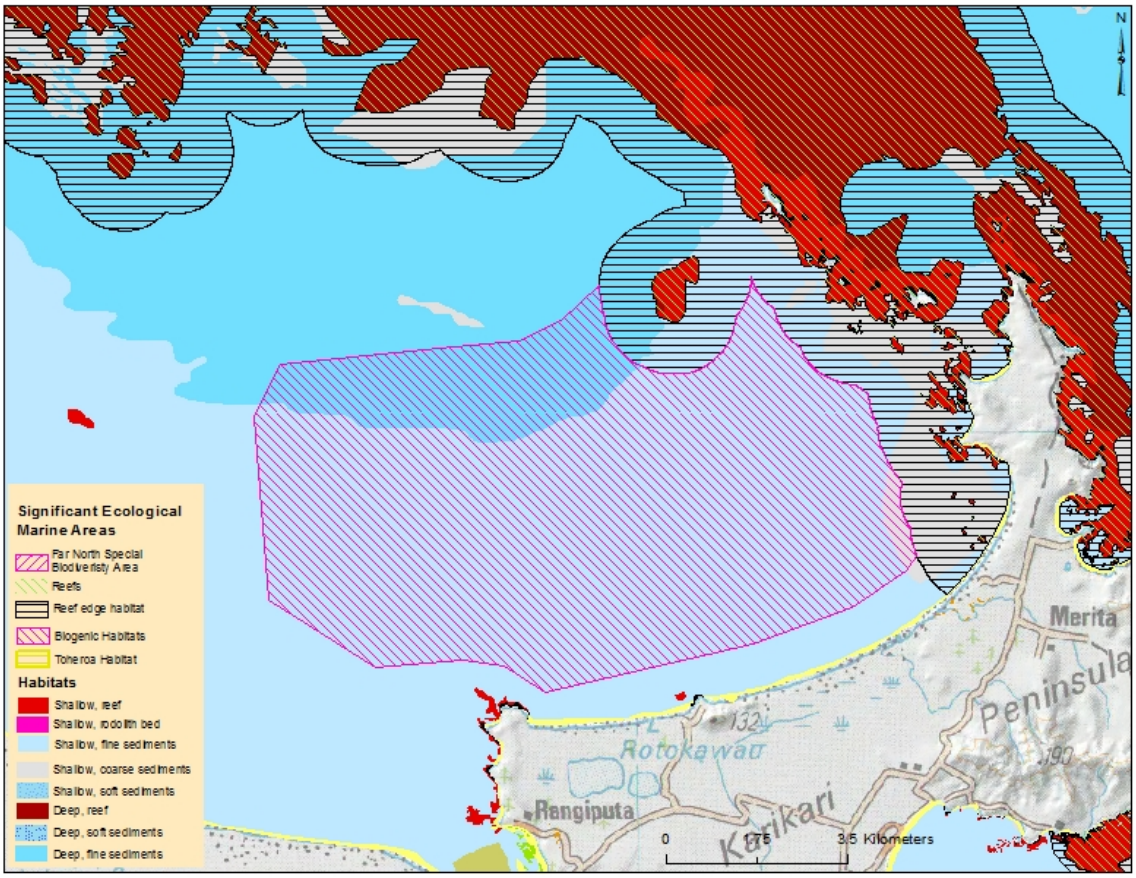
Significant Ecological Marine Area Assessment Sheet

Name: Great Exhibition Bay Biogenic Habitat

Summary:

The soft sediment habitats situated offshore from the mouth of Rangaunu Harbour to the beginning of the reefs of the western side of the Cape Karikari Peninsula score as a high ranking ecological area. This is area is known as an exceptional scallop area and is commercially fished. In addition evidence from aerial photo analysis and field sampling has indicated the existence of large areas of diverse biogenic habitat characterised by algal communities which include rare species red algae and rhodolith beds. This special area also is significant because of the ecological connectivity and proximity to the Rangaunu Harbour entrance and harbour system, and the extensive shallow and deep reef systems of the Cape Karikari to Rawawa rocky reef complex. Underpinning the unusual biological communities in this area is the rare combination of favourable bathymetry for these algal communities and moderate to low exposure (semi-sheltered from large swells).

Map of the biogenic benthic communities area in Great Exhibition Bay.

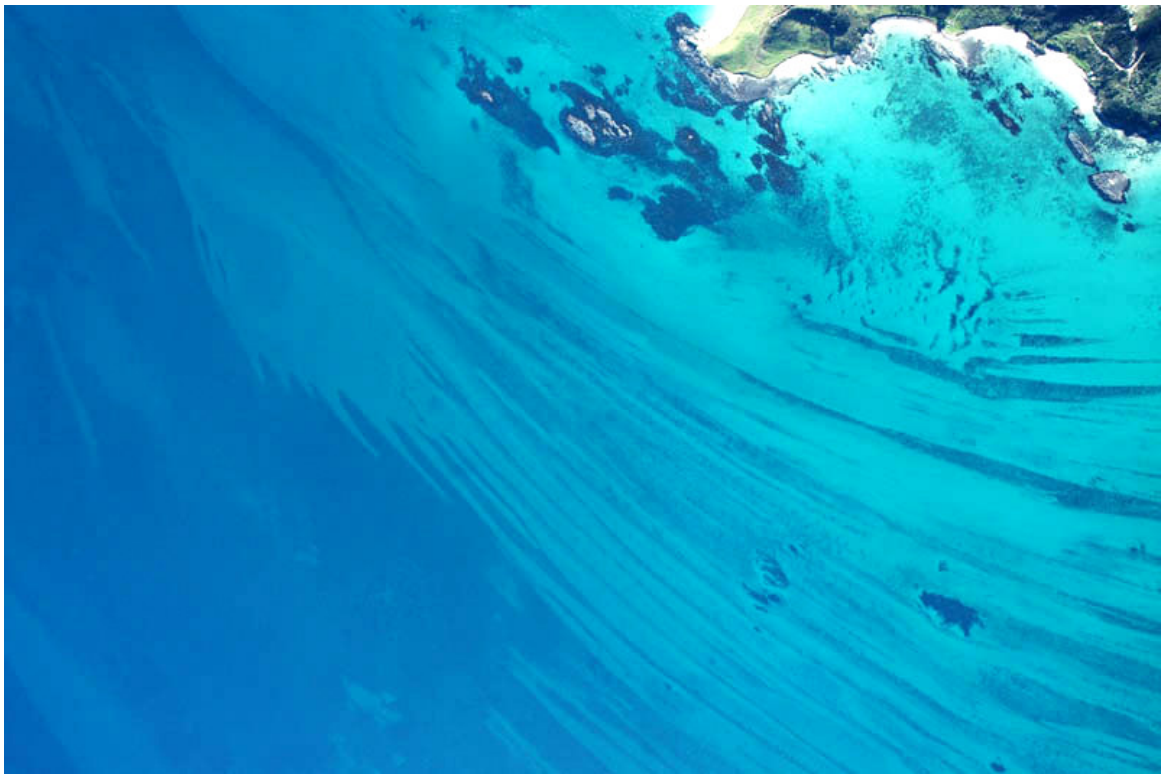


Description:

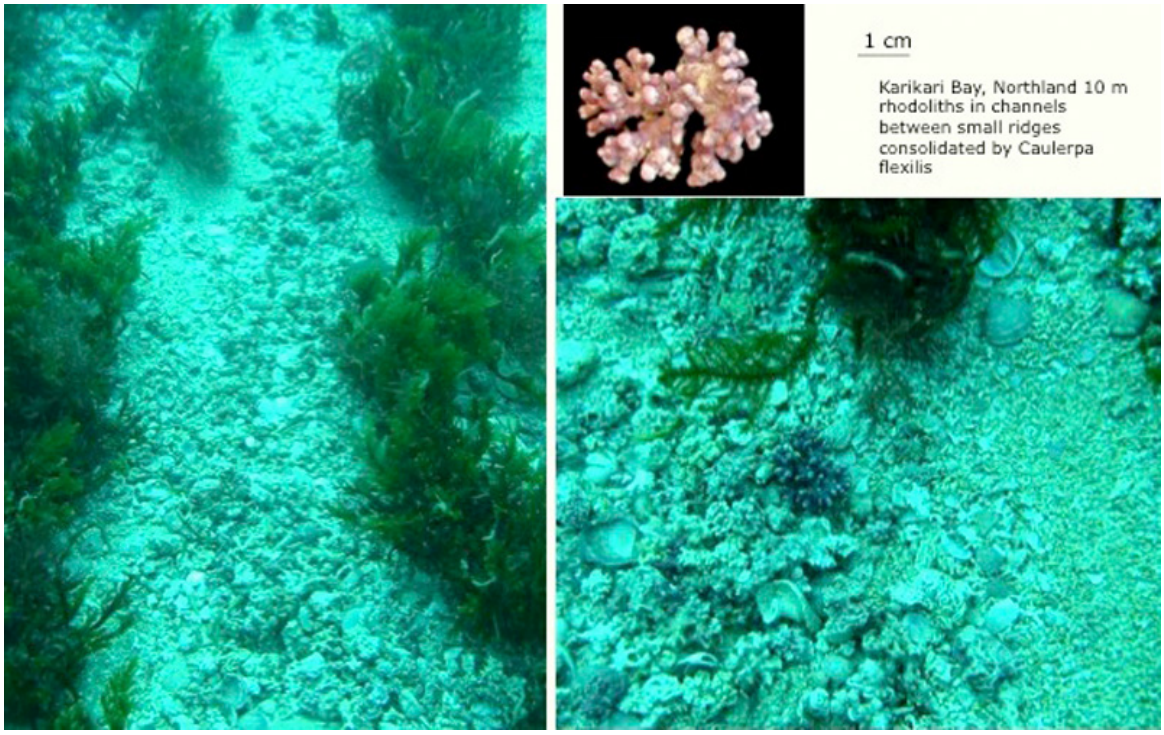
The Great Exhibition Bay marine environments are exceptional in terms of the surrounding diverse habitats, ranging from estuarine environment to deep offshore reefs and islands. The mapped area consists of a large area of relatively clean coarse sandy and shelly soft bottom habitats. The bay is relatively shallow; depths in the mapped area range from under 10m to approximately 40m. The eastern half of Great Exhibition Bay receives considerable shelter from the south through to the northeast as a result of the location of Moturoa Islands and Cape Karikari. This reduced exposure makes it possible

for the various diverse and unusual algal communities to establish and persist there in a very productive situation that would otherwise not be possible due to the effects of wave disturbance in waters less than 40-50 metres deep.

An aerial view of the area just offshore of the far northeast end of Karikari Beach. The dark areas and steaks out beyond the shoreline rocky reef are algal turf biogenic habitats with areas of rhodoliths. Photo credit: Roger Grace and Vince Kerr.



Examples of the rhodolith beds forming biogenic habitats in Great Exhibition Bay. Photo Credit: Debbie freeman DOC.



Oceanography

Several environmental factors influence this area. The Bay receives strong movements of offshore water and the East Auckland Current has significant influence, carrying with it subtropical marine organisms and connecting this area to the great diversity of special soft-bottom habitats to the north. There is also minimal siltation from catchment runoff affecting this area.

Ecological Values

This area of Great Exhibition Bay has attracted considerable scientific interest. A regional scale marine habitat map project was carried out in 2009. [1] A number of observations have led to special interest in this area over the years. One observation was the presence of unusual dark streaking on the ocean bottom in aerial photos, indicating special habitats there. In 2006 a NIWA research trip was able to sample the area and found new species of red algae and presence of rhodolith beds. [2] Rhodilith beds have been recognised in New Zealand and internationally as being important biogenic habitats which have elevated levels of biodiversity due to the three-dimensional structures that are created by their rough hard calcified structures. [3] [4]

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[1] Kerr, V. 2009: Marine habitat map of Northland: Mangawhai to Ahipara vers. 1. Northland Conservancy, Department of Conservation, Whangarei. 33 p.
[2] D'Archino R., Nelson, W.A., and Zuccarello, G.C., 2014: Amalthea and Galene, two new genera of Halymeniaceae (Rhodophyta) from New Zealand. Botanica Marina 2014; 57(3): 185–201
[3] Morrison, M.A., Jones, E., Consalvey, M., Berkenbusch, K., 2014. Linking marine fisheries species to biogenic habitats in New Zealand: a review and synthesis of knowledge. New Zealand Aquatic Environment and Biodiversity Report No. 130. 156 p.
[4] Nelson, W.,A., 2009. Calcified macroalgae - critical to coastal ecosystems and vulnerable to change: A review. Mar Freshwater Res 60:787–801.

Assessment of Ecological Significance

Table 1 Ranking score of ecological significance of Great Exhibition Bay[5]

Great Exhibition Bay: Assessment of Ecological Significance			Rank
Overall Ranking		**Notes**	**High**
Representation	supports most taxa expected for habitat type	Believed to be high diversity example for its type, but only limited survey	NA
	large example of its type	Relatively large example but not well surveyed	NA
Rarity and Distinctiveness	supports indigenous species threatened, at risk, or uncommon, nationally or within the relevant ecological scale	New algal species described from this location, believed to be unusally rare site	H
	supports species endemic to the Northland-Auckland region or at distributional limits within the Northland region	New algal species described from this location, believed to be unusally rare site	H
	distinctive of a naturally restricted occurrence	Habitat very special and unusual	H
	developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem	Unique combination of substrates shelter and currents	H
	identified as nationally or regionally rare habitat(s) in MPA Plan	Habitat identified in MPA document (biogenic habitats)	H
Diversity and Pattern	high diversity of indigenous ecosystem or habitat types	Believed to be high diversity example for its type, but only limited survey	NA
	high diversity of indigenous taxa	Believed to be high diversity example for its type, but only limited survey	NA
	its composition reflects the existence of diverse natural features or ecological gradients	Habitat very special and unusual – high diversity of soft bottom substrates	H
	contains intact ecological sequences	Limited sequences	M
Ecological Context	provides or contributes to ecological linkages, networks, buffering functions	Important nursery habitat for fishes and habitat for other benthic organisms	H
	supports the natural functioning of freshwater or coastal ecosystems	Not Assessed	NA
	supports life stages of indigenous fauna	Provides support for early life stages for a significant number of fish species and other benthic invertebrates	H
Assessed by: Vince Kerr		Date: September	

[5] Table 1 details the ranking criteria and scoring that was used to determine the overall high ranking given to the ecological significance of this area. The criteria used have been adopted from Appendix 5 of the Northland Regional Council Proposed Policy Statement. See reference to Methodology report or other council documents to call up

	2015	
Information Source(s) *see below*		**2-7**
Reliability of Information *see below*		**++**
Rank (overall score) H = high, M = moderate, L =low, DD = data deficient, R = recommended for further investigation		
Information Source(s) 1 = quantitative report, 2 = qualitative report, 3 = habitat map or classification, 4 = expert opinion, 5 = personal communication, 6 = anecdotal information, 7 = visit and observation		
Reliability of Information expressed as a scale of confidence ranging from high (+++) to low confidence (---)		
Criteria Rank - score for each individual criteria) H = high ranking, M = moderate ranking, L = low ranking, DD = data deficient, R = recommended for further investigation, NA = not assessed for this criteria		