

# Tauranga Harbour Integrated Management Strategy

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*Working with our communities for a better environment*

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All the people who took time to write letters or make submissions to Environment Bay of Plenty expressing their views on harbour issues.

Cover Photo: Tauranga Harbour



## Executive Summary

This report arises from the Environment Bay of Plenty Long Term Council Community Plan 2004-2014. In accordance with the Council direction it details the issues, gaps and overlaps in the management of Tauranga Harbour and provides recommended actions to address gaps. Considerable effort has been made to objectively evaluate each issue raised.

While the report has been produced by Environment Bay of Plenty there has been significant input from the Western Bay of Plenty District Council (WBOPDC) and Tauranga City Council (TCC).

Sedimentation has been identified as the issue of most concern to both the community and to Council staff involved in environmental management. As a result, a detailed review of the available science, the management mechanisms and the projected effects of the SmartGrowth strategy is proposed.

Similarly, population growth poses a management challenge for the recreational use of Tauranga Harbour. A strategy to deal with recreation in an integrated way is in preparation.

Environment Bay of Plenty has approved the commencement of a series of changes to the Regional Coastal Environment Plan. A number of issues identified in this report can be dealt with as part of those changes, likely to be notified in the 2007 financial year.

Additional efforts in monitoring Tauranga Harbour are needed in respect of wetland extent and condition and the effects of stormwater near outfalls. A number of other monitoring recommendations are made.

A number of groups involved in the preparation of this report appeared to have a lack of knowledge about investigations carried out by Environment Bay of Plenty. Many of the issues raised in this report can be dealt with by improving the links between the community and the Council. Action needs to be taken to make science and experts more accessible to the public. Likewise, formalising the Estuary Care Groups will assist with this issue.

A number of difficulties arise across spatial and functional boundaries. Both regional and district councils need to be mindful of these boundaries and actively work to minimise the integration difficulties caused by legislation.



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# Chapter 1: Introduction

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## 1.1 Project background

The project arises from a process carried out under the Local Government Act 2002, brand named Tauranga Tomorrow, to determine the first set of community outcomes for the Tauranga City Council and Environment Bay of Plenty. One of the community outcomes was to develop and implement a Tauranga Harbour Strategy and Action Plan addressing a number of environmental matters.

For the 2004-2005 financial year, Environment Bay of Plenty provided funding for a Tauranga Harbour Integrated Management Review in its Long Term Council Community Plan (10 Year Plan). The Council decision on the 10 Year Plan prescribes a report on “issues, gaps and overlaps” and recommendations on any future policy work. The Council decision also lists sustainable land management programmes, SmartGrowth, the Regional Coastal Environment Plan and the Regional Water and Land Plan as other activities that affect the harbour.

## 1.2 Tauranga Harbour

Tauranga Harbour (refer figure 1) is one of New Zealand’s largest estuaries, covering an area of 210 km<sup>2</sup>. The catchment of around 1,300 km<sup>2</sup> is home to a population of over 100,000 people. The harbour has a large volume of tidal exchange, through its two entrances, and at low tide approximately 60% of the harbour is exposed. The entire harbour has been identified as an outstanding natural features and landscape. Many sites within the harbour are identified for their ecological and cultural values. Recreationally the harbour is extremely popular with one of the highest rates of pleasure boat ownership in New Zealand.



Figure 1 Tauranga Harbour

### 1.3 **Current management of the Harbour**

Management of Tauranga Harbour and the immediate coastal environment falls under the jurisdictions of the following regulatory agencies:

- Environment Bay of Plenty;
- Western Bay of Plenty District Council;
- Tauranga City Council;
- Ministry of Fisheries;
- Department of Conservation; and
- Maritime New Zealand (Environment Bay of Plenty carry out most of the functions at a regional level).

The project has been undertaken in conjunction with staff from the Tauranga City Council and Western Bay of Plenty District Council. The Department of Conservation were invited to be involved in the project but due to staff resourcing and timing issues, their input was limited to consultation. Likewise there was difficulty in gaining input from the Ministry of Fisheries.

### 1.4 **Scope of project**

The report is about environmental management and the integration of responsibilities between and within the regulatory agencies. The boundary of the coastal marine area is the boundary between a number of jurisdictions both functional and spatial. Integration across this boundary is therefore very important in achieving sustainable management. The project's spatial scope therefore proceeded on the basis of immediate "coastal environment" to ensure that issues across the coastal marine area boundary are included.

The project team has been mindful of SmartGrowth processes and has attempted to avoid any duplication and ensure that the project is complementary in nature. This report therefore varies considerably in scope to many "strategies" that are being developed around the country that commonly include the sorts of things already covered in the SmartGrowth Strategy.

The project team also gave consideration to whether the report should be confined to the functions of the regional and district councils. Again in the interests of integration the project proceeded on the basis of including all identified environmental issues but it was accepted that councils would have not direct ability to carry out any actions outside their immediate functions and could only advocate for those actions to be carried out.

It is also likely that people have a general knowledge of council functions and so tended to raise only those issues that were relevant to the Council's Resource Management Act (RMA) and Local Government Act (LGA) responsibilities.

## 1.5 Methodology

The Issues identified in this report were identified and collated in two ways. Direct discussions were held with the parties acknowledged at the front of this report. Those people had a good understanding of issues due to either their area of interest or the issues they face on a day-to-day basis as part of their employment or as a resident of an area adjoining the harbour.

Given the numerous recent public processes, involving wide community consultation, it was not considered necessary, or appropriate, to consult the public in general. Instead a set of issues was compiled from the following processes:

- Proposed Regional Water and Land Plan – submissions and further submissions.
- Proposed change to the Regional On-Site Effluent Treatment Plan - submissions and further submissions.
- Tauranga Tomorrow.
- Survey 2003 – Attitudes and Perceptions towards the Environment and Environment Bay of Plenty.
- State of the Environment: Tauranga 2000.
- Survey of Recreational Users of Tauranga Harbour in 2001-2002.
- Environment Bay of Plenty's 10 Year Plan process.
- Consultation by Environment Bay of Plenty on dredging recreational channels.

## 1.6 Layout of report

The report is structured as follows:

### 1.6.1 Issues

These are the issues recorded during the preparation of this report. They have been arranged into a logical order and have been included without any judgement of the validity of the concern. Some of the issues raised extend beyond Tauranga Harbour.

### 1.6.2 Evaluation

Considerable effort has been made to objectively evaluate the issues raised with the support of actual data where possible and with reference to regional and district plans where relevant. In the interests of brevity this section references sources extensively rather than repeat information.

### 1.6.3 What is being done?

This is a factual review of all the relevant actions that the relevant agencies are currently undertaking.

#### 1.6.4 **What needs to be done?**

Forms a set of recommended actions. In addressing a number of these recommended actions, consideration may need to be given as to whether the action should be extended across the wider region.



## Chapter 2: Regulatory context

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The main legislative tools governing the management of Tauranga Harbour are the Resource Management Act 1991 and the Local Government Act 2002, administered by both the Regional and District Councils. A number of other agencies operate under a range of statutes.

### 2.1 Resource Management Act 1991 (RMA)

The main environmental management mechanism is the RMA. Upon its commencement in 1991, the RMA replaced 78 statutes and regulations and amended numerous others. At the time of its passing it was considered to reform the management of environmental issues into one integrated statute. While the RMA provides a vastly more integrated structure for environmental management, there are a number of exceptions, most notably the area of Fisheries Management (discussed later in this report).

As there are several agencies carrying out functions under the RMA there are inevitably issues with functional boundaries and with jurisdictional boundaries, discussed later in the report. These boundaries make integrated management more challenging and the RMA places an obligation on the relevant organisations to efficiently and effectively deal with them.

#### 2.1.1 Statutory RMA policy documents affecting the management of Tauranga Harbour

In addition to the Part II matters set out in the RMA 1991, the two high order documents that govern the regulatory framework are the New Zealand Coastal Policy Statement (NZCPS) and the Regional Policy Statement (RPS).

These are given effect to via the following regional and district plans by way of policies and rules:

- Regional Coastal Environment Plan;
- Onsite Effluent Treatment Regional Plan;
- Proposed Regional Water and Land Plan;
- Regional Land Management Plan;
- Regional Air Plan;
- Western Bay of Plenty District Plan; and

- Tauranga City District Plan.

A number of guidelines also exist as well as non-statutory strategies.

Lwi management plans are also of importance and there are several with relevance to Tauranga Harbour. Others are in development and processes are being put in place to formalise the use of those documents.

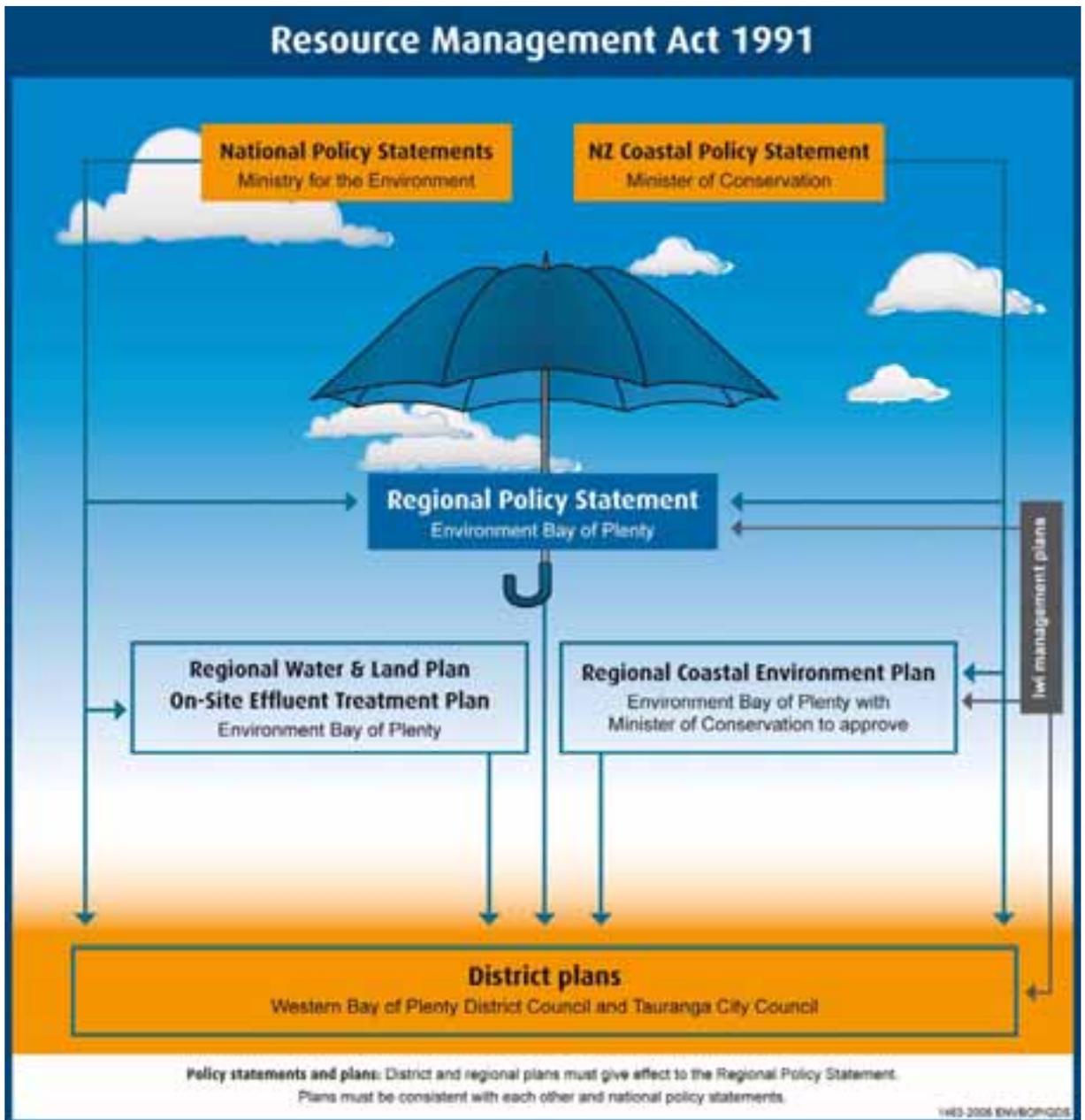
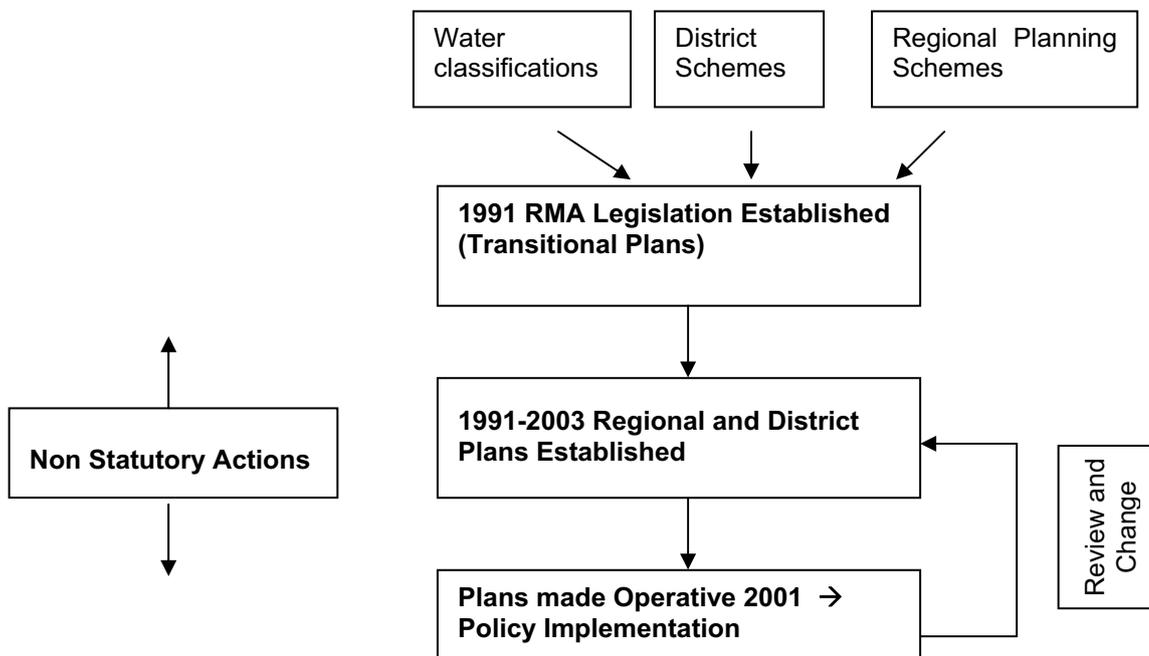


Figure 2 Simplified overview of Resource Management Framework

### 2.1.2 Progression of Resource Management Planning

The last 15 years have seen the progressive development of a planning framework shown in the diagram below. In 1991 the RMA set up the regulatory environment but operation was very much in transitional mode until new plans were developed. Over time the district and regional plans were developed through a detailed process in consultation with the community. Both districts now have operative plans and, with the

exception of the Proposed Water and Land Plan, all the regional planning documents have been made operative. Now that the planning framework is in place focus is turning to implementation matters. It is often when implementing provisions that difficulties are detected and as a result a number of district plan changes have been made after provisions have been found to be inappropriate. New issues also arise and plan changes have also been made for those reasons.



### 2.1.3 Plan monitoring and review

Section 35(2)(b) of the RMA requires every local authority to monitor the effectiveness of the provisions in its plans and each 5 years it must make the results available to the public. So far there has been little central government guidance on how this is to be achieved or made consistent between agencies or throughout New Zealand.

Every 10 years the relevant authority must review its plan (s.79(1) and (2)). Full plan reviews or plan changes can be initiated at any time or by request.

### 2.1.4 Other agency roles

A number of other agencies have roles under the RMA.

The Minister of Conservation is responsible for making New Zealand Coastal Policy Statements, approving Regional Coastal Plans and any changes as well as for approving applications for resource consents for Restricted Coastal Activities. These roles allow the Minister to give effect to the Crown's interests in the coastal marine area.

MFE are responsible for drafting national standards, non-coastal national policy statements, and can direct councils to make plan changes.

## 2.2 Local Government Act 2002 (LGA)

The purpose of the Local Government Act 2002 is “to provide for democratic and effective local government”. The act provides a framework for the operation of Local Government and provides for councils to create and administer bylaws.

### 2.2.1 Navigation and Safety Bylaws

An important regulatory tool for Tauranga Harbour is the Navigation and Safety Bylaws administered by Environment Bay of Plenty under the LGA. As well as general navigation controls, the bylaws have specific provisions for Tauranga Harbour.

### 2.2.2 Bylaws

Both the Tauranga City Council and the Western Bay of Plenty District Council have bylaws that govern the use of the foreshore and the adjacent coastal environment. The bylaws control many uses for the purposes of:

- Protecting the public from nuisance;
- Protecting, promoting and maintaining public health and safety; and
- Minimising the potential for offensive behaviour in public places.

## 2.3 Spatial jurisdictions

Under the RMA, the district councils have jurisdiction down to mean high water springs (the coastal marine area boundary).

Under the LGA both the Tauranga City Council and Western Bay of Plenty District Council have jurisdiction for:

- the entire harbour area to the entrances; and
- on the open coast their districts extend down to mean low water springs, having extended their boundaries in the mid to late 1990's (refer Figure 2.3).

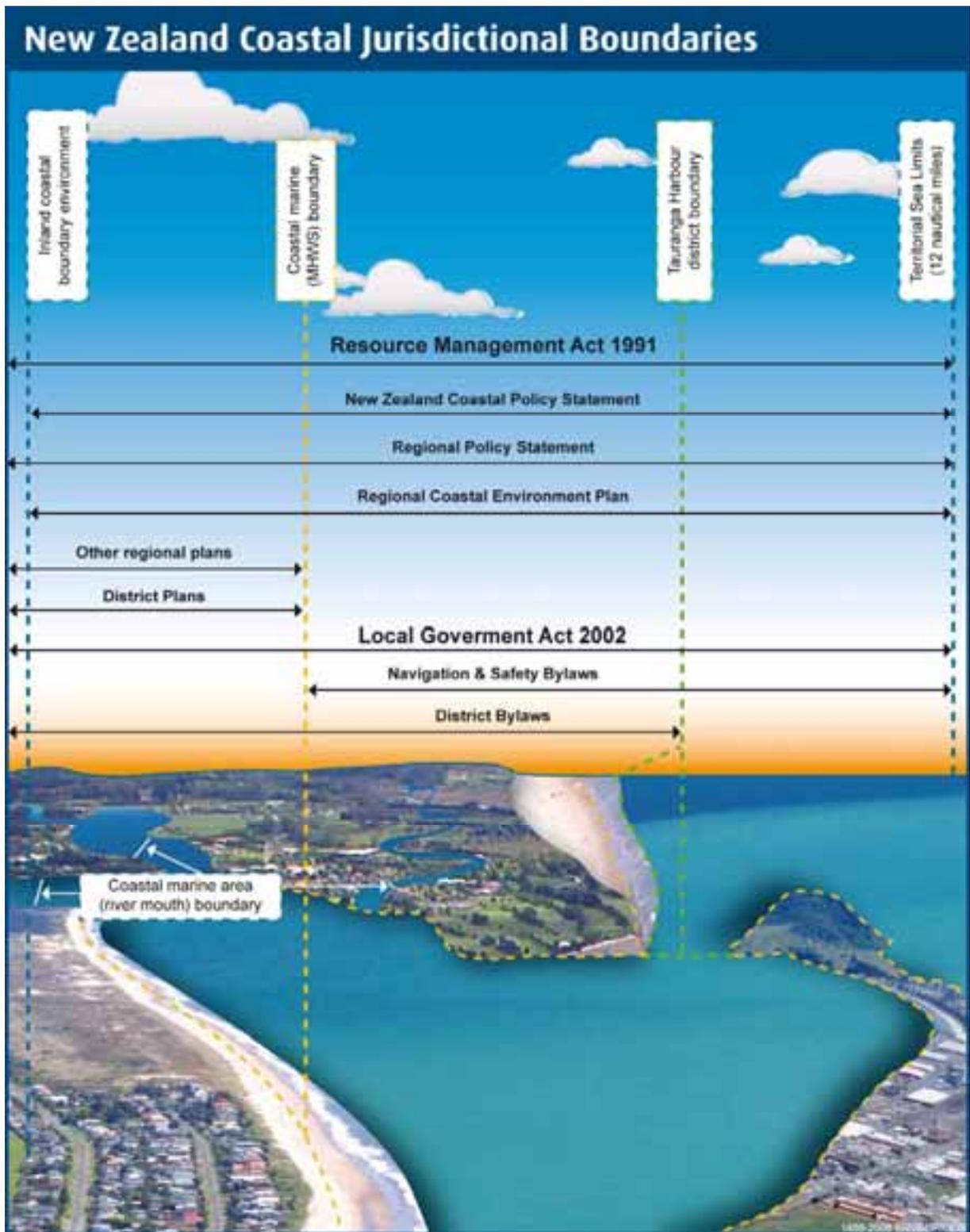


Figure 3 Spatial jurisdictions of the main regulatory and policy instruments in Tauranga Harbour. The inland boundary is known as the inland coastal environment boundary. It is not a fixed boundary and varies from location to location. For further discussion on this line refer to Section 8.2.4.

## 2.4 Other management mechanisms

There are a number of other mechanisms that directly regulate the coastal environment of Tauranga Harbour. Some of these mechanisms have quite different purposes and principles to the RMA, making integration challenging.

Act	Administration	Purpose
Fisheries Act 1996	Ministry of Fisheries	To manage the sustainability of fisheries resources through allocation of quota as well managing the activity of fishing.
Reserves Act 1977	Department of Conservation and Territorial Authorities	The acquisition, control, management, maintenance, preservation (including the protection of the natural environment), development, and use of public reserves, and to make provision for public access to the coastline and the countryside.
Conservation Act 1987	Department of Conservation, Fish and Game New Zealand	To promote the conservation of New Zealand's natural and historic resources.
Wildlife Act 1953	Department of Conservation, Fish and Game New Zealand	The protection and management of wildlife especially native bird species and the management of game.
Biosecurity Act 1993	Biosecurity New Zealand, DOC, Ministry of Fisheries, Ministry of Health, regional councils, territorial authorities	Preventing the introduction of unwanted organisms not yet established in New Zealand.  Managing unwanted organisms and pests already established in New Zealand.
Health Act 1956	Local Authorities, Ministry of Health,	Improving, promoting, and protecting public health.
Hazardous Substances and New Organisms Act 1996	Environmental Risk Management Authority	To protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.
Building Act 2004	Local Authorities, Ministry of Health,	Regulation of building work to provide for sustainable development and health and safety.
Foreshore and Seabed Act 2004	Local Authorities, Minister of Conservation	To vest the foreshore and seabed in the Crown, to provide for recognition and protection of customary rights, and to provide for general rights of access and navigation.

## 2.5 History of management initiatives in Tauranga Harbour by Local and Central Government

1989	Local Government Re-organisation
Pre 1991	District Schemes and Harbours Act 1950 covered harbour
1990	Tauranga Harbour Committee established

1991	Resource Management Law reform culminated in passing of the RMA 1991
1990-1994	Scientific Baseline Information established: Resource Inventory
1994	NZCPS gazetted
1994	Western Bay of Plenty District Plan notified
1995	Proposed Regional Coastal Environment Plan notified
1996	Proposed Regional Policy Statement notified
1997	Tauranga Harbour Forum established– two public information booklets produced
1998	Fisheries (Kaimoana Customary Fishing) Regulations
1999	Regional Policy Statement became operative
2002	Western Bay of Plenty District Plan became operative
2003	Regional Coastal Environment Plan became operative
2004	Tauranga District Plan became operative
2004	Review of effectiveness of NZCPS released
2006	Draft review of NZCPS released (DOC)

## 2.6 Future initiatives that may affect Tauranga Harbour

There are a number of initiatives that are likely to affect the management of Tauranga Harbour:

2006	Draft Tauranga City Council Tauranga Harbour Reserves Management Plan released (TCC)
2006	Tauranga Port and Harbour Safety Code
2006-2007	Regional Coastal Environment Plan changes (Environment Bay of Plenty)
2006-?	Oceans Policy Development (Ministry for the Environment)
2006 -	Treaty of Waitangi Settlements
2006 -	Foreshore and Seabed – customary claims
2007	Aquaculture Management Areas plan change (Environment Bay of Plenty)
2007	Department of Conservation to implement Marine Protected Areas policy - Bay of Plenty (DOC/Ministry of Fisheries)
2008	Regional Policy Statement Review
2008	Recreation study (SmartGrowth action)
2012 onwards	Mandatory 10 year reviews of each of the District and Regional Plans.

## 2.7 **Environmental change and the Natural Environment Regional Monitoring Network (NERMN)**

There have been significant environmental changes in and around Tauranga Harbour. Over the last 500 years since the first settlement and development occurred, land clearance, changing land uses, port development and the effects of urbanisation around much of the harbour have been significant and are ongoing. Monitoring those changes was not given much attention until the RMA placed resource management obligations on authorities. As a consequence there is little detailed data available for the period in which major development took place, except to the extent that it can be gained from resources such as historic aerial photography and other historic documents.

In 1991 the RMA placed an obligation on councils to monitor the state of the environment (Section 35) to measure the effectiveness of its planning framework. Environment Bay of Plenty put in place a Natural Environment Monitoring Network (NERMN). The monitoring network has been expanded and improved over time. A number of Environment Bay of Plenty projects have also attempted to incorporate an understanding of pre 1991 change through the use of aerial photography. The NERMN is summarised in Appendix 1.

In addition to the NERMN, Environment Bay of Plenty carries out scientific projects on specific issues.

## Chapter 3: Water quality

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### 3.1 Issues

#### 3.1.1 General

The Tauranga Tomorrow process showed that good water quality was one of the most frequently sought environmental outcomes. “Keep the Harbour Clean” was a statement that appeared many times.

Water quality is influenced by discharges of various sorts and in turn influences other aspects of the harbour. Ecological effects due to water quality are dealt with in the flora and fauna section.

#### 3.1.2 Point source discharges

With increased development comes an increase in impermeable surfaces that in turn leads to increased runoff. Areas available for natural soakage are therefore decreased, as is the absorption and soil treatment of contaminants.

In the Tauranga City area, particularly around the port industrial area, there are a number of discharges of stormwater from Industrial sites. One group considered that the fertiliser works at Mount Maunganui was inappropriately sited. The iwi forum commented that a discharge in Waipu Bay from a drain adjacent to the fertiliser works affects shellfish from time to time.

There was considerable concern about urban stormwater generally; cumulative effects, lack of permitted activity monitoring, lack of treatment devices, heavy metals and hydrocarbons were of concern. One group considered that there was insufficient understanding about the effects of all the discharges: “the science is not there to understand the effect in the larger picture”.

It was noted that plans for whole-of-catchment stormwater management were advancing very slowly if at all. In the past the focus has been on quantity control rather than on quality. The older catchments are noted as having only very basic treatment devices and need to be “retro fitted” with treatment devices. There was concern that non-Council controlled systems do not have sufficient controls in place.

Increases in storm water runoff also have a physical impact on streams and waterways leading to the harbour. Peak hydraulic loadings impact the fish and invertebrate communities of streams. One group noted that over-design events seemed to be becoming more frequent and suggested that treatment systems were not designed well enough.

### 3.1.3 Non-point source discharges

Concern was identified with discharges resulting from:

- Onsite effluent treatment systems leading to microbiological and nutrient contamination of the harbour.
- Fertilisers, fungicides and other general farming discharges. Several groups noted their concern that Tauranga Harbour should not be allowed to become another Lake Rotorua. Unsustainable farming practices were noted as an issue.
- Dredging.
- Wood preserving agents.
- Vessel antifouling – commercial and recreational (slip ways/maintenance areas). It is noted that TBT in particular can cause considerable damage to the benthic ecology.

### 3.1.4 Large game birds

Black swans and Canadian geese appear to be an issue in most of the harbour. It was suggested that in large numbers these birds can increase the nutrient loading and the microbiological contamination of the water body. Concerns were raised by the public and in particular iwi groups about contamination of swimming and kaimoana places. There are also concerns from adjacent farmers of overgrazing of pasture by both species.

Fish and Game New Zealand advised that there is more conflict between people and Pukekos as a result of increased development around the harbour. With an increase in development around the harbour margins comes a reduction in the area available for hunting due to the legal restrictions on the use of firearms in urban areas. The Pukeko population is therefore more difficult to control and numbers have increased.

## 3.2 Evaluation – water quality

### 3.2.1 General

McIntosh (2003) reporting on estuarine water quality states that “Generally the estuaries of the Bay of Plenty are of high to good quality.” He notes that this is most likely assisted by estuarine and harbour waters being diluted with coastal waters. Tauranga Harbour is shown to consistently comply with the bacteriological limits for contact recreation set in the Regional Coastal Environment Plan.

Scholes (2005) applies the Suitability for Recreation Grade (SRG) based on both risk and bacteria counts. Some marine sites within Tauranga Harbour are not scored well by this system, despite having reasonably good measured water quality. This is attributed to the weighting given to risk factors, such as proximity to outfalls etc. More data is required for this grading system to be effective for the marine sites.

Rivers and streams entering Tauranga Harbour did not score well in the SRG test due to poor water quality. The report notes that “*Contamination at these sites can be a combination of factors, however the most common element is runoff from intensive and semi-intensive livestock based agriculture. Other elements such as urban stormwater and industrial discharges can also be a factor at certain sites. Finding the land uses directly responsible for contamination or apportioning contamination to different land*”

*uses requires well planned, intensive monitoring. The recreational water quality monitoring and catchment surveys performed for this study will not necessarily determine the exact source of any contamination, but rather implicate land use(s) by association and proximity to the site in question".* Further work is proposed, including intensive monitoring of high risk sites.

Reporting on four major shellfish assessments carried out between 1991 and 1999, McIntosh (1999) found that *"there is an indication that the quality of shellfish in the Bay of Plenty is improving with respect to bacterial quality"*. Shellfish from representative sites were also tested for PAH, Metals, TBT and pesticides with no results of concern (contaminants were either non detect or met water quality standards). TBT was detected in low levels in shellfish from the Port and channel areas. The report notes that there is some suggestion that levels are decreasing.

A report on harbour water quality over the last 14 years is currently in preparation (Scholes 2005) that shows a slight trend of increasing levels of microbiological contamination and suspended solids. Microbial contamination is still well within water quality classification levels set in the Regional Coastal Environment Plan. The causes of the increases are yet to be investigated but possible sources of microbial contamination are:

- Intensive livestock agriculture. Pickles (2005) shows a decrease in compliance levels with dairy operations in the Western Bay of Plenty;
- Cumulative effects of discharges from onsite effluent treatment systems; or
- Weather conditions at the time of sampling.

Latest sediment monitoring (Park 2003) shows a generally low level of contaminants in sediments throughout most of Tauranga Harbour but did note some elevated levels in the most highly urbanised areas. The report recommends ongoing monitoring and further investigation of localised effects from stormwater outfalls.

Water quality data from 1989-2000 from 10 river sites within the Tauranga Harbour catchment was analysed in Taylor and Park (2001). The results of a grading system show good to excellent water quality. The report covers all Environment Bay of Plenty's river monitoring sites and there is some suggestion that the rivers are showing the effects of climatic cycles. Specific to Tauranga Harbour catchment there was some suggestions that the Omanawa and the Waitao were declining in quality however the authors noted a level of uncertainty. There is a considerable amount of data for each of these streams and more detailed analysis of the data should be considered to relate the data to specific activities.

### 3.2.2 Point source discharges

#### *Urban stormwater*

A stormwater treatment device is currently being tested in the port industrial zone (Hewletts Road/Tasman Quay) but is showing mixed results when it comes to removing dissolved metals. Inputs of dissolved copper and zinc to the treatment device show that stormwater discharges in the catchment have been exceeding ANZECC water quality guidelines (Taylor *et al*, 2004). This would suggest that localised contamination is likely. It is noted that suspended solids levels also tended to be high however a proportion would normally be addressed by street cleaning and catch pit maintenance.

Recent water quality monitoring (Scholes and McIntosh 2004) shows no detectable adverse impacts on water quality from the Port of Tauranga and the Balance Agri-Nutrients industrial sites from stormwater discharges into Tauranga Harbour.

### 3.2.3 Non-point source discharges

Some evidence of localised contamination from onsite effluent treatment systems has been detected at Omokoroa, Ongare Point, Te Puna and Tanners Point (Futter 2003, Gibbons-Davies 2002, McIntosh et. al. 2001, Gunn 2001). These sites pose a risk to bathers.

Some exceedences of bathing water quality has been detected in rivers and streams entering Tauranga Harbour. Dwane (2001) reported exceedences in the Waimapu River that were attributed to dairy sheds.

Although sedimentation is clearly the driving factor for the spread of mangroves (discussed in more detail in Section 4), Schwarz (2002) suggests that the spread of mangroves may have a link to the increase in runoff of Nitrogen.

### 3.2.4 Large game birds

There is little information available on the water quality effect of large game birds in Tauranga Harbour. Some work carried out by Bioreserches (2002) in the Rotorua lakes, shows that Canadian geese and black swans can contribute a significant amount of waste, the majority of which ends up in the water body. Both Canadian geese and black swans are estimated to produce 20-60 kg of excretion per year (Bioreserches 2002, Sagar et al. 1995). Depending on bird numbers increased bacterial loadings are possible in localised areas.

A recommendation of that report is that targeted surveys of water quality and bird numbers are needed to assess potential impacts. If birds remain in one area then nutrients are recycled and the issues are those of microbiological water contamination, changes to estuarine ecology and the potential of Salmonella and campylobacter. Generally bacterial water quality in the harbour is however good at popular recreational spots.

Fish and Game New Zealand have supplied their latest bird count data for Tauranga Harbour (McDougall 2005). The data shows a reasonably stable population of black swans in Tauranga Harbour and in fact Fish and Game management is directed at maintaining a stable population. The Department of Conservation report that Canadian geese number have risen.

It would appear that microbiological contamination as a result of swans is likely to be minimal and any effect localised. Clearly however large game birds pose concern to the community.

## 3.3 What is being done – water quality?

### 3.3.1 General

Environment Bay of Plenty's Natural Environment Regional Monitoring Network (NERMN) programme monitors water quality across Tauranga Harbour and in the streams that feed into the estuary. More targeted monitoring and reporting is also included for major discharge sites.

NERMN Freshwater Module – Report on Invertebrate health as an indicator of stream health in preparation.

Process for public warnings of contamination in water or shellfish through Medical Officer of Health and signage by TA's.

Monitoring of marine biotoxins by NZ Food Safety Authority.

Territorial authorities exercise powers under Health Act 1956 and Building Act 2004 to ensure dwellings have adequate sanitary conveniences and appliances.

### 3.3.2 Point source discharges

Both Tauranga City Council and Western Bay of Plenty District Council have trade wastes bylaws, governing the disposal of trade wastes.

District council operations of street sweeping, catch pit maintenance etc.

Dairy shed guidelines, compliance monitoring of discharges and regular reporting, enforcement actions as appropriate. Ongoing compliance/enforcement as well as random audits.

A comprehensive catchment consents strategy for long-term stormwater discharge has been prepared. The strategy (Environment Bay of Plenty 2005) dealing with these was presented to the Regulation & Monitoring Committee of Environment Bay of Plenty on 30 August 2005. One of the mechanisms used in the strategy is to rank each catchment for a number of factors, including environmental factors, to ensure that the highest risk catchments are dealt with as a priority.

Tauranga City Council has a full-time pollution prevention officer who monitors point source discharges to Council's stormwater system, including open drains and provides education to businesses and the general public.

The Regional Coastal Environment Plan has Water Quality Classifications for contact recreational and shellfish gathering. The objective of chapter 9 is "the maintenance and enhancement" of water quality and there are a number of policies, rules and methods to achieve this outcome.

Policy 9.2.3(d) of the Regional Coastal Environment Plan targets stormwater control.

The Marine Pollution Regulations 2002 (extended by Regional Coastal Environment Plan) prohibits the discharge of untreated sewage within the harbour and contains a list of approved treatment systems.

Proposed Regional Water and Land Plan Water Quality Classifications for rivers/streams that enter Tauranga Harbour.

Permitted activities for small-scale discharges, with mitigating conditions.

Environment Bay of Plenty undertakes compliance monitoring of every permit to discharge, including large industrial discharges, and regular reporting. Some permits are subject to self-monitoring requirements. The results are audited by Environment Bay of Plenty.

### 3.3.3 Non-point source discharges

The onsite effluent treatment monitoring programme currently requires that all onsite effluent treatment systems at Omokoroa and Tanners Point are part of an inspection and maintenance programme. The plan also requires that by December 2010 systems in those areas are to be upgraded to an advanced system or connected to a reticulated sewer system where available. The current review of the Onsite Effluent Treatment Regional Plan is proposing to add Te Puna (based on Futter 2003, and Gibbons-Davies 2002) and Ongare Point (based on McIntosh *et al.* 2001) to the inspection and maintenance programme and impose the same rules as for Omokoroa and Tanners Point. Currently there are compliance issues as a result of inadequate on site systems and unfavourable environmental conditions (cumulative effects, shallow ground water etc). These are causing localised effects around the identified settlements but to date these are not translating into broad scale water quality effects. Environment Bay of Plenty actively targets monitoring at sites where there is potential for contamination. Any detection of contamination triggers the public health process described in Section 3.3.1.

Environment Bay of Plenty Sewage Scheme Funding Assistance Policy.

The use of TBT for anti fouling is not allowed on New Zealand vessels under section 173 (1)(b) and (d) of the Hazardous Substances and New Organisms Act 1996 and section 4 of the Pesticides (organotin antifouling paints) Regulations 1993. New Zealand's international obligations mean that there is no ability to control TBT hull anti fouling on foreign vessels. The International Maritime Organisation is however attempting to phase out the use of TBT by 2008 (PCE 2003) through an International Convention on the Control of Harmful Anti Fouling Systems on Ships.

### 3.3.4 Large game birds

Fish and Game monitoring and management of black swan and Canadian geese populations.

Territorial authorities have a responsibility to secure the abatement or removal of any nuisance or condition likely to be injurious to health (Section 23 of the Health Act 1956). This would include any widespread deaths of wildfowl from diseases.

## 3.4 What needs to be done – water quality?

### 3.4.1 General

Ongoing NERMN monitoring and reporting.

### 3.4.2 Point source discharges

#### *Urban stormwater*

- Further scientific investigation of effects of stormwater on sediment near and around stormwater outfalls.
- Need to investigate trends in contaminant levels with repeat surveys every 5 years (programmed to be done).
- Sediment control initiatives– see sediment section.

- Implementation of Stormwater Strategy.
- More extensive event monitoring.

### 3.4.3 Non-point source discharges

Assessment of agricultural input/additions to harbour (particularly indicator bacteria).

Further industry based monitoring – PAHs, metals, chemicals.

Ongoing and increased support for Estuary and Streamcare and Community groups to restore and revegetate catchment stream margins.

NERMN report on stream water quality incorporating the last 6 years of data.

### 3.4.4 Birds

Investigate water quality effects of black swans and Canadian geese in conjunction with monitoring their effects on Flora and Fauna.

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## Chapter 4: Flora and fauna

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### 4.1 Issues

#### 4.1.1 General

Loss of biodiversity was a concern to many of the people involved with this project as well as being an issue in the Tauranga Tomorrow process. Most of the losses were directly attributed to development. Some comments were made about the lack of legal protection for ecologically significant areas.

#### 4.1.2 Mangroves

Mangroves are clearly a major concern to many residents around Tauranga Harbour. The public feedback processes reviewed gave a fairly consistent message to “get rid of the mangroves”. There was a small minority that sought the opposite. There appears to be a polarisation of views on the issue and this is illustrated by HarbourWatch who advised that they have been unable to come to a consensus on the issue. Care groups are reportedly evolving from initial concerns with mangroves to having wider concerns about catchment management issues.

Infilling as a result of impoundments was raised as an issue particularly for the Waimapu and the perception that the lack of outflow and hydrodynamic effects are exacerbating the spread of mangroves in the upper estuary.

Care groups are indicating a desire to reverse the mangrove spread and are unsatisfied with the “hold the line” approach taken in the past. Groups also have indicated their concern at their lack of labour resources and the inability to use mechanical assistance for clearance.

#### 4.1.3 Sea lettuce (*Ulva*)

Sea lettuce also had a high profile among submitters to Council processes as well as with many of the groups spoken to. Complaints relate mainly to visual and odour effects.

The Ministry of Fisheries report that sea lettuce had been deterring the gill netters. This in turn has led to an increase in the population of flounder. The issue of sea lettuce clogging set nets was also raised by the SmartGrowth Iwi forum.

Rotted sea lettuce was observed to add to siltation as it sinks and decomposes in channels, smothering benthic communities.

It is apparent from the submissions that there is public confusion about who is responsible for cleaning up sea lettuce (if anybody).

The Port of Tauranga report several incidents with vessel cooling water intakes becoming blocked with sea lettuce. As a result the vessels have been forced to shut down their engines putting them at risk of going ashore.

Environment Bay of Plenty maritime manager has noted that moorings weighted with sea lettuce tend to be pulled under.

#### 4.1.4 **Wetlands**

Cumulative and incremental losses of marginal wetlands has been raised as an issue. The loss of wetlands as a result of sea level rise is of concern, particularly in areas where there is little space between urban development and the harbour. These wetlands are likely to be “squeezed” further.

Loss from infilling around harbour margins.

Loss from drainage – from both the direct drainage and drying, and from the interception and diversion of ground water flows leading to increased salinity and die back.

Degradation/loss of condition associated with weed invasion along spoil mounds from drainage activities.

#### 4.1.5 **Sea grass (*Zostera marina*)**

Concerns were apparent about the loss of zosteria or sea grass beds and the resulting decrease in available habitat for shellfish and invertebrates as well as wader feeding areas. Some suggestion was made that swan grazing exacerbates the problem.

#### 4.1.6 **Pest species and biosecurity**

Invasive weeds were raised by a number of groups – particular concern was noted about morning glory, pampas and iceplant in fringe wetlands.

The Department of Conservation had a concern that the spraying of *Spartina* requires consent under the Regional Coastal Environment Plan when it is a total control plant in the Pest Management Strategy. They held a consent that has now expired and they needed a replacement in order to carry out very minor work.

Animals currently identified in the Bay of Plenty Regional Pest Management Strategy are possums, cats and rats. Other species that the community are concerned are affecting the harbour environment are Canadian geese, black swans, dogs and mice.

Recently the Asian Date Mussel has been identified in Tauranga Harbour and the presence of *Undaria* is also confirmed. The arrival of other foreign organisms such as the Sea Squirt is likely and is also of concern. The spread of Sea Squirt is a major concern to the aquaculture industry, particularly for mussel farming.

#### 4.1.7 Bird species

The Department of Conservation (DOC) identified a number of issues with birds around the Tauranga Harbour:

- The direct loss of high tide roosts for waders through development.
- The intrusion of recreational users to nesting and roosting areas particularly at Panepane Point.
- The increase in the numbers of cats and dogs in urban areas adjacent to important bird areas, particularly wetland/saltmarsh habitat.
- The imminent loss of a key nesting area at Sulphur Point (sand mining area).
- Birds displaced from Sulphur Point reclamation now nesting and roosting at inappropriate sites e.g. Port of Tauranga industrial land and Tauranga airport.
- Displaced birds being shot at Tauranga airport to avoid bird strikes.
- Walkways giving pests access to sensitive saltmarsh sites that harbour threatened bird species.

#### 4.1.8 Fisheries

A number of fisheries related concerns were raised:

- Commercial fishers depleting stocks in harbour and the apparent conflict between recreation and commercial fishing. Environment Bay of Plenty files show that this issue has been of concern since the Regional Council was formed.
- Recreational harvesting pressure depleting shellfish stocks and exerting a selective pressure that results in smaller shellfish.
- Effects of increased suspended sediment on shellfish size.
- Effects on the benthic habitat and species assemblages from scallop dredging.

### 4.2 Evaluation – flora and fauna

#### 4.2.1 General

Shaw & Taylor (2003) carried out aerial monitoring of coastal indigenous forest in the Bay of Plenty. Canopy conditions were assessed for damage from a number of possible sources, put principally possum browsing. In contrast to other parts of the region, no sites of concern were identified on the margins or adjacent to Tauranga Harbour.

Park (2000) assessed environmental data on benthic macrofauna collected between 1990 and 2000 and found that *“Results ... show very little consistent change that may present a deterioration of habitat quality. Species richness, which is an important indicator of ecological health of the benthic communities, has remained at a stable level throughout the period of monitoring”*.

## 4.2.2 Mangroves

The spread of mangroves has been well documented as being exponential (Park 2004).



Figure 4 Waikareao Estuary (photos Stephen Park) mangroves (*Avicennia marina* var. *australasica*).

An assessment of the change in mangrove canopy cover over time is provided in Figure 3 below (Park, pers com 2005).

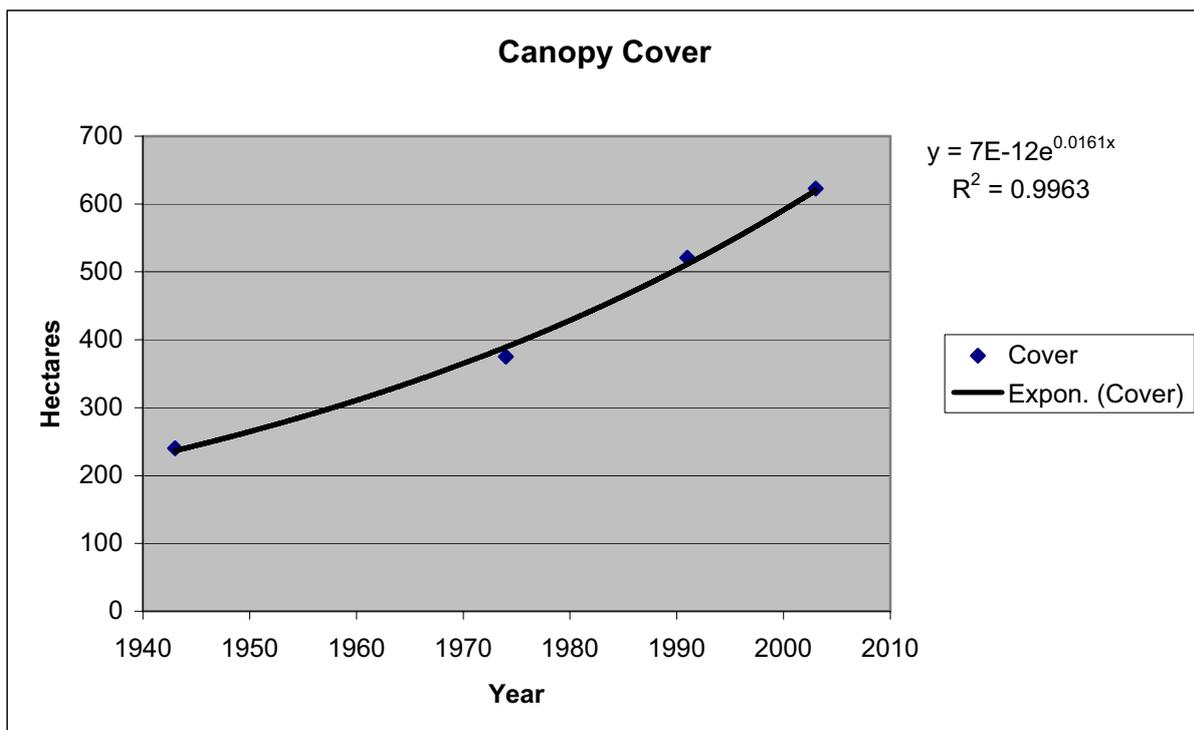


Figure 5 Increase in mangrove cover 1943-2003.

There is a strong correlation between the average mud content and mangrove cover. The issue of sedimentation is dealt with in Section 5.

Park (2004) notes that sedimentation is not the only environmental factor to influence extent and “Other factors such as nutrient inputs and global warming may also play a part”. The study “supports the need to ensure that sediment runoff from the harbour catchment is carefully controlled to maintain the natural harbour environment”.

So far there appears to be little mangrove incursion into saltmarsh areas however more detailed monitoring has been recommended in Park 2004. It is also noted that expected sea level rise could exacerbate the incursion of mangroves into saltmarsh.

One of the perceived difficulties with mangrove management is policy 1.1.2(c) of the New Zealand Coastal Policy Statement. This policy provides for the protection of coastal ecosystems including mangroves. The NZCPS has recently been reviewed for effectiveness (Rosier 2004) and the issue of mangroves raised by a number of groups in the northern part of the north island. A draft revised NZCPS should be ready for consultation in March 2006 (June 2005 Cabinet paper) and the recommendation of the report is to provide for "protection and management". It is noted that some management of mangroves would not be inappropriate provided there are concurrent strategies to deal with sediment inflow.

#### 4.2.3 **Sea lettuce (Ulva)**

Park, 1996 & 2000 states *"the sea lettuce blooms in Tauranga Harbour are known to be correlated with El Nino conditions, when persistent westerly winds tend to drive coastal water offshore. In these conditions the deeper oceanic water up-wells to replace the coastal water bringing with it nutrient rich water which then enters the estuaries. It is considered that this additional nutrient input is the primary factor triggering the sea lettuce blooms"*.

There appears to be a mixed understanding about the causes of sea lettuce. Some groups such as the Port of Tauranga and HarbourWatch had a good understanding of the science but others were either unsure or attributed it to nutrient runoff from various land uses. The iwi forum was interested in obtaining better information about sea lettuce and to have warning of where and when it may become a problem. Likewise the Port is interested in having warning so that they can alert operators.

There appears to be more of an issue with the organisational responses to sea lettuce. It is apparent that many members of the public believe that someone should be responsible for cleaning it up. Environment Bay of Plenty research shows that sea lettuce blooms are a natural event and therefore in legislation there is no obligation on any party to carry out such clean up works. Any organisation or individual could decide that they wish to carry out works on behalf of the community provided the right approvals are gained.



Figure 6 Sea lettuce at Ongare Point in 1992 (photo Stephen Park).

If sea lettuce becomes a nuisance as defined by the Health Act 1956, TCC and WBOPDC have responsibility within their district to take action to deal with the nuisance.

#### 4.2.4 Wetlands

Environment Bay of Plenty has good data on the extent and state of wetlands around Tauranga Harbour as they were in the early 1990's. However they are not routinely monitored as part of Environment Bay of Plenty's NERMN programme. Without more recent survey information it is not possible to assess changes in extent or state over the intervening years.

Between 1991 and 1993 the wetlands of Tauranga Harbour were assessed (Beadel 1994) for inclusion in the Regional Coastal Environment Plan. While this information was sufficient for the planning purpose for which it was intended there are deficiencies in its use for monitoring purposes.

A report prepared by Hunt (2003) examined the many ways that Environment Bay of Plenty deals with wetlands. The report also made a number of recommendations, some that are yet to be implemented.

A maritime wetlands database was created, however Park (2000/21) notes that the "current quality assessment is poor and needs to be more rigorous and repeatable with well defined criteria". Clearly more work is needed on coastal wetlands, in particular changes in extent and condition over time.

#### 4.2.5 Sea grass (*Zostera marina*)

Park (1999) considered the changes in the abundance of sea grass in Tauranga Harbour. Significant losses were identified due to changes in water clarity. It is noted that there is no sea grass present when the mud content of the sediment exceeds 13%. Increased suspended sediment and nutrient runoff (promoting algal growth and blocking light) were identified as the main causes. Serious losses were observed in the upper harbours where sediments have become far muddier as a result of development-caused sedimentation.

Sagar et al (1995) identified a knowledge gap about the effect of swans grazing on sea grass beds. They describe the potential for overgrazing and Environment Bay of Plenty scientists also suspect damage to sea grass from overgrazing at some sites. This may add to the serious decreases measured over the last 50 years that has been attributed to earlier water clarity and sedimentation changes. Sagar (1995) also considers that swans may graze on sea lettuce however it is apparent to Environment Bay of Plenty scientists that sea grass is the favoured diet with some suggestion that invertebrates are also part of a swan's diet. These beds are very important to waders as favoured feeding areas.



Figure 7 Damage to sea grass beds from swan grazing (photos Stephen Park).

#### 4.2.6 Pest species and biosecurity

It is desirable to have spartina removed from the harbour and the Regional Coastal Environment Plan and the Pest Management Strategy both advocate for its removal. There are difficulties with allowing spraying by permitted activity because many of the spartina sites are on the margins of the harbours and on private land. The discharge of herbicide in to the coastal marine area must also be carefully managed. This is currently noted as an issue to be addressed in the first coastal plan change.

There are currently reports of areas affected by the Asian Date Mussel with one area of up to 3 ha. More recently this species has been confirmed as being present in Welcome Bay. These mussels are known from a variety of locations in New Zealand, and consequently have not been listed as unwanted organisms under the Biosecurity Act. They are known, however, to have significant impacts to sea grass beds and associated fauna and flora by creating monocultures with thick mats. The rate or extent of likely spread in Tauranga Harbour is unknown but could be significant. Environment Bay of Plenty staff have raised the issue with Biosecurity New Zealand and it appears unlikely that any central government funding for control will be forthcoming.

Undaria is an exotic seaweed of concern but there appears to be little coordinated monitoring of its spread or planning for dealing with it. Undaria has recently been identified in Pilot Bay and although the affected areas have been cleared, it appears that the plant has been through a breeding cycle and therefore likely to re-appear.

The Biosecurity Strategic Unit has identified the roles and responsibilities of the respective agencies for the management of marine pests as:

- Biosecurity New Zealand has a key national leadership and coordination role in relation to both the management of specific pests like *Undaria*, and leading the development of marine pest management capability in general.
- Regional councils have clearly defined responsibilities for managing natural resources in the marine environment, which must be identified through coastal marine (*sic*) plans. Regional councils have recognised the need to involve all marine parts of their organisation in marine pest management, and to incorporate coastal plan obligations into the consenting and RPMS processes.

Sea Squirt is unlikely to cause widespread problems in Tauranga Harbour as it requires a hard substrate in shallow sub tidal areas and there are few areas that meet its habitat requirements. Suitable areas could be infested and structure owners may have difficulties. If it establishes in Tauranga, however it will be likely to spread further in to the Bay of Plenty, threatening the viability of sub tidal marine farming.

Environment Bay of Plenty is currently increasing resourcing in the area of Marine Biosecurity and establishing appropriate links with national and local stakeholders. The draft 10 Year Plan notes a number of risks such as marine species escaping detection while at low levels making control difficult and costly and climate change.

#### 4.2.7 Bird species

There is little monitoring information available about birds except for annual counts of wading birds by the local branch members of the Ornithological Society of New Zealand. Environment Bay of Plenty does not currently monitor birds except to the extent that habitat is monitored as part of State of the environment monitoring. The Department of Conservation have traditionally undertaken inventories of indigenous bird habitat and manage some key nesting sites under the Wildlife and Conservation Acts.

Fish and Game New Zealand undertake monitoring of game bird populations in Tauranga Harbour.

#### 4.2.8 Fisheries

Clearly there are concerns about fishing matters in Tauranga Harbour, in terms of both the allocations and appropriateness of commercial fishing. Issues surrounding fishing and fisheries are difficult issues for district or regional councils to address. It is also difficult to evaluate with varying opinions about the extent of the issue.

Considerable concern was identified during the development of the Regional Coastal Environment Plan about fisheries matters. Research and investigation was undertaken and legal advice was sought.

Regional council functions extend only as far as control over habitat. Section 30(3) prevents regional councils from any control for the purpose of “*conserving, using, enhancing, or developing any fisheries resources controlled under the Fisheries Act 1996*”. The 2004 aquaculture reforms allow the regional council to consider fisheries and fishing more closely but only in relation to proposed aquaculture activities.

The Regional Coastal Environment Plan recognises the lack of jurisdiction that the Council has over fisheries matters but in the interests of sustainable environmental

management seeks improved fisheries management. The plan therefore contains an advocacy chapter.

The Ministry of Fisheries were contacted a number of times as part of the preparation of this report but very limited feedback was received. This feedback suggested that the last summer had been one of the best snapper fishing seasons and that there were very few issues with the management of Tauranga Harbour.

Apart from the aquaculture reforms, where Environment Bay of Plenty is establishing a reasonably good working relationship with the Ministry of Fisheries, it is apparent there is little other integration of management between the regional and district councils and the Ministry of Fisheries. This is concerning as section 11(2) of the Fisheries Act 1996 requires the Minister of Fisheries to have regard to “*any provisions of any regional policy statement, regional plan, or proposed regional plan under the Resource Management Act 1991*” before setting or varying any sustainability measures.

The Ministry of Fisheries (2005) have recently released a strategy for managing the environmental effects of fishing. The press release quotes the Minister of Fisheries stating that they need to do more in setting environmental limits.

It is apparent that the community see Tauranga Harbour as a recreational and customary resource rather than a commercial one.

## 4.3 What is being done – flora and fauna?

### 4.3.1 General

Environment Bay of Plenty assists care groups and has produced a manual for group leaders.

Western Bay of Plenty District Council fund Landcare Trust to assist care groups.

There are a number of restoration projects in place around Tauranga Harbour being carried out by a range of organisations or individuals.

### 4.3.2 Mangroves

Sediment control – refer to sedimentation section.

A coastal permit was recently approved for the management of mangroves in areas of Waimapu Estuary, Welcome Bay, Waikareao Estuary and Matua Estuary. This permit provides for a “hold the line” approach, based on the extent of mangroves in 2002. Tauranga City Council have recently appointed a coasts and harbours ranger to administer these consents and to engage with the local communities in partnership with Estuary Care.

A permit is also held by the Waikaraka Estuary Managers Incorporated for mangrove removal based on “hold the line” from extent in 1986. This consent was approved on a non notified basis, is yielding good monitoring information and provides a good model for future harbour groups. The group are committed to restoring the estuary and mangrove management is only one aspect of their work.



*Figure 8 Waikaraka Estuary following mangrove clearance. Photo John Whale.*

It is understood that in other parts of the harbour, management/clearance is carried out informally, even though the coastal plan currently makes this a discretionary activity requiring a resource consent.

The Council have approved the commencement of initial work for a plan change to the Regional Coastal Environment Plan. Currently technical work is being carried out to re-assess the areas of significant vegetation in accordance with the significance criteria in the Regional Policy Statement. Following completion of that work more enabling policy will put in place that will simplify the consent process. Environment Bay of Plenty is also in the process of establishing an Estuary Care concept in partnership with the territorial authorities, the Department of Conservation and tertiary research organisations. One of the roles of Estuary Care will be to assist care groups to articulate collective aspirations for their harbour margins and to assist with any planning required.

Review of NZCPS.

#### 4.3.3 **Sea lettuce (Ulva)**

Ongoing monitoring of the abundance of sea lettuce is undertaken along with water quality and nutrient monitoring.

Tauranga City Council facilitate the collection by residents of sea lettuce on foreshore areas within their local authority area, and fund clean up works adjacent to harbour reserves.

Western Bay of Plenty District Council do not propose any action to deal with sea lettuce.

Environment Bay of Plenty have not cleaned up sea lettuce in the past.

Section 23 of the Health Act 1956 obligates territorial authorities to take action within their district “where any accumulation or deposit is in such a state or is so situated as to be offensive or likely to be injurious to health”.

#### 4.3.4 Wetlands

Hunt (2002) reported that there was a considerable number of activities taking place in the protection and management of wetlands. It was noted that there was considerable confusion about the roles of various agencies and recommended improved coordination and communication. It was noted that additional policy was not needed but that focus was needed on implementation. A number of actions were recommended. As a result a technical wetlands forum has been set up administered by Environment Bay of Plenty including the Department of Conservation, Fish and Game New Zealand, Landcare Trust, QEII National Trust, Nga Whenua Rahui and District Councils. Overall it would appear that implementation of the recommendations in the report has been slow.

Environment Bay of Plenty currently operates Environmental Programmes (Shaw & Hall 2000) to provide for the protection and enhancement of indigenous biodiversity, soil and water conservation and removal of pest plants and pest animal. The Tauranga Harbour catchment is identified as a Regional Focus Areas, and is accorded priority in the Regional Water and Land Plan. Environment Bay of Plenty provides advice and financial contributions (Land Resources 2003).

Taylor and Beadel (2005) have prepared Interim lists of nationally and regionally significant wetlands in the Bay of Plenty so that councils have a trigger to require more information on particular sites or can target restoration efforts. Tauranga Harbour is listed as being of national importance.

There is currently a change to the Regional Coastal Environment Plan in preparation that will identify areas of significant indigenous vegetation in the coastal marine area and the adjacent coastal environment. The work will review the extent of the following where they are considered to be of significance<sup>1</sup>:

- Marginal wetlands
- Zostera beds
- Mangrove forests
- Dune lands
- Marginal wetlands (not coastal marine area)
- Coastal forests and shrublands

#### 4.3.5 Sea grass (*Zostera marina*)

Annual black swan control is carried out by a gun club with around 300 to 1,000 birds being shot each year. The numbers of kills licensed depends on the numbers of birds present with the aim of maintaining a stable population.

Monitoring of changes in extent.

#### 4.3.6 Animal and plant pests and biosecurity

The Bay of Plenty Regional Pest Management Strategy prepared under the Biosecurity Act 1993 includes the coastal marine area.

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<sup>1</sup> Significance will be determined in accordance with the criteria set out in Change No.1 to the Regional Policy Statement.

Biosecurity New Zealand Central/Regional Biosecurity Coordination Group are considering ways of dealing with marine biosecurity issues.

The Ministry of Health monitor suitable habitat for exotic mosquitoes and surveillance is carried out in high risk areas, such as around the Port of Tauranga.

#### 4.3.7 **Bird species**

There is some information in the Regional Coastal Environment Plan about areas that are important for marsh bird habitat. The information is based on work undertaken between 1990 and 1992 (Owen 1993) and is therefore dated. The plan is deficient in the following areas:

- Lacks information about high tide roosts and feeding areas.
- Lacks policies or rules to protect those areas.
- There is no information on the coastal environment adjacent to either the harbour or the open coast.
- There is no identification of key nesting areas for wader and seabird species

There is currently a change to the Regional Coastal Environment Plan in preparation that will update the work of Owen (1993). This work will extend to include areas of importance to waders and seabird populations and the coastal environment. The input of the Department of Conservation and the Ornithological Society of New Zealand is being obtained.

Both the Western Bay of Plenty and Tauranga City District Plans protect significant areas of wetland habitat around the harbour margins. There is currently no protection for high-tide bird roosting and nesting sites outside of these specified ecologically important sites.

The Department of Conservation have recently announced their intention to review the level of protection for some New Zealand wildlife. The Canada Goose is listed as one of the species that may have an inappropriate level of protection.

#### 4.3.8 **Fisheries**

Ministry of Fisheries monitoring of commercial catch volume.

#### 4.3.9 **Policy/Plans**

Coastal habitat preservation zones in the Regional Coastal Environment Plan prohibit most activities thereby protecting the wetland and bird habitat from direct human effects. The removal of indigenous vegetation, including mangroves, is discretionary.

Tauranga District Plan has special ecological areas and conservation zoning requiring discretionary resource consents for most activities.

Western Bay of Plenty District Council Plan has significant ecological features requiring discretionary resource consents for most activities and a number of activities are prohibited within the zones.

A map was prepared showing the significant zones from the Regional Coastal Environment Plan and the two district plans. Most sites showed a reasonable consistency across mean high water springs however opportunity exists for better integration when plans are reviewed.

#### 4.4 **What needs to be done?**

##### 4.4.1 **General**

Ongoing state of environment monitoring.

Monitoring of policy implementation of relevant planning documents.

Contribute to implementation of Governments Marine Protected Areas policy. This process provides an opportunity for the relevant resource managers to collectively make decisions about integrated management and is one avenue that the Council may be able to use to influence fisheries management. The development of this policy is currently being run by the Department of Conservation and the Ministry of Fisheries at a central government level. The draft policy provides for the process to commence in the Bay of Plenty in 2007 and it is likely that the process will be a priority to central government.

Submit on New Zealand Coastal Policy Statement. Continue monitoring the changes in extent.

##### 4.4.2 **Mangroves**

Reconsider Regional Coastal Environment Plan mangrove management rules and policies, after the draft revised NZCPS.

Environment Bay of Plenty Operations Group as part of Estuary Care to formally assist and support any groups to prepare appropriate management plans and seek required approvals.

Continue scientific monitoring of mangroves and assist with monitoring effects of management.

Investigate feasibility, costs and effects of mangrove management, including mechanical removal.

##### 4.4.3 **Sea lettuce (Ulva)**

- Educate that sea lettuce results from natural occurrences.
- Sea lettuce alert notification list – include Port of Tauranga, iwi groups, harbourmaster, councils and residents.
- Agreed understanding between councils about who does what (if anything) about sea lettuce.
- Ensure that all agencies understand whatever is agreed about sea lettuce and that consistent advice is given when sea lettuce complaints are received.

An opportunity exists for the agencies to assist any willing community/care groups to undertake cleanup operations.

#### 4.4.4 **Wetlands**

Review implementation of actions recommended by the Hunt (2002) report.

Incorporate wetland extent and condition monitoring into the NERMN. This should ensure that there is sufficient information to update the Regional Coastal Environment Plan and district plans on their 10 yearly review from 2012 onwards.

Ensure consistency between the Regional Coastal Environment Plan and relevant district plans across the coastal marine area boundary.

Providing in district plans for sea level rise and harbour margin features moving inland – NZCPS policy.

Reserves management plans and district plans policies of TA's need to balance public access against coastal ecological aspects particularly across MHWS.

Provide management and protection of key wetland sites. This may include predator proof fencing being put in place as development occurs in the area.

#### 4.4.5 **Sea grass (*Zostera marina*)**

Further investigation of effects of swans on sea grass and invertebrates. Continue monitoring changes in extent.

Monitor effects of sedimentation.

#### 4.4.6 **Pest species and biosecurity**

Ongoing participation in Biosecurity New Zealand initiatives and liaise with other regions.

Further monitoring of pest species, such as Asian Date Mussel, Undaria (both identified in the Bay of Plenty) and Sea Squirt.

Promote a better understanding and integration of biosecurity issues across the Councils functions. District councils may also need to be involved due to their role as facility providers.

Education and involvement of marine stakeholders – as a start a workshop of interested parties is planned for the next few months.

Establish a management plan for marine biosecurity in the Bay of Plenty region including a protocol for response to marine incursions with the region.

Review of the Pest Management Strategy in the 2006-2007 financial year with the likely inclusion of marine species.

#### 4.4.7 **Bird species**

Environment Bay of Plenty invite the Department of Conservation to provide input to, and peer review, work currently being undertaking for the Coastal Plan change to include areas of significance to birds (roosting, feeding) as well as additional information on the adjacent coastal environment. This work will draw on data collected by the Ornithological Society of New Zealand.

#### 4.4.8 Fisheries

Refer to recreation section.

### 4.5 References

Environment Bay of Plenty (2003). Bay of Plenty Regional Pest Management Strategy Operative 2003-2008, Environment Bay of Plenty Operations Report 2003/10.

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- Schwarz, A. (2002) the Role of Nutrients in Contributing to Mangrove Expansion. NIWA Client Report HAM 2002/051.
- Taylor, J. & Beadel, S (2005) Interim Lists of Nationally and Regionally Significant Wetlands in the Bay of Plenty Region. Environment Bay of Plenty Environmental Publication 2005/09.

## Chapter 5: Sedimentation

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### 5.1 Issues

Most groups or individuals spoken to raised sedimentation as the most serious issue facing Tauranga Harbour.

Through public submissions many people have voiced concerns about sedimentation and the associated spread of mangroves (discussed in Flora and Fauna section).

The Port of Tauranga Limited report that the port sitting basins (berth pockets) are being filled with small sized sediment. This causes increased turbidity during construction activities, vessel movements and dredging operations. They advise that the infill of fine sediment has progressed northward along the wharf front over the last 5 to 10 years and that they are now dredging more fine sediment than in the past.

The Tauranga Bridge Marina report that sand sized sediment is being transported around the eastern abutment of the Tauranga Harbour Bridge and being deposited in the marina basin.

Environment Bay of Plenty's maritime manager reports that half of the navigation channels now have tide restrictions and the usable area of the harbour is shrinking. The adverse effects of decreased available recreation area is being exacerbated over time as boat numbers increase. An associated issue is the viability of launching areas. People report boats hitting the bottom in places where they never previously did, and a reduction in swimming areas.

Ecological effects reported as a result of siltation are:

- Loss of sea grass (*Zostera*) beds and decreased productivity.
- Mangrove spread - loss of wetland vegetation, loss of recreation, access, views.
- Loss of some shellfish beds and decreased productivity in others.
- Loss of juvenile fish habitat.

The quantity of earthworks proposed to be permitted in the Regional Water and Land Plan was 10,000 m<sup>3</sup>, increased from 2,000 m<sup>3</sup>. The hearings decision has reduced that volume to 5,000 m<sup>3</sup>. There was considerable concern that the increased volume will result in more earthworks sites not being monitored, as permitted activities are not usually monitored unless there has been a complaint.

Concerns were also raised about the cumulative effects of earthworks carried out for the construction of individual house platforms.

## 5.2 Evaluation – sedimentation

The perception that sedimentation is the largest issue facing Tauranga Harbour is supported from a number of sources, both scientific and observational.

The observations of the Port of Tauranga should be able to be validated by data obtained in their dredging operations. Linking the effect to a cause may be more difficult as the port undertook major capital dredging in the early 1990's and have deepened the sitting basins and channels.

There appears to be little data on changes in navigation channels. Anecdotal evidence of shallowing in channels appears widespread with comments made in a number of public processes and supported by Environment Bay of Plenty's maritime manager. In addition, Welsh (2002) reported that there was widespread support for dredging of navigation channels and in appendix 4 to that report recorded a number of comments about recent rapid siltation at some sites around the harbour.

Recent work on the distribution of sediment size has shown reasonably large areas to be affected by siltation (Park 2003).

*Table 1 The average % mud content overall for each estuary. Before development in the catchments these sites were likely to have a mud content similar to the lower few sites in this table. From Park (2003).*

<b>Location</b>	<b>Average % mud content</b>
Apata Est.	70
Wainui Est.	55
Rereatukahia Est.	37
Te Puna Est.	30
Katikati Est.	30
Aongatete Est.	23
Matahui Est.	22
Welcome Bay	22
Mangawhai Est.	21
Waimapu Est.	21
Waikaraka Est.	18
Waikareao Est.	12
Tuapiro Est.	12
Waiau Est.	7
Wairoa Est.	7
Waipu Bay	7
Rangataua Bay	7
Blue gum Bay	5

The findings of Park (2003) have not been carried over into any policy documents or consent processing practice. In that report it notes that the findings can be used to "highlight which areas need the most attention to catchment management to avoid degradation of the marine receiving environment".

The increase in mangrove cover described under flora and fauna has arisen mainly due to a decrease in the sediment size found in the upper estuaries.

Baseline cross-section monitoring to survey the height of intertidal sand/mudflats was established in 2003-2004 with planned re-survey at five year intervals. The next re-survey is planned for 2007 and will be capable of showing sedimentation rates.

Information on stream bank erosion as a contribution to Tauranga Harbour was provided by Surman (1999). Based on suspended sediment measurements made in 1990-1991 a total sediment contribution to Tauranga Harbour was estimated accurate to an "order of magnitude". The overall results are shown below.

*Table 2 Total and average sediment yields for Tauranga Harbour calculated in Surman (1999).*

<b>Total Contributing Area</b>	<b>Total Yield for Tauranga Harbour</b>	<b>Average yield</b>
956 (km <sup>2</sup> )	118 020 (t/yr)	124 t/km <sup>2</sup> /yr

The figures ranged from 10-20 t/km<sup>2</sup>/yr for less developed catchments to 510 t/km<sup>2</sup>/yr for the Kopurererua. The report was based on field work carried out between 1995-1998 and on data collected in 1990-1991. The report findings are therefore 7-15 years old. Since the data collection and field work there has been increased development, however it is noted that sediment control practices have significantly improved.

### 5.2.1 Current management

Earthworks are controlled under the Regional Land Management Plan and usually are discretionary activities.

Generally, Environment Bay of Plenty operates under a best practicable option (or best management practice) approach to controlling earthworks. In this way any discharge is deemed to be acceptable provided consent conditions specifying the measures to be used on site are met. With this approach there is no specific limits on the quality of the discharge.

This approach accepts a level of risk that from time to time there are adverse environmental effects. In the winter (May to September) those risks become greater than considered acceptable and a performance standard approach is adopted. This means that consent applicants are required to provide a more detailed Assessment of Environmental Effects and (if approved) will be subject to performance standards.

The Environment Bay of Plenty Erosion and Sediment Control Guidelines were last reviewed in 2001 and provide good practical technical information on controlling sediment runoff from earthworks and provides the basis for assessing resource consents.

The guidelines are generic and apply across the Bay of Plenty with little provision for sensitive sites either at the location or downstream. Sensitive sites are also not identified in either the guidelines or the Regional Land Plan.

Compliance levels are reasonably good and enforcement action has been taken on a number of occasions. Compliance staff note that the number of earthworks sites have increased over the last few years.

While the current approach is working reasonably well many people, including Environment Bay of Plenty consents staff, noted their concerns about the ability to deal with cumulative effects in sensitive areas that are under heavy development.

### 5.2.2 Development process

Recent population increase projections (University of Waikato 2005) predict a doubling of the population of the Western Bay of Plenty sub region between 2001 and 2051. Significant development pressures are likely to result.

It is not clear where the cumulative effects of sedimentation stemming from the expected increase in development should, or would, be dealt with.

Strategic planning for the Western Bay of Plenty sub region is currently proceeding on the basis that sedimentation will be adequately addressed in the current planning framework.

The SmartGrowth process of identifying where growth should occur has been driven by a need to better integrate land use and infrastructure. No investigation of sedimentation issues has been carried out. The approach of SmartGrowth to develop confined areas quickly is on the assumption that councils will put in place appropriate development controls. While there are valid strategic reasons for the planned development it may well conflict with the harbour's ability to assimilate effects.

The Regional Policy Statement change to provide for urban growth limits is proceeding without information on the potential effects from sedimentation. Once the urban limits are in place an expectation of development will be created, despite the policy that deals with the need to avoid, remedy or mitigate adverse effects. Determining the urban limits is the most appropriate and effective place for cumulative effects of development on the harbour to be considered in its entirety.

The district plan rezoning stage will be carried out by two district councils in a number of plan changes. The ability for addressing cumulative effects is reduced.

Following re-zoning the development process then becomes incremental through approval of individual subdivisions, all of which could result in minor effects when considered individually. Depending on the scale, the subdivision often precedes land use consent applications for earthworks where it is assumed that sedimentation effects will be dealt with.

The land use application is often seen as the last step and somewhat of a formality. The activity is generally discretionary, dealt with on a "best practice" basis guided by the Earthworks Guideline. Through the consent process each discharge is found to have minor effects and can therefore be non notified and approved subject to standard consent conditions. The restrictions in Section 107 are met.

None of the processes described currently address the cumulative effects of sedimentation.

### 5.2.3 **Monitoring of permitted activities**

Monitoring of permitted activities currently is not carried out by any of the authorities. Permitted activities are minor by definition so theoretically there should be no concerns with them being undertaken provided permitted activity conditions are met. The activities are monitored in response to complaints, where usually the activity is not meeting the permitted activity conditions. Any adverse cumulative effects of permitted activities may also be picked up in state of environment or plan monitoring processes.

A number of parties were concerned with focus on the large-scale earthworks not being continued into the construction of individual building sites. Once the bulk earthworks are completed and the site grassed down, the consent terminates and Environment Bay of Plenty ceases to monitor. Western Bay of Plenty District and Tauranga City Councils do not operate any controls on earthworks. The individual house sites are then constructed as permitted activities. It is not clear to what extent this is an issue however at this stage there is usually a reticulated stormwater system in place. Under the Stormwater Strategy currently in development it is likely that the holder of the

stormwater discharge consent would become responsible for the discharge of sediment in stormwater arising from these activities.

Concern has been voiced about the increased thresholds in the Proposed Water and Land Plan for earthworks with the resulting increase in the number of earthworks activities that are un-monitored. Since 1 January 2000, there have been 257 consents granted in the Western Bay of Plenty/Tauranga district for earthworks. Of the 173 that have data the breakdown on volumes and area are as shown in Tables 3 and 4. This data suggests that 24 (14 %) of the earthworks would have been permitted, assuming they did not have point source discharges off the site. Given this permitted activity condition it would appear that the Water and Land Plan provisions are in fact more stringent than the previous Regional Land Plan provisions. It is noted however that compliance monitoring becomes important to ensure that any diffuse discharge meets the standards in the plan until such time as a 20% AEP is exceeded.

*Table 3 Number of earthworks consents approved for different volumes categories by Environment Bay of Plenty between 1 January 2000 and 1 August 2005.*

Volume of Earthworks	Number of Consents approved since 1 Jan 2000
<2000m <sup>3</sup>	11 consents
2000m <sup>3</sup> – 4999m <sup>3</sup>	24 consents
5000m <sup>3</sup> – 9999m <sup>3</sup>	40 consents
10 000m <sup>3</sup> +	98 consents

*Table 4 Number of earthworks consents approved for different area categories by Environment Bay of Plenty between 1 January 2000 and 1 August 2005.*

Area of Earthworks	
<1ha (10000m <sup>2</sup> )	55 consents
>1ha (10000m <sup>2</sup> )	136 consents

### 5.3 What is happening – sedimentation?

Ongoing compliance work and reporting.

The Integrated Stormwater Strategy was completed and presented to the Regional Council in August. The strategy provides for a progression to comprehensive consents for the whole of catchments. This will result in progressive incremental improvement. As part of the strategy, Tauranga City Council are carrying out upgrades to systems and retro fitting treatment devices to older developed areas of Tauranga.

Tauranga City Council has a full-time pollution prevention officer who monitors point source discharges to Council's stormwater system, including open drains and provides education to businesses and the general public.

#### 5.3.1 Regional Land Management Plan

Large scale earthworks discretionary activity

#### 5.3.2 Proposed Regional Water and Land Plan

The earthworks and discharge provisions in the proposed plan is currently under appeal. The provisions of the plan are not currently being given effect to as part of the consents process.

The plan as agreed by consent order will raise the level of permitted earthworks from 2,000 m<sup>2</sup> to 5,000 m<sup>2</sup> however an area limit of 1 ha will apply to flat land with reductions in the permitted area as slope increases. These activities are also subject to relatively stringent water quality conditions to discharges to surface water.

## 5.4 What needs to be done – sedimentation?

It is important that any action is carried out at a strategic level. Sedimentation cannot be left to individual consent level as it is difficult, if not impossible, to deal with cumulative effects on a case-by-case basis as discussed above.

Review of Sedimentation from top of catchment to harbour addressing:

- Sediment yield analysis from all sources (Ruahihi, stream banks, coastal erosion, long term stormwater, individual earthworks sites etc);
- Carry out peak flow monitoring;
- Projection of sediment yields based on proposed RPS development scenarios;
- Assess likely effects on harbour (mangroves, shallowing, habitat, fish etc);
- Whether the current BPO approach is sufficient to effectively manage the cumulative environmental effects of development;
- Review options for managing cumulative effects; and
- Make recommendations on how best to address the findings, including identifying the most appropriate policy instrument(s).

Information needs to be available so that decision makers can understand the likely effects of development. It may be that a certain level of effect may be accepted but currently it is not understood.

Feed this information back into relevant processes e.g. SmartGrowth, Regional Policy Statement, Water and Land Plan, district plans, consent process.

Additional matters for consideration:

- Review permitted activity monitoring.
- Consider means of reversing effects e.g. dredging navigation channels, mangrove clearance etc subject to satisfactorily dealing with any adverse effects of the activity.
- Submission to the proposed Regional Policy Statement change for urban limits to ensure that there is ability to consider the outcomes of the review proposed above.

### 5.4.1 Ongoing

- Continued environmental monitoring.
- Continued compliance and enforcement actions.

## 5.5 References

- Environment Bay of Plenty (2001) Erosion and Sediment Control Guidelines for Land Disturbing Activities. Guideline 2001/03.
- Miller, Christine (2005) Integrated Management of a cleanfill In the Okura Catchment. Paper to the New Zealand Water and Waster Association, 4th South Pacific Stormwater Conference 2005.
- Park (2003) Marine Sediment and Contaminants Survey (2001-03) of Tauranga Harbour. Environment Bay of Plenty Environmental Publication 2003/20.
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- University of Waikato (2005) Population Change in the Bay of Plenty, 1981-2051. TA and sub-regional perspectives. Presentation to Environment Bay of Plenty's Strategic Policy Committee by the Department of Geography and Population Studies Centre.
- Welsh, C. (2002) Dredging Recreation Channels in Tauranga Harbour. Cost Benefit Analysis. Report prepared for Environment Bay of Plenty by REM Consultants Limited.



## Chapter 6: Natural character/landscape

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### 6.1 Issues

Natural character comprises many of the issues discussed elsewhere in this report and can be defined as having three components: natural processes, natural elements and natural patterns. Landscape is an overlapping concept that places the emphasis on the human perception of a group of natural resources. For further description refer to Peart (2005).

A number of concerns were raised in the public processes about the decline in the appearance of the estuarine areas caused by development in general. The losses are perceived to be incremental and cumulative and plans are not putting a cap on what is “acceptable” development. It was thought that while the Regional Coastal Environment Plan has some provisions, development is still tending to be *ad hoc*. It was suggested that within the coastal marine area the coastal plan needs to be more specific about what development can happen where within the harbour.

One submitter suggested that better landscape protection is needed at neighbourhood and site level. Another noted illegal earthworks and dumping as causing adverse effects.

A landscape professional suggested that national and regional policy on landscape was not being effectively being carried through into district plans and into consent decisions.

Intensification of use was raised as having adverse effects on landscape values. With the policy drive to infill, there is no consideration of natural character and landscape. Development can occur right to the permitted baseline.

Development of Matakana and the prospect of high-rise development and the resulting landscape effects is a concern to some.

### 6.2 Evaluation – natural character

There has been no regional monitoring of natural character carried out however it is apparent that there is ongoing loss of natural character and landscape values caused by development and other activities on the harbour margins. It is also apparent that this loss is cumulative and incremental.

At the same time there are obviously improvements in some areas as a result of restoration works.

The RMA is an effects based approach to resource management requiring sustainability. Within the planning framework uses are generally expected to stand or fall on their merits and that has been the approach taken by the coastal plan. The approach encounters difficulty when dealing with cumulative effects, particularly with the evolution of the permitted baseline. Small incremental effects hide the overall picture of sustainability.

One of the mechanisms for the protection of natural character is to concentrate development in areas that are already compromised (NZCPS 1.1.1) and direct it away from more pristine areas. The Regional Coastal Environment plan does this through “enabling” zoning around the Tauranga Central Business District and the Port of Tauranga and by having exclusions to development in those areas of significant conservation value. The most pristine areas are protected by way of prohibited rules in Coastal Habitat Preservation Zones. In this way provision is made for either end of the natural character spectrum.

While natural character is not one of the main drivers, the proposed change to the Regional Policy Statement to apply urban limits will also provide for the concentration of development and the consequential protection of sites not within the urban limits.

A review carried out for the Minister of Conservation (Rosier 2004) assessed the Regional Policy Statement, the Regional Coastal Environment Plan and both the district plans. The review notes that regional policy statements and coastal plans adequately provide for natural character but notes that councils have difficulty protecting areas of natural character via appropriate rules and performance standards once they are identified. The Western Bay of Plenty District Plan was found to partially satisfy NZCPS requirements for natural character protection and the Tauranga City Plan was found to be “not adequate”.

Plans do not identify natural character on a site-by-site basis, only components of it, such as landscape or significant ecological sites. This again results in the sustainability picture being obscured by components and incremental effects.

The recent aquaculture reforms have provided opportunities for the Regional Council to decide what sort of activities should occupy which areas of the coastal marine area and to allow the Council to tender those sites for use. This provides a useful tool to deal with cumulative effects that is yet untested.

### 6.3 What is being done – natural character?

Boffa Miskell have been contracted by Environment Bay of Plenty to update the 1993 survey of landscapes and natural features for the coastal environment of the region. The report was completed in November 2005 and provides:

- Recommendations on changes to the Regional Coastal Environment Plan;
- Monitoring information of the change over the last decade; and
- Recommended indicators for State of the Environment monitoring.

Boffa Miskell also reviewed the natural features and landscapes work, undertaken in the mid-1990's for Tauranga and Western Bay of Plenty District Plan preparation, in 2002 as part of the constraints and opportunities research for SmartGrowth. This work produced maps of the natural character of the Western Bay of Plenty sub-region, including Tauranga Harbour.

Tauranga City Council are preparing a vegetation strategy, which will give outcomes and actions to enhancing Tauranga's ecological environment, including street tree and amenity planting.

Care group rehabilitation.

Other rehabilitations efforts carried out by councils and other organisations.

### 6.3.1 Policy/Plans

Regional Policy Statement – Urban Limits Change to provide for intensive development.

#### *Regional Coastal Environment Plan*

- Coastal Habitat Preservation Zones with activities mainly prohibited.
- Outstanding Natural Features and Landscapes with policy protection and 5<sup>th</sup> Schedule – Management Guidelines for Natural Features and Landscapes.
- Areas of District Significance with policy protection.
- Areas of Significant Conservation Value with policy protection.

An update to the Regional Coastal Environment Plan is likely in 2006-2007 to give effect to the Boffa Miskell report.

Policy 4.2.3(f) advocating no further urban development in the Western Bay of Plenty coastal environment.

#### *Tauranga District Plan*

- Identified Landscape Features – mainly policy.
- Conservation Zone rules.
- Register of ecologically significant sites as part of the heritage register (Appendix 16A).
- Coastal landscape protection areas (building setbacks) for Matapihi peninsula and Bethlehem sections of the harbour.

Planned review of purpose and rules of greenbelt

#### *Western Bay of Plenty District Plan*

- 40 metre Tauranga Harbour Landward Edge protection yard.
- Schedule of Identified Landscape Features – discretionary activities.
- Schedule of Identified Ecological Features – mix of prohibited and discretionary activities.
- Schedule of Identified Heritage Features – mainly discretionary activities.

## 6.4 What needs to be done – natural character?

Update Regional Coastal Environment Plan in accordance with Boffa Miskell report.

Provide for natural character zoning approach in 10 year coastal plan review in conjunction with district plan reviews.

Environment Bay of Plenty to consider using tendering provisions to tender prospective marina/development sites. This is a possible mechanism for allocating space within the waterfront development zone in the Tauranga Central Business District in conjunction with Tauranga City Council and at Omokoroa in conjunction with Western Bay of Plenty District Council.

Review Tauranga Harbour Landward Edge protection yard in the Western Bay of Plenty District Plan.

Establish monitoring and indicators in conjunction with district councils.

Review relevant regional plans and district plans to ensure consistency with Regional Policy Statement Change No 1 – Heritage Criteria.

## 6.5 References

Boffa Miskell (1993) A Landscape Assessment of the Bay of Plenty Coastal Environment. Report prepared for the Bay of Plenty Regional Council.

Boffa Miskell (2002) Landscapes and Natural Features. Report and maps prepared for SmartGrowth. August 2002.

Peart, R. (2005) The Community Guide to Coastal Development Under the Resource Management Act 1991. Environment Defence Society publication.

Rosier, J (2004) Independent Review of the New Zealand Coastal Policy Statement. A report Prepared for the Minister of Conservation.

## Chapter 7: Recreation/Access

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### 7.1 Issues

#### 7.1.1 Conflicting uses

The Tauranga Tomorrow process shows that the community have a clear preference for maintaining Tauranga Harbour as:

- A recreational harbour.
- A recreational fishing resource.

The community have a number of concerns about conflicting uses and conflicting users:

- Port of Tauranga – The Port advise that they have concerns about the conflict between recreation and port related vessels. In future it is expected that usage by both may well increase, leading to further conflict. Currently they have loose agreements with recreational groups that work reasonably well. Likewise other groups are concerned about the extent to which Port operations take priority over other uses.
- Over fishing by commercial fishers.
- Incompatible uses of facilities e.g. swimming and jumping off jetties v boat usage.
- The issue of sedimentation as a result of development is of concern because of the reduction of usable area and with shallowing of navigation channels and the loss of all tide access – refer to Sedimentation section.
- Effect of recreational users on indigenous bird nesting area at Panepane Point, Matakana Island and other coastal sites around the harbour.

#### 7.1.2 Facility provision

Lighting is needed on navigation aids and boat ramps.

Some comments were made about the need for thoughtfully set out facilities at the Tauranga Central Business District to make the most of the harbour environment.

The coastal marine area boundary causes issues with integration – if an activity is in the coastal marine area, for example a clubhouse or floating restaurant, then sufficient services should be provided on land such as parking.

Lack of attention from SmartGrowth on the “play” aspect. Little attention has been given to the need for additional facilities.

### 7.1.3 Conflict between users

There is demand for new facilities in particular boat ramps and car parking and this will likely increase over time.

Commercial ferries need guaranteed access to berthage.

### 7.1.4 Access

Access to and along the harbour is of importance to the community but there is a need to balance access with ecological effects:

- Walkways provide access for pests such as cats, dogs, rats and mice.
- Animals and people disturb nesting and roosting birds.

There is more demand for space in the harbour than there is space available. There is only 33% of water coverage at low tide.

There is a reported lack of consistency applying the esplanade reserves provisions.

Private encroachment onto public land is of concern.

Public encroachment onto private land (trespass) is also a concern, particularly on the Tauranga Harbour Islands.

### 7.1.5 Integration issues

Difficulty getting the Ministry of Fisheries to participate in Resource Management processes.

Lack of enforcement integration – the Department of Conservation, Ministry of Fisheries and Environment Bay of Plenty staff are out in boats monitoring for enforcement.

### 7.1.6 Other

Lack of licensing of commercial operators or recreational vessels.

Lack of knowledge about regulations.

## 7.2 Evaluation – recreation/access

### 7.2.1 Recreation

There is very little current quantitative information about usage of Tauranga Harbour.

A survey (Babbage 1988) undertaken between 26 December 1987 and 1 February 1988 showed a total of 5,000 boat launches in the Northern Harbour.

An Environment Court decision in 1993 found that the upper harbour is a major regional recreational resource and that the value will undoubtedly increase as the population increases.

More recently Tauranga City Council undertook a review of its boat ramps from an asset management perspective. The work showed over 200 boat launches per day (Bickers 1996) during March 1996. Currently Sulphur Point has reportedly 200-250 trailers on a busy day.

The Coastguard reported in 2002 that 7,000 vessels use the harbour regularly.

Statistics New Zealand<sup>2</sup> data shows that population of the Western Bay of Plenty sub region was 132 600 in 2001. Recent projections by the University of Waikato (2005) is for a doubling of the population by 2051.

Maritime New Zealand (1999) research shows that around 20% of households in the Tauranga area own a pleasure boat. Assuming that the 20% figure remains constant as the population increases this could result in a doubling of the boat number in Tauranga in the next 50 years.

*Table 5 Possible current and future boat numbers in the Western Bay of Plenty sub region.*

	Population	Households	Estimated Boat numbers
2001 census data	132,600	48,771	9754
2051	278,800 (prediction)	97,500 (est by doubling 2001 data)	19500
Total Increase over 50 years	146,200		9476

Demand for mooring space exceeds supply. Environment Bay of Plenty currently has 174 people on waiting lists for moorings. The Bridge marina, however advises they have further capacity.

A survey on harbour usage was undertaken in 2001 as part of the Coastal Plan appeals resolution process. That survey was sent to most known clubs or other users of the harbour with questions asking which areas of the harbour were used, how many vessels were owned by members and what changes there had been in member numbers. The results showed increasing usage, increasing memberships and also attracted a number of comments about harbour management. Of interest were the comments from the Tauranga Coastguard that there had been an increase in the number of incidents per year and that their membership had risen from 250 in 1991 to 1500 in 2001.

### *Port of Tauranga*

The Regional Coastal Environment Plan, the Navigation and Safety Bylaws and the Ports occupation permit (S384A RMA) provide for port activities. The S384 permit provides for exclusive occupation for an area extending 30 to 60 metres from the wharves. The coastal plan defines a port zone extending from the bridge to the open ocean. One of the purposes for this zone is to “*Minimise potential conflict between port activities and other activities*”. The Navigation and Safety Bylaws provide for a restricted anchorage in the entrance channel. Furthermore the maritime rules under the Maritime Transport Act provide for restricted anchorages throughout the piloted area (narrow channels) and that recreational craft must give way to any vessels in excess of 500 gross tonnes. All of these have been put in place by robust mechanisms

<sup>2</sup> Statistics New Zealand 2005. The estimated resident population is based on the 2001 census usually resident population count, with adjustments for residents missed or counted by more than one by the census (net census undercount), and for residents temporarily overseas on census night.

and in the case of the coastal plan the process was subject to public consultation, submission and appeals. The issue appears to be not whether the Port has rights above the general public – the relevant policy documents say that the Port does, but that any management should focus on coordinating events to avoid conflict with the Port.

### 7.2.2 Access

The maintenance and enhancement of access to and along the coastal marine area is a matter of national importance in the RMA. Both of the district councils provide for along shore access through their reserves functions and by the taking of reserves when property is subdivided. The Foreshore and Seabed Act 2004 has encompassed the principle of unrestricted access into law and has provided in sections 7 and 8 for public rights of access and navigation over the foreshore and seabed, unless restricted by another enactment.

As discussed in the Flora and Fauna there is a conflict between protecting significant sites and providing public access, recognised in policies in the NZCPS, the Regional Policy Statement and the Regional Coastal Environment Plan. The Regional Coastal Environment Plan contains a Method of Implementation stating the Environment Bay of Plenty will identify (in consultation) areas where public access may need to be restricted for a number of reasons. This method is yet to be implemented and is identified in the draft sustainable coastal chapter for the 10 Year Plan.

## 7.3 What is being done – recreation/access?

Tauranga City Council and Western Bay of Plenty District Council provide recreational facilities at the harbour-land interface such as boat ramps, car and boat trailer parking areas. Tauranga City Council has a draft level of service for boat ramps, which will see extensions to existing boat ramp areas to accommodate future population growth and the rationalisation of some ramps e.g. Pilot Bay.

Environment Bay of Plenty provides navigation aids, harbour guides (brochures), patrols, harbour wardens, patrols, oil spill response, 24 hour callout, mooring management, event management, commercial licensing, bylaw enforcement, education and safety management of commercial shipping.

The Port of Tauranga provides information about ship movements on their website at <http://www.port-tauranga.co.nz/>.

The Environment Bay of Plenty's Tauranga harbourmaster formally keeps track of events occurring in the harbour.

Tauranga City Council Harbour Reserves Management Plan is in preparation. A draft is expected in late 2006.

Tauranga City Council is continuing the re-development of the Central Business District-Waterfront area.

Investigation into the dredging of recreational channels has been carried out by Environment Bay of Plenty (Welsh 2002). A possible funding source is from coastal occupation charges.

Maritime New Zealand have recently published the New Zealand Port and Harbour Marine Safety Code requiring regional councils to undertake a risk assessment and develop management systems for the harbour. Environment Bay of Plenty's Regulation

and Monitoring Committee considered the draft risk assessment at its 30 August 2005 meeting.

The SmartGrowth Strategy contains an action (action 8 in SmartSpace) for a:

*“comprehensive study of recreation use of the Tauranga Harbour and waterways with trends on future use by type of craft and activities, frequency of intense use and effects on harbour”.*

The report suggests that Environment Bay of Plenty should lead the project starting in June 2008 with a cost suggestion of around \$200,000.

TCC have recently adopted an encroachment policy to deal with structures and activities that encroach on public reserves. The Council also has a draft policy defining the Council's position on ownership of structures on Council coastal reserves.

### 7.3.1 Policy/Plans

The Regional Coastal Environment plan:

- Prohibits structures in navigation channels.
- Provides specific activity zones (port, waterski, jet ski etc).
- Has a recreation policy chapter – a method of implementation is to manage water surface recreation by bylaws.

The Navigation and Safety Bylaws:

- Provide for the entrance channel as a restricted anchorage.
- Sets regulations to ensure navigation safety.
- Manage the interface between commercial shipping and recreation.

## 7.4 What needs to be done – recreation/access?

### 7.4.1 Coastal plan

The coastal plan recognises recreational values in the entire Bay of Plenty as being of national significance but is not specific about the extent to which Tauranga is considered a recreational harbour. On first review amend the coastal plan and district plan policies to provide for Tauranga Harbour as:

- A recreational harbour.
- A recreational fishing resource (Advocacy Policy).

Any amendment to the coastal plan will be given regard to when decisions involving sustainability measures are made (s11 (2)(a) Fisheries Act 1996).

### 7.4.2 Recreation strategy

It is difficult to manage recreation appropriately if it is not well understood. Integrated monitoring processes need to be established to gain better data on harbour usage and planning needs to be undertaken for future demands. As well as assisting with managing recreation, the information will also be of assistance to other council planning processes such as planning for aquaculture and a better understanding of the effects of any coastal proposals. Information gathering has commenced as part of Environment Bay of Plenty's Tauranga Harbour Integrated Management Strategy project.

It is suggested that a recreation strategy integrate planning between:

- Facility operators (mainly TA's boat ramps, car parking, public jetties).
- Commercial operators (Port and others).
- Reserves managers.
- Navigation and safety functions.
- Transport planning functions.
- RMA functions to ensure recreation does not adversely affect natural values.
- Fisheries functions.
- Wildlife functions (birds, marine mammals etc).
- Biosecurity New Zealand functions.

A strategy should deal with the following matters:

- Compile existing information sources and establish monitoring of usage of harbour.
- Consider adequacy of current facilities for users of the harbour.
- Review need for additional facilities ahead of expected population growth (e.g. Omokoroa) and ensure an integrated approach to making provisions; for example plan changes.
- Assess need for other facilities such as lighting of navigation aids and boat ramps, additional markers etc.
- Consider ways of introducing environmental protection e.g. deterring visitors to Panepane point in nesting season.
- Investigate the dredging of recreational channels.
- Consider separation of incompatible harbour uses.

The following agencies should be invited to take part: Department of Conservation, district councils and the Ministry of Fisheries. Large facility operators such as the two marinas and the Port of Tauranga may also have an interest in some aspects.

### 7.4.3 Moorings

Investigate a reorganisation of moorings for efficiency. It may be possible to provide for up to 100 additional moorings within the same mooring zones.

#### 7.4.4 Port and Harbour Safety Plan

A port and harbour safety management plan for Tauranga is under preparation.

#### 7.4.5 Access

Provide for Regional Coastal Environment Plan Implementation Method 7.2.4(a) as part of a wider access strategy. Consideration should be given to whether this includes other harbours and open coast in the Bay of Plenty.

The issue of encroachment should be considered in this strategy.

### 7.5 References

Babbage (1988) Survey of Usage Tauranga Harbour. Report prepared for the Tauranga County Council and Bay of Plenty Harbour Board.

Bickers, A. (1996) Tauranga District Council Boat Ramps Review. Report and Inventory.

Environment Bay of Plenty (2004) Bay of Plenty Regional Navigation and Safety Bylaws 2004.

Maritime Safety Authority (1999): Please Boat Advisory Group. Final Report.

University of Waikato (2005) Population Change in the Bay of Plenty, 1981-2051. TA and sub-regional perspectives. Presentation to Environment Bay of Plenty's Strategic Policy Committee by the Department of Geography and Population Studies Centre.

Welsh, C. (2002) Dredging Recreation Channels in Tauranga Harbour. Cost Benefit Analysis.

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## Chapter 8: Miscellaneous and institutional matters

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### 8.1 Issues

A number of issues arose that were more related to the way that the respective councils operate than environmental matters.

When discussing environmental issues with many parties it was apparent that there was a lack of knowledge and some misinformation about the planning framework already in place. In particular there was a lack of knowledge about the Regional Policy Statement and the landward policies of the Regional Coastal Environment Plan.

#### 8.1.1 Science

It is apparent that the community has a lot of “science” questions about Tauranga Harbour. Furthermore it is clear that a number of district council and regional council staff are not aware of the work that has been carried out.

A number of groups report a lack of access to science and consider there are deficiencies in the way the councils promote information or education material about the harbour.

Several groups noted that the information from the authorities is not pitched at the right level in that it is either highly technical or is superficial. It was suggested that when science is provided to the community there needed to be some explanation of its meaning.

The quality of the science being carried out was questioned, particularly the lack of event monitoring and whether council scientists are staying “current”.

#### 8.1.2 Interest/Care groups

Care groups or interest groups note a number of barriers:

- Lack of support/guidance – they considered there was too much reliance on personalities and personal contact rather than institutional support.
- Difficulty of gaining credibility or recognition.
- Inability to motivate people.
- Burden falling on a few.

- Lack of “voice” at a strategic level e.g. SmartGrowth, RPS changes etc. There is a perception that there is enough policy and action is needed.

Several parties were keen to see the Coast Care model applied to the harbour.

### 8.1.3 **Boundary issues**

There were a number of issues raised about the coastal marine area boundary and the administrative difficulties that arise:

- Need for two permits from two authorities for one activity where it crosses the coastal marine area boundary.
- Inconsistent provisions across the coastal marine area boundary.
- Difficulty with precise location of the boundary.
- Effects across a boundary - activities that require a coastal permit in the coastal marine area can have significant effects across the boundary. Often these effects can be outside the function of the Regional Council. Examples are the Kestrel floating restaurant, the Tauranga Bridge Marina, the Mount Maunganui Artificial Surfing Reef and the Omokoroa Boat Club. The coastal marine area location means that no permits are required from the district council. For example a floating restaurant has no requirement for car parking to be provided like it would if it were land based.
- Zoning issues when land emerges from the coastal marine area - district plan zone boundaries are generally fixed. This causes issues if land accretes or is reclaimed.
- Additions to bridges that form the coastal marine area boundary (downstream they require a coastal permit whereas the bridge holds a landuse permit).

Other boundary issues noted were:

- River mouths – lateral boundaries undefined.
- Lack of definition of coastal environment.

### 8.1.4 **Coastal erosion**

Coastal erosion has been raised as a matter of concern with losses of land around most of the harbour but notably Maungatapu, Motuhoa, Te Puna, Rangiwaea and Matakana Island. Communities attribute the erosion to rising sea levels.

Erosion and land slippage has also been suggested as a source of harbour sedimentation.

## 8.2 **Evaluation – institutional matters**

### 8.2.1 **General**

It is not surprising that there is little public knowledge about the content of plans and the Regional Policy Statement. Even professionals who deal with plans on a daily basis become specialised and tend to know particular areas well but are not familiar with other areas. The nature of the planning process also adds to this by allowing

significant changes throughout the planning process so that the document that is made operative can be quite different from the one that was publicly notified.

First generation plans and policy statements have tended to be wordy and use indirect language, partly because of legislative requirements and partly because of lack of central government direction. Legislative changes, case law and lessons learnt should ensure that improvements are made in the second generation of regional plans and policy statements. The recently proposed RPS change has seen a change in style that should be continued as the policy statement is further changes/reviewed.

### 8.2.2 Science

The science that Environment Bay of Plenty carries out is of great importance. The Water Quality and Flora and Fauna sections detail some of the science that Environment Bay of Plenty has done recently in and around Tauranga Harbour. It is apparent that there is little community knowledge or understanding of what is done and why. There are a number of factors that may contribute:

- By nature the reports are highly technical.
- Reports are presented to the Council but generally nowhere else.
- They are not readily available.

Several of the groups expressed interest in gaining further information and being involved before the science works starts, particularly when work is being done in their area.

It is essential that policy is able to quickly respond to science (PCE 2004) and therefore that policy makers are able to quickly receive and understand the information.

The investigations carried out for this report suggests that the science is being presented at council level but there is no formalised process for the knowledge to be transferred to the planning and consents staff of Environment Bay of Plenty or the Territorial Authorities.

### 8.2.3 Care groups

Interest or care groups that are better supported can:

- Achieve significant environmental objectives; and
- Give more effective and more informed input into decision-making processes.

The groups indicated a wish to be more involved, to assist with projects, and importantly to see outcomes.

### 8.2.4 Boundary issues

The line of mean high water springs causes the most operational issues with coastal management. All the issues identified are valid issues however they are legal or statute issues and are not able to be "fixed" by either the regional or district councils. Jurisdictional boundaries are inevitable and there are ways that the councils can manage the issues that arise to promote integration. Section 67(1)(h) places an obligation on regional councils to specify in regional coastal plans the processes that will address cross boundary issues. Section 75 does not have an equivalent section for district plans (except between districts), however there is a requirement to be not

inconsistent with any regional plan. It is noted that section 80(5) requires councils to consider preparing joint plans when they consider that there are significant cross boundary issues.

Effects across the boundary. There is debate about the extent to which a regional council can address any effects both legally and effectively. It is apparent that the law intends regional councils to consider every actual or potential effect (unless the activity is controlled or limited discretionary) but mitigating conditions are impossible where these impinge in the “doing” functions of district councils, such as car parking.

While this seems to be a “gap” in the law there are ways this issue can be managed. This is a national issue not confined to Tauranga Harbour.

Difficulties in precisely locating the boundary. There is case law guidance about locating the coastal marine area boundary but in practice it can be difficult and needs to be done on a case-by-case basis. There is often a misconception, even among professionals, that the boundary is the most seaward survey line (usually the edge of the esplanade reserve). This is not the case. The coastal marine area boundary is not related in any way to underlying ownership or whether or not a certificate of title exists.

Boundary at river mouths - lateral boundaries are undefined. This is a legal problem that needs to be managed and possibly legally tested some stage.

The coastal environment was purposely left undefined by the NZCPS to enable it to be considered on a case-by-case basis. The board of enquiry into the NZCPS pointed to the considerable case law that had already developed on the subject (Department of Conservation 1994). It is understood that the Department of Conservation are reconsidering the definition as part of the NZCPS review. The boundary can be important in determining which policies and objectives apply to particular activities. The Regional Coastal Environment Plan has a number of important zonings outside the coastal marine area within the coastal environment. It is important that these are understood by consultants and consents processing staff.

### 8.2.5 Coastal erosion

It is likely that coastal erosion has been occurring in Tauranga Harbour since sea level stabilised from the last glacial period around 6000 years ago. Gibb (1996) estimates just under half of the entire harbour coast line is in a state of erosion. In this preliminary report, Gibb attributes the erosion to lithology (nature of the sediment), exposure (particularly the north west facing coasts and water depth (rising sea level). Land slippage is also a factor caused by interactions between lithology, toe erosion, vegetation and groundwater.

Coastal erosion is a natural process that is of little concern until such time as assets are threatened. In many instances around the world development has simply occurred too close to the coast and in the case of Tauranga Harbour too close to unstable slopes. This is a historical problem that needs to be managed. Both district councils have now carried out work on floodable areas and have established floodable areas in their district plans. Sites subjects to coastal erosion have however not been identified due to the prohibitive costs of accurately determining erosion rates and the fact that there are a number of management actions than successfully deal with the issue.

Once coastal erosion occurs there are generally two concerns:

- 1 What action is appropriate; and
- 2 Who should pay?

In 1999 Environment Bay of Plenty commissioned reports:

- Assessing the physical effects of protection works on the environment (Coastal Consultants 2000).
- Assessing the effects of coastal protection works on landscape values, amenity values and public access (Isthmus Group 2000).
- Providing for standard engineering designs (Tonkin & Taylor 2001).
- Investigating non structural (planting etc) options for erosion protection (Opus 2001).

From those reports the councils jointly developed the Erosion Protection Works - Guidelines for Tauranga Harbour (Herbst, Schuler and Lawrie 2002). These provide guidance on how to select the best option for dealing with harbour erosion. Standardised designs are provided to minimise the need (and cost) for specialist advice and some ideas of costings are given (for different materials and designs).

Who should pay for any protection works appears to be more of an issue, particularly where land owners would have difficulty paying themselves. There is some legal guidance from a court case in Manukau strongly suggesting that district councils do not have any obligation to provide erosion protection works. Where there are public assets at risk councils may however choose to assist. Generally where erosion protection works are to protect private land then the cost falls on the owner gaining the benefit from the protection. It is noted that the scale of erosion in Tauranga is so large (in terms of length of coast urbanised and eroding) as to be unaffordable to local government to take on the responsibility.

### 8.3 What is happening – institutional matters?

#### 8.3.1 Science

Science reports are presented to Environment Bay of Plenty's committees as appropriate.

Press releases are made and often reported in the media.

Regional Guardian and council newsletters.

Environment Bay of Plenty website contains information on swimming water suitability.

#### 8.3.2 Care, hapu and/or ratepayer, and environmental groups

- Environmental groups - Environment Bay of Plenty Manual for Care Group Leaders;
- Environmental Enhancement Fund;
- Environment Bay of Plenty indigenous biodiversity advice administrator; and
- StreamCare/Coastcare.

### 8.3.3 **Boundary issues**

Tauranga City Council have agreed in principle to transfer the powers for considering landuse consents for structures straddling the coastal marine area boundary to the Regional Council. Western Bay of Plenty District Council decided not to.

The Regional Coastal Environment Plan gives some guidance on the extent of the coastal environment.

### 8.3.4 **Coastal Erosion**

Erosion Protection Works - Guidelines for Tauranga Harbour and introductory pamphlet.

TCC have a draft coastal structures policy (currently open for submissions):

- To define where Council will accept responsibility for a coastal structure.
- To ensure the planned management and ownership of coastal structures in relation to Council-administered land on the margins of Tauranga Harbour.
- To ensure that all coastal reserves are either accessible to the public or managed for conservation purposes.

Western Bay of Plenty District Council/Tauranga City Council district plan floodable areas.

Western Bay of Plenty District Council and Tauranga City Council have alongshore access policies at strategic locations.

The Regional Coastal Environment Plan contains policies to remove any abandoned, derelict or unsafe structures. This is budgeted in the compliance area of the Council.

## 8.4 **What needs to be done – institutional matters?**

### 8.4.1 **General**

When plans/policy statements are changed or reviewed effort should be made to:

- Remove unnecessary text;
- Use more direct language;
- Coordinate reviews/changes where appropriate;
- Promote and educate about new/changed provisions; and
- Make plans accessible and understandable.

Update “Introducing Tauranga Moana” Booklet

### 8.4.2 Science

Consideration of promoting understanding of the science and monitoring that Environment Bay of Plenty carries out:

- Enhanced website facilities with technical reports available. A reader friendly summary should also be provided in straightforward language avoiding jargon.
- Relationship management between interest groups and scientists.
- Ensure relevant staff of respective councils are kept informed (Consents, planning etc). Environment Bay of Plenty staff to do annual presentations to Western Bay of Plenty District Council, Tauranga City Council and Department of Conservation staff on the state of Tauranga Harbour.
- Targeted synopses of information – one care group suggested using care group networks and newsletters to get the right information to interested people.
- Presentation to committee cannot be viewed as the end point for science delivery.
- A process needs to be established for ensuring those who need to know are informed in a timely manner (e.g. regional and district consents processing staff, care groups, Department of Conservation etc).
- Scope of investigations should be given more attention with input from users e.g. planners and consents staff. In some instances it may be worthwhile having a small project team so that the gap between science and management can be better dealt with.

### 8.4.3 Care, Hapu and/or Ratepayer, and Environmental Groups

Formalise Environment Bay of Plenty's approach to Estuary Care by signing of Memorandum of Understanding between partner agencies.

Investigate ways to better support interest and care groups through financial support where appropriate, and access to resources (including staff).

Better access to scientists/science information through facilitator.

### 8.4.4 Cross boundary issues

Review the cross boundary chapter of the Regional Coastal Environment Plan.

Review the Regional Coastal Environment Plan and the Water and Land Plan for consistency once Water and Land Plan is operative.

Review plans for consistency across coastal marine area boundary. Well integrated plans can assist in making the precise location of MHWS less important.

Western Bay of Plenty District Council reconsider transfer of powers to Environment Bay of Plenty for structures in the estuary that straddle the coastal marine area boundary.

Implement guidelines for erosion protection structures developed by all three councils for erosion protection to assist with consistency in design matters.

District councils to consider district plan provisions to “catch” activities that occur in the coastal marine area but have effects on land.

Territorial Authorities (TA's) need to consult Environment Bay of Plenty when planning activities adjacent to the water and Environment Bay of Plenty needs to consult TA's when considering activities in the coastal marine area. Both TA's and Environment Bay of Plenty then need to ensure that the whole of each organisation is consulted, not just individual sections. Should a major issue arise then it is likely that a legal advice/declaration will be necessary.

Be mindful of legal issues surrounding boundaries and seek solutions on a case-by-case basis.

Promote the coastal environment part of the Regional Coastal Environment Plan. Target consent processing procedures manuals, consents brochures, desktop GIS systems.

Investigate better integration of enforcement activities between the Department of Conservation, Environment Bay of Plenty and the Ministry of Fisheries. This could range from sharing knowledge to cross organisation warranting.

Tauranga City Council waterfront development needs consultation with Environment Bay of Plenty as Environment Bay of Plenty is the regulating authority in the coastal marine area. The RMA provides powers for Environment Bay of Plenty to tender the site.

Two yearly forums for organisations/interest groups to meet and discuss issues and receive presentations.

Prepare an interagency website containing information on Tauranga Harbour with links to monitoring data, relevant reports.

#### 8.4.5 **Coastal erosion**

Tauranga City Council to finalise coastal structures policy.

Implement method 11.2.5(b) of the Regional Coastal Environment Plan to undertake research on the issue of harbour shore erosion. This work should be collaborative with the District Council's, as any landuse controls will need to be given effect through the district plans and should be targeted to priority areas. This is currently noted in the draft 10 Year plan for the period 2006-2009.

### 8.5 **References**

Coastal Consultants (2000) Assessment of the Effects of Tauranga Harbour Coastal Protection Works on Coastal Geomorphic Processes. Report prepared for Environment Bay of Plenty.

Department of Conservation (1994) Report and Recommendations of the Board of Inquiry into the New Zealand Coastal Policy Statement.

Environment Bay of Plenty (2005) Manual for Care Group Leaders.

- Gibb, J. (1996) Tauranga Harbour – Coastal Hazards Scoping. Report prepared for the Bay of Plenty Regional Council.
- Herbst, Schuler and Lawrie (2002) Erosion Protection Works, Guidelines for Tauranga Harbour. Environment Bay of Plenty Guideline Number 2002/02
- Isthmus Group (2000) Assessment of Effect of Tauranga Harbour Coastal Protection Works on Landscape, Amenity Values and Public Access. Report prepared for Environment Bay of Plenty.
- Opus International Consultants (2001) “Soft options” for erosion protection in low energy environments, a literature review. Report prepared for Environment Bay of Plenty.
- Parliamentary Commissioner for the Environment (2004) Missing Links. Connecting Science With Environmental Policy.
- Tonkin & Taylor (2001) Harbour Margin Erosion Protection Works Guideline. Report prepared for Western Bay of Plenty District Council, Tauranga District Council and Environment Bay of Plenty.

## Chapter 9: Summary and actions

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This report reviews the issues of concern in Tauranga Harbour and evaluates them against the available science and the statutory/planning framework in place.

The science suggests that at a harbour scale there has been no significant environmental degradation of the aspects monitored over the 15 years that the programme has been in place. In fact there is some suggestion of overall environmental improvement. This does not mean that there are not localised effects or concern around the harbour however and there are several important values that the NERMN is not adequately monitoring or has only recently commenced monitoring. In particular wetland (saltmarsh) extent and condition, and sedimentation monitoring.

There has been significant environmental degradation over the last 500 years of development of the Western Bay of Plenty sub region and there is scope for rehabilitation through both council and community initiatives.

There are a number of statutes that have effect in Tauranga Harbour that have different purposes and will lead inevitably to inconsistency and integration issues. The relevant organisations need to recognise these issues and work to manage potential problems.

The Resource Management planning framework is extensive and detailed to the point that it is difficult to understand the entire framework. Each planning document has its own review and monitoring processes and there are opportunities for the Councils to improve the provisions as more information is gathered on their effectiveness. Since the preparation of the plans there has been case law that has changed the way the plans are interpreted and legislative changes. Ongoing and coordinated reviews of policy effectiveness are essential as well as timely policy responses to environmental changes.

One area that is of concern is that of cumulative environmental effects. The RMA framework relies on an effects based approach with general rights to have activities considered on a case-by-case basis. Recent case law on the relevance of precedent effect and having enough knowledge to understand when cumulative effects reach an unacceptable threshold make management difficult. These issues are not confined to Tauranga Harbour.

While the two district councils and Environment Bay of Plenty have been extensively involved in the preparation of this report, there has been limited input from the Department of Conservation and the Ministry of Fisheries. The extent to which management of the harbour can be truly integrated depends on the extent to which other organisations are willing or able to participate.

### 9.1 Main concerns

Sedimentation – the science on sedimentation appears to be fragmented and management is on a case-by-case basis using a best practicable option approach.

Given predicted population growth and the possibility of a doubling of the population in the next 50 years, it would seem prudent that a whole of catchment approach is taken to better understand the issue and the likely effects of growth.

Recreation – expected population growth will bring an increase in the number of recreational users of Tauranga Harbour. During the preparation of this report it has been apparent that the pressures that currently exist for the harbour will only increase. Coupled with increasing navigation and safety responsibilities, it is appropriate that a recreation strategy be prepared taking account of the current and future demand for space and services.

Community relationships – There has been some criticism of the relationship that the Councils have with community groups through the process of preparing this report. A number of recommendations are made, particularly in relation to ensuring the community have access to technical expertise and information at an appropriate level of detail. A community desire has been identified to formalise and assist Harbour Care groups.

## 9.2 Funding of actions

Environment Bay of Plenty has provided for actions from this review with a budget of \$71,000 for the 2005-2006 financial year. It is recommended that the majority of that be allocated to the proposed recreation strategy and the sedimentation review.

A number of actions are able to be undertaken as part of normal council processes of plan or procedure review and will therefore be able to be undertaken within existing budgets.

## 9.3 Review

It is proposed that a review be carried out in two years time to assess and report on the implementation actions agreed.

### 9.4 Recommended action table

Action	Who	Who Else	Cost
<p><b>3.4 Water Quality</b></p> <p>Ongoing State of Environment monitoring and reporting.</p> <p><i>Urban Stormwater</i></p> <ul style="list-style-type: none"> <li>Further scientific investigation of effects of stormwater on sediment near and around stormwater outfalls. Repeat surveys every 5 years.</li> <li>Implementation of Stormwater Strategy.</li> <li>More extensive event monitoring.</li> </ul> <p><i>Non Point Source Discharges</i></p> <ul style="list-style-type: none"> <li>Assessment of agricultural input/additions to harbour (particularly indicator bacteria).</li> <li>Further industry based monitoring – PAHs, metals, chemicals.</li> <li>Ongoing and increased support for estuary and streamcare and community groups to restore and revegetate catchment stream margins.</li> <li>NERMN report on stream water quality incorporating the last 6 years of data.</li> </ul> <p><i>Birds</i></p> <p>Investigate water quality effects of black swans and Canadian geese in conjunction with monitoring their effects on flora and fauna.</p>	<p>Environment Bay of Plenty (EBOP)</p> <p>EBOP</p> <p>EBOP, Tauranga City Council (TCC), Western Bay of Plenty District Council (WBOPDC)</p> <p>EBOP</p> <p>EBOP</p> <p>Consent holders.</p> <p>EBOP, WBOPDC, TCC, DOC,</p>		<p>Existing process required by S35 RMA.</p> <p>Part of existing programme.</p> <p>Existing processes.</p> <p>Process matter.</p> <p>In process</p> <p>Programmed NERMN work</p>
<p><b>4.4 Flora and Fauna</b></p> <p>Ongoing State of Environment monitoring and reporting.</p> <p>Monitoring of policy implementation of relevant planning documents.</p>			<p>Existing processes required by S35 RMA.</p> <p>Process required by RMA S35.</p>

Action	Who	Who Else	Cost
Contribute to implementation of Government's Marine Protected Areas Policy, likely 2007.	Department of Conservation (DOC)	EBOP, TCC, WBOPDC and other stakeholders.	Not budgeted, requirements unclear until policy formalised by DOC/Ministry of Fisheries (Mfish).
<i>Mangroves</i> Submit on New Zealand Coastal Policy Statement	EBOP, TCC, WBOPDC		Existing process.
Reconsider Regional Coastal Environment Plan mangrove management rules and policies, after the draft revised NZCPS			Budgeted and approved.
Environment Bay of Plenty Operations Group as part of estuary care to formally assist and support any groups to prepare appropriate management plans and seek required approvals	EBOP		Identified in draft 10 Year Plan
Continue scientific monitoring of mangroves and assist with monitoring effects of management.	EBOP		Existing process.
Investigate feasibility, costs and effects of mangrove management, including mechanical removal.	EBOP		Part of Estuary Care and Coastal Plan processes.
<i>Sea Lettuce</i>	EBOP	TCC, WBOPDC	Existing processes.
<ul style="list-style-type: none"> <li>Educate that sea lettuce results from natural occurrences.</li> <li>Sea lettuce alert notification list – include Port of Tauranga, iwi groups, harbourmaster, councils and residents.</li> <li>Agreement about sea lettuce response.</li> <li>Consider assisting willing care groups to undertake cleanup operations.</li> </ul>	EBOP		Small cost.
<i>Wetlands</i> Review implementation of actions recommended by Hunt (2002). Incorporate wetland extent and condition monitoring into NERMIN.	EBOP, TCC, WBOPDC, DOC		Small cost.
Ensure consistency between the Regional Coastal Environment Plan and relevant district plans across the coastal marine area boundary. Providing in district plans for sea level rise and harbour margin features moving inland.	EBOP, TCC, WBOPDC	DOC	Uncertain.
	EBOP		Small cost.
	EBOP		Identified in draft sustainable coastal section for 10 Year Plan.
	EBOP, TCC, WBOPDC		Existing processes.
	TCC, WBOPDC		Territorial Authority (TA)

Action	Who	Who Else	Cost
Sea grass ( <i>Zostera</i> ) Further investigation – effects of swans on sea grass and invertebrates, Continue monitoring changes in extent Monitor effects of sedimentation on sea grass.	EBOP EBOP EBOP EBOP	Fish and Game  Care Groups	
<i>Pest Species</i> Ongoing participation in Biosecurity New Zealand initiatives and liaise with other regions.	EBOP	Structures owners	Existing process.
Further monitoring of pest species, such as Asian Date Mussel <i>Undaria</i> (both identified in the Bay of Plenty) and Sea Squirt. Promote a better understanding and integration of biosecurity issues across the Councils' functions. District councils may also need to be involved due to their role as facility providers. Education and involvement of marine stakeholders	EBOP EBOP EBOP, BNZ, NIWA	BNZ, TAs  Stakeholders eg marinas, port, structure owners, harbour users etc BNZ and local stakeholders	Existing process. Existing process. Existing budget and process Uncertain.
Establish a management plan for marine biosecurity in the Bay of Plenty region including a protocol for response to marine incursions with the region. Review of the Pest Management Strategy in the 2006-2007 financial year with the likely inclusion of marine species.	EBOP EBOP	BNZ, Stakeholders	Existing process.
<i>Birds</i> Update bird information in Coastal Plan.	DOC, EBOP		DOC, existing budget EBOP.
<b>5.4 Sedimentation</b> Sedimentation review.  Consider means of reversing effects e.g. dredging navigation channels, mangrove clearance etc.  Submission to the proposed Regional Policy Statement change for urban limits to ensure that there is ability to consider the outcomes of the review proposed above.	EBOP EBOP EBOP	WBOPDC, TCC	\$30,000 available 2005-2006 financial year. Significant, long term coastal occupation charges. Existing process.
<b>6.4 Landscapes/Natural Character</b> Update Regional Coastal Environment Plan in accordance with Boffa Miskell report.	EBOP		Already budgeted in Coastal Plan area.

Action	Who	Who Else	Cost
Provide for natural character zoning approach in 10 year coastal plan review in conjunction with district plan reviews.	EBOP, TCC, WBOPDC		Review is mandatory, identified in EBOP draft 10 Year Plan Sustainable Coastal.
Consider using tendering to allocate space in Tauranga Harbour CMA.	EBOP		Not currently budgeted, tendering can fund.
Review Tauranga Harbour Landward Edge protection year in the Western Bay of Plenty District Plan.	WBOPDC		TA
Establish landscape/natural character monitoring and indicators in conjunction with district councils	EBOP	WBOPDC, TCC	Partly funded and in development.
Review relevant regional plans and district plans to ensure consistency with Regional Policy Statement Change No.1 (Heritage Criteria).	EBOP, TAS		RMA requirement.
<b>7.4 Recreation/Access</b>			
Amend Coastal Plan to identify Tauranga Harbour as a recreational harbour.	EBOP		Approved changes or await review.
Recreation Strategy.	EBOP	WBOPDC, TCC, Port of Tauranga	\$30,000 available 2005-2006 financial year.
Reorganise moorings.	EBOP		
Harbour and Port Safety Plan.	EBOP	Port of Tauranga	Currently budgeted in Navigation and Safety.
Access Strategy.	EBOP	All coastal TAs	Not currently budgeted but identified in draft sustainable coastal activity for 10 Year Plan.
<b>8.4 Institutional Matters</b>			
Improve language in plans/policy statement.	EBOP, TAS		As part of plan change/reviews.
Update Tauranga Moana Booklet	EBOP, TA's		Small cost
Relationships and communications review, particularly with science.	EBOP	WBOPDC, TCC, DOC	Not currently budgeted.
Formalise Care Groups and improve support.	EBOP, TCC, WBOPDC	Landcare Trust	Uncertain, identified in draft sustainable coastal activity for 10 Year Plan.
Review Cross Boundary Chapter of RCEP.	EBOP	All coastal TAs	As part of plan change/reviews.
Review Regional Coastal Environmental Plan and Water and Land Plan for consistency once Water and Land Plan is operative.	EBOP		Budgeted and approved.

Action	Who	Who Else	Cost
Review plans for consistency across coastal marine area boundary.	EBOP, TCC, WBOPDC		As part of plan change/reviews.
Western Bay of Plenty District Council reconsider transfer of powers to Environment Bay of Plenty for structures in the estuary that straddle the coastal marine area boundary.	WBOPDC		TA
Implement guidelines for erosion protection structures developed by all three councils for erosion protection to assist with consistency in design matters.	WBOPDC, TCC, EBOP		Process matter.
District Councils to consider district plan provisions to "catch" activities that occur in the coastal marine area but have effects on land	WBOPDC, TCC		TA
TAs to consult Environment Bay of Plenty when planning activities adjacent to the water and Environment Bay of Plenty needs to consult TAs when considering activities in the coastal marine area. Need to ensure whole of organisation is consulted, not just individual sections.	EBOP, TCC, WBOPDC		Process matter.
Promote the coastal environment part of the Regional Coastal Environment Plan. Target consent processing procedures, manuals, consent brochures, desktop GIS systems.	EBOP	TCC, WBOPDC	Budgeted as part of two existing projects.
Investigate better integration of enforcement activities between Department of Conservation, Environment Bay of Plenty and Ministry of Fisheries.	EBOP	DOC, MFish	Process matter.
Tauranga City Council to consult Environment Bay of Plenty over waterfront development.	TCC	EBOP	Existing process.
Two yearly forums for organisations/interest groups to meet and discuss issues and receive presentations.	EBOP, TAs		Small cost.
Prepare an interagency website containing information on Tauranga Harbour with links to monitoring data, relevant reports.	EBOP, TAs		Small cost.
Collaboratively with the district councils, implement method 11.2.5(b) of the RCEP to undertake research on the issue of harbour shore erosion.	EBOP, TA's		



## Appendices

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### **Appendix I      Monitoring carried out by Environment Bay of Plenty in Tauranga Harbour**



## Appendix I – Monitoring carried out by Environment Bay of Plenty in Tauranga Harbour

### Water quality – coastal rivers and streams

The river and stream sites below are monitored on a monthly, two-monthly or rotational basis.

Site #	Water course	Site name	NZMS260 grid reference
110032	Waimapu Stream	SH 29 bridge	2787200 6380000
710008	Kopurererua Stream	SH 29 (rec. house)	2784200 6380600
110035	Ngamuwahine Stream	Old Ngamuwahine bridge	2775600 6371700
110033	Wairoa River	Ruahihi bridge (SH 29)	2778900 6375600
110036	Omanawa River	SH 29 bridge	2780800 6377800
110034	Wairoa River	SH 2 bridge	2783100 6384600
110038	Tuapiro Stream	SH 2 bridge	2769100 6407800
110037	Waipapa River	SH 2 bridge	2775200 6389400
710022	Te Mania Stream	SH 2 bridge	2767300 6397800
110031	Waitao Stream	Welcome Bay bridge	2794800 6382000

The following parameters are measured at most of these sites;

- Temperature
- Clarity (black disc)
- Colour Coefficient
- Conductivity
- Suspended solids
- Turbidity
- pH
- Biochemical Oxygen Demand (BOD<sub>5</sub>)
- Dissolved oxygen
- Dissolved reactive phosphorus
- Total phosphorus
- Ammonium nitrogen
- Nitrate/nitrite nitrogen
- Total nitrogen
- Flow
- Escherichia coli
- Enterococci
- Faecal coliforms

## Water quality - Tauranga Harbour

There are 18 sites in Tauranga Harbour at which water quality parameters have been monitored at some time. Currently there are ten sites monitored every two months at high tide and three at low tide. Measured parameters include;

- Dissolved oxygen
- Temperature
- Salinity/conductivity
- Turbidity
- Suspended solids
- PH
- Chlorophyll-a
- nitrate-nitrogen
- ammonium-nitrogen
- dissolved reactive phosphorus
- total phosphorus
- bacteria – Faecal coliform, E.coli and enterococci

Site No.	Site Description	NZMS 260 Map Ref	Current
BOP720004	Kulim Ave. Otumoetai	U14:8880-8870	Y
BOP720001	Grace Street	U14:8950-8390	Y
BOP150011	Maungatapu Bridge	U14:9140-8340	Y
BOP730024	Boat Ramp	U14:9080-8770	Y
BOP150021	Toll Bridge Marina	U14:9050-8750	Y
BOP150016	Tauranga Yacht and Boat Club	U14:8970-8880	N
BOP150012	Otumoetai, Beach Rd.	U14:8732-8854	Y
BOP150013	Te Puna Beach, Pitua Rd.	U14:8230-8920	Y
BOP710105	Matakana	U13:7400-0700	N
BOP150014	Omokoroa, Wharf.	U14:7980-9210	Y
BOP150026	Pahoia Beach Rd	U14:7515-9236	Y
BOP710107	Mid Harbour	U14:7500-0000	N
BOP150009	Katikati Boat Ramp	T14:7150-0180	N
BOP150023	Kauri Point Jetty	U13:7328-0509	Y
BOP720025	Ongare Point.	U13:7290-0680	Y
BOP150027	Tanners Point Jetty	U13:7087-0930	Y
BOP150022	Bowentown Boat Ramp	U13:7320-1186	Y
BOP150015	Bowentown, Entrance to Pio's	U13:7330-1050	N

## Bathing beach water quality sites in Tauranga Harbour

There are 16 sites in or near Tauranga Harbour at which monitoring (indicator bacteria) is conducted to assess suitability for contact recreation against Ministry of Health guidelines.

Site name	Location	Site #	NZMS260 Grid ref	
Papamoa Beach Surf Club	Papamoa	160026	2802600	6383000
Omanu Beach	Mount	900096	2793800	6388700
Mt Maunganui Ocean Beach Surf Club	Mount	160025	2790700	6391800
Pilot Bay Mid Beach	Pilot Bay	160024	2791000	6390000
Rangataua Bay adjacent to Marae	Maungatapu	160049	2791200	6386200
Waimapu Estuary Motel-Motor Camp	Waimapu	160019	2789150	6382550
Outmoetai Beach reserve end of Beach	Otumoetai	160021	2787450	6388480

Fergusson Park, Tilby Point Reserve (Boat Ramp)	Tilby Pt	160020	2785900	6388900
Omokoroa Beach	Omokoroa	160022	2779800	6392200
Waitui Reserve	Te Puna	800087	2779200	6389000
Pahoia End of Beach	Pahoia	160023	2774600	6392400
Ongare Point Harbour View Road	Ongare Pt	160032	2772800	6406800
Tanners Point Beach	Tanners Pt	160031	2770800	6409100
Anzac Bay Bowentown Domain	Anzac Bay	160028	2774230	6410700
Athenree Opposite Motor Camp	Athenree	160030	2772800	6412900
Waihi Beach Surf Club	Waihi Beach	160027	2770400	6418600

### Shellfish quality sites in Tauranga Harbour

All the sites below in Tauranga Harbour have been tested at some time in the past for bacterial contamination and those sites indicated have also been tested for metals and organics.

Location	Site #	shellfish	Metals/organics
Bowentown	900092	mussel	
Pio's Beach	900048	cockle	
Pio's Beach Yellow Point	900020	pipi	
Central sand bar	900050	cockle	
Tuapiro Estuary	900022	mussel	
Tanners Point	900091	pipi	
Katikati	900071	mactra	
Wainui Estuary-A	900001	mactra	
Wainui Estuary-C	900003	mactra	
Omokoroa Domain	900018	pipi	
Omokoroa	900074	pipi	
Te Puna Estuary	900035	oyster	
Matakana Pt channel	900044	scallop	
Wairoa River	900046	pipi	
Tilby Point	900032	pipi	
Bay Street	900067	cockle	
Otumoetai	900030	cockle	
Waikareao Estuary	900025	pipi	
Rangiwaea Island	900031	scallop	
Hunters Creek	900029	cockle	
Matapihi	900036	cockle	
Matapihi	900095	oyster	
Port	900045	mussel	

### Sediment contamination

The table below contains a list of sites in Tauranga Harbour for which various contaminants were tested in 2003 as indicated. Those sites with an \* indicate where ongoing monitoring is likely to take place in the future.

Location	Site #	Metals tot	Metals 2M HCL	Pesticides	TPH	PAH	PCB
Wairoa Estuary	154	✓					
	266	✓					
	268*	✓	✓	✓	✓	✓	
Waipu Bay	47*	✓			✓		
	49	✓	✓	✓	✓	✓	✓
Waikareao Estuary	246	✓	✓	✓	✓	✓	✓

	248*	✓			✓	✓	✓
	253*	✓			✓	✓	✓
Rangataua Bay	5	✓	✓		✓		
	26	✓	✓	✓	✓	✓	✓
Welcome Bay	20*	✓			✓		
	23*	✓	✓	✓	✓	✓	
	36	✓			✓		
Waimapu Estuary	172*	✓	✓		✓	✓	✓
	164	✓	✓	✓	✓	✓	
	176*	✓			✓	✓	✓
Te Puna Estuary	335*	✓	✓	✓	✓	✓	
Mangawhai Estuary	196	✓		✓	✓	✓	
Waipapa Estuary	295	✓		✓	✓		
Apata Estuary	308	✓	✓	✓	✓	✓	
Wainui Estuary	202	✓	✓	✓	✓		
	198	✓					
Aongatete Estuary	313	✓	✓	✓	✓	✓	
Matahui Estuary	281	✓		✓	✓		
Rereatukahia Estuary	380*	✓	✓	✓	✓	✓	✓
	272	✓			✓		
	269*	✓	✓		✓	✓	
Katikati Estuary	372*	✓			✓		
	368	✓	✓	✓	✓	✓	
Tuapiro Estuary	214*	✓		✓	✓	✓	
Waiiau Estuary	379*	✓	✓	✓	✓		
Blue Gum Bay	348	✓	✓	✓	✓	✓	

## Ecological monitoring in Tauranga Harbour

### ***Benthic Macrofauna monitoring sites***

The following sites have quantitative core sampling of the macrofauna species present on and in the lower intertidal sandflats once a year.

Site location	Site #
Pio's Beach	720032
Tuapiro Est Tanners Pt. boat ramp	720067
Matakana Is. north	720069
Katikati Estuary entrance	720024
Blue Gum Bay south	720038
Blue Gum Bay north	720035
Hunters Creek	720016
Duck Bay	720017
Te Puna Estuary	720020
Otumoetai north, Tilby Point	720008
Otumoetai south, Kulim Ave	720003
Waikareao Estuary	980031
Grace Road	720001
Waimapu Estuary	720002
Welcome Bay	720013

### **Sea lettuce (*Ulva*) monitoring sites**

The following sites are monitored every second month to track the abundance of sea lettuce. In addition to measuring the abundance of sea lettuce, tissue samples are collected and analysed for the total amount of carbon, nitrogen and phosphorus present in the plants.

<b>Site location</b>	<b>Site #</b>
Ongare Point	720025
Otumoetai - Kulim Ave	720004
Grace Road	720001

### **Wetland plants**

The extent of sea grass beds and mangrove plants will be mapped at regular intervals (about 10 years or less) to track changes in distribution and total extent in Tauranga Harbour.

### **Sedimentation monitoring sites**

The following locations in Tauranga Harbour have at least one survey cross-section over the intertidal flats along which sedimentation rates will be measured every five years.

- Waiau Estuary
- North of Tanners Pt.
- Tuapiro Estuary
- Katikati Estuary
- Rereatukahia Estuary
- Matahui Estuary
- Aongatete Estuary
- Wainui Estuary
- Waipapa Estuary
- Hunters Creek
- Mangawhai Estuary
- Te Puna Estuary
- Wairoa Estuary
- Waikareao Estuary
- Waimapu Estuary
- Welcome Bay
- Rangataua Bay

### **Sea level monitoring**

Tide gauge and barometric pressure at Omokoroa.

Hairini tide gauge (for Tauranga City Council).

Oruamatua tide gauge (for Tauranga City Council).

### **Meteorological monitoring**

Otumoetai.

### **Sea surface temperature**

Pilot Bay.

## Rainfall monitoring

Rain gauge	Site number	NZMG	
		Easting	Northing
Ashby	766201	2793760	6386420
Cooke	767201	2797100	6384500
Marshall	755903	2769200	6405000
Phoenix Heights	766205	2793500	6385600
Tauranga City	766101	2789200	6387200
Suckling	754906	2770900	6409400
Stannett	766002	2779281	6389204
Tuapiro	755811	2766138	6405900
Waipapa	757901	2773791	6382629

## Onsite effluent monitoring sites

Site	Description	Source	MapRef
BOP800063	Memorial Park	Tauranga Stormwater	U14:8940-8440
BOP800071	Anchorage Grove. Maungatapu	Tauranga Stormwater	U14:8980-8230
BOP800089	Athenree, Pohutukawa Drive	Tauranga Stormwater	U13:7250-1330
BOP800090	Grace Rd.	Tauranga Stormwater	U14:8940-8380
BOP800190	Grace Road South	Tauranga Stormwater	U14:8941-8380
BOP800054	Boat ramp drain	Tanners Point	U13:7080-0930
BOP800209	Drain by Toilets	Tanners Point	U13:7073-0907
BOP800209	Moana Drain	Tanners Point	U13:7170-0935
BOP800216	Drain #2	Tanners Point	U13:7075-0940
BOP800087	Waitui Reserve	Te Puna	U14:7920-8900
BOP800088	Lindoch Ave.	Te Puna	U14:8060-8820
BOP800195	Drain #4	Te Puna	U14:7923-8887
BOP800196	Drain #1	Te Puna	U14:7921-8897
BOP800197	Drain #2	Te Puna	U14:7922-8894
BOP800198	Drain #3	Te Puna	U14:7922-8891
BOP800199	Drain #5	Te Puna	U14:7793-8907
BOP800200	Fairlie Grove Drain	Te Puna	U14:7944-8909
BOP800201	Drain #6	Te Puna	U14:7931-8907
BOP800202	Drain #7	Te Puna	U14:7924-8885
BOP800203	Drain #9	Te Puna	U14:7919-8900
BOP800204	Drain #8	Te Puna	U14:7939-8910
BOP800205	Seepage #1	Te Puna	U14:7954-8909
BOP800206	Drain #10	Te Puna	U14:7988-8883
BOP800207	Darin # 11	Te Puna	U14:7923-8886
BOP800208	Drain # 12	Te Puna	U14:7994-8882
BOP800210	Spring Drain	Te Puna	U14:7928-8888
BOP800211	Drain #13	Te Puna	U14:7929-8908
BOP800212	Seepage #2	Te Puna	U14:7947-8910
BOP800213	Drain #14	Te Puna	U14:7941-8910
BOP800073	Golf Links	Omokoroa Seepage	U14:7730-9140
BOP800074	Domain	Omokoroa Seepage	U14:7960-9230
BOP800075	Bowling Club - West	Omokoroa Seepage	U14:7860-9190
BOP800076	Between Bowling & Golf Clubs	Omokoroa Seepage	U14:7830-9150
BOP800077	Beach Grove	Omokoroa Seepage	U14:7900-9160
BOP800078	Sand bank west of Beach Grove	Omokoroa Seepage	U14:7880-9120
BOP800079	West end of Esplanade	Omokoroa Seepage	U14:7930-9190

BOP800055	Beach Grove	Omokoroa Stormwater	U14:7900-9160
BOP800056	#1 The Esplanade	Omokoroa Stormwater	U14:7910-9180
BOP800057	#5 The Esplanade	Omokoroa Stormwater	U14:7940-9200
BOP800058	Ruamoana Place	Omokoroa Stormwater	U14:7930-9270
BOP800059	Bowling Club (Yellow Pipe)	Omokoroa Stormwater	U14:7870-9210
BOP800060	Bowling Club	Omokoroa Stormwater	U14:7870-9200
BOP800061	The Domain	Omokoroa Stormwater	U14:7960-9230
BOP800062	No.2 The Esplanade	Omokoroa Stormwater	U14:7920-9190
BOP800072	Spring north of toilets.	Ongare Point	U13:7270-0690
BOP800221	Potu Rd. Stormwater Drain	Ongare Point	U13:7285-0664
BOP800222	Harbourview Rd Stormwater Drain	Ongare Point	U13:7278-0675
BOP900080	Boat Ramp End	Ongare Point	U13:7280-0700
BOP800053	Beach front, Harbour View Road	Ongare Point Drain	U13:7270-0680