

# Significant Ecological Marine Area Assessment Sheet

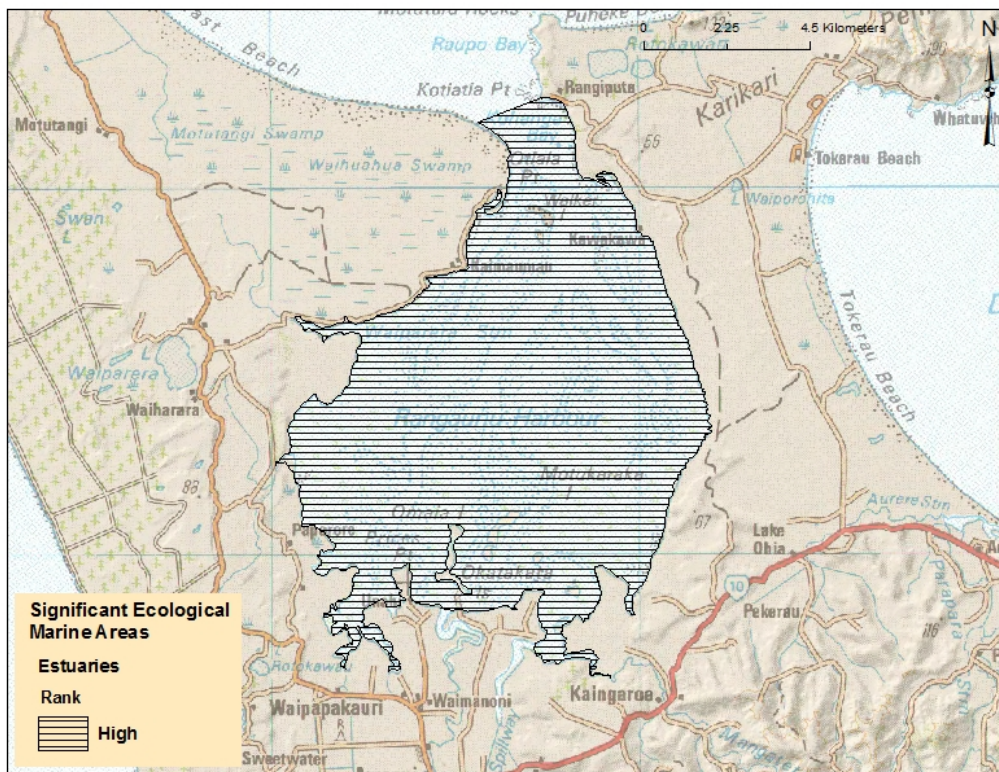
Name: Rangaunu Harbour Marine Values

## Summary:

Rangaunu Harbour is as an outstanding example of a northern estuary with a true subtropical influence. It has been given a high ranking of ecological significance for its marine values.

The harbour's large size supports an elevated level of marine biodiversity values and the resulting estuarine ecological functions. The tidal flats support large areas of seagrass beds *Zostera muelleri*, which have been recognised as significant biogenic habitats. Seagrass communities add to an already diverse benthic invertebrate community. These systems in Rangaunu have been recognised as the very best examples of feeding and nursery areas for the juvenile stages of many coastal fishes. The proximity of the Rangaunu and Parerengarenga Harbours have special significance because of the connectivity between these estuaries and the high value reef and soft bottom marine habitats offshore. The movement of seabirds between these habitats is evidence of this. In the marine environment there is similar dispersal - or movement - between these habitats, notably with pelagic fish species and their spawning cycles; also, more generally, the movement of larval forms of the life stages of marine organisms, especially in the case of subtropical species which arrive with the warm East Auckland currents coming down the East Coast. The marine habitats of Rangaunu Harbour play a crucial role in preserving water quality of the waters passing through this estuary to the high value surrounding coastal area. The estuarine habitats also provide connectivity between the coastal and estuarine habitats and the freshwater systems of the catchment.

Map of Rangaunu Harbour



## Description:

Rangaunu Harbour, alongside Parengarenga Harbour, is high ranking in biodiversity terms due to the large areas of intact estuarine habitats and very high biodiversity values. In part, this is down to their location in the northern tip of Northland's east coast: the influence of the warm subtropical East Auckland Current has a profoundly positive influence on the diversity of the marine communities found here. Both estuaries support nationally and internationally important seabird communities and higher levels of marine diversity than any other New Zealand estuary. <sup>1</sup>

Rangaunu Harbour arose from the formation of the Aupouri and Karikari peninsulas which joined a number of former islands with the mainland. It is a large circular harbour (11,488 ha) with a narrow entrance and a maximum harbour channel depth of about 10 m. 53% of the harbour area is exposed as mud and sand flats at low tide. Seagrass *Zostera muelleri*, saltmarsh, and mangrove are the predominant habitats of the harbour. The mangrove area amounts to 3,100 ha, the largest mangrove forest in New Zealand, and as such represents 15% of the New Zealand stock. <sup>2</sup> Inside the harbour, the entrance channel divides into many branches, the main branch being the centrally flowing Awanui Channel originating from the Awanui River.

Despite Rangaunu's great size and relatively healthy condition as an estuary there have been impacts from sedimentation and runoff from the catchment. Improving riparian protection in the catchment would greatly enhance the connectivity between estuarine habitats, freshwater wetlands, stream corridors and the bush covered fringes of the estuary and catchment. Estuarine habitats and species generally will benefit from the combined effects of buffering sediments and nutrients entering the marine environment. Rangaunu's position is a sensitive one in that its waters drain into Great Exhibition Bay, which is a very pristine and productive coastal area.

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<sup>1</sup> Northland Harbour Board 1984. Rangaunu Harbour Study. Prepared by the Rangaunu Harbour Study Group for the Northland Harbour Board.

<sup>2</sup> Department of Conservation, 2005. Near Shore Marine Classification System. Compiled by Vince Kerr for Northland Conservancy, Department of Conservation. Revised September 6, 2005. [http://www.marinenz.org.nz/nml/files/documents/3\\_northland-mpa.html](http://www.marinenz.org.nz/nml/files/documents/3_northland-mpa.html)

*A 3D aerial image of Rangunu Harbour looking from the north. The dark areas in the middle of the harbour on tidal flats are seagrass habitat. Extensive mangrove and salt marsh habitats fringe the upper reaches of the Harbour.*



*A subtidal scene of juvenile snapper swimming over a dense seagrass bed in Rangaunu Harbour . Photo credit: NIWA*



## Ecological Values

The marine ecology of the Rangaunu Harbour is more generally summarised in the Nearshore Classification produced by the Department of Conservation <sup>1</sup>. A further review of natural features and ecology was completed by NIWA in 2005.<sup>3</sup> Both publications have comprehensive references covering previous descriptive work done in Northland. The later report summarises some of the local scale habitat mapping work done in the region. The most recent habitat map of the harbor was produced in 2010 <sup>4</sup>

Rangaunu's large area of shallow habitats are very well flushed with coastal waters. This daily flow of tides means that the harbour is well connected to the rich marine biodiversity that of this northern part of Northland's east coast. New Zealand's northern harbours in general have been shown to have high benthic invertebrate diversity, high productivity and are characterised by significant numbers of subtropical species, owing to the affects of the East Auckland current carrying sub tropical species larvae from warmer regions to the north and east of New Zealand. <sup>1 2</sup>

The intact sequences of mangrove and saltmarsh are significant in Rangaunu and play an important role in providing ecological connections between the expansive tidal flat community's coastal waters and the wetlands and freshwater streams of the catchment. The role of these habitats in filtering and buffering sediments and nutrients as they enter the estuarine system is a vital one that has significance to the wildlife values of the estuary and the aquaculture established there. <sup>5</sup> The large tidal flat areas are a rich area of benthic invertebrate diversity and support a large and valuable area of seagrass; combined with the areas of seagrass beds in neighbouring Parengarenga and Houhora Harbours, these northern seagrass beds are the largest in the country. In total 1,955 ha of seagrass beds have been mapped recently in this harbour. Seagrass beds are an important biogenic habitat supporting diverse benthic invertebrate communities and are identified as a key habitat for the early life stages of many coastal fish species. <sup>6</sup> The system in Rangaunu Harbour is described as the best example of a nursery area for coastal fish species in the country.

## Assessment of Ecological Significance

Table 1 Ranking score of ecological significance of Rangaunu Estuary<sup>7</sup>

Rangaunu Estuary Marine Values: Assessment of Ecological Significance			Rank
Overall Ranking		Notes	High
Representati	supports most taxa expected for habitat	Soft bottom communites are	H

<sup>3</sup> Morrison, M., 2005. An Information Review of the Natural Marine Features and Ecology of Northland. Prepared for the Department of Conservation. NIWA Client Report: AKL 2005-50.

<sup>4</sup> Kerr, V. 2009: Marine habitat map of Northland: Mangawhai to Ahipara vers. 1. Northland Conservancy, Department of Conservation, Whangarei. 33 p.

<sup>5</sup> Morrison, M.A.; Lowe, M.L.; Parsons, D.M.; Usmar, N.R.; McLeod, I.M., 2009. A review of land-based effects on coastal fisheries and supporting biodiversity in New Zealand. *New Zealand Aquatic Environment and Biodiversity Report No. 37*. 100 p.

<sup>6</sup> Morrison, M.A.; Jones, E.G.; Parsons, D.P.; Grant, C.M., 2014. Habitats and areas of particular significance for coastal finfish fisheries management in New Zealand: A review of concepts and life history knowledge, and suggestions for future research. *New Zealand Aquatic Environment and Biodiversity Report No. 125*. 202 p.

<sup>7</sup> 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

on	type	diverse and include high quality seagrass beds, juvenile fish diversity and abundance is high – an excellent example and only comparable to Parengarenga Harbour	
	large example of its type	A large example	H
Rarity and Distinctiveness	supports indigenous species threatened, at risk, or uncommon, nationally or within the relevant ecological scale	Not Assessed expected to be high if sufficiently documented	NA
	supports species endemic to the Northland-Auckland region or at distributional limits within the Northland region	Not Assessed but expected to be high if sufficiently documented	NA
	distinctive of a naturally restricted occurrence	Excellent example distinctive due to its large size and complexity of intertidal habitats	H
	developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem	Excellent example distinctive due to its large size and complexity of intertidal habitats	H
	identified as nationally or regionally rare habitat(s) in MPA Plan	Not Assessed but would be expected to be classified as unique and special	NA
Diversity and Pattern	high diversity of indigenous ecosystem or habitat types	Habitat sequences excellent, salt marsh, mangrove, tidal flat and seagrass beds important estuaries on East Coast and nationally significant	H
	high diversity of indigenous taxa	Soft bottom communities are very diverse and include high quality seagrass beds, juvenile fish diversity and abundance is at the very highest levels compared to other estuaries in New Zealand	H
	its composition reflects the existence of diverse natural features or ecological gradients	The range of estuarine habitats are well represented and large in extent and complexity	H
	contains intact ecological sequences	Areas identified are all connected as part of the whole estuarine system.	H
Ecological Context	provides or contributes to ecological linkages, networks, buffering functions	All habitat areas are strong contributors to providing ecological connections and the estuarine buffering functions	H
	supports the natural functioning of freshwater or coastal ecosystems	All habitat areas are strong contributors to providing ecological connections and the estuarine buffering functions	H
	supports life stages of indigenous fauna	Provides significant support for various life stages for shorebirds juvenile coastal fish species and diverse benthic invertebrate communities	H
Assessed by: Vince Kerr		Date: September 2015	
Information Source(s) <i>see below</i>		1-7	

<b>Reliability of Information</b> <i>see below</i>	+++
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	