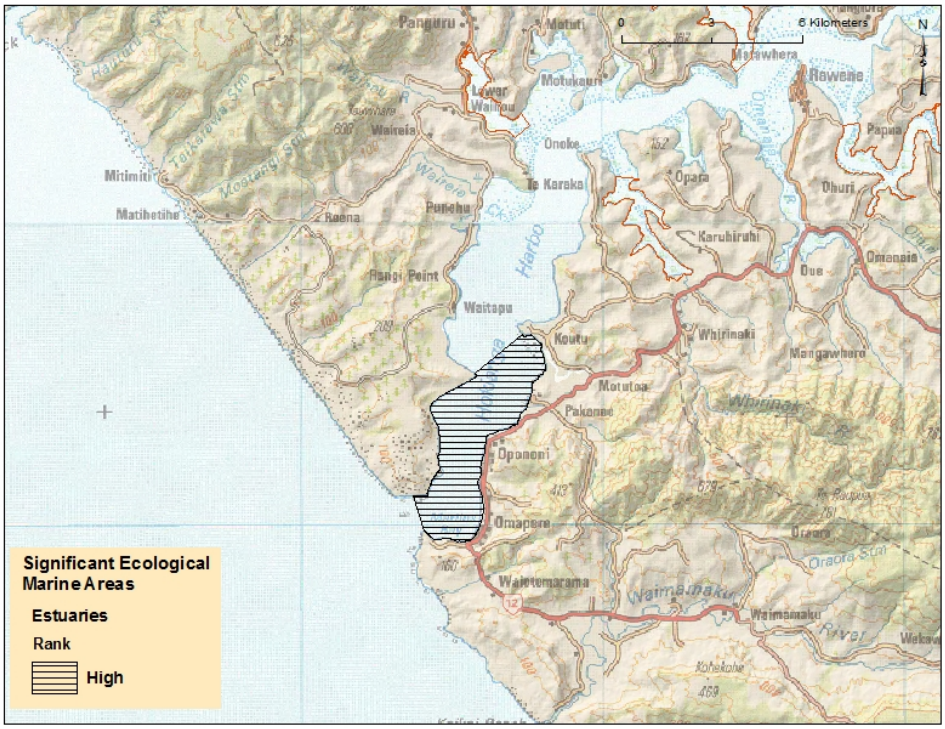
Significant Ecological Marine Area Assessment Sheet

Name: Hokianga Harbour Entrance and Lower Harbour Marine Values

Summary:

The area making up the entrance to the Hokianga Harbour and extending up to a line drawn between Kawehitiki Point on the north side to Koutu Pount on the south side has been scored as high ranking for ecological significance. This area has some quite special and unique habitats and environmental conditions. The lower harbour area is an area of significant tidal currents with very large volumes of water passing over a complex set of habitats with each tidal cycle due to the large size of this estuarine system. Currents near the mouth of the harbour can reach 5 knots in velocity with at times standing waves and considerable eddies being visible for a distance. In this area there are many valuable habitats ranging from rocky reefs to shelly gravels and sand and boulder environments. There are some important examples of biogenic habitats of green lipped mussel beds *Perna canaliculus* and important productive communities of cockle *Austrovenus stutchburyi*, pipi *Paphies australis*, horse mussel *Atrina novaezealandiae* and scallops *Pecten novaezelandiae*. The areas include an important nursery area for crayfish *Jasus edwardsii* and coastal fish species nursery habitats. Owing to the amount of current and coastal water flowing into the Harbour, this area is a very active feeding area for many fish species who congregate and feed on the many marine species travelling through the lower section of the harbour.

Map of Hokianga Harbour entrance and lower harbour



Description:

Hokianga is the fourth largest in New Zealand. This drowned river valley extends well inland and has 50% of its 11,500 ha area composed of tidal mudflats with Pleistocene dunes at the entrance. Hokianga Harbour has been estimated at 15,414 ha in size.

Tidal flow is the major factor influencing water circulation, rather than the freshwater inflows. The maximum tidal range is 3 m. The lower harbour area is characterized by high salinity oceanic water, soft substrates dominated by sands, and shelly fine gravels, numerous areas of boulder and rock, strong tidal currents, low water turbidity and relatively short water residence times. The area is influenced by the north-flowing Westland Current and occasionally in summer months by the south-flowing West Auckland Current.

Unfortunately the middle and upper areas of the harbor are currently under pressure from sedimentation runoff impacts and have become increasingly muddier each decade. There remain many important marine values in these areas but at a reduced level from what has been known historically.

By contrast, the lower reach and entrance of the harbour is essentially swept clean of large sediment impacts by the high currents and interchange of coastal waters. Also the geological history of the entrance area has created a complex and diverse physical environment within a small area. A full range of habitats can be found here, from rocky reefs of varying topography - including a deep tidal current scoured hole 30 m deep at South Head - to a complete range of fine sand, shell and gravel substrates as well as large intertidal sand flats. There are a number of boulder areas and there are patches of biogenic reef formed by green lipped mussel rafts which, while once common and expansive in Kaipara Harbour and the Hauraki Gulf, are now a rare habitat. [1]

A 3d view of the entrance to the Hokianga Harbour

[1] Kerr, V.C., 2015. Draft Marine Habitat Map of Northland's West Coast Ahipara to Kaipara. Unpublished work in progress Kerr and Associates Marine Conservation Consultants, Whangarei, New Zealand.

Ecological Values

The marine ecology of the Hokianga Harbour is generally summarised in the Nearshore Classification produced by the Department of Conservation [2]. A further review of natural features and ecology was completed by NIWA in 2005.[3] A Northland regional scale study of reef fish diversity includes two study sites at the South Head of the harbour. Generally reef fish diversity was lower than Northland East Coast sites as the sub tropical species were largely absent however the diversity there would still be considered high compared to similar habitats in other regions of New Zealand. In 2001 a detailed study of marine habitats identified and mapped 12 characteristic intertidal habitats reflecting substrate and dominant biological communities: preliminary lists of biota were recorded for each habitat. [4]

In 2002 a local Kaitiaki group (Whakatutuki) carried out a marine subtidal survey on scuba at 12 sites in the lower harbour environment. [5] The notes from this study and personal diving observations [6] form the background to the habitat descriptions to follow. Along the northern shore from the entrance the there is a gradient of wave energy along the first 1 km. At times waves of up to 1-1.5 m in height make their way across the bar, affecting this shore and the mainly fine sandy sea bottom. As you turn the first corner upon entering the harbour the wave energy is much diminished and substrates become very mixed with fine sand fine gravels and shelly areas. This area has a number green lipped mussel mats growing and creating important reef like structures on top of a soft bottom. Further along this shore and out into the channel area there is a patchy distribution of scallops and areas of horse mussel. As you move up the harbour toward the Kawehitiki Point there is a broadening of the harbour and a large area of shallow subtidal soft bottom in the area. There are patches of scallops and large continuous beds of horse mussels forming a valuable habitat for other encrusting invertebrates and nursery feeding area for fishes. The southern shore of the lower harbor in contrast begins with the dramatic rocky shoreline of the South Head which changes to a boulder and gravel shoreline and then the sand and gravel beaches extending past the Opononi township.

The South Head has a steep rock face that drops down in to a 30 m hole. Along this rough rocky face *Ecklonia radiata* kelp forest make a transition to lush sponge habitats at 8- 10 m depth. Crayfish *Jasus edwardsii* are common in this area and a nearby shallow reef is known by local kaitiaki [7] as being an important crayfish settlement area. The subtidal area off this shore extending out into the channel is characterized by large areas of green lipped mussel beds and a diversity of shelly sand and gravel substrates. The red algae *Pterocladia lucida* is abundant throughout this area. As you travel up the south shore of the harbor from Opononi township the harbor widens and the shore alternates between gravels and fine sands. Offshore subtidal the sea bottom flattens out to form a series of tidal flats and subtidal shallow flat areas that are productive shellfish habitats. The intertidal flats are a predominantly sand substrate. Cockles are the dominant species.

---

[2] 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

[3] 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.

[4] Davidson, R.J., Kerr, V.C., 2001: Habitats and ecological values of Hokianga Harbour. Report for the Department of Conservation. Davidson Environmental Ltd, 389/2001.

[5] Whakatutuki (Compiler). (2002). Hokianga sub-tidal habitat survey 2002–2003. Upublished report for Nga Ngaru O Hokianga Takiwa Trust. 13 p.

[6] Pers. comm. Vince Kerr

[7] Pers. Comm. Graeme Morell

The subtidal area has patches of scallops and as you go deeper towards the channel a wide band of horse mussels creates an important habitat there for a range of algal and encrusting species.

Some important assemblies of algal species, not well studied to date, are believed to be associated with the various habitats of the lower part of the Hokianga.[8] The presence of horse mussel habitats and green lipped mussel raft habitats is special and significant as habitat forming structures. Taken as a whole this array of habitats can be expected to play a significant role as a nursery area for a number of coastal fish species and marine biodiversity generally. [9]

Orca and dolphin species are occasionally seen in this area.

Assessment of Ecological Significance

Table 1 Ranking score of ecological significance of Hokianga Harbour upper arms Estuary[10]

Hokianga Harbour Entrance and Lower Harbour Marine Values: Assessment of Ecological Significance			**Rank**
Overall Ranking		**Notes**	**High**
Representation	supports most taxa expected for habitat type	Soft bottom communites are generally diverse with abundant encrusting invertebrate and algal communities but not as yet well described	NA
	large example of its type	Is a large example of its type with diverse suite of habitats	H
Rarity and Distinctiveness	supports indigenous species threatened, at risk, or uncommon, nationally or within the relevant ecological scale	Not Assessed	NA
	supports species endemic to the Northland-Auckland region or at distributional limits within the Northland region	Not Assessed	NA
	distinctive of a naturally restricted occurrence	Many envrinmental aspects of this area are unique	H
	developed as a result of unusual environmental factor(s) or is part of an ecological unit that occurs within an originally rare ecosystem	Many environmental aspects of this area are unique	H
	identified as nationally or regionally rare habitat(s) in MPA Plan	Not Assessed	NA
Diversity and Pattern	high diversity of indigenous ecosystem or habitat types	Soft bottom communites are generally diverse with	NA

[8] Pers. comm. Wendy Nelson, NIWA

[9] 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.

[10] 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

		abundant encrusting invertebrate and algal communities but not as yet well described	
	high diversity of indigenous taxa	Soft bottom communites are generally diverse with abundant encrusting invertebrate and algal communities but not as yet well described	NA
	its composition reflects the existence of diverse natural features or ecological gradients	The range of estuarine habitats are well represented and connected extreme example of gradients between exposed West Coast and sheltered shallow tidal areas, also diverse substrates	H
	contains intact ecological sequences	Complex array of subtidal and intertidal habiats connected.	H
Ecological Context	provides or contributes to ecological linkages, networks, buffering functions	All identified areas are strong contributors to providing ecological connections and the buffering functions generally	H
	supports the natural functioning of freshwater or coastal ecosystems	All identified areas are strong contributors to providing ecological connections and the buffering functions generally	H
	supports life stages of indigenous fauna	Important nursery area for coastal fish species and feeding area for Orca	H

Assessed by: Vince Kerr	Date: September 2015
Information Source(s) *see below*	**2,3,4,5,6,7**
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