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Whangamata Harbour and Catchment Management Plans: Summary Document

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Executive summary

The Whangamata communities desire to protect and enhance the social, cultural, environmental and economic values of their community initiated the requirement for the development of both The Whangamata Harbour Plan and Catchment Management Plan.

This document has been prepared as a summary of these two plans so as to provide a snapshot of the catchment as a whole to ensure a holistic approach to the planning and management of the natural environment. These plans will allow future generations to be able to live, work and play in the Whangamata catchment.

Key aspects of the plan are identified below. Further in-depth information can be sourced from the original documents (see appendices at the back of the document).

Significant features of the Whangamata catchment include:

- landscape and recreational values
- cultural and historical sites
- flora and fauna – including threatened and rare bird species
- coastal habitat – both existing and potential.

Key issues that are both current and potential for the Whangamata catchment are:

- the perceived and actual impact of forestry activities
- potential for urban development
- declining aquatic and terrestrial habiatats and asscoiated species
- evidence of a general decline in water quality
- changes in harbour vegetation – encroachment of mangroves into sea grass habitat and the expansion of salt water paspalum
- impact of animal and plant pests.

Recommended actions and implementation methods for the Whangamata catchment are:

- retirement of riparian margins wetlands, forest fragment and harbour fringe
- plant and animal pest control
- river management and maintenance
- walkways around the Whangamata harbour and opportunities for recreational access to the wider catchment
- reduction of contaminents entering stormwater systems
- vegetation management in the harbour.

The success of this plan relies on the up-take and goodwill of the landowners, residents and interest groups within the Whangamata catchment. Contributions are needed from the Department of Conservation, TCDC, Environment Waikato, Hauraki Iwi, stakeholders and the Whangamata community to ensure the plans overall success. A number of projects and initiatives are well underway within the catchment already.

1 Introduction

The Whangamata catchment sits on the lower east coast of the Coromandel Peninsula. The catchment supports a range of activities including multiple land use, pastoral and forestry activities and hosts a small sea-side community.

The catchment's diversity and the value many people place on this area create a situation where there are a number of pressures and conflicts of interest. This high level of interest is often a result of passion for the preservation of the catchment as a whole and as such volunteer groups are numerous.

The key to success in this catchment is balancing the varying views and uses of the catchment and harbour whilst allowing for active participation by the community to ensure the preservation of the natural and physical environment.

1.1 Purpose

The purpose of this document is to provide a summary of the Whangamata Harbour Plan and the Whangamata Catchment Management Plan. It also provides reference to the Whangamata Mangrove Management Plan and the Wentworth River Flood Hazard Assessment.

The plans that this document refers to are non statutory and provide a strategic and operational implementation framework whilst informing statutory documents such as district and regional plans.

It is recognised that the success of this plan will rely on the uptake and goodwill of landowners, land managers and the wider community within the catchment with support from key agencies.

1.1.1 Outcomes sought

Key outcomes of the plan will be:

- reduced sediment and nutrient input into waterways
- improved water quality and biodiversity
- improved flood management
- identification of appropriate measures for works and restoration
- integration of existing works and initiatives
- links between groups and organisations in the catchment
- recreational values of the harbour and catchment protected
- diversity of habitats maintained
- estuarine vegetation management/preservation areas identified.

2 Background

Over the past three years Environment Waikato has been developing harbour and catchment management plans in two catchments; Whangamata and Wharekawa. It is proposed that this form of planning in conjunction with the Coromandel Peninsula Blueprint project continue within the wider Coromandel communities.

The Whangamata Harbour and Catchment Management Plan will be implemented predominantly through Environment Waikato's Peninsula Project with support from Thames-Coromandel District Council (TCDC), the Department of Conservation (DoC), landowners, local Iwi and care groups.

2.1 The Peninsula Project

The Coromandel Peninsula is known for its beautiful environment. However, river bank erosion, debris blocking rivers and streams, the effect of animal pests on forest health and storms have caused widespread problems for communities.

The Peninsula Project aims to improve these issues. It is a collaborative project established in 2004 between Environment Waikato, Thames Coromandel District Council, the Department of Conservation and Hauraki Māori Trust Board. Over 20 years, the project will have far-reaching benefits for both the environment and the people who live and holiday on the peninsula. It will:

- better protect people, property and essential services from flooding
- reduce sedimentation in rivers, harbours and estuaries
- improve water quality
- reduce pests such as possums and feral goats
- improve the diversity of flora and fauna
- improve and stabilise catchments
- sustain the mauri of the peninsula from the mountain ranges to the sea.

2.2 An integrated approach

Catchment management has become a catch phrase in recent years with agencies and communities keen to get involved and to be thinking about catchments from the mountains to the sea.

Catchment management is seen as a holistic approach to natural resource management. It seeks to integrate the relevant uses of a catchment (eg. farming, forestry, conservation) in order to maximise their long term sustainability.

The aim of catchment management plans is to link environmental issues and functions as well as engage with the communities that live and work within catchments. Catchment management works with the support of four key principles in mind. These are the consideration and support of economic, social, environmental and cultural outcomes.

A catchment approach is the preferred way to work for the Peninsula Project programme as such it is proposed that 12 management plans be developed in conjunction with communities on the Coromandel peninsula.

Community based management initiatives are encouraged as people who live, work or have a strong connection to an area have a greater sense of ownership.

Integrated management requires that provision be made for the types of activities and values listed below:

- recreational opportunities such as walkways
- the protection of heritage and landscape values for amenity and biodiversity purposes.
- communities to actively participate in works programmes
- an increased awareness and understanding of the natural environment
- the protection of cultural heritage resources and sites
- the impact of stormwater contaminants entering waterways to be minimised.
- ensuring the appropriate disposal of waste which is generated within the Whangamata catchment.
- recognition of the relationship iwi have with the natural environment

- kaitiakitanga (guardianship) practiced by all.

The Whangamata community have actively participated in works in and around the harbour and catchment for a number of years. Whangamata is home to one of the oldest river care groups in the Waikato region; the Wentworth River care group.

2.3 The Coromandel Peninsula Blueprint Project

The Coromandel Peninsula Blueprint Project brings together representatives from Thames Coromandel District Council, Department of Conservation, Hauraki Whaanui and Environment Waikato to undertake long-term growth management and integrated planning. As a result of the Blueprint project Whangamata has been identified as one of three “main urban hubs” or centres for growth.

The next phase is to take the overarching Coromandel Peninsula Blueprint and implement it at a local level. Local area blueprints will be developed for seven management areas across the Thames Coromandel district boundary in partnership with communities, stakeholders and the lead agencies.

The Coromandel Peninsula Blueprint Project will direct and inform statutory documents and turn the planning into actions.

2.4 Community process

Environment Waikato has been working with the Whangamata community in various forms for around 10 years. Over the last three years Environment Waikato has been working with this community to develop a management plan for the harbour and its catchment. In 2007, this process produced three key documents for public consideration:

- Draft Whangamata Harbour Plan 2007
- Draft Whangamata Catchment Plan 2007
- Whangamata Mangrove Management Options report.

In October and November of 2007 these documents were used to consult with the community and identify the level of community support for these proposals prior to the harbour and catchment management plans being finalised and adopted by Environment Waikato’s council.

A number of issues were not resolved through the initial process and as a result a stakeholder forum was established to work through the remaining issues. The forum includes representatives from:

- Whangamata Ratepayers Association
- Whangamata Community Board
- Whangamata Harbour Care
- Whangamata Marina Society
- Hauraki Māori Trust Board
- Te Ruunanga A Iwi O Ngāti Tamaterā
- Te Ruunanga O Ngāti Puu Inc
- Te Kupenga O Ngāti Hako
- Ngāti Whanaunga Inc
- Rayonier Forests Ltd
- Royal Forest and Bird Society
- Department of Conservation
- Thames-Coromandel District Council

- Environment Waikato.

On the whole agreement has been reached by the forum on the harbour and catchment plans with the exception of the extent to which mangroves will be managed. The Waikato Regional Council intends to apply for a resource consent for limited, staged removal of mangroves for the Whangamata harbour. This will be based on an independent assessment of social, cultural, environmental and economic issues.

3 Legislative and planning framework

A number of legislative frameworks exist that guide and direct Environment Waikato in its various roles and functions. Additional statutes also govern and direct other agencies who have an interest in this catchment.

The key acts or plans that drive agencies in their work are the:
- Soil Conservation and Rivers Control Act (1941)
- Resource Management Act (1991)
- Waikato Regional Policy Statement
- Waikato Regional Plan
- Regional Coastal Plan
- Wild Animal Control Act
- Conservation Act
- Reserves Act
- Conservation Management Strategy for the Waikato
- Protected Natural Areas Programme
- Whaia te Mahere Taiao a Hauraki – Hauraki Iwi Environmental Plan
- Thames Coromandel District Council Community Plan.

Information on these documents and the components that relate to this plan can be found in the draft Whangamata Catchment Management Plan section 3, and the draft Whangamata Harbour Plan appendix II.

4 Catchment description

4.1 Location

The Whangamata catchment is located on the east coast of the Coromandel Peninsula in the southern part of the Coromandel zone (see Figure 1). The catchment contains 81 kilometres of streams with the main contributor to Whangamata's harbour being the Wentworth River.

For the purpose of this harbour and catchment management plan, the area of concern is some 5,376 hectares of land.


Overview
Firth of Thames
Thames
Coromandel Peninsula
Great Mercury Island
Mercury Islands
Cuvier Island
Whangamata
Thames
Coromandel
Whitianga
Whangapoua
Colville
Port Charles
Cooks Beach
Hahei
Tairua
Pauanui
Papakura
Pokeno
Tuakau
Meremere
Mangatawhiri
Bombay
Drury
Waiuku
Pukekohe
Waerenga
Te Kauwhata
Huntly
Ngaruawahia
Raglan
Port Waikato
Kaiaua
Miranda
Kawakawa Bay
Beachlands
Maraetai
Pakiri Island
Whangaparaoa Peninsula
Whangaparaoa
Matakana
Warkworth
Snells Beach
Algies Bay
Omaha Bay
Leigh
Goat Island
Kawau Island
Sandspit
Matakana Island
Tawharanui Peninsula
Omaha
Te Arai
Pakiri
Mangawhai
Waipu
Ruakaka
Whangarei
Whangarei Heads
Tutukaka
Poor Knights Islands
Bream Bay
Bream Head
Bream Tail
Marsden Point
Ngunguru
Tutukaka Coast
Matapouri
Whananaki
Whangaruru
Russell
Opua
Paihia
Waitangi
Kerikeri
Kaeo
Whangaroa
Doubtless Bay
Mangonui
Taipa
Cape Karikari
Karikari Peninsula
Rangaunu Harbour
Houhora Harbour
Pukenui
Houhora
Tom Bowling Bay
Whatuwhiwhi
Kaitaia
Awanui
Ahipara
Kaeo
Whangaroa
Kaimaumau
Pukepoto
Lake Ohia
Lake Waihola
Lake Waiparera
Lake Owhareiti
Lake Kanono
Lake Kohuora
Lake Waiporohita
Lake Waiparera
Lake Waiporohita
Lake Kohuora
Lake Kanono
Lake Owhareiti
Lake Waihola

4.2 Physical characteristics of the catchment

4.2.1 Geological features

The Whangamata catchment is part of the Hauraki volcanic area with some influence from eruptions on Mayor Island. In geological terms this area is relatively young (Miocene area <25 million years) compared to the rest of the Waikato region. Some pockets of Jurassic (130 million year old) greywacke[1] exist throughout the peninsula.

Both Coromandel andesites[2] and Whitianga rhyolites[3] make up the parent material of the Whangamata catchment. Most of the andesites have been altered due to hydrothermal activity, but fresh andesite can be found, and is quarried just north of Whangamata on McBeth's Road.

The Whangamata catchment was included in the 1975 Land Inventory Survey as part of the Coromandel Thames Counties area. The classification of soils was carried out by the then Department of Lands and Survey. This information is still relevant throughout New Zealand and is still the most complete record of soils and land use capabilities.

4.2.2 Land use and land cover

There is land suitable for production farming (and not prone to erosion) in the Whangamata catchment but the use of most of these areas is limited by poor soil fertility. This is reflected by the majority of land in the catchment with farming potential being used for production forests.

Like so many of the catchments on the east coast of the Coromandel Peninsula, land surrounding the headwaters of the Whangamata catchment is managed as production forests. Between harvesting events the forest provides for water and soil conservation as well as regulating run-off during flood events in the lower catchment. This benefit is diminished after harvesting for a term of approximately seven years, until a new crop is established.

Production forestry is the single largest land use or land cover in the Whangamata catchment with approximately 40 per cent of the total land area in pine plantation. The forestry industry contributes economically to the Whangamata community however it is also recognised that this type of activity impacts on the catchment largely through sedimentation of waterways and downstream harbours/estuaries.

Unlike its neighbouring catchments (Otahu and Wharekawa) the Whangamata catchment has little floodplain. This makes the already poor soil fertility worse and limits farming potential. Only 10 per cent of the catchment area is still managed for pastoral farming and there are no dairy farms. Agriculture is largely drystock or lifestyle blocks with less than one per cent in horticulture.

Impacts from historical tree felling, gold mining and land clearance are still being felt in the middle and upper catchment areas with poor forest canopy structure and unstable hill sides. Land use data shows that more than 40 per cent of the catchment area is under plantation forest. A further 36 per cent is covered by indigenous forest or scrub (refer to Figures 2 and 3). These areas have relatively high erosion potential. Most of the land is steep or mountain country with unstable landforms. The Department of Conservation manages 31 per cent of the catchment area.

[1] Greywacke: Coarse usually dark gray sandstone or fine-grained rock containing firmly cemented fragments (as of quartz or feldspar)
[2] Andesite: Fine grained brown or greyish volcanic rock.
[3] Rhyolite domes: Granite-like land forms created through a build up of fine grained volcanic rock.

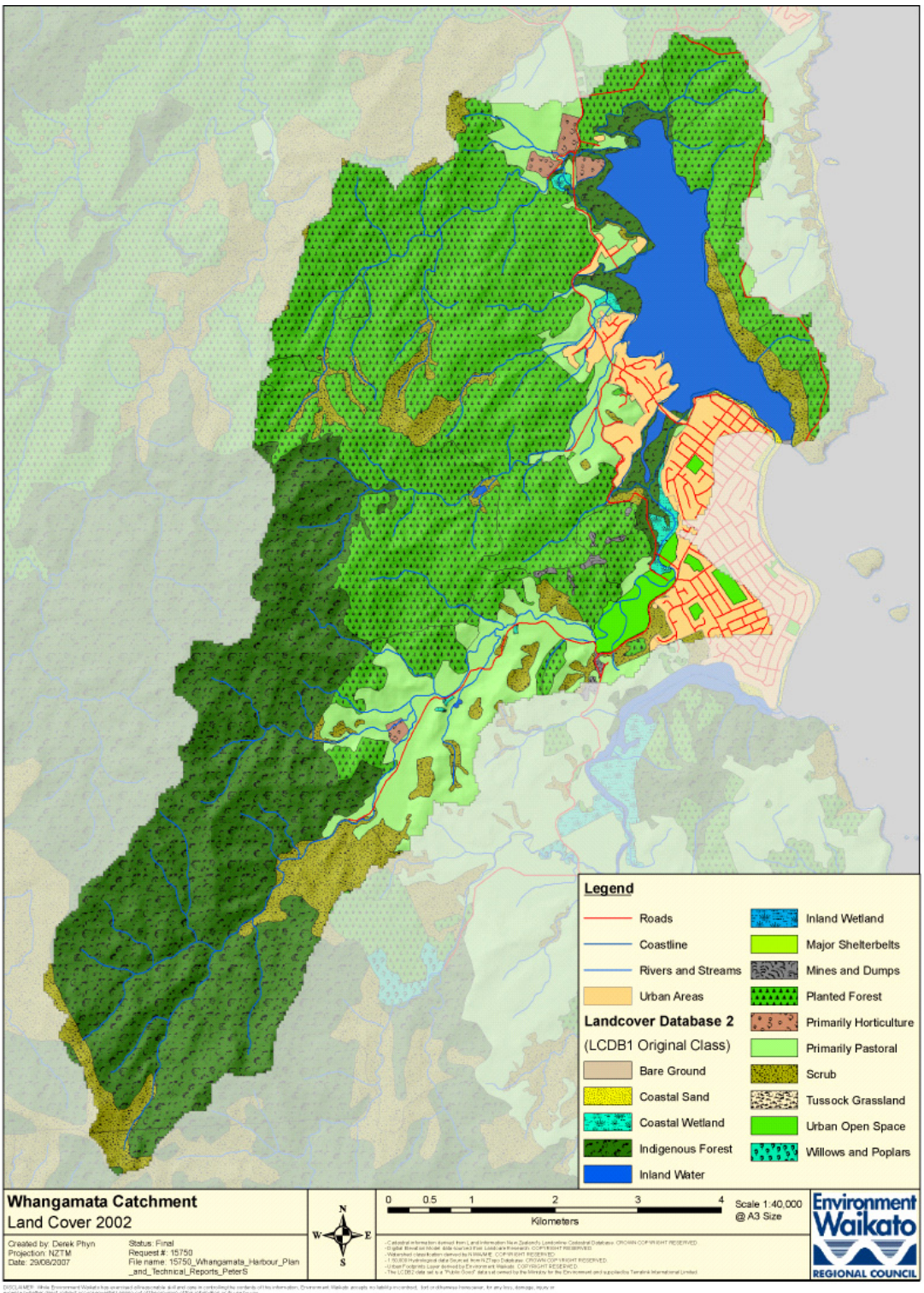
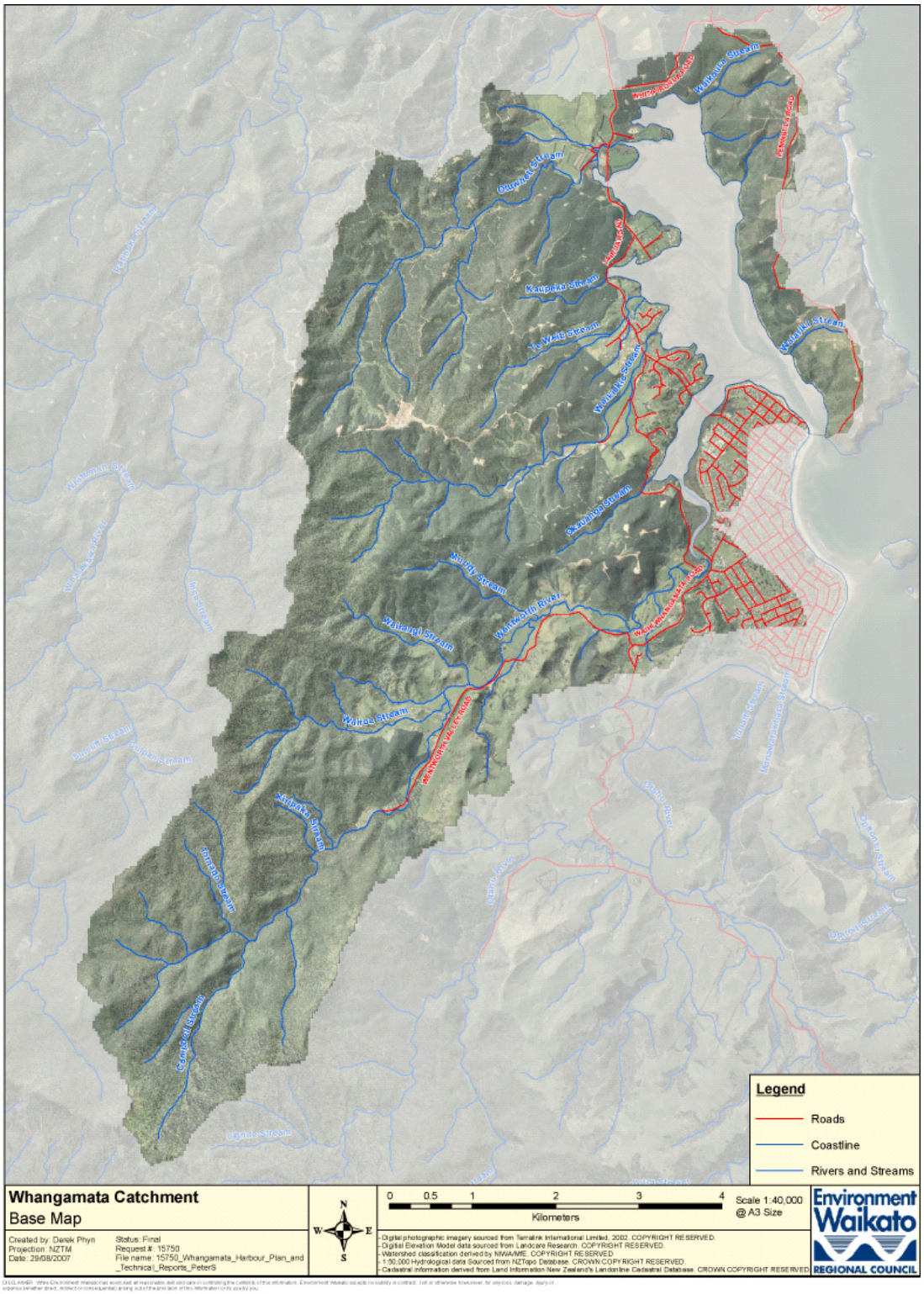


Figure 2 Land use in Whangamata catchment


Legend
Roads
Coastline
Rivers and Streams
Whangamata Catchment
Base Map
Created by: Derek Phyn
Projection: NZTM
Date: 29/08/2007
Status: Final
Request #: 15750
File name: 15750_Whangamata_Harbour_Plan_and_Technical_Reports_PeterS
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Environment Waikato
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- Digital photographic imagery sourced from Terralink International Limited, 2002. COPYRIGHT RESERVED.
- Digital Elevation Model data sourced from Landcare Research. COPYRIGHT RESERVED.
- Watershed classification derived by NIWA/ME. COPYRIGHT RESERVED.
- 1:50,000 Hydrological data Sourced from NZTopo Database. CROWN COPYRIGHT RESERVED.
- Cadastral information derived from Land Information New Zealand's Landonline Cadastral Database. CROWN COPYRIGHT RESERVED.
Kaupeka Stream
Te Waiti Stream
Waiaruri Stream
Waitekauri River
Waitaia Stream
Kopuku Stream
Kopuku Stream
Waikawau Bay Road
Waikawau Bay Road
Waikawau Bay Road

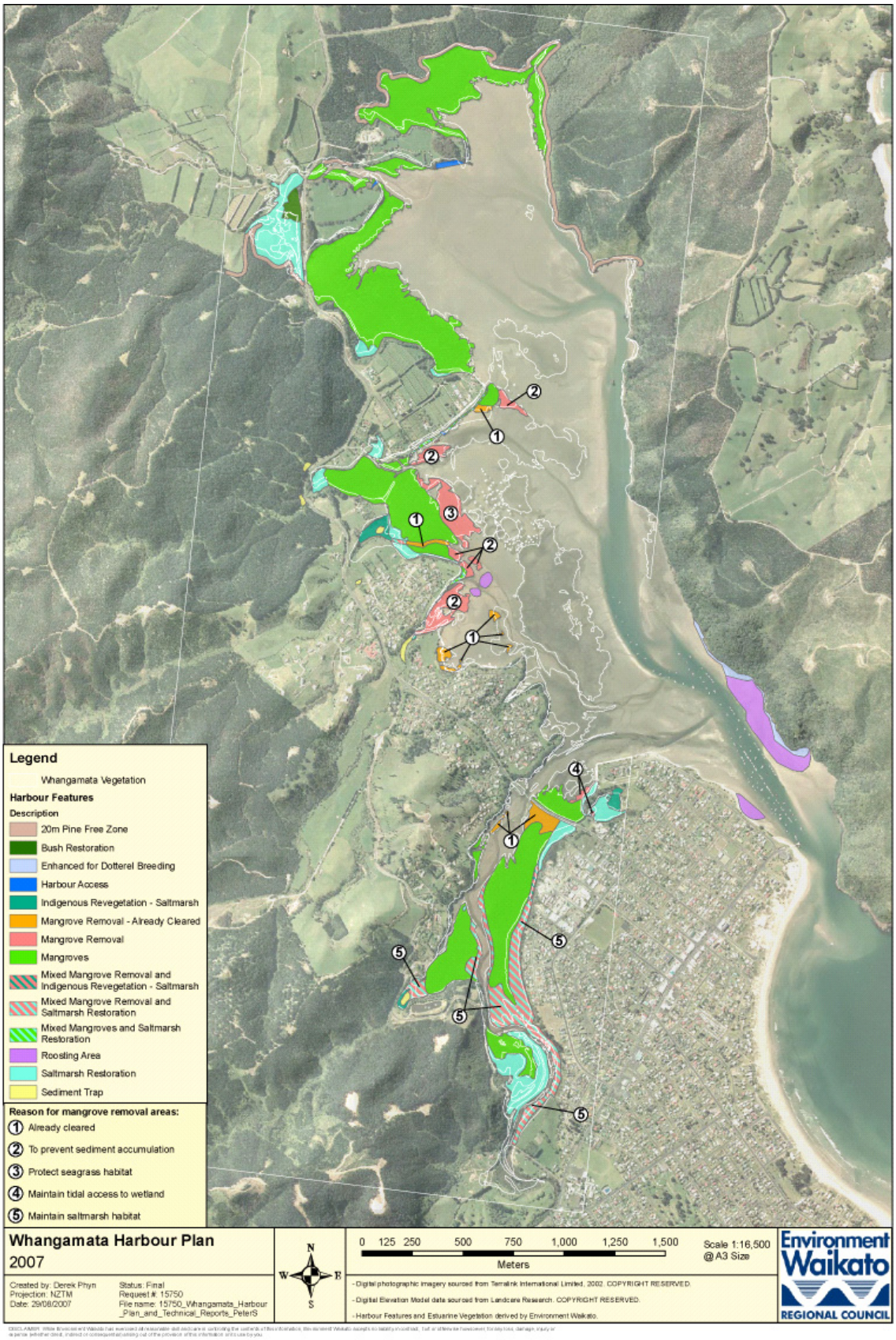

Figure 4 Whangamata harbour vegetation map

Note: Map shows the 'eight hectares' of initially selected mangrove removal sites identified by Environment Waikato in 2007.

4.3 Ecology

New Zealand has been divided into 268 different ecological districts based on geological, topographical, climatic and biological features that together define a characteristic landscape. Similar districts combine to form an “Ecological region”.

The Coromandel ecological region is divided into eight ecological districts. For ease these have been reduced to four districts, largely based on topography. The Whangamata catchment sits in the Tairua ecological district. Recognising and working within the parameters of an ecological region is important especially in relation to plant species.

Under Environment Waikato’s key ecological site (KES) survey, no land areas of significant ecological value were identified in the catchment. The closest KES is the Otahu Estuary. This estuary and the Whangamata harbour are identified in the Waikato Regional Coastal Plan as areas of significant conservation value.

From a biodiversity protection viewpoint, the upper Whangamata catchment is not a priority for animal pest control work on Department of Conservation-administered land when compared to high value sites like Moehau in the northern Coromandel. However, as a result, animal pests have led to a decline in forest health and a collapse of the forest canopy in areas in the southern part of the catchment.

While most of the biodiversity value in the catchment is around the saltmarsh and wetland areas, a post breeding season dotterel flock site is located in the harbour and is home to an estimated 30 to 40 birds. Populations of the threatened Fern bird and the Moko skink can also be found in the lower reach of the Wentworth river system.

4.4 Water quality

In surveys carried out by Environment Waikato water quality continues to remain the number one issue for Waikato residents. This is no different for residents of the Whangamata catchment.

Though generally water is safe to swim in and drink from, the occasions where standards are breached have become more frequent. This is consistent with other streams and waterways in the Coromandel.

Issues that threaten the water quality in the Whangamata harbour and catchment are:

- Bacteria and nutrient inputs from:
  - runoff from land and agricultural activities
  - cattle accessing waterways
  - stream banks and hillside erosion.
- Accidental spills of oil or contaminants entering storm water drains or flowing directly into waterways.
- The high amounts of sediment entering waterways.

The upgrade of the Whangamata waste water treatment plant should alleviate past issues associated with bacteria and faecal matter entering water ways. Ongoing monitoring is required during peak use times to ensure compliance.

Currently there is no regional river monitoring carried in the Whangamata catchment. However, Environment Waikato has completed several studies to examine nitrogen and other contaminant sources.

The results show that water quality is high over large areas of the harbour during fine weather. However, in estuarine areas near the mouths of inflowing streams

concentrations of contaminants brought into the harbour by the streams can be high. In wet weather, contaminant loads in streams can be high. Most of the contaminants come from runoff from the catchment as a whole, but leakage from the wastewater spray irrigation area in the Waikiekie subcatchment has been a major source of the nitrogen entering the harbour.

Forestry and pastoral activities contribute to sediment build up in streams and in the harbour leading to water quality issues. Studies have shown commercial forestry activity is a suitable land use in steep classes of land the 7 year post harvest period is where there can be a higher risk of erosion leading to increased sediment run-off.

The community has an opportunity to take steps now while there is still a water resource to protect and while solutions are relatively cost effective.

4.5 Harbour and estuary

Coromandel harbours and estuaries were formed when sea-level rises inundated the land, which stabilised at about its current level 6,500 years ago. The original formation was very different to what we see today, as they have since filled with sediment.

Estuaries have a life; they are born, they age and then they die. Examples of the last stage in the aging process are seen at Hot Water beach or at Waikawau estuary where the upper reaches of the estuaries are farmland and the lower reaches so choked with marine sands that the sea only enters at high tide.

4.6 Social

4.6.1 Residential

Like so many communities on the Coromandel peninsula, Whangamata is home to a fairly small permanent population. This population increases from 4,000 to 50,000 over the Christmas period, putting pressure on infrastructure[4] and local resources. Support for community initiatives can vary greatly because of the often different perspectives.

Whangamata is identified as one of the seven main serviced settlements and as such is an area where future growth should be concentrated. The 2006 Census[5] results show that Whangamata dropped 10.3 per cent of its usually resident population to go from 3855 to 3567. When you lay the population figures over the housing statistics it becomes apparent that the non-resident population is increasing. This is supported by the numbers of unoccupied dwellings on census night. In 2001 55 per cent of dwellings were unoccupied and in 2006 this increased to 60 per cent unoccupied.

Dwelling numbers increased from 4026 (2001) to 4182 (2006). In 2016 it is projected that there will be 5017 dwellings and 4846 usual residents. By 2026 it is projected that there will be 5664 dwellings and 5709 usual residents. These growth projections are being re-done as a result of the 2006 census data and the new projections should be available.

4.6.2 Tangata whenua

There are four iwi with direct interests in the Whangamata catchment. They are Ngāti Pū, Ngāti Whanaunga, Ngāti Hako and Ngāti Tamaterā. A statement of significance was prepared by representatives of Hauraki iwi for the draft Whangamata Harbour Plan which identifies the Whangamata harbour as being of cultural, spiritual and historical significance to Hauraki iwi.

[4] Examples of infrastructure include roads, powerlines, sewage systems, water services and other organisational structures and services.
[5] Source: Statistics New Zealand website: http://www.stats.govt.nz/census/2006-census-data/default.htm.

Listed below are Hauraki iwi's goals for the Hauraki environment.

- To ensure that we sustain and enhance the mauri of the environment as kaitiaki.
- That protecting our past including cultural heritage sites, waahi tapu, places, landscapes and associated knowledge is a priority for Hauraki kaitiaki.
- To maintain and enhance our kaitiaki roles with the environment.
- To make informed decisions about the Whangamata harbour, its surrounding environment and heritage.
- To ensure that central and local government, industry and local communities are upholding their Treaty of Waitangi obligations and that these are reflected in the decisions that are made.
- To ensure that communities understand and value Hauraki iwi involvement in environmental management and heritage protection.[6]

The philosophy of Hauraki iwi is to allow the present generation to use and develop the resources in a sustainable manner and to ensure that the resource is left in a better condition when it is handed to the next generation. What becomes important for Hauraki iwi is the balancing of Māori and community needs so that needs are not driven solely by economic development.

The following are key concepts when considering the environment for Hauraki iwi and will be integrated where possible into any future processes:

- rangatiratanga – to exercise the right to make decisions over management development, use and protection over taonga
- kaitiakitanga – to fulfil our ancestral obligations as kaitiaki (guardians/caretakers)
- wairuatanga – to spiritually respect taonga in recognition of the spiritual connection that exists between us and the natural world
- manaakitanga – to exercise our rights and responsibilities in a way that is beneficial to taonga
- whanaungatanga – to exercise our rights and responsibilities to taonga that acknowledges the whakapapa to each other and the natural world
- kotahitanga – to all work together and strive towards collective goals whilst recognising the autonomy and needs of each participant.[7]

A heritage map of the harbour and part of the catchment was compiled by the Hauraki Māori Trust Board in 2005. This identified sites of significance to Māori. Areas used for recreation, kaimoana, ancient pa sites and archaeological sites were identified along with locations suitable for habitat restoration. Locations of environmental concern were also identified.

5 Catchment and harbour assessment

An inspection of the physical characteristics of the Whangamata catchment was carried out by Environment Waikato staff in April 2007. A detailed account of the condition of the catchment and potential works required can be found in the draft Whangamata Catchment Management Plan[8]

The Whangamata catchment is made up of three main sub-catchments and one minor tributary. For the purpose of the inspection the main catchments of focus were:

[6] *Hauraki Iwi Environmental Plan*, produced by Hauraki Màori Trust Board, March 2004, p. 12
[7] *Hauraki Iwi Environmental Plan*, produced by Hauraki Màori Trust Board, March 2004, p. 12
[8] Draft Whangamata Catchment Plan, Environment Waikato Internal Series 2007/13

- Wentworth River
- Waikiekie Stream
- Te Weiti Stream
- Otuwhete Stream (minor tributary).

Due to time constraints, the field and desktop assessments focused mainly on the stream channel and surrounding land. While there may be benefits from a wider catchment assessment, it is considered these are less significant and that the greatest gains will be made by focusing on streams and surrounding land. These gains can be made in a relatively short timeframe by actively involving land owners in soil conservation and farm plans. Consideration of land use in the wider context of the catchment will require further investigation and consultation with land owners.

Information in relation to the harbour was gathered through a number of desk top exercises, research and communication with the Whangamata community.

5.1 Values

A number of biodiversity and cultural values were identified through discussions with groups and individuals as part of the Draft Whangamata Harbour Plan 2007. The key values identified are listed below:

- estuarine habitat
- kaimoana (seafood) gathering grounds in the harbour
- cultural and historical sites
- recreational use and amenity value of the harbour and catchment
- native bush in the headwaters and Department of Conservation lands
- rare animals including the Moko skink, the Fern bird and the New Zealand Dotterel.

5.2 Key issues

The key issues in the Whangamata catchment are listed below:

- stream bank erosion
- sedimentation of stream channels and the estuary
- degraded water quality
- some harmful impacts on biodiversity values
- animal pests such as possums are impacting on native plants and animals, and their impact on vegetation is resulting in erosion and soil run-off in some areas of the catchment (particularly in the forested areas of the upper catchment)
- a need for raised awareness of environmental issues and opportunities for education and participation in the enhancement of the harbour and catchment.

5.3 Wentworth River

The Wentworth River catchment has the largest concentrated area of pastoral land within its boundary and the river contributes the largest amount of water to the Whangamata harbour. Approximately 50 per cent of the catchment is administered by the Department of Conservation, and a further 25 per cent is under production forest (mainly the northern slope of the catchment). The main stem of the Wentworth river channel flows for more than 10 kilometres.

A key outcome for this river is fencing the main channel to stock class standard. Considerable effort has been made by the Wentworth rivercare group (supported by Environment Waikato and other agencies) over the last 10 years to support land owners in the catchment to fence and plant the river banks. This has resulted in

approximately 70 per cent of the main Wentworth channel being fenced to stock standard.

Where land owners have taken up works good riparian vegetation exists and is protecting the banks. This was demonstrated in 2006 when an isolated 'weather bomb' struck the catchment. Areas fenced and planted received minimal to no damage, where as areas that were unfenced or had little or no vegetation were badly eroded. The benefits of this work to the river and wider community will only be fully recognised when the whole of the river is fully fenced.

The environmental effects on the Wentworth River are clearly visible to the community at the lower reach of the Wentworth River. This has generated community debate regarding the accumulation of sedimentation at Hetherington road causeway and the presence of mangroves in the Moanaanuanu estuary.

5.3.1 Issues from the lower reach of the Wentworth River (from the causeway upstream to old quarry)

Background information

The old quarry referred to is located right next to Wentworth Valley Road approximately 2.25 kilometres in from State Highway 25. This reach is generally well fenced and planting of native species has been carried out by the Wentworth rivercare group. Proposed works in this section generally relates to flood hazards and associated effects on surrounding land. Benefits to water quality can be had through the restoration of the wetland environment in this stretch of the catchment.

Issues

- High possum numbers in the upper Wentworth catchment impacting in forest health and structure.
- Pampas growth on stream margins.
- Appropriate riparian vegetation is present, however in-fill planting needs to occur.
- Isolated blockages within the stream need to be removed.
- Silting up of the stream is reducing channel capacity.
- Flooding between the causeway and the golf course (refer below for more information) has and continues to cause significant issues.
- The design of the Hetherington Road causeway has resulted in a dam effect at the mouth of the Wentworth river.
- There is increased sedimentation of the estuary.
- Unauthorised development of a stopbank including infilling has occurred next to the upstream side of bypass road bridge.

Flooding

As part of the development of the catchment management plan a technical investigation was carried out on flooding of the lower Wentworth River (refer Environment Waikato Technical Report 2007/16 'Wentworth River Flood Hazard Assessment'[9]).

Modelling was undertaken assessing three scenarios – the existing channel and estuary, the future situation with mangroves retained and the future situation with mangroves removed. The results indicate that there could be flood hazard potential in built up areas northwest of Martyn Road for both future scenarios, although the extent of this is greater if the mangroves are retained.

Given that there is little historical information about the channel dimensions of the Wentworth River and Moanaanuanu estuary it is recommended that five yearly channel

[9] Environment Waikato Technical Report 2007/16 'Wentworth River Flood Hazard Assessment'

surveys be undertaken. Once sufficient site specific information is available, over say 10 years, it will be possible to reassess flood hazards and develop appropriate flood mitigation options. This timeframe will also allow for other catchment management initiatives to be implemented.

5.3.2 Issues from the mid section of the Wentworth River (old quarry to approximately 1.5 kilometres upstream)

- River is virtually unfenced along this reach.
- Stream banks are eroding badly with no vegetation cover and full stock access to the bank and stream bed.
- Hill slope erosion and poorly formed access tracks.

5.3.3 Issues from the upper reach of the Wentworth River (to the ford)

This reach of the river is generally well vegetated, however the key issues are:

- there are some exotic species present such as wattle
- sections of the main Wentworth river channel remain unfenced
- forest health is poor due to high numbers of possums and goats that are effected forest structure
- potential issues with production forestry. For example, wood unsuitable for sale is left on harvested land and then mobilised during flood events causing debris dams; sediment run-off during harvesting
- methods on production forest land specific to the site to decrease impact of debris dams; increased silt traps during harvesting.

5.3.4 Issues for the tributaries around the Wentworth River

- Majority of Wentworth tributaries are unfenced and poorly managed.
- Potential issues with production forestry. For example, wood unsuitable for sale is left on harvested land and then mobilised during flood events causing debris dams; sediment run-off during harvesting.
- Hill slope erosion.

5.4 Waikiekie Stream

Close to two thirds of the Waikiekie subcatchment is under production forest management. Of the 5.8 kilometres of the main stream channel, only 1.4 kilometres runs through farmland. The bulk of the catchment is owned or managed by forestry companies with only one other significant land owner.

Environment Waikato undertook some minor river works in the form of vegetation clearance in the lower reach of this catchment in 2006 and is supporting land owners in the middle reach with fencing and planting of the stream. The land in the lower reach is owned by Thames-Coromandel District Council and Land Information New Zealand.

5.4.1 Issues from the lower reach of Waikiekie Stream (below state highway bridge)

- Floodplain blocked and storage capacity limited due to weeds.
- Council boardwalk trapping debris.
- Floodplain is slowly rising due to silt deposition after each flood causing flooding to properties next to it.
- Deepening the stream bed to act as a sediment trap where practicable and effective.

5.4.2 Issues from the middle reach of the Waikiekie Stream (above state highway to tributary confluence)

- Isolated blockages in the stream channel.
- Parts of the reach are unfenced and planting is needed in unfenced and fenced areas in increase vegetation cover and bank stability.
- Watt's Road wetland area is currently over-run with willow.
- Some minor weed issues.

5.4.3 Issues from the mid reach of the Waikiekie Stream to forestry boundary

- Weeds (mainly pampas).
- Existing fences are degraded and stock have access to the stream in places.
- Eroding stream banks in places.
- Forest health is poor due to possums and goats.
- Potential issues with production forestry. For example, wood unsuitable for sale is left on harvested land and then mobilised during flood events causing debris dams; sediment run-off during harvesting.

5.5 Te Weiti Stream

As with the Waikiekie subcatchment, the upper reaches of the Te Weiti Stream is largely covered by plantation forest with some native riparian vegetation. Of the 2.8 kilometres of main channel only one kilometre runs through pasture land or residential reserve. In 2006 work began to increase the channel capacity in the lower reach below the state highway bridge and where the stream enters the harbour, and to stabilise the stream banks by excluding grazing animals and planting appropriate species.

5.5.1 Issues from the lower reach of Te Weiti Stream (below the state highway)

- Sedimentation of the stream and bed build-up which contributes to flooding of properties (mainly paddocks, lawns with some risk to houses).
- Poor fencing which allows stock access to the stream and bank erosion.

5.5.2 Issues from the upper reach of Te Weiti Stream (above the state highway)

- Possum browse on poplar poles risking poplar survival rate and erosion reduction potential.
- Weed species are present such as pampas and pussy willow causing stream channel blockage.
- Potential issues with production forestry. For example, wood unsuitable for sale is left on harvested land and then mobilised during flood events causing debris dams; sediment run-off during harvesting.

It should be noted that there is only one private landowner in this reach before it enters production forest lands.

5.5.3 Tributary of Te Weiti Stream

This tributary requires fencing of its upper end and maintenance of existing silt traps.

5.6 Otuwhete Stream/Julian Drive

The majority of the land draining into this area is in horticulture (citrus fruit) and small lifestyle blocks. Investigation into fertiliser use and nutrient budgets would be worthwhile to assess if nutrient run-off is an issue here.

5.6.1 Issues for the Otuwhete Stream

- Excessive gravel deposition in the stream channel causing bank erosion and loss of channel capacity during high flows.
- Cattle access to the waterway causing bank erosion and sediment contribution to the stream.
- Poor stream shading which allows increases in stream temperature reducing biodiversity potential.

5.7 Harbour issues

The issues outlined in the Whangamata Harbour Management Plan were derived from; community concerns, scientific studies and monitoring surveys.

This section is a summary of the issues identified throughout the harbour plan. They have been grouped to provide an overall picture of key issues. Full references are contained in the draft Whangamata Harbour Plan (2007).

5.7.1 Issues for water quality within the Whangamata Harbour

- Nutrients and bacteria: wastewater treatment plant could not cope with population surges over peak season.
- Nitrate concentrations down stream of treatment plant irrigation field higher than up stream.
- High amounts of bacteria in water and shellfish.
- Contaminants in storm water.
- Accidental spill of oil or contaminants.
- Sediment and runoff from agricultural activities.
- Faecal matter from both domestic (cows and sheep) and pest animals.

Note That the majority of nitrogen seems to come from the Waikiekie Stream catchment and that the Wentworth River contributed most of the turbidity and at time much of the loads of the other contaminants as well.

5.7.2 Issues for coastal habitat within the Whangamata Harbour

- Mangrove expansion displacing other habitats and open space for wading birds.
- Unauthorised clearance of mangroves.
- Loss of wetlands by drainage and reclamation of harbour edge.
- Harvesting pressures on shellfish.
- Invasive weeds and pests:
    - Sea squirt
    - Salt water paspalum
    - Undaria pinnatifida.
- Decline in ecological corridors. These areas are becoming more fragmented.
- Decline in eel and whitebait numbers.
- Threat to habitats and wildlife from animal pests such as argentine ants rats, stoats and possums.
- Expansion of the mangrove population.

5.7.3 Issues from sedimentation within the Whangamata Harbour

The majority of sediment issues relate to catchment and land use practices and as such are addressed or identified as part of catchment plan. These have not been included in this summary, only those specific to the harbour.

- Sediment accumulating around the causeway.
- Mangroves retaining sediment.
- Contaminants in estuarine mud.
- Silt and smothering effects affecting fish spawning, shellfish, pāua and kina.
- Flooding caused by mangroves blocking stream mouths and drainage to the harbour.

5.7.4 Issues for recreation, boating, access and views within the Whangamata Harbour

- Accidental spill of oil or contaminants.
- Antifouling paints affecting sea life.
- Dredging affecting the harbour.
- Mangroves blocking navigation access up to Mums Corner Store.
- Public access to harbour.
- Marina pro's and con's.
- Views need to be protected.
- Native vegetation needs to be extended to cover the western face of the peninsula (Te Puia Point).

5.8 Vegetation management in the coastal marine area

Achievement of the outcomes in the Whangamata harbour and catchment management plans will require the management of vegetation in the coastal marine area. Specifically saltwater paspalum (*Paspalum vaginatum*) and mangroves.

As with many harbour communities on the Coromandel peninsula mangrove expansion is an area of concern. These concerns have been documented in the Whangamata Community Plan[10].

It is important to note that while mangroves are a concern to parts of this community it is generally accepted that they are the end result of a larger issue; erosion and sediment entering the tidal prism of the harbour.

5.8.1 Saltwater paspalum

Saltwater paspalum is identified as a *potential pest plant* under the Waikato Regional Pest Management Strategy. Currently active management is proposed at Wharekawa where the regions first resource consent application for its control is being processed. Total control is proposed at Kawhia and Aotea harbours as density is currently low.

Saltwater paspalum is a threat to:

- Biodiversity values.
- Coastal habitats including feeding grounds for wading birds.
- Stream and flood plain hydrology.

[10] Whangamata Community Plan

Saltwater paspalum is a threat to the Whangamata harbour and action is needed to control this highly invasive plant.

5.8.2 Mangroves

Mangrove management in the Whangamata harbour ties in with key outcomes identified in the preparation of both the harbour and catchment plans. Key outcomes include that:

- the main body of the Whangamata harbour is available for open water usage and recreation
- unique botanical, aquatic and wildlife habitats area protected and enhanced
- the harbour is clean and ecologically healthy
- the community has a greater understanding of coastal and catchment processes.

Striking the right balance when considering the total area for mangrove removal and ongoing management is important. Sites for removal will be considered on:

- environmental purposes and benefit (protecting habitats)
- hydraulic impact (impact on flooding and storage capacity of the river systems)
- recreational and amenity values (boating, aesthetic values, access to the marine environment).

Under the Local Government Act (LGA) Environment Waikato functions cover two of the three areas of consideration. Environment Waikato would need to seek an amendment to its functions to undertake works for the purpose of amenity.

6 Works methods and benefits

This section provides an overview of each works component, the expected benefits and a summary of anticipated outcomes associated with the various works and services. For more detail on what the work involves and the outcomes refer to the Whangamata Catchment Management Plan and the Whangamata Harbour Plan. For proposed actions and implementation strategy refer to appendix.

6.1 Land management

Land management in this instance means enhancement work not associated with streams or wetlands such as plant and animal pest control erosion control planting and forest fragment restoration. This work is essential in ensuring the big picture approach is taken and that the focus does not fall solely on stream works.

6.1.1 Benefits to this approach

Land management works have the potential to have the greatest overall benefit to biodiversity by reducing plant and animal pest numbers and allowing native species to successfully reproduce.

The focus on land cover and pest reduction would see improved forest structure with the ability to provide greater stability during rain events and consequently less erosion, downstream sedimentation and harbour infilling. There will also be secondary benefits for biodiversity, water quality and community wellbeing.

6.2 Riparian enhancement

For the purpose of this document riparian enhancement includes stream and wetland fencing, planting (both native and exotic species) and weed control.

6.2.1 Benefits to this approach

- Decreased water temperature through shading.
- Creation of fish spawning habitat by retiring stream margins and planting.
- Decreased stream bank erosion by removing stock pressure and by planting appropriate plant species.
- Fencing allows for;
  - increased water quality, by reducing the direct (cows defecating in the stream) and indirect (run off) inputs of faecal matter and nutrients
  - reduced stream bank erosion and surface erosion
  - stream bed health and stability improved – stock crossing/walking in the stream bed impacts on the structure within the channel and decreases aquatic invertebrate habitat.
- Increased biodiversity by planting eco-sourced natives and creating new habitat
- Community awareness raised through active participation.
- Opportunities created for access to riparian and stream areas for the purpose of education and recreational activities such as swimming, bathing and fishing.
- Habitats and ecosystems link to enhance landscape and biodiversity's values.
- The impact of stormwater contaminants entering waterways to be minimised.

6.3 River and flood management

River and flood management aims to ensure minimal damage during high rainfall events both to our stream, rivers and harbours as well as peoples place and property. Typical works and services include erosion protection, blockage removal and gravel management.

6.3.1 Benefits to this approach

- Increased channel capacity resulting in adequate flow path during heavy rainfall events.
- Property and infrastructure protected.
- Reduced risk of stream bank erosion.
- Improved water quality.
- Community awareness raised through active participation.

6.4 Harbour and estuary activities

The issues identified in relation to the harbour and estuarine systems are generally remedied though works that relate to land management practices. The greatest benefactor of works carried out on land and water ways is the harbour system.

However, some activities such as coastal vegetation management, coastal habitat enhancement (coastal wetlands, shellfish bed protection, salt marsh habitat, targeted pest control for wading bid protection) and coastal recreation values relate solely to this section.

6.4.1 Benefits to this approach

- Coastal habitats such as wetland, salt marsh and dune systems are enhanced and maintained for biodiversity and landscape value.
- Significant coastal areas protected to maintain biodiversity and landscape values.
- Shellfish and fisheries breeding grounds maintained, managed and easily accessed.
- Access to the costal marine area is maintained but does not effect environmental and cultural values.
- Whangamata harbour is available for open water usage and recreation.
- The protection of significant cultural heritage resources and sites.

- The impact of stormwater contaminants entering waterways to be minimised.
- Ensuring the appropriate disposal of waste which is generated within the Whangamata catchment.

7 Implementation

On the basis that the community and Environment Waikato consider that addressing the sedimentation issues in the Whangamata catchment is a priority, it is proposed that the implementation of works be undertaken within a short to medium term time frame (10 years).

A works programme will be confirmed annually in conjunction with affected landowners and reported through the Coromandel liaison subcommittee. It should be noted that the implementation of works will be dependent upon land owner participation and funding.

Additional information can be found in documents:

- Whangamata mangrove management options report
- Draft Whangamata Catchment Management Plan
- Whangamata Harbour Plan: looking forward to a healthier harbour.

Appendix 1 Whangamata catchment and harbour plan blended objectives, outcomes and actions

Whangamata catchment and harbour plan blended objectives, outcomes and actions			Funding key	
			No funding currentlu allocated	X
			Possible funding allocated	?
			Fully funded	√
Objective	**Outcome**	**Action**	No funding required	
Recreation, access and amenity	Main body of Whangamata Harbour is available for open water usage and recreation. The Whangamata catchment provides for recreation such as bush walks.			
1.0 Maintenance and enhancement of public access to and along lakes, rivers, wetlands and their margins, and the CMA	**1.0.1** Public access to and around the harbour, along waterway margins up into the catchment is improved.	Identify locations where existing navigation access is blocked in the harbour.	EW	X
		Existing navigation access points that are blocked are remediated and open water is maintained.	EW	X
		Mangrove seedlings are removed as per consent requirements, including monitoring, between 1st January - 31st July each year to maintain open space/access	Whangamata Harbour Care Inc	
		Identify opportunities to improve linkages and access to and around the harbour and up into the catchment as part of draft TCDC Walking & Cycling strategy.	TCDC	X
		Investigate opportunities for additional access points to the harbour for un-powered water-based recreation, including any associated land-based infrastructure requirements.	TCDC	X
1.1 To ensure the amenity values associated with open space, recreation, coastal and ecological areas are not further degraded. (P)	**1.1.1** The amenity values associated with open space, landscapes, views and recreation areas are protected.	Mangrove seedlings are removed as per consent requirements, including monitoring, between 1st January - 31st July each year to maintain open space/access	Whangamata Harbour Care Inc	
		Habitat restoration plans will be developed for these sites; Papamarie Island, Moanaanuanu lower reach of Wentworth and Otuwhete stream will include provision for public amenity	Tangata Whenua DOC (Restoration Plan) EW (Funding of wk)	?
		Identify further sites in the catchment which could be restored in co-operation with landowners with a particular focus on coastal wetlands, saltmarsh and seagrass.	EW	?
Natural hazards				
2.1 To reduce and avoid the effects and minimise the impacts of hazards including flooding, subsidence obstructions and erosion.	**2.1.1** Reduced risk to the community from natural hazards (Down stream flooding).	Undertake routine monitoring and maintenance of streams to maintain channel capacity particularly in the lower reaches	EW	√
	2.1.2 A reduction of economic costs/risks resulting from un-managed hazards.	Sediment retention methods at key locations will be investigated to trap sediment before it enters the harbour.	EW	√
		Identify those locations where mangroves maybe inhibiting water flow that exasperates flooding and/or flooding into the harbour. Establish and maintain a clear channel for water to flow into the harbour from the catchment.	EW	√
		Continue to promote the use of existing Best Practice Guidelines for earthworks and urban development in high risk erosion areas	EW	√
		Cross-section surveys be undertaken every five years in the Wentworth River and Moanaanuanu Estuary to assess sedimentation trends to inform future management options for the river/estuary system.	EW	X
		Once the sedimentation rates in the Wentworth River are better established (using site specific survey data) the future flood hazard should be reassessed and flood hazard management options developed as required.	EW	X

Landscape and natural character	The harbour has a stable natural backdrop including forest and appropriate land use			
3.1 A reduction in the effects of accelerated erosion across the catchment	**3.1.1**Reduced severity of accelerated erosion in the Whangamata catchment	Planting of appropriate native or exotic riparian species at identified sites in the Whangamata catchment to stabilise stream banks & improve shading for in-stream habitat.	EW	√
		In co-operation with landowners undertake or upgrade fencing along streams and water ways to reduce bank erosion and nutrient inputs	EW	√
		Installation or maintenance of infastructure (eg silt traps, culverts, bridges for stock crossing)	EW (With appropriate landowner contribution)	√
		Replace willow/poplar poles that have been lost due to possum browsing throughout the catchment and particularly at the upper reach of the Te Weiti stream	EW	√
		Re-shaping of channel sides at key sites in the catchment, particularly between the Wentworth River and Waikiekie stream	EW	√
		Ensure the land use or land management of identified high erosion risk areas is appropriate for the slope by working with landowners and consent holders.	EW	?
		Continue to promote the use of existing Best Practice Guidelines for earthworks and urban development in high risk erosion areas	EW	√
		Work with landowners to fence and plant eroding areas like hill slopes on farm land that have been identified in the catchment assessment and protect stands of native bush	EW	√
	3.1.2 A reduction of cumulative adverse effects in the CMA.	Manage bank erosion in the catchment and harbour including reshaping the banks to prevent continued undermining and collapse into the river and harbour	EW	√
	3.1.3 Less suspended sediment transported by water ways	Planting of appropriate native or exotic riparian species at identified sites in the Whangamata catchment to stabilise stream banks & improve shading for in-stream habitat.	EW	√
		In co-operation with landowners undertake or upgrade fencing along streams and water ways to reduce bank erosion and nutrient inputs	EW	√
		Installation or maintenance of infastructure(eg silt traps, culverts, bridges for stock crossing)	EW	√
		Re-shaping of channel sides at key sites in the catchment, particularly between the Wentworth River and Waikiekie stream	EW	√
		Ensure the land use or land management of identified high erosion risk areas is appropriate for the slope by working with landowners and consent holders.	EW	?
		Sediment retention methods at key locations will be investigated to trap sediment before it enters the harbour.	EW	√
		Continue to promote the use of existing Best Practice Guidelines for earthworks and urban development in high risk erosion areas	EW	√
		Work with landowners to fence and plant eroding areas like hill slopes on farm land that have been identified in the catchment assessment and protect stands of native bush	EW	√
		Appropriate conditions are applied to forestry consents and are monitored to ensure best practice	EW	√
		Assess the use of sediment modelling or other similar mechanisms to inform resource consent applications for urban development around sensitive harbour environments. Incorporate such mechanisms into best practice guidelines and/or as part of consent process.	EW	?

3.2 The natural character of Whangamata is protected and enhanced	**3.2.1** No further inappropriate subdivision, use or development	Establish ongoing compliance of consent requirements for previous consent holders ensuring accountablity for ongoing issues associated with sedimentation, erosion and stormwater.	EW	?
	3.2.2 Structures in the CMA are minimised.	Assess (as part of Blueprint) alternative locations for infrastructure and utilities beyond the Coastal Marine Area (CMA)	EW	?
		Identify and authorise or remove non-consented structures in the Coastal Marine Area (CMA)	EW	X
3.3 To recognise, protect and where appropriate enhance natural features and landscape values in the wider catchment	**3.3.1** Significant coastal areas, features and processes are identified and protected	Shellfish gathering regulations will continue to be enforced	Ministry of Fisheries	
		Implement the Waikato Regional Plan rule for stock exclusion in priority one waterbodies that excludes stock from riparian and wetland areas and from all streams that feed into the harbour up to 2 km upstream from Mean High Water Spring (MHWS)	EW	?
		Survey native fish numbers above four identified culvert sites on the Waikiekie, Otuwheti and Wentworth stream	EW	√
		Where required modify culverts to allow fish passage from the harbour to the streams	TCDC	X
	3.3.2 Regionally significant and representative landscapes, seascapes, landforms and geological features are identified and protected	Important views and outstanding natural features & landscapes for each settlement/catchment will be identified through the Blueprint project.	TCDC	?
		Identify any related special building requirements, or need for protection from development, through the Blueprint project.	TCDC	?
3.4 Protection and enhancement of areas of significant indigenous vegetation and significant habitats of indigenous fauna (and ecosystems) in the Whangamata catchment	**3.4.1** An increase in the area and health of indigenous habitats and species	Identify further sites in the catchment which could be restored in co-operation with landowners with a particular focus on coastal wetlands, saltmarsh and seagrass.	EW	√
		Investigate targeted mangrove management at those locations where saltmarsh and seagrass habitat are at risk.	EW	√
	3.4.2 An increase in the connections between different habitats within the catchment	Seek to fence and plant areas that connect habitats and where required seek advice from specialist wildlife experts to determine suitable ecological corridor design and location with landowner contribution	EW	X
		Survey native fish numbers above four identified culvert sites on the Waikiekie, Otuwheti and Wentworth stream	EW	√
		Where required modify culverts to allow fish passage from the harbour to the streams	TCDC	X
	3.4.3 Pest management improves vegetation condition and assists downstream flood and sediment management	Animal pest control is completed in conjunction with other agencies and projects at key locations.	EW and Doc	X
		Remove pest plant species that impede flow or cause erosion in particular pampas, wattle and pussy willow	EW	√
		Work with landowners to manage & contain plant pest species on private land	EW	√
		Inform householders about the alternative to exotic or pest plants and the importance of encouraging native habitats for indigenous species to flourish	TCDC and EW	X
		Routinely inspect wharf piles & mooring poles for invasive marine organisms.	Biosecurity	X
		Vessels that have been in international waters are routinely inspected for invasive marine organisms.	Biosecurity	X
		Apply for a resource consent for controlling saltwater paspalum at monitored sites.	EW	√
		Saltwater *Paspalum* will be controlled in the harbour.	EW	X
	3.4.4 Protect the habitats of species in the CMA that are important for commercial, recreational or cultural reasons from the adverse effects of use or development	Routinely inspect wharf piles & mooring poles for invasive marine organisms.	DOC	X
		Apply for a resource consent for controlling saltwater paspalum at monitored sites.	EW	√

		Saltwater *Paspalum* will be controlled in the harbour.	EW	X
		Shellfish gathering regulations will continue to be enforced	Ministry of Fisheries	
		Pipi and cockle beds will be monitored annually to confirm abundance and extent of the shellfish beds.	Ngāti Pū	
Biodiversity, ecosystems and habitats	Wetlands and salt marshes are able to be regenerated			
4.1 Protect and restore wetland, salt marsh & coastal habitats and ecosystems so as to increase the quantity and quality of the Catchments wetlands and coastal habitats	**4.1.1** Unique botanical, aquatic and wildlife habitats are protected and enhanced	Implement the Waikato Regional Plan rule for stock exclusion in priority one waterbodies that excludes stock from riparian and wetland areas and from all streams that feed into the harbour up to 2 km upstream from Mean High Water Spring (MHWS)	EW	?
		Identify further sites in the catchment which could be restored in co-operation with landowners with a particular focus on coastal wetlands, saltmarsh and seagrass.	EW	√
		Investigate targeted mangrove management at those locations where saltmarsh and seagrass habitat are at risk.	EW	√
	4.1.2 The quality of water bodies maintained and water quality enhanced in degraded areas.	Planting of appropriate native or exotic riparian species at identified sites in the Whangamata catchment to stabilise stream banks & improve shading for in-stream habitat.	EW	√
		Identify properties with high rates of nutrient leaching, fertiliser and run-off, and help the owners put in place practices that will improve their nutrient efficiency and reduce contaminant run-off.	EW	X
		Appropriate conditions are applied to forestry consents and are monitored to ensure best practice	EW	√
		Continue discussion with Forestry companies to identify improvements in land management prior to consent processes	EW	?
		In co-operation with landowners undertake or upgrade fencing along streams and water ways to reduce bank erosion and nutrient inputs	EW	√
		Installation or maintenance of infastructure(eg silt traps, culverts, bridges for stock crossing)	EW (With appropriate landowner contribution)	√
Water quality	The harbour is clean, ecologically healthy with a sandy playground in which human activity is in balance with nature.			
5.1 Water quality of the catchment and harbour is improved	**5.1.1** The catchment and harbour contribute to public health and wellbeing, healthy aquatic ecosystems, habitats and species.	Planting of appropriate native or exotic riparian species at identified sites in the Whangamata catchment to stabilise stream banks & improve shading for in-stream habitat.	EW	√
		In co-operation with landowners undertake or upgrade fencing along streams and water ways to reduce bank erosion and nutrient inputs	EW	√
	5.1.2 Improved water quality provides for a range of potential economic, social and cultural activities within Whangamata Harbour.	Installation or maintenance of infastructure(eg silt traps, culverts, bridges for stock crossing)	EW	√
		Animal pest control is completed in conjunction with other agencies and projects at key locations.	EW	X
	5.1.3 Mauri of water is recognised and protected from further degradation.	Identify properties with high rates of nutrient leaching, fertiliser and run-off, and help the owners put in place practices that will improve their nutrient efficiency and reduce contaminant run-off.	EW	X
		Survey native fish numbers above four identified culvert sites on the Waikiekie, Otuwheti and Wentworth stream	EW	√
		Where required modify culverts to allow fish passage from the harbour to the streams	TCDC	X
		Work with landowners to fence and plant eroding areas like hill slopes on farm land that have been identified in the catchment assessment and protect stands of native bush	EW	√

		Implement the Waikato Regional Plan rule for stock exclusion in priority one waterbodies that excludes stock from riparian and wetland areas and from all streams that feed into the harbour up to 2 km upstream from Mean High Water Spring (MHWS)	EW	X
		Actions to improve water quality will be prioritised and linked to Regional and District LTCCP's to ensure funding.	EW & TCDC	X
5.2 Riparian margins maintained and enhanced	**5.2.1** Increased bank stability reduced nutrient and sediment inputs to waterways	Planting of appropriate native or exotic riparian species at identified sites in the Whangamata catchment to stabilise stream banks & improve shading for in-stream habitat.	EW	√
		Appropriate conditions are applied to forestry consents and are monitored to ensure best practice	EW	√
		In co-operation with landowners undertake or upgrade fencing along streams and water ways to reduce bank erosion and nutrient inputs	EW	√
		Installation or maintenance of infastructure(eg silt traps, culverts, bridges for stock crossing)	EW	√
		Work with landowners to fence and plant eroding areas like hill slopes on farm land that have been identified in the catchment assessment and protect stands of native bush	EW	√
		Continue to promote the use of existing Best Practice Guidelines for earthworks and urban development in high risk erosion areas	EW	√
Education	The community has a greater understanding of coastal and catchment values and how they relate			
6.1 To raise community awareness and increase engagement and participation of the coastal environments and catchment~~t~~	**6.1.1** Increased community awareness of the interconnected nature of natural and physical resources	Inform householders about the alternative to exotic or pest plants and the importance of encouraging native habitats for indigenous species to flourish	TCDC	X
		Identify properties with high rates of nutrient leaching, fertiliser and run-off, and help the owners put in place practices that will improve their nutrient efficiency and reduce contaminant run-off.	EW	X
		Investigate opportunity to link The Harbour and Catchment plan actions into local Enviro Schools programme.	EW	X
		Work with Weedbusters New Zealand to continue to educate the Whangamata community on the issues of organic waste dumping and the spreading of weeds.	Forestry	X
	6.1.2 We are aware of what we need to do to look after our environment. Our region is renowned for linking environment awareness with community action.	Seek opportunities to promote landowner opportunities to achieving the catchment and harbour plan outcomes	EW & TCDC	
		Pipi and cockle beds will be monitored annually to confirm abundance and extent of the shellfish beds.	Ngāti Pū	
	6.1.3 Increased awareness of the values of areas of indigenous vegetation and habitats of indigenous fauna in the catchment.	Implement a public awareness campaign on the impacts of land-based activity on the harbour and marine catchment	EW	X
Rubbish, spills, waste management, storm water, waste water treatment plant	No contaminants are polluting the waterways or harbour			
7.1 Landbased activities effectively managed to reduce waste and contamination of harbours and water ways	**7.1.1** On-site retention, treatment and slow release of stormwater maximised	Monitor effectiveness of current controls and investigate options for additional controls on point source contaminants into stormwater drains.	TCDC	X
		Work with landowners to reduce contaminant levels entering the harbour from identified point sources from 2 drain sites.	EW	X
		Continue to promote the use of existing Best Practice Guidelines for earthworks and urban development in high risk erosion areas	EW	√
7.2 To avoid, remedy or mitigate the adverse environmental effects of waste generation, disposal and hazardous substances	**7.2.1** Reduction of the amount of waste produced	Regularly complete waste audits and share best practice for high risk industries in the Whangamata catchment.	TCDC	X
	7.2.2 All types of waste is disposed without adverse effects on natural coastal processes, water quality and ecology	Regularly complete waste audits and share best practice for high risk industries in the Whangamata catchment.	TCDC	X
		Spill prevention and containment training will be continued	TCDC	X

		Ensure equipment for spills is inspected once a year and is ready to be deployed at all times.	TCDC	X
		Monitor and rectify any unauthorised infilling or dumping activities identified at bush and wetland habitat sites.	TCDC	X
		Create a dedicated boat hull cleaning/scraping zone/area at the marina where anti-fouling paint contaminants can be contained on-site for all boats.	Marina Society	√
		Work with Weedbusters New Zealand to continue to educate the Whangamata community on the issues of organic waste dumping and the spreeding of weeds.	Forestry	X
Heritage				
8.1 To ensure the protection of cultural heritage resources. To allow for unidentified heritage resources to be appropriately managed.	**8.1.1** Iwi & European heritage sites and landscapes of significance are preserved and valued. Our historic buildings and places are retained and cared for. New developments are designed to be sensitive to people, places and the environment.	Identify heritage sites (European and iwi) as part of Blueprint project as constraints to development		X
		Work with iwi to ensure the harbour and catchment plan actions do not compromise heritage sites		X
Integrated management	All management agencies and stakeholders are aware of their responsibilities and all aspects of the management of natural and physical resources are covered with no duplication of functions. (RPS 2.2 Anticipated results 3)			
9.1 The catchment is managed across agencies to reduce adverse effects from use and development.	**9.1.1** There is consistent management between all agencies and stakeholders who are involved with Whangamata's land, water & coast	Actions to improve water quality will be prioritised and linked to Regional and District LTCCP's to ensure funding.	EW	X
Tangata whenua				
10.1 that the relationship which tangata whenua have with natural and physical resources is recognised	**10.1.1** There is clear tangata whenua objectives, outcomes and actions for the Whangamata Harbour & Catchment Plan	Whangamata Iwi Management Plan is completed	Hauraki Maaori Trust Board	√