

# WAIKANAE RIVER ENVIRONMENTAL STRATEGY

Opportunities to Enhance the  
Waikanae River Environment

March 1999

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March 1999

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## Foreword

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This Strategy is the combined effort of the Wellington Regional Council and Kapiti Coast District Council. It was developed to help co-ordinate the activities of the different agencies, community groups and landowners involved in protecting and improving the river environment.

The Strategy is the result of the very good working relationship that exists between the two councils. This relationship is crucial for effective resource management - especially in areas such as rivers where there are a large number of cross-boundary issues.

The support of Ernie Gates, the previous chairman of the WRC Landcare Committee, and Denis Ferrier, the previous chairman of the KCDC Planning and Environment Committee is also acknowledged.

Te Runanga o Ati Awa ki Whakarongotai and the Department of Conservation have also had input into the preparation of the Strategy. Both parties strongly support the principle of the Strategy but have some reservations regarding its contents. Their support has been valuable and we thank them for their efforts.

The Strategy is important because it is a proactive document. It sets out recommendations for action beyond those carried out within normal statutory and operational frameworks. On-going commitment to these recommendations will ensure continued improvement in the river environment.

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Dick Werry  
Chairman, Landcare Committee

Wellington Regional Council

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Diane Ammundsen  
Chairperson, Planning & Environment  
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Kapiti Coast District Council

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## Executive Summary

### The Purpose of the Strategy

The Waikanae community, landowners, Iwi and government agencies are all making efforts to protect and improve the Waikanae River environment. The Strategy has been developed to assist these efforts. A key objective is to establish an agreed vision of the river environment that the different parties can work towards.

Within this broad picture the Strategy attempts to address the needs of these different groups.

For the Regional Council it provides guidance on environmental enhancement undertaken in conjunction with the Council's flood protection works (the Strategy was initiated by the Regional Council Flood Protection Group as an outcome of the *Waikanae Floodplain Management Plan*<sup>1</sup>).

Kapiti Coast District Council, the other principal partner in the Strategy, will use it as a reference in relation to:

- its statutory land management functions;
- its operational works;
- any proactive efforts to improve the river environment.

Because of its significant management role in the river environment, the Strategy also recommends actions that the Department of Conservation could undertake.

Other groups and individuals with an interest in the river could also use the Strategy as a reference. These groups include:

- Iwi
- community groups
- environmental organisations
- private landowners.

These groups can use the Strategy to identify specific opportunities in the River Corridor where they could carry out environmental work (such as the planting of native trees)<sup>2</sup>. The Strategy will also be useful as a guide to the types of government support available to groups and individuals who wish to improve the river.

The Strategy is a long-term plan for the river, as we would like to see it 40-50 years in the future.

The Strategy places no obligation on the parties involved, beyond their existing statutory responsibilities.

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<sup>1</sup> Wellington Regional Council (1997), *Waikanae Floodplain Management Plan*

<sup>2</sup> For information on the River Corridor see Figure 1



## What is Currently Being Done to Protect and Improve the River Environment?

### Statutory Planning

- KCDC is ensuring habitats are protected through requiring the fencing of native bush remnants and the issuing of consent notices as conditions of subdivision consents
- The Proposed Regional Freshwater Plan includes statutory controls on discharges to water and land uses in the bed of the river. These controls are used to avoid water pollution and manage any adverse effects of activities in the riverbed.

Sections 4.2.1, 4.3.1 and 4.6.1

Section 4.4.1

### Public Ownership of Land

- Much of the River Corridor area is in public ownership. There is greater opportunity for environmental improvement on public land because approval of private landowners is not necessary.

Section 4.2.4

### Flood Protection Works

- WRC is preparing an Environmental Code of Practice to ensure that any adverse effects of flood protection works are minimised. This is in addition to any conditions of consent required under the Resource Management Act.
- WRC is working to improve the river environment as part of their on-going flood protection works (e.g. caring for native species planted within willow bank edge protection).

Section 2.3

Section 4.3.3 and 4.6.2

### Fish Habitat

- DoC is undertaking on-going surveys of instream structures. DoC advocates for the modification of these structures where they create an obstacle to fish passage.

Section 4.5.1

### Public Access

- Walking access is available along the entire length of both sides of the River Corridor, except around Kebbell's Bend on the south bank.
- KCDC is continuing to build and maintain walkways subject to available funding.

Sections 4.6

## What Is Planned For The Future?

### Consultation

- WRC (Flood Protection Group) will establish an informal community group called ‘Friends of the Waikanae River’ to ensure continued community involvement in the Waikanae Floodplain Management Plan. Protection and enhancement of the river environment is likely to be a central focus for this group.
- WRC (FPG) will hold an annual ‘walkover’ of the River Corridor with ‘Friends of the Waikanae River’, DoC, KCDC, Fish and Game Council and Iwi. This inspection will ensure everyone is thoroughly informed about any proposed works, and has had enough time to air and discuss their concerns.

Section 4.1.1

Section 4.1.2

### Statutory Planning

- KCDC will take the recommendations in the Strategy into account when reviewing the District Plan.

Sections 4.2.1  
and 4.3.1

### Flood Protection Works

- Efforts to enhance the river environment will be incorporated into any major river works undertaken by WRC (FPG).

Sections 4.3.3  
and 4.6.2

### Support for Landowners and Developers

- KCDC will encourage the restoration, replanting and fencing of native bush remnants through the provision of grants or rates relief. This is subject to the outcome of the KCDC Environmental Strategy and the annual plan/estimates process.
- WRC/KCDC/DOC will provide technical advice and information to landowners and developers on habitat protection, enhancement and creation (especially wetland areas, backwaters and oxbows).

Section 4.3.4

## What Else Could Be Done?

### Land Ownership

- The remaining privately owned land in the River Corridor could be brought into public ownership.
- Important habitat remnants and areas with the potential for habitat restoration could be brought into public ownership.

Section 4.2.4

### Support for Landowners and Community Initiatives

- A user-friendly guideline on riparian planting specific to the Waikanae River could be developed.
- Recommendations in the Strategy could be discussed with landowners and community groups interested in environmental enhancement. The Strategy could be used to encourage landowners by showing them that their efforts can be part of an overall plan.
- Agencies who have entered into covenant agreement with landowners could provide expertise to help landowners fulfil their responsibilities. They could also take an on-going interest in the habitat concerned. Disinterest from agencies once covenant agreements are signed will reduce public acceptance of covenants in the future.

Section 4.3.4

Sections 4.1.1,  
4.1.2 and 4.3.4

### Public Access

- Public access could be provided around the south side of Kebbell's Bend.
- The north-south access links suggested in the Strategy could be developed.
- A study of an appropriate access network for upper reaches of the Waikanae catchment could be carried out.

Section 5.2

Section 11

Section 4.6.2

### Recreation and Signage

- Further interpretation signage for habitat remnants and historic sites could be provided in the River Corridor area.

Section 4.6.2

## **PART A**

# **A Framework for Protecting and Improving The River Environment**



# 1. Introduction

## 1.1 The Purpose of the Strategy

Numerous agencies, community groups and landowners have an interest or a role to play in the Waikanae River and its environs. Each of these parties has their own objectives for managing, protecting and enhancing the river. Overall co-ordination of the different roles is necessary to ensure that they are consistent, and to ensure that all opportunities and priorities for environmental enhancement are maximised.

This Strategy is a principal step in providing this overall co-ordination. It is intended as a reference point for anybody with an interest in the river environment. It will ensure that management actions, as they occur, are consistent with a long-term vision.

## 1.2 Who Developed the Strategy?

The Regional Council Flood Protection Group initiated the Strategy. It will guide any efforts to improve the river environment undertaken in conjunction with its flood protection works. The Strategy is an outcome of the Waikanae Floodplain Management Plan<sup>3</sup>.

Kapiti Coast District Council is the other principal partner in the Strategy. KCDC will use the Strategy as a reference in relation to:

- its statutory land management functions;
- its operational works;
- any proactive efforts to improve the river environment.

Ati Awa ki Whakarongotai and DoC have also been involved in the preparation of the Strategy. Both parties strongly support the principle of the Strategy but have certain reservations about its content. Principally these concerns relate to the ecological framework of the Strategy and the integration of iwi values. This is not considered as a failing. Instead it is the development of this document that has brought these differences to light. The Strategy is a starting point for dealing with these matters.

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<sup>3</sup> The *Waikanae Floodplain Management Plan, 1997* is the result of a five stage planning process. This process was undertaken to determine the community's requirements for flood mitigation and the best methods of meeting these requirements. It provides direction to WRC's activities in the River Corridor.

### 1.3 Who Will Use the Strategy?

The Strategy will provide guidance to the principal government agencies involved in the environmental management of the river. These are:

- Wellington Regional Council (WRC)
- Kapiti Coast District Council (KCDC)
- Department of Conservation (DoC)

Other groups and individuals could also use the Strategy as a reference with an interest in the river. These include:

- iwi
- community groups
- environmental organisations
- private landowners

These groups will be able to use the Strategy to identify specific opportunities in the River Corridor where they could carry out environmental work (such as the planting of native trees). The Strategy will also be useful as a guide to the types of government support available to groups and individuals who wish to improve the river.

Due to limited resources, the roles and objectives of private landowners and community groups are not specifically addressed in the Strategy.

### 1.4 Government Agencies Responsible for the Management of the River Environment

#### (i) Wellington Regional Council Flood Protection Group (WRC (FPG))

WRC (FPG) is responsible for mitigating the effects of flooding on the community. To achieve this it undertakes flood protection works from the river mouth to just above the State Highway 1 bridge. This area is called the River Corridor (see Figure 1).

WRC's mandate for river management is based on its responsibility for the River Corridor. WRC also owns a large part of the River Corridor.

**Figure 1: The River Corridor**

**The River Corridor comprises the riverbed and the adjacent floodway. It is the minimum area able to contain a major flood and enable the water to pass safely to the sea.**

**In a flood the depth and speed of waters in the River Corridor are such that any development is likely to sustain major damage, and the evacuation of people and their possessions could be extremely difficult. The rise of water may be rapid. There may be a danger to life, and social disruption and financial loss could be very high.**

**Almost any development would worsen the impact of flooding on other nearby properties. The River Corridor is an area that, if only partially blocked, would cause a significant redistribution of flood flow. Therefore, appropriate land uses and development potential are extremely limited.**

*(Waikanae Floodplain Management Plan, p.86)*



In undertaking flood protection measures, WRC (FPG) intend to enhance and protect the natural character of the River Corridor. This objective is in response to public concern that became apparent during the floodplain management planning process.

**(ii) Kapiti Coast District Council (KCDC)**

KCDC is responsible for land use management of the River Corridor and its environs, excluding the bed of the river. Its instrument for regulation and control is the District Plan.

In an operational role the KCDC is responsible for the management of parks and reserves adjacent to the river. Jim Cooke Memorial Park is one of these.

**(iii) Department of Conservation (DoC)**

DoC manages the Waikanae Estuary Scientific Reserve at the mouth of the river, and Tararua Forest Park at the headwaters. DoC also advocates for the protection of threatened habitats and species through the statutory resource management processes.

DoC advocates for the protection of fish passage in inland waterways in accordance with its responsibilities under the Freshwater Fisheries Regulations 1983.

DoC agrees in principle with the development of the Strategy and will endeavour to work with other parties to promote the protection and enhancement of the river environment.

## 1.5 The Document Structure

### Executive Summary

#### **PART A A Framework for Protecting and Improving the Waikanae River Environment**

This addresses the Waikanae River environment as a whole, and deals with the key issues - what we intend to achieve, and how we intend to achieve it. Part A is divided into four sections.

##### **1. Introduction**

##### **2. Scope of the Strategy**

This section sets out the limitations within which the Strategy will work:

- (i) *Its influence.* The Strategy is a voluntary document, which depends on the good will of the parties involved.
- (ii) *The geographic area covered.* The Strategy is a plan for both the River Corridor and its environs.
- (iii) *The timeframe.* The Strategy is a long-term plan that will only be realised in stages.

##### **3. Issues and Objectives**

This section identifies the outcomes that the Strategy is trying to achieve. It includes:

- (i) A vision statement on the qualities of the river environment which are sought.
- (ii) A description of the principal environmental concerns which need to be addressed.

#### **4. Methods for Achieving Environmental Protection and Enhancement**

This section is an overview of all the methods for protecting and improving the river environment available to the key government agencies. This section outlines how these methods are currently being used and, where appropriate, recommends changes for making them more effective. There are six sub-sections to the Methods section:

- (i) Community involvement.
- (ii) Controlling subdivision and development.
- (iii) Habitat protection, enhancement and creation.
- (iv) Water quality.
- (v) Fish habitat.
- (vi) Recreation and access.

### **PART B Protecting and Improving the River Corridor Environment**

Part B looks at the opportunities for protecting and enhancing the River Corridor, in accordance with the objectives set out in Part A. Part B is divided into seven sections. The first six address distinct reaches of the corridor. Actions recommended for each reach are described and mapped on aerial photographs. The seventh section addresses the public access linkages between the River Corridor and its environs. The sections are:

- 5. Parikawau/Edgewater Park Reach**
- 6. Waipunahau/Jim Cooke Memorial Park Reach**
- 7. Pukekawa Reserve Reach**
- 8. Te Aorere/Waikanae Christian Holiday Camp Reach**
- 9. Arapawaiti/Otaihanga Reach**
- 10. Kenakena/The Estuary**
- 11. Access linkages between the River Corridor and its Environs**

## **2. The Scope of the Environmental Strategy**

### **2.1 The Strategy Places No Obligation on the Parties Involved, Beyond their Existing Statutory Responsibilities**

It is acknowledged that:

- WRC, KCDC and DoC all have their own mandate and responsibilities;
- one party cannot prescribe what another might do;
- WRC, KCDC and DoC have limited financial resources, and costly objectives recommended in the Strategy may only be achieved over a long period;
- the rights of private landowners within the river environment must be respected.

Therefore, the Strategy is flexible, relying on the good will and co-operation of the agencies involved.

### **2.2 The Area Covered by the Strategy - the River Environment as a Whole and the River Corridor in Particular**

Part A of this Strategy is applicable to the Waikanae River environment as a whole. This overview is apparent in both the vision for the river environment and methods for achieving that vision.

Part B applies specifically to the River Corridor. This emphasis reflects the Regional Council's responsibility for the Corridor, its importance as a recreational resource, and the need to address development pressures within the Corridor.

Part B also considers the River Corridor in the context of its surroundings. This includes:

- the integration of the river landscape with adjacent open spaces;
- opportunities for developing public access;
- ecological and open space linkages between the river and its environs.

## **2.3 The Effects of Routine Flood Protection Works are Addressed in the Environmental Code of Practice**

An Environmental Code of Practice is being developed by WRC, in addition to the Environmental Strategy. Together the two documents will provide a complete environmental framework for WRC's flood protection activities. The Strategy addresses the long term protection and enhancement of the river environment, and the cumulative effects of flood protection works. In contrast, the Code of Practice addresses the immediate effects of routine flood protection works.

The Code of Practice is also a living document and may be modified in the future where it is found to be inconsistent with the Environmental Strategy objectives.

The Code of Practice is a generic document that applies to the Waikanae, Otaki and Hutt Rivers.

## **2.4 The Strategy is a Long-term Plan Which Will Only Be Realised in Stages**

The Strategy is a plan for the river, as we would like to see it 40-50 years in the future. Alternative river management methods may be used for a considerable time until the final plan can be realised. For example, in some areas willow planting will be necessary until the river is realigned or the banks are stabilised with riprap rock.

However, in the longer term, WRC are working towards the actions recommended in the Strategy.

Photograph 1: Aerial view of Waikanae River Mouth

## **3. Objectives and Issues**

### **3.1 A Vision for the River**

This section describes the qualities of the river environment that we want to protect and improve. It provides direction for the Strategy's recommendations.

The Strategy's vision for the river deals with the natural character of the river environment, as well as our relationship with that natural character.<sup>4</sup> That includes landscape, ecosystems (both indigenous and exotic), public access, recreation, and historical and spiritual values.

The extent to which this vision is consistent or inconsistent with the views of iwi is set out in the statement provided by Ati Awa ki Whakarongotai in Section 3.2. The aim is to use this statement as a basis for further agreement in the future.

The Strategy does not address activities that do not specifically relate to the natural environment (for example, the protection of communities within floodable areas). These are dealt with sufficiently in the Floodplain Management Plan.

The Strategy does not seek to re-establish the natural environment that existed before human habitation. This would be unrealistic and would exclude the community.

The objectives that are derived from this are set out below. It is intended as a focus for the recommended actions that follow. This vision may never be completely realised, but it provides a goal that we can work towards.

#### **3.1.1 The Waikanae River as a Greenbelt**

The role of the Waikanae River as a greenbelt is the central concept in this vision for the river environment. All the recommendations in this Strategy feed into, or are consistent with, this concept. The objective is to protect and improve the natural character of the land adjacent to the river. This will provide a corridor of particular landscape, ecological and recreational value that connects the coast and inland hills. This concept does not exclude development but requires it to be discrete and of low density.

Protecting and enhancing the river as a greenbelt will have numerous benefits:

- the river's value as a landscape feature which links the mountains to the sea will be enhanced;
- the greenbelt will be a natural landscape corridor separating, and providing a contrast to the developing areas of Paraparaumu and Waikanae;
- the greenbelt will improve recreational opportunities along the full length of the river;

<sup>4</sup> 'Natural character' can be thought of as the extent to which naturally occurring ecology and/or physical processes of the river environment remain intact.

- the greenbelt will be an ecological corridor providing for the movement of birds, fish, invertebrates and plants within a continuous habitat;
- the greenbelt will be part of a broader plan to develop a network of greenbelts on the floodplain.<sup>5</sup>

### 3.1.2 A Natural and Varied Landscape

The Waikanae River is an important visual link between the Tararua Ranges and the coast. It is also significant as a distinct feature that provides variation in the landscape of the coastal plain.

In landscape terms it can be divided into three reaches; (i) the headwaters in the steep predominantly forest covered upper catchment, (ii) Reikorangi Basin and (iii) the coastal plain. Each of these reaches has its' own character and qualities that must be protected.

The Strategy is primarily concerned with the river landscape on the coastal plain where development pressure is greatest. The landscape qualities that are sought for this area are:

- a large proportion of natural vegetation, habitats and landforms;
- sufficient vegetation to enhance the river as an unbroken natural feature;
- variation, with a mix of enclosed bush, open spaces, and visual links with the surrounding rural landscape;
- minimal structural development.

These objectives build on the existing distinctive characteristics of this lower section of the river:

- *SH1 to Jim Cooke Memorial Park.* The river is visually secluded, set down below terraces with remnant kohekohe forest a dominant visual feature;
- *Jim Cooke Memorial Park to Otaihanga.* This reach passes through lower lying land where creeks, streams and backwaters are more of a feature and it is visually influenced by surrounding rural land;
- *Estuary section.* The riverscape broadens into a wide estuary where tidal conditions and an estuarine habitat are the dominant influences.

The rural character valued by the community is also a prime objective. The river should not become highly managed parkland, but should continue to be informal in character.

<sup>5</sup> *KCDC Strategic Plan 1998*

### 3.1.3 Informal, Passive and Unstructured Recreational Opportunities

The Waikanae River is valued by local communities as “a recreational resource, an aesthetic attribute, a habitat for birds and fish and as a place of special atmosphere and character.”<sup>6</sup>

Our intention is to continue to provide for informal recreation. This includes passive and unstructured activities such as picnicking, swimming, walking, fishing and horse riding. Public facilities will be confined to the areas of greatest use where there is drive-on access. There will be basic picnic and toilet facilities only. Current recreation facilities adjacent to the river include soccer fields at Jim Cooke Park and a camping and conference park opposite and immediately upstream of Otaihanga reserve.

In line with KCDC’s policy, the walkway along the north side of the river should be confined to walking only. A greater level of track construction and maintenance will be needed on this side where use is more intensive. On the south side, walking, cycling and horse riding are to be permitted. The riverside track is generally wider and associated with the less developed rural environs.

KCDC will enforce the Dog Control Bylaw that requires dogs to be kept on a leash along the north bank (except in the designated exercise zone opposite Otaihanga Domain), and will also discourage horse riders from using the north bank walkway.

### 3.1.4 The Waikanae Catchment as a Diverse Ecological Corridor

Philip Simpson in *Ecological Restoration in the Wellington Conservancy* describes the vision of Waikanae Catchment as an ecological corridor:

*To one degree or another there is an ecological continuity through the Waikanae catchment between the coast and the high peaks of the Tararua Range. In addition, the off shore sanctuary Kapiti Island is linked to the mainland via the Kapiti Marine Reserve.... This continuity offers a unique opportunity for restoring a full range of protected ecosystems within a densely populated and productive landscape....*

*The major break in a continuum of protected land occurs through the foothills and across the sand plain, where agricultural land and urban land respectively, dominate. However, there are patches of lowland forest, coastal forest, regenerating indigenous shrubland, and wetland that form a mosaic of habitats. The river itself interlinks all the elements, although its banks are largely covered by exotic willow forest.*

*The mid-catchment is predominantly Regional Council land, both indigenous and exotic forest. Any comprehensive restoration programme would involve co-operation between DoC and WRC and would also benefit from energies of a generally conservation-minded population....*

<sup>6</sup> *Environmental Investigations*, January 1992, p. xv



**Figure 2: Waikanae River as an Ecological Corridor**

*A 'mountains-to-the-sea philosophy' [for restoration] is one that is seldom contemplated in New Zealand because opportunities are so rare. But the Waikanae catchment has sufficient elements, both natural and social that such a vision is possible. ... (Ecological Restoration in the Wellington Conservancy, Philip Simpson, Department of Conservation 1997).*

As a central ecological corridor, the river could be the basis for developing a network of connected habitats over the wider floodplain. This would improve the ecology of the floodplain and river, providing the conditions for more native plant and animal species to enter and move along the river environment.

## 3.2 Response to the Strategy from Kapakapanui Te Runanga o Ati Awa ki Whakarongotai Inc.

Ka mehameha, e hine, ko Wai-meha,  
Ka ngahae nga kanohi, ko Wai-kanae,  
Ka tangi ko te mapu...

*The name Waikanae is an ancient one, dating from the times anterior to the great heke of Polynesian immigrants usually referred to as the Great Migration. The name is one of those attributed to Haunui-a Nanaia, a tohunga of the ancestors of the Rangitane people...<sup>7</sup>*

The Waikanae River has complex and ancient associations with tupuna of its many occupying hapu and also for the tangata whenua today. Its name and its connection with the kaitiaki - the people of Ati Awa ki Whakarongotai - are potent statements of manawhenua. It is a place named by a tupuna tohunga as much as it actually is a tupuna.

Understanding these associative and whakapapa relationships is critical for understanding the vision the tangata whenua have for their river and also for understanding their consequent kaitiaki duties. The health and wellbeing of the river is connected to the health of the people, and one should reflect the wellbeing of the other.

At present the Waikanae is in a state of ecological decline. It is a landscape feature identified as being of outstanding regional significance and yet its wairua is in jeopardy. The tangata whenua are acutely aware of the river's state of health and accordingly are supportive of an environmental strategy - a notion deeply connected to the idea of enhancing the mauri of this river. Mauri, and also wairua, are expressions of attachment between landscape systems and kaitiaki. When one flourishes so does the other. There is then reciprocity in the maintenance of mauri; connecting mauri to kaitiaki. The opportunity that a strategy presents for guidance on restoration, replanting, and cleaning up the waters in turn enhances the mauri (and wairua) of the community, of the people, and of Papatuanuku – the land.

There are, though, core aspects of this particular strategy which with the tangata whenua cannot agree. These relate to process, ecology, terminology, and cultural heritage issues. However, as a means of furthering the intent of establishing a vision for the river that embraces a degree of ecological restoration Ati Awa ki Whakarongotai have agreed to support the strategy in principle and participate in an on-going process for realising a community vision.

The tangata whenua philosophy on what a River Corridor needs to encompass is a whole ecosystem picture. This tangata whenua approach acknowledges the inter-species associations and relationships, it acknowledges the importance of recognising the diversity of the natural river environment and providing for its replenishing capacity, and it acknowledges the way that people did live, still live and may wish to live with the river. In all these areas we strongly differ from this strategy developed by the Regional Council. For instance:

<sup>7</sup> Adkin, G. L. 1941 JPS, pg. 1

- The notions of what constitutes the "natural character" of the river as set out in this document need to be defined on an ecological basis;
- the vision needs focus on enhancing and maintaining indigenous vegetation in the River Corridor, and phase out non-indigenous vegetation;
- sections of the river need names that are evocative of the river. We do not agree with the choices of river sections as set out in the strategy and instead have suggested an ecologically-based solution using tree and bird names, and;
- the on-going process for an environmental strategy needs to become one that is inclusive of the community and all stakeholders and interest groups.

### **The River as a Whole Ecosystem**

In 1839 there was a “*green, unbroken seam between the sea and mountains covering everything but the sand dunes and the wetter swamps.*”<sup>8</sup>

The whole ecosystem picture sees the river from its origins in the tears of Ranginui and in the formation of tiny streams in the Tararua mountains. The corridor then also includes the river's natural floodplain and its sister tributary, the Waimeha, as well as its flow into the Tasman Sea (Te Tai o Rehua). This is an approach consistent with the principles of ecological integrity and which also sees the river in its context as a "people place".

### **The River's Capacity for Maintaining Natural Biodiversity**

The tangata whenua vision or "strategy" for the river embraces the notion of "wairua", a key concept that embodies maintenance of ecological balance. The wairua of the Waikanae area was once seen in the forested hills and wet foredunes - the balance of land and water. This concept is also a significant tohu (or sign) for this place because the two rivers (Waimeha and Waikanae) were such salient, linked landscape features.

### **The River as a People Place**

Historic settlement was focused on the river, the estuary and associated floodplain area. The pa along the riverbanks built by Ati Awa and previous occupants are numerous, as are the wahi tapu, crossing areas and mahinga kai. Tangata whenua wish to see this layer of the river's story in the strategy but acknowledge that more detailed work is required to adequately present this information.

To meet the needs of documenting cultural heritage this Strategy should expand to incorporate relevant sections of the Ati Awa Resource Management Plan and Cultural Heritage Strategy (*both forthcoming*). These two documents will also contain details of traditional protection mechanisms, and an accepted process for consultation.

<sup>8</sup> G. Park in Nga Uruora, describing Heaphy's vision of the coast from a ship deck in 1839. This is likely to have been from the *Tory* that was standing off the coast during the Kuititanga battle at the Waikanae river mouth.

## 3.3 Principal Environmental Issues

### 3.3.1 Development Pressure

In recent years Kapiti Coast has been subject to one of the highest rates of development in the country. Many areas that were once used for traditional farming activities with large areas of open space are now being used for urban and rural-residential development. These subdivisions are rapidly reducing the extent of open and rural land near the river. This reduces the chance to create buffer zones to protect the natural character of the river.

The demand for open space recreation areas will also increase as development progresses on the Kapiti Coast. There will be greater recreational use of the river, with potential for some of its natural qualities to be compromised as a result.

### 3.3.2 Degradation of the Natural Ecosystem

#### (i) Remnant habitats

Before human intervention the floodplain had a much greater diversity of habitats than it does today. The river system included extensive areas of swamp forest and wetlands, and on higher ground other types of dry land habitats occurred.

Only a few remnants of these habitats now remain and most of these, by virtue of their rarity, have important conservation value. Most of the remnants are small and isolated from other natural habitats. This reduces the diversity of species and long term viability of the habitat.

#### (ii) Instream habitat

A significant number of native New Zealand freshwater fish species are threatened or endangered. The majority of these need access to the sea for part of their life cycle.

Structures such as culverts and weirs that can obstruct upstream fish passage are a significant problem to these species as they reduce the area of upstream habitat available. This reduces the fish populations that the catchment can support. There are a significant number of these artificial barriers in the Waikanae catchment.

Removal and modification of riparian vegetation and modification of stream alignments have affected the ecological quality of tributaries such as the Muaupoko and Mazengarb Streams. The Mazengarb Stream has also been affected by pollution. WRC investigations suggest that water quality in these tributaries is amongst the worst on the Kapiti Coast.<sup>9</sup>

<sup>9</sup> *An investigation into the Sources of Faecal Contamination and Turbidity in the Waikanae River*, March 1998, p. 16

**(iii) Weeds**

Weed infestation is a serious problem throughout the river margins, particularly on the south bank of the River Corridor. Species such as Wandering Jew and Old Man's Beard are rampant beneath the cover of existing vegetation, preventing the regeneration of native vegetation.

Photograph 2: Kohekohe, Karaka Forest Remnant



## **4. Methods for Protecting and Improving the River Environment**

The following section:

- describes the methods available for protecting and enhancing the Waikanae River environment;
- identifies the actions necessary;
- distinguishes the different roles which WRC, KCDC, and DoC can play.

### **4.1 Community and Tangata Whenua Involvement**

Community and tangata whenua involvement in the management of river is crucial for the long term environmental protection and enhancement. Numerous methods have been established to enable this involvement to occur:

- a community group to monitor the river;
- an annual walkover of the River Corridor;
- review of the reserve management plans and state of the walkway.

#### **4.1.1 'Friends of the Waikanae River'<sup>10</sup>**

To ensure continued community involvement in the Waikanae Floodplain Management Plan the Regional Council will establish an informal community group called 'Friends of the Waikanae River'. Protecting and improving the river environment is likely to be a central focus for this group.

Friends of the River will be an advisory group. It will also be used to transfer information between WRC, KCDC, tangata whenua, DoC and the community. WRC Flood Protection staff will be responsible for co-ordinating the group, with meetings held on an agreed basis.

The group will be reviewed and re-established every three years.

<sup>10</sup> *WFMP*, October 1997, p. 78



### **4.1.2 Annual walkover of the River Corridor**

WRC will hold an annual ‘walkover’ of the River Corridor with ‘Friends of the Waikanae River’, DoC, KCDC, Fish and Game Council and Iwi. This inspection will ensure everyone is thoroughly informed about any proposed works, and has had enough time to air and discuss their concerns.<sup>11</sup>

### **4.1.3 Review of the Reserve Management Plans and State of the Walkway**

KCDC will review the management plans for Jim Cooke Park and Otaihanga Reserve to ensure that the reserves meet the needs of users and local residents. The walkway will be reviewed so that it is maintained to a standard that is compatible with its usage. This may require the track to be re-metalled or widened.

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<sup>11</sup> *WFMP*, October 1997, p. 44

## 4.2 Maintaining Land Uses Which Provide for a Greenbelt

A greenbelt along the river and its tributaries depends upon appropriate land use. For a greenbelt to function as an ecological corridor, land must be set aside for a range of natural habitats primarily with native vegetation. This includes for existing vegetation, as well as open space where habitats can be developed in the future. A landscape and recreational greenbelt depend upon a combination of vegetation and open rural landscapes.

Appropriate areas include:

- the River Corridor;
- open rural areas adjacent to the River Corridor;
- existing habitat remnants and areas that could create linkages between these remnants;
- low-lying land subject to flood risk, that are natural locations for swamp and wetland restoration.

The methods for providing appropriate land use are:

- District Plan provisions;
- land use covenants;
- public ownership of land;
- Land Information Memoranda.

### 4.2.1 District Plan Provisions

*(Provisions for habitat enhancement and access are discussed in Sections 4.3.1 and 4.6.1 respectively.)*

The Kapiti Coast District Plan controls land uses in the Waikanae River catchment. This is achieved through:

- restrictions on subdivision and development in certain areas;
- Esplanade Reserves and Esplanade Strips required as a condition of subdivision consent;
- the protection of specific ecological and landscape features.

These controls reflect KCDC's Strategic Plan that promotes the creation of greenbelts within and between existing communities. This includes a greenbelt between Waikanae and Paraparaumu.

### 4.2.1.1 Restrictions on Subdivision and Development

Subdivision is restricted within the District Plan areas and zones listed below (also see Figure 3). These controls provide for a rural greenbelt along the river margins. They also ensure that the opportunities to develop a more extensive planted ecological corridor in the future are not lost.

#### ***The River Corridor Zone***

The River Corridor is a zone in the District Plan. Subdivision is a non-complying activity within the River Corridor. Land uses are restricted to rural and open space recreation activities within the Corridor because of the high risk of flooding and erosion.

#### ***1% Flood Event Level***

Parts of the Waikanae floodplain would be inundated in a major flood. These areas are identified on the District Plan as the 1% Flood Extent. Further subdivision and development in these areas is unlikely, as each subdivided lot must have a building site above the 1% flood level.<sup>12</sup>

#### ***Restriction on Lot Size in the Rural Zone***

As part of the green belt concept intensive subdivision is restricted on the rural land within the immediate visual context of the river to provide a buffer of compatible land uses along the River Corridor.

Within the Rural Zone adjacent to the River Corridor there are three different areas with different subdivision restrictions:

- Alluvial Plain - minimum lot size 4ha, average lot size 6ha<sup>13</sup>;
- Coastal Dune Environment - minimum lot size 0.4ha, average lot size 4ha<sup>14</sup>;
- Rural-Residential - minimum lot size 4000m<sup>2</sup> with 1ha average.

#### ***Restrictions on Lot Size in the Waikanae Water Collection Area***

Upstream of SH1 the Waikanae Catchment is identified in the District Plan as the Waikanae Catchment Water Collection Area. In the lower parts of the Area the river margins are characterised by predominantly open pasture interspersed with shelterbelts and regenerating native bush. Here subdivision is a discretionary activity with a minimum lot size of 1ha with an average lot size of 20ha.<sup>15</sup>

<sup>12</sup> District Plan, D2.2.2 General Standards (e)

<sup>13</sup> District Plan, D.2.2.2 Subdivision (ii)

<sup>14</sup> District Plan, D2.2.3 Subdivision (i)

<sup>15</sup> District Plan, D.2.2.3 Subdivision (v)(a)

**Figure 3: District Plan Zones and Subdivision Areas**

### 4.2.1.2 Esplanade Reserves and Esplanade Strips

(See also Section 4.6 - Recreation and Access)

#### ***Reserving Land as a Condition of Subdivision Consent***

Esplanade Reserves are publicly owned land along the margins of lakes, rivers and the coast. Esplanade Strips are privately owned land along lakes, rivers and the coast, which are subject to certain conditions (e.g. riparian planting, public access).<sup>16</sup>

Esplanade Reserves and Strips can be required as a condition of subdivision consent. This will help to keep the river as a greenbelt.

However, the creation of reserves and strips is infrequent because they can only be taken without compensation where the lot size is less than 4 hectares. The restriction on lot size described in 4.2.1.1 means that lots of less than 4 hectares will seldom be created adjacent to the river.

Therefore, to make the most efficient use of the Esplanade Reserve and Strip provisions, KCDC has identified priority areas where they will be required. The priority areas in the Waikanae catchment where land will be reserved for ecological purposes are listed below.

Waikanae River downstream of the SH1 bridge (the River Corridor area)	Up to 20 metre Esplanade Reserves, with greater widths allowed within 1000 metres of the river mouth
Waikanae River upstream of the SH1 bridge	Up to 20 metre Esplanade Strips
Mauapoko Stream	Up to 20 metre Esplanade Strips
Mazengarb Stream	Up to 20 metre Esplanade Reserve in urban area Up to 20 metre Esplanade Strips outside urban area (part only)

Outside these areas KCDC will require reserve contributions in either cash or land. Where cash is taken, the money will be set aside for land purchase and enhancement in other areas.<sup>17</sup>

<sup>16</sup> Resource Management Act 1991, s.2

<sup>17</sup> District Plan, C.12, Policy 7

### ***Establishing Esplanade Strips Through Negotiation***

KCDC will negotiate with landowners where appropriate to establish Esplanade Strips where subdivision is unlikely and/or public access is a high priority.

KCDC will seek co-operation with other agencies such as DoC and WRC in considering the need for acquiring Esplanade Reserves. Co-operation between agencies will be encouraged where there is a high priority for Esplanade Reserves that could protect a range of values.

#### **4.2.2 Natural Heritage Sites**

Ecological Sites and Outstanding Landscapes are identified in the Planning Maps and protected through policies and rules. For example the River Corridor is an Outstanding Landscape and is protected from development that would be visually obtrusive.

Some sites of ecological significance within the catchment are shown in Figure 2.

#### **4.2.3 Land Use Covenants**

Land use covenants are a voluntary agreement between an agency and a private landowner. They are used to restrict land uses and protect landscape or habitat values on private land. While landowners enter into covenant agreements on a voluntary basis, they are binding on the landowner once they are signed and are registered against the title in perpetuity.

WRC, KCDC, DoC and the Queen Elizabeth II National Trust all have powers to enter into covenant agreements with landowners to protect areas of conservation value.<sup>18</sup>

<b>Recommended Action</b>	<b>Parties Involved</b>
Where habitats remain in private ownership encourage landowners to commit to long term protection by way of a land use covenant.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ QEII National Trust</li> </ul>

<sup>18</sup> The Department of Conservation use Conservation Covenants provided for under section 27 of the Conservation Act 1987 or section 77 of the Reserves Act 1977. The Regional and District Council use Conservation Covenants provided for under the Reserves Act 1977. The Queen Elizabeth the Second National Trust use Open Space Covenants provided for under section 22 of the Queen Elizabeth the Second National Trust Act 1977. The majority of the 1200 covenants registered with the Trust protect Recommended Areas for protection or areas of similar conservation value.

## 4.2.4 Public Landownership

### *The River Corridor*

Regional Council policy is to bring the River Corridor area into public ownership.<sup>19</sup> Public ownership is useful for both effective flood management and environmental enhancement. Most of the River Corridor is already in public ownership (see Figure 4).

KCDC and DoC may provide support for any Regional Council initiatives that are consistent with their own policies.

There are a number of opportunities available for procuring this land including:

- land swap;
- reserve contribution - as part of adjacent subdivisions;
- reserve contributions - funding from pool;
- purchase - WRC, KCDC;
- vesting.

Purchase of the River Corridor will be considered as a last resort. None of the public agencies are able to commit to funding for land purchase, though they agree with the long-term strategy. Individual cases will have to be considered on their own merits at the time the opportunity arises.

### *Outside the River Corridor*

Together WRC, KCDC and the Crown already own large areas of land in the Waikanae catchment. Any further land purchases would be targeted at sites of special conservation value.

<b>Recommended Actions for the River Corridor</b>	<b>Parties Involved</b>
<p>(a) Consult with the private landowners to ascertain their aspirations and views about selling the land in the River Corridor in order to work out a long-term programme of acquisition.</p> <p>(b) Include funding allocations for gradual acquisition of land in the River Corridor in budget estimates.</p>	<p>◆ WRC ◆ KCDC</p>

<sup>19</sup> WFMP, 3.1.1.4, p. 29

**Figure 4: Public and Private Land in the River Corridor**



<b>Recommended Actions for the River Environment in General</b>	<b>Parties Involved</b>
<p>(c) Seek to acquire in public ownership the significant remnant natural habitats shown in Figure 2.</p> <p>(d) Provide for future habitat restoration by acquiring strategically located land for the purpose of establishing wildlife corridors to connect remnant habitats with other natural habitats.</p>	<ul style="list-style-type: none"> <li>◆ KCDC (subject to annual plan/estimate priorities)</li> <li>◆ DoC (subject to DoC's conservation priorities)</li> <li>◆ WRC (only within the River Corridor)</li> </ul>

#### 4.2.5 Land Information Memorandum

A Land Information Memorandum (LIM) is a set of all the legal and resource information relating to a particular lot. LIMs are held by KCDC and available to landowners for a small fee. The Environmental Strategy will be referenced on LIMs for properties bordering or within the River Corridor. This will help to raise landowner awareness of the value of their properties as part of the river environment.

<b>Recommended Actions</b>	<b>Parties Involved</b>
<p>Include a reference to the Waikanae Environmental Strategy in LIMS for properties within and adjacent to the Waikanae River.</p>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>

Photograph 3: Land Information Memorandum

## 4.3 Improving and Restoring Vegetation and Habitat

Vegetation and habitat can be improved and restored for both ecological and landscape purposes. While the principal focus is on indigenous vegetation, exotic species can also have landscape value and can act as nursery plants for indigenous species.

The methods available for improving and restoring vegetation and habitat are:

- District Plan provisions;
- Open Space and Conservation Covenants;
- government funded works;
- encouraging landowner and community support.

Opportunities include:

- controlling weed competition;
- removing willows where they are being succeeded by indigenous vegetation and not providing front-line defence;
- fencing remnant habitats and riparian margins of the river and its tributaries;
- planting natives to; (i) enhance riparian habitat, (ii) link existing habitat remnants, and (iii) create a buffer around existing remnants;
- restoring wetlands in low lying areas;
- retaining open space areas where habitat could be developed in the future.

### 4.3.1 District Plan Provisions

*(See also 4.2.1)*

Vegetation and habitat can be protected/enhanced as a condition of subdivision consent. For example, KCDC can require that wetlands be restored or created to mitigate any adverse environmental effects of the development.

### 4.3.2 Land Use Covenants

*(See also 4.2.3)*

Covenants over land can include conditions that require landowners to actively protect the site. For example, a covenant over an ecological site may require that area to be fenced off.

Recommended Action	Parties Involved
<p>Agencies who have entered into covenant agreement with landowners should provide expertise to help landowners fulfil their responsibilities. They should also take an ongoing interest in the habitat concerned.</p> <p>Disinterest from agencies once covenant agreements are signed will reduce public acceptance of covenants in the future.</p>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ QEII National Trust</li> </ul>

### 4.3.3 Government Funded Works

Habitat protection, enhancement and restoration can be funded by central and local government works - either as distinct projects or as part of larger development (e.g. flood protection works).

DoC funds restoration works in accordance with its conservation priorities.

Recommended Action	Responsibility
a) Undertake enhancement activities as part of on-going management and during the implementation of major river works.	◆ WRC
b) Undertake habitat protection and restoration works in accordance with DoC's conservation priorities.	◆ DoC
c) The provision of funding for restoration works and replanting is dependent on the outcome of the: <ul style="list-style-type: none"> <li>• KCDC Environmental Strategy, and</li> <li>• the annual plan/estimates process.</li> </ul>	◆ KCDC

### 4.3.4 Landowner and Community Support

KCDC, WRC and DoC can encourage habitat protection and enhancement by supporting the efforts of private landowners and community groups. Providing technical advice and materials can do this.

Planting native trees is a key activity that involves landowners and community groups. However, too often riparian planting fails because it is not undertaken properly, despite the best intentions of the people involved.

To overcome this problem a guideline to riparian planting on the Waikanae River is included in the Appendix of the Strategy. These guidelines will need to be refined in

the future to make them more user-friendly and more widely available to the community.

<b>Recommended Action</b>	<b>Parties Involved</b>
(a) Provide technical advice and information to landowners and developers on habitat protection, enhancement and creation (especially wetland areas, backwaters and oxbows).	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> <li>◆ DoC</li> </ul>
(b) Revise the riparian planting guidelines in Appendix 1. Address: <ul style="list-style-type: none"> <li>• key locations that would benefit from riparian planting;</li> <li>• methods of dealing with potential problems such as weeds, pest damage, theft and drought;</li> <li>• any ongoing maintenance requirements.</li> </ul> Provide the guidelines in a user-friendly format that can be circulated to community groups involved in planting initiatives.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> <li>◆ DoC (provision of technical advice and expertise)</li> </ul>
(c) Provide native seedlings free of charge for revegetation projects (subject to the availability of funds from the annual plan).	◆ KCDC
(d) Support community groups by removing willows where it does not conflict with flood protection objectives.	◆ WRC
(e) KCDC is looking at the possibility of providing rates relief or direct grants in exchange for habitat protection. If funds are provided the priority for any assistance will be ecological sites identified in the District Plan Heritage Register.	◆ KCDC

## 4.4 Water Quality

Methods available for maintaining and enhancing water quality are:

- regional plan provisions (the proposed Freshwater Plan and the Transitional Regional Plan);
- government funded works;
- support for landowner and community efforts;
- a Riparian Management Group which has been established within the Regional Council. One of the jobs of this group will be to develop policy options on where and how to use riparian management.

### 4.4.1 Proposed Freshwater Plan for the Wellington Region

The Environment Section of WRC administers the Proposed Freshwater Plan. In the Plan, water quality suitable for water supply purposes is sought for the catchment above the Waikanae Water Treatment Station. Water quality for contact recreation purposes is sought below the Water Treatment Station. The Plan sets restrictions on discharges to and abstractions from the river aimed at achieving these goals.

### 4.4.2 Government Funded Works

Riparian management works funded by the Regional and District Councils, targeted at specific parts of the catchment, could be used to enhance water quality. The findings of the Riparian Management Group may provide direction to any works undertaken.

### 4.4.3 Supporting Landowner and Community Efforts

Water quality in key areas could be enhanced through landowner and community riparian planting. Providing information on appropriate locations can encourage such efforts and planting methods aimed at reducing run-off (for example the Riparian Planting Guidelines in Appendix 1).

Water quality can also be improved by encouraging and educating farmers to keep stock out of waterways.

Recommended Action	Parties Involved
a) Provide information to landowners and community groups on how to undertake riparian planting to reduce run-off.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
b) Make information about the riparian management available to landowners.	<ul style="list-style-type: none"> <li>◆ WRC Environment Division</li> <li>◆ KCDC</li> </ul>

## 4.5 Fish Habitat

Habitat for both trout and indigenous fish species should be provided within the catchment. This means maintaining fish passage, riparian vegetation and habitat variation (e.g. pools and ripples for both native and indigenous species, wetlands, backwaters for indigenous species, and undercut banks for trout).

The methods for enhancing fish habitat are:

- statutory controls protecting fish passage;
- advocating for the removal of barriers to fish passage;
- Regional Council flood protection works.

### 4.5.1 Fish Passage and the Freshwater Fisheries Regulations

In accordance with the Freshwater Fisheries Regulations 1983 DoC has a responsibility to ensure that fish passage is maintained. Within the Waikanae River catchment DoC is surveying instream structures to identify fish barriers. An initial list of structures that need to be modified to allow fish passage will soon be available.

Ongoing surveys are likely to add further structures to this list. Modifications to these structures to make them passable are often relatively minor, inexpensive exercise due to the natural ability of many native fishes to climb or wriggle over obstacles.

The most significant obstruction to fish passage on the Waikanae River is the Water Supply Weir. KCDC is in the process of constructing a fish pass. Construction is scheduled to start in April 1999 and to be completed by December 2000.

## 4.5.2 River Management Works

River management works can be designed to enhance instream habitat. This involves maintaining or restoring a variety of river flows, river edge types, backwaters and wetlands. This can be achieved with the use of durable flood protection structures such as riprap and groynes. These structures provide for fish habitat by:

- limiting the need to disturb the bed of the river with machinery;
- creating pools as a result of the current moving against the hardened surfaces.

A specified number of pools are required along the river as a condition of the long-term consent for river maintenance works.

Ideal habitat for trout includes a range of water depths and velocities.

<b>Recommended Action</b>	<b>Parties Involved</b>
a) Continue ongoing surveys of instream structures and advocate for their modification where they create an obstacle to fish passage.	<ul style="list-style-type: none"> <li>◆ DoC</li> <li>◆ Fish and Game Council</li> </ul>
b) Identify opportunities to enhance fish habitat as part of river protection works.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ Fish and Game Council</li> </ul>

## 4.6 Recreation and Access

The methods involved in the provision of recreational facilities, and access ways to and along the river are:

- esplanade reserves, esplanade strips and access strips;
- government funded works;
- landowner and community support.

Providing for recreation and access can involve:

- providing recreation routes to and along the river and its tributaries;
- the creation of swimming holes as part of river works;
- providing facilities such as toilets within park areas adjacent to the river;
- providing location and interpretation signs.

### 4.6.1 Esplanade Reserves and Strips and Access Strips

(See also Section 4.2.1.2)

KCDC has policy of providing public access to and along waterbodies, such as the Waikanae River, through the provision of Esplanade Reserves, Esplanade Strips and Access Strips.<sup>20</sup> Opportunity occurs where land adjacent to the river is subdivided, and Reserves and Strips can be required as a condition of consent.

#### ***Esplanade Reserves and Strips for Access Purposes***

Reserving land from subdivision is, by itself, a patchy and not very effective way of providing continuous riparian areas available for public access. Therefore, KCDC has focused its effort by identifying priority areas where reserves or strips should be created for access purposes. These are set out below:

Downstream of the SH1 bridge	<ul style="list-style-type: none"> <li>• 20 metre Esplanade Reserves, with greater widths allowed within 1000 metres of the river mouth.</li> <li>• 3-5 metre Esplanade Strips can be negotiated with landowners if no subdivision occurs (access purposes).</li> </ul>
Upstream of the SH1 bridge	20 metre Esplanade Strips
Mazengarb Stream	20 metre Esplanade Reserve in urban area

Where public access is a high priority and/or subdivision is unlikely KCDC will negotiate with landowners to establish Esplanade Strips.

<sup>20</sup> District Plan, C 10.1, C, Objective 1



### **Access Strips**

Access Strips to Esplanade Reserves and Strips, sought as a condition of subdivision consent, are not affected by lot size. Therefore, it is a very useful method of providing for public access.

KCDC will also negotiate with landowners where public access is a high priority and purchase or use the reserve contribution requirement to secure an Access Strip. Each case will be looked at on its merits and will in part depend on available funds and the type of subdivision.

Generally access strips shall be fenced and will be at least 3m wide. They shall include boardwalks where erosion to sand dunes by pedestrians is likely. Any structures on dune systems (including boardwalks) shall be designed so as to avoid deflecting or accelerating erosion. However, the conditions of access, fencing requirements and the provision of boardwalks will be negotiated when KCDC purchases the easement<sup>21</sup>.

<b>Recommended Action</b>	<b>Parties Involved</b>
The importance of public access identified in the Strategy will be taken into account when the District Plan is reviewed.	◆ KCDC

### **4.6.2 Government Funded Works**

Recreation facilities and access ways can be funded by central and local government works - either as distinct projects or as part of larger development, for example flood protection works.

#### **Issues**

1. Swimming holes naturally occur on the outside of river bends where the bank is vulnerable to scouring. As a result WRC often ends up filling in swimming holes as part of its flood protection works. This conflicting use could be overcome if WRC provided swimming holes in areas that are not vulnerable.
2. Numerous opportunities exist to enhance the public access network inland of SH1 especially from the gorge into the hinterland. These possibilities need further investigation.
3. Dense willow plantings prohibit access the river. Access corridors through the willows of up to six metres wide are possible without compromising the integrity of flood protection works.

DoC's policy on recreation and access in the Waikanae Estuary Scientific Reserve is described in Section 10.

<b>Recommended Action</b>	<b>Parties Involved</b>
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<sup>21</sup> *District Plan, H.7 Access Strips*

a)	Undertake improvements on recreational facilities and public access as part of ongoing maintenance and during the implementation of major river works.	◆ WRC
b)	Continue the building and maintenance of walkways in co-operation with landowners and service groups, including the continuation of the walkway on the south bank. Continue the development of recreational facilities subject to funding from the annual plan and reserve contributions from subdivision and development.	◆ KCDC
c)	Facilitate the development of swimming holes when designing flood protection works. Known swimming holes should be signposted, and public access and picnic areas provided for wherever appropriate.	◆ WRC (as part of major works).
d)	Investigate the suitability of an appropriate public walkway/cycleway network for upper areas of the Waikanae catchment.	◆ KCDC ◆ WRC Regional Parks Group or Environment Division
e)	Maintain cleared access ways to the river through the dense willow plantings at various points.	◆ WRC

### 4.6.3 Landowner and Community Support

Public access ways across private land depend upon the co-operation of the landowners. This depends on the good will of the landowner and the encouragement, technical advice, labour and materials provided by local government and community groups.

The Waikanae Rotary chapter along with the Parks and Reserves section of KCDC have upgraded and extended the walkway on the north side of the river. Co-operation from landowners was essential as it involved public access over private land. The most significant landowner and contributor was the late Mrs Eileen Blake whose property is downstream from Jim Cooke Park.

<b>Recommended Action</b>	<b>Parties Involved</b>
a) Provide information to landowners on the appropriate location and development of access ways and recreational facilities on their land.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC (within the River Corridor)</li> </ul>
b) Provide materials, technical guidance and supervision for community projects.	

Photograph 4: Wi Parata’s tree, a site of importance to Maori

## **PART B**

### **Protecting and Improving the River Corridor Environment**

In some cases the flood protection works undertaken on the river may conflict with the actions recommended in the Strategy. In these situations the need for flood protection will take precedence over the objectives of the Strategy.

Flood protection works recommended for the river were determined through the floodplain management planning process. Those recommendations provide for the level of flood protection sought by the community. They include proposed willow planting and riprap identified in figures 5-10.



## 5. Parikawau/Edgewater Park

(See Figure 5)

### Existing Landscape and Vegetation

The River Corridor is visually confined on both sides by vegetated higher terraces, creating a feeling of seclusion.

Native vegetation is a feature with:

- a remnant of kohekohe forest opposite Kebbell's Bend;
- patches of kohekohe, Karaka and other natives mixed among exotic vegetation on the higher ground in the Corridor;
- a forest remnant on the hill behind the highway.<sup>22</sup>

On the south bank a concrete works and a house removal storage site occupy the area immediately below the bridge. This site is mainly screened from the riverbed by vegetation.

Edgewater Park is characterised by open spaces surrounded by native and exotic vegetation and includes BBQ facilities and playground equipment. There is also a swimming hole in the river adjacent to the Park.

### Proposed Flood Mitigation Works

A sharp bend in the river at Kebbell's Bend is causing erosion on the south bank where base rock has been exposed. Realignment of the river across the grassy ground inside the bend is identified in a priority list for major flood mitigation works in the Waikanae Floodplain Management Plan.<sup>23</sup> These works are scheduled for the 1999/2000 financial year.

When the major realignment occurs it will create accessible low ground at the base of Kebbell's cliff.<sup>24</sup>

In the meantime, less major works are envisaged to secure the river in its present alignment. These works involve the placement of rock riprap on the south bank of the bend and vegetation protection up and down stream.

<sup>22</sup> Ecological site no. 71 in the District Plan

<sup>23</sup> *WFMP*, 1997, P.40

<sup>24</sup> *Phase Three Investigations*, March 1994, p. 20

## 5.1 Vegetation Management

The kohekohe forest remnants in or near this reach are of high ecological value due to their comparative rarity. Therefore, steps to maintain their health and extend this forest type locally are recommended as the principal objective in this area.

Most of the river edge has been planted with willow and poplar which creates a very regular and predictable vegetation character along the river itself and separates the river visually from its environs. To ensure bank stabilisation this type of planting will continue to be necessary on most of the river edge.

The following actions can be taken in co-operation with adjoining landowners to reduce the dominance of the willow/poplar mix and create a more diverse vegetation pattern.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank</b>	
<b>A</b>	<ul style="list-style-type: none"> <li>Upstream of Edgewater Park the high ground is well vegetated with a mix of local native and exotic species. Extend the kohekohe forest type through planting and weed control to encourage self-seeding of native species beneath the canopy.</li> <li>The extended garden plantings are a feature of local interest. They need not be excluded provided that the plantings are of species that will not self seed and compete with native vegetation.</li> <li>Adjacent property owners obviously use and enjoy this area and there is the potential to enlist their help with vegetation management in this area. Foster their understanding of the ecological value of the local kohekohe forest and potential weed problems from garden rubbish and garden escapes.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ DoC</li> <li>◆ WRC</li> </ul>
<b>B</b>	<ul style="list-style-type: none"> <li>In several places the river berm has been extended (low ground has been reclaimed behind older rock lining of the bank and willow plantings). Introduce appropriate native species into these areas and gradually confine the willow/poplar mix close to the river edge.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> </ul>

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank cont....</b>	
<b>C</b>	<ul style="list-style-type: none"> <li>• Retain the open character of Edgewater Park for its recreational value. New plantings should be confined native species intended to diversify the existing vegetation framework.</li> <li>• Retain the poplars and willows as the main tall trees as they are less shady during the winter.</li> </ul>	◆ KCDC
<b>D</b>	<p>The health of the kohekohe remnant forest downstream of Edgewater Park is adversely affected by:</p> <ul style="list-style-type: none"> <li>• ground level weed growth inhibiting regeneration;</li> <li>• vines threatening to smother trees;</li> <li>• ground compaction from numerous tracks.</li> </ul> <p>Weed control is needed and one or two properly formed tracks and/or boardwalks constructed to define circulation routes and discourage uncontrolled exploration.</p>	◆ KCDC
<b>E</b>	If the river is realigned at the Kebbell's bend introduce planting of local native species at the base of the cliff, linking upstream to the Westernness terrace vegetation and across the river to the kohekohe remnant.	◆ WRC
	<b>South Bank</b>	
<b>F</b>	<ul style="list-style-type: none"> <li>• Downstream of the Westernness property, gradually phase out the poplar plantings and revegetate with native species, extending up the terrace edge to link up with the native vegetation in the Westernness property and beyond to the forest remnant across the highway.</li> <li>• Remove the remaining pines to avoid self-seeding in what could ultimately become an area characterised by local native vegetation.</li> </ul>	◆ KCDC



<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>South Bank cont.</b>	
<b>G</b>	Keep some of the lower ground where the pines have been cleared as an open glade, for informal picnic use (some willows will need to be retained adjacent to the river to control bank edge erosion).	◆ KCDC
<b>H</b>	There is potential to extend the Kohekohe forest type in the Westernness property into the area currently occupied by industrial activities if this land ever comes into public ownership (see Land Ownership below).	◆ KCDC ◆ WRC (within the River Corridor)

## 5.2 Access

Access is well provided on the north bank with an attractive meandering path and several access points from nearby residential areas.

On the south bank access via the gravel beaches is only possible down to Kebbell's Bend where the river cuts in against the cliff face. However public access adjacent to the riverbed is not permitted across either:

- the industrial sites;
- the private land at the top of the cliff at Kebbell's Bend.

<b>Ref.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>E</b>	<ul style="list-style-type: none"> <li>• Negotiate walking access over private land around the top of the Kebbell's cliff and clear a route back down to the river at each end.</li> <li>• In the longer term, if the river is realigned, develop the river walkway around the base of the cliff.</li> </ul>	◆ KCDC ◆ WRC (as part of major works)
<b>H</b>	<ul style="list-style-type: none"> <li>• Negotiate walking access over the industrial sites.</li> </ul>	◆ KCDC ◆ WRC

### 5.3 Interpretation

The significance of the kohekohe remnants in this reach warrant some on-site interpretation, partly as a feature of interest but also to foster understanding and appreciation of their ecological significance.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
C	<ul style="list-style-type: none"> <li>• Provide an interpretative sign at Edgewater Park, as this is the main point of access to the kohekohe remnants up and down stream. This could include information on:               <ul style="list-style-type: none"> <li>i) the forest type and its ecological significance;</li> <li>ii) some basic management principles such as weed control, the need to minimise damage to the under-storey;</li> <li>iii) the opportunity of extending the vegetation type locally;</li> <li>iv) any heritage significance of the remnants.</li> </ul> </li> <li>• Provide professional advice on interpretative signs</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ Tangata Whenua</li>   <li>◆ DoC</li> <li>◆ Tangata Whenua</li> </ul>

Photograph 5: Waikanae River Corridor from SH1 Overbridge

## 5.4 Land Ownership

As noted above, public ownership of the industrial sites beside State highway 1 would have benefits for recreation and vegetation management. The building removals activity, in particular, does not need a riverside location. The extent to which the concrete plant uses river-sourced material should be investigated. Possible alternative sites for both activities should be investigated.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>H</b>	Aim to acquire, in public ownership, the land currently occupied by Gold Coast Building Removals Limited and the Dricon Waikanae Premix Plant.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC (only that part within the River Corridor)</li> </ul>

**Figure 5: Parikawau/Edgewater Park Reach**



## **6. Waipunahau/Jim Cooke Memorial Park**

*(See Figure 6)*

### **Existing Landscape and Vegetation**

Below Kebbell's Bend there is a distinct contrast between each side of the river.

On the north side, the berm opens out to a strip of open ground above the river and then broadens to wide-open ground at Jim Cooke Memorial Park.

Upstream of the park, a significant kohekohe remnant on adjacent private land is screened from view by mature pines. These pines are currently the most visually significant vegetation within the reach.

While adjacent residential and grazing land is mainly screened by stopbanks, the proximity of residential development is evident by glimpses of housing and by places where garden planting has extended into the Corridor. Currently, the prominent dune seen downstream of this reach provides a rural backdrop but the proposed Howarth subdivision will bring housing in to view.

In contrast, the south bank is essentially rural and unmanaged in character. The walking track is alternately open to the adjacent farmland with views of the inland hills or screened by farm type shelter plantings. Along the river dense undergrowth of tree lucerne, blackberry and willow screen the river.

### **Proposed Flood Mitigation Works**

The river has developed an exaggerated meander, placing a 50m stretch of stopbank at risk. To reduce the risk of stopbank damage, realignment of the river is proposed. This involves extensive bank protection works, including stretches of both rock riprap and willow planting.

This will also result in some additional land being added to the berm on the north bank and some land lost from the south bank, near the existing meander.

Reconstruction of the stopbank extending downstream from Nimmo Avenue West is also proposed. The existing stopbank will remain and another will be built parallel on the riverside.

## 6.1 Vegetation Management

On the north bank planting would provide shelter and a more attractive recreational setting at Jim Cooke Park. The kohekohe forest remnant, as with the reach upstream, is of high ecological value due to its comparative rarity (A).

On the south bank the rural outlook should be retained, but there are opportunities to introduce native plantings into the scrub along the river.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank</b>	
<b>A</b>	<ul style="list-style-type: none"> <li>• Seek protection of the privately owned kohekohe forest remnant through negotiation with the landowner in the short term and possible acquisition of the land in the long term.</li> <li>• In the long term remove the pines and replant with material sourced from the kohekohe remnant. Although the pines provide a buffer, replanting in natives would help to provide a visual and ecological link to the kohekohe remnants further upstream.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>
<b>B</b>	Downstream from the pines, retain large open areas as a contrast to the enclosed character upstream but replant a framework of vegetation to define informal picnic areas and provide shelter.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC (part of major work)</li> </ul>
<b>D</b>	<ul style="list-style-type: none"> <li>• As far as possible, keep the area currently occupied by the exaggerated meander as low ground and revegetate with suitable local species to form a small wetland.</li> <li>• Where the bank has been ripped use toetoe and flax in places as an alternative to willows. If this is not done willow plantings will screen the rural outlook across the river.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC (as part of major works)</li> </ul>

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank cont.</b>	
<b>E</b>	Introduce buffer plantings of species attractive to birds along the base of the existing stopbank in close liaison with the adjacent property owners, after the new stopbank is constructed. This will increase privacy for adjacent properties and provide bird habitat around the open ground of the playing field.	◆ WRC
<b>F</b>	<ul style="list-style-type: none"> <li>• The extended garden plantings are a feature of local interest and need not be excluded provided that the plantings are of types that will not self-seed and become a weed problem in the Corridor. These property owners obviously use and enjoy this area and there is the potential to enlist their help with vegetation management here.</li> <li>• Foster property owners understanding of revegetation objectives and of weed problems that can arise from garden rubbish and garden escapes.</li> </ul>	◆ WRC
	<b>South Bank</b>	
<b>G</b>	<ul style="list-style-type: none"> <li>• The comparatively unmanaged vegetation here is part of the rural character. Visual interest could be improved and wildlife habitats diversified by introducing more plant species such as cabbage trees, mahoe and coprosma, a few specimens of which occur here.</li> <li>• The areas where tree lucerne is well established have potential to provide cover for under-planting.</li> <li>• Weed control may be needed in places, especially blackberry.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
<b>H</b>	<ul style="list-style-type: none"> <li>• Where possible replant the existing poplars as a feature around the bend encircling Jim Cooke Park. Also interplant with grouped kowhai (willows may also be need to control bank edge erosion).</li> </ul>	◆ WRC



## 6.2 Access

Access along the south bank is via an old haul road. This access comes to an abrupt end where the river cuts in to the higher ground at the Kebbell's bend and crosses private property.

The fence around the playing fields at the downstream end impedes access to the walkway beyond. Clear access to the stile crossing on to the Blake property is needed.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank</b>	
<b>I</b>	Modify the fence line around the Jim Cooke Park playing fields to allow clear access to the downstream walkway. In the longer term ensure the walkway route is obvious and accessible here, when the playing field area is modified as a result of stopbank construction (see Recreation Facilities below).	◆ KCDC
<b>A</b>	Entry to the kohekohe remnant should be limited to weed control and restoration activities whether or not it is in private ownership.	◆ KCDC
	<b>South Bank</b>	
<b>G</b>	Ensure that the old haul road is maintained for public access.	◆ WRC

## 6.3 Recreation Facilities

The new stopbank will encroach onto the playing field area and the playing fields will inevitably be disturbed by the construction. They will need to be reinstated in a modified layout. Rather than keeping the playing fields strictly within the legal boundary of the park (currently marked by a fence) the layout of playing fields, picnic areas and vehicle access should be redesigned as an integrated concept covering both the park area and the adjacent river berm areas in co-operation between KCDC and WRC.

Photograph 6: Jim Cooke Memorial Park

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>J</b>	Redesign the entire open space beside the river in the Jim Cooke Park area as part of the stopbank construction works to facilitate compatible use for both formal and informal recreation.	<ul style="list-style-type: none"> <li>◆ WRC (part of major works)</li> <li>◆ KCDC</li> </ul>

## 6.4 Interpretation

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>A</b>	<ul style="list-style-type: none"> <li>• Interpretation explaining the significance of the privately owned kohekohe remnant would be worthwhile if it becomes a visual feature of the River Corridor through removal of the pines.</li> <li>• Provide professional advice on interpretative signs.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ tangata whenua</li> </ul>

**Figure 6: Waipunahau/Jim Cooke Memorial Park Reach**

## **7. Pukekawa Reserve Reach**

*(See Figure 7)*

### **Existing Landscape and Vegetation**

#### ***North Bank***

At the upstream end is the privately owned Blake property. This is an attractive pastoral landscape enclosed by a low river terrace with mixed vegetation to the north and a narrow strip of willow and poplar along the river edge. This open character then passes into a narrow stretch. It is enclosed between dense garden plantings on adjacent private properties and tangled willow in a backwater formed by a former river channel.

At Greenaway Road, the corridor opens out on to a wider open area. Here a picnic/parking area, screen planting and a wetland area with ponds have been recently developed as part of the restoration following flood mitigation works (see below). An old sand dune sits behind this swampy area and mature pines on this higher ground are a feature.

#### ***South Bank***

The river bends around a prominent sand dune here. On the east side the Corridor is a comparatively narrow strip, passing close below the dune with a line of poplar and cypress on the inland side and willow along the river. On the west side, low-lying paddocks lie between the river and the dune.

A line of poplars creates an avenue effect along the walkway that is separated from the main river by lower lying ground occupied by willows. Further down, the walkway passes over boggy ground with a backwater fed by a small stream

The dune is a strong visual feature of this stretch with significant natural values. The unkempt pasture reverting to bracken and blackberry, together with the remnant native vegetation, reinforces the rural, relatively unmanaged character of the walkway. However, this will change significantly with the approved lifestyle lots subdivision which will introduce housing and roading on to the dune with properties extending right down to the River Corridor.

### **Flood Mitigation Works**

In 1997 the former sharp bend at the lower end of this reach was realigned and protected with associated riprap and willow bank protection works. Two new stopbanks were also constructed.

## 7.1 Vegetation Management

This reach is characterised primarily by rural land uses with associated exotic tree plantings such as poplar and pine. Native vegetation is mainly in the form of isolated vestiges, such as scattered cabbage trees, but new native plantings have been introduced as part of the flood mitigation works.

The main significant remnants of native vegetation occur on the Howarth dune. The kohekohe forest remnant on the east side of the dune is protected in the District Plan.<sup>25</sup> On the west side there are scattered specimens of cabbage trees and kahikatea. Opportunities to protect and develop vegetative links to these remnants need to be explored.

There is considerable opportunity to diversify habitats in this reach, where areas of lower lying ground with a high water table present the conditions where former native wetlands and swamp forests would have occurred.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank</b>	
<b>A</b>	The Blake property occupies what appears to be a former river meander. If this land comes in to public ownership in the future, retain the pastoral character but investigate the potential of the lower lying ground near the river terrace, to be developed in to a pond/wetland area.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
<b>B</b>	Maintain buffer planting where possible behind the new stopbanks for privacy and shelter to adjacent properties.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
<b>C</b>	<ul style="list-style-type: none"> <li>• The former river channel downstream from the Blake property is a valuable backwater habitat with some wetland species already evident.</li> <li>• Assist the development of a wetland habitat by thinning of the willows and planting with appropriate native species.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> </ul>
<b>D</b>	Monitor, maintain and interplant recent plantings in the Pukekawa Reserve with additional species as plantings become established.	<ul style="list-style-type: none"> <li>◆ WRC</li> </ul>

<sup>25</sup> *KCDC District Plan, I, Heritage Register, E82*

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>South Bank</b>	
<b>E</b>	<ul style="list-style-type: none"> <li>Maintain the “poplar avenue” along the walkway, as a characteristic feature of the rural setting. Extend the poplars with native under-planting, along the inland side of the walkway to provide screening from the Howarth subdivision.</li> <li>Encourage local landowners to take part in the planting.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
<b>F</b>	Plant the Esplanade Reserve between the Howarth subdivision road and the walkway with native species of the kohekohe forest type. This will provide visual screening and bring a vegetative link as close as possible to the kohekohe remnant. Willow planting may be needed adjacent to the river to control bank edge erosion.	◆ KCDC
<b>G</b>	Revegetate the proposed walkway along the small stream from the river to the subdivision on the east side of the dune with native wetland/swamp forest species to tie in with the scattered remnants near the stream.	◆ KCDC
<b>H</b>	Diversify vegetation on the riverside of the walkway where low-lying ground appears to have been extended by river protection works. Use wetland species in backwaters and former channels.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>

## 7.2 Access

With the help of the Rotary Club KCDC has developed a walkway along the north bank of this reach. Public access has been negotiated across the Blake property on the condition that this will be pedestrian only, with no horses, dogs (unless on a lead) or cyclists. The walkway has also been developed across the Regional Council grazing land downstream. Further improvements are currently being made to the walkway adjacent to the Waikanae Christian Holiday Camp. These include a footbridge over a stream mouth.

There are significant stretches of willow along both sides of the river in this reach, which impede access to the river.

The proposed Howarth subdivision includes a walking/equestrian route that connects through to the Greendale Park subdivision further south. This concept has been supported by other local landowners who are keen to develop walking and horse riding opportunities as part of local rural residential living. The route has two access points to the river, with the potential to have a short local side trip from the river walk up to a vantage point on the top of the dune as well as the longer route south.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
A	<ul style="list-style-type: none"> <li>• Maintain access across the Blake property. This is crucial to achieving a continuous public walkway on this side of the river.</li> <li>• Developers should be encouraged to be involved in this process.</li> <li>• Maintain the signs where the walkway enters the private property - stressing that the land is private property with restrictions on the type of pedestrian access permitted (see above).</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC (where the walkway is developed as part of a major work)</li> </ul>

Photograph 7: Pukekawa Reserve

## 7.3 Recreation Facilities

Greenaway Road provides a central entry point to the River Corridor, accessible from both the Waikanae and Waikanae Beach communities. It has been developed as a low key recreation area with limited drive-on access and picnic tables.

	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>I</b>	Provide toilet block.	◆ KCDC

## 7.4 Interpretation

Interpretation of habitats in this reach would foster understanding of their significance and, hopefully, enlist support in their protection and development.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>D</b>	<ul style="list-style-type: none"> <li>Provide interpretation of the wetland habitat in Pukekawa Reserve with information about the former habitats that were common in the area and the objective of restoring a similar type of habitat.</li> <li>Provide interpretation on the heritage values of the area.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ tangata whenua</li> </ul>
<b>J</b>	<ul style="list-style-type: none"> <li>Provide interpretation of the kohekohe remnant on the Howarth dune (similar to that proposed for Edgewater Park).</li> <li>Enlist the support of the new property owners in introducing compatible plantings on their land.</li> </ul>	As above

## 7.5 Land Ownership

Within this reach the Blake property is significant because it occupies all of the accessible land in the River Corridor for some distance. It should also be noted that several of the lots in the Howarth subdivision extend into the River Corridor.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>A</b>	Aim to eventually purchase the Blake property for public ownership.	◆ WRC



**Figure 7: Pukekawa Reserve Reach**

## 8. Te Aorere/Waikanae Christian Holiday Camp

(See Figure 8)

### Existing Landscape and Vegetation

#### North Bank

This is a very attractive pastoral parkland landscape with groups of mature poplar and macrocarpa. The holiday park buildings are set well back from the river and partially screened from view so do not intrude on the pastoral character. The lower end of the reach is defined by a stream that flows out round an old river meander to the river.

The river, visually, is part of this pastoral landscape because its edge is much more open here than many stretches of the river. Rounded river boulder riprap permits a grassy edge close to the river and, further down, a line of poplars along the bank makes it easier to see into and out of the river than the usual dense willow plantings.

#### South Bank

Riverside vegetation is characterised by dense willow with distinctive stands of silver poplar. The vegetation becomes less dense at the Otaihanga end with some grassy banks where attractive views across to the holiday park are a feature.

### Flood Mitigation Works

The sharp meander at the upper end of this reach has been realigned with associated riprap and willow bank protection works. This realignment has cut a new river channel across the tip of the paddock in the bend on the south side.

The realignment has had a significant effect by straightening the river from its natural meander pattern and, on the south side, introducing a long stretch of willows along the new alignment. This significantly reduces the visual interest of the river here. It has required re-routing the walkway for a short distance.

### 8.1 Proposed Flood Mitigation Works

A localised stopbank is proposed to protect the Corich property.

Fig.	Recommended Actions	Parties Involved
A	Ensure that there is landscape design input to the stopbank design. The structure should be visually integrated in its setting through contoured mounding rather than being an angular engineered embankment.	◆ WRC

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## Photograph 8: Waikanae Christian Holiday Camp

### 8.2 Vegetation Management

The vegetation in this reach is characterised by exotic trees, most notably poplars, which are part of the rural character. On the south bank there are also scattered specimens of mature cabbage trees and mahoe. There are opportunities to diversify and strengthen this mixed character of vegetation by:

- extending it into the wider areas of established willow on the south bank;
- introducing grouped plantings between the river and the future Corich stopbank.

The vegetation character at the holiday park is already very distinctive and should be retained if this land comes into public ownership in the future. The recreational use of the Waikanae Holiday Park property is very appropriate to the River Corridor. There is a potential to enhance the wetland plant species in the stream.

Although additional bank protection is not indicated here, river dynamics may change. If more bank protection is required in the future, methods other than willow planting, such as rock groynes and riprap, should be used so as to preserve the open character of the river edge.

The proposed bypass road passes through this reach. As construction is likely to have a major impact on the vegetation any enhancement of existing vegetation should be delayed until plans for the bypass are finalised. If it is built through this area the recommended enhancement should be included in the reinstatement works. The bypass will have significant buffer areas, and these provide an opportunity to develop a north-south greenbelt that links with the river.

<b>Fig.</b>	<b>Recommended Action</b>	<b>Parties Involved</b>
<b>B</b>	Where willows are thinning naturally behind the river edge in the wider stretches of established willow and interplant with groups of poplar and groups of local native plants. (Note, however, the above comments regarding bypass construction).	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
-	If the bypass road is constructed, recognise the buffer zones as a greenbelt.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
-	The recreational use of the River Corridor at the Holiday Camp should be commended and supported.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
<b>C</b>	Encourage the owners of the holiday park to enhance the wetland habitat around its stream and provide assistance where necessary	<ul style="list-style-type: none"> <li>◆ WRC</li> </ul>

### 8.3 Access

#### *North Bank*

The holiday park owners have agreed to permit the riverside walkway to pass along the river here provided that dogs are excluded and this section has recently been completed. At the lower end, a stream impedes access beside the river. A footbridge has recently been installed to give access across the stream.

#### *South Bank*

A vehicle track provides easy, wide access along the upper part but further down it narrows to an undulating foot track. The different character of this path adds to the interest of the river walk and should be kept as it is. Access to the river is impeded where dense willow breaks extend for significant distances.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>North Bank</b>	
<b>D</b>	<ul style="list-style-type: none"> <li>• Ensure that access across the holiday camp land is retained. It is crucial for achieving a continuous public walkway on the north side of the river.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
	<b>South Bank</b>	
-	<ul style="list-style-type: none"> <li>Provide signage identifying access points to the south bank. For instance at Otaihanga.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>
A	<ul style="list-style-type: none"> <li>Investigate removing the fence around the triangular paddock near Corich's to allow unrestricted public access in this area when the track is reinstated.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>
-	<ul style="list-style-type: none"> <li>Retain the relatively unmanaged nature of the foot track on the south bank.</li> <li>Limit maintenance to keeping vegetation clear of the path and addition of gravel where muddy conditions are forcing people to seek alternative routes at the expense of vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>

## 8.4 Recreational Facilities

This reach should be retained as a rural, undeveloped part of the river. Therefore, no recreational facilities are proposed.

Visitors to the holiday camp use the river for picnics, swimming, canoeing and rafting.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	If possible create at least one swimming hole in this reach when undertaking river management and protection works.	<ul style="list-style-type: none"> <li>◆ WRC</li> </ul>

## 8.5 Land Ownership

Within this reach the holiday camp land is significant because it occupies all of the land in the Corridor for some distance. On the south side the Corridor has potential to be revegetated (Muaupoko Stream has particular ecological value). Public ownership of this land would increase opportunities to carry out planting.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	Aim to eventually bring the privately owned land in the River Corridor into public ownership.	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ KCDC</li> </ul>

**Figure 8: Te Aorere/Waikanae Christian Holiday Camp Reach**



## 9. Arapawaiti/Otaihanga Reach

*(See Figure 9)*

### Existing Landscape and Vegetation

On the north bank this reach extends from the El Rancho to the point where the Weggery Estate dune comes close to the river. This dune defines the “inland” part of the river from the open estuary landscape. There are two backwater areas with some wetland plants - the El Rancho stream and an oxbow in a former river meander.

On the south bank, the berm is confined to a narrow strip that opens out halfway down to the Otaihanga Domain. Upstream from the Domain, the berm is comparatively unmanaged. Downstream, it is a well-maintained mown area with some garden plantings. Otaihanga Domain itself has a parkland character.

At the lower end of this reach the tidal influence brings an end to the willow plantings along the river.

### 9.1 Proposed Flood Mitigation Works

A stretch of rock riprap is proposed from just upstream of Makora Road to the Mazengarb Stream outlet. This is to extend down into the next reach and will extend the riverbank, adding a wider berm along the river edge.

A short stopbank is proposed between the two access ways to the Domain in Makora Road. Its exact location has yet to be decided but there are two main options to be considered.

1. Constructing the stopbank along the road edge within the Domain. This will have a significant effect on the Domain as a number of trees which are essential to its character would be removed and the stopbank would encroach on the lower ground which is already under intense pressure in the summer months for picnic groups. This option could be mitigated to some extent by designing the stopbank to avoid some of the trees but would, nevertheless, reduce the amount of lower ground and perhaps cut off some area from the central green which is a particular attraction for picnic groups.
2. Alternatively, a short section of Makora Road could be raised instead. This would affect adjacent properties during construction and affect access to these properties by steepening the driveways.

The riverbanks in this reach of the river are probable spawning grounds for whitebait. Therefore, it is important that suitable conditions for spawning are maintained.



<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
A	<ul style="list-style-type: none"> <li>• Consult with the local community and KCDC, as administrator of the Domain, to decide on the preferred option.</li> <li>• Carry out planting in case Option 1 is chosen.</li> <li>• Ensure that there are suitably vegetated banks with a sufficiently gentle slope to allow access for whitebait at the spring tide spawning times in this reach.</li> <li>• Experiment with flax and toetoe.</li> </ul>	♦ WRC

## 9.2 Vegetation Management

### *North Bank*

The pines (C) are highly valued by the local residents for their visual quality, shelter and roosting habitat for birds.<sup>26</sup> The pines do, however, visually cut off the oxbow from the River Corridor, masking its role as part of the river system.

Photograph 9: The Otaihanga Reach of the Waikanae River

Both the backwaters and the pond have ecological value as habitat for aquatic and bird life. There is potential to increase the diversity of local native wetland plant species in and around these.

<sup>26</sup> *Otaihanga Domain Management Plan*, Kapiti Coast District Council, 1993, p. 8 & 9

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	Protect the oxbow as an ecological area, not a recreational area.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
<b>B</b>	<ul style="list-style-type: none"> <li>• Retain the belt of pines and replant as they become over mature or a hazard except for the riverside edge of the oxbow.</li> <li>• When the pines come to the end of their life, do not replant so that the oxbow has a more evident relationship to the river.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
<b>C</b>	<ul style="list-style-type: none"> <li>• Remove the young pines from the open ground in the oxbow and introduce more groups of native trees typical of wet areas such as the kahikatea and pukatea.</li> <li>• Establish a nurse canopy of shrubby species around these trees that have been recently planted there.</li> <li>• Do not replace the ornamental exotics when these reach the end of their life.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>
<b>D</b>	Introduce more local native wetland plant species into the margins of the two backwaters to diversify these habitats (for example, flax, toetoe, and cabbage trees).	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>
<b>E</b>	Retain the young specimen pines in the open ground near the lagoon to reinforce the contrast in inland/estuarine character at the Weggery dune.	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>
<b>F</b>	<ul style="list-style-type: none"> <li>• Clear gorse and blackberry from the edges of the lagoon and introduce more local native species typical of wetland margins such as cabbage trees and flax around the edges.</li> <li>• Revegetate the slope above with suitable local native species to diversify habitat and screen the houses above.</li> </ul>	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>G</b>	Investigate methods for reducing the contaminant loading in water discharging from the holiday park duck pond and 'Bridge Pond' (located immediately north of the Otaihanga bridge).	◆ WRC Environment Division

### **South Bank**

The parkland character of Otaihanga Domain is to be maintained (see the KCDC *Otaihanga Domain Management Plan*<sup>27</sup>). The close relationship between private gardens on the berm will be retained as a feature of interest. However, more use of native species along the river edge would provide a better transition to the natural qualities of the estuarine reach downstream.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>H</b>	Adjacent property owners obviously appreciate the river and already assist with vegetation management here. Their understanding of revegetation objectives and weed problems that can arise from garden rubbish and garden escapes should be fostered.	◆ WRC ◆ KCDC
<b>I</b>	When the riprap bank is extended revegetate with native species appropriate to this tidal transition area. These should be lower growing species to allow the river to be visible from Makora Road.	◆ WRC

<sup>27</sup> *Otaihanga Domain Management Plan*, Kapiti Coast District Council, August 1993

### 9.3 Access

Access to the river from the end of Weggery Drive West is poorly defined at present. If a walkway is developed to the north (see Figure 12) this could be developed as an entry point to both the river and the walkway.

Horse riding has been prohibited from the Domain and river walk on the south side because of incompatibility with the other recreational uses.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	When the future of the undeveloped Weggery Drive West land and potential walkway is decided, develop a parking area with improved access to the river through subdivision consents.	◆ KCDC
J	Signage at the Domain should direct horse riders to the end of Makora Road. Access to the river over private land from there should be formalised with signage in consultation with the landowner.	◆ KCDC

### 9.4 Recreation Facilities

The Otaihanga Domain Management Plan covers management of Otaihanga Domain. Additional recreation facilities are not envisaged on the north bank as the Waimanu Lagoon and beach in the next reach are the principal focus of recreation on this side. This side of the river should be kept principally as a walking area with natural values.

### 9.5 Interpretation

Interpretation of the wetland habitats on the north bank of this reach would foster understanding of their significance to river ecology and would, hopefully, enlist support in their protection and development.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
C,F	Provide information at the oxbow and lagoon about their relationship to the river, former habitats that were common locally and the objective of restoring these types of habitats in the area.	◆ KCDC ◆ DoC ◆ WRC

**Figure 9: Arapawaiti/Otaihanga Reach**

## 10. Kenakena/The Estuary

*(See Figure 11)*

### **Existing Landscape and Vegetation**

This reach extends from the Otaihanga Boat Club to the river mouth where tidal influence brings a dramatic change in terms of ecology and landscape character. Most of the estuary environment is a DoC Scientific Reserve. It is of national ecological importance, supporting a number of rare and endangered plant and wildlife species. The Scientific Reserve overlaps with the River Corridor near the mouth.

On the south side, the river opens out to a wide flat landscape in which estuarine flats and swamplands are the dominant features with Kapiti Island a prominent backdrop in the distance.

On the north side, the river flows close to sand dunes where there is a narrow strip of ecologically significant estuarine vegetation. The berms within the Corridor are mainly vegetated in rough grass, pampas, marram grass and reeds with patches of blackberry and gorse. The berm near the Waimanu Lagoon is maintained as mown grass for passive recreation and boat launching.

The unique qualities of this environment derive from the combination of river, estuarine flats and dunes. On both sides of the river its visual and ecological integrity is being severely compromised by on-going housing development. To the north of the River Corridor, housing is rapidly advancing on the remaining undeveloped sand dunes by the river and around the Waimanu Lagoon wildlife habitat. To the south, new housing is being developed to the very edge of the estuary.

### **10.1 Proposed Flood Mitigation Works**

The fine sandy material making up the riverbed and banks is highly mobile and easily eroded. Consequently, large movements in the river channel are possible in a major flood. Shore drift causes a build up of material that, in turn, causes the river mouth to gradually move southward. This threatens housing at the south end of the estuary, and increases flood levels in the river channel in the reach up to Otaihanga Domain by up to 500mm.

Figure 10: Waikanae Estuary Scientific Reserve

## 10.2 Riprap

WRC intends to keep the river within a preferred alignment by constructing rock riprap in places where the bank is eroding.

The proposed long stretch of riprap will introduce a comparatively straight, steep and regular edge to the river which, because of the reduced soil cover and saline conditions, is likely to support less vegetation than further up the river. This will have two main effects.

1. River edge habitats will be affected by less diversity of conditions and less vegetation to provide shelter and food. In particular, it may affect whitebait spawning which requires vegetated ground that will be covered during spring high tides, generally at the upper limit of salt water penetration.<sup>28</sup> This limit occurs around the area of the boat club where riprap is to be introduced.
2. Riprap is particularly visible as an artificial edge in this environment because of tidal movements which make it more exposed at low tide and because there is less camouflage from overhanging vegetation.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	<ul style="list-style-type: none"> <li>• Vary the batter slope, height and form of riprap to give a less contrived appearance and to provide some variation in habitat conditions.</li> <li>• Aim to have some areas of riprap near the boat club with a gentle enough profile to allow access to whitebait during spawning.</li> </ul>	♦ WRC

<sup>28</sup> WRFMP *Environmental Investigations*, 1992, p.39-40

Fig.	Recommended Actions	Parties Involved
-	<ul style="list-style-type: none"> <li data-bbox="411 230 1070 450">• Use rounded river boulders for riprap, as these are more in keeping with the river environment than quarried rock. Monitor how well fine material lodges in this as it has been argued that angular material accumulates and retains fines better.<sup>29</sup></li> <li data-bbox="411 495 1070 752">• Place a suitable rooting medium over the riprap and revegetate with suitable species<sup>30</sup> as soon as possible after construction. Repeat this when vegetation is destroyed and soil washed away, particularly in the area where whitebait spawning occurs.</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="1093 230 1390 264">◆ WRC</li> <li data-bbox="1093 495 1390 528">◆ WRC</li> </ul>

### 10.3 Cutting the River Mouth

WRC intends to keep the river mouth from progressing too far southward, by periodic cutting of the mouth. Cutting is required about every five years with the last cut occurring in 1995.

Photograph 10: Cutting the Waikanae River Mouth, May 1995

<sup>29</sup> *WFMP Environmental Investigations*, January 1992, p. 31

<sup>30</sup> *WFMP Environmental Investigations*, January 1992, p. 40



Cutting the river mouth affects the flow of water through the estuary and the periodic flushing that is considered beneficial.<sup>31</sup> The main lagoon in the estuary holds water while the river mouth is closer to the north (through river backwash), then becomes drier and stagnant when the river is in the mid part of its southward migration. As the river flows further to the south, the lagoon receives more water again by tidal flushing.

DoC sees the current management practice and the current regime as something of a compromise because it would prefer the lagoon to have more constant water. As the dynamics of the river and coastal influence are constantly changing, continued monitoring and consultation is required.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	<ul style="list-style-type: none"> <li>Ongoing liaison between WRC and DoC regarding the ecological effects of the river mouth management regime.</li> <li>Leave some high level of sand, preferably with the existing marram grass, on this spit to maintain bird habitat. The foredune where the river is cut is kept to a maximum height of 1 metre so that the river can cut its own direct line to the sea in the event of a major flood event.</li> </ul>	<ul style="list-style-type: none"> <li>◆ WRC</li> <li>◆ DoC</li> <li>◆ WRC</li> </ul>

## 10.4 Vegetation Management within the River Corridor

On the south bank the low grass and shrub cover should be retained as it is in character with the estuary environment. There is, however, potential to introduce buffer planting between the Otaihangā oxbow and nearby housing. Further screen planting could be planned around the Kotuku Park subdivision to reduce its visual impact within the River Corridor.

On the north bank a strip of estuarine vegetation at the river's edge has conservation value. There is potential to revegetate the river face of the Weggery Estate dune and increase planting on the berm near Waimanu Lagoon to diversify habitats and provide buffer screening between the river and new housing.

<sup>31</sup> WFMP *Environmental Investigations*, January 1992, p. 33

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>A</b>	Remove taller growing introduced woody species from the river berm below the Otaihanga oxbow.	◆ DoC
<b>B</b>	Introduce buffer planting of local native species; (i) on the wider berm adjacent to Otaihanga oxbow; (ii) adjacent to the housing on Makora Road; (iii) in the future, along the riverside boundaries of the Kotuku Park housing subdivision.	◆ DoC  ◆ WRC ◆ KCDC
-	Protect the estuarine vegetation on the north bank and control weeds.	◆ DoC ◆ KCDC ◆ WRC
<b>C</b>	Revegetate the river face of the dune inland of Waimanu Lagoon with local native species typical of the dune environment. Consult with Iwi about this first, as this may affect the site of the former Waimeha Pa.	◆ KCDC
<b>D</b>	Plant a buffer of local coastal species such as ngaio, cabbage tree and taupata near the riverside boundaries of new houses currently being developed beside Waimanu Lagoon.	◆ KCDC
<b>E</b>	Introduce more groups of flax and cabbage trees around the margins of Waimanu Lagoon to provide more bird habitat.	◆ KCDC

## 10.5 Mazengarb Stream

Pollution of the Mazengarb Stream is a major point of concern because of its impact on recreational activities and ecology. Extension of the stream via a drain cut through the middle of the Otaihanga oxbow has also altered the hydrology in the oxbow with possible effects on the habitats there.<sup>32</sup>

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>F</b>	Advocate for improved water quality in the Mazengarb Drain to enhance the habitat for freshwater fish, birds and indigenous plant communities. <sup>33</sup>	<ul style="list-style-type: none"> <li>◆ DoC</li> <li>◆ WRC</li> </ul>
	Any discharge of treated wastewater from the KCDC treatment plant complies with resource consents issued by WRC.	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>

## 10.6 Recreation and Access

The Scientific Reserve has high recreational use and already has tracks to direct public access. Whitebait fishing from the mouth of the Waikanae River is traditional and has been allowed by gazette notice. Other fishing at the Waikanae River mouth, within the Reserve, is in conflict with its classification as a scientific reserve.

There have been some problems with vehicular damage to dune and saltmarsh environments and with dogs disturbing bird life. The vehicle access through Kotuku Park subdivision is locked off to prevent the fragile estuary environment being disturbed.

Facilities for recreation are currently confined to a boat-launching ramp near the Otaihanga Boat Club and Waimanu Lagoon, and picnic tables and toilets at Waimanu Lagoon. Facilities appear to meet current demand so further provision is not recommended at this stage.

<sup>32</sup> *WFMP Environmental Investigations*, January 1992, p.11

<sup>33</sup> *Conservation Management Strategy*, DOC 1996, p.88

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>G</b>	Support landowners to stop public access through the Kotuku Park subdivision to the River Corridor.	<ul style="list-style-type: none"> <li>◆ KCDC</li> <li>◆ WRC</li> </ul>
-	<ul style="list-style-type: none"> <li>• Prepare a site plan for the Scientific Reserve to minimise the visitor impacts.<sup>34</sup></li> <li>• Seek bylaws under the Reserves Act to restrict vehicle access in the Reserve and allow dogs on leash only.<sup>35</sup></li> <li>• Investigate and consult with the public over the appropriateness of allowing fishing within the reserve, and maybe seek bylaws under the Reserves Act to allow some fishing for species other than whitebait.<sup>36</sup></li> </ul>	<ul style="list-style-type: none"> <li>◆ DoC</li> </ul>
<b>E</b>	Outside the Scientific Reserve any future development of recreational facilities should be confined to the Waimanu Lagoon and Otaihanga Boat Club areas and the rest of this reach kept undeveloped in keeping with the natural character of the setting.	<ul style="list-style-type: none"> <li>◆ KCDC</li> </ul>

Photograph 11: Canoeists on the Waimanu Lagoon

<sup>34</sup> *Conservation Management Strategy*, DOC 1996, p.89

<sup>35</sup> *Conservation Management Strategy*, DOC 1996, p.89

<sup>36</sup> *Conservation Management Strategy*, DOC 1996, p.89

## 10.7 Interpretation

DoC aims to encourage greater public appreciation of the conservation values of the Scientific Reserve through high quality interpretation. There is also the potential to foster a general understanding of the natural values of the area on the north side of the estuary even though the main focus of interpretation opportunity lies within the Waikanae Estuary Scientific Reserve.

The former Waimeha Pa site is also a feature of historic interest.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
-	<ul style="list-style-type: none"> <li data-bbox="411 611 1066 757">• Within the site plan for the Scientific Reserve suggested above, provide for a high standard of recreational and interpretation facilities.<sup>37</sup></li> <li data-bbox="411 801 1066 947">• Consult with tangata whenua on management of the Scientific Reserve, in particular on interpretation and management of historic resources.<sup>38</sup></li> <li data-bbox="411 992 1066 1249">• Provide at a suitable viewing point near the Waimanu Lagoon, general interpretation and a map of the local habitats and their significance. These would include the estuary and river, the Waimanu and Waimeha Lagoons and the Kapiti Marine Reserve.</li> <li data-bbox="411 1294 1066 1395">• Provide advice to WRC/KCDC on interpretation material outside the Reserve.</li> <li data-bbox="411 1440 1066 1541">• Consult with tangata whenua about possible interpretation of the Waimeha Pa site.</li> </ul>	<ul style="list-style-type: none"> <li data-bbox="1098 611 1185 645">◆ DoC</li> <li data-bbox="1098 992 1217 1059">◆ KCDC ◆ WRC</li> <li data-bbox="1098 1294 1185 1328">◆ DoC</li> <li data-bbox="1098 1440 1217 1473">◆ KCDC</li> </ul>

<sup>37</sup> Conservation Management Strategy, DOC 1995, 7.4, p.88

<sup>38</sup> Conservation Management Strategy, DOC 1995, 7.4, p.89

## 10.8 Land Ownership

The possible extension of the Waikanae Estuary Scientific Reserve is the main land ownership opportunity in the Estuary Reach.

Significant opportunities to preserve the estuary area from housing development have already been lost. However, there remains undeveloped land with ecological value along the south side of the river outside the Reserve. This includes an area of estuarine vegetation and the Otaihanga oxbow. The oxbow is important as an overflow area for the river, is a probable whitebait spawning site and is habitat for some rare plants.

For consistent ecological management, it would make sense for all of the estuarine habitats to be included in the Scientific Reserve. Currently the additional land in question is owned variously by DoC, KCDC and Kotuku Parks Ltd. If the Reserve were to be extended, the issue of land ownership and management responsibilities would need to be discussed by these parties. It should be noted that the private land is within the overflow fringe of the River Corridor. Housing development is therefore not appropriate.

<b>Fig.</b>	<b>Recommended Actions</b>	<b>Parties Involved</b>
<b>H</b>	<ul style="list-style-type: none"> <li>• Investigate and negotiate the extension of the reserve boundaries or management of adjacent area to establish buffers for the reserve, for example through covenants.<sup>39</sup></li> <li>• Discuss management responsibilities with KCDC regarding the land that it owns.</li> </ul>	◆ DoC

Photograph 12: Waikanae River Mouth and Estuary

<sup>39</sup> *Conservation Management Strategy*, DOC 1996, p.88

**Figure 11: Kenakena/The Estuary**

## 11. Walkways and Cycleways Linking the River Corridor with Surrounding Areas

*(See Figure 12)*

As development progresses on the Kapiti Coast, the demand for open space recreation areas will increase. There will be greater recreational use of the river, with potential for some of its natural qualities to be compromised as a result. Planning for open space and walking/cycling connections from the river to nearby areas will reduce future pressure by providing a choice of recreational settings and activities.

At present walking opportunities along the river are generally good on the north side of the river with linkages into existing roads. On the south side however walkways are more limited and linear, necessitating return by the same route or a commitment to walk the entire length of the river on both sides if a circular route is desired. Connecting walkways into the rural hinterland on the south side of the river will provide greater choices with the river included as part of a series of circular routes (see Figure 12).

The development of a walkway/cycleway from Otaihanga to Mazengarb Park via the Mazengarb Stream is a condition of the subdivision consent. Although polluted at present, this waterway has great potential to be improved and the riparian land revegetated to make an attractive public access route.

<b>Recommended Actions</b>	<b>Parties Involved</b>
a) Develop a walkway/cycleway from Otaihanga, north to the golf links. This will have the potential to eventually provide a long round trip to the Te Hakariki swamp, up the connecting stream to Nga Manu sanctuary and back through the remnant forest in the Parklands area of Waikanae to Waikanae Park.	◆ DoC ◆ KCDC
b) Develop a walkway/cycleway along the Muaupoko Stream to eventually connect through to the Tourist Activity Precinct (identified in the District Plan along State Highway One).	◆ KCDC ◆ WRC
c) Negotiate walking access over private land around the top of Kebbell's cliff.	
d) It is pleasing to note that part of this has already been identified in the subdivision plans for Greendale Park along with the opportunity to develop a circular route back to the river through the Howarth subdivision.	



**Figure 12: Walkways/Cycleways Concept**

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## **Appendix One: Planting Guidelines**

Throughout the Environmental Strategy there are various opportunities identified for restoring habitats or diversifying vegetation types, both within the River Corridor itself and in adjacent areas such as riparian reserves and potential ecological corridors.

It should be stressed that every revegetation project requires specific planning according to the site conditions, objectives of the project and resources available. To ensure success, informed advice should be sought in most cases, to select appropriate species and plan a programme of site preparation, planting and maintenance. In many instances, habitat restoration is a long-term undertaking that involves monitoring and successive planting as early 'nurse' plantings become established.

The following highlights some important issues that should be considered.

### **Weed Control**

Throughout the River Corridor weeds infestation is a serious problem. Species such as 'wandering jew' are rampant beneath the cover of existing vegetation, preventing the regeneration of native vegetation that would otherwise occur. Weed control is an essential pre-requisite to revegetation and will require ongoing management to maintain existing and newly established areas of vegetation.

Because of the necessity for weed control, planting should be carried out in small, manageable areas so that these can be readily maintained and monitored.

### **Species**

The success of revegetation depends on selecting species that are appropriate to the habitat and have proven to be reliable for establishing initial cover. In the short term, use of the more common but reliable species will have greater chance of success. Less common and slower growing species would be introduced as part of a longer-term, in-fill planting programme.

Native plant material should be grown from local seed sources to maintain genetic purity.

### **Nurse Planting**

Nurse planting greatly assists the establishment of native vegetation. Much of the revegetation recommended is underplanting with desirable long-lived woody species where some cover is already established. This provides advantageous conditions for many native species and reduces the chance of theft or vandalism because underplanting is less obvious than new plantings on open ground. It also adds to the diversity of existing vegetation. When planting on open ground is recommended, 'common' species with, perhaps, some exotic nurse plantings such as tree lucerne should be used for first plantings to establish quick cover.

These areas can then be underplanted with slower growing more “desirable” species, once established. These species will eventually grow into relatively tall trees and overtop the original nurse species that will finally be repressed by shade.

## **Plant Lists**

In terms of the Waikanae River Corridor a range of site conditions occur which influence the type of species that should be selected. These are indicated below, with some typical plant species appropriate to each indicated. These lists should be regarded as a starting point for planning planting projects and are not exhaustive. It should also be noted that within any one planting site, there might be a range of site conditions for which plants should be selectively located, e.g. a damp hollow below a well-drained slope, or permanently wet margins in a wetland, with drier edges.

Within the Waikanae Floodplain River Corridor, the main environmental factors that influence different vegetation types appear to be the level of water table and the presence of tidal influence.

Note: In general First Plantings should be planted densely to provide a ‘nurse’ canopy into which, when well established, the Subsequent Plantings can be introduced.

Photograph 13: Native Plant Nursery

Conditions/Habitat Type	First Plantings	Subsequent Plantings
<b>Upstream of estuarine influence</b>		
Dry ground sites, flood inundation rare or unlikely.	<p><i>Aristotelia serrata</i>, Wineberry  <i>Coprosma robusta</i>, Karamu  <i>Coprosma australis</i>  <i>Hebe stricta</i>, Koromiko  <i>Melicytus ramiflorus</i>, Mahoe  <i>Leptospermum scoparium</i>, Manuka  <i>Leptospermum ericoides</i>, Kanuka (drier, more fertile sites)  <i>Sophora microphylla</i>, Kowhai</p>	<p><i>Alectryon Excelsus</i>, Titoki  <i>Beilschmedia tawa</i>, Tawa  <i>Corynocarpus laevigatus</i>, Karaka  <i>Dysoxylum spectabile</i>, Kohekohe  <i>Elaeocarpus hookerianus</i>, Pokaka  <i>Knightia excelsa</i>, Rewarewa  <i>Pseudopanax crassifolius</i>, Lancewood  <i>Streblus banksii</i>, Towai</p>
Low-lying sites, periodic flood inundation expected, including drier edges of wetlands	<p><i>Coprosma ssp.</i> (<i>C. propinqua</i>, <i>C. rhamnoides</i>, <i>C. repens</i>)  <i>Cordyline australis</i>, Cabbage tree  <i>Geniostoma ligustrifolium</i>, Hangehange  <i>Phormium tenax</i>, Harakeke, Flax</p>	<p><i>Dacrycarpus dacrydioides</i>, Kahikatea  <i>Laurelia novae-zelandiae</i>, Pukatea  <i>Syngium maire</i>, Swamp maire</p>
Low-lying permanently damp sites	<p><i>Carex ssp.</i> (<i>C. germinata</i>, <i>C. ustulatus</i>, <i>C. virgata</i>)  <i>Cyperus ustulatus</i>, Sedge  <i>Cordyline australis</i>, Cabbage tree  <i>Cortaderia toetoe</i>, Toetoe  <i>Phormium tenax</i>, Harakeke, Flax  <i>Typha muelleri</i>, Raupo</p> <p>(See also “New Zealand Wetlands, A Management Guide,” by Robert Buxton)</p>	

Estuarine Reach		
Well drained, sandy sites, inundation rare or unlikely	<p>On sand dune, north of river:  <i>Cassinia leptophylla</i>,  <i>Coprosma acerosa</i>,            Corokia cotoneaster  <i>Cortaderia toetoe</i>, Toetoe            Shrubby <i>Coprosma ssp.</i> (<i>C. propinqua</i>, <i>C. rhamnoides</i>, <i>C. repens</i>)  <i>Cordyline australis</i>, Cabbage tree  <i>Meuhlenbeckia complexa</i>  <i>Phormium tenax</i>, Harakeke,            Flax  <i>Pimelia arenaria</i>  <i>Tetragonia trigyna</i></p> <p>On flat land south of river:  <i>Juncus maritimus</i> var. <i>australiensis</i>, Sea rush  <i>Leptocarpus similis</i>, Jointed wire rush  <i>Plangianthus divaricatus</i>,            Saltmarsh ribbonwood</p>	Note: subsequent planting in this estuarine reach is generally confined to replacement planting with the same species where failures may have occurred, since a taller canopy of later succession species does not occur naturally here as it does further upstream.
Low-lying sites, periodic inundation expected	<p>Low areas inundated by the tide:  <i>Cotula coronopifolia</i>  <i>Juncus maritimus</i> var. <i>australiensis</i>, Sea rush  <i>Samolus repens</i>  <i>Silliera radicans</i></p> <p>Areas inundated less frequently:  <i>Leptocarpus similis</i>, Jointed wire rush  <i>Plangianthus divaricatus</i>,            Saltmarsh ribbonwood</p>	Note: subsequent planting in this estuarine reach is generally confined to replacement planting with the same species where failures may have occurred, since a taller canopy of later succession species does not occur naturally here as it does further upstream.