Identification and Mapping of Significant Ecological Marine Areas in Northland
Project Brief and Guide to Assessment

Prepared by Vince Kerr, August 12th, 2015 Vers 4

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Introduction and Background Notes

The aim of this project is to identify and map areas of significant biodiversity within the Coastal Marine Area of the Northland region. This work is being undertaken largely in response to the requirements to protect significant biodiversity values set out in:

- Resource Management Act 1991 (RMA), section 6(c)

- Policy 11 of the New Zealand Coastal Policy Statement 2010 (NZCPS 2010)

- Proposed Regional Policy Statement for Northland (PRPS), policy 4.4.1

This project will focus on the coastal marine area shoreline defined as the MHWS out to 30 m depth or 2 km off shore, whichever is further.

Appendix 5 to the PRPS (see Appendix 1) sets out criteria for selecting sites of ecological significance. Considerable consultation with the Department of Conservation (DOC) was carried out in producing the criteria. The Appendix 5 criteria include area thresholds to automatically trigger 'significance' when different wetland classes exceed a given area. Saltmarsh wetlands are likely to be one of the main habitats located at the Coastal Marine Area (CMA), terrestrial saltwater environment boundary. Northland Regional Council (NRC) has mapped many of the region's wetlands and this exercise is likely to cover most significant wetlands that are (partially or fully) in the coastal marine area.

It is envisaged that end users will be able to easily access a description of the significant values of each identified area and be directed to a location where more detailed information is available, i.e. worksheets from the significance assessment and supporting data.

Criteria adapted from Appendix 5 PRPS for marine assessment

In order to test the Appendix 5 criteria in a marine context, assessment processes for mapping marine significant ecological areas in Bay of Plenty, Auckland, and Marlborough Sounds were reviewed. A further set of natural character and significant areas assessment criteria and the IUCN guidelines were also reviewed. Each of the Councils which have done marine assessments have used slightly different approaches with only the Marlborough Sounds process substantially simplifying the terrestrial list of criteria. These simplified criteria allowed more expert judgement to be exercised, based on what is often a more complex environment in the sea, with far less information available.

In the author's opinion the Appendix 5 criteria do provide a workable framework for this assessment, although minor adaptations as described below were identified and listed.

Appendix 5 suggested alteration for marine assessment:

- The term flora was substituted for vegetation;
- Criteria 2-i was omitted as it applied to a particular threatened terrestrial vegetation assessment;

- Criteria 2-ii was omitted as it applied to a particular threatened terrestrial vegetation assessment.

Original numbering of criteria and sub-criteria was retained to maintain consistency with Appendix 5 in all documents.

Method and rules for assessment

For a site to be recommended for inclusion within the proposed Regional Coastal Plan Significant Ecological Area schedule it must meet at least one of the four primary criteria:

1. representativeness,
2. rarity/distinctiveness,
3. diversity/pattern, and
4. ecological context.

Each of the four primary criterions above has a set of sub-criteria. Each sub-criterion has a description provided below that is intended to serve as a guide to assessing the sub-criterion as a high, moderate, or low-ranked site. Within each main criterion the list of sub-criteria are all connected with an **or** which means that a site only has to achieve a high ranking in one sub-criterion to be considered as high ranking for that main criterion.

Moderate rankings can be considered in the overall assessment where there are no high rankings. There could be situations where a significant number of moderate rankings are achieved across the main criteria but no high rankings are given. In this case the site could be reviewed in relation to its overall importance as an ecological site to the region.

Care is required to avoid multiple counting of values to ensure that the values are directly related to the criterion being assessed.

In most cases it is impossible to measure all biodiversity at a single site. Nor is it possible to identify all of the significant ecological sites or all functional ecological roles in a region. In the context of the Northland coastal environment it is important to protect the potential to further identify and protect outstanding ecological sites for the future. Surrogates such as habitat classifications, bathymetry, and other available abiotic information can accordingly be used to facilitate the assessments. Where specific spatial information is lacking a judgement can be made that there is a high probability of significant species assemblies or habitats occurring and a high ranking awarded. Notes summarising the grounds for such judgements will be provided.

In the assessment worksheet there will be two columns for inputs describing the category of information and a ranking for reliability of the information used.

The categories of information are:

- Quantitative report
- Qualitative report
- Habitat map and/or classification

- Expert opinion
- Personal communication
- Anecdotal information
- Visit and observation

The ranking system for reliability of the information is expressed as a scale of confidence ranging from high confidence (+++) to low confidence (---). This method is adopted from Van den Belt (2014).

Each site assessment worksheet may also have brief explanatory notes on the extent and quality of the information considered. References will be noted where possible.

Some sites can be described as having insufficient information and requiring further investigation to assess for inclusion in the schedule as high-ranking. This data-deficient ranking can fulfil the function of identifying sites that could be high-ranking ecological sites but cannot be justified on current knowledge. This category should prove useful in the directing further work.

Biogeographic areas and representation

The aim of using representativeness as a selection criterion is to ensure that the full range of biodiversity (species, habitats, and ecosystems) of the region is represented in the schedule. This in turn ensures that the expected or typical range of ecosystems naturally found in Northland is maintained. This criterion provides for examples of common ecosystems to be valued for their contribution to the maintenance of biodiversity.

Applying this criterion requires that a scale of representation be identified. There are numerous New Zealand-created classification schemes to consider. Six of the most useful were reviewed with statistical methods against biological data sets in Shears et al. (2008). From this review there was support for the usefulness of the Bioregions now adopted in the Marine Protected Area Protection Standard and Implementation Guidelines (MinFish and DOC, 2008). There are fourteen Bioregions in New Zealand waters. As described in the MPA Guidelines, Northland lies mostly in the Northeast Bioregion (see Figure 1). The Northeast Bioregion extends from Ahipara on the west coast around the top of Northland and down the northeast coast to Bay of Plenty and ends at Cape Runaway. The Northland coast also makes up part of the Western North Island Bioregion running from Ahipara to New Plymouth. A third Bioregion, Three Kings, lies off shore to the northwest of Northland bordering on the NRC area.
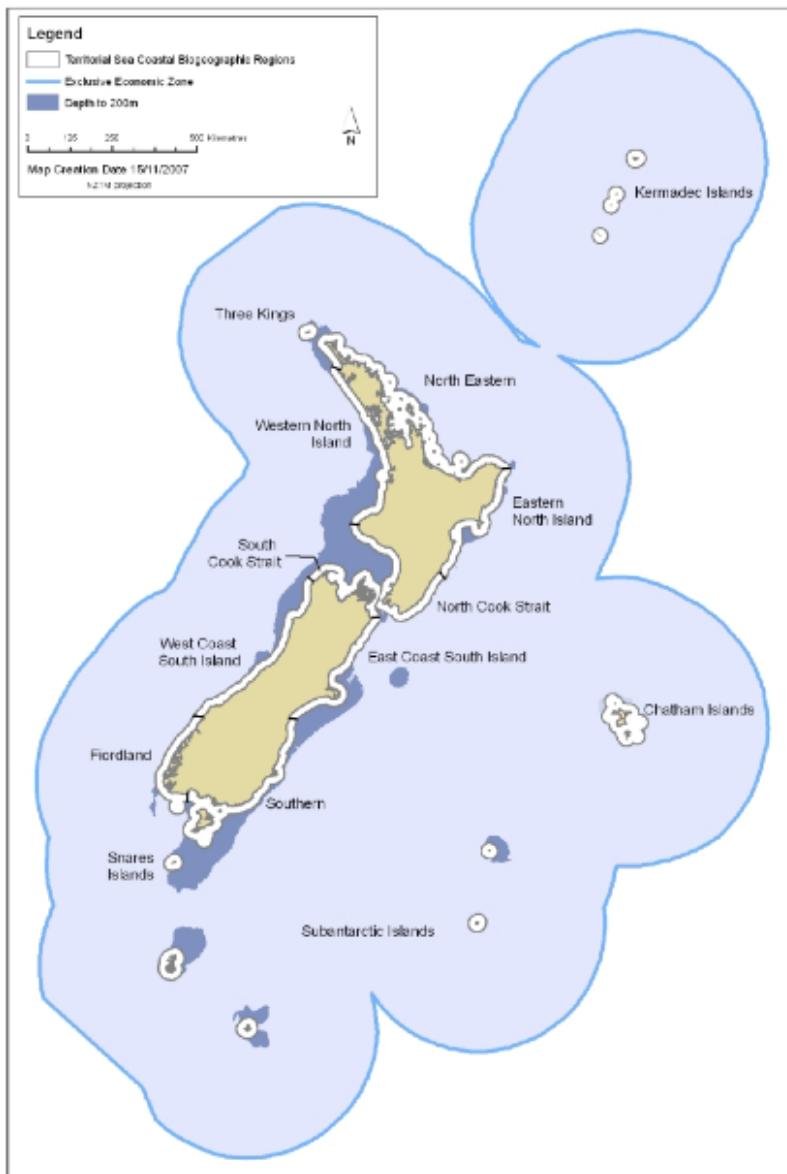
Figure 1 Northeast Bioregion map

A finer scale Nearshore Marine Coastal Classification (Walls, 1995, Walls, 2006, and DOC, 2006) was developed by DOC in the 1990s based on earlier work by King (1985). This classification approach was also reviewed in a Shears et al. (2008) study. The Nearshore Classification was useful in that it included consideration of intertidal and nearshore coastal species and had an emphasis on coastal communities of importance and their variations at the finer scale. In this classification there are 18 coastal units covering the Northland coast including the estuaries, with the larger estuaries each constituting one coastal unit. See Figure 2.
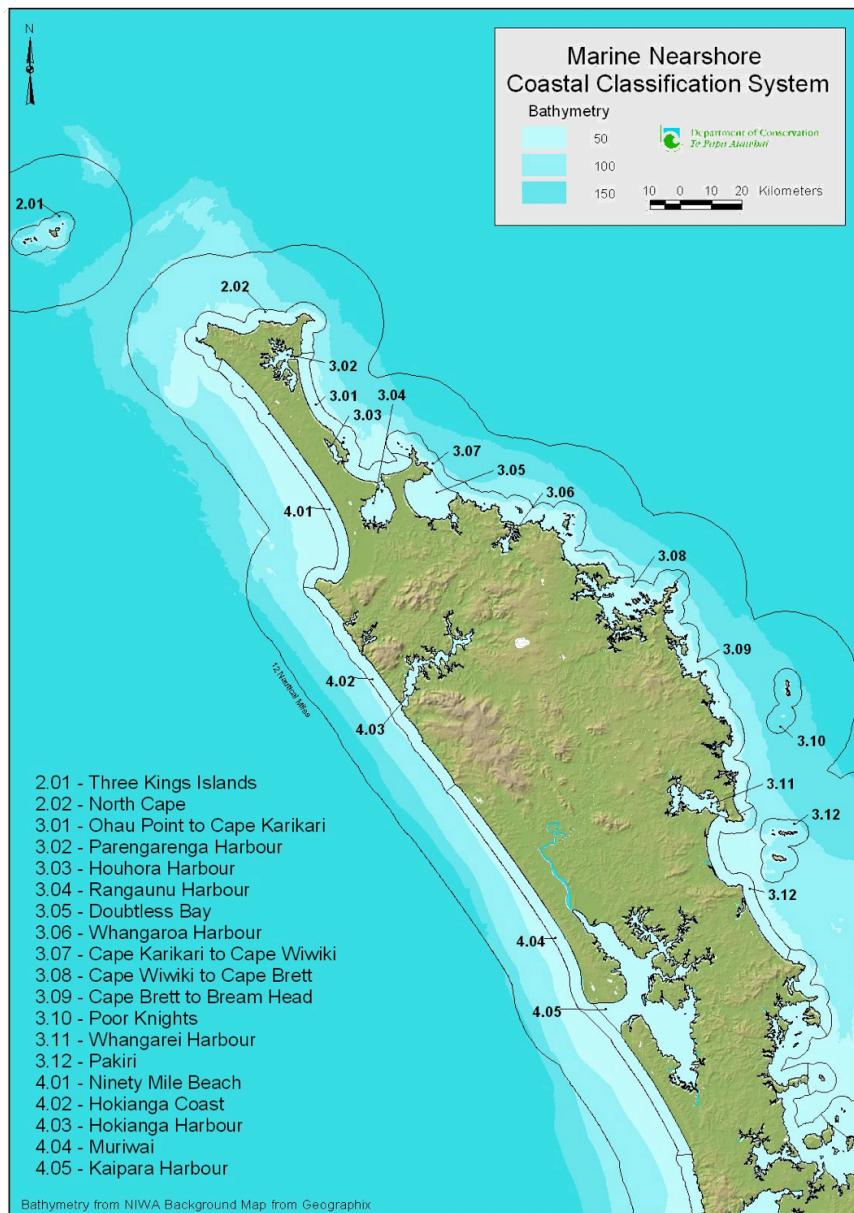
Figure 2 Marine Nearshore Coastal Classification System

From a conservation perspective, the application of representation is not a concept that exists in isolation from other ecological factors. Rather it must be considered in the context of other requirements that are related to and of equal importance to representativeness: geographic spread, replication, and connectivity. This is well documented in the international literature (IUCN CBD, 2009, Dunstan, 2011) and the New Zealand MPA Guidelines.

Northland has a very long and very diverse coastline. The coasts of the two Bioregions of which Northland forms part are hundreds of kilometres long and account for approximately one half of the entire North Island coast. In this case representative areas need to be spread and replicated along such a long coast to be effective in ecological terms. Considering

representation at the coastal unit scale largely addresses this problem and supports assessments being done at a Northland scale.

For this project, it is suggested that representation is assessed at the Bioregion level with the following caveats:

1. The information in the Nearshore Classification System scale is considered in the assessment for its value of showing the diversity of environments, communities, and species assemblies and the large geographic spread in Northland.

2. Other classifications arising from specialists' surveys useful in informing the assessment process should also be considered.

3. When deciding how many sites of a particular type can be considered as high-ranking for representation at the Bioregion scale, the requirements for geographic spread, replication, and connectivity should be considered. Within the Northland region there needs to be replication due to the size and diverse nature of the environment.

This approach in the Northland context will be especially useful when applied to special sites, of which there are many. Many of these sites will stand out as representative at the coastal unit scale or Northland scale, but could be overlooked when considered along with every similar site in the Bioregion if geographic spread and replication connectivity requirements were ignored.

Important species and candidate areas

A list of species comprised of listed species in the National Threatened Species classification is being compiled and a GIS project is being built. This will bring together available information on candidate sites for the assessment process.

The Assessment Criteria

The significance of an area of indigenous flora or habitat(s) of indigenous fauna is to be assessed using the following criteria.

1. Representativeness

Representativeness can be considered at the coastal unit scale as part of the process of consideration of representation at the Bioregion scale.

The extent to which the ecological site containing the indigenous flora or habitat(s) of indigenous fauna is representative, typical, or characteristic of the natural diversity at the relevant ecological classification and scale, and whether it:

1-i. Supports *most* indigenous flora *and / or* fauna species expected for the habitat type; or

High representative value: The site contains habitat(s) and species assemblies reflecting a composition and structure that would be expected where representatives of the natural range of the indigenous fauna and/or flora are present. The site is the best-known example or one of the better examples. A site can be modified to some extent but in this case must be among the best remaining examples of its type and have the potential to be restored or to support the recovery of significant indigenous flora or fauna. (Note: this consideration supports NZCPS Policy 14 provisions in additions to Policy 11 generally.)

Medium representative value: The site contains one of the better examples, but not the best of its type known from the coastal unit or region.

Low representative value: The site contains an example of representation but not one of the better or best of its type known from the coastal unit or region.

Example: Mimiwhangata contains a very large array of habitats due to the complex coastline and variations of exposure created by the islands and extension of the peninsula out into ocean currents and deeper bathymetry. Mimiwhangata has large adjoining areas of high quality deep reefs including areas of high relief that create a more productive reef situation than normal. Greater than normal species diversity notably for subtropical fish species is documented for this site. (Suggested rank = high.)

1-ii. Is a large example of its type at the relevant and recognised ecological classification and scale.

High representative value: The site contains habitat(s) and species assemblies that are the largest in spatial extent in relation to their type found within the coastal unit or region. Some specialised examples of habitats and species could be the largest example of type but still a small area compared to other examples. The site can be modified to a degree where it is the best remaining example of its type and has the potential to be restored or to support the recovery of significant indigenous flora or fauna.

Medium representative value: The site is relatively moderate in size.

Low representative value: The site is relatively small in size.

Example: The tidal flats of Parengarenga Harbour are among the largest areas of high quality estuarine tidal flats in Northland and are significant regionally and nationally in their role of supporting migratory waders. The expansive areas of tidal flats have large areas of seagrass habitats in virtually pristine condition. This habitat would score a high ranking in several criteria but as a representative site would score a high ranking based on being one of the biggest and best in the Region. (Suggested rank = high.)

2. Rarity / distinctiveness

The rarity of the indigenous flora or habitat(s) of indigenous fauna, including whether:

2-i Omitted from marine assessment

This criterion is excluded from assessment as it refers to a specific terrestrial vegetation situation and is not applicable to marine assessment.

2-ii Omitted from marine assessment

This criterion is excluded from assessment as it refers to a specific terrestrial vegetation situation and is not applicable to marine assessment. It is suggested that the criteria 2-ii through 2-vii adequately cover assessment of the 2. Rarity / distinctiveness primary criteria and that where special and rare sites are associated with key ecological functions they can be assessed under primary criteria 4. Ecological context.

2-iii. It is distinctive of a naturally restricted occurrence; or

High value: The site contains habitat(s) and species assemblies that make up a significantly important or valuable community or ecosystem, which by its nature is specialised or habitat-specific such that it occurs naturally only in one or few locations.

Medium value: The site contains habitat(s) and species assemblies that make up a community or ecosystem of importance, which by its nature is specialised or habitat-specific such that it occurs naturally only in one or few locations or in a limited number of other localities.

Low value: The site contains habitat(s) and species assemblies that make up a community or ecosystem with low importance, which by its nature is specialised or habitat-specific but occurs naturally in other localities or is relatively unrestricted in natural range.

Example: The sponge gardens off the coast of North Cape have been described as having a high diversity of sessile sponge species and including a number of species only known from this location. (Suggested rank = high.)

2-iv. It has developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem (see Table 1, Appendix 5 for Northland's known examples and those likely to occur); or

Table 1 is based on Williams (2007) and is predominantly focused on terrestrial habitats arising from rare geological formations. Unfortunately in the coastal marine area there is no parallel identification of rare habitats based on a similar approach. Table 1 does list lagoons, estuaries, coastal rock stacks, and marine mammal rookeries and haul-outs, which should be considered here. It is suggested that additional coastal physical features that create special or rare marine ecosystem examples are considered if they can be described as such (see examples below).

High value: The site contains habitat(s) and species assemblies that make up a significantly important or valuable community or ecosystem resulting from identified rare environmental conditions or makes up a component of an originally rare ecosystem.

Medium value: The site contains habitat(s) and species assemblies that make up a community or ecosystem of some value resulting from identified rare environmental conditions.

Low value: The site contains habitat(s) and species assemblies that make up a community or ecosystem of low value resulting from identified rare environmental conditions.

Examples:

1) The shallow rocky reef ecosystems associated with Cape Brett and Motukokako Island are special and rare as a coastal site due to the dramatic landforms supporting them and their position of extension out into the deeper depths and currents of the coastal shelf environment. Settlement of sub-tropical species is very high here as result of the special characteristics. (Suggested rank = high.)

2) The encrusting invertebrate communities on the reefs surrounding Motukaroro Island near the entrance to Whangarei Harbour. The site has a unique topography and current/eddy environment that results in high diversity of species and lush growth. (Suggested rank = high.)

2-v It is nationally or regionally rare habitat(s) identified in accordance with the New Zealand Marine Protected Areas Policy and Implementation Plan; or

The current MPA plan in its coastal classification in addition to its abiotic classifications defines a classification named 'biogenic reefs'. This is defined as follows:

> *Biogenic reefs (elevated structures on the seabed constructed of living and dead organisms) include fragile erect bryozoans and other sessile suspension feeders. Examples are bryozoan beds, rhodolith beds, tube worm mounds, sponge gardens and cold-water corals. These communities develop in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats, and may be found in a variety of sediment types and salinity regimes.*

The plan also refers to the desirability of considering additional information when assessing a site for protection: *"Examples include seagrass and horse mussel beds, kelp forests, nursery areas, threatened species distributions, breeding sites, salinity gradients, wave exposure or current flow."*

It should be noted that the current MPA plan does not take the approach of specifically defining what would constitute communities or species assemblies that are unique, rare, and/or nationally significant. Instead it is assumed these areas will be captured in the representative network. Their identification and documentation is referred to as desirable information to consider.

High value: The site contains habitat(s) and species assemblies that are identified as significant biogenic reefs or can be described as regionally or nationally rare.

Medium value: The site contains habitat(s) and species assemblies that are identified to a limited extent as biogenic reefs or can be described as having some regionally or national importance as rare.

Low value: The site contains habitat(s) and species assemblies that are not identified as biogenic reefs and are not considered regionally or nationally rare.

Examples:

1) Known rhodolith beds trigger this criteria based on the MPA guidelines statement.

2) A site containing an assembly of rare algal species possibly only known in one or few locations. (Suggested rank = high.)

2-vi. It supports indigenous species threatened, at risk, or uncommon, nationally or within the relevant ecological scale; or

This criterion is difficult to apply to marine ecosystems where, apart from marine mammals and invertebrates, there is limited threat assessment information and assessment systems are not well-developed. As a result it is suggested that expert judgement and opinion should be considered on a case-by-case basis on the basis of the precautionary principle to assess a species or community in relation to this criterion.

For highly pelagic species like whales the consideration is to what extent a site supports that species in some part of its life history stages and distribution.

These current lists give the status of marine taxa:

Marine mammals (XLS, 79K) (opens in new window)

Marine invertebrates (XLS, 221K) (opens in new window)

Marine fish, algae, and freshwater invertebrates were not reviewed during the 2008-2011 cycle; the most recent listings (from 2005) for these taxa can be found here:

2004 NZ Threat Classification System (XLS, 2100K) (opens in new window)

High value: The site supports species that are listed in the National Threats classification system as nationally threatened, endangered, vulnerable, or in serious decline, or supports important species or species assemblies that are not as yet listed or listed as data-deficient and are considered in expert opinion to be threatened and nationally significant.

Medium value: The site supports species that are listed in the National Threats classification system as nationally at-risk, described as nationally declining, recovering, relict, or naturally uncommon, or sites which support important species or species assemblies that are not as yet listed or listed as data-deficient and are considered in expert opinion to be at risk and nationally significant.

Low value: The site does not support nationally listed threatened or at-risk species and is not considered to support unlisted threatened or at-risk species.

Examples:

1) There are a number of haul-out areas for NZ fur seals establishing and regularly used in Northland waters, including several at the Poor Knights Islands. (Suggested rank = high.)

2) Sites containing species in the lists for invertebrates and/or macroalgae species would trigger a high ranking.

2-vii. It supports species endemic to the Northland-Auckland region or at distributional limits within the Northland region.

High value: The site contains habitat(s) and species assemblies that are endemic to Northland or at their distribution limits within the Northland region.

Medium value: The site contains habitat(s) and species assemblies that are endemic to the West Coast or Northeast Bioregions or near their distribution limits within the Northland region but are not the only or best examples of this type.

Low value: The site does not contains habitat(s) and species assemblies that are endemic to the West Coast or Northeast Bioregions or near their distribution limits within the Northland region.

Example: There may be invertebrate or algal species that should be considered under this criterion.

3. Diversity and pattern

3a The extent to which the ecological site containing indigenous vegetation or habitat(s) of indigenous fauna contains a high diversity of:

3a-i. Indigenous ecosystem or habitat types; or

High value: The site contains localised ecosystems and/or species assemblies that can be described as having high diversity in relative terms in the context of the Northland region.

Medium value: The site contains habitat(s) and species assemblies that can be described as having moderate diversity in relative terms in the context of the Northland region.

Low value: The site contains habitat(s) and species assemblies that can be described as having low diversity in relative terms in the context of the Northland region.

Example:

The areas around the Okahu, Waewaetorea, and Urupukapuka islands have a very large array of habitats and exposures, supported by descriptions of high species diversity as compared to other coastal sites in Northland. (Suggested ranking = high.)

3a-ii. Indigenous taxa; or

High value: The site contains species assemblies that can be described as having high diversity in relative terms in the context of the Northland region.

Medium value: The site contains species assemblies that can be described as having moderate diversity in relative terms in the context of the Northland region.

Low value: The site contains species assemblies that can be described as having low diversity in relative terms in the context of the Northland region.

Example:

The shallow reefs of the Bream Head area are amongst the very best coastal sites in terms of fish diversity. (Suggested ranking = high.)

3a-iii. Its composition reflects the existence of diverse natural features *or* ecological gradients; or

High value: The site contains habitat(s) and species assemblies that are outstanding examples of high diversity resulting from diverse natural features and/or ecological gradients.

Medium value: The site contains habitat(s) and species assemblies with moderate diversity resulting from diverse natural features and/or ecological gradients.

Low value: The site does not contain habitat(s) and species assemblies that are examples of high or moderate diversity resulting from diverse natural features and/or ecological gradients.

3b Whether the indigenous vegetation or habitat of indigenous fauna contains intact ecological sequences such as estuarine wetland adjoining forest.

High value: The site contains habitat(s) and species assemblies that are outstanding examples of intact ecological sequences.

Medium value: The site contains habitat(s) and species assemblies that are examples of intact ecological sequences.

Low value: The site contains habitat(s) and species assemblies that are lacking in examples of intact ecological sequences.

Example:

A rocky reef site with complex topography and high-quality examples of intact communities ranging from the intertidal rock platform down through healthy kelp forest types to sponge flats and a productive and diverse soft sediment fringing habitat possibly including biogenic reef types. For example, Okahu Channel in the Bay of Islands has sheltered reefs running down to soft sediment algal turf and seagrass bed habitats (biogenic habitats) to the west. To the east on the exposed side of the islands it has Ecklonia forest-covered reef habitats with complex topography running out to high quality deep reefs at 30 m depth. This full sequence of habitats is very rare. (Suggested ranking = high.)

4. Ecological context

The role of the ecological site containing the indigenous flora and/or fauna or habitat(s) of indigenous fauna.

In assessing these criteria in the marine coastal area a site's ecological relationship with the adjacent ecosystems on shore in the CMA zone and in deeper waters bordering the site are to be considered (see Figure 3 below). Terrestrial systems should be predominantly indigenous vegetation with sites having conservation status afforded the highest priority. In most case these sites will also be sites of high natural character and/or significance.
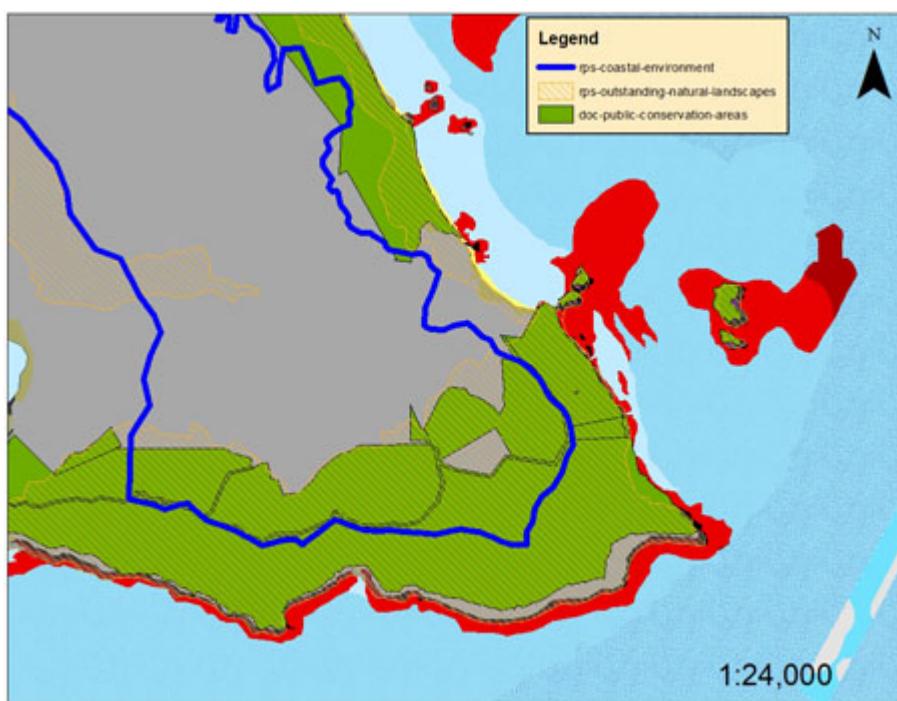

Figure 3 Bream Head example showing relationship with rocky reefs and the connecting terrestrial area which is both classified as having outstanding natural landscape values and is part of the DOC estate in native forest. The blue line depicts the definition of the coastal environment in the Regional Policy Statement.

Ecosystems in deeper water should be considered on the basis of ecological complexity and values.

4-i. In providing or contributing to ecological linkages, networks, or buffering functions; or

High value: The site contains habitat(s) and species assemblies that fulfil significant ecological functions in terms of connections and linkages, networks, and buffering with adjacent terrestrial indigenous ecosystems **and/or** have significant ecological connections with ecosystems and communities in the deeper adjacent waters.

Medium value: The site contains habitat(s) and species assemblies that fulfil some ecological functions in terms of connections and linkages, networks, and buffering with

adjacent terrestrial indigenous ecosystems **and/or** have some ecological connections with ecosystems and communities in the deeper adjacent waters.

Low value: The site contains habitat(s) and species assemblies have no or limited ecological functions in terms of connections and linkages, networks, and buffering with adjacent terrestrial indigenous ecosystems **and/or** have no or limited ecological connections with ecosystems and communities in the deeper adjacent waters.

Examples:

1) Mimiwhangata has significant indigenous conservation forests and is adjacent to a large Maori-owned land block in native vegetation. In deeper waters there are extensive areas of reefs at 30 m to 100 m depths, including some significant areas of high-relief deep reef at around the 50 m depth mark. (Suggested ranking = high.)

2) The rocky reefs of the Taiharuru peninsula are connected to a small estuary containing good examples of saltmarsh, mangrove, and seagrass beds. The shallow reefs of Taiharuru benefit from a complex topography and are swept by offshore currents due to the nature of the peninsula extending outwards in the seaward direction. These shallow reefs connect to an extensive deep reef 'ridge system', running approximately 6 kms offshore to depths of 120 metres. (Suggested ranking = high.)

4-ii. For the natural functioning of freshwater or coastal ecosystems; or

High value: The site contains habitat(s) and species assemblies that fulfil significant **and/or** essential ecological roles in supporting important indigenous freshwater and coastal ecosystems.

Medium value: The site contains habitat(s) and species assemblies that fulfil some ecological roles in supporting important indigenous freshwater and coastal ecosystems.

Low value: The site contains habitat(s) and species assemblies that fulfil no or limited ecological roles in supporting important indigenous freshwater and coastal ecosystems.

Examples:

1) Estuarine habitats providing essential buffering and connectivity ecological roles between the sea and wetlands and/or freshwater stream ecosystems. For example, shell fish beds in small and large estuaries play a significant role in filtering out high levels of sediment nutrients, plankton and fine sediments from the water column. (Suggested ranking = high.)

2) Soft-bottom habitats immediately adjoining high-quality rocky reefs provide important foraging food sources for a number reef species and associated pelagic species attracted to these habitats. (Suggested consideration for high ranking where reef is high ranking.)

4-iii. For life stages of indigenous fauna including breeding / spawning, roosting, nesting, resting, feeding, moulting, refugia or migration staging point (either seasonally, temporarily or permanently).

This criterion can consider a full range of specific life stage requirements such as breeding / spawning, roosting, nesting, resting, feeding, moulting, refugia, or migration staging point (either seasonally, temporarily or permanently).

High value: The site contains habitat(s) and species assemblies that fulfil significant **and/or** essential ecological roles in supporting one or more critical life stages of important indigenous species in adjacent freshwater and coastal ecosystems and/or deeper adjacent waters.

Medium value: The site contains habitat(s) and species assemblies that fulfil some ecological roles in supporting one or more life stages of important indigenous species in adjacent freshwater and coastal ecosystems and/or deeper adjacent waters.

Low value: The site contains habitat(s) and species assemblies that fulfil limited ecological roles in supporting one or more life stages of important indigenous species in adjacent freshwater and coastal ecosystems and/or deeper adjacent waters.

Example:

Estuarine habitats providing essential buffering and connectivity ecological roles between the sea and wetlands and/or freshwater stream ecosystems.

a) The area of each estuary where the spring tides reach their landward extreme is where inanga breeding takes place. This habitat is a critical habitat component for these species. (Suggested ranking = high.)

b) The tidal flats of the northern harbours are significant feeding and staging areas for a number of international migratory wader species. (Suggested ranking = high.)

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Appendix 1 Proposed Regional Policy Statement Appendix 5 - significance criteria

Appendix 5 - Areas of significant indigenous vegetation and significant habitats of indigenous fauna in terrestrial, freshwater and marine environments

The significance of an area of indigenous vegetation or habitat(s) of indigenous fauna is to be assessed using the following criteria.

1. Representativeness
The extent to which the ecological site containing the indigenous vegetation or habitat(s) of indigenous fauna is representative, typical or characteristic of the natural diversity at the relevant ecological classification and scale, and whether it;

> i. Supports most of the species of indigenous vegetation and / or fauna expected for the habitat type; or

> ii. Is a large example of its type at the relevant and recognised ecological classification and scale.

2. Rarity / distinctiveness
The rarity of the indigenous vegetation or habitat(s) of indigenous fauna, including whether:

> i. It is indigenous vegetation associated with land environments (defined by LENZ Level 4[29]) that are either acutely or chronically threatened[30]; or

> ii. It is indigenous vegetation within ecological unit(s) that are now less than 20% of their original extent in the region; or

> iii. It is distinctive of a naturally restricted occurrence; or

> iv. It has developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem. (See Table 1 for Northland's known examples[31](bold text) and those likely to occur)[32]; or

> v. It is nationally or regionally rare habitat(s) identified in accordance with the New Zealand Marine Protected Areas Policy and Implementation Plan; or

> vi. It supports indigenous species that are threatened, at risk, or uncommon, nationally or within the relevant ecological scale; or

> vii. It supports species endemic to the Northland-Auckland region or that are at distributional limits within the Northland region.

[29] Landcare Research in Land Environments New Zealand (LENZ).
[30] Guide for Users of the Threatened Environment Classification, August 2007, Authors:
Walker S, Cieraad E, Grove P, Lloyd K, Myers S, Park T, Porteous T, for Landcare Research
New Zealand Ltd.
[31] Source Landcare Research and Department of Conservation.
[32] Department of Conservation.

Table 1 – Northland's rare indigenous ecosystems and vegetation types					
Coastal					
Active sand dunes	Coastal rock stacks	Shell barrier beaches	Coastal turfs	Stony beach ridges	Shingle beaches
Stable sand dunes	Dune deflation hollows	Coastal cliffs on quartzose rocks	Coastal cliffs on acidic rocks	Basic coastal cliffs & rock outcrops	Calcareous coastal cliffs
Ultra-basic sea-cliffs, screes & rock outcrops	Seabird guano deposits	Seabird-burrowed soils	Marine mammal rookeries & haul-outs	damp sand-plains	Dune slacks Damp sand plains
Wetlands					
Lake margins	Lagoons	Seepages & flushes *(including soda springs)*		Ephemeral wetlands including Gumlands *see Note below	
Bogs	Estuaries				
Inland					
Volcanic debris flows	Volcanic boulderfields	Basic cliffs scarps and tors	Ultra-basic hills	Cloud forests	Vegetation on extremely low fertility soils
Geothermal systems					
Heated (dry) ground	Fumeroles	Geothermal streamsides	Hydrothermally altered (now cool) ground		
Subterranean or semi-subterranean					
Cave entrances	Caves and cracks in karst	Sinkholes	Subterranean basalt fields		

Note: Gumlands are included in wetlands because it is recognised that they are seasonally wet and are often mosaics including other low fertility habitat such as bogs and heathland.

3. Diversity and pattern

(a) The extent to which the ecological site containing indigenous vegetation or habitat(s) of indigenous fauna contains a high diversity of:

> i. indigenous ecosystem or habitat types; or

> ii. indigenous taxa; or

> iii. its composition reflects the existence of diverse natural features or ecological gradients; or

(b) Whether the indigenous vegetation or habitat of indigenous fauna contains intact ecological sequences such as estuarine wetland adjoining forest.

4. Ecological context

The role of the ecological site containing the indigenous vegetation or habitat(s) of indigenous fauna:

> i. In providing or contributing to ecological linkages, networks, or buffering functions; or

> ii. For the natural functioning of freshwater or coastal ecosystems; or

> iii. For life stages of indigenous fauna including breeding / spawning, roosting, nesting, resting, feeding, moulting, refugia or migration staging point (either seasonally, temporarily or permanently).