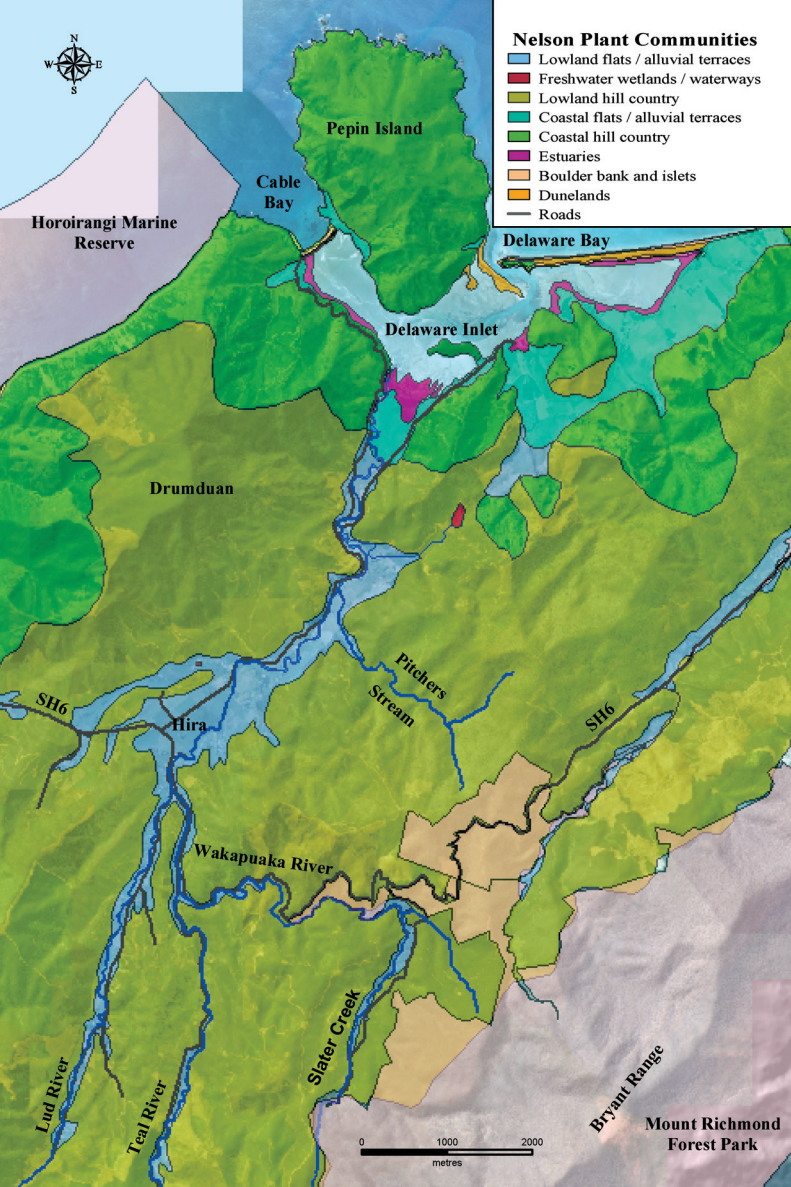


The Wakapuaka River



...the story of the river running through our lives



The Wakapuaka Booklet

Introduction

Why this booklet?

Who's behind this project?

A Note on Names

General River Information

Geology: The formation of the Wakapuaka catchment

A Chronological History

People & the River

Use of the Wakapuaka River

Rivercare Group Work

Estuary Pest Control

Get Involved

Water Quality Protection

Help at Hand – Rural Liaison Adviser

The River in Detail

Zone One: Top of Catchment

Zone Two: Mid Wakapuaka

Zone Three: The Delta

Zone Four: The Delaware Inlet estuary

Photo credits

Acknowledgements

Bibliography

The story of the river running through our lives

Introduction

Small but perfectly formed, the Wakapuaka River has a rich history, good biodiversity, and an interested and motivated local community.

The river flows from its headwaters in the Whangamoia and Bryant Range foothills, is joined by various tributaries and makes its path along the flats to the sea at the beautiful Delaware Inlet estuary.

Why this booklet?

This booklet has been written to:

- Inspire local people about the Wakapuaka River
- Highlight interesting information about the river – its fascinating natural and human history, the wildlife that frequent it
- Suggest voluntary actions interested people can take to improve its water quality and wildlife habitat
- Recognise and celebrate the work by local people to enhance the river and estuary environment.



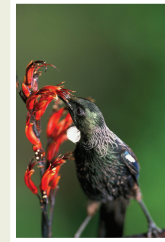
Who's behind this project?

This booklet is the brainchild of the “Wakapuaka Rivercare Group”, whose members include local landowners, Hira School staff and other interested people. The Rivercare Group has carried out river monitoring since its inception in 1999 and has also been involved in streamside plantings. (More detail can be found in the “Rivercare Group” section.)

The booklet has been funded by New Zealand Lottery Grants Board, Transpower Landcare Trust Grants Programme and Nelson City Council (NCC), with assistance from NZ Landcare Trust. Generous support has also been provided by Nelson City Council (NCC), Department of Conservation (DOC), Cathy Kilroy of NIWA and local residents.

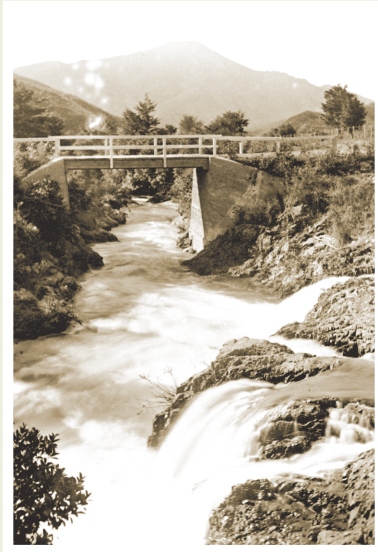
A Note on Names

“Wakapuaka” (also spelt “Whakapuaka”) translates as “canoe of red pine” or “bursting into life bud”. This was the original Maori name for the wider area encompassing what we now call The Glen, Hira, Mackays Bluff, Cable Bay and Delaware Bay. The lovely “bursting into life bud” phrase apparently refers to the spring and summer flowering of the harakeke (flax) and kowhai once prolific in the area.



Now the small settlement named Wakapuaka on State Highway 6 (SH6) is separated by several kilometres and the Gentle Annie Hill from the Wakapuaka River, which crosses SH6 near Hira village.

Hira’s earlier European name was “Happy Valley” - named with tongue-in-cheek by the early European surveyors because a “homebrew” whiskey still was sited there. However, as there were already numerous places in New Zealand called Happy Valley, the name was officially changed to Hira in 1912. Hira means “abundant” or “multitude” in Maori.



In pre-European times, the Hira area was known as “Te Huinga Wai” – “the kissing waters” or the “meeting of the waters”. This evocative name referred to the joining of the Wakapuaka with its tributaries, the Lud and Teal.

Geology

A combination of fascinating geological processes has created the Wakapuaka River and tributary valleys and the Delaware Inlet estuary area.

The formation of the Wakapuaka River and tributary valleys

The geology of the area has been strongly influenced by the Waimea Fault, which extends from near Lake Rotoiti to Taranaki. (A fault is a weakness or break in the Earth’s crust.) The Waimea Fault passes through the Lud Valley and along the eastern edge of the lower Wakapuaka Valley.

The Teal joining the Wakapuaka River
- date unknown

General Information on the River

The upper Wakapuaka River (called the “Wakapuaka main stem” in this booklet) and its tributaries drain westward off Nelson’s eastern ranges. On reaching the Waimea Fault, the rivers have eroded the crushed faulted rocks. This erosion action has formed the area’s straight valleys that open towards the north.

The Waimea Fault also separates two distinctly different rock types, the “Brook Street Volcanics” and the “Maitai Group”. Most of the underlying bedrock of the Wakapuaka Valley is comprised of the Brook Street Volcanics, which helps to produce the valley’s fertile soil. In comparison, most of the bedrock which underlies the Teal, Slater Creek and the upper Wakapuaka main stem areas is the Maitai Group, which lacks volcanic debris and is less fertile.

The formation of the Delaware Inlet estuary

The shallow tidal estuary, which covers around 3 square kilometres, was formed around 6000 years ago. During that period, the sea rose to its present level and flooded the lower Wakapuaka River Valley. At the same time, debris from the east of Delaware Bay was eroded by the sea and transported westwards to form the 2.25 kilometre long Delaware Spit.

The sea also inundated a small valley to the west of the inlet, thereby temporarily isolating what is now Pepin Island. However, deposition of the 500 m long Boulder Bank now joins the island to the “mainland”. Within the inlet, the landform of Bishops Peninsula is also a former island, which is now connected to the estuary edge.

Over the past 6000 years, the inlet has shallowed as sediment coming down the river is deposited in it. Water from the Wakapuaka River, mixed with saltwater, makes its final exit from the inlet through a narrow channel between Pepin Island and Delaware Spit.



The Waimea Fault extends along the toe of the steep hills from the base of the spit southwest to Hira (centre distance)

River Flows

In the context of the wider region, the Wakapuaka is classed as a small river. (Visualise it in relation to the Aorere River in Golden Bay or the Wairau River in Marlborough.) However, within Nelson City Council's relatively dry boundaries, the Wakapuaka is considered a major waterway.

A river's rate of flow is measured by the amount of water passing a certain point. The common unit of measurement is a "cumec" which is 1,000 litres or one cubic metre of water, per second, flowing past that point. A typical bathtub would hold about 300 litres.

The average flow for the Wakapuaka River is 1.75 cumecs. Like all waterways, these rates fluctuate up and down through various years and seasons. During long dry spells in summer and autumn, the river can drop to approximately one fifth of its average flow, to an average of around 328 litres per second. However, Wakapuaka has, in heavy rainfall periods, been transformed from its usual gentle flow to a churning turbulent flood which has inundated the valley. The most recent, large flood measured a maximum of 204.3 cumecs at the flow recorder near Hira School in February 1995. This flow is much bigger than the average flow of the Wairau River in Marlborough!



A Chronological History

Information about the early Maori history of the Wakapuaka River mainly centres around the Delaware Inlet estuary and the lower “delta” area of the river, which would have been covered in swamp.

Archaeological evidence and oral history suggest this area was settled from about the 12th century. Midden material produced from “Rotokura”, a small lagoon site at Cable Bay, provides some fascinating glimpses of how those early Maori people lived. Bones from the oldest midden layers include three types of moa – the small northern bush moa, *Megalapteryx*, a small moa which closely resembled a kiwi, and *Dinornis novaezealandiae*, one of the large moa species. Other extinct birds found in midden are swan and the little weka.

The estuary and upstream swampland area would have provided early occupants with rich food sources of tuna (eel), putangitangi (paradise duck), pukeko and inanga (whitebait). The inlet provided shellfish while the deeper channels and the offshore coastline abounded with fish such as kahawai and tamure (snapper). As with other rivers, the Wakapuaka River would presumably have provided ready access via waka to the thickly wooded interior.

Life for the early Maori in the Delaware / Cable Bay area would have centred around hunting and gardening – taro and kumara were both grown in the warm local microclimate. In addition, the nearby argillite outcrops and associated quarries would have provided tool making resources suitable for use and trade.

With its abundant food supplies and desirable climate, it has been suggested this area was one of the most fought-over regions in the country. Tribes known to have occupied or laid claim to the land include Waitaha, Ngati Tumatakoriri, Ngati Kuia, Ngati Apa, Ngati Koata and Ngati Tama.

From the early 1800s, Ngati Tama occupied the Wakapuaka River Valley and Delaware Bay area, under their leader Paremata Te Wahapiro.



Example of large Moa species

In 1839, William Wakefield from the “New Zealand Company” purchased a block of Wakapuaka Valley land from Te Rauparaha and another chief. There were, however, two major problems with that sale – firstly, the proceeds were not shared by all the chiefs who had interests in the land and secondly, the unsurveyed boundaries of the land sold were disputed by Paremata.

Tensions over the boundary issue erupted into conflict with Ngati Tama as the settlers began to develop the land they had purchased. From around 1842, European settlers began to move onto the land. Over the next few decades, the dense podocarp and beech forest that once thickly covered the Wakapuaka River Valley began to be cleared by early settlers for farming and other development. The accepted way of clearing land was by felling timber, then burning, followed by sowing grass over the burnt-over land.

Eventually, after much argument and discussion, Paremata accepted the original boundaries and his hapu moved inland up the Wakapuaka River Valley to “Te Kopi o Uenuku”. (This area is in what we have called the Mid Wakapuaka zone.) Paremata’s name then became associated with peaceful pursuits such as cultivating land and food gathering. From the river, Paremata reputedly had a specific cache of tuna (eels) he harvested only for special occasions.



Digging Into The Past

Nelson Historical Society Members working at Rotokura Archaeological dig 1960s



Fishing at the Wakapuaka River - date unknown



Woman on log bridge, Lud River - date unknown

The felled timber was mainly used for building, shingles and firewood. Matai, a large podocarp tree once common in the valley, was considered highly desirable as firewood as it burnt both hot and evenly. Around the late 1890s - early 1900s, matai for firewood was cut from the Wakapuaka area and shipped to Wellington where it was used to fire bakers' ovens. It was also used locally as a building material - notably in the front altar wall of St Johns Church at Hira (1888) and the floor of the Wakapuaka Memorial Hall.

The early settlers managed to eke some sort of living from the land. Dairy farmers made and sold butter, raised pigs for pork and bacon, bred and sold a few horses and kept goats. Interestingly, the 1860s gold rush, to areas like the Wakamarina, provided a much needed market for the small farmers' produce.

Flaxmilling in the valley began as early as 1843. In the 1860s, when overseas demand for fibre for rope manufacture was high, a large quantity of flax was cut and taken from the Wakapuaka Valley and environs. Around 1898, another small flaxmill was developed adjacent to the river at Happy Valley by Mr Sharland from the Maitai. Although the quantities of flax nearby were now not large, Mr Sharland apparently described the river as having "great conveniences" for the siting of his flaxmill, presumably for access and transport. Large quantities of flax taken from the vicinity of Maori Pa and Drumduan were processed at Sharland's Mill.

With increased numbers of settlers, the population of local children swelled. The nearest school was at Hillside, near the Glen turnout. As this was considered too far for the children to travel, Happy Valley School, later renamed Hira, was established in 1872 and is still going strong.



Matai



St John's



Hira School



Flax

People & The River Now

Use of the Wakapuaka River

The river is used by the local and wider community in a variety of ways:

- The river is habitat and a spawning ground for both native fish and trout. For wildlife in general, the river is both habitat and corridor.
- The river is a recreation resource for locals and others, of all generations. For example, the river is used and enjoyed for fishing, swimming, whitebaiting, boating, kayaking and general relaxation.
- The river provides local children with an outdoor adventure playground, a place of discovery and a connection to that old and universal favourite, water
- The river is an interactive educational tool to teach children and adults about science, nature and living systems.
- Water is abstracted from the Teal, the Lud and the Wakapuaka for domestic use, irrigation and stock.
- Gravel from the riverbank is extracted for small scale commercial and local private use.



Kereru in kowhai



Children with eel at Teal River



Children fishing

Rivercare Group

The Wakapuaka Rivercare Group was initiated in 1999 by a group of local people concerned about the river. (Group members are listed in the acknowledgments section at the back of the booklet.) The group wanted to monitor the health of the river environment to identify any changes over time and to raise awareness within the local community.

With the help of NIWA, Fish & Game and Nelson City Council, the group identified and commenced monitoring at several sites throughout the catchment. At present, the group regularly monitors water quality and stream habitat at six sites and NIWA assists with data analysis. The group uses a monitoring system called the Stream Health Monitoring and Assessment Kit (SHMAK). This system was designed to help non-scientists observe and record the condition of waterways. The practical component of SHMAK involves measuring and assessing factors that are important for overall stream health. These include: water temperature, clarity and pH level; silt deposits, bank vegetation, algae and types of invertebrates present.

A key part of SHMAK monitoring is to count and record invertebrates living on streambed rocks and assign them to different groups. Each of these groups has a score. High scores indicate invertebrates which thrive in healthy streams with clean, well-oxygenated water and don't tolerate pollution, silt, or prolific algal growth. Examples of these are mayflies, stoneflies and some caddisflies. Low scores indicate animals such as snails, worms and midge larvae, which can tolerate low-oxygen, polluted or silty conditions – in other words, less healthy streams.



In brief, the Rivercare Group monitoring has found that the top two sites in the Wakapuaka main stem (at Whangamoia and Hira in the Top of the Catchment zone), generally have good stream health, as indicated by their invertebrate scores. However, there is a general overall decline in a downstream direction. Silty conditions and low water clarity occur more often at the downstream sites. Also, sites with little vegetation that are grazed to the stream edge tend to have slightly lower quality invertebrates. In contrast, Pitchers Stream in the Mid Wakapuaka zone, which flows from a largely bush-clad catchment, exhibited the healthiest invertebrates. However, this relatively sunny site did occasionally have quite high algal growth.

Overall, the monitoring shows there have been no major changes in the Wakapuaka catchment since monitoring began. However, seven years of data collection has highlighted the diversity and variability of sites in the Wakapuaka River and its tributaries. The data suggests streamside (or “riparian”) vegetation benefits stream health, while the addition of silt is detrimental. (For more information on this, please refer to the Water Quality Protection and the NCC’s Rural Liaison Adviser sections.)

Examples of Invertebrates which indicate water quality



Swimming Mayfly - indicator of good water quality



Freshwater Snail - often indicator of degraded water quality



Freshwater Worm - often indicator of degraded water quality

Hira School Involvement

Hira School is also involved in the Rivercare project. Teachers and students at Hira School, with support from the Rivercare Group, NCC, and the Landcare Trust, have:

- Monitored a site near the school as part of the Rivercare Group's monitoring programme. This programme teaches children about waterways, their importance to us and the connection between water quality and aquatic life.
- Set up a native plant nursery at the school. The nursery teaches children how to grow and look after plants and also provides free native trees and shrubs to local people to plant on their properties.
- Carried out streamside plantings around Hira and in the wider Wakapuaka catchment using the plants they've grown.



Hira School monitoring water quality



Hira School "potting up"

Estuary Pest Control Group

Since 2004, a group of neighbours at Delaware Inlet have been actively trapping pests and monitoring bird numbers around the estuary. The group began when a local landowner contacted the Landcare Trust to seek advice on pest control on his own property. This action initiated the formation of a local pest control group which now covers the whole estuary margin. The estuary pest control group has been active for around three years, with rats, stoats, ferrets and weasels as their main targets.

Reduction in pest numbers gives local birds, which range from forest species like tui to shorebirds like the banded dotterel, a much greater chance of survival. The group's sustained trapping efforts have been rewarded by a very noticeable increase in local birdlife.



Counting birds



Trap demonstration

Get Involved

There are many opportunities for you and your family to get involved in looking after this special area:

- Join the Wakapuaka Rivercare Group to help with stream monitoring
Phone the NZ Landcare Trust on 0508 526 322 for contact details of the local Landcare representative
- Join the estuary pest control group or create another pest control group in the river valley
See NZ Landcare Trust number above
- Join the NCC organised public planting days
Contact the NCC Parks Department on (03) 546 0200
- Help Hira School with their plantings
Contact the school direct on (03) 545 0942
- Plant native plants on your own streamside margin (see next two sections)
For help and advice, phone NCC's Rural Liaison Adviser on (03) 546 0200
- Consider wildlife, your neighbours, other landowners and downstream users when using the river and estuary.



Combined pest control workshop



Hira School planting

Water Quality Protection - reasons for streamside fencing and planting

An excellent way to protect water quality and increase local wildlife is to plant up and fence the sides of riverbanks.

The immediate banks and wider flood channel areas on both sides of a river are called the “riparian zone”. Plants, including trees, shrubs and smaller plants like grasses and flaxes, growing within this zone provide huge benefits. In particular, riparian plantings can:

- Help protect riverbanks from erosion
- Help regulate water flow and slow down floodwaters
- Filter and buffer sediment, nutrients and pollution from the land
- Help suppress exotic weed growth on the banks and in the river
- Make rivers more “fish friendly” by creating shade and cooler water temperatures
- Create habitat and wildlife corridors for birds, plants and insects
- Beautify areas for people to enjoy.



Example of streamside planting

Help at hand – Nelson City Council’s Rural Liaison Adviser

Landowners interested in creating, enhancing and protecting the natural values of their rural properties can get practical help and advice from NCC’s “Rural Liaison Adviser”. The adviser can be contacted on (03) 546 0200.

The adviser can:

- Recommend best planting species and methods
- Give advice on animal and plant pest control
- Provide native plants for riparian (streamside) planting
- Potentially assist with financial costs of fencing off stream margins and waterways.

The River in Detail

Specific parts of the Wakapuaka River have different characteristics. For example, the upper reaches of the Wakapuaka and its tributaries have distinct features, compared to the river further downstream at Paremata Flats. The river has therefore been split into several different zones.

These zones also follow the demarcations set out by DOC and NCC in their excellent native plant restoration guide “Living Heritage – Growing Native Plants in Nelson”. The guide identifies eight different vegetation and ecosystem types which were originally found within the Nelson City Council boundaries. In some cases, the original vegetation has been mostly or completely lost, but for general interest and restoration purposes, the ecosystem delineation remains.

The eight different types of natural ecosystems are: lowland hill country, lowland flats and alluvial terraces, coastal hill country, coastal flats and alluvial terraces, freshwater wetlands and waterways, dunes, estuaries and the Boulder Bank.

Unlike any other stream or river within NCC’s boundaries, the Wakapuaka River travels through or close to every one of these ecosystems in its 15 kilometre journey from the hill country to the sea. This makes the Wakapuaka River unique and distinctive.

Examples of ecosystem types from “Living Heritage” booklet



Lowland hill country



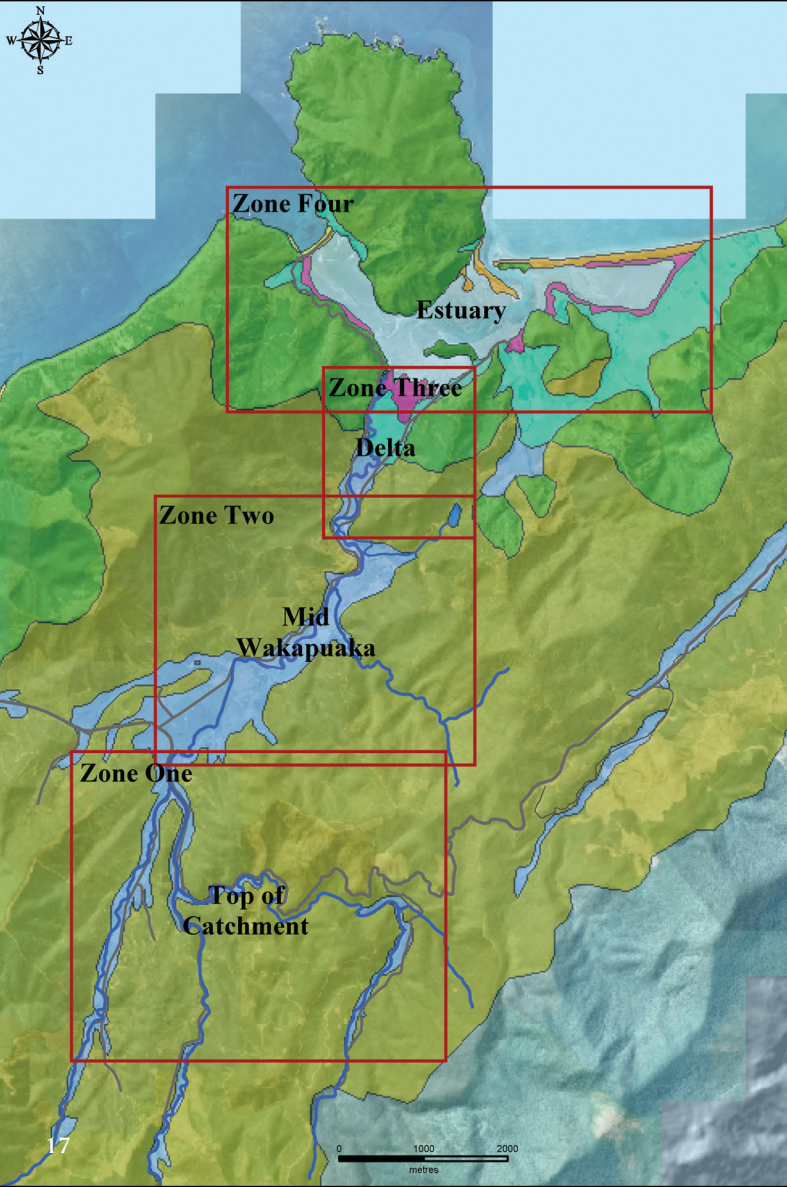
Coastal flats



Coastal hill country



Boulder Bank



For the purposes of this booklet, the zones are:

Zone One

Top of the Catchment: this zone includes the upper Wakapuaka main stem and the main tributaries (the Lud, Teal and Slater) to just beyond the Lud, and includes Hira School. This zone flows through “lowland hill country” and “lowland flats and alluvial terraces” ecosystem types.

Zone Two

Mid Wakapuaka: this zone covers the river from below the confluence of the main upper tributaries to the bridge at the junction of Cable Bay and Maori Pa Roads. This zone flows through the “lowland flats and alluvial terraces” ecosystem type.

Zone Three

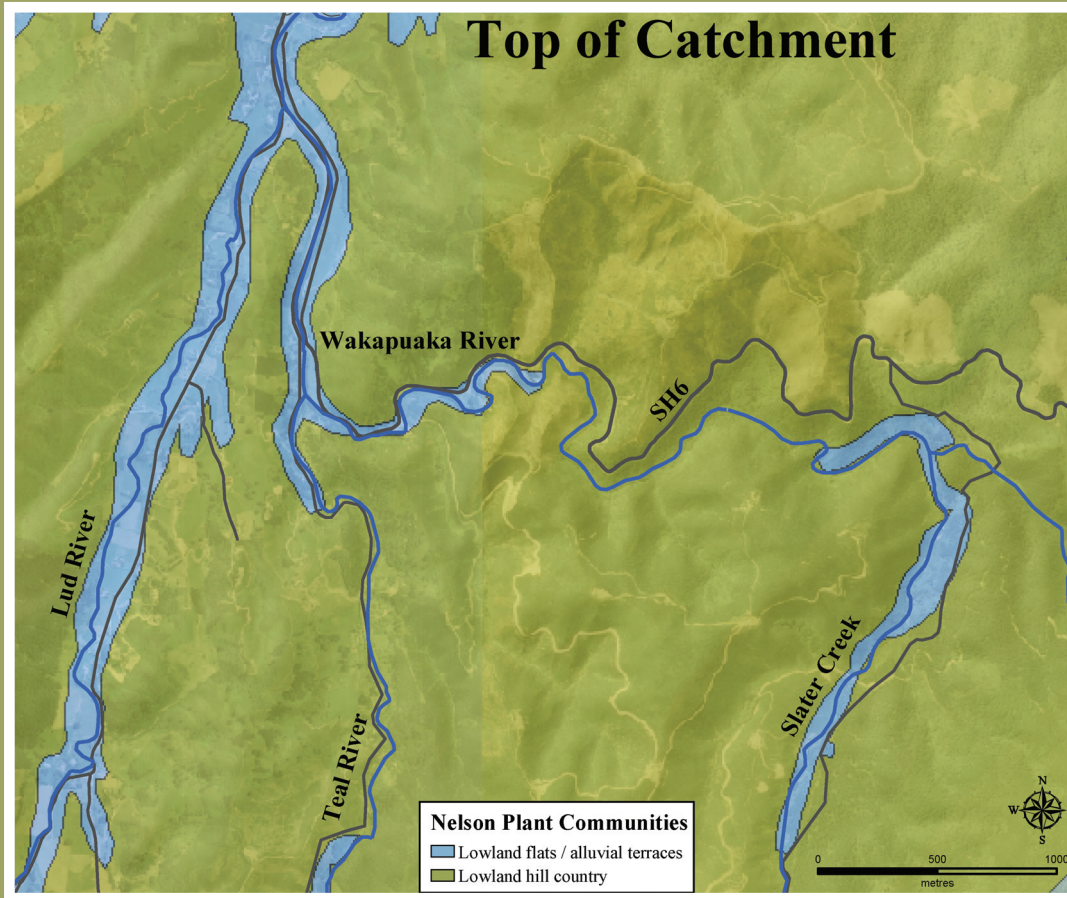
The Delta: this zone covers Maori Pa Road to the estuary edge. The delta zone is located in the “coastal flats and alluvial terraces” ecosystem.

Zone Four

The Delaware Inlet estuary: this zone covers the entire estuary, including Delaware and Pepin Spits, the Cable Bay / Pepin Island Boulder Bank, Bishops Peninsula and the whole tidal flats between. This zone covers several of the “Living Heritage” ecosystem areas – the estuarine ecosystem where river and sea meet; the dunes ecosystem of Delaware Spit; Bishops Peninsula which is technically “coastal hill country” and the Boulder Bank ecosystem.

NB: There are several references in this booklet to the “true left” or “true right” of the river. True left or right refers to the side of the river as you look downstream, towards the sea.

Zone One



Top of the Catchment

Wakapuaka Main Stem

The “Wakapuaka main stem” refers to the upper section of the river before it joins the Teal. The river begins in steep country, clothed in a combination of plantation and native forest. Monitoring undertaken there shows that water quality in the upper Wakapuaka main stem is high. The length of the Wakapuaka main stem (measured from the head of the branch to the east of the Slater Creek) to the end of Zone One is 8.5 kilometres.

Slater Creek

The Slater is a small tributary draining the Bryant Range and the first tributary to join the Wakapuaka main stem high in the catchment. The creek is named after Daniel Slater, an early settler who leased the area for farming and sawmilling and built a hut there. Later the area was milled using a portable “donkey engine”.

The donkey engine operated as a power source to haul out logs felled from the area. The remains of the hut and the donkey engine are still evident today. Slater Creek has good water quality. Slater Creek is 3.7 kilometres long.



Children playing on donkey engine ca. 1967

The Teal River

The middle tributary is the Teal, which flows for 7 kilometres from the Bryant Range before it meets the Wakapuaka main stem at SH6. Like the Slater and the Lud, the Teal Valley was logged and then farmed by several pioneer families. The Teal's interesting history is embodied by a collection of wonderful old buildings (on private property) upstream on the Teal's true left. These buildings include the original homestead dating from the 1850s.

The Teal's water quality is generally good, though it does deteriorate a little as it flows downstream. Compared with the Lud River, the Teal has the greater water flows, with a mean flow of 0.385 cumecs or 385 litres per second. The Teal Valley is also steeper and narrower than the neighbouring Lud Valley. Water is taken from the Teal and piped over the hill to service households in the Lud Valley.



Original Teal Valley homestead (on left)

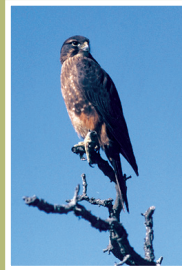
The Lud River

The Lud is the most western Wakapuaka tributary in this zone and drains Hira Forest. It was originally called Sawmill Creek. Compared to the Teal, the Lud occupies a much wider and flatter valley. The Lud's mean water flow is 0.135 cumecs or 135 litres per second. The Lud River flows about 6 kilometres before discharging into the Wakapuaka River near Hira School. Water quality in the Lud has been impacted by sediment and stock.

Plants and animals in this zone include:



Broadleaf



NZ Falcon



Swimming Mayfly

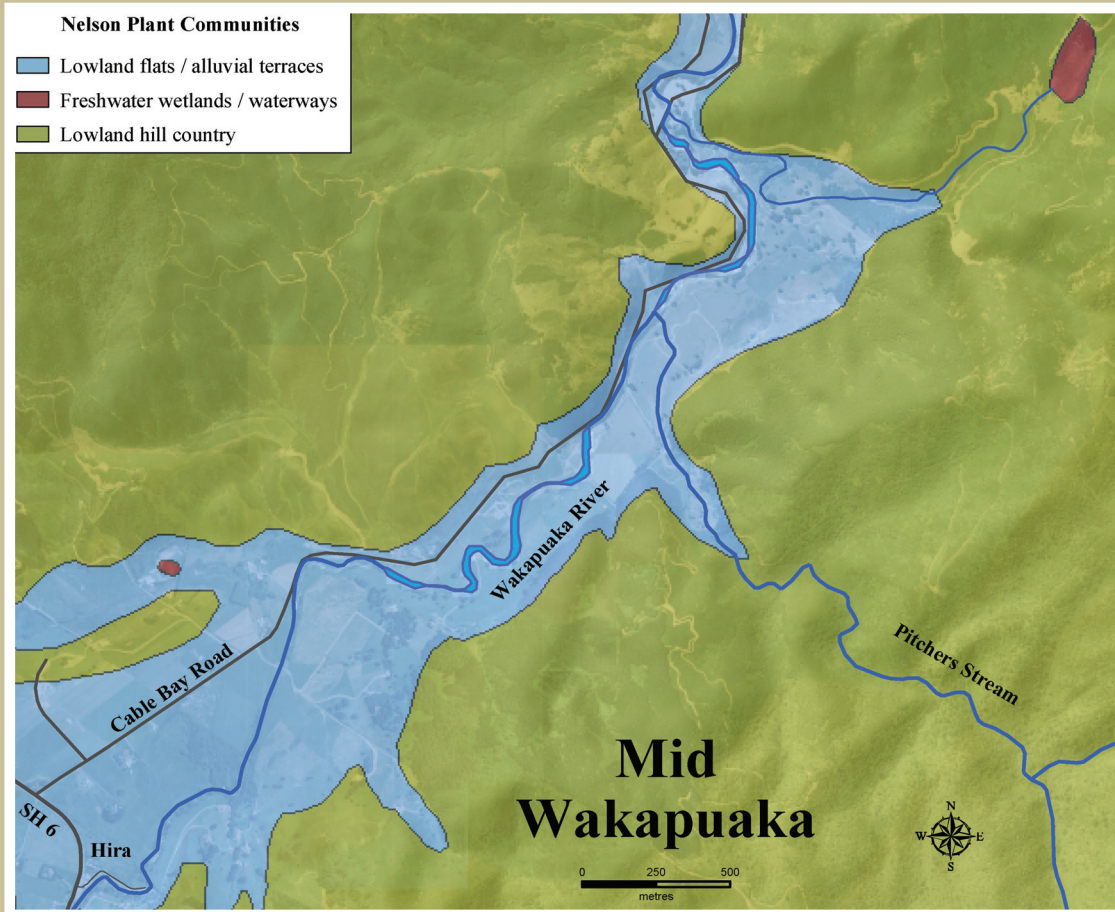


Brown Trout

The environment in this zone could be enhanced by:

- Fencing and planting the streamside margin
- Monitoring and removal of illegally dumped rubbish in river reserve areas
- “Best practice” forestry harvesting and careful land clearance and earthworks during subdivision to protect water quality and avoid excess sediment entering the waterways
- Streambank weed control.

Zone Two



Zone Two - Mid Wakapuaka

Past the confluence of its tributaries, the river continues to flow through the valley, through farmland and lifestyle block properties. This section of the river is still a part of the “lowland flats and alluvial terraces ecosystem” and originally large trees such as kahikatea, totara and matai would have graced the valley floor, with an understorey of trees like tawa, pukatea and titoki.

Remnants of this vegetation can be seen in the remaining large kahikatea and totara “specimen” trees dotted here and there near the river. However, these graceful remnant trees, often admired from the road, won’t continue as a landscape feature unless young trees are planted to replace them.

Several small tributaries join the Wakapuaka on its downstream path, the main one being Pitchers Stream. This stream is named after William Pitcher, a local farmer who lived near the stream from the late 1890s. Pitchers Stream flows down through bush and plantation forest to meet the Wakapuaka on its true right. Pitchers Stream, which flows down through bush and plantation forest to meet the Wakapuaka on its true right, has good water quality.

However, water quality generally deteriorates somewhat through this zone, with less water clarity and higher bacterial and nutrient levels evident.

Native plants and animals found in this zone include:



Matai



Totara



Shining Cuckoo

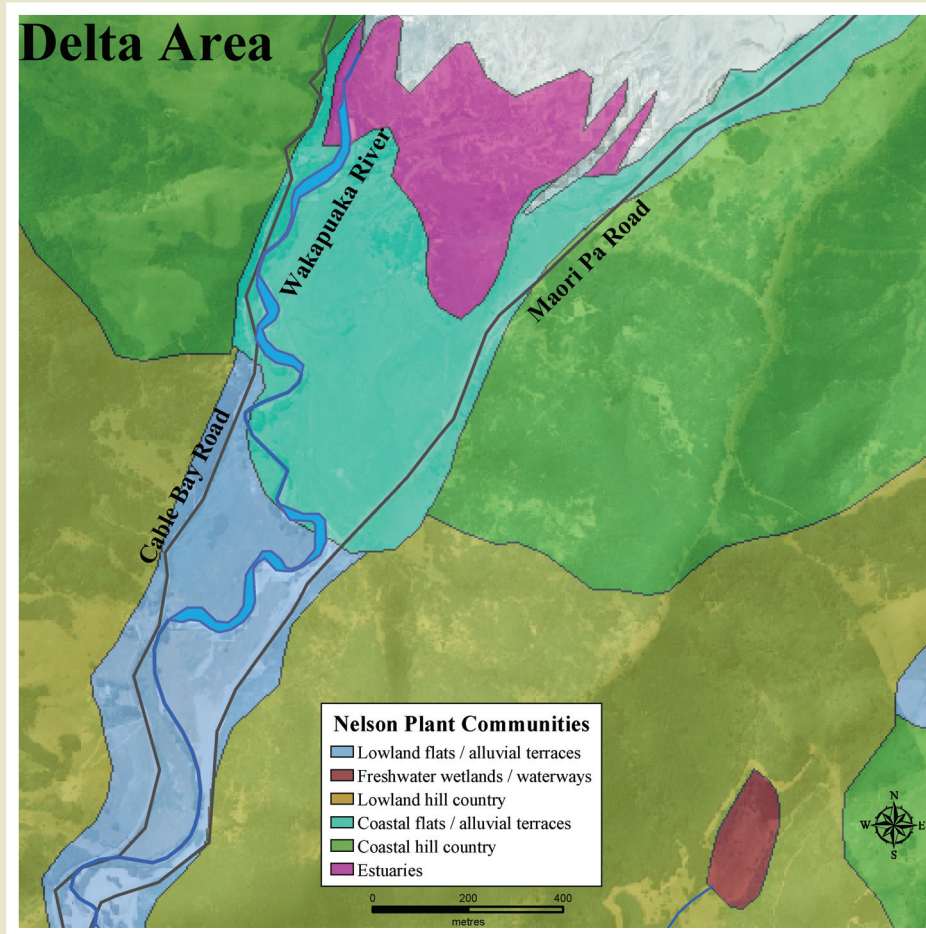


Morepork

The environment in this zone could be enhanced by:

- Fencing and planting the streamside margin
- Collecting seed from the large remnant native trees and replenishing these by growing and planting out seedlings which would need protection from stock.

Zone Three



Zone Three - The Delta

This short but significant section of the river flows from the junction of Maori Pa Road to the estuary and is within the “coastal flats and alluvial terraces” (or “delta”) ecosystem. River water quality here is lower than upstream.

The river flows through farmland before entering the lovely Paremata Flats Reserve, which abuts the estuary edge. This 30.8 hectare reserve was bought by NCC in 1998, with a contribution from the government’s “Forest Heritage Fund”. This reserve protects three separate remnants of a forest /scrub type that is now rare within the Nelson City Council’s boundary.

The most northern remnant (closest to the estuary edge) features mature native trees. These include several totara very close to the estuary edge; a lofty matai and several mature kowhai which are smothered in golden flowers in spring.

Slightly south of the northern remnant and close to the true right river edge is a very small collection of old pukatea and titoki trees.

The southern forest remnant is sited closer to Maori Pa Road and is separated from the northern remnant by a narrow estuary channel. Although this forest remnant is larger and the canopy more enclosed, it features smaller trees. Species of note here include numerous ngaio, totara, marsh and lowland ribbonwoods.



Pukatea & titoki



Whitebaiting



Fishing for trout

Further downstream, on the river's true left, is the Cable Bay Scenic Reserve, another small reserve (0.75 hectare) which is administered by DOC. This tiny but lush reserve is usually accessed from the Cable Bay Road but can be better viewed and appreciated from the Paremata Reserve side of the river. Tree species featured here include pukatea, kahikatea, kowhai and nikau.

Although the combined area of these reserves is small, they provide birds such as kereru and tui with a vitally important food source. Food from native plant sources is also supplemented by the buds from the streamside willows found along the Wakapuaka River.

The delta landform and ecosystem found in this area is uncommon. It has been created at the end of a floodplain where rivers are disgorging the sediment they have picked up on their journey to the sea. They are sheltered areas, prone to flooding and have very fertile soils. As a system, they are mobile and form a meeting and mixing place of freshwater and salt, wet and dry. Delta inhabitants therefore need to be adaptable to cope with these varying and often challenging conditions.

Native plants and animals found in this zone include:



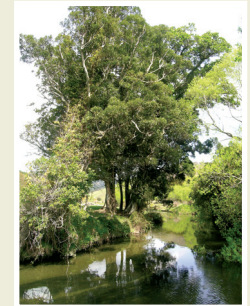
Pukeko



Nikau



Short Finned eel



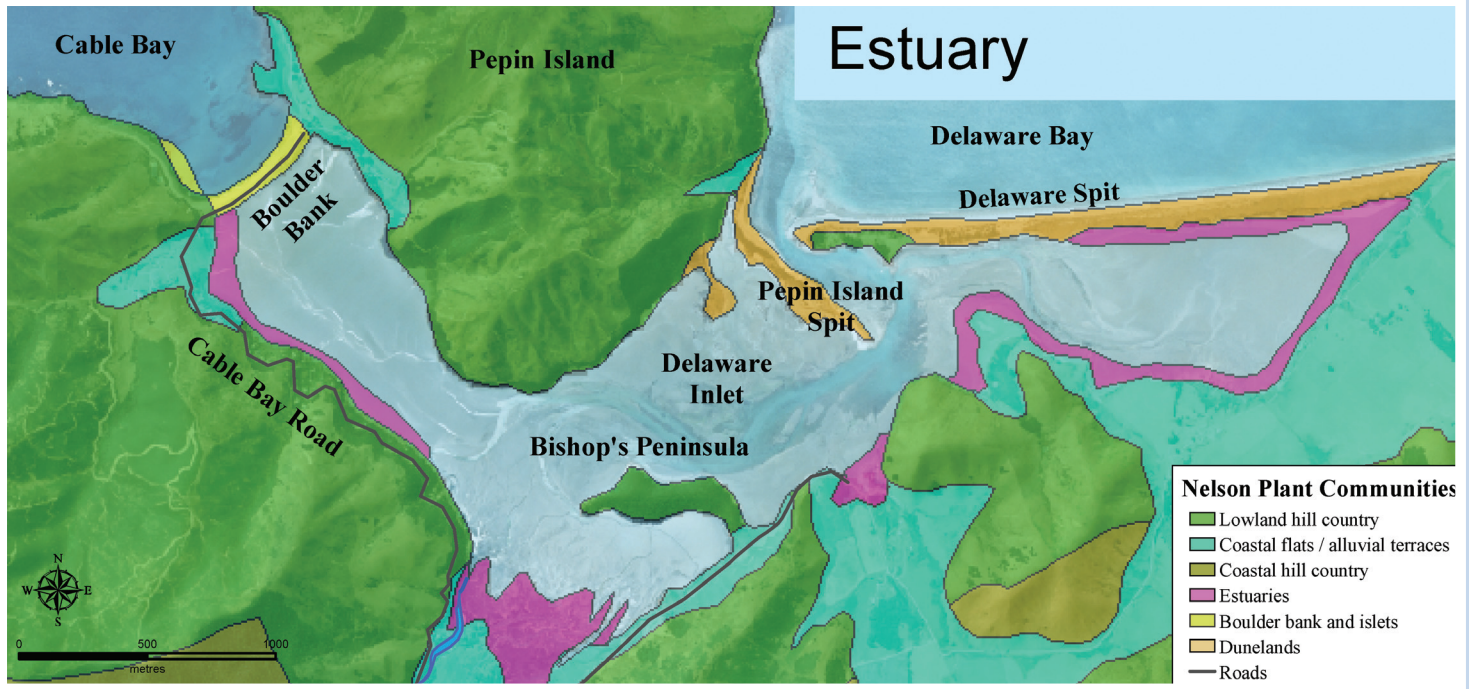
Pukatea with puka epiphyte

The environment in this zone could be enhanced by:

- Adequate fencing and pest weed control for the remnant forest reserve areas
- Further planting of appropriate native species in the reserves
- Fencing and planting the streamside margin

Zone Four

Estuary



Zone Four - The Delaware Inlet estuary

The Wakapuaka River enters the beautiful Delaware Inlet estuary at its southernmost end. Here the estuary covers not one but several of the Living Heritage ecosystem types – estuaries, coastal hill country, boulder bank and dunes.

Estuaries are highly fertile and productive places. Twice a day the nutrients brought into the estuary by the tides are mixed with nutrients and freshwater from the Wakapuaka River. The estuary provides food and habitat for a range of species from mudsnails and cockles to fish and birds.

Delaware Inlet estuary is ecologically special and important because of its relatively unmodified state. (This is compared with many other estuaries in New Zealand, which have often been developed or “reclaimed”.) At Delaware, the natural progression (or “sequences”) of vegetation are still mostly intact. For example, the mudflat algae which is flooded at high tide is succeeded by saltmarsh at the estuary margin, which then melds into alluvial forest on the drier land at Paremata Reserve and connects with the coastal hill forest on the Bishops Peninsula outcrop.

Embodied in the estuary zone are three other distinct ecosystem types.

The first, the dune ecosystem, is located at Delaware and Pepin Island Spits. While still modified, parts of these spit duneland areas feature shrub-sized native vegetation, rare both in Nelson and New Zealand. Plants found there include flax, akeake, kanuka, ngaio and two regionally rare species - spinifex and a prostrate matagouri.



Estuary looking north



Bishops Peninsula with estuarine vegetation



The delta ends & the estuary begins

The second ecosystem, the Boulder Bank, links Pepin Island and Cable Bay. Only a few specimens of very tough vegetation such as ngaio and scrambling pohuehue grow here, on the inner shore.

The third and final ecosystem type in the estuary area is the “coastal hill country”. This is found at the 8 hectare area of Bishops Peninsula, a picturesque forested peninsula which juts out into the estuary. Trees growing on the peninsula include some hard beech trees and matai, tawa, kamahi, kowhai and kanuka.

The combinations of these adjoining ecosystems provide outstanding habitat and breeding sites for native birds and other animals. For these reasons, the Delaware Inlet estuary and associated spits are considered to be of national importance for wildlife.

Twenty-seven bird species have been observed within the estuary area. This number include birds that breed there, for instance, banded dotterel and shags, annual visitors like the royal spoonbill and infrequent visitors such as the rare Australasian bittern.

Native plants and animals found in this zone include:



Banded Dotterel



Australasian Bittern



Sea Rush



Eagle Ray

The environment in this zone could be enhanced by:

- Careful public access to sensitive areas e.g. estuary mudflats
- Continuation of the pest control work carried out by the estuary pest control group
- Prevention of exotic weed invasion and exclusion of stock to reserve areas.

Photo Credits

All DOC photos – Crown Copyright applies All S. Moore photos – courtesy of Taranaki Regional Council / Landcare Research

Intro Page All photos – Rivercare Group / NZ Landcare Trust

General Information: Delaware Spit and Waimea Fault. L. Homer, GNS Science

A Note on Names Page Flax: P. Gerbeaux, DOC Tui: T. de Roy, DOC

Kowhai: A. van Meeuwen-Dijkgraaf, DOC Teal joining Wakapuaka – Tasman Bays Heritage Trust / The Nelson Provincial Museum Bett Collection ½ 422

River Flows Flood photos: NCC

A Chronological History Moa: Display at National Museum, DOC

Digging Into the Past: Nelson Mail photo ca. 1960's, Stuart Family Collection Fishing at Wakapuaka: Tasman Bays Heritage Trust / The Nelson Provincial

Museum, Copy Collection C173 Woman on Log Bridge, Lud River: Tasman Bays Heritage Trust / The Nelson Provincial Museum, Copy Collection C5581 Matai:

DOC St Johns & Flax: A.Sheridan

People & The River Now Kereru in kowhai: A. van Meeuwen-Dijkgraaf,

DOC Kids with eel: Unstated Kids fishing: A. Sheridan

Rivercare Group Work All photos: Rivercare Group / NZ Landcare Trust

Example of Invertebrates: All photos: S. Moore

Hira School Involvement Hira School monitoring: M. de Ruyter, Nelson Evening Mail Hira School “potting up”: NZ Landcare Trust

Estuary Pest Control Group All photos: NZ Landcare Trust / NCC

Get Involved All photos: NZ Landcare Trust / NCC

Water Quality Protection Photo: NZ Landcare Trust

The River in Detail Example of Ecosystem Types: All photos from “Living Heritage” courtesy of DOC/NCC

Zone One Kids on donkey engine: unstated Teal Valley homestead: Brian Pratt Photography Broadleaf: R. Stanley, DOC NZ Falcon: G. Loh, DOC

Swimming Mayfly: S. Moore Brown Trout: R. Morris, DOC

Zone Two Trees: NZ Landcare Trust Shining Cuckoo: J Kendrick, DOC

Morepork: C. Robertson, DOC

Zone Three Pukatea & Titoki: A.Sheridan Whitebaiting: NZ Landcare Trust Fishing for Trout: A. Sheridan Pukeko: R. Morris, DOC

Nikau: L. Molloy, DOC Short Finned Eel: S. Moore Pukatea with Puka epiphyte: NZ Landcare Trust

Zone Four All Estuary photos: NZ Landcare Trust Banded Dotterel: D. Veitch, DOC Australasian Bittern: D. Veitch, DOC Sea Rush: J. Kendrick, DOC Eagle

Ray: photographer unstated, DOC

Acknowledgments

The booklet was researched and written by Ann Sheridan for the Wakapuaka Rivercare Group. Past and present Rivercare Group members are: Barbara Stuart, Mary-Anne Baker, Julie McLintock, Jane Pearson, Jim Sinner, Andrew Burton, Pam McConnell, Dixie Lane, John & Shirley Reid, Bruce Wilson, Margaret Scott, John Campbell & Millie Bellcroft, Trevor Trenchgrove, and Carlo Weigand.

Ann and the Rivercare Group would like to extend special thanks to the following people and organisations for their help, advice and support:

NZ Lottery Grants Board, Transpower Landcare Trust Grants Programme, & NCC for funding of the booklet

Hira School children

NiWA: Cathy Kilroy

NCC: Paul Sheldon, Ian Tyler, Steve Read, Debra Bradley, Peter Grundy, Raewyn Lovell

DOC: Shannel Courtney, Geraldine Moore, Martin Rutledge

Fish & Game: Neil Deans

Speedy Print: Printing & Setup

Mike Johnston, Natalie Wastney & Christopher Vine.

Bibliography / Further Reading

Cawthron Institute / Nelson City Council (2002): Nelson State of the Environment Report

Courtney, Hindshaw, Moore & Atkinson (2003): “Living Heritage – Growing Native Plants in Nelson” - Department of Conservation & Nelson City Council

Davidson R.J, Preece J & Wingham E (1994): “ Internationally & Nationally Important Coastal Areas from Waimea Inlet to Cape Soucis, Nelson, New Zealand, Recommendations for Protection” – Department of Conservation, Nelson / Marlborough Conservancy Occasional Publication No. 15

Franco, Gail (1988): “A Guide to Delaware Inlet” - DSIR Publishing

Kelly, G.C. (1972): “Bishops Peninsula - Scenic Reserves of the Nelson Land District” unpublished report, Botany Division DSIR

Kelly, G.C (1969): “Cable Bay” – Scenic Reserves of Nelson Land District” unpublished report - Botany Division DSIR

McAloon, Jim (1997): “Nelson: A Regional History” – Cape Catley / Nelson City Council

Millar, Don (1967): “ Recent Archaeological Excavations in the Northern Part of the South Island - Rotokura – An Archaic and Classic Maori Site at Cable Bay” – Journal of Nelson Historical Society, Volume 2, No.2, pg 10

Mitchell, Hilary & John (2004): Te tau ihu o te Waka: A History of Maori of Marlborough & Nelson – Huia Publishers / Wakatu Incorporation

Nelson City Council (2004): “Nelson Resource Management Plan” – Nelson City Council

Richardson, Lesley (updated April 2006): “Paremata Te Wahapiro, Te Kiore, fl 1822-1845” – Dictionary of New Zealand Biography

Wastney, P.V & N.L (1977): “Early Tide to Wakapuaka” - Nelson Historical Society

Wastney P.V & N.L (1982): “Roads of Yesterday: Whangamoa, Wakapuaka and Maungatapu” – RW Stiles & Co.

Wastney N.L (1999): “Names on the New Land” - Copy Press, Stoke.

Johnston, M.R. (1981): “Sheet 027AC Dun Mountain: Geological Map of New Zealand 1:50 000, DSIR



Wakapuaka River

"A river running through our lives"

This booklet describes what we know about the Wakapuaka River and its tributaries. It has been compiled by the Wakapuaka River Monitoring Group and Ann Sheridan, to inspire people to protect this special river.

March 2007

