

Regional significance criteria for the assessment of surf breaks

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Prepared for

Taranaki Regional Council
July 2017

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Cover photo

Rocky Lefts, one of Taranaki's many well known surf breaks. Photo: Kester Brown.

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1. Introduction

A study in Hawai'i by Kelly (1973) was the first formal attempt to understand the value of surfing to a local community. Since then a range of other studies have demonstrated that surf breaks are the source of a wide range of benefits and substantial socio-economic value (Abell & Mallett, 2008; Buckley, 2002; Dolnicar & Fluker, 2003; Lazarow 2007, 2008; Lazarow et al. 2009; Murphy & Bernal, 2008; Nelsen et al. 2007; Ove Arup & Partners, 200; Peryman & Orchard, 2013; Tourism New South Wales, 2009). Although New Zealand has a considerable surf break resource, changing development, settlement, and resource use patterns are placing increased pressure on coastal margins where surf breaks are found (Scarfe et al., 2009a). Each surf break is a unique natural feature formed by a specific combination of geographical factors. Many of the characteristics may be destroyed or degraded by incompatible human activities as well as by natural events. To protect these resources for the future there is a need for a strategic approach that includes effective policy and planning mechanisms for managing human impacts and providing for community interests in surf breaks.

In Taranaki, surf breaks are an important coastal resource. The region is well known for both the number and quality of its surf breaks. They are an important aspect of the local lifestyle and are drawcards for visitors from throughout New Zealand and overseas (Taranaki Regional Council (TRC), 2016a). Taranaki also produced New Zealand's first example of a regional policy context specifically addressing surf break protection. This involved the identification of 80 'high quality or high value' surf breaks within the Regional Policy Statement for Taranaki 2010 (RPS) (TRC, 2010). This initiative preceded further surf break policy developments that were to come at the national level. Those developments occurred under the NZ Coastal Policy Statement 2010 (NZCPS) and included a definition for surf break in national coastal policy, identification of a schedule of surf breaks of national significance, and policies and objectives that directly referenced surf breaks and the need for their protection (Orchard, 2011; Peryman & Skellern, 2011).

The new NZCPS took effect on 3 December 2010 (DOC, 2010). Since then there have been further developments in both interpretation and means for implementation of the policies, with local government being required to give effect to the NZCPS as soon as practically possible. Due to variations in the timing of regional policy and plan review cycles, the opportunities to implement the NZCPS have in practice, arisen on different timelines around the country. In New Zealand's hierarchical resource management system, each such review provides an important mechanism for giving effect to new national policy and objectives (Memon & Perkins, 2000; Peart, 2008).

Taranaki Regional Council (the Council) is now in the process of reviewing its Regional Coastal Plan. The Coastal Plan is a key policy instrument for implementing the RPS and it also must also give effect to the NZCPS. Despite being an early leader in the field, advances in policy for the protection of surf breaks was one of the notable new developments in national policy under the NZCPS. Since the Taranaki RPS predates the NZCPS, this requires careful consideration. Important steps including reviewing and addressing the contemporary policy context together with current information on the surf break resource and its value to the community. As part of the Coastal Plan review process the Council is identifying all nationally, regionally and locally significant surf breaks. These breaks will have varying levels of policy protection through the Plan.

The purpose of this report is to develop a set of criteria to determine which surf breaks along the Taranaki coast should be considered regionally significant.

2. Methods

The methodology for this study is based on policy analysis and a desktop literature review. The key steps were:

- analysis of the national and international policy context relevant to the concept of regionally significant surf breaks;
- review of the Taranaki RPS to identify additional considerations that may be relevant to the regional policy context;
- review of technical studies that have informed recent regional policy and planning approaches for the management of surf breaks with a focus on those that have identified regional significance criteria for surf breaks;
- evaluation of potential criteria for the assessment of regional significance; and
- development of a set of criteria together with recommendations on how they could be applied to inform the Taranaki Coastal Plan.

Literature reviewed included technical reports on either criteria for regional significance assessment, or the identification of regionally significant surf breaks for the purposes of regional policy and planning in New Zealand. This included all of the known studies dealing with this topic since gazettal of the NZCPS 2010 and also the report of Coombes & Scarfe (2010) that considered the proposed NZCPS in its near-final form. Additionally, approaches to surf break protection at regional level under the National Surfing Reserves programme in Australia were considered for an international comparison.

Potential criteria for the assessment of regional significance were evaluated against the following considerations:

- applicability to the policy context; and
- definition of, and relationships between the potentially relevant criteria.

3. Results

3.1 Policy analysis

International context

In many places around the world surfing has rapidly increased in popularity (Lazarow et al., 2009) and a growing range of wave riding pursuits are becoming mainstream forms of recreation. However, there is also increasing competition for limited coastal space, in part due to an increasing human population on coastal margins (Cicin-Sain & Knecht, 1998; Peart, 2007). In recent decades several world-renowned surf breaks and many other locally important breaks have been destroyed or degraded following coastal management decisions (Corne, 2009; Lazarow 2007; Nelsen et al., 2007; Scarfe, 2008; Scarfe et al., 2009a, 2009b; Skellern et al., 2009).

Although New Zealand was the first country to develop a protection mechanism for surf breaks in national level resource management legislation, this advance was undoubtedly influenced by an international context characterised by growing awareness of the value of surf breaks, and the threats to them (Orchard et al., 2014). This awareness has been largely championed by organisations working in the non-government sector such as Surfers Against Sewage (SAS), the Surfrider Foundation, and Save the Waves Coalition. It has steadily gathered momentum over the years in response to a greater understanding of the pressures on surf breaks as natural resources (e.g. Butt, 2010; SAS, 2009) and has included innovative approaches such as the National and World Surfing Reserves programmes (Farmer & Short, 2007; Short & Farmer, 2012). Likewise, the origins of policy development for surf break management in New Zealand can be traced back to the efforts of community groups such as Surfers' Environmental Advocacy (SEA) and the Surfbreak Protection Society (SPS), as well as many individuals with concerns for the growing pressures on surf breaks and the need for an effective response.

Treaty of Waitangi

The Treaty of Waitangi is a unique aspect of the policy context being an agreement made between the Crown and the Māori people of New Zealand. It is directly relevant to resource management because of its influence on relationships between the Treaty partners, and arrangements for the governance of natural resources. Treaty principles are directly connected to contemporary resource management through section 8 of the Resource Management Act 1991 (RMA) as well as via policy instruments required under the Act. These include National Policy Statements, Regional Policy Statements, and statutory plans.

Resource Management Act 1991 (RMA)

The RMA is New Zealand's principal legislation for environmental management outside of the conservation estate. Surf breaks are examples of natural and physical resources relevant to the purposes of the Act under section 5.

Section 5 Purpose

- (1) *The purpose of this Act is to promote the sustainable management of natural and physical resources.*
- (2) *In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—*
 - (a) *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
 - (b) *safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
 - (c) *avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

Surf breaks are also relevant to matters of national importance under section 6.

Section 6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) *the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- (b) *the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
- (c) *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:*
- (d) *the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:*
- (e) *the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
- (f) *the protection of historic heritage from inappropriate subdivision, use, and development:*
- (g) *the protection of protected customary rights.*

The matters identified in section 6(a), (b), (d) and (e) are all relevant. Surf breaks are natural features that require consideration under 6(b). They are also components of the natural character of the coastal environment as addressed by 6(a). Public access is important to many of activities associated with surf breaks, and they may be important sites for Māori. This may be in connection with the traditional practices of early Māori who are known have utilised a variety of wave riding craft (Skellern et al., 2013), as contemporary sites for wave riding practices, or in relation to other attributes of cultural importance.

Surf breaks are also relevant to other matters identified in section 7.

Section 7 Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

- (a) *kaitiakitanga:*
 - (aa) *the ethic of stewardship:*
- (b) *the efficient use and development of natural and physical resources:*
 - (ba) *the efficiency of the end use of energy:*
- (c) *the maintenance and enhancement of amenity values:*
- (d) *intrinsic values of ecosystems:*
- (e) *[Repealed]*
- (f) *maintenance and enhancement of the quality of the environment:*
- (g) *any finite characteristics of natural and physical resources:*
- (h) *the protection of the habitat of trout and salmon:*
- (i) *the effects of climate change:*
- (j) *the benefits to be derived from the use and development of renewable energy.*

The matters identified in section 7(c), (f), (g) and (i) are relevant. The RMA defines amenity value as “those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes”. Surf breaks can contribute to all of these aspects in various ways and may be important for many sectors of the community over and above those actively involved with riding waves. Surf breaks can contribute to the attractiveness of an area due to their visual qualities, and other experiential aspects such as the sound of breaking waves. Many surf breaks are also popular sites for spectators and other recreational users.

Surf breaks are relevant to 7(f) due to their contribution of to the quality of the environment is relevant to 7(f). As unique natural features surf breaks are a finite resource of particular relevance to 7(g). Experience with attempts to create artificial surf breaks around the world has shown that the qualities of naturally occurring surf breaks are very hard to reproduce. It is therefore important to avoid adverse effects

wherever possible to prevent long term degradation of the resource. The effects of climate change are relevant to the management of surf breaks though are not considered further in this report.

New Zealand Coastal Policy Statement 2010 (NZCPS)

Under Section 56 of the RMA, the purpose of an NZCPS is to state policies to achieve the purpose of the RMA in order to promote the sustainable management of natural and physical resources in relation to New Zealand's coastal environment. Implementation of the NZCPS 2010 requires consideration of all objectives and policies as a whole since many are interlinked. The management of surf breaks is relevant to NZCPS objectives 1, 2, 3, 4 and 6, and to objective 5 in the sense that breaking waves dissipate wave energy that may be a consideration for managing natural hazards. As yet there are no international obligations that require the protection of any New Zealand surf break as would be relevant to objective 7.

NZCPS policies 4, 7, 13, 14, and 15 are particularly relevant.

Policy 4 'Integration' requires the coordination of management activities especially those addressing effects and aspects that cross jurisdictional boundaries. Since most surf breaks are located close to the jurisdictional boundary between regional councils and territorial authorities, an integrated approach is particularly relevant for effective management. Being close to the land-water boundary surf break management requires attention to both landward and seaward aspects.

Policy 7 'Strategic planning' addresses the preparation of regional policy statements and plans. It requires the identification of resources or values that are under threat or at significant risk from adverse cumulative effects. It is clear that this process must be inclusive of surf breaks when policy 7 is read in conjunction with other policies that specifically identify surf breaks among the resources and values to be considered in coastal management. Policy 7 also requires attention to areas where particular activities and forms of subdivision, use and development may be inappropriate, and these areas may include surf breaks. The term 'surf break' is directly defined in the NZCPS glossary thereby supporting the implementation of this policy and others relevant to surf breaks.

Policy 13 'Preservation of natural character' is relevant since policy 13(2)(c) directly identifies surf breaks a component of the natural character concept. In addition, matters under policy 13(2)(a) 'natural elements, processes and patterns' and 13(2)(h) 'experiential attributes, including the sounds and smell of the sea; and their context or setting' are also influenced by surf breaks. However, the degree to which the presence of a surf break, or loss or degradation of it, would be reflected in a natural character assessment is currently unclear as a result of considerable variation in the way that natural character is assessed in practice (DOC, 2011). Some authors suggest that a quantitative basis for understanding natural character is required to consistently address the issue (e.g. Froude, 2011). It is clear that the degree to which a surf break is deemed to contribute to natural character currently depends on the methodology adopted for evaluating its different components, together with the spatial scale of the assessment. Despite these inconsistencies, surf breaks are defined spatial entities that have their own natural character. Adverse effects on the natural character of surf breaks are a relevant consideration under policy 13(1)(a) and (b) in addition to the contributory aspects of surf breaks in the context of larger assessment units.

Policy 14 'Restoration of natural character' is also relevant to surf break management but it is unlikely to be a practical focus for implementation of this policy, in part due to the methodological issues discussed above. Obvious targets for restoration consistent with this policy include reinstatement of natural coastal processes that may affect surf breaks such as sediment supply and exposure to swell where these have been altered by past modifications. However it should be recognised that some surf breaks are currently beneficiaries of modified natural character, such as where groynes and other engineered structures may have improved wave quality. Therefore the implementation of this policy has the potential to impact both positively and negatively on surf breaks with regards to the different attributes of surf breaks that may be valued.

Policy 15 'Natural features and natural landscapes' requires the protection of natural features and natural landscapes from inappropriate subdivision, use, and development. Throughout the policy the wording is clear in its reference to both natural features and natural landscapes as the subjects requiring protection. Although natural features also contribute to the assessment of landscapes, it is the specific focus on protecting both that makes this policy highly relevant to surf break management. The NZCPS specifically defines surf breaks as natural features and also gives a clear definition to guide identification of their spatial extent. Moreover, policy 15(c) requires "identifying and assessing the natural features and natural landscapes of the coastal environment of the region or district". This indicates that surf breaks should be identified and assessed. Topics for assessment are also detailed in the policy. In particular, policy 15(d) requires "ensuring that regional policy statements, and plans, map or otherwise identify areas where the protection of natural features ... requires objectives, policies and rules". Assessing the protection requirements of surf breaks directly contributes to implementation of this policy. In addition, policies 15(a) and (b) addressing adverse effects on outstanding natural features and other natural features respectively, each require methods for implementation.

Policy 19 'Walking access' and others including policies 2, 20, 21, 22, 23 and 28 are also relevant to surf break management. However they do not deal with specific considerations for surf breaks and for that reason are not discussed further in this report.

Regional Policy Statement for Taranaki 2010 (RPS)

The approach to surf breaks within the current RPS includes policies relevant to surf breaks, and maps of "high quality or high value areas of the coastal environment" that include surf breaks. The maps found in Appendix 2 provide point locations for 80 high quality or high value surf breaks of regional importance. These were identified from the Council's inventory of coastal areas of local or regional significance (TRC, 2004), Morse & Brunskill (2004), and by consultation with local surfers (TRC, 2010). Appendix 2 also notes that "the coastal areas identified are not necessarily an exhaustive selection and, on occasion, other parts of the coast may have natural, ecological, or cultural values that are regarded as important to the region" (TRC, 2010).

As part of the review of the Coastal Plan the Council is seeking to build on the policy approach adopted in the RPS and improve on its application. RPS policies relevant to protection of surf breaks are found in section 8.1 dealing with "protecting the natural character of our coast". Objectives stated in this section include:

CNC OBJECTIVE 1

To protect the natural character of the coastal environment in the Taranaki region from inappropriate subdivision, use, development and occupation by avoiding, remedying or mitigating the adverse effects of subdivision, use and development in the coastal environment.

CNC OBJECTIVE 2

To provide for appropriate, subdivision, use, development and occupation of the coastal environment in the Taranaki Region.

CNC POLICY 4

Areas in the coastal environment of importance to the region will be identified and priority given to protection of the natural character, ecological and amenity values of such areas from any adverse effects arising from inappropriate subdivision, use and development.

In the assessment of areas of importance, matters to be considered will include:

- (a) wetlands, estuaries or coastal lagoons and coastal turf, forest and shrublands of regional, national or international importance;*
- (b) their importance for marine mammals or birds, invertebrates and lizards for breeding, roosting or feeding, or habitats of threatened indigenous bird species;*

- (c) *the existence of regionally or nationally outstanding ecosystems or communities or nationally threatened plant or animal species;*
- (d) *scenic sites and recreational sites of outstanding or regional or national significance;*
- (e) *historic heritage values, including archaeological sites of national or outstanding significance;*
- (f) *the existence of nationally significant or outstanding coastal and marine landforms, landscapes, scientific features and associated processes;*
- (g) *the cultural and spiritual values of tangata whenua;*
- (h) *wāhi tapu and sites of importance to tangata whenua; and*
- (i) *the existence of marine protected areas.*

The policy most specific to the protection of surf breaks is CNC Policy 4 addressing the protection of areas in the coastal environment of importance to the region. Because Appendix 2 states that the surf break locations identified are of “regional importance”, they would likely be within the scope of CNC Policy 4(d).

More generally, surf breaks may also be considered under CNC Policy 5 since they are natural features.

CNC POLICY 5

Recognition will be given to the protection where appropriate of other areas, features or landscapes in the coastal environment not covered by Policy 4 above, but still important to the region for one or more of the following reasons:

- (a) *recognition of the special value of estuaries, including the unique physical processes that occur as a result of the interaction of coastal and river dynamics; and the importance of estuaries in providing spawning areas and nursery areas for juveniles of aquatic species;*
- (b) *amenity and scenic values;*
- (c) *recreational and historic areas;*
- (d) *biodiversity and the functioning of ecosystems;*
- (e) *scientific and landscape features; and*
- (f) *cultural features of significance to tangata whenua.*

There is a lack of direct reference to the Appendix 2 surf breaks in any of the policy provisions, with the only explicit linkage being in RPS explanations. Furthermore, the term ‘surf break’ is not defined or used anywhere within the RPS or the glossary section. This creates a potential issue for plan users in relation to determining the spatial extent of the Appendix 2 surf breaks. This could be improved by providing a definition of the spatial extent of the surf breaks to be considered under policy, as is proposed in the Draft Coastal Plan, and additional information on the characteristics of the surf breaks to support assessments of effects, either within the Coastal Plan or in readily accessible guidance material.

3.2 Development of criteria for regional significance

To date, surf breaks of regional significance have been identified in five regions of New Zealand for the purpose of informing policies or plans. With the exception of Gisborne, all of these regions have subsequently included regionally significant surf breaks within their policies or plans (Orchard, 2017). Other studies including Peryman & Orchard (2013), Scarfe et al. (2009a), and Skellern et al. (2013) have also considered the topic in relation to the wider coastal policy and planning context in New Zealand. As detailed in section 2, the Regional Policy Statement for Taranaki 2010 broke new ground by identifying 80 regionally significant surf breaks within an Appendix to the statutory document. Each surf break is identified as a point location only. No additional information was provided on their characteristics or other rationale for regional significance.

Coombes & Scarfe (2010) were the first to propose explicit criteria for regional significance in a New Zealand planning context. The criteria were applied to rate surf breaks in the Auckland region that were identified from Morse & Brunskill (2004), information from the Surfbreak Protection Society, and the local knowledge of council staff. Subsequently, the Auckland Unitary Plan included most of the surf breaks

assessed by Coombes & Scarfe (2010) but not on the basis of the ratings in that assessment. The reason for the difference is unclear. However, the surf breaks were identified using a schedule (Appendix 4 to the Plan), and policies referencing them were included in relevant sections (Auckland Council, 2016).

The focus of studies by Peryman (2011a, 2011b) in Gisborne and Bay of Plenty included potential criteria for the identification and description of regionally significant surf breaks, as well as characteristics of the nationally significant surf breaks in Gisborne. The studies were run concurrently and both utilised workshops, interviews, and surveys to engage with, and gather information from community members with knowledge of surf breaks in their region. In the Gisborne study, survey respondents were asked to rate the importance of 20 factors for understanding the importance of surf breaks, and identify any other important factors from their perspective. The list of factors was derived from Coombes & Scarfe (2010) and additional considerations identified by the researcher (Peryman, 2011b).

In the Bay of Plenty study survey respondents were presented with 11 suggested assessment criteria and asked to provide a rating against each for all of the surf breaks they had knowledge of within the region. In addition, respondents could provide comments on the surf break assessment criteria (Peryman, 2011a). Results included ten of these criteria being suggested as a criteria set for assessing the characteristics and values of surf breaks in the region, and a similar set was identified from the Gisborne study (Table 1). The difference related to an additional criterion identified in the Gisborne study addressing consistency of high quality wave conditions at or near full potential (Peryman, 2011b).

Table 1. Comparison of surf break assessment criteria used in regional assessments in New Zealand and Australia. Note: Wavetrack refers to Morse & Brunskill (2004).

Policy context & references	Auckland Unitary Plan Coombes & Scarfe (2010)	Bay of Plenty RCP Peryman (2011a)	Gisborne RCEP Peryman (2011b)	Greater Wellington RCP Gunson et al. (2014) Atkin et al. (2015)	Northland RCP NRC (2016a, 2016b, 2016c)	Australian National Surfing Reserves programme www.surfingreserves.org Short & Farmer (2012)
Physical environment attributes	<ul style="list-style-type: none"> Wave quality when optimum conditions are present determined using the Wavetrack 'stoke rating' or determination of an equivalent site when the break is not included in Wavetrack*. Rarity. Relates to whether the break is a rare type of break for the region. Determined from the average of rarity ratings assessed for geomorphic break type (headland or point, beach, bar, reef or ledge) and surfing skill level (all surfers, competent surfers only, intermediate-expert, experts only). Frequency/consistency of surfable conditions. Size of break area. Based on whether the break can accommodate many surfers at once. Larger breaks have a higher rating than smaller breaks. Naturalness. Indicates the level of naturalness retained and value as a wilderness experience. Sites with a low level of modification of the surroundings rate higher than sites adjacent to urban areas. 	<ul style="list-style-type: none"> Wave Quality (height, shape and length of ride). Performance of the surf break in optimum conditions – rated out of 10 in comparison to other breaks in the region, 10 being highest. Break type (reef break, point break, ledge, river mouth or beach break). How representative is the surf break is in terms of its type in the region, i.e. is it a common type of surf break within the region or is it rare. Consistency of surfable (wave conditions of any quality) and/or high quality (surfable wave conditions at or near full potential) waves – rated out of 10 in comparison to other breaks in the region, 10 being highest. Size or diversity of break area. How many recreational users the break can accommodate at once and where a break offers several surfable areas at any one time given suitable conditions. Naturalness/Scenery. The contribution of the surrounding natural landscape toward the enjoyment of the surfing and overall recreational experience. 	<ul style="list-style-type: none"> Wave Quality (height, shape and length of ride). Performance of the surf break in optimum conditions – rated out of 10 in comparison to other breaks in the region, 10 being highest. Break type (reef break, point break, ledge, river mouth or beach break). How representative is the surf break is in terms of its type in the region, i.e. is it a common type of surf break within the region or is it rare. Consistency of surfable wave conditions of any quality – rated out of 10 in comparison to other breaks in the region, 10 being highest. Consistency of high quality surfable wave conditions at or near full potential – rated out of 10 in comparison to other breaks in the region, 10 being highest. Line-up accommodation. How many recreational users the break can accommodate at once, including where a break offers several surfable areas at any one time given suitable. Naturalness/Scenery. The contribution of the surrounding natural landscape toward the enjoyment of the surfing and overall recreational experience. 	<ul style="list-style-type: none"> Wave Type. Min Wave Height. Max Wave Height. Wave Shape. Swell Direction. Wind Direction. Tide. Ride Length. Wavetrack 'stoke rating'. 	<ul style="list-style-type: none"> Wave quality. Performance of the surf break in optimum conditions i.e. height, shape and length of ride. Rarity (of break type). How representative is the surf break is in terms of its type in the region i.e. is it a common type of surf break within the region or is it rare (reef break, point break, ledge, river mouth or beach break). Uniqueness. Is the surf break able to be ridden in wind or swell conditions that are unusual in respect to other breaks in the area. Consistency. How often does the break have wave conditions that are suitable for surfing. Water Quality. Is the quality of the water at the site suitable for contact recreation? Wilderness/ naturalness. Does the break feel remote, lack buildings or is valued because of its uncrowded waves. 	<ul style="list-style-type: none"> Quality of wave(s). Consistency of the waves. Wave variety. Recognised biodiversity hotspot. Threatened species present. Undeveloped area. Connected to other water resources. Provides key ecosystem services.
Socio-cultural and economic attributes	<ul style="list-style-type: none"> Level of use. Based on a general assessment of how many surfers regularly use the particular break. Amenity. Reflects proximity to populated areas, ease of access, presence of ancillary services and facilities (e.g. surf 	<ul style="list-style-type: none"> Level of use. How regularly the break is used for recreation. This applies to the breaks suitability for a range of users from beginner to advanced levels in terms of all activities that use the break, including, but not limited to surfers, surf 	<ul style="list-style-type: none"> Level of use. How regularly the break is used for recreation. This applies to the breaks suitability for a range of users from beginner to advanced levels in terms of all activities that use the break, including, but not limited to surfers, surf 		<ul style="list-style-type: none"> Frequency of use / popularity. How regularly the break is used for recreation. This applies to the breaks suitability for a range of users from beginner to advanced levels. Education. Focus for skills learning, including 	<ul style="list-style-type: none"> A place considered special by the local surfing community. Long term usage of the beach and wave environment by local surfing community. Importance in surf history. Surf is key part of the local

	<p>clubs, toilets, car parks, shelters, accessways to beach, nearby accommodation and shops). Sites with greater levels of such facilities are rated higher than those with few facilities.</p> <ul style="list-style-type: none"> • Significance to the local community. Relates to whether the break is a key aspect of the local sense of place or contribution to local economy. • Value as a national / internationally recognised site (i.e. competition site, attracts tourists, frequently cited in surfing guides). Determined from knowledge of locations of surf competitions, frequency of mention in surfing websites and guide books. Sites with frequent competitions and mentions rate higher than those that are only locally known. 	<p>life saving, kite boarding, canoeists and paddle boards.</p> <ul style="list-style-type: none"> • Amenity value and access. Value of the break for its ease-of-access, proximity to a township, associated facilities, services and other amenities (e.g. surf clubs, toilets, car parks, shelters, nearby accommodation and shops). This category also includes the users of surf breaks as a part of the seascape, in providing amenity value for onlookers. • Local community and competition. Influence of a break on the social fabric of the surf community and the health and well-being associated with surf-riding (e.g. family-orientated lifestyle, local economic activity, surf training and competition). Includes the significance of a surf break as a contest venue for surf competition. • Value as a national / internationally recognised break. The significance of a break beyond the region for a wider domestic or international range of users, interests or audience – for general tourism and/or purposes specific to surf-riding. • Cultural values. Consideration of culturally significant values . This includes tikanga Māori (particularly where practiced in the coastal environment); and, the arrival, growth and evolution of ‘modern’ surf culture from Hawaiian and Californian influences (including surf lifesaving). 	<p>life saving, kite boarding, canoeists and paddle boards.</p> <ul style="list-style-type: none"> • Amenity value and access. Value of the break for its ease-of-access, proximity to a township, associated facilities, services and other amenities (e.g. surf clubs, toilets, car parks, shelters, nearby accommodation and shops). This category also includes the users of surf breaks as a part of the seascape, in providing amenity value for onlookers. • Community values. Influence of a break on the social fabric of the surf community and the health and well-being associated with surf-riding (e.g. family-orientated lifestyle, local economic activity, surf training and competition). • Value as a national / internationally recognised break. The significance of a break beyond the region for a wider domestic or international range of users, interests or audience – for general tourism and / or purposes specific to surf-riding. • Cultural values. Consideration of culturally significant values. This includes tikanga Māori and the arrival, growth and evolution of ‘modern’ surf culture from Hawaiian and Californian influences that included surf lifesaving. 		<p>encouragement of young/learner surfers to participate and socialise.</p>	<p>economy.</p>
<p>Presence of, or susceptibility to threats</p>					<ul style="list-style-type: none"> • Physical Robustness/ fragility of surf break. This attributes seeks to quantify the risk to a surf break. 	<ul style="list-style-type: none"> • Past/present wave threat likely to be mitigated. • Key issue identified. • Clear avenue for legal protection locally. • Protected designations.

* Wavetrack refers to the Wavetrack New Zealand Surfing Guide (Morse & Brunskill, 2004).

Peryman & Orchard (2013) evaluated the combined data from the surveys, interviews, and focus groups conducted in the Gisborne and the Bay of Plenty studies to identify categories of value that are important to coastal communities in those regions (Table 2). Ten categories of value associated with surf breaks were identified spanning all of the ‘four well-beings’. At least 15 aspects of surf breaks contributing to one or more value categories could be identified in the raw data from the combined studies. Many of these aspects can be further subdivided in terms of surf break attributes that contribute to each of the categories of value (Peryman & Orchard, 2013).

Table 2. Categorisation of surf break values and contributing aspects in Gisborne and Bay of Plenty. Adapted from Peryman & Orchard (2013).

Well-being theme	Value categories	Contributing aspects
Social	Physical and mental health benefits	<ul style="list-style-type: none"> • Surf breaks are host to many user groups who participate in many different forms of recreation with positive qualities for physical and mental health for people of all ages and walks of life
	Educational value	<ul style="list-style-type: none"> • Surf breaks are venues for skills learning , including encouragement of young / learner surfers to participate, hold contests, and socialise in a supportive environment
	Enabling interactions between community members	<ul style="list-style-type: none"> • Surf breaks support a diverse range of interactions that contribute to a social fabric that extends into wider communities
	Lifestyle value	<ul style="list-style-type: none"> • Surf breaks contribute to healthy, family-orientated and community-based lifestyles
	Spiritual value	<ul style="list-style-type: none"> • Surf breaks are a source of spiritual energy and a place to exercise spirituality important to individual health and community well-being
Cultural	Experiential and amenity values	<ul style="list-style-type: none"> • Surf breaks contribute to scenic and naturalness values important to recreational users, onlookers, coastal inhabitants and visitors • Surf breaks contribute to visual and oral expressions of place – interconnected to wider landscape and seascape values • Surf breaks contribute to the nature and memorability of experiences in the coastal environment • Raw and undeveloped natural landscapes and seascapes contribute to the opportunities for wilderness experiences • Built access and facilities can contribute to surf break amenity though are not always desirable
	Cultural use and enjoyment Places of cultural significance	<ul style="list-style-type: none"> • Access to, use and enjoyment of surf breaks are important aspects of the link between coastal culture and surf break environments • Many surf breaks are associated with important cultural or heritage associations and some are considered ‘sacred treasures’
Economic	Commercial activities and economic effects associated with surf breaks	<ul style="list-style-type: none"> • Surf-related tourism and surfing industry activities are important to local, regional and national economies • Surfing is extensively used in the marketing and promotional activities, and contributes to the branding of many commercial products as well as visitor and lifestyle destination. • The contribution of surfing to healthy lifestyles has physical and mental health benefits that contribute to economic considerations
Environmental	Natural features and life-supporting systems	<ul style="list-style-type: none"> • A range of physical aspects of the both terrestrial and aquatic environment contribute to the existence, character, and uniqueness of surf breaks • The ecology and ecological health of surf breaks, adjacent areas, and upstream catchments can influence use and enjoyment • Surf breaks have environmental educational value as sites for experiencing aspects of the coastal environment

More recently, a total of 17 attributes identified from Coombes & Scarfe (2010), Peryman (2011a), and Skellern et al. (2013) were considered to be potentially useful for an assessment of surf breaks in Northland (Northland Regional Council, 2016b, 2016c). Of these, nine attributes were considered to be 'primary attributes' of greater importance. Eight of these were subsequently applied in the assessment process following a decision to drop the 'water quality' attribute on the grounds that open coast water quality in the region was generally very good. Surf breaks were scored out of 10 for each of the eight attributes using an expert panel approach, with the surf breaks considered being identified from Morse & Brunskill (2004) and discussions with the expert panel (Northland Regional Council (2016b)). Scores for each break were summed following a Multi Criteria Analysis approach similar to that of Hughey & Baker (2010). Additional weight was given to the scores for wave quality, consistency, popularity, and education in calculating a final score out of 100 for each surf break. Those scoring a total of 35 or more were identified as being regionally significant although the report notes that the final threshold to be applied will be considered further by the expert panel following public feedback (Northland Regional Council, 2016b).

In the Wellington region a different approach was taken in which there were no criteria explicitly used in identifying a list of regionally significant surf breaks for inclusion in the Proposed Natural Resources Plan (Greater Wellington Regional Council, 2015). Instead, Gunson et al. (2014) prepared updated information on the location and characteristics of the surf breaks identified in Morse & Brunskill (2004), some of which are areas consisting of multiple breaks. This information considered the spatial extent of surfable waves at each location, and the characteristics of wave type, minimum and maximum wave height, wave shape, ride length, best tide, swell direction, and wind direction along with the Wavetrack 'stoke rating'. The information was incorporated in Atkin et al. (2015) along with maps of the swell corridor for each surf break derived from numerical modelling. These were based on a tracing the paths of swell able to reach a given break from a range of simulated offshore wave conditions as described by the model (Atkin et al., 2015).

The National Surfing Reserves programme in Australia was developed as a means of recognising the importance of iconic surfing sites in (Farmer & Short, 2007). Although the philosophy behind the programme and the Australian policy context differ from approaches to surf break protection in New Zealand, it includes the recognition of Regional Surfing Reserves (Short & Farmer, 2012). Criteria for reserve selection have been developed (Table 1) and are used by a reference group who are tasked with assessing nominated sites. However, the programme is not designed to provide a systematic approach to the identification of significant surf break resources. Instead the focus is on bringing people together around a non-statutory method of affording recognition to valued area (Farmer & Short, 2007). The approach has proven successful and has attracted strong support from State government including subsequent statutory recognition of the reserves by various means. The process encourages conflicts between user groups to be resolved by requiring evidence of a high level of community support for reserve status as an aspect of the assessment process (Short & Farmer, 2012).

3.3 Summary

The literature reviewed illustrates that a wide variety of attributes can contribute to the value of surf breaks. Some of these attributes may be perceived as being more relevant to the concept of regional significance than others. However with the exception of Northland, none of the New Zealand planning approaches to date have applied explicit criteria to separate surf breaks of regional significance from other known surf breaks in the region (Table 3).

Table 3. Regional policy statements and plans that have identified surf breaks of regional significance.

Date	Policy instrument	Methodology*	References
2010	Regional Policy Statement for Taranaki 2010	Wavetrack + consultation with local board-riding clubs	TRC (2010)
2015	Proposed Natural Resources Plan for the Wellington Region, July 2015	Wavetrack + local knowledge	Gunson et al. (2014) Atkin et al. (2015) Greater Wellington Regional Council (2015)
2016	Auckland Unitary Plan Operative in Part, Updated 14 December 2016.	Wavetrack + information provided by the Auckland branch of the Surfbreak Protection Society + local knowledge of council staff	Coombes & Scarfe (2010) Auckland Council (2016)
2016	Proposed Bay of Plenty Regional Coastal Environment Plan. Version Number 9.0b, November 2015.	Wavetrack + consultation with local surf community	Peryman (2011a) Bay of Plenty Regional Council (2015)
2016	Draft Regional Plan for Northland, August 2016.	Wavetrack + feedback from expert panel + assessment of overall importance + application of a cut-off score for defining regional significance	Northland Regional Council (2016a) Northland Regional Council (2016b) Northland Regional Council (2016c)

* Wavetrack refers to Morse & Brunskill (2004).

In consideration of the policy analysis and literature review the following matters provide the rationale for the recommended approach for identifying regional significance as set out in section 4:

- The focus of the policy context under the NZCPS is firstly on recognising surf breaks as natural features, and secondly on considering the contribution of those features to a range of matters important to the achievement of policy objectives;
- There is nothing in the policy context that requires the identification of surf breaks of 'regional significance' *per se*. Rather, the policy context requires the consideration of surf breaks in general, with additional considerations for the surf breaks of 'national significance' that are identified directly within the NZCPS;
- Conversely, there is also nothing precluding the identification of surf breaks of 'regional significance'. Where this approach is taken the purpose must be as a component of a method that helps achieve the relevant policy objectives. Under RMA section 32 the effectiveness and efficiency of all such approaches are important considerations;
- Planning approaches based on recognising a list of surf breaks of higher relative importance than others are a potential mechanism for achieving policy objectives, and similar concepts have been applied to the management of other natural resources. The relevant policy objectives clearly require attention to a range of values that may occur in those locations and could be impinged by other activities. The definition and identification of regional significance status cannot be considered to be effective and efficient as a planning tool unless these aspects of the policy context are addressed; and
- It is important to note that the policy context for surf break management is consistent with the overall approach to effects-based management under the RMA. Effects-based management depends on the recognition of current values, and consideration of potential adverse impacts on those values with regards to proposed developments (Rennie et al., 2014).

4. Recommendations

4.1 Assessment framework

Criteria for defining and identifying surf breaks of ‘regional significance’ reflect attributes that are valued by the community within areas defined as surf breaks. As identified above, the attributes to be considered must be inclusive of multiple values and perspectives. Although only the important attributes need to be considered (i.e. those that are valued and policy-relevant), there is a need to assess their relative importance at the location and provide some evidence or justification on which to base recognition of regional significance status. This suggests that a quantitative assessment of important attributes is a necessary step for the characterisation of surf breaks. Table 4 provides an assessment framework to address these needs.

Table 4. Framework for the assessment of regionally significant surf breaks.

Component	Description
Identify attributes	The surf break resource is assessed against an attribute typology defining the aspects that underpin community values and are relevant to the policy context (see Table 7). The primary attributes form the basis for regional significance assessment. Secondary attributes are defined as contributory aspects and are not directly assessed.
Quantitative attribute assessment	The purpose of this step is to quantify the primary attributes of the surf break resource. Sources of information should be inclusive of multiple values perspectives and a community-based approach is recommended. Each attribute is rated in terms of the degree to which the surf break exhibits that attribute on a regional scale. A 5-point assessment scale is recommended.
Apply significance criteria	Results from the assessment are evaluated against the criteria for regional significance.

4.2 Criteria for the assessment of regional significance

The recommended criteria consist of:

- design criteria that are applied to the assessment process, and
- significance criteria against which each surf break is rated for comparison to the significance threshold.

4.2.1 Design criteria

Spatial delineation

Spatial extent and resolution of the assessment must be stated.

This is an important criterion for interpretation of the overall assessment and is required to ensure that only areas that have been assessed are interpreted as being ‘significant’ or ‘not significant’. Suitable means for applying this criterion in practice include listing, mapping, or otherwise describing the spatial basis and scope of a given assessment process. Where known surf breaks have not been assessed due to local, cultural, or other sensitivities a ‘not assessed’ (NA) qualifier can added to the assessment result. This provides a mechanism for those areas to be potentially considered in a separate process more appropriate to the sensitivities of the affected community.

Value recognition

Sufficiency of information

To facilitate a credible assessment, information must be available and the sources made transparent. Where information is not available or sufficient to permit a reliable assessment this must be flagged to ensure transparency and comparability of results. This applies to any of the assessment criteria. A 'data deficient' qualifier (DD) may be used to denote situations where the current information is insufficient for a reliable assessment. In general, the degree to which the planning approach enables the future assessment of 'data deficient' and 'not assessed' areas is an important matter for consideration.

Shared value basis

The recognition of values is on a shared value basis since this is the best representation of the wider community perspective. If there are divergent views on the value of an assessment criterion, the assessment result should reflect this. Suitable means for addressing this criterion in practice include taking the average of values assigned by individual assessors, or through use of a consensus-building expert panel approach. To address information sufficiency aspects, the number of assessors required for a reliable assessment is a further consideration. The minimum number is open to interpretation and may be of particular importance for the assessment of lesser known breaks. In these cases local knowledge is likely to be the best information source and could be harnessed through a crowd sourcing approach.

Significance threshold

The significance threshold is the mid-point of a Likert scale as applied to rate the significance criteria.

Following the assessment framework, all surf breaks are rating in terms of the perceived importance of the location for each of the significance criteria on a regional basis. Using the recommended 5-point scale, a surf break will qualify for regional significance where score of >3 is attained for any one of the significance criteria.

Recommended assessment scale

For this assessment context, a 5-point scale is considered to be the most appropriate in striking a balance between simplicity and consistency of application (Table 5).

Alternatives include a 3-point scale as discussed by Hughey (2013), or a 10 point scale as used in other surf break studies and rating systems in New Zealand (e.g. Coombes & Scarfe, 2010; Morse & Brunskill, 2004; Peryman, 2011a, 2011b; Northland Regional Council, 2016b). The 3-point scale is considered insufficient for informing evaluation against the proposed criteria and significance threshold. A higher number of divisions (e.g. a seven or 10 point scale) may complicate the assessment process and analysis of results. The 5-point scale is considered sufficiently detailed to capture the essential information including the calculation of summary statistics where surveys or similar tools are used to collect individual responses. Within this approach, where the cut-off is applied for surf breaks of different value or importance to the region will depend on the particular management objectives and planning approaches developed by the Council in collaboration with surfing stakeholders and the wider community.

Table 5. Assessment scale for regional significance assessment.

Score	Importance of the surf break for the attribute on a regional basis
1	very low
2	low
3	moderate
4	high
5	very high

Following the same approach used for RiVAS assessments some attributes may have no importance at a given location and could be scored a zero (Hughey, 2013). In practice this could be incorporated by requiring assessors to score only the attributes that have some level of importance from their perspective, with all attributes not scored being treated as zeros.

4.2.2 Significance criteria

Ten assessment criteria are recommended. These are summarised in an attribute typology (Table 6). Primary attributes are the recommended attributes for regional significance assessment. Secondary attributes are additional aspects of surf breaks that contribute to the primary attributes. For the latter, examples only are given and others could be recognised.

Variations of the primary attributes may also be considered. This could be useful in different assessment contexts, such as where there is evidence that particular attributes are important to the regional significance concept and deserve recognition at the primary level. As such this typology has been developed for the Taranaki policy context based on the available information. See section 5.2 for further discussion on development of these criteria and consideration of alternatives.

Table 6. Attribute typology for significance assessment.

Primary attributes	Explanation	Secondary attributes (examples only)
Rarity	Recognises the rarity of the type of surf break, in the sense of being uncommon. 'Type' refers to physical characteristics of the waves produced by different surf breaks and this may be distinguished in various ways. To apply this criterion it is recommended that the types to be considered are first defined by a classification that addresses the characteristics thought to be important. An example classification is provided in Appendix 1. This recognises both types of surf breaks that are suitable for different activities (include both skill level considerations and various recreational pursuits) and geomorphic distinctions that may be used to categorise surf breaks such as those described by Mead (2000), Mead & Black (2001b) and Hutt et al. (2001). At the primary attribute level the rarity criterion describes whether the surf break is a rare type for any of the types considered.	Surf break types as defined by suitability for different activities, e.g. beginner surfers, big wave surfing, body-boarding, wind assisted wave riding etc. Surf break types as defined by geomorphic characteristics, e.g. beach break, reef break, point break, river bar break.
Wave quality	Recognises the quality of the waves at surf break for the wave riding activities practiced there. Assessed on the basis of the wave quality under near optimum conditions e.g. as used by Morse & Brunskill (2004).	<ul style="list-style-type: none"> - length of ride - wave shape characteristics - wave power characteristics - wave height range - performance aspects under optimum conditions
Wave consistency	Recognises the consistency of the surf break for producing surfable waves.	<ul style="list-style-type: none"> - surfable days / year or season - consistency of good quality surf
Uniqueness of the surf break in relation to favourable conditions	Recognises the importance of the location to the regional surf break resource in conditions when other breaks are not favourable	<ul style="list-style-type: none"> - relationships with other surf breaks in different weather & swell conditions
Naturalness	Recognises the degree to which the surf break is free from modifications to the natural environment which may be influenced by factors such as the presence of particular ecosystems, vegetation types, or wildlife, and absence of man-made structures and pollutants.	<ul style="list-style-type: none"> - proximity and design of structures or other modifications to the natural environment - occurrence of particular ecosystems, vegetation types, or wildlife - condition and legibility of landforms and/or formative coastal processes - water quality parameters / pollutants e.g. plastics - sounds and smells

Wilderness values	The key distinction from naturalness relates to wilderness being a human construction associated with the experience of wild nature. As applied to surf breaks it is primarily associated with the environmental context e.g. the level of remoteness or exposure to the elements the location offers.	<ul style="list-style-type: none"> - perception of wildness, as influenced by level of exposure to the elements, difficulty of human access or commitment required to reach the location
Amenity values	Recognises the importance of amenity values associated with the surf break. These are aspects that contribute to the pleasantness of the location. These aspects may be important to a range of associations with the surf break that do not necessarily involve wave riding. They include aesthetic aspects the influence the perception of beauty or memorability of the location, and others such as the ease of access and the presence of facilities.	<ul style="list-style-type: none"> - presence of services and facilities - proximity to home - scenic qualities and other aesthetics - memorability
Level of use	Recognises the popularity of the surf break in terms of the frequency of use and number of people who derive value from it.	<ul style="list-style-type: none"> - frequency of use - diversity of uses or associations with the surf break - numbers of people involved
Economic value to the community	Recognises the level of economic importance of the surf break for local communities and/or the wider regional community	<ul style="list-style-type: none"> - Promotional value for visitors to the local area or region, including as a component of international appeal - Economic activity associated with visitation modes - Contributions associated with events or contest venues
Historic, heritage, and cultural associations	Recognises the contribution of the surf break to historical and heritage values, including the importance of the site for historical events and the development of coastal and surf riding culture, and specific associations important to tangata whenua	<p>Characteristics in relation to:</p> <ul style="list-style-type: none"> - importance of the site for historical events - heritage aspects of the local or regional coastal culture e.g. long standing boardriding or surf lifesaving clubs - importance to contemporary coastal culture - contribution to the local sense of place - tangata whenua values associated with the surf break

4.3 Information sources

Suitable information sources for assessing the primary attributes include the perspectives of community members familiar with the resource and use of expert panel approaches. In some cases quantification of the contributing components (i.e. secondary attributes) could assist the assessment of primary attributes following either of the above approaches. To ensure that multiple perspectives are included community engagement is particularly important. In most cases there is a lack of existing information that could be used to characterise New Zealand surf breaks in terms of these attributes and yet it is important to avoid bias towards particular activities or preferences. Documented information on surf breaks is mostly found in guidebooks such as Morse & Brunskill (2004) and Rainger (2011) or online sources such as Wannasurf (www.wannasurf.org). However the aforementioned sources are not comprehensive in the sense of characterising all of the attributes important to surf break management since they are designed to cater for particular user groups. In addition, the original information sources are not always stated or available creating challenges for verification. To address this, local knowledge is currently the most authoritative source of information on New Zealand surf breaks for the purposes of regional significance assessment. A comprehensive community survey to gather information on the surf breaks in the region is recommended as the best approach to address current information gaps and underpin further assessments.

5. Discussion

5.1 Development of significance criteria

Northland Regional Council (2016b) suggested that the purpose of identifying national or regionally significant resources was to support the provision of levels of protection that may not be justifiable if it was applied across the whole resource. From a technical standpoint, many places have waves that could be ridden if a person paddled out with suitable surf-riding equipment and was so inclined. All such coastal areas and their swell corridors would meet the definition of surf break under the NZCPS. A key reason relates to the policy approach being place-based in the sense that surf breaks are discrete geospatial entities. The NZCPS approach does not discriminate against, or favour, any particular activity for which these areas are valued (Rennie et al., 2014) and instead defines them on the basis of producing surfable waves.

For the above reasons many parts of the New Zealand coastline are within the scope of matters to be considered when managing surf breaks under the NZCPS and it is important to note that all of the examples of the regional significance to date (as described in section 3) differ from the concept of identifying all of the surf breaks in a region. Although assessment criteria may not have been formally stated, it is considered that selection criteria have implicitly been applied to identify the regionally significant surf breaks, for example on the basis of the location being reasonably well known and recognised as a venue for wave riding. The current need is for more rigour and transparency around the basis on which regional significance is defined. Weaknesses of the 'creating a list' approach include a lack of transparency on what has been considered and why, and the likelihood that some wave riding activities or other associations with surf breaks have not been adequately considered, despite that they involve areas that meet the definition of surf break. Contributing factors may include limitations in the extent, or focus of consultation with the community, the composition and knowledge base of expert panels where used, and since the locations covered in the Wavetrack guide are biased towards board riding pursuits as the means of riding waves. A more comprehensive approach would include attention to the full range of community associations with surf breaks.

5.2 Recommended criteria

The criteria identified have been selected on the basis of evidence that links the attribute to values provided by surf breaks. Attributes found in the literature were evaluated and discarded where there was no evidence for their contribution to aspects of surf breaks valued by the community, or where they were adequately accounted for within the definition of other attributes. The result is an attribute typology that reflects a holistic and policy-relevant approach to the assessment of surf breaks in the New Zealand. The following sections discuss key aspects of the recommended significance criteria.

Rarity of surf break types

Rarity of break type was found to be the most inconsistently applied topic in the literature reviewed despite that it is undoubtedly important. As discussed by Coombes & Scarfe (2010), the importance of rarity relates to distinctive wave types. Surf breaks suited to different user groups may be scarce resources and it is appropriate that their importance is specifically recognised. The policy context indicates that it is appropriate to consider wave types that are valued by all sectors of the community at the primary attribute level, consistent with an effects-based and non-partisan approach to managing surf breaks. Important distinctions may relate to waves suitable for different surfing skill levels (Hutt et al., 2001; Mead & Black, 2001a, 2001b) and also to different wave riding activities that may utilise a wide range a craft (Skellern et al., 2013)

Oceanographic and geomorphic distinctions between surf breaks appear to be less relevant to the current policy context. However, it could be argued that they are important to protecting surf breaks as finite resources and these aspects are certainly important for other attributes. For example, elements such as sea bed morphology influences wave shape and other aspects of wave quality. The approach applied by Coombes & Scarfe (2010) to derive a ‘combined rarity rating’ is not supported since it confounds the consideration of skill level with different geomorphic classes of waves whilst not specifically addressing the needs of different user groups. The recommended approach is based on the development of a classification of wave types that acknowledges different user groups and incorporates the concept of skill level within these distinctions where needed.

In practice this requires that the rarity attribute is assessed against a *regional classification of surf break types valued by the community*. It is envisaged that these would be developed with considerable input from the community. For illustrative purposes an example classification is provided in Appendix 1 which could be adapted through consultation. This approach provides a practical basis for identifying different wave types that are valued within a region.

The assessment involves characterising each surf break in terms of these types and rating their importance in comparison to the regional surf break resource (i.e. a score of 1 indicates very low rarity of the type of break and a score of 5 indicates very high rarity). This interpretation is consistent with the concept of less common resources being important due to the scarcity of potential substitutes for the values they support.

Wave quality

High quality waves are a scarce resource. However, the concept of quality can only be defined in light of the uses being considered. The most common perspective considered in wave quality studies is that of high performance short board surfing. However, the concept of performance can be readily applied to a range of wave riding pursuits. Although many surf breaks are likely to be rated similarly in terms of wave quality for different user groups, some may have divergent views on the definition of high quality waves for their chosen activity. For example, a location may be identified by wind surfers as having high wave quality for their purposes. If the same surf break is rated as a low quality wave from other perspectives it is unlikely to meet the significance threshold for the wave quality attribute. Similar considerations may apply to user groups such as learners.

These aspects illustrate the role of the rarity attribute for recognising specific locations important to different user groups. In other respects the most practical basis for assessing wave quality is considered to be the perceived quality under optimum conditions as used in the Wavetrack ‘stoke rating’ (Morse & Brunskill, 2004). Following the approach of Coombes & Scarfe (2010) and Peryman (2011a), wave quality relative to the regional resource is the appropriate comparative basis.

Wave consistency

The consistency of a surf break in terms of the frequency of surfable waves is widely recognised as an attribute important to community value. Peryman (2011b) recommended an additional attribute related to the consistency of a surf break for delivering high quality waves (Table 1). However this has not been a consideration used elsewhere. Consistency for a variety of user groups as defined above is considered more appropriate for the regional level policy context and also more practical to assess. For example, Australia’s National Surfing Reserves programme considers this attribute in relation to surfable days / year.

Uniqueness of the surf break in relation to favourable conditions

This attribute is has been widely recognised as being important to the overall surf break resource of a given area. It recognises that in some conditions, which may be prevailing weather patterns, there may be only a very few surf breaks that are favourable for riding waves. In some case there may be only a single surf break capable of producing good wave riding conditions within a wide radius of a population centre. Examples include Bastion Point in Australia as discussed by Lazarow (2007) and Magnet Bay near

Christchurch. These surf breaks are a scarce and sought after resource in certain weather patterns. They are important to the attractiveness of an area for both locals and visitors to a region due to their influence on the reliability of finding favourable surfing opportunities and practical considerations such as travel times.

Scenic values, aesthetics, and amenity values

There are a number of inter-related components involving these topics, all of which have a solid basis for recognition in policy. Scenic values are considered to be subjective since they depend on the personal perspectives. Therefore, scenery is therefore grouped with other aesthetic considerations since all are related to perceptions of beauty or the appreciation of beauty. Furthermore these aesthetic qualities are grouped with other amenity values in the primary attribute typology. The justification relates to the definition of amenity values under the RMA as being “those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes”. Likewise, aspects such as the presence of facilities or convenience from home may all contribute to this definition. At the primary level of the typology it was considered appropriate to group these within a single class

Naturalness and wilderness values

In comparison to scenic values and other aesthetics the concept of naturalness is considered to have a more objective basis that is not necessarily correlated with people’s perceptions of beauty (*sensu* Froude et al., 2010). Accordingly, naturalness is identified as a separate environmental attribute that is related to the degree of modification of the site. Intuitively, the concept of wilderness may appear to overlap with naturalness. However, wilderness values refer to experiential qualities associated with the perception of wild. For example the definition of wilderness under the USA’s Wilderness Act includes “...has outstanding opportunities for solitude or a primitive and unconfined type of recreation”. Therefore, a location may be a highly natural environment (i.e. largely unmodified) that does not offer a wilderness experience. In addition, locations that are valued for offering a wilderness experience are likely to have very specific management needs. For example they may be valued because of the *difficulty* of access. As with other forms of placed-based resource management (e.g. parks and reserve management) it may be important to protect these values in specific ways to ensure that wilderness experiences remain available.

Level of use

This attribute recognises the popularity of the surf break in terms of the people who derive value from it. It includes aspects such as the number of people, and frequency and duration of use. The attribute is not necessarily correlated with wave consistency and is influenced by a range of factors that include proximity to population centres and whether the location suits a range of uses which may be sought after by different groups. The concept of level of use is applied to the surf break as discrete area and is therefore inclusive of multiple uses and includes those derive their ‘use’ value from a distance. It would be possible to measure levels of use in term of each user group but the total level of use is considered the most appropriate consideration at the primary level of the typology.

Economic importance

As described in Peryman & Orchard (2013), there are a range of commercial activities and economic effects associated with New Zealand surf breaks. They include surf-related tourism and surfing industry activities, the contribution of surfing to healthy lifestyles with associated economic benefits in terms of avoided health care costs, the extensive use of surf related branding in marketing and promotional activities, and contribution of surf breaks to the appeal of locations for settlement. In general, economic considerations have received little attention in New Zealand surf break management studies to date. Peryman (2011b) also found that the economic aspects of surf breaks were perceived as being of lesser importance than other management considerations in the Gisborne region. NRC (2016c) identified a connection between desirable qualities of surf breaks with associated influences on the local culture that include economic activity. Despite this, economic activity associated with surfing in Northland was thought to be difficult to attribute to a particular surf break (NRC, 2016c). However, this contrasts with the results of

overseas studies that have quantified economic activity attributable to individual surf breaks (e.g. Nelsen et al., 2007; Murphy & Bernal, 2008) and the localities where several surf breaks are found (e.g. Lazarow, 2008).

More generally, the importance of considering the economic value of surf breaks to the community is strongly supported in the research literature (Lazarow et al., 2009; Butt, 2010; Nelsen et al., 2013). It therefore seems clear that the economic benefits associated with surf breaks may be considerable despite that quantification remains difficult. Therefore a rating of economic importance of a surf break is considered to be appropriate as a primary attribute of value to the community. Importance to particular local economies and the wider regional economy is the appropriate scope for assessment.

Historic, heritage, and cultural associations

This criterion relates to whether the break is a key aspect of the local sense of place, identity or development of local culture. It may include spiritual aspects and in the New Zealand context includes aspects of importance to tangata whenua. Heritage value is a contributing aspect, such as where the break been the location for important historical events (e.g. competitions) or the hub for a particular style of wave riding, equipment development, or other cultural interaction with surf (e.g. the establishment of surf lifesaving clubs). Previous research has confirmed that these aspects are important characteristics of surf breaks for New Zealand communities (Peryman & Orchard, 2013) and in Australia they are a key consideration for the assessment of National Surfing Reserve proposals (Short & Farmer, 2012).

Other potential criteria

Size and diversity of the surf break area

Coombes & Scarfe (2010) identified size of the break area in their list of criteria for assessing surf breaks in the Auckland region. This was based on whether the break can accommodate many surfers at once with larger breaks receiving a higher rating than smaller breaks. A similar concept was adopted by Peryman (2011b) who identified 'line-up accommodation' as an assessment criterion, referring to how many recreational users the break can accommodate at once. In this typology, these characteristics are considered to be contributing factors to the 'level of use' criterion and for that reason adequately accounted for sense at the primary attribute level. Peryman (2011a) and NRC (2016c) also identified diversity of the surf break area as a criterion for consideration, referring to whether a surf break offers several surfable areas at any one time. In this study, the diversity concept was found to have no direct basis in policy as an important consideration at the scale of an individual surf break. This concept is considered to be adequately addressed as a component of the 'level of use' in combination with the 'rarity' criterion in which the focus is on recognising locations important for specific activities on a regional basis.

Vulnerability

NRC (2016c) identified an attribute called 'physical robustness / fragility' that was included to reflect concerns of the expert panel regarding risks to certain types of breaks that were perceived as being more sensitive to degradation. In the assessment, river bar breaks were assumed to be a more sensitive wave type due to their reliance on sediment dynamics that were perceived to be vulnerable to undesirable change (NRC, 2016c). In this study the concept of sensitivity was found to be more generally applicable to a wide range of threat types that may include disruptions to coastal processes but also aspects such as water quality, access issues, visual and other aesthetic impacts, and longer term processes such as sea level rise. The policy context for defining significance was found to be largely concerned with identifying the attributes of surf breaks that underpin community values. Moreover, characterisation of the specific values of a given location is in many ways a pre-requisite for comprehensive risk assessment. Therefore it is considered that the best approach is to decouple sensitivity and risk considerations from the process of identifying and characterising valued locations. This approach is consistent with recommendations of Scarfe et al. (2009b), Skellern et al. (2013) and others who have pointed out the urgent need for proper characterisation of the current surf break resource together with the establishment of baseline measurements as are needed to facilitate the assessment of impacts and risk.

5.3 Primary versus secondary attributes

For all of the primary attributes, there are additional contributing aspects. It is open to debate whether these require explicit consideration in relation to the concept of regional significance. In the proposed typology, primary attributes describe a property of the natural feature that underpins a cohesive and defensible source of value for the community. Secondary attributes are further characteristics of the feature or environmental context that are components of the primary attributes. They may contribute to primary attributes (e.g. aspects of seabed morphology or swell patterns that contribute to wave quality, or presence of vegetation types and wildlife contributing to naturalness), or may be responsible for the formation or maintenance of other attributes (e.g. coastal processes at rivermouths). The overall approach is considered appropriate for the purposes of a regional significance assessment where the focus is a smaller set of policy relevant criteria. The primary attributes are designed to be complementary and comprehensive in their ability to accommodate a wide range of knowledge sources and perspectives on the value of surf breaks.

It is noted that for the purposes of establishing baseline condition measurements and monitoring, decisions on the level of detail required are very important. This will generally require a greater level of detail than provided by the primary attributes in this typology. This arises because of the need to understand and monitor the factors responsible for the primary attributes valued by the community. This point has been well made by other researchers in connection with fundamental need to understand the oceanographic parameters responsible for high performance waves (ASR Ltd, 2011; Benedet et al., 2007; Mead & Black 2001a, 2001b; Hutt et al., 2001; McComb, 2016; Scarfe et al., 2009a, 2009b). The same reasoning applies to all of the primary attributes that underpin community values at a given surf break. All are important considerations for baseline and impact assessments, and the design of monitoring programmes.

5.4 Significance threshold

An argument was presented in Northland Regional Council (2016c) around the common use of thresholds to identify areas of regional significance for various resources, using examples such as the identification of Regionally Significant Wetlands in Otago and Regionally Significant landscapes in Canterbury. This was related to the following perspective:

“A threshold for regional significance should be set and this process should be used to show the elevated importance of this list of surf breaks of resources because they are exceptional examples of their type within a region” (Northland Regional Council, 2016c).

The findings of this study do not support the view that the concept of regional significance as applied to surf breaks requires those areas to be “exceptional examples of their type within a region”. Other terms, such as “outstanding” are typically employed in the RMA and related policy where this is the desired focus. Additional weaknesses of the proposed approach include failure to account for some attributes that are relevant to policy and previously shown to be important to the values of surf breaks, and the ability for some aspects to be weighted more highly than others without a policy-relevant and objective basis for doing so.

In general, the weighted sum model for Multi-Criteria Assessment (MCA) as used in Northland (2016c) and described in Hughey & Baker (2010) and Hughey (2013) provides an example of a criteria-based assessment system. Conceptual thresholds may readily be applied, such as through ranking the summed scores and applying numerical cut-offs. This process of ranking and grouping can be useful for tasks such

as prioritising management effort where the investment available is limited. For that purpose, the attributes selected for rating could be designed to measure aspects of the management needs. However, the policy context does not suggest that a summed score of ratings against a set of surf break attributes would be an appropriate basis for defining a threshold for regional significance. Rather, it suggests that areas should be identified that are important to the achievement of relevant policy objectives and there are several to be considered. Identifying areas based on a summed score runs the risk of obscuring areas that may be important for any one of these objectives.

Alternative MCA methodologies include specifying thresholds under any one or more individual criteria as proposed here. This is a better match for the surf break policy context. Examples as applied to other natural resources include the identification of ecologically significant areas under RMA s6(c). For this purpose, councils have some flexibility in specifying the assessment criteria to be used and there has been vigorous debate around which criteria should be applied and whether a standardised set is necessary (e.g. Walker et al., 2008; Davis et al., 2016). Once the criteria have been determined, the methodology involves the assessment of candidate areas against all the criteria, each of which has a threshold. Areas qualifying under any one criterion are deemed significant.

5.5 Application to the Taranaki Coastal Plan

5.5.1 Mapping and identification of surf breaks

In the Taranaki context there are large sections of the coastline that meet the definition of a surf break. There are also many locations where people are known to have associations with surf breaks that include a range of wave riding activities. Review of the Coastal Plan provides an excellent opportunity to recognise the surf break resources that provide benefits to the community. In the process to date, the Council has prepared a Draft Coastal Plan that provides for the protection of nationally and regionally significant surf breaks as identified in a schedule to the plan (currently Schedule 4). The draft plan also identifies a stretch of surf breaks from Kaihihi Road to Cape Road as a 'Nationally Significant Surfing Area' (TRC, 2016a, 2016b). This area is notable for a high density of quality surf breaks including three of the region's four nationally significant surf breaks, most of which are associated with reef systems formed by finger-like lahar deposits and volcanic debris (McComb, 2016). There are four nationally significant surf breaks in the region as identified in Schedule 1 of the NZCPS (DOC, 2010). These breaks are Waiwhakaiho, Stent Road, Backdoor Stent and Farmhouse Stent. No mechanism exists for affording 'national significance' status to any further surf breaks at the current time.

The four breaks of national significance and a further 76 surf breaks were identified as regionally significant in the RPS (TRC, 2010). The same list of 80 breaks is currently identified in Schedule 4 of the Draft Coastal Plan. However, as part of the plan review process the Council has identified that some of the locations of the 80 surf breaks mapped in the RPS are not particularly accurate (N. West, pers. comm.) To address the above, focus groups with local surfers were convened to confirm the locations and also add any additional surf breaks to create a comprehensive inventory of surf breaks in the Taranaki region.

In general, mapping is not a prerequisite for regional significance assessment. However, following identification the next step involves the development of planning methods to achieve the relevant policy objectives. The identification of spatial boundaries is undoubtedly a potential method for improving plan effectiveness by providing information to alert plan users to the location of the values to be protected. However if detailed mapping is envisaged this could also have counterproductive aspects. In particular, many local surfers may be hesitant to disclose the location or details of a regionally significant surf break in the knowledge that it will be mapped, thereby reducing plan effectiveness for purpose of surf break protection.

The following considerations may be helpful in developing an appropriate approach to the mapping and identification of surf breaks:

- i) it may be appropriate to develop a 'locally sensitive break' (LSB) mechanism as a tool to support information sharing. An agreed approach to the treatment of information on LSBs could provide a mechanism similar to the 'silent file' approach developed by Ngāi Tahu (Tau et al., 1990). With regards to mapping, the approach could involve the suppression of LSBs from maps, or the inclusion of fuzzy data to indicate the presence of a valued location within a certain radius.
- ii) in general, point data may be ineffective at identifying the location of surf break resources unless an additional tool is provided to clarify the spatial boundaries. This could be achieved by way of a descriptive schedule as an alternative to the mapping of polygons. In any event the boundaries of the area of significance should be clear to facilitate the implementation of protection methods, especially those reliant on impact assessments, and also to support the design of appropriate coastal developments in the vicinity. It is important to avoid unnecessary adversarial consequences that could result if the relevant boundaries become the subject of debate.
- iii) the mapping of swell corridors is not essential to an effective planning approach provided that an adequate description of the swell corridor concept is provided directly within the plan. This could be achieved by adopting the NZCPS definition of surf break within the plan. Thereby, all activities seaward of identified surf breaks are required to assess effects in relation to the swell corridor component of each break. The most important factor is that the locations to be protected can be readily identified by resource users and managers. Where an activity is proposed that could have effects on a swell corridor, techniques such as numerical modelling are useful for predicting potential impacts such as the alteration of swell patterns and the number of breaks potentially affected. This is also an appropriate context for more detailed characterisation of swell corridors and their properties since the specific attributes that are valued at the surf breaks can be considered in the choice of the modelling approach and outputs. In addition, the establishment of baseline measurements for monitoring is another setting in which the investigation of swell patterns is required to characterise the physical components of important attributes such as wave quality (Hutt et al., 2001; McComb, 2016; Mead & Black, 2001a, 2001b; Scarfe, 2008; Scarfe et al., 2009a, 2009b). In general, there is a lack of documentation to describe the current values and condition of New Zealand's surf break resources as is needed to facilitate monitoring. A combination of community data, field measurements, and numerical modelling can assist in addressing these needs and should be applied to all of the attributes that underpin important values.

5.5.2 Application of regional significance criteria within the Coastal Plan

The following approaches are options for utilising the criteria to determine the surf breaks of regional significance in the context of the Coastal Plan:

- i) *Conduct a surf break assessment to determine surf breaks of regional significance for inclusion in the plan.*

This method offers a direct mechanism to assist future decision making (e.g. on development proposals) by providing information on surf breaks directly to the community. In addition to regional significance status, information on the attributes and values of surf breaks will support processes such as resource consent applications and impact assessments. Arguably, this is the most effective method for ensuring robust and consistent effects assessments if these are a feature of the planning approach. However, it is important that a sufficient timeline is allocated to compile information and deal with information gaps. Inclusive community-based approaches are recommended

- ii) *Provide information on the criteria to be considered when assessing values of, and effects on surf breaks.*

This method is complementary to the above and could be useful for addressing the situation where a surf break has not been fully assessed under the above process due to being unknown, an LSB, or data deficient. It would operate by specifying the criteria to be used when assessing surf breaks for regional significance. This may present both an efficient and effective solution for Council at the current time since it enables consistent assessment to be conducted by other parties, provided that the criteria have legal effect. This is best achieved by their inclusion directly within the plan.

Either of the above method could be supported by the content of the plan, by separate guidance documents, or a combination thereof.

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Appendix 1. Components of a regional classification of surf break types for assessment of the rarity criterion.

A. Community sectors with specific requirements or preferences for particular wave types:

- beginner surfers
- big wave surfers
- short board / high performance surfing
- long boarding and stand-up paddle
- body boarding
- kayak surfing
- wind powered surfing
- body surfers / swimming in waves
- non-use interests e.g. photographers, spectators

B. Surf break types distinguishable by geomorphology (*sensu* Mead, 2000; Mead & Black 2001b) that occur in Taranaki:

- Beach breaks
- Point breaks
- Rocky reef breaks
- Rock ledges / slabs
- River bar breaks

Classes identified in part A reflect surf break types important to different community sectors. Classes identified in part B are defined according to physical characteristics of the seabed upon which the waves break. Both aspects may be regarded as relevant to the management of surf breaks as unique natural features. Although the relative importance of each is open to debate it is recommended that a combination (and potentially all) of the above categories are recognised for assessment of the rarity criterion. It is also noted that although some of the above community sectors may identify the same surf break(s) as being important waves types for their activities this is best established as an outcome of the rarity assessment rather than an *a priori* assumption.

In designing the assessment the key step is to identify community sectors that may value wave types differently. However, it is important to limit the classes recognised to keep the assessment practical and since the examples shown in parts A and B are both amenable to further subdivision. The above list provides an example of readily identifiable socio-ecological associations and geomorphic distinctions that may be a useful starting point when classifying surf break types for application of the rarity criterion.