6 COASTAL MANAGEMENT

Summary

RPS Objectives

- The preservation of the natural character of the coastal environment, including protection from inappropriate subdivision, use and development.
- Prevention of damage to and loss of traditional fisheries habitats and tangata whenua resources of significance to the tangata whenua.
- Maintenance and enhancement of public use, enjoyment of and access to the coastal environment.
- The minimisation of the conflicts between uses in the coastal environment and their effects on public health and safety.

Pressures

- Direct and indirect human-induced modification of natural coastal features, systems and processes.
- Cumulative effects of increasing development pressure on coastal-land and coastal marine area.
- Inappropriately sited coastal development affecting natural coastal processes.
- Conflicting demand for coastal water space.

State

- Coastal systems have been extensively modified, with extensive loss of coastal forests, saltmarsh and modification of natural dune systems.
- Development has occurred on many of the east coast lowlands, with many barrier-spit systems fully developed and the margins of the Whangarei and Bay of Islands harbours well developed.
- The west coast is less developed, although there is increasing pressure for development as demand for coastal property increases.
- There are currently more than 3800 active permits for coastal structures and moorings, with close to 90% of these situated on Northland's east coast.
- More than 700 subdivisions in Northland's coastal area were approved by District Councils between 2002 and 2005. These subdivisions include more than 3800 lots.

Doing well

- Coastal monitoring is undertaken to better understand baseline dynamics of Northland's beaches and estuaries.
- Four changes to the Regional Coastal Plan have been initiated that will assist in addressing a number of coastal management issues.
- Restoration and enhancement of natural coastal systems, such as dunes and coastal forests is being undertaken.

Areas for improvement

- More work is needed to adequately assess the natural character and state of Northland's coast to establish environmental baselines from which to manage, monitor and report on change and the pressures which these create.
- Further integration is required with the Regional and District Councils to better manage and prepare for the preservation of natural character at all stages of the planning, consenting and monitoring stages.
- The integrated management between territorial authorities of the coastal environment across the administrative line of Mean High Water Springs.

6.1 Introduction

The natural character of Northland's coast varies from mainly natural environments which have a high degree of natural character such as the South Head of the Parengarenga Harbour (below right) to highly developed and built environments with a lower degree of natural character such as Paihia in the Bay of Islands (below left). Judging natural character is about scale or degree of natural character. All of Northland's coast has a degree of natural character.

Contrasting examples of natural character between Paihia (left), which is highly modified and the South Head of the Parengarenga Harbour (right).

Significant issues likely to affect the natural character of the coast have been identified within the Regional Policy Statement (RPS) for Northland (NRC 2002). These include the impacts of residential and industrial development on coastal margins, the modification and disturbance of sand dunes through development, the placement of coastal structures, pedestrian and vehicle access, and increased rates of estuarine sedimentation.

The NRC has prepared a Regional Coastal Plan (RCP) for Northland (NRC 2004) which identifies the significant issues in the coastal marine area and sets out the objectives, policies and actions to deal with these issues. The RCP has been prepared in accordance with the direction set out by the coastal management section of the RPS.

Several of these issues fall under the responsibility of the District Councils. District plans must be consistent with the RPS. Issues such as controls on appropriate development of coastal margins and public access to the coast are addressed within district plans. The Northland Regional Council works closely with the District Councils, principally through the district plan and resource consent process.

Regional Policy Statement objectives

Northland Regional Council has stated a number of objectives relating to coastal management within the RPS. These seek to preserve the natural character of Northland's coastal environment, while maintaining and enhancing public use and access.

The RPS objectives are:

- The preservation of the natural character of the coastal environment, including protection from inappropriate subdivision, use and development.
- Prevention of damage to and loss of traditional fisheries habitats and tangata whenua resources of significance to the tangata whenua.
- Maintenance and enhancement of public use, enjoyment of and access to the coastal environment.
- The minimisation of the conflicts between uses in the coastal environment and their effects on public health and safety.

Environmental results anticipated

The following is the anticipated environmental results after the implementation of the coastal management policies in the RPS:

- The maintenance and enhancement of the natural character of the coastal environment.
- Enhanced access to and use of traditional fisheries and other resources by tangata whenua.
- Greater protection of sites of significance to tangata whenua and those features which contribute to the natural character of the coastal environment.
- Appropriate and environmentally sensitive use of the Coastal Marine Area by people involved in water-related activities.
- Improved public access to foreshore areas and enjoyment of the wider coastal environment.
- Increase in formally reserved areas.

6.2 What are the pressures on the coastal environment?

Demand for coastal residential property, water space and recreational activities have increased the many pressures on the coastal environment. The key pressures on Northland's coastline currently are catchment land use, coastal development and use of coastal water space including coastal structures.

Land use

This includes the modification of natural coastal systems and features, such as sand dunes and coastal wetlands, through development, forestry, farming, stock grazing, flood control schemes and drainage, vehicle usage and introduced pest species.

Sedimentation and nutrient enrichment inputs from surrounding land use and river outflows is leading to mangrove proliferation and an associated change in broad-scale habitat composition in Northland's estuaries.

The photograph below shows an example of a modified coastal margin, where coastal forest has been converted to pastoral farming and stock grazing has removed most riparian vegetation.

Example of a modified coastal margin in the Kaipara Harbour.

Coastal development and use

The cumulative effects of coastal development and use can have a significant detrimental effect on the natural character of the coast if poorly designed, implemented or maintained. This includes coastal subdivisions, marine farming, mooring areas, marinas and other coastal structures

The number of coastal subdivisions has increased significantly in recent years. More information on this is presented below in the state of the coastal environment.

Subdivision development sprawling along the Coopers Beach and Doubtless Bay coastline.

Coastal subdivisions have sometimes been built in active erosion and storm hazard zones which, along with fears of climate change increasing the risk of more storm damage, is bringing an increased demand for coastal protection works.

The photograph to the right is an example of coastal protection works (seawall) resulting from coastal development in a hazard zone at Rangiputa.

More detailed information on coastal protection work is presented in Case Study 1: Coast care of dune systems.

Use of coastal water space

The coastal marine area is a public resource, and the public expectation is that the 'right' of access is maintained.

Of particular concern is the proliferation of coastal structures, such as jetties and boatramps, and their effect on coastal landscape values. There is also an increase in water craft use in Northland and with this an increasing demand for moorings and marinas and associated shore-based facilities including boat ramps, rubbish disposal and car parking.

Other pressures include current and future demands for use of coastal space for energy generation, aquaculture and other industry-related activities, and the effects of associated structures and activities on natural character.

The photograph below shows the cumulative effects of coastal development and use, with a subdivision in the foreground and marine farming, moorings, coastal structures and the site for a proposed marina development in the background.

Cumulative effects of coastal development and use at Parua Bay, Whangarei Harbour.

6.3 What is the state of our coastal environment?

Natural coastal systems

Northland's coast is predominantly comprised of rocky shores, sandy beaches and barrier-spit systems backed by dunes and cliffs, with backshore areas comprised of dune fields and to a lesser degree coastal wetlands and coastal forest. There are more than 13 harbours and many other smaller estuaries, containing extensive mangrove, sea grass and wetland habitats.

Northland's natural coastal systems have been modified over time. Coastal forest is confined to a few islands and limited areas on the mainland and no completely natural dune systems remain. Coastal salt marsh wetlands have been reduced to less than 5% of their original area through drainage and reclamation.

Amongst the most modified natural systems are the infilled barrier spit systems, such as Taupo Bay and Taipa. These systems are well developed, mainly with residential dwellings. As most of Northland's infilled barrier spit systems are becoming developed to capacity and demand for coastal property increases, pressure to develop other coastal systems is coming, such as the Ngunguru sand spit and the prograded holocene dune systems of the west coast.

Coastal activities

Coastal protection work, such as seawall construction, has proliferated in coastal areas where coastal developments are inappropriately sited with respect to the natural variability of coastal systems. Coastal structures, such as wharfs, jetties and boat ramps, are also commonly placed adjacent to developed coastal systems. Increasing development and occupancy of the coast has resulted in an increased demand for these structures, and the proliferation of water craft use and associated facilities such as moorings, marinas and boat ramps.

As at 1 July 2007 there were 2812 permits for moorings and 1089 permits for other coastal activities (mostly structures) in Northland, as shown in table 1 (below).

Table 1: Number and type of active coastal permits and mooring permits at 1 July 2007

Type of permit	Number
Moorings [1]	2812
Structures (boat ramps, jetties, seawalls etc) [2]	765
Marine Farms [3]	34
Extraction/Disturb land in CMA	77
Reclamation	59
Pipeline/Cables	20
Marina	9
Occupy	27
Other	98
Total	**3901**

Note 1: This includes all privately owned moorings but not moorings associated with Marinas such as the Whangarei Town Basin, which are covered under the marina consent.
Note 2: This figure does not include the approximate 200 deemed coastal permits, which where authorised prior to the RMA 1991. These structures are monitored every three years by the Council.
Note 3: Approximately 100 marine farms administered by the Ministry of Fisheries where transferred to the Council under the Aquaculture Reform (Repeals and Transitional Provisions) Act 2004. These Leases,

Licence and Marine Farm Permits are deemed to be coastal permits granted under the RMA 1991, but are still in the transitional phase, so are not included in the above figure.

The greatest development is located on Northland's east coast, where the natural character of estuaries, embayments and barrier spit systems is modified by extensive residential areas. At April 2007 approximately 98% of moorings and 85% of coastal permits for coastal activities, such as structures, were located on the east coast of Northland in figures 1 and 2 (right).

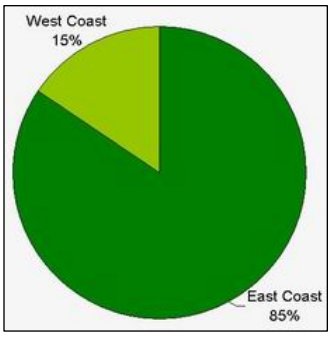


Figure 1: Proportion of coastal structure permits (top right).

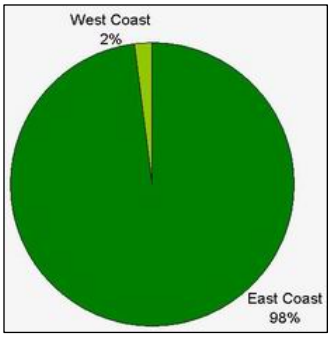


Figure 2: Proportion of mooring permits (bottom right).

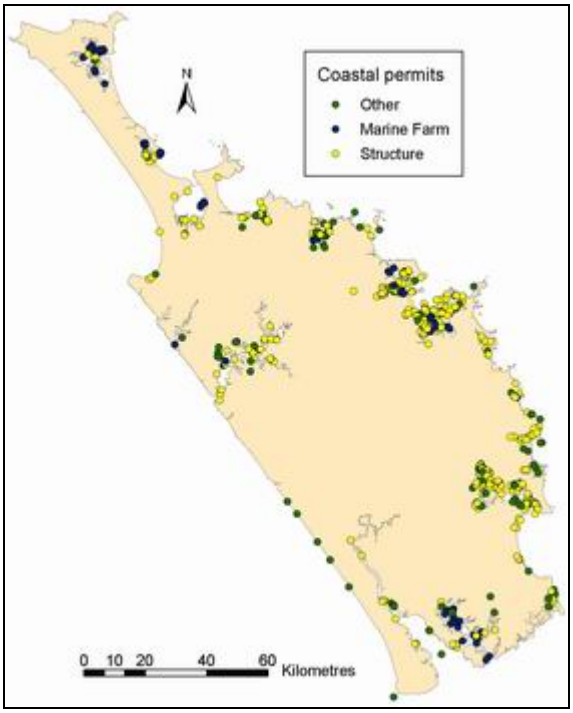
The areas of greatest development are Whangarei and the Bay of Islands, where large proportions of coastal margins have been developed. The majority of coastal permits are located in Whangarei Harbour (27%) and the Bay of Islands (22%), while the majority of mooring permits are located in the Bay of Islands (42%), Kerikeri inlet (14%) and Whangarei Harbour (14%) as shown in table 2 (below).

Table 2: Location of Mooring and Coastal Permits by Area.

Harbour/coast	Coastal permits	Mooring permits
Bay of Islands	239 (22%)	1189 (42%)
Whangarei	298 (27%)	388 (14%)
Kaipara	106 (10%)	46 (2%)
Whangaroa	72 (7%)	208 (7%)
Doubtless Bay/Mangonui	45 (4%)	164 (6%)
Houhora	40 (4%)	98 (4%)
Kerikeri	100 (9%)	404 (14%)
Whangaruru/Whananaki	18 (2%)	67 (2%)
Tutukaka/Ngunguru	55 (5%)	168 (6%)
Hokianga	63 (6%)	10 (0.4%)
Mangawhai	12 (1%)	54 (2%)
Other*	41 (4%)	16 (0.6%)
TOTAL	1089	2812

*Other includes Bream Bay, Parengarenga Harbour and Rangaunu Harbour.

Figures 3 and 4 (below) clearly show the congestion of coastal permits, including moorings, structures and marine farms in the Whangarei Harbour, Bay of Islands and Kerikeri inlet.



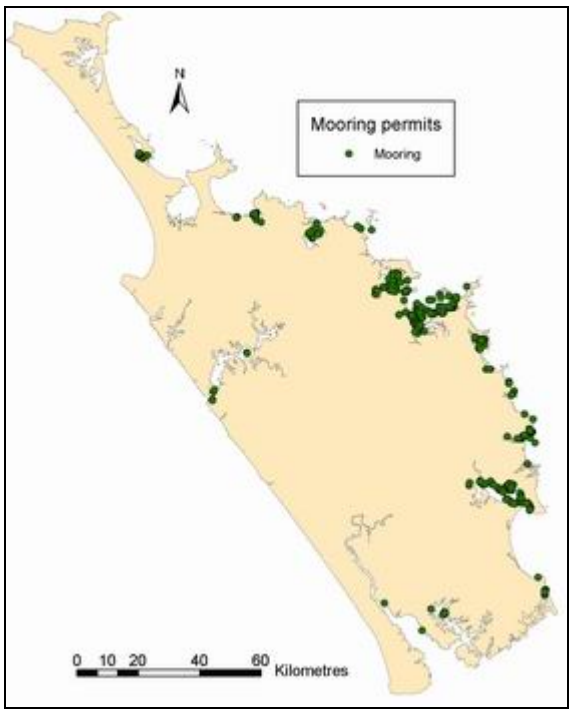


Figure 3: Location of coastal permits (left). Figure 4: Location of mooring permits (right).

The number of consents for coastal activities has increased steadily over the last 10 years, with approximately 2600 consents in total for coastal activities at 1 January 1997, compared to 3800 at 1 January 2007 as shown in figure 5 (below).

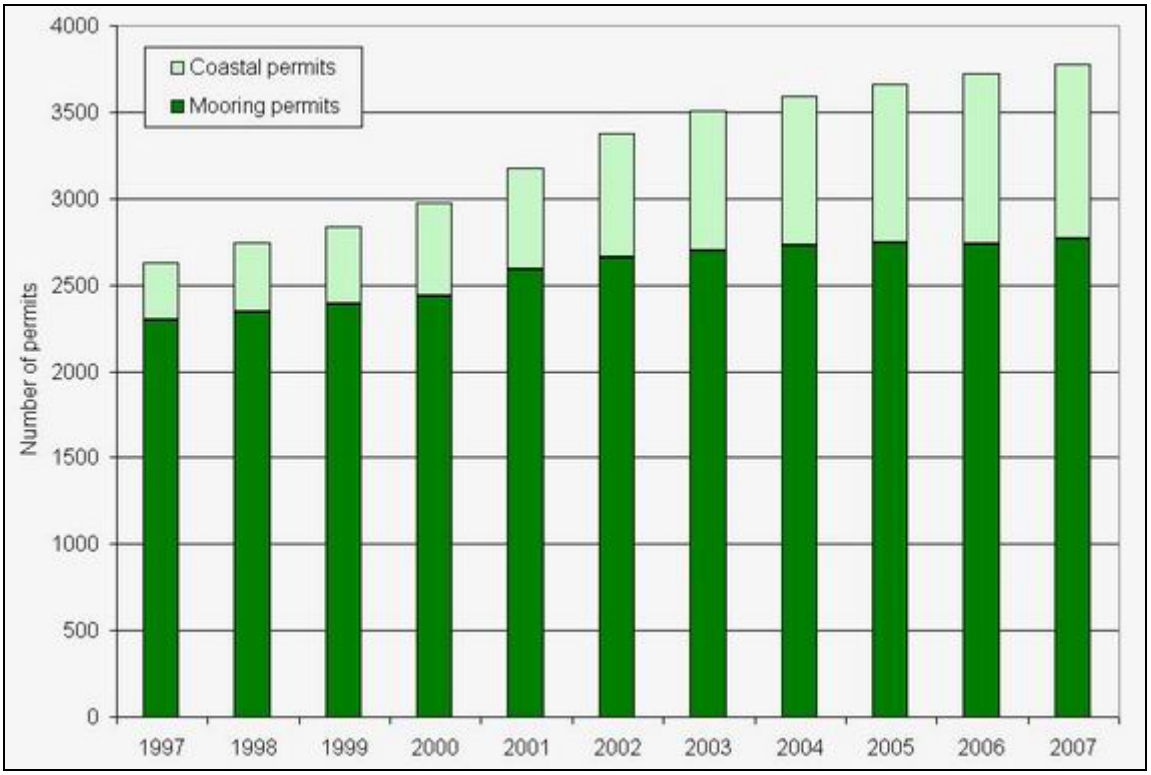


Figure 5: Number of permits for coastal activities at 1 January each year from 1997 to 2007.

Coastal subdivisions

An analysis of subdivision data supplied by the District Councils for a three-year period from August 2002 to July 2005 was undertaken to provide a snapshot of subdivision

pressure. To identify the pressure on the coastal environment, only subdivision data within one kilometre of the coastline was analysed.

This subdivision data comprises consents granted by the District Councils. Some of the subdivision developments may not have started or could still be under development, and some completed developments can have empty lots for several years. However, this data does give a useful indication of both current and future pressures on Northland's coastal environment.

Between August 2002 and July 2005 there was a total of 715 subdivision applications granted for Northland within one kilometre of the coast as shown in table 3 (below). These subdivisions include 3822 lots, which equates to an average of just over 5 lots per subdivision.

Table 3: Subdivision applications granted from August 2002 to July 2005 for subdivisions within 1km of coast for each District and the total for Northland.

	Far North	Whangarei	Kaipara	Total
Total number of lots	1230	1543	1049	3822
Mean number of lots/subdivision	3.6	6.3	8.1	5.3
Total number of subdivisions	342	244	129	715

*NB: Raw datasets obtained from District Councils.

The photograph below is Marsden Cove development, an example of a large scale coastal subdivision. This particular development located near the entrance to the Whangarei Harbour commenced in 2005 and includes a canal development, with a dredged access channel, 250-berth marina and 700-lot residential subdivision.

An example of a large-scale coastal subdivision at Marsden Cove near Whangarei.

Location of subdivisions

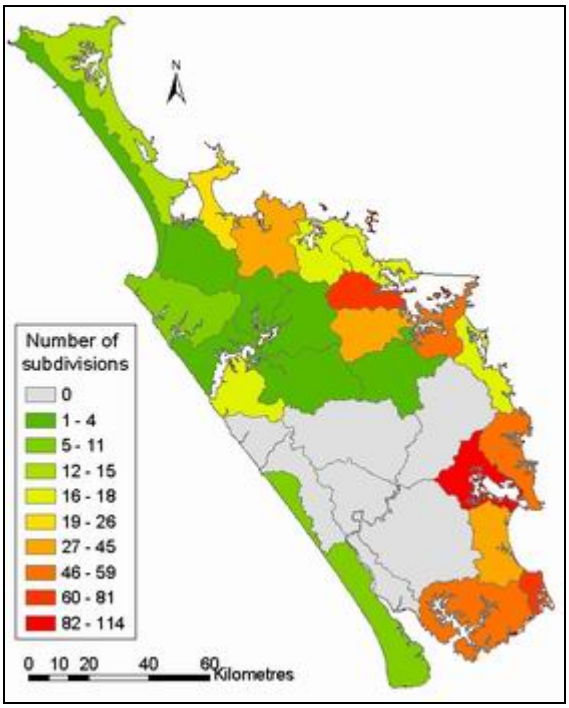
The greatest coastal subdivision pressure for the three-year period was focused around the areas of Whangarei Harbour, Mangawhai, Kerikeri, Eastern Bay of Islands, Ngunguru/Pataua and the Otamatea arm of the Kaipara Harbour as shown in table 4 and figures 6 and 7 (below). Each of these areas had more than 50 subdivision applications granted between August 2002 and July 2005 equating to more than 130 lots for each area.

Table 4: Subdivisions granted between August 2002 and July 2005, split into catchment areas, with their respective number of lots. These results are also shown in figures 6 and 7.

Area	Number of subdivisions	Number of lots
Whangarei Catchment	114	743
Mangawhai Catchment	81	872
Kerikeri Catchment	79	309
Eastern Bay of Islands Catchment	59	182
Ngunguru/Pataua Catchment	57	379
Otamatea Catchment	52	138
Oruru/Oruaiti Catchment	45	118
Bream Bay Catchment	42	270
Waitangi Catchment	39	181
Karikari Peninsula	26	145
Takou Bay Catchment	18	46
Whangaruru/Whananaki Catchment	17	111
Whangaroa Catchment	17	77
South Hokianga Catchment	17	42
Far North Peninsula (East)	15	47
Whangape/Herekino Catchment	11	35
Wairoa/West Coast	10	79
North Hokianga Catchment	4	10
Puketi/Utakura Catchment	3	14
Mangamuka Catchment	2	9
Kawakawa Catchment	2	5
Awanui Catchment	2	4
Far North Peninsula (West)	1	2
Taipa/Mangonui Harbour	1	2
Waima Catchment	1	2

Other areas with substantial subdivision consents granted in this three-year period were Oruru/Oruaiti (Doubtless Bay area), Bream Bay, Waitangi and Karikari Peninsula. These four areas all had more than 20 subdivisions approved with more than 100 lots in total for the area.

The concentration of subdivisions and high lot numbers in Whangarei, Mangawhai and Kerikeri areas between August 2002 and July 2005, is obvious in figures 6 and 7 (below), shown in red.



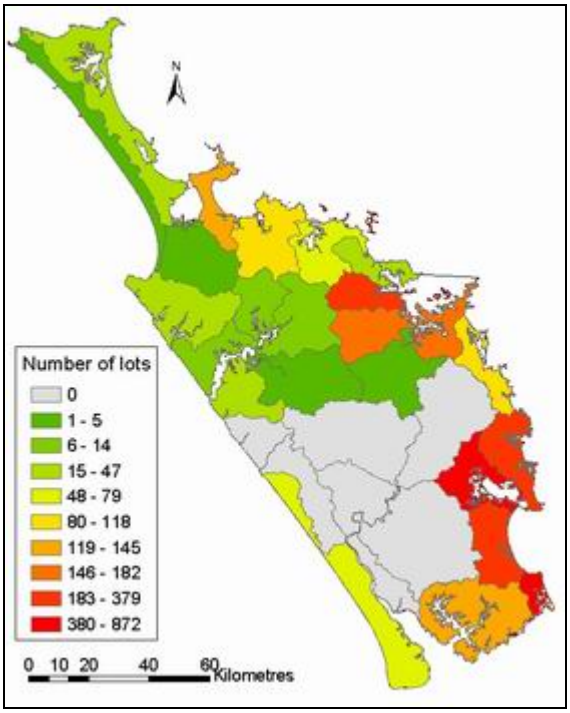


Figure 6: Number of subdivision consents granted between August 2002 and July 2005 within 1km of the coastline, for specified catchment bounds (left). Figure 7: Respective number of lots for figure 6 subdivisions (right). Data also shown in table 4.

Location by District

For the Whangarei District the very large subdivisions (greater than 50 lots per subdivision) are located at Ruakaka and Marsden Point as shown in figure 8 (right). The majority of other smaller subdivisions were in Whangarei City itself, in the Ngunguru, Tutukaka and Matapouri areas or in the Waipu area.

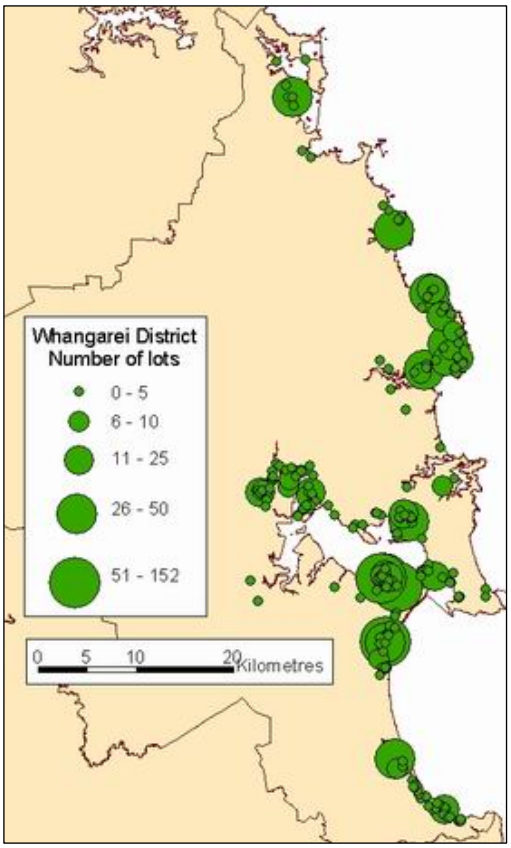
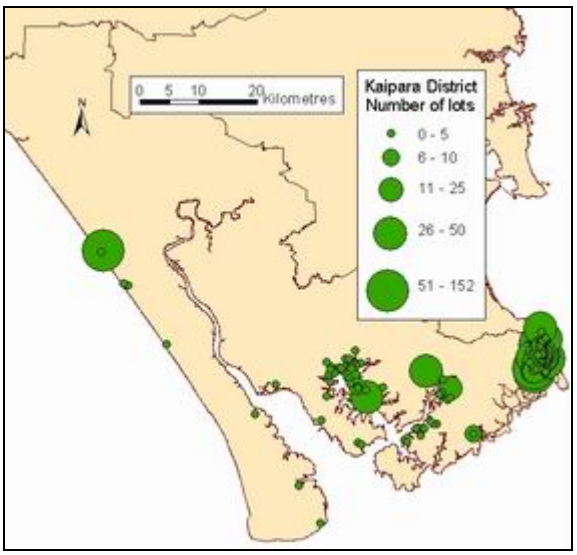


Figure 8: Coastal subdivisions granted August 2002 to July 2005 in the Whangarei District.

For Kaipara District the very large subdivisions (greater than 50 lots) are located in the Mangawhai area, other than one near Baylys Beach on the West Coast as shown in figure 9 (below left). The majority of the remaining subdivision consents granted for the Kaipara District are on the Kaipara Harbour itself, particularly in the Matakohe, Pahi and Whakapirau area. However, most of these subdivisions are small (five or fewer lots).

For Far North District all large subdivisions (greater than 50 lots) are in the Kerikeri and Bay of Islands areas, with hundreds of smaller subdivisions as well, as shown in figure 10 (below right). There are also many small subdivisions spread along the coast of the Hokianga Harbour and in the Doubtless Bay area.



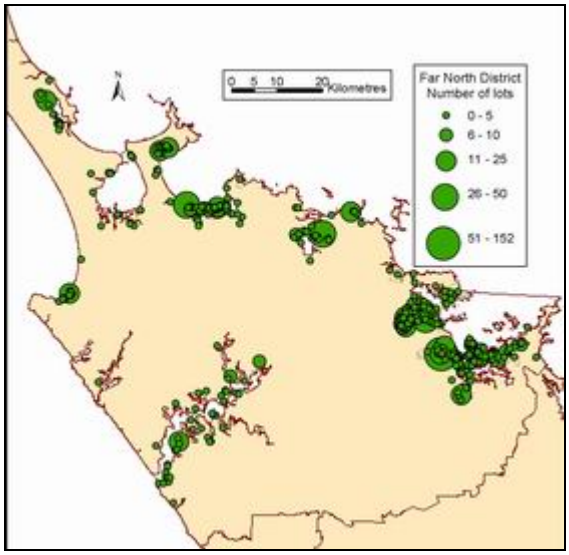


Figure 9: Coastal subdivisions granted between August 2002 and July 2005 in the Kaipara District (left). Figure 10: Coastal subdivisions in the Far North District (right).

As these subdivisions are settled they have the potential to place many pressures on the coastal environment, including:

- Sediment run-off if not well managed and contamination of stormwater run-off.
- Sewage discharges as many are in areas without municipal wastewater systems.
- Loss of wetland habitats and riparian vegetation.
- Demand for boating facilities such as ramps, marinas and jetties.
- Damage to natural dune systems and demand for protection against natural hazards.

Indirect modifications to natural character of the coastal environment

Land use practices, such as deforestation and conversion to pastoral land, have resulted in increased sediment loading and nutrient enrichment of estuarine systems. This appears to have contributed to the expansion of mangroves in estuaries. Trapping of sediment by mangroves and the subsequent mangrove expansion has changed the natural character of many estuarine systems. There are a number of anecdotal accounts of mangrove areas that were once sandy, estuarine beaches.

Deforestation in the Parengarenga Harbour, causing increased sediment loading and proliferation of mangroves in estuarine environments.

Seagrass populations have also been lost from estuaries due to sediment loading from land use or industry. In 1942 there were an estimated 1400 hectares of seagrass meadows in Whangarei Harbour, but due to effects of sedimentation, only small patches remain today. See Case Study 2 for more information.

Introduced pest species, such as *Spartina* sp. and Asian date mussels, also modify the natural character of the environment by displacing indigenous flora and fauna, increasing sedimentation and creating a mainly homogenous habitat of low diversity.

Spartina incursion in the Otamatea arm of the Kaipara Harbour.

6.4 What is being done?

Policy documents

The Government has prepared a New Zealand Coastal Policy Statement (DOC 1994), which sets the national priorities for the management of the coastal environment, with a particular emphasis on the preservation of natural character.

The NRC has prepared a Regional Policy Statement (RPS) for Northland (NRC 2002). The RPS contains section 22 - coastal management, which recognises and provides for the preservation of the natural character of the coastal environment and protection from inappropriate subdivision use and development.

Preservation is best achieved through control of development activities and requires, among other things, coordination between Regional and District Councils. The controls on activities in the Coastal Marine Area need to be related to those applying on adjacent land areas and vice versa. Special attention needs to be focused on areas with high natural values and complementary programmes of acquisition and formal protection developed.

The NRC has prepared a Regional Coastal Plan (RCP) which is a self contained document with objectives, policies and rules governing management of the coastal marine area, i.e. the land and waters below mean high water springs mark. It provides the basis for allocating space to and controlling the effects of activities in this area.

The management of land, water and other resources above Mean High Water Springs are dealt with in a similar manner in regional plans prepared by the Regional Council and District Plans prepared by the respective District Councils.

The split in planning area and associated jurisdictions of Regional and District Councils based around the Mean High Water Springs mark is a somewhat artificial one. Both levels of authorities recognise the need for integrated management of the wider coastal environment, as established by the planning framework set out in the RPS.

Beach profile monitoring

A beach-profile monitoring programme is undertaken to assess changes in the foreshore location and shape of the beach profile at selected coastal areas. Data gathered from this programme is necessary to better understand the dynamics of Northland's coastline. This data assists the Council in assessing the suitability and effect of developments on coastal systems. For more information, refer to the Coastal Hazards chapter of this report.

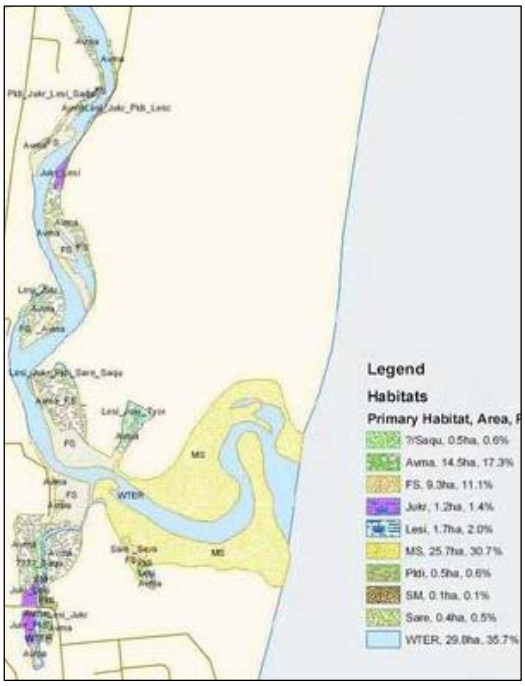
Estuarine monitoring

The Northland Regional Council has commenced the implementation of the national Estuarine Monitoring Protocol (EMP) programme to assess estuarine habitat health and changes over time. The EMP assesses changes in both fine-scale estuarine health and broad-scale estuary habitat composition over time.

The fine-scale assessment involves routine sampling of a suite of characteristics relevant to estuarine condition, such as faunal and floral composition, nutrient and contaminant status and seabed sediment grain size characteristics. The broad-scale mapping of habitat characteristics is used to determine the proportion of different habitat coverage within the estuary.

The main outcomes from estuarine monitoring are:

- A baseline assessment of estuarine sediment and ecological health and the habitat composition of estuaries.
- Continued assessment of changes in estuarine health, based on the above factors.
- The provision of quantitative data from which informed decisions can be made on the management of estuarine areas and activities impacting on these systems.



Example map of Ruakaka Estuary showing results of broad-scale habitat mapping.

NRC Environment Fund

The Northland Regional Council has an Environment Fund that is used to assist with funding projects that are designed to restore and enhance the natural environment, including coast care initiatives, the fencing of coastal margins, biodiversity enhancement and others.

This fund has recently been changed so that a portion ($25,000) is set aside specifically for coastcare initiatives and another $25,000 has been secured for CoastCare activities within the Bream Bay area. The Environment Fund amount proportioned within the Environment Fund is set to increase as the CoastCare programme in Northland gains momentum and more groups are established

Coastal plan changes

A plan change to the Regional Water and Soil Plan for Northland (NRC 2007) is being prepared to regulate land use in the coastal margins, preventing land disturbance activities from being adversely affected by marine processes or exacerbating the effects of these processes on other properties. There are also a number of natural, social and cultural values which may be affected by land disturbance activities undertaken in the coastal margin. These are being considered in the development of the plan change.

The following plan changes to the RCP for Northland all contribute towards the sustainable management of the natural character of Northland's coastal environment. These plan changes will occur over the next few years and will involve extensive consultation with the public and other stakeholder groups

Mooring and Marina Management

This change restricts the proliferation of moorings outside of identified mooring areas. It also initiates a new management regime within identified mooring areas through the development of mooring management plans. Mooring management plans will be developed for each of the roughly 40 identified moorings areas in Northland and will cover issues including maximum mooring numbers, mooring layouts and improve the integrated management of moorings through the identification of shore-based facility requirements like toilet and sewage pump-out facilities, and car parks.

Mangrove Management

This plan change has been developed to recognise that there are circumstances where the removal or pruning of mangroves is appropriate. Such activity would require resource consent with the application process taking into account relevant provisions of the New Zealand Coastal Policy Statement, Regional Policy Statement for Northland and Regional Coastal Plan for Northland.

Whangarei Harbour - Marine 1 Review

The purpose of this plan change is to identify and formally recognise areas of important conservation value within Whangarei Harbour, and to rezone these areas as Marine 1 (Protection) Management (MM1) Areas.

Aquaculture Management Areas (AMA)

This plan change is proposed to enable marine farming in Northland waters under an invited private plan change regime. Under this proposal, marine farm development outside of existing AMA would require a change to the Regional Coastal Plan. Resource consent approval would still be required to undertake any aquaculture activity within an approved AMA.

Stock exclusion from the coastal marine area

The Northland Regional Council is actively promoting the exclusion of stock from the coastal marine area and riparian management through the Regional Coastal Plan for Northland. Access to and use of the coastal marine area by stock is set to become a prohibited activity by June 2009.

This rule is supported by the employment of a catchment management officer and the delegation of NRC Environment Funds specifically for the fencing of riparian margins in the CMA.

Near-shore sand mining

The Northland Regional Council contributed to the Kaipara Sand Study, which was a multi-agency funded study, carried out from 2000 to 2004. The study provided a sustainable management context to assess the sustainability of sand extraction from this resource.

Applications for renewal of resource consents for near-shore sand mining near the entrance to Mangawhai Harbour were heard in 2004. The hearing committee, upon the advice of the Northland Regional Council, recommended the use of the precautionary principle, in this case being a cessation of sand mining. The decline recommended by the hearing committee was backed up by the Minister of Conservation who declined the application for the continuation of sand mining.

The only sand mining operation now left in Northland is within the Kaipara Harbour.

Vehicles on beaches

In response to increased concern from the public over the misuse of vehicles in the coastal environment, the Northland Regional Council is coordinating a multi-agency education campaign and working party with the Department of Conservation, NZ Police and District Councils. The education days are used to patrol the beach giving out safe driving information.

6.5 Where to from here?

The following are key points towards implementing improved future management of the coastal environment in Northland:

- Increase preparedness for and our understanding of hazards and the effects of climate change and sea level rise. (Refer to the Coastal Hazards chapter of this report for more information)
- Assess adequacy of regional and district plan rules in response to coastal development intensification and subdivision pressure, and develop tools to monitor trends in development of coastal areas subject to hazards.
- Better integrate the management of the coastal marine area and adjoining land margins to better manage effects of activities.
- Focus on catchment management – improving water quality and addressing cumulative discharges in the entire catchment is likely to have the most benefit for coastal water quality.
- Continue developing and promoting best practice – particularly in relation to sewage disposal. This is supported by the current development of a sewage accord for Northland.
- Review the implementation and effectiveness of the RPS and the Regional Plans for Northland.

CoastCare

In terms of CoastCare over the next five years, emphasis will be placed on the following:

- Establishing and assisting as many new groups as possible.
- Educating people on their impacts on the coast.
- Getting as many plants as possible into the ground.
- Creating an education campaign to present to schools to get children working with coast care.
- Involving district councils and DOC with coast care initiatives on its reserves and protected land.
- Securing funding for coast care projects.
- Educating developers on the benefits of coast care.

6.6 What can you do to help?

Establish a CoastCare group

Every CoastCare group is different – each project reflects the particular environmental issues in an individual area, and each group is organised according to the makeup of the local community and the resources available. Generally speaking, CoastCare projects may include:

- Removing weeds from sand dunes and coastal reserves.
- Replanting and rehabilitating sand dunes to help protect against coastal erosion.
- Building walkways and fences to manage the way people, vehicles and horses gain access to the beach. (This protects sand dunes and coastal vegetation).
- Monitoring and/or controlling animal and plant pests.
- Protecting and/or enhancing coastal habitats; for example re-planting and/or fencing off areas of native vegetation.
- Community education and awareness (eg signs and pamphlets).
- Monitoring and protecting threatened species - plants, animals or birds. For example a group may control predators around nesting seabirds or migratory shorebirds.
- Beach clean-ups and litter removal.

For more information on establishing a CoastCare group in your area contact the CoastCare coordinator at the Regional Council on 0800 002 004.

Keep to the CoastCare code

Help protect our coastal environment by sticking to Northland's CoastCare code:

- Keep your vehicle and motorbike off the dunes. Drive on existing access tracks and below the high tide mark.
- Do not ride your horse through the dunes. Use designated access ways and ride your horse on the hard sand.
- Do not sandboard down the dunes. This destroys plants and loosens the sand, leading to wind erosion.
- Do not leave litter on the beach. Always take your rubbish home with you.
- Check with your local District Council which beaches can be used for exercising your dog. Keep your dog under control and pick up its waste.

For more information refer to the 'Caring For Our Coast' brochure available on the Regional Council website at the following link:

http://www.nrc.govt.nz/upload/2229/Caring%20for%20our%20Coast.pdf

Vehicles on beaches

Inappropriate vehicle use on beaches can exacerbate erosion of the foreshore. For more information refer to the 'Driving On The Beach' brochure on the Regional Council website at the following link:

http://www.nrc.govt.nz/upload/1779/Driving%20on%20the%20Beach%20(Reprint%20Mar%2007).pdf

6.7 Case Study 1: Coast care of dune systems

Dune systems provide natural protection for coastal communities from coastal hazards such as flooding and erosion (storm surge and wave effects). Functioning dune systems can provide a key defence against the effects of coastal hazards which are set to increase with projected climate change. A well maintained dune system with appropriate vegetation cover and sand supply will repair itself after storm events. This allows a dune to afford a self-perpetuating protection existence between the land and sea.

Storm-eroded dune at Bream Bay in 2000 (left) compared to natural rebuilding in 2005 (right).

Dunes have been modified over the last 100 years through human and natural pressures such as land clearance, development, over-use by vehicles and pedestrians and the introduction of plant and animal pests. All of Northland's dunes have been modified since the arrival of Maori and Europeans. Many dunes are in a poor state and some have been completely destroyed due to development.

In response to the degraded state of Northland's dunes and their importance to mitigate against the effects of coastal erosion and climate change, the Northland Regional Council has developed the CoastCare initiative to help assist communities and other government organisations with dune restoration.

Pressures on our dune systems

Human modification of dunes leads to major changes in dune morphology, vegetation and natural coastal processes. Initial threats to sand dunes came from early land clearance where fire was used to remove dune vegetation and land turned into pastoral fields. This also caused large-scale sand drifts as sand exposed to the wind quickly mobilised inland over large tracts of Northland's coast.

Inundation at Waipapakauri.

The dunes were then further modified through subdivision and other developments. The frontal dune was often bulldozed and levelled and in some instances capped with soil and grassed. This provided platforms suitable for housing, businesses, esplanades and roading.

Damage to the native sand-binding vegetation has been widespread in Northland and can be attributed to:

- The initial grazing of dune areas by stock.
- The introduction of animal pests such as rabbits and hares.
- The introduction of plant pests such as lupins, marram grass, ice plant and kikuyu.
- Encroachment gardening on dune systems by adjacent land owners and dumping of plant pests.
- The inappropriate use of vehicles on dunes, which displaces vegetation and causes blow outs in sand dunes.
- The increased level of pedestrians on dune vegetation, which can also cause blow outs, if the use is intense.
- The effects of sand mining both in the back dune and off shore area.

Erosion at Omapere

State of our dune systems

There are very few dune systems in Northland where the original lowland, dune or coastal forests remain intact. Some of the more remote areas, such as Pouto peninsula, Kokota spit and Cape Reinga (Aupouri Peninsula), are Northland's best examples of pristine dune areas. Even these dunes are under threat from inappropriate vehicle use (Pouto) and the invasion of exotic pest species (Kokota spit).

Pouto peninsula, one of the few relatively pristine dune systems remaining in Northland

Dune systems are 'healthier' on the west coast than the east coast of Northland on account of lower resident populations, with the exception of Omapere, Opononi, Ahipara and Waipapakauri. However, this is set to change as subdivisions on the west coast develop and pressure from vehicle use increases as southern authorities begin to exclude vehicle access to their beaches.

In comparison the east coast dunes are in a great state of decline, with some areas such as Rangiputa, Cable Bay, Tauranga Bay, Matauri Bay, Paihia, Oakura, Teal Bay,

Wellingtons Bay and Waipu Cove modified almost beyond repair. This modification can be linked to a longer history of human inhabitation leading to more intense housing and development.


Modification of natural dune systems at Tauranga Bay (left) and Teal Bay (right).

Seawalls have often been constructed to try to protect houses built on bulldozed dunes which are susceptible to the effects of sea level rise and coastal erosion. These seawalls, although protecting property, lead to a lower beach level and therefore a loss of high tide beach and generally detract from the natural character of the coastline.

Protective works where roading is threatened by erosion often has a similar effect to seawalls and stormwater outlets can have a significant impact by aggravating dune erosion during coastal storms.

Seawall and stormwater outflow at One Tree Point.

What is being done?

In response to growing pressures on Northland's dunes, the Northland Regional Council has appointed a CoastCare co-ordinator. The role of the co-ordinator is to support CoastCare groups and work in with the Department of Conservation, district councils and iwi to raise awareness of CoastCare in Northland and assist with the establishment of new CoastCare groups.

NRC Environment Fund

To assist with this role, a targeted funding amount was made available in the Environment Fund exclusively for CoastCare groups wishing to undertake dune restoration projects. This fund currently supports nine projects with several more proposed for the coming year.

Coastal planting workshops

The Northland Regional Council has also hosted two seed collection, propagation and planting workshops to provide technical assistance to CoastCare groups and other agencies wishing to grow coastal dune plants. The workshops have been well attended and the feed back from participants has been very positive.

Vehicles on beaches

In response to increased concern from the public over the misuse of vehicles in the coastal environment, the Northland Regional Council co-ordinated a multi-agency education campaign with the Department of Conservation, NZ Police and Far North District Council. This education campaign occurred over three weekends in late summer 2007, in the three districts: Whangarei (Bream Bay), Far North (Ahipara and Waipapakauri) and Kaipara (Baylys Beach to Glinks Gully).

The education days were used to patrol the beach giving out safe driving information and undertaking a pilot survey. Over half of the people on the beach surveyed think there is a problem with vehicles on beaches, in particular with speed and dangerous driving and they would like to see increased policing on beaches to deal with this problem. This programme will be repeated again next summer.



Vehicle damage on west coast dunes (left) and education day at Baylys Beach (right).

CoastCare groups

There are currently 14 coast care groups and individuals throughout Northland registered with the Regional Council. Examples of two CoastCare groups are below:

Omamari Beach Care Group (Hua Rakau Ki Omamari Trust)

The Omamari Beach Care Group was established in 1997 in response to a shifting river mouth which threatened to undermine older sand dune cliffs. The group managed to have the stream realigned directly to the sea and undertook an extensive planting programme to stabilise the dunes.

The group erected a large brush fence to keep people and vehicles out and trap the moving sand. In the fenced compound the group planted native sand binding plants grown from their own nursery. The group has been so successful that some members have completed their level 2 Horticultural Certificate which was held at the volunteer nursery at Omamari. The nursery also supplied plants to the Kaipara District Council and Pouto marae for other restoration projects.

Signage for pedestrians.

The group is now working on protecting the back dune area and in particular the area next to the Omamari stream where members are planting, creating walkways and removing water weeds. A pest programme has also been adopted to control rabbits, possums and feral cats.

Waipapakauri Coastal Care Group

The Waipapakauri Coastal Care Group was set up in response to the sand dune inundation and degradation that was being caused by pedestrian, vehicle and livestock (wild horses) use and damage of the dunes. The group has sought to protect and reinstate the Waipapakauri dune system through management of recreational vehicles and pedestrian pressures.

To do this the group has fenced off the dunes and created one pathway for pedestrian access from the car park to the beach.

The group members undertook the works using locally donated materials and their own labour. The access way over the dunes has been a huge success with tourists who disembark at Waipapakauri and use the access way as a viewing point.

Walkway at Waipapakauri

The group has also been attempting to stabilise the sand dune blow out by erecting sand fences to capture the sand. Funding has been secured, which has allowed group members to purchase sand-binding plants. These have been planted by the group, community members and children from local schools.

The Waipapakauri Coastal Care Group is committed to restoring the degraded dune system and has achieved great success so far.

6.8 Case Study 2: Whangarei Harbour Seagrass Restoration

Seagrass habitats are well documented as providing ecosystem benefits by providing a 'nursery' habitat for juvenile fish species and increasing biodiversity. The restoration of even small areas of seagrass habitat would have a positive impact on the health of the Whangarei Harbour and adjacent coastal communities, while also restoring the natural character of the Whangarei Harbour.

A study into the feasibility of the restoration of degraded seagrass beds in the Whangarei Harbour was undertaken in the 2004/2005 financial year. The study, a joint initiative between the Northland Regional Council (NRC) and the National Institute of Water and Atmospheric Research Ltd (NIWA), was funded via the Whangarei Harbour Health Improvement Fund, as part of Northport Limited's commitment to improving the health of the harbour, and a Sustainable Management Fund grant from the Ministry for the Environment.

The study was undertaken in several phases:

- An assessment was undertaken to determine the historical distribution of seagrass beds and environmental factors influencing their health in the Whangarei Harbour.
- An assessment was then carried out to determine the current health of the harbour, in terms of suitability for seagrass habitation and restoration.
- Lastly a methodology and decision-making document to be used when attempting seagrass restoration efforts was produced.

The historic distribution of seagrass shows that as recently as the 1940s, parts of the Whangarei Harbour were thriving with healthy seagrass meadows, including areas around Takahiwai, One Tree Point, Snake Bank, Parua Bay and McDonald Bank. In 1942 there was approximately 1400ha of seagrass habitat coverage in the Whangarei Harbour. By the 1960s this had dwindled to smaller pockets, and by the 1970s only small patches of seagrass were left.

Factors that contributed to the loss were an increased rate and degree of sedimentation, erosion/accretion or mechanical excavation of sediment, increased suspended sediment loads, changes in sediment texture and seabed shape. An example of this was the major dredging programme undertaken in 1966-69 to deepen the shipping channel. In this programme alone over one million cubic metres of sediments were excavated and deposited in other areas of the harbour such as Snake Bank and Takahiwai, and the entrance to Parua Bay. Another example was the discharge from the Portland cement works, which is estimated to have contributed close to three million cubic metres of sediment into the harbour between 1958 and 1971.

The study's assessment of the current 'health' of Whangarei Harbour's water and sediment quality in the areas of western One Tree Point and Takahiwai, determined that the water clarity, nutrient and contaminant status of these areas were within the published ranges for seagrass habitation. These factors are critical for seagrass habitation. High water clarity is needed to provide sufficient light penetration for photosynthesis to occur. Nutrient concentrations must fall within a range that enables sufficient plant growth to occur without being too high as to encourage the growth of parasitic epiphytes and toxicity effects.

The evidence from the study is suggesting that adverse environmental conditions, such as low water clarity caused by excessive sediment inputs, have improved recently

compared to historic levels. These findings are promising, as they indicate that environmental conditions at areas previously inhabited by seagrass are improving and are still suitable for seagrass habitation.

The final deliverable of the study was the development of a decision-making document. This document includes methods for identifying restoration sites, requirements for environmental enhancement, methods for restoration trials and a procedure for monitoring the success of a trial.

The implementation of restoration trials by the local community in conjunction with assistance from a science provider, resourced through funding initiatives such as the Whangarei Harbour Health Improvement Fund, is proposed as the next step in the progression of this work.

Remnant seagrass patch near One Tree Point.

6.9 References

DOC. (1994). *New Zealand Coastal Policy Statement (NZCPS) 1994.* Published by the Department of Conservation, Wellington. The NZCPS and recent review is available on the Ministry for the Environment's website at the following link:

http://www.mfe.govt.nz/rma/central/nps/coastal.html

NRC (2002). *Regional Policy Statement for Northland.* Produced by the Northland Regional Council. Latest version available on the Regional Council's website at the following link:

http://www.nrc.govt.nz/Resource-Library-Summary/Plans-and-Policies/Regional-Policy-Statement/Regional-Policy-Statement/

NRC (2004). *Regional Coastal Plan for Northland.* Produced by the Northland Regional Council. Latest version and current plan changes are available on the Regional Council's website at the following link:

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NRC (2007). *Regional Water and Soil Plan for Northland.* Produced by the Northland Regional Council. Latest version and current plan changes are available on the Regional Council's website at the following link:

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