are protected from developments (Farmer, 2011; Lazarow, 2012, Lazarow, 2007). Surfbreaks have significant economic and social benefits which must be recognised in order for them to be better protected. Much of the non-surfing population do not realise the benefits which can come from surfbreaks, even though some of our New Zealand's coastal towns such as Raglan are built on the reputation of high

quality surf. While there are associated risks with placing a monetary value of surfbreaks (the most significant is the risk of surfbreaks being traded off for a service of higher value such as a port (Lazarow, 2012)), it is important to act strategically to add other factors to compete with other developments (Lazarow, 2012). This became apparent when surfbreak protection activists who were petitioning to save a very popular surfbreak in the California were challenged to put a monetary value on the surfbreak to show why it should be chosen over the development (Nelson, 2011).

Surfbreaks also have significant social value. Surfing is viewed by many surfers as something beyond a recreational activity, but something which gives people a spiritual connection to the marine environment (Moore, 2011). Because of the spiritual connection surfers have with the marine environment, specifically surfbreaks, the social value of surfbreaks is a very important part of community wellbeing. By recognising the value of surfbreaks, comparisons can be made to the effects developments may have on the economy within a region. This would act as another dimension to protecting surfbreaks beyond the environmental aspect.

International examples- World Surfing Reserves

While the first World Surfing Reserves (WSR) were set up as a response to surfbreaks being threatened by development, layers have been added to create proactive protection for world class surfbreaks and regions of world class surfing waves (La Tourette, 2011). WSR now proactively identify, designate and preserve outstanding waves and surf zones around the world. WSR do not hold any actual legislative protection for surfbreaks. Instead, the weight that comes from having a region known as a world surfing reserve means that any inappropriate development will be halted by local laws which enforce the management of coastal areas under world surfing reserve status. This is therefore using awareness of the value of surfbreaks as protected. By dedicating these sites as iconic and important to the world surfing community, non-surfers can then see the importance of the areas (La Tourette, 2011). Ways in which the value of surfbreaks are shown the public include;

- Education about the value of the natural resources (including the surfbreaks in the area). This was achieved through community meetings for voluntary action including beach clean ups and outreach to NGOs and Local Government.
- Establishment of vertical linkages between local, state and federal government which engaged stakeholders and bridged the communications gaps between communities and all levels of government. This further enhanced the public and awareness of the value of the surfbreaks.

Nelson and Richter (2005).

WSR's use extensive and comprehensive stakeholder engagement when developing the reserve and have noted that without a high level of community involvement and support they would not exist. While this model of surfbreak protection has proven to be effective, it is not suitable for all surfbreaks. Because of the weight and status that is attached to WSR, it is only surfbreaks that are internationally significant which can be given WSR status. However, they have proved to be very effective surfbreak management tools based on awareness of surfbreak value.

Australian National Surfing Reserve

Along with the WRS, Australian National Surfing Reserves (ANSR) use awareness of the cultural value of surfbreaks for protection. By taking into account the spiritual relationship between surfers and the marine environment, there is an increased recognition of the value of surfbreaks. The Angourie Plaque stating that the reserve recognises the 'cultural and historical significance in Australian surf culture' while the Maroubra plaque explains that the reserve is "integral to the historical, environmental, spiritual and cultural heritage of Australian Surfing" (Moore, 2011, p. 14).

4.5. Marine spatial data

It has been identified that the use of marine spatial data is necessary for informed decision making and therefore effective surfbreak management (Eberlein, 2012 ;Cicin-Sain & Knecht, 1998) Marine spatial data includes attaining an understanding of the location and distribution of features such as; bathymetry, substrate, currents, water properties, habitats, animal and plant populations, sensitive ecosystems, cultural features, recreation, marine transportation, and coastal communities (Eberlein, 2012). This information can then be used to map areas of significance, including surfbreaks and the environments in which development could potentially have an effect on them. This includes estuarine environments inland from the coast as well as swell corridors offshore (Skellern *et al*, 2009). This is important because activities beyond the coastal zone can have impacts of surfbreaks, such as changes sedimentation, as was the case in Whangamata (Surfbreak Protection Society, 2011).

Example – Australian National Surfing Reserve: Manly

The Australian national surfing reserve has included and mapped surfbreaks in Manly. These surfbreaks have been designated as well as the immediate coastal area surrounding them upto 500 metre mark offshore as shown in Figure 7. This mapping therefore takes into account swell corridors, which are important factors in surfbreak quality. Along with this, there is recognition of the stream, highlighted as a purple line in the map. This ensures that developments within these areas that could impact on surfbreaks are not undertaken.



Figure 7: Surfbreak mapping for the Cronulla National Surfing Reserve, Australia. Image from National Surfing Reserves (2012).

4.6. Monitoring

Monitoring ensures policies regarding the coastal area are not “taken into consideration” without being enforced by local authorities. Monitoring strategies need to be put in place to ensure that both surfbreak protection policies are working effectively, as well as to ensure that developments within the coastal area are not having a detrimental impact of surfbreaks. It has been stated in the literature that, although numerical methods of surfbreak monitoring are useful, it is the surfers who are the only ones who can provide an informed account of how a surfbreak is being affected (Battjes, 1974). In regard to surfbreak management, this may include meetings with surfers to discuss surfbreak quality within regions and develop a surfbreak quality guide based on surfers experience with surfbreaks. These could then be referred to in order to determine if coastal development has impacted on surfbreaks. Of course, this is a reactive rather than proactive response, but may be needed to show that surfbreaks are being affected by development within the coastal zone. This adds to the argument that active participation of the local surfers is an important factor in conservation and management of surfbreaks (Aguilar-Perera *et al*, 2006).

Implementation

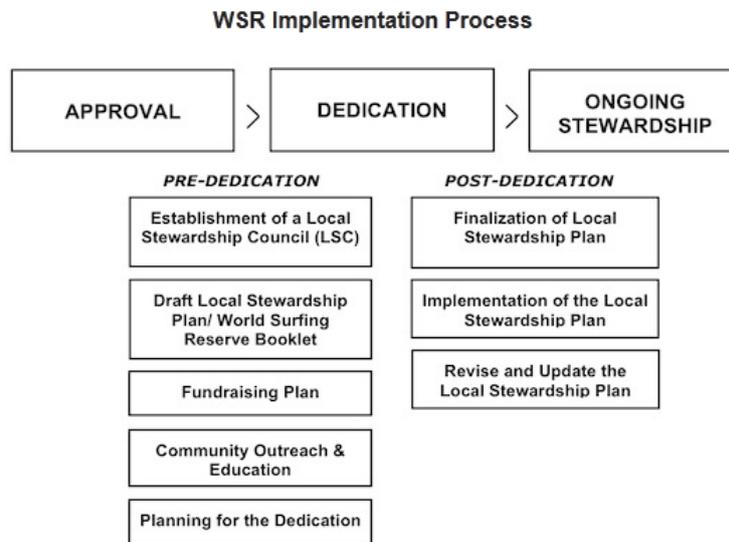


Figure 8: The main stages of the WSR programme. From World Surfing Reserves, (2011).

The WSR programme can be broken down into four main stages. These include; the nomination/application process, the selection process, dedications/enshrinements, and on-going monitoring and management as shown in Figure 6. This final phase of management, identified as on-going stewardship is implemented through a stewardship plan. This plan is revised as necessary. This on-going stewardship means that if any activities are having an effect on the surfbreaks within the WSR, they will be picked up on by the surfers in the reserve and the process of protecting surfbreaks in the reserve using the planning provisions associated with the WSR can prevent further impact. As such, WSR's provide for on-going monitoring undertaken by surfers.

4.7. Access provisions

The reason surfbreaks are significance is because there is a large group of people (surfers) who use them. Therefore, the ability to access and use surfbreaks is as important as the environmental aspects of surfbreak protection (Cummins, 2012). The most inaccessible areas of the coast are often those occupied by the military, private housing developments or a large single land owner (Eberlien, 2011). Providing access for surfers may include the insurance that coastal development allows for access to surfbreaks as well as management plans ensuring that access roads, pathways and trails are maintained. Also, legislative measure can be taken to ensure that any coastal developments take the preservation of public access into account.

International Example – California Coastal Act

It has been stated that the USA has some of the strongest environmental laws in the world and that California has the strongest environmental laws in the US (Nelson, 2011). One example of the protection of a surfbreak in California is the how the California Coastal Act protects access to the world famous surfbreak Trestles. In the 1970's surfers had to trespass private land and face fines, board confiscation and even potential jail time in order to surf the wave (Eberlien, 2011).

The California Coastal Act (1972) provides for access to Trestles through the identification and provisions for "areas where divisions of land could substantially impair or restrict coastal access" (Nelson, 2011). Access is also provided for in paragraph 6 of the Act, where one of the purposes in to, "Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources, conservation principles and constitutionally protected rights of private property owners "(Eberlien, 2011). Under the California Coastal Act access is provided and maintained by local authorities and now Lowers is one of the most heavily used wave in the USA, with up to 2500 visitors per day in summer to surf (Eberlien, 2011).

5. Current Situation of surfbreak management in **New Zealand**



5.1. Surfbreak management in New Zealand

This section outlines the current legislative surfbreak management and non-statutory, informal methods of surfbreaks management in New Zealand.

5.1.1. Legislative Surfbreak Protection in New Zealand

In order to manage the ever increasing pressures from coastal development, coastal management policies, plans and strategic documents have been put in place under the RMA. The Minister of Conservation has been appointed the task of providing national level governance regarding coastal management in New Zealand. This is done through the implementation of the New Zealand Coastal Policy Statement (NZCPS) (Peart, 2005).

The NZCPS includes “Surfbreaks of National Significance”, which are found in policy 16 and listed under Schedule 1 (see APPENDIX 2). The surfbreaks that are considered to be of national significance were chosen for their “stoke” rating using the Wavetrack New Zealand Surfing Guide (Perryman, 2011a). “Stoke” is something that surfers use to describe a feeling of exhilaration of surfing a quality surfbreak. The stoke rating measures waves out of 10, with a 10/10 referring to a very high quality surf break (Peryman, 2011a). The surfbreaks which were chosen to be of national significance scored 10/10 using this stoke rating, except Papatowai which was given an 8/10 but is of national significance due to its international recognition of a premier big wave surfbreak (Peryman, 2011a). The surfbreaks which are identified to be of national significance are listed in schedule 1 of the NZCPS. The intent of the policies is to ensure that these surfbreaks of national significance are not degraded and remain world class breaks.

Using the NZCPS as guidance, Regional Councils are then given the task of preparing objectives and policies relating the use, development or protection of the coastal environment (Peart, 2005). Local authorities are also required to identify areas of natural character and natural landscapes in planning provisions (Peryman, 2011a). Because surfbreaks are part of natural landscape, this too encompasses surfbreak protection under the NZCPS.

Surfbreaks of regional significance are also taken into account at the local level by some regional councils. Because the surfbreaks included in the NZCPS are suited to expert surfers, surfbreaks which are used and enjoyed by modest surfers are not protected by national legislation. This is despite the fact that these surfbreaks may be used by more people than those contained within schedule 1 of the NZCPS. However, national level protection may not be appropriate for every surfbreak in the

country. For this reason, some regional councils have developed reports which identify significant surfbreaks within their region, which can then be accounted for within regional coastal plans. These include:

- The Bay of Plenty Regional Council: Bay of Plenty Surfbreak Study (Peryman , 2011b)
- Gisborne Regional Council: Surfbreak Identification and Protection (Peryman, 2011c)
- Taranaki Regional Council: Taranaki Regional Policy Statement (Peryman and Skellern, 2011)
- Auckland Regional Council: Inclusion of regional significant surfbreaks into the Regional Coastal Plan (Pearl, 2012).

A good example of the use of surfbreak mapping to spatially recognise surfbreaks is the Bay of Plenty Surfbreak Study undertaken by Perryman, (2011b). This study has mapped surfbreaks of regional significance as identified through consultation with the surfers in the community. However, these maps do not designate areas in which development can affect surfbreaks, as discussed in section 5.2.2. An example from the Bay of Plenty Surfbreak Study is shown in Figure 9.



Figure 9: An example of surfbreak mapping using community consultation. From Peryman (2011b).

5.1.2. Non statutory and informal surfbreak protection in New Zealand

Along with the statutory system of surfbreak management in New Zealand, there are examples of non-statutory and informal measures to ensure coastal activities do not impact upon surfbreaks. The Surfbreak Protection Society (SPS) are a non-profit organisation who brings together a range of professionals who make submissions on plan reviews, plan changes, resource consent applications-anything which can impact the management of surfbreaks in New Zealand. Thus far, there has been a lot of success by SPS in ensuring that surfbreaks have legislative protection, including having the surfbreaks of national significance incorporated into the NZCPS. Along with this they have played a part in protecting surfbreaks by lodging submissions against developments which could have negative impacts on surfbreaks.

Informal surfbreak protection can also be found where communities rally together to demonstrate against activities which could harm surfbreaks. A recent example of this is the protest against seabed mining in Raglan. This protest saw 200 Raglan residents supporting Kiwis Against Seabed Mining (KASM) as there is potential that seabed mining could have an effect on the world famous left hand point breaks found in the area (Nishiyama, 2012). An article from this protest is included in APPENDIX 3.

5.2. The performance of New Zealand surfbreak management

This section discusses the performance of surfbreak management in New Zealand based on the components identified in section 4.2. The section has been divided into three parts, Components met, components partially met, and components not met. The components which have been partially met or not met can then be seen as areas where there is room for improvement.

5.2.1. Components met

Surfer and community involvement

Under the RMA there are structured avenues for concerned members of the public to be directed (Scarfe *et al*, 2009a). The current process of resource consents under the RMA allows for public participation during the plan change and plan development process, as well as during the resource consent process for developments which are publically notified. For resource consents that are non-notified the council must deem that the activity will have affects which are no more than minor and therefore are unlikely to have any major negative impacts on surfbreaks. As discussed in the previous section, the SPS have made good use of the submission process in order to ensure that surfbreaks are made part of the decision making process for coastal activities. It has been mentioned by Scarfe *et al*, (2009a) that this is a model approach to surfer and community involvement.

5.2.2. Components partially met

Integrated management structures

While there is a level of integration of coastal management in New Zealand the literature suggests that this is an aspect which could be improved. One of the main barriers to coastal management in New Zealand is jurisdictional uncertainty (Bremmer, 2009). According to Bremmer (2009, p. 41) “multiple agencies are operating according to conflicting imperatives, and there is a need for an ‘all of government’ perspective for coastal management”. There is also room for improvement in the horizontal integration of coastal management in New Zealand. This is mainly due to the lack of formal coordination mechanisms, jurisdictional disintegration and a lack of a single vision for coastal management (Bremmer, 2009, p.42). Integrated management policies are an opportunity to improve on this issue (Bremmer, 2009; Scarfe *et al*, 2009). Terrestrial integration also has room for improvement. While the RMA does to some extent herald an ecosystem based approach to management there is little recognition of the interconnectedness of surfbreaks with entire ecosystems (Bremmer, 2009).

Awareness of the value of surfbreaks

While the RMA provides for and encourages informed decision making (Makgill and Rennie, 2012), awareness of the value of surfbreaks is a component not being met by the current system. There are almost as many surfers as there playing soccer in New Zealand shows the number of people who use surfbreaks, yet surfbreaks are not currently recognised as having significant economic benefits for the areas they are located. For example, the Whangamata marina was allowed to go ahead, many believe, due to the amount of money it was expected to bring into the region. Along with this, the proposed seabed mining offshore of Raglan holds promise of huge economic gains, a factor which is used by supporters of seabed mining to gain backing for their proposals. These activities do not take into account the value of surfbreaks and therefore the only way to ensure surfbreaks are recognised is through protests (such as the KASM protests in Raglan) and submissions.

Marine spatial data

While some local councils have undertaken surfbreak mapping (as mentioned in section 5.1.1), this needs to happen across all regional councils that have significant surfbreaks. Furthermore, for many local councils in New Zealand there is uncertainty about the extent of the coastal zone. While policy 1 of the NZCPS mentions the extent and characteristics of the coastal environment, the margins of these vary between each region and are often not clearly defined. The RMA also does not define the coastal environment, instead this is subject to interpretation and determined on a case by case basis (Orchard, 2011; Makgill and Rennie, 2012). Mapping currently is not undertaken in a way which designates areas in which activities are likely to have an effect on surfbreaks, meaning that any activities will need to show they will not have a negative impact on that surfbreak before they are given consent to go ahead.

Access

Access is provided for in the RMA and the NZCPS where it is recognised as a matter of national importance. While there is access to most coastal areas, some surfbreaks are often located in areas where surfers must cross private land or other boundaries to access their surfbreaks. As identified, it is often large single property owners who restrict access to the coast, but there are instances of gated coastal communities restricting access (such as Tapuaetahi, Northland). A regional where there is both good access and high level of awareness of the value of surfbreaks is Taranaki. Here public access is provided for under part B Section 8.3 of the regional policy statement with specific mention of the importance of coastal recreation. There is an opportunity for other regional councils

to follow provision such as this (some already have) to ensure that surfers are able to access surfbreaks.

Proactive management

As discussed, once a surfbreak have been degraded it is difficult, if not impossible to recreate, for this reason, it must be ensured that surfbreak protection is proactive and prevents inappropriate development within the coastal zone before surfbreak degradation occurs. Under the RMA, planning in New Zealand is effects based, meaning that the impacts that are expected from an activity are regulated by the effect they will have. This can be compared to regulation of actual activities themselves. For this reason, the RMA only intervenes where activities are likely to result in negative environmental effects (Environmental Defence Society, 2012). While this approach does have the advantage of focusing on reducing environmental impacts, it has resulted in environmental planning in New Zealand being reactive rather than proactive (Environmental Defence Society, 2012). Along with this, the cumulative effects of activities are often poorly managed (Environmental Defence Society, 2012). As the NZCPS comes under the RMA, it has retained the effects based management approach. For this reason, the current New Zealand system of surfbreak management is reactive as opposed to proactive, where developments in the coastal zone can only be appealed against once the formal planning processes have begun through the lodgement of resource consents.

5.2.3. Components not currently being met

Monitoring

Monitoring the effects of activities and how they may impact is another component of surfbreak management which can be improved on. An example of the need for this can be seen in the case of the Whangamata bar where, the consent for the marina required monitoring conditions. While the monitoring practices may have met the physical, bathymetry measurements and scientific data, users of the surfbreak were excluded from the process. As noted in the Surfbreak Protection Society (2012) report, the monitoring was required to be undertaken by ‘appropriately qualified and experienced persons’ which does not include surfers. Along with this, it was stated that the monitoring conditions were “quite vague”. SPS says they have been trying to engage Waikato Regional Council since 2007 (before construction of the marina) as to what science needs to be employed to effectively monitor the wave quality on the Whangamata Bar, as it is the opinion of SPS that the current monitoring regime is not adequate (Surfbreak Protection Society, 2012). By not including surfers into the monitoring process, any decline in the quality of the wave would be at risk of not being picked up, as only subtle changes in the system could result in a major decline in surfing

wave quality. Such changes are most likely to be noticed by surfers who use the surfbreak (Battjes, 1974). This example shows that the need for effective monitoring is not being met to a satisfactory standard and there is room for improvement.

6. The opportunities for improved surfbreak management in New Zealand



Because the current system of surfbreak management in New Zealand does not completely meet all of the components identified in section 3.2, there are opportunities for improvement. This section will outline the opportunities surfbreak management can be improved by first discussing improving on those components which are being met to some extent, then those which are not being met.

Opportunity 1: Improve Integrated Management

As discussed, ICM is a component of surfbreak and coastal management which is highlighted in the literature. Because this has been identified as a major component of surfbreak management there have been steps towards a more integrated system of coastal management in New Zealand. However, there is an opportunity for improved integration in regard to surfbreak management. The BBSRCMP is an international example from which methods to achieving the goal of ICM can be derived. This plan outlines the coordination between authorities, incorporation of different environments and public participation into the management plan. Along with this, an approach to achieving higher levels of integration is to improve communication between different management agencies (Peart, 2008). Good communications between agencies will ensure that actions taken by one agency will not have unintended impacts on another as well as build relationships and trust between agencies, both of which have been identified as precursors to higher levels of integrated management (Peart, 2008). It has been identified that the use of marine spatial data will also improve on ICM (Scarfe *et al*, 2009a).

Two of the main areas where ICM can be improved in New Zealand are through providing the appropriate legislative framework to ensure coastal decision makers are working towards the same goals. Also this will ensure that there are appropriate avenues for surfers, objections will be limited to protest actions and may be overlooked by environmental permitting agencies (Scarfe *et al*, 2009a).

Opportunity 2: Develop and apply marine spatial mapping

While surfbreak identification mapping has been undertaken by some Regional Councils in New Zealand, there is an opportunity to expand on these efforts. The use of marine spatial data is another way in which surfbreak management can be improved in New Zealand. For the best environmental results, surfbreak management plans need to identify surfbreak locations and the physical processes that cause the surfbreak to have quality waves need to be mapped (Scarfe *et al*, 2009a). This means that mapping of surfbreaks needs to also include swell corridors and the areas inland (such as streams and estuarine environments) which impact on surfbreak quality (Skellern, 2009). This will ensure that activities offshore (such as proposed iron ore seabed mining in Raglan)

and upstream activities (such as the Whangamata Marina) will need to consider the effects they will have on surfbreaks as part of consent conditions.

An example of the kind of mapping that could be carried out for a river bar surfbreak such as the Whangamata Bar is shown in Figure 10. The designated area would include the estuarine environment which feeds sediment to the bar as well as the swell corridor out to the 12 nautical mile limit.

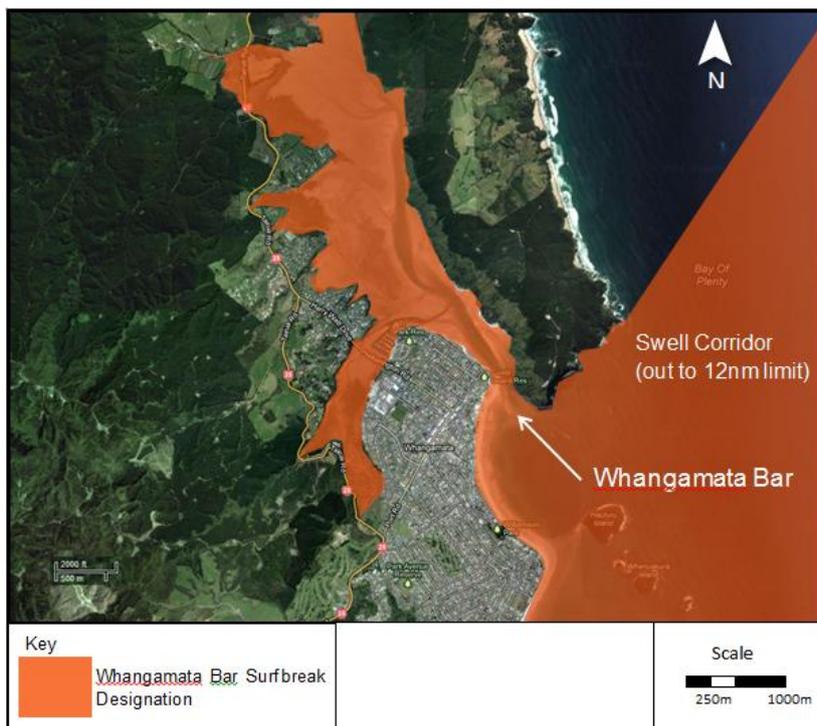


Figure 10: An example of marine spatial planning and surfbreak mapping which could be used to designate surfbreaks and the environments in which activities could impact upon the surfbreak.

Opportunity 3: Increase awareness of the value of surfbreaks

Increasing awareness of the value of surfbreaks is another opportunity for surfbreak management. The best case scenario of the awareness of the value of surfbreaks is for surfbreaks to be recognised in the same way WSR's are. These reserves use awareness to ensure that developments do not harm breaks. However, because these are only suitable for a select few world class waves they are not an appropriate mechanism for overarching surfbreak management in New Zealand. The awareness of the value of surfbreaks is a component which will greatly improve the level of protection for surfbreaks in New Zealand. Awareness can be improved through informing developers of surfbreaks in the areas they wish to undertake their activity, as well as through designation with marine spatial data. Along with this, a study into the economic benefits could be undertaken for popular surfbreaks in New Zealand. For the surfbreaks of national significance, a case by case study could be undertaken

in order to give a monetary figure on the value of the surfbreak to the region. Such studies have been undertaken overseas in order to further justify surfbreak protection from coastal developments (see section 3.2.4). These figures need to then be recognised by decision makers and made public information in order to informally educate people about the monetary value of surfbreaks. This will further enhance the protection they receive and the value placed on them compared to coastal developments. This would follow what experts in the field of surfbreak management (e.g. Lazarow, 2007; Lazarow 2012) are recommending should happen to strengthen surfbreak management.

Opportunity 4: Make surfbreak protection pro active

In order to be fully proactive, surfbreak management in New Zealand should require surfbreaks to be taken into account before resource consents are lodged. As mentioned, the components of surfbreak management are interlinked. More proactive management will depend on the implementation of the other components such as awareness and marine spatial data to be achieved. Therefore, in order for surfbreak management will come from the implementation of the successful implementation of the other components.

Opportunity 5: Develop effective surfbreak monitoring strategies based on surfer information

While there does not seem to be any apparent best case scenarios for surfers monitoring the quality of surfbreaks under a statutory regime, it is the non-statutory examples of surfbreak management which offer insight into more effective monitoring. Using non statutory measures, monitoring is undertaken by those who actually use the surfbreaks and know best how they are being affected by activities in the coastal zone. Non statutory surfbreak management, such as the world and national surfing reserves, rely on community involvement and activism to protect and monitor surfbreaks. This means that those surfers who can identify changed in surfbreaks can then let ensure that activities are ceased or prevented.

Opportunity 6: Ensure accesses to surfbreaks is encouraged and provided for

Councils could include into coastal plans provisions for access to surfbreaks. This will remove the issues associated with lack of formal access, poorly defined public aces and the insurance that coastal development does not limit coastal access. Public coastal access points need to be well defined within local plans in order to avoid conflict over private property rights. Private land owners should also be encouraged to allow public access. This issue also ties into awareness of the value of surfbreaks to the community. However, due to the complexities of coastal land ownership (such as

Maori land), this component of surfbreak management will most likely not be solved through surfbreak management structures.

Opportunity 7: Continued non-statutory surfbreak protection

Implementation of coastal management frameworks is occurring as well as being enforced, however this is dominated by regulation (Bremmer, 2009). Therefore Bremmer (2009) suggests that the implementation of non-statutory measures holds more promise.

Non statutory surfbreak protection may be the most used form of protection used by communities who want valuable coastal resources protected. Across the globe there are examples of community led action groups lobbying for coastal protection. Each form of non-statutory surfbreak protection varies depending on the issues faced and the community action taken, however, this seems to be an effective form of protecting coastal resources. For example, the way in which iwi management plans are used by Maori to exercise their kaitiaki for natural and physical resources on resource consents and plan changes could be developed into a form of surfbreak management where surfers are seen as the recognised caretakers of surfbreaks. This would mean that if a development was to have an effect on the coast or a surfbreak, an organisation such as the SPS would be given the opportunity to include conditions of consent or if a development threatened a surfbreak, have a say in its final decision. As mentioned, even coastal legislation which is viewed as some of the most effective in the world such as the Californian Coastal Act and the associated parks would not in themselves prevent development which would have a detrimental effect on surfbreaks. Instead, it is the non-statutory, informal, insurgent planning methods which have prevented inappropriate development going ahead.

7. Conclusion



As the coastal pressure from development and land use continues to increase, so does the threat of surfbreak degradation. Examples from overseas and New Zealand shed light into how surfbreaks can be impacted or even destroyed by inappropriate coastal development. While New Zealand has developed surfbreak protection into national level legislation, cases of surfbreak degradation under the NZCPS (such as the Whangamata marina) prove that there is room for improvement. In order to make surfbreak management more effective, components of effective surfbreak management identified in the literature as well as examples of surfbreak management structures from overseas hold opportunities to improve on the current system. This research project has shown that there are opportunities for improved surfbreak protection in New Zealand. These include; a higher level of integration through agencies and communities as well as territorial integration, marine spatial and surfbreak mapping which includes a more holistic view of surfbreaks and the environment, increasing awareness of the value of surfbreaks, a more proactive approach to ensure activities which could have an effect on a surfbreak are prevented before they happen, and effective monitoring based on information from surfers. While statutory measures will protect surfbreaks to a certain point, it is action from local communities which has had the most impact on surfbreak protection thus far. The involvement of surfers into the decision making process and on-going protection of surfbreak through non statutory measures may therefore be the key to ensuring that surfbreaks in New Zealand remain in their natural state and they can be enjoyed by current and future generations of surfers.

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APPENDIX 1

SPARC Recreation Participation Survey, 2008/2009. Surfing/bodyboarding has been highlighted by the author.

3

PARTICIPATION LEVELS OVER 12 MONTHS

The table below provides participation rates for specific sport and recreation activities. Activities with a combined percentage have not been ranked and are denoted by an asterisk (*) in the ranking column.

Activity	Percentage ²⁵ (%)	95% Confidence Interval ²⁶	Population Number ²⁷	Ranking ²⁸
Walking	64.1	(62.2 - 66.0)	2,100,277	1
Gardening	43.1	(41.2 - 45.1)	1,414,635	2
Swimming	34.7	(32.8 - 36.6)	1,139,812	3
Equipment-based exercise	26.6	(24.8 - 28.4)	868,271	4
Cycling (total)	22.7	(21.0 - 24.5)	745,182	*
Cycling (cycling/biking)	19.6	(17.9 - 21.4)	644,698	5
Fishing (total)	19.5	(17.7 - 21.2)	633,768	*
Jogging/running	17.6	(15.9 - 19.3)	574,107	6
Dance (total)	16.8	(15.2 - 18.5)	549,110	*
Fishing (marine/saltwater)	16.6	(15.0 - 18.3)	539,446	7
Golf	12.8	(11.3 - 14.4)	416,221	8
Dance (various)	11.5	(10.0 - 13.0)	378,607	9
Tramping	9.4	(8.0 - 10.8)	306,342	10
Tennis	9.3	(7.9 - 10.7)	304,676	11
Pilates/yoga	9.0	(7.6 - 10.4)	290,753	12
Aerobics	8.6	(7.2 - 9.9)	277,865	13
Cricket (total)	7.3	(6.0 - 8.6)	237,965	*
Football (total)	6.8	(5.6 - 8.0)	227,266	*
Cricket (outdoors)	6.8	(5.6 - 8.0)	221,219	14
Touch rugby	6.7	(5.5 - 7.9)	219,953	15
Netball (total)	6.5	(5.3 - 7.6)	209,771	*
Canoeing/kayaking	6.4	(5.2 - 7.5)	209,648	16
Basketball	6.3	(5.1 - 7.4)	209,427	17
Snowsports (total)	6.3	(5.2 - 7.5)	206,071	*
Cycling (mountain biking)	6.1	(5.0 - 7.3)	202,237	18=
Callisthenics/stretch	6.1	(4.9 - 7.2)	198,879	18=
Table tennis	5.9	(4.7 - 7.0)	194,198	20
Rugby	5.7	(4.6 - 6.8)	189,661	21=
Fishing (freshwater)	5.7	(4.6 - 6.8)	184,784	21=
Football (outdoor)	5.5	(4.4 - 6.6)	185,292	23
Hunting (total)	4.6	(3.6 - 5.6)	150,343	*
Surfing/body boarding	4.5	(3.5 - 5.5)	145,620	24
Volleyball (total)	4.4	(3.4 - 5.4)	148,496	*
Hunting (other)	4.4	(3.4 - 5.4)	143,598	25

Activity	Percentage ³⁵ (%)	95% Confidence Interval ³⁶	Population Number ³⁷	Ranking ³⁸
Squash	3.8	(2.9 - 4.7)	123,443	26=
Diving/scuba diving	3.8	(2.9 - 4.7)	121,625	26=
Badminton	3.7	(2.9 - 4.6)	126,482	28=
Skiing (snow, grass)	3.7	(2.8 - 4.6)	123,536	28=
Netball (outdoor)	3.7	(2.8 - 4.6)	122,829	28=
Netball (indoor)	3.6	(2.8 - 4.5)	116,765	31
Bowls (outdoor/lawn)	3.2	(2.4 - 4.0)	105,745	32
Aquarobics (aqua/water jogging)	3.1	(2.3 - 3.9)	102,554	33=
Water skiing	3.1	(2.3 - 3.9)	99,283	33=
Shooting (rifle & pistol)	3.0	(2.3 - 3.8)	101,712	35=
Horse riding/equestrian	3.0	(2.2 - 3.8)	99,331	35=
Motorsports (total)	2.9	(2.1 - 3.6)	94,863	*
Snow boarding	2.7	(2.0 - 3.5)	87,649	37
Bowls (indoor)	2.6	(1.9 - 3.3)	85,285	38=
Boxing	2.6	(1.9 - 3.3)	84,192	38=
Volleyball (outdoor)	2.5	(1.8 - 3.2)	84,239	40
Martial arts (total)	2.5	(1.8 - 3.1)	79,931	*
Athletics (track and field)	2.4	(1.7 - 3.0)	82,729	41=
Volleyball (indoor)	2.4	(1.7 - 3.0)	81,117	41=
Sailing/yachting	2.4	(1.8 - 3.1)	78,209	41=
Football (soccer indoor)	2.2	(1.6 - 2.8)	73,453	44
Rugby league	2.1	(1.5 - 2.7)	68,042	45
Hockey (total)	2.0	(1.4 - 2.5)	68,091	*
Skateboarding	2.0	(1.4 - 2.6)	66,848	46
Hockey (outdoor)	1.7	(1.2 - 2.3)	60,203	47
Motorsports (motorcycles)	1.6	(1.1 - 2.1)	53,485	48=
Ice skating	1.6	(1.1 - 2.1)	51,227	48=
Multisport/triathlon/duathlons	1.5	(1.0 - 2.0)	48,454	50
Softball	1.3	(0.9 - 1.8)	44,925	51=
Tai chi	1.3	(0.9 - 1.7)	41,471	51=
Martial arts (other)	1.2	(0.8 - 1.6)	37,713	53
Mountaineering/mountain climbing	1.1	(0.8 - 1.5)	37,868	54=
Billiards/pool/snooker	1.1	(0.7 - 1.5)	36,769	54=
Kapa Haka (poi, waiata-a-ringa)	1.0	(0.7 - 1.4)	34,683	56=
Cricket (indoors)	1.0	(0.7 - 1.3)	34,458	56=
Motorsports (cars)	1.0	(0.7 - 1.4)	34,340	56=
Waka ama	< 1.0	-	-	-

APPENDIX 2

NZCPS Schedule 1: Surf breaks of national significance

Northland

- Peaks - Shipwreck Bay
- Peaks - Super tubes - Mukie 2 - Mukie 1

Waikato

- Manu Bay - Raglan
- Whale Bay - Raglan
- Indicators - Raglan

Taranaki

- Waiwhakaiho
- Stent Road - Backdoor Stent - Farmhouse Stent

Gisborne

- Makorori Point - Centres
- Wainui - Stock Route - Pines - Whales
- The Island

Coromandel

- Whangamata Bar

Kaikoura

- Mangamaunu
- Meatworks

Otago

- The Spit
- Karitane
- Whareakeake
- Papatowai

APPENDIX 3

Article on seabed mining in Raglan. Retrieved 10 September from Raglan tourism website:
<http://www.raglan.net.nz/raglan-news/raglan-says-no-to-seabed-mining/>

Raglan says NO to seabed mining

Last Sunday 11th March over 200 Raglan residents and their supporters came together to stand in opposition against proposals for an iron sand mining operation off the west coast of the North Island.

The silent protest saw the group march up Bow Street and continue towards the one-way bridge to peacefully await iron-mining company executive Andy Sommerville, children and adults alike bearing signs that clearly conveyed their position on the issue.

Represented by community-based awareness and advocacy group Kiwi's Against Seabed Mining (KASM), the protesters lined the bridge as Mr. Sommerville approached. Marching in silence, the intensity of the message was abundantly clear; "We love our coastal marine environment. We are here. We are strong. You will not take our sand."

The message was conveyed to Mr. Sommerville of Trans Tasman Resources on his return from meetings with local iwi about possible plans to explore iron sand deposits off Raglan's coast.

Spokesperson for KASM Phil McCabe said, "We've all grown up experiencing the great things our coastal environment can offer. We all have some connection to the environment but there's no guarantee that it's going to be here when they're done. We're here today in a silent peaceful expression of our love for the marine environment."



New Zealand-based iron-ore company Trans Tasman Resources (TTR) currently holds a Crown Minerals Prospecting Permit, which grants them exclusive mineral rights over 9633km² of seabed off the west coast of the North Island.

This permit covers three plots of land, one off the coast of southern Taranaki and the other two covering the coastline north and south of Kawhia, including the coast off Raglan.

Mr. Sommerville's visit follows announcements in August last year that minerals (iron) located in the southern Taranaki zone could be almost double what TTR had originally estimated in March 2011, projecting resource estimates to be around 200 million tons in that area alone.

The NZ Crown Minerals website now shows three exploration permit applications from TTR which were received only a day after the protest was held.



An article published in industry publication Mining Magazine during September last year states, “TTR aims to begin production by the December quarter of 2014, providing Asian markets with, initially, 10 million tons/year ... with the potential to increase to 50 million tons/year,”

TTR further claim in the article that, “the risks associated with environmental approvals are limited because the target mining areas are located offshore and in very barren areas.”

However, KASM brought to attention that over five tons of seabed sand would be shifted for every ton of iron-ore concentrate they extract,

Furthermore the targeted area directly overlaps with the habitat of the critically endangered

Maui's Dolphin. An unpublished Department of Conservation report estimates the Maui's dolphin population to currently be less than 80 with fewer than 25 breeding females.

Dave Rastovich, pro-surfer and representative of Surfers for Cetaceans, related his experiences in a letter to the Chronicle of living in Burleigh Heads and the effects sand dredging has had on his own community "I come from a place where we were told the manipulation of sand was not going to negatively affect our greater region, yet it did just that."

"It seems there are so many unknown components to the practice of seabed mining. Is it worth seabed mining here and risking the extinction of an entire species? Is it worth risking the entire future of Raglan's ecology and economy to benefit a company?" said Dave.

KASM urged the wider community to get involved with this issue and invites members of the community to attend a meeting, which will be held at the Town Hall on Tuesday 20th March.

Maki Nishiyama