

# INTRODUCTION

The Wairarapa Coast is noted for its rugged beauty and isolation. It has incredible scenery, diverse recreational opportunities, unique native ecosystems and evidence of settlement stretching back 700 years. People who visit or live on the Wairarapa Coast value these qualities and want their children and grandchildren to be able to enjoy them for generations to come.

In recent years the Wairarapa Coast has experienced unprecedented pressure for subdivision and development. This development can have positive spin-offs for the Wairarapa community, but if it is not managed properly, it can also destroy the things we value about the Wairarapa Coast.

Fortunately there are many things we can do to enhance the Wairarapa Coast through our day to day activities and actions, and through careful management of future development. This booklet highlights some of the things that you can do as a visitor, resident or developer to help care for our coast. It covers everything from how to reduce rubbish in the coastal environment, to which native plants to use, to how to design a low impact development and how to apply for a resource consent. This booklet was produced alongside the *Wairarapa Coastal Strategy*. The Strategy provides a long-term vision (see opposite). By using the ideas and information in this booklet we can all help to achieve this vision and care for our coast.



Castlepoint



Te Awaiti



Wharekauhau



Homewood

***“To provide for sensitive, sustainable development and management of the Wairarapa Coast which recognises and retains its special qualities.”***

# VISITING THE COAST

Every year hundreds of people visit the Wairarapa Coast. Some stay for a few hours, others a few days or weeks. No matter how long or short the stay, visitors to the coast can have an impact on the environment and on the quality of other people's experience of the coast.

At the Wairarapa Coast you will find many interesting plants, animals and may even come across historic artefacts or remains of shipwrecks. Taking an interest in the world around us, and encouraging that interest in our children is important, but it is also important that we leave things as undisturbed as possible. While you may think your one small action will not make a difference, remember that there are hundreds of visitors just like you. Together hundreds of small actions can have a large impact on the coastal environment.

This section of *Caring for our Coast* shows some ways that you can help sustain or enhance our coast and reminds you of the responsibilities that go with enjoying this unique environment. By following these guidelines you will help ensure that future generations will be able to enjoy the Wairarapa Coast.

Full contact details for all organisations mentioned in this section are given on the page 53.

Parts of this section are based on information contained on the Department of Conservation website ([www.doc.govt.nz](http://www.doc.govt.nz)) and the Department of Fisheries website ([www.fish.govt.nz](http://www.fish.govt.nz)).



Ngawi



Riversdale Beach



Whangaimoana Beach

## Care for the creatures and plants

The Wairarapa Coast is home to unique plants and animals. Some, like the Castlepoint Daisy and Castlepoint Moth, are found nowhere else in the world.

Sand dunes and the plants on them play an important role in preventing erosion and coastal flooding. They also provide habitat for native animals, as do all our native ecosystems from wetlands to coastal forest.

But the coastal environment is harsh and it can take plant and animal communities years to recover from human disturbance. Sometimes they can't recover at all without our help.

### How you can help:

- Keep to established roads and tracks, whether you are walking, in a vehicle, or on a motorbike or a horse. Leave your car and boat trailer in designated carparks. Many plants are small and hard to see and some birds lay their eggs in no more than a depression in the sand. You can destroy them without even realising it.
- Keep out of dune restoration areas. Use the boardwalks and paths.
- Do not chase or approach nesting birds. They may try to draw you away from the nest, leaving their eggs unprotected. Instead, use binoculars to get a closer look.
- If you do disturb rocks or animals in rockpools, make sure you return them to where and how you found them.
- Keep your pets away from wildlife. You may need to keep your dog on a leash and do not let any pets roam at night.
- If you find injured wildlife contact the Department of Conservation.



Turakirae Head



Windy Point

## Our coast is no place for rubbish

More people visiting our coast means more rubbish is created and, as you know, our coast is no place for rubbish. Litter is unsightly and encourages rats and mice. It may also kill native animals if they swallow it or get entangled.

### How you can help:

- Before heading to the coast think about how much rubbish you will be taking with you. Can you reduce it by re-packing food into reusable containers before you go?
- On day trips, take a rubbish bag with you and bring your rubbish home. If you are staying longer than a day or two, then find out where your closest drop-off point is for domestic rubbish and use it on your way home.
- Remember the rubbish bins at the beach are not for domestic rubbish. Over filling them with household rubbish after a weekend at the beach house looks unsightly and leaves rubbish to blow around the beach.
- Clean fish and shellfish where they will not pollute the water or offend other beach users.

## Know the right place for waste

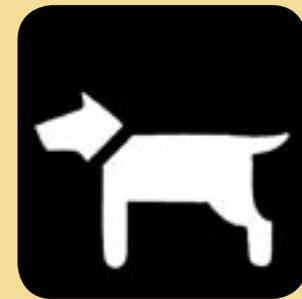
Toilet waste can contaminate waterways, damage the environment and spread disease to people and animals. The health and monetary cost can be serious.

### How you can help:

- In areas without toilet facilities, bury your waste. Choose a spot at least 50 m away from tracks, camping sites, popular areas and water sources. Dig a hole about 15 cm deep. It's a good idea to carry a small trowel if you know you will be away from toilet facilities.
- Dog waste can cause the same problems as human waste. Remove your pet's waste with a plastic bag or bury it as you would human waste.



Rubbish in our sand dunes



## Respect our cultural heritage

The Wairarapa Coast has a rich history. Maori settlement stretches back over 700 years and this was one of the earliest places in New Zealand farmed and settled by Europeans. As you explore the Wairarapa Coast you may find historic artefacts or visit areas that have mythological or cultural significance.

### How you can help:

- Take time to learn the history of the area. Talk to the older locals and iwi. Discover the cultural values of an area. Use the resources listed on pages 49 and 50.
- If you find Maori or historic artefacts, do not remove them. Removing artefacts is not only against the law, you may also be disturbing something that is sacred to others. If you find artefacts report it to the Department of Conservation. If you come across human bones, contact the local police.

## Respect the rights of landowners

Access to the coast is often across private land even though there may be no fences. Landowners' goodwill in providing this access needs to be respected.

Even where there are fences, landowners may allow the public to walk across private land. Again this arrangement relies on the goodwill of each landowner. If you do want to cross private land you must first gain the landowner's permission and respect his/her rights.

Permission for walking access is more likely to be given than for vehicles, dogs or firearms.

### How you can help:

- Leave gates as you find them. If something appears wrong, tell the farmer.
- Park well clear of gateways so you don't affect stock movement.
- Walk along fencelines where possible. Move carefully around livestock. During lambing season it may not be appropriate to be on the property at all. Keep out of paddocks with deer or bulls.



Storage pit, Washpool



Te Kau Kau



Cape Palliser

- If you come across sick or injured animals, don't disturb them and do tell the farmer.
- Take everything you need with you. Drinking water may not be available and landowners should not be expected to provide this.
- If you must dispose of toilet waste on private property make sure you know the right place for waste to ensure you don't contaminate water or spread disease (see page 4).
- Don't light fires. If you smoke take care to ensure that butts are out.
- Take out everything you take in. A farm is not a rubbish dump.

## Be a low impact camper

There are places on the Wairarapa Coast where people can enjoy "freedom camping". Freedom camping allows people to 'get away from it all' and enjoy time at the beach with minimal facilities. However, freedom camping can also have a large impact on the environment.

### How you can help:

- Where there are toilet facilities, use them. If there are no facilities make sure you know the place for waste (see page 4).
- Remember our coast is no place for rubbish. Carry out what you carry in.
- Check with the District Council if there are fire bans in place. If you are able to light fires, keep them small, under control, and be certain you extinguish them completely when you have finished. Check the ashes are cold before you leave.
- Consider using a small portable fuel stove for cooking. They are fast, clean, efficient and reduce the risk of wildfire. It also means less driftwood will be burnt. Driftwood provides important habitat for native animals.
- Don't camp on private land without permission.
- Care for the creatures and plants. Don't damage sand dunes. Keep to established tracks and use established campsites where possible. Reduce your impact by keeping your campsite compact.



## Consider other visitors

People enjoy the coast in many ways – from sunbathing to scuba diving. Consider how you might be impacting on other's enjoyment of the coast.

### How you can help:

- People, especially those with small children, can be concerned about vehicles on the beach. Before you drive on a busy beach, find out what the regulations are. When you are near people, slow right down, and keep an eye out for children.
- People can also be concerned about dogs or horses. Keep your animals away from other people and put dogs on a leash if necessary. Your dog must be registered.
- Many people visit the Wairarapa Coast for its peace and quiet and sense of isolation. Keep in mind that your activities may disturb this and do try keep away from busy areas.
- Leave the coast at least as good as you found it.

## Have a safe visit

While the Wairarapa Coast is a place of extraordinary scenery and wonderful recreational opportunities the area can be hazardous. You should know about these hazards and how to respond to them.

### How you can be safe:

- At Riversdale Beach, swim between the flags. At surf beaches ask the locals about rips and undertows. Always swim with the crowd. There is safety in numbers.
- Be very careful if you are fishing from, or walking on rocks and reefs. Rogue waves can occur unexpectedly. Don't cross the Castlepoint Reef. There have been a number of deaths and serious accidents at this dangerous spot.
- Be aware of the tsunami escape route and assembly point where you are visiting or staying. If there is forewarning of a tsunami you will be directed to leave by this route.



Riversdale Beach



Castlepoint

- If you feel an earthquake for more than 20 seconds, immediately take the tsunami escape route to higher ground. An earthquake of this intensity can trigger a large local tsunami with little warning or time to react.
- Make sure you have a well maintained emergency kit. If a natural hazard strikes, you may have to stay put for several days.

## Be boat safe

The Wairarapa has a hazardous coastline, notorious for weather and beach conditions that make it difficult to launch and land a boat. Boating, water skiing and jet skiing can also affect the enjoyment of others.

### How you can help:

- Talk to local boaties about weather and boat launching conditions. There may be hidden risks you are not aware of.
- Get a copy and learn the 'Navigation and Safety Bylaws' from Greater Wellington Regional Council. As a boatie or skier you must:
  - Make sure your boat has the right size life jackets for all on board.
  - Travel no faster than 5 knots when within 200 metres of the shore or 50 metres of another vessel or person. This is especially important at Castlepoint.
  - Use the defined personal water craft area at Castlepoint beach.
  - Be at least 15 years old, unless directly supervised by an adult.



Lake Ferry



Te Awaiti



## Fish for the future

The Wairarapa Coast is a wonderful source of kaimoana - fish and shellfish. Unfortunately, due to fishing pressure, some places no longer reflect what a great resource the coast can be. Help make sure there will be fish for future generations.

### How you can help:

- Know and observe the fishing regulations.
- Contact the Ministry of Fisheries ([www.fish.govt.nz](http://www.fish.govt.nz)) to find out what the fishing regulations of your area are. If you are going to take fish or shellfish, observe season, size, and number restrictions. Make sure you get a permit if you need one.
- Contact the Department of Conservation ([www.doc.govt.nz](http://www.doc.govt.nz)) to find out about whitebait regulations.
- To avoid catching undersized fish, use larger hooks and bigger bait. Don't keep fishing in an area where most of the fish are small.
- Only catch what you need. Carefully unhook and release smaller and unwanted fish so they can live on. You can reduce the amount of harm to the fish by keeping them moist, minimising handling, and releasing them quickly.
- If collecting bait, take only as much as you need and reposition any rocks you have moved.
- Report any suspected poaching, including the taking of undersized crayfish or paua, to the Ministry of Fisheries.



Palliser Bay



Pahaoa

# LIVING ON THE COAST

If you live on the Wairarapa Coast or own a beach house then you will know what a unique place it is. You may have also noticed changes occurring as more people discover its attractions.

Everyone who lives at the coast can help ensure it will be a place for future generations to enjoy. You can take positive actions such as using native plants in your garden or working with others to restore and enhance a wetland or dune system.

Full contact details for the organisations referred to in this section are provided on page 53.

## What you can do at your place to help

If you have a beach house or farmhouse, or are going to build one, there are many things you can do that can help make an overall difference.

- Use native plants in your garden. Not only can this save you hours of lawn mowing and pruning, but native plants are adapted to the harsh coastal environment, use less water and provide important food and habitat for native birds and animals. On pages 16 to 23 there is a list of native plants you can use in your garden and tips on how to get the best results.
- Avoid using plants that can “escape” your garden to become weeds on farms and in coastal reserves. On pages 25 to 27 there are lists of some common “garden escapees” and pest plant species.
- Don’t extend your garden into coastal reserves and don’t lower the dunes to improve your view. If you want to restore the coastal reserve you should do this in partnership with your District Council or the Department of Conservation. They will be responsible for the land and will help you use the right species and management techniques.
- Don’t let your pets damage native plants or disturb or kill native animals, especially nesting birds. You may need to keep your dog on a leash and you shouldn’t let your pets roam at night.
- Don’t remove sand or boulders from the beach, even in small amounts. Sand and boulders allow beaches to withstand erosion during storms.



Whangaimoana

- Avoid “straight-lines” in your landscaping. These do not blend into the natural landscape. Plant vegetation in clumps rather than in lines along your boundary. Ask yourself whether you need to fence your section at all.
- Paint your buildings in the colours of the landscape. This is important where buildings stand alone in the landscape and are not part of a cluster or settlement. A solitary white building will ‘stand out’ in stark contrast to the surrounding land. Its prominence will reduce the feeling of wildness and undeveloped nature that many people value about the Wairarapa Coast.
- For buildings outside of coastal settlements choose styles and materials that help them blend with the landscape. Consider whether a single storey will be better and how the building will impact on views from the road and the beach. Choose natural materials and avoid reflective materials.
- For buildings within coastal settlements choose styles and materials that reflect the existing character of the settlement. Each settlement has a unique character that is valued by its community.

Low impact



High impact



Low impact



High impact



- Make sure your septic system works properly. Clean your septic tank regularly and record the date. Remember that the system includes the soak lines not just the tank. Do not park on soak lines or plant vegetation that will clog them. In some coastal settlements problems with incorrectly maintained septic systems have led to groundwater and surface water contamination.
- For new dwellings, or when replacing an old system, an investigation and design by a wastewater engineer are needed. The engineer will take account of the soils and drainage on your site and design a suitable system.
- Make sure your stormwater system works properly. While a lot of your stormwater will be collected for use, there will be runoff from your roofs and paths during wetter months. Poorly installed or maintained stormwater systems can cause flooding, erosion, and slips.
- Be fire safe. Summer fire risks are often high and there are usually fire bans in place. Remember that there can be lengthy fire fighting response times at the coast. Some tips on rural fire protection are given on page 13.
- Be aware of natural hazards in your area such as storm surge, tsunami, wind storms, earthquakes, land slip and rock fall. Be ready to respond and maintain an emergency kit. Secure materials that may be blown away during gales.

## What you can do on your farm to help

Most of the Wairarapa Coast is farmland. These large areas of land are mostly grassland but also contain gems of native ecosystems, remnants of wetlands, dune systems, rivers, estuaries and other habitat. Many farm owners have willingly protected or enhanced these areas with limited support and recognition. It is through their interest and actions that these areas remain today.

If you own or manage a farm there are things you can do to help protect or enhance the coastal environment. Fortunately there is also increasing support and recognition that you should not have to do it alone. Along with the tips for dwellings, there are a number of things that you can do on your farm to help ensure future generations enjoy the Wairarapa Coast.

- Find out about the funding that is available to help you protect the special areas on your farm. There may be funding available for fencing and pest control and a rates reduction may be possible. Contact Greater Wellington Regional Council, your District Council or the Queen Elizabeth II Trust to find out more.
- Talk to other farmers, staff from Greater Wellington Regional Council and the Department of Conservation about proven management techniques. It may surprise you how many people are already caring for the coast without too much change to their farm management and with minimal cost.
- Keep stock away from wetlands and sand dunes. They can damage the plants, cause erosion and affect the water balance. These ecosystems are fragile and take a long time to recover from disturbance.
- Plant native vegetation along streams and rivers and around wetlands to reduce the impact of nutrient run-off from grazing land.
- Be aware that there may be historic or archaeological sites on your property and there are laws that govern the disturbance or destruction of these sites. The two local iwi are happy to come and discuss with you information they may have about your property. They usually prefer to work one to one with landowners rather than trying to secure formal protection for sites.
- Consider working with community groups who may be restoring land adjacent to your farm. This not only enhances the ecology of an area, but also strengthens “town and country” links.



People are revegetating erosion-scarred hillslopes throughout New Zealand but the choice of plants is more limited in coastal situations. If native species are used rather than pine, poplar or eucalyptus there will be greater long-term benefits for native ecosystems. Use this booklet to determine the most appropriate species for your site.



The first step in mass planting, controlled reversion or bush protection is to prevent browsing. Check with the local council - there may be grants available to assist with fencing costs.

## What you can do with your community to help

The saying “many hands make light work” has never been truer than in relation to caring for our coast. While there are many things you can do as an individual to help care for the coast, if we work together, we can achieve much more.

There are already community care groups who are helping to restore dunes, keep the beaches clean, improve estuaries, and monitor threatened species.

- Join the community group in your area. You may be able to provide muscle, lend them equipment, help with funding applications or organise working bees. As little as half an hour a week can make a big difference.
- If there are no care groups in your area, talk to people about starting one. Contact Greater Wellington Regional Council about the support they can provide to help you get a group up and running. Also see the information about volunteers on [www.doc.govt.nz](http://www.doc.govt.nz) and [www.conservationvolunteers.org.nz](http://www.conservationvolunteers.org.nz).
- If you have a particular interest or would like to know more about an aspect of the coast, consider organising an information or learning day. Sharing your enthusiasm and knowledge can encourage others to care for our coast. Greater Wellington Regional Council, Department of Conservation and other organisations will be happy to assist and advise on ways that you can work with the community.

## Rural fire protection

The coast is a fire hazard area. Fires can have a devastating effect on coastal communities, farms and forests.

- On the coast there can be lengthy response times for rural fire fighters. Rather than relying on them, a better solution is the installation of an automatic home sprinkler system. New systems are more affordable than ever and will not set your home awash with water.
- Keep the area around your house free of long grass, debris, flammable materials, firewood and flammable plant species. Use fire resistant, ground cover species near the house.
- Clearly signpost your property with your RAPID rural property identification number.
- Make sure rural fire fighting services can reach your property and water is stored on your property for fire fighting purposes. Your driveway needs to have 4 metres by 4 metres clearance for fire engines.
- Signpost water sources and fit your water tank with a standard fire coupling.
- Install smoke detectors in your house and have an escape plan.
- Install multipurpose dry powder extinguishers in the house and outbuildings.
- Keep a garden hose connected that is long enough to reach around the house.
- Maintain machinery and equipment in safe working order.
- Be aware of the status of fire hazards. Check with the local Rural Fire Authority on current restrictions and fire permit requirements.

For further information contact the New Zealand Fire Service [www.fire.org.nz](http://www.fire.org.nz), your local District Council, Principal Rural Fire Officer or the Department of Conservation.

## Go 'wild' with native plants

One of the easiest ways to help care for the coast is through the use of native plants. Whether you already have an established garden, are planting an empty section, or are creating a new subdivision, using the right native plants will provide food and habitat for native birds and animals, provide protection from the wind and help dune systems function properly.

Much of the native vegetation on the Wairarapa Coast has been lost, so even a small effort in gardening with native species goes a long way. Think of your garden or property development as the best opportunity for native habitat that has come along for several hundred years.

Before choosing what plants to use in your garden or development you need to identify what ecological zone you are in. Different plants require different habitats. If you use the wrong plant for your zone it is unlikely to thrive, and will probably die. The diagrams on page 16 and 20 show the different ecological zones found on the Wairarapa Coast. There may be more than one zone on your property and you should choose your plants accordingly.

On pages 16 to 23 are the native plants suitable for each ecological zone. You can use the references on page 15 for more details about each species, their propagation and cultivation.

### Plant survival hints

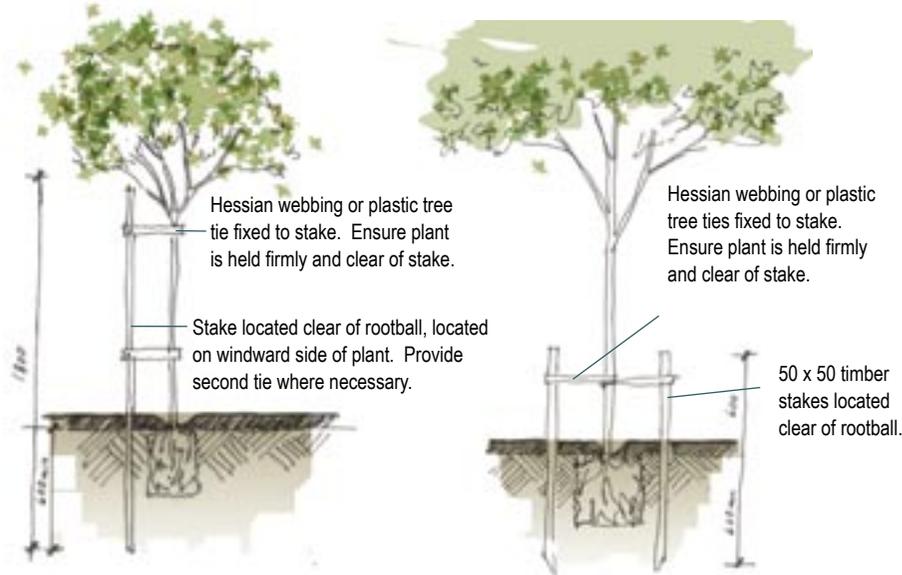
There are some basic points you should follow to improve plant survival.

- Identify your ecological zone and try to use the plants suited to it.
- Try and use plants sourced from local native plants. This way you know they come from plants that have adapted to Wairarapa conditions and are strong and viable.
- Control rabbits prior to planting trees otherwise their grazing can kill new plants.
- The coastal environment can be harsh with salt and sand laden winds. Give your new plants as much protection as possible. You can do this by using tree shelters, planting near established vegetation, using 'nurse' species, leaving the grass long between plants, and planting vegetation in reasonably dense clumps so the individual plants can shelter each other.



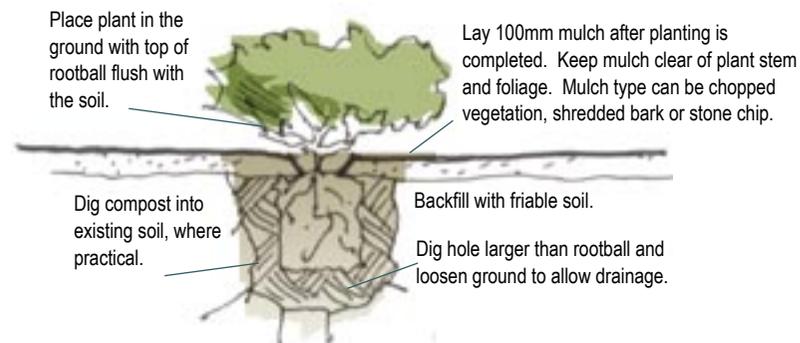
Wharekauhau

- In dry areas make sure your plants have enough water. In a domestic garden you can water your plants by hand but for larger properties this might not be possible. Placing 200-300ml of moisture absorbing crystals in the bottom of the planting hole will extend the availability of moisture to the plant.
- Mulching reduces competition from weeds, helps retain moisture, keeps roots cool and breaks down into organic compost. But at the coast lightweight composts will blow away. Use shredded bark rather than bark nuggets or pea straw.
- If mulching is impractical, use a non-persistent herbicide before planting to eliminate the weeds and grasses that will compete with the plant for moisture.
- Plant during the cool seasons. A small application of slow-release fertiliser at planting will assist survival. Don't use fast release nitrogenous fertilisers as they are often too strong and can encourage weeds.
- Check out [www.doc.govt.nz](http://www.doc.govt.nz) for information on native plants. It covers information from seed collection to propagation and planting. The book *Protecting and Restoring our Natural Heritage – a practical guide* by Mark Davis and Colin Meurk, is also helpful.
- For photos and information about native plants go to [www.taranakiplants.net.nz](http://www.taranakiplants.net.nz). It also has information about weeds and a list of other resources and references.
- You can find out about common wetland plants at [www.gw.govt.nz/em/wetlands](http://www.gw.govt.nz/em/wetlands).
- Details on how to propagate plants can be found in the *Propagation of New Zealand Trees and Shrubs* by L J Metcalf; and *Gardening with New Zealand Plants, Shrubs and Trees* by Muriel Fisher.



Planting detail - small tree

Planting detail - large tree



Planting detail - shrub

## Sandy coast

### Unstable dunes

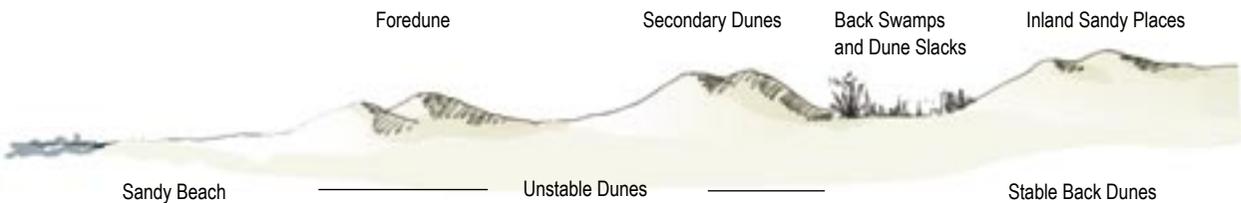
All these plants are groundcovers or grasses.

spinifex	<i>Spinifex hirsutus</i>
pingao	<i>Desmoschoenus spiralis</i>
sand sedge	<i>Carex pumilo</i>
sand tussock	<i>Austrofestuca littoralis</i>
knobby clubbrush	<i>Isolepis nodosa</i>
bidibidi	<i>Acaena spp</i>
small leaved pohuehue	<i>Muehlenbeckia complexa</i>
NZ iceplant	<i>Disphyma australis</i>
sand coprosma	<i>Coprosma acerosa</i>



### Planting notes for this zone:

- Although marram grass has been used as a dune stabiliser in the past, it is now recognised that it creates steeper dunes that are more vulnerable to erosion. Foredunes with a combination of spinifex, pingao and sand tussock have a greater healing and sand trapping potential than dunes with marram.
- Areas with native grasses will also heal erosion more quickly than if the South African ice plant is used.
- Revegetation of pure spinifex around blowouts can be accelerated with two six-monthly applications of urea fertiliser.
- You may not be able to get spinifex or pingao at your local nursery but it is easy to germinate the seed yourself. See [www.doc.govt.nz](http://www.doc.govt.nz) for information on pingao.



## Sandy coast

### Stable back-dunes

The following plants are recommended for back dune areas. Some of them will attract native birds with their fruit (🍌). Plants are listed from shortest to tallest.

NZ iceplant	<i>Disphyma australis</i>
bidibidi	<i>Acaena spp</i>
sand daphne	<i>Pimelea arenaria</i>
shore convulvulus	<i>Calystegia soldanella</i>
libertia	<i>Libertia peregrinans</i>
sand sedge	<i>Carex pumila</i>
spinifex	<i>Spinifex hirsutus</i>
pingao	<i>Desmoschoenus spiralis</i>
knobby clubrush	<i>Isolepis nodosa</i>
small leafed pohuehue	<i>Muehlenbeckia complexa</i>
sand coprosma	<i>Coprosma acerosa</i>
tauhinu	<i>Ozothamnus (Cassinia) leptophyllus</i>
coastal shrub daisy	<i>Olearia solandri</i>
corokia	<i>Corokia cotoneaster</i>
toetoe	<i>Cortaderia toetoe</i>
taupata 🍌	<i>Coprosma repens</i>
kanuka	<i>Kunzia ericoides</i>



Duneland is hot, dry and infertile for plants. Dense planting is important, to create shade for young roots, and to prevent precious leaf litter from blowing away. Use a ground cover such as small leaved pohuehue to provide shelter for young shrubs.



Wilding pines are one of the greatest threats to this environment. If left uncontrolled, their management costs increase exponentially.

### Planting notes for this zone:

- Continuous shrub cover, using small-leaf species, will fast-track soil development and provide sheltered conditions for smaller plants.
- Don't over-fertilise. These sand-tolerant plants are adapted to low fertility. Higher fertility will encourage invasive weeds.
- Learn the difference between the benign native grass toetoe and the invasive weed pampas grass:
  - Toetoe flowers in early summer, with drooping heads. The leaves have multiple veins making it very difficult to snap them.
  - Pampas flower heads are erect and flower later in summer. The leaves have a conspicuous midrib rather than multiple ribs, making them easier to snap.

## Sandy coast

### Back swamps and dune slacks

The following plants are recommended for damp sandy areas. Some of them will attract native birds with their nectar (🌸) or fruit (🍌). Plants are listed from shortest to tallest.

sand sedge  
knobby clubrush  
oioi

sea rush  
small leaved pohuehue

swamp sedge  
giant umbrella sedge, upoko tangata  
raupo  
swamp coprosma

toetoe  
manuka

saltmarsh ribbonwood

swamp flax, harakeke 🌸  
taupata 🍌  
five finger, whauwhaupaku 🌸 🍌

cabbage tree 🍌

*Carex pumila*  
*Isolepis nodosa*  
*Leptocarpus similis*

*Juncus maritimus*  
*Muehlenbeckia complexa*  
*Carex virgata*  
*Cyperus ustulatus*  
*Typha orientalis*

*Coprosma tenuicaulis*  
*Cortaderia toetoe*  
*Leptospermum scoparium*  
*Plagianthus divaricatus*

*Phormium tenax*  
*Coprosma repens*  
*Pseudopanax arboreus*  
*Cordyline australis*



Swamps are common in duneland where wind scouring exposes the water table or where small streams become dammed by shifting sands. Over time it would be expected that some will infill and dry out (with the help of the vegetation) and new ones may form.

## Planting notes for this zone:

- Algae will grow in nutrient enriched wetlands and choke the native plants. To help protect wetlands, minimise the amount of nutrient rich farm run-off or septic seepage reaching the wetland. To do this you may need a large buffer or you can plant vegetation to help intercept the nutrients.
- You can recognise that a wetland is nutrient enriched by the presence of raupo.
- When purchasing cabbage trees, make sure they are raised from Wairarapa seed. Local trees typically have narrow, stiff fibrous leaves compared to cabbage trees in most other areas.



Te Kawa Kawa Rocks

## Sandy coast

### Inland sandy coastal places

On sandy stretches of coastline, sand may be driven well back onto the foothill slopes. The following plants are recommended for inland sandy areas. Some of them will attract native birds with their nectar (✿) or fruit (🍌). Plants are listed from shortest to tallest.

small leaved pohuehue	<i>Muehlenbeckia complexa</i>
tauhinu	<i>Ozothamnus (Cassinia) leptophyllus</i>
coastal shrub daisy	<i>Olearia solandri</i>
corokia	<i>Corokia cotoneaster</i>
toetoe	<i>Cortaderia toetoe</i>
manuka	<i>Leptospermum scoparium</i>
akiraho	<i>Olearia paniculata</i>
mapou 🍌	<i>Myrsine australis</i>
broadleaf, kapuka	<i>Griselinia littoralis</i>
taupata 🍌	<i>Coprosma repens</i>
kanuka	<i>Kunzia ericoides</i>
kaikomako ✿ 🍌	<i>Pennantia corymbosa</i>
akeake	<i>Dodonea viscosa</i>
five finger, whauwhaupaku ✿ 🍌	<i>Pseudopanax arboreus</i>
kohuhu ✿ 🍌	<i>Pittosporum tenuifolium</i>
mahoe 🍌	<i>Melicytus ramiflorus</i>
ngaio	<i>Myoporum laetum</i>
karaka 🍌	<i>Corynocarpus laevigatus</i>
fierce lancewood	<i>Pseudopanax ferox</i>
lancewood	<i>Pseudopanax crassifolius</i>



Sandy soils will dry quickly and young roots may be heat-stressed. Heavy mulching or starting with a sprawling ground cover is recommended for new plantings.

### Planting notes for this zone:

- Ngaio and kanuka are good shade trees. So is karaka, but remember that the fruit is poisonous.
- When planting manuka or kanuka include a handful of soil that has come from existing stands. It contains the soil fungi that assists their growth.
- Gardeners will appreciate the fast growth, textured bark and small specimen tree potential of tauhinu and manuka. However, take care to ensure these plants do not spread onto neighbouring farmland.
- If a site has been consolidated with fill, treat it as 'rocky coast' rather than sandy coast for planting. Loosen it and mix in sand prior to planting to improve drainage.
- Karaka will grow best where its tap root can find moisture. In sandy country plant in hollows rather than on raised ground.
- Pohutukawa is sometimes planted in duneland. Although a native tree, it is not a local plant. Its natural habitat is in more fertile soils, north of East Cape. Young plants may find these sandy sites too hot and infertile - and remember they are frost tender.
- Mulches which also break down into organic compost, such as pea straw, are excellent, but are often too lightweight to stay where they are put. Shredded bark, while not composting quickly, provides a good mulch and cool root run (bark nuggets tend to blow away).

## Rocky coast

### Shingle or rocky shore

The following plants are recommended shingle foreshore plants (marked with \*) and/or rocky foreshore plants (marked with #). Plants are listed from shortest to tallest.

prostrate sand daphne *	<i>Pimelea prostrata</i>
clematis, pikiarero #	<i>Clematis forsteri</i>
shore bindweed *#	<i>Calystegia soldanella</i>
NZ spinach *#	<i>Tetragonia tetragonoides</i>
sea spurge *	<i>Euphorbia glauca</i>
knobby clubbrush *#	<i>Isolepis nodosa</i>
sand tussock *	<i>Austrofestuca littoralis</i>
small leaved pohuehue *#	<i>Muehlenbeckia complexa</i>
thick-leaved mahoe #	<i>Melicytus crassifolius</i>
shrubby tororaro *	<i>Muehlenbeckia astonii</i>



The lumpy dense shrubs common around Palliser, are mostly *Coprosma propinqua*, and sometimes thick-leaved mahoe. They are frequently intertwined with small-leaved pohuehue (*Muehlenbeckia complexa*) which is host to the copper butterfly. Their shape partly derives from stock and possum browsing and partly from wind shear. When they are growing close together they form excellent lizard habitat, and herbs, ferns and clematis will grow in their shelter.

Hill Coastal Places and Terraces

Bluffs/Escarpment and Terrace Faces

Shingle/Rocky Shore Rocky Coast Wetlands

### Planting notes for this zone:

- Plants that grow naturally in these conditions are adapted to good drainage and cool root runs. They will not thrive where ground is consolidated or clogged with silts.



- Many of the plants in this zone are palatable to stock so you will need to fence the plants off to ensure dense growth and diversity.
- Many coastal shrub species - shrubby tororaro is an example - have separate male and female bushes. Such shrubs are very vulnerable to population collapse when their distribution becomes fragmented along the narrow coastal zone, so planting a group rather than individuals is better practice.

## Rocky coast

### Bluffs, escarpments and terrace faces

The following plants are recommended for the exposed bluffs, escarpments and terrace faces of the rocky coast. Some of them will attract native birds with their nectar (✿) or fruit (🍌). Plants are listed from shortest to tallest.

spaniard	<i>Aciphylla squarrosa</i>
silver tussock	<i>Poa cita</i>
reinga lily	<i>Arthropodium cirratum</i>
NZ linen flax, rauhuia	<i>Linum monogynum</i>
small leaved pohuehue	<i>Muehlenbeckia complexa</i>
prostrate kowhai	<i>Sophora prostrata</i>
coastal flax ✿	<i>Phormium cookianum</i>
tauhinu	<i>Ozothamnus (Cassinia) leptophyllus</i>
coastal shrub daisy	<i>Olearia solandri</i>
rangiora	<i>Brachyglottis greyii</i>
corokia 🍌	<i>Corokia cotoneaster</i>
koromiko	<i>Hebe stricta</i>
toetoe	<i>Cortaderia toetoe and Cortaderia fulvida</i>
akiraho	<i>Olearia paniculata</i>
mapou 🍌	<i>Myrsine australis</i>
broadleaf, kapuka	<i>Griselinia littoralis</i>
kanuka	<i>Kunzia ericoides</i>



### Planting notes for this zone:

- Plant silty pockets with grasses like toetoe and silver tussock.
- Scree can be stabilised with small-leaved pohuehue.
- There is quite a difference between coastal and swamp flax in size, appearance and natural habitat. If your site is dry or steep, use coastal flax. You can recognise it by its shrivelled seedpods hanging down. With the slightest hint of a seepage or boggy area use the larger swamp flax that has stiff, upright leaves and seedpods.



## Rocky coast

### Rocky coast wetlands

Wetlands in rocky shore environments are often 'perched' wetlands and are more seasonal and rainfall dependant than wetlands that are the result of an exposed watertable. Use the following plants in rocky coast wetlands. Some of them will attract native birds with their nectar (🌸) or fruit (🍌). Plants are listed from shortest to tallest.

knobby clubrush	<i>Isolepis nodosa</i>
oioi	<i>Leptocarpus similis</i>
sea rush	<i>Juncus maritimus</i>
Glen Murray tussock	<i>Carex flagellifera</i>
small leaved pohuehue	<i>Muehlenbeckia complexa</i>
swamp sedge	<i>Carex virgata</i>
pukio	<i>Carex secta</i>
giant umbrella sedge, upoko tangata	<i>Cyperus ustulatus</i>
raupo	<i>Typha orientalis</i>
swamp coprosma	<i>Coprosma tenuicaulis</i>
toetoe	<i>Cortaderia toetoe</i>
manuka	<i>Leptospermum scoparium</i>
saltmarsh ribbonwood	<i>Plagianthus divaricatus</i>
swamp flax, harakeke 🌸	<i>Phormium tenax</i>
five finger, whauwhaupaku 🌸 🍌	<i>Pseudopanax arboreus</i>
cabbage tree	<i>Cordyline australis</i>

### Planting notes for this zone:

- Algae will grow in nutrient enriched wetlands and choke the native plants. To help protect wetlands, minimise the amount of nutrient rich farm run-off or septic seepage reaching the wetland. You can do this by creating a buffer between the wetland and other land uses, by fencing and planting vegetation to help intercept the nutrients.



## Rocky coast

### Hilly coastal places and terraces

Use the following plants on hills and terraces. Some of them will attract native birds with their nectar (✿) or fruit (🍌). Plants are listed from shortest to tallest.

tauhinu  
coastal shrub daisy  
corokia  
koromiko  
toetoe  
small leaved coprosmas

*Ozothamnus (Cassinia) leptophyllus*

*Olearia solandri*

*Corokia cotoneaster*

*Hebe stricta*

*Cortaderia toetoe*

*Coprosma rhamnoides*

*Coprosma propinqua*

*Coprosma virescens*

*Coprosma crassifolia*

*Leptospermum scoparium*

*Olearia paniculata*

*Myrsine australis*

*Griselinia littoralis*

*Coprosma repens*

*Kunzia ericoides*

*Pennantia corymbosa*

*Dodonea viscosa*

*Pseudopanax arboreus*

*Pittosporum tenuifolium*

*Melicytus ramiflorus*

*Myoporum laetum*

*Corynocarpus laevigatus*

*Cordyline australis*

*Pseudopanax ferox*

*Pseudopanax crassifolius*

*Alectryon excelsus*

manuka  
akiraho  
mapou 🍌  
broadleaf, kapuka  
taupata 🍌  
kanuka  
kaikomako ✿ 🍌  
akeake  
five finger, whauwhaupaku ✿ 🍌  
kohuhu ✿ 🍌  
mahoe 🍌  
ngaio  
karaka 🍌  
cabbage tree 🍌  
fierce lancewood  
lancewood  
titoki 🍌



## Planting notes for this zone:

- The soils in this zone are generally good and enable a wide range of plants to be grown but summers can be extremely dry and prolonged.
- In this zone grass and clover growth can be very competitive. A combination of herbicide spraying before planting, good cultivation, and mulching will help your plants survive and grow.



Wharekauhau and Lake Onoke

## Using non-native plants

The character of the native coastal forest is distinctive. The trees are bushy and multi-branched. The dense, even canopy they create allows wind to pass across the surface, minimising damage and salt burn. In contrast exotic species such as Norfolk Island pine, Radiata pine and Phoenix palms are straight trunked and much taller than the native coastal bush and make the area look less “natural”. They may also spread and become weeds.

However, if you have a large cleared section you may need to use exotic species to stabilise eroding land or provide shelter from the wind. Before planting, you should talk to the land management officers at Greater Wellington Regional Council. They will help you choose species to control the erosion and wind blow. Once the exotic trees have been established you can begin the process of underplanting and eventually replacing them with native species.

Here is a list of non-native tree species that you can use in the coastal environment.

Indian hawthorn	<i>Raphiolepis umbellata</i>
Norfolk Is. hibiscus	<i>Lagunaria patersonii</i>
horsetail sheoak	<i>Casuarina equisetifolia</i>
southern mahogany	<i>Eucalyptus botryoides</i>
Leyland cypress	<i>Cupressocyparis leylandii</i>
Holm oak	<i>Quercus ilex</i>
red flowering gum	<i>Eucalyptus ficifolia</i>



Riversdale Beach

## Planting notes for non-native plants:

- Use non-natives that will control the problem on your section but choose species that will not spread and become weeds in neighbouring land.
- Try to avoid using Norfolk Island pine, Radiata pine or Phoenix palms. They will dominate the landscape and look out of place on the Wairarapa Coast.
- Wilding pines (trees that have self seeded) can be a major threat to this environment. If left uncontrolled, their management costs increase exponentially with time. If you do have pine trees make sure they do not spread into other areas. If you find wilding pines on your property, remove them sooner rather than later.
- Some introduced trees, including Macrocarpa, are used as roost sites for non-native birds. With the additional roost sites the number of non-native birds increases. The birds spread the seed of “weed” species, which grow and destroy native ecosystems.



Riversdale Beach

## Prevent “Garden Escapes”

You might not realise that some plants in your garden could be a threat to the coast. There are many plants in domestic gardens that may look great but can spread into natural areas or farms and become weeds. These “garden escapees” can cause serious damage to native ecosystems, need ongoing costly control, and may destroy the habitat of native birds and other animals.

About 75 percent of all land-based weeds are garden escapees. Their seed can be spread by wind, water or birds. Even if you are keeping the plants in your garden under control, they may be spreading their seed along the coast.

Caring for our coast starts in your garden.

- Learn to recognise plants that can become weeds. If you have them in your garden, remove them and replace them with native plants.
- Dispose of plant cuttings and other garden waste wisely. Never dump garden waste, no matter how harmless you may think it is. Instead take it to an approved landfill or transfer station or burn it.
- If you find a plant that is spreading out of control report it to Greater Wellington Regional Council.

You can recognise plants that can become weeds because they:

- Spread easily
- Grow quickly
- Produce lots of seeds
- Are hard to control
- Grow from stem fragments or roots
- Tolerate a wide range of conditions
- Invade native habitat and smother native plants.

Banana Passionfruit



(Photo:DOC)

Periwinkle

This plant smothers bush undergrowth



Wandering Jew

This plant smothers bush undergrowth



(Photo:DOC)

The following garden plants can become weeds in the coastal environment. A list of pest plants is also given. If you have these plants in your garden, remove them, dispose of them carefully, and replace them with native plants.

For help with plant identification and advice on suitable herbicide sprays, contact the Biosecurity Department of Greater Wellington Regional Council, Masterton.

#### Brush wattle



(Photo:DOC)

#### Succulents, Agave, Ice Plant

Huge colonies of wilding succulents are common near settlement areas. Never throw cuttings of these hardy plants away - even apparently dead ones, as they will resprout. Burn or dispose in landfills.



(Photo:DOC)

#### Old Man's Beard



#### Boxthorn



## Plants that are a real pest

Along with the garden escapees there are also plants that have been identified as pest plants. If you have these plants on your property you may have legal responsibilities to control or remove them. Assistance is available from Greater Wellington Regional Council for a number of these plants. To find out more about pest plants contact the Biosecurity Department of Greater Wellington Regional Council, Masterton, or check out [www.gw.govt.nz](http://www.gw.govt.nz).

The following is a list of pest plants in the Wairarapa:

#### Evergreen buckthorn (*Rhamnus alaternus*)

Greater Wellington Regional Council is responsible for control.



#### Boneseed (*Chrysanthemoides monilifera*)

Already present around Palliser Bay and Riversdale Beach. Greater Wellington Regional Council is responsible for control.



#### African Feather Grass (*Pennisetum macrourum*)

Greater Wellington Regional Council is responsible for control.



#### Climbing asparagus (*Asparagus scandens*)

This plant grows in shady areas and will rapidly climb and strangle trees. Greater Wellington Regional Council is responsible for control.



Pampas (*Cortaderia selloana*,  
*C. jubata*)



Darwins barberry (*Berberis darwinii*)

This plant colonises open shrubland, but is also shade tolerant and will persist under trees. Greater Wellington Regional Council is responsible for control.



Mist flower (*Ageratina riparia*)

Greater Wellington Regional Council is responsible for control.



## Wetland Invaders

There are also pest plants that invade coastal wetlands and other aquatic habitat. Again, there are some species that Greater Wellington Regional Council will help you control.

Many problem aquatic pest plants originate from aquariums. Always be sure to empty your aquarium onto dry land. Do not empty your aquarium into waterways or flush it down the toilet.

Remember that you will require a resource consent if you want to use chemical applications in waterways. Contact the Consents and Compliance Section of Greater Wellington Regional Council in Masterton for more information.

Eelgrass (*Vallisneria spp*)

Greater Wellington Regional Council is responsible for control.



Parrots Feather (*Myriophyllum aquaticum*)



(Photo:DOC)

Lagarosiphon (*Lagarosiphon major*)



## Pest animals

There are non-native animals that have chosen to make the Wairarapa Coast their home, but in doing so threaten native ecosystems. They feed on native plants and animals and, if left uncontrolled, can completely destroy native ecosystems.

Greater Wellington Regional Council will give you information and assistance about pest animals and control methods. Contact the Biosecurity Department, Masterton.

The following is a list of pest animals and some control methods.

### Possums

Favourite foods include garden plants, coprosma, five-finger, citrus and ripening male pine cones.

- Bait stations with poison pellets. The poisons are slow acting so you will need to top up your bait stations at regular intervals
- Timms traps or similar set near palatable trees. Bait with fresh fruit, cinnamon or dates
- Live trapping
- Shooting

### Rabbits

A major pest in dune country where they eat hebes, coprosma and aciphylla. You will need to control rabbits if you want new plantings to survive.

- Fumigate burrows
- Poison carrots
- Shooting
- Commercial liquid repellants. These may be sprayed onto plants, or at their base
- Tyres, netting or plastic sleeves placed around plants
- Exclusion netting made of chicken mesh



Without a seedling understory bush cannot regenerate and will ultimately be lost.



Stoat

(Photo: DOC)

## Feral Goats

- Shooting. It is recommended that only experienced hunters carry out goat control work. Goats are intelligent animals and ineffective, indiscriminate shooting will only make future control more difficult

## Mustelids (stoats, ferrets, weasels)

Mustelids carry TB and eat the eggs and young of native birds and poultry.

- Kill traps, using fresh eggs or meat for bait. Set near sheds, in ditches or under hedges. Traps are best used with tunnels

## Rodents (rats, mice)

- Bait stations using anticoagulant poison baits. A length of drain pipe can be used for the bait station
- Traps

## Wasps

Nests on private land are the responsibility of the landowner. To locate a wasp nest look for the wasps' flight path at dawn or dusk on a warm sunny day when large numbers will be leaving or returning to the nest. Use a plate of cat food or similar to attract the wasps. As they land sprinkle them with flour to make them more visible. Follow the wasps as far as you can and repeat the process until the nest is located.

- For nests found in flat ground: upend a bottle containing 1 litre of diesel or petrol into the nest opening, block the entrance and leave to fumigate the nest
- Nests elsewhere: garden insecticides

## Midges, mosquitoes and sandflies

Midges, mosquitoes and sandflies breed in still, brackish water. In the past, eels, small fish, frogs, waterfowl and fantails would have kept the insect populations in check. Degradation of wetland and estuarine environments has tipped the balance in favour of the insects. Our best long-term remedy is to make wetlands inviting for those other species once again. In the meantime make sure there is nothing lying around your section that can collect water and provide a breeding place for mosquitoes, midges and sandflies.



# DEVELOPMENT ON THE COAST

There is increasing pressure for subdivision and development on the Wairarapa Coast. To date this has resulted in a patchwork of developments that are largely urban in nature or have little regard for the existing characteristics of the land and coastal setting.

With increasing awareness of the impacts that subdivision and development can have, the community has asked that future development on the coast be sensitive and sustainable. They want development that will not compromise or destroy the things they value about the coast for future generations.

A low impact approach to subdivision and development will help achieve this. This approach recognises that a development, whether it is for a 2-lot or a 20-lot subdivision, an aquaculture facility or a motel, should be planned and designed around a site's characteristics, constraints and opportunities.

Development should also be guided by the goals and policies of the *Wairarapa Coastal Strategy*, district and regional plans, and by any approved structure or management plans for the area. It should minimise negative impacts and seek to enhance the Wairarapa Coastal environment.

This section of *Caring for our Coast* sets out how you can achieve a low impact development. Much of it concentrates on the design and effects of subdivision, but the approach applies equally to all types of new development on the coast. With landowners and developers taking a low impact approach to development, they can maximise the opportunities from their land and still help to care for our coast.



Homewood

## Low Impact Development

Conventional subdivision and development do not recognise the unique nature and character of the Wairarapa Coast or the ecological, physical, historic, intrinsic and aesthetic values it has. It can result in “ribbon development” with houses sprawling along roadsides; large lots that may be poorly maintained by part-time residents and an increasingly urban feel that is out of character with the surrounding land use or existing coastal settlements.

In contrast, low impact development recognises a site’s distinct character, constraints and opportunities. It is designed around and in sympathy with these attributes rather than trying to retrofit conventional subdivision and development to the site.

By following the steps outlined in this section of *Caring for Our Coast* you can achieve a low impact development. Generally this means:

- Adopting a holistic approach to site selection, subdivision layout and design,
- Taking a more flexible and creative approach to development including the use of clusters of smaller sized lots and low impact infrastructure,
- Being more sensitive to site and building development, landscape design and planting within each lot.

The creation of small lots in a rural or coastal area does not necessarily lead to a more suburban pattern of development, loss of privacy and outlook, or a reduction in the values and character of the area. The objective of creating smaller lots, is to have discrete clusters or pockets of development set within the landscape, not spread all over it.

Smaller lots also provide the opportunity for retaining areas of open space between the clusters of houses that can then be managed for farming, conservation values or recreational purposes. It enables the essential character and landscape values of a site to be retained and it is these characteristics and values that invariably attract purchasers and visitors in the first place.



Conventional rural/residential subdivision



Cluster development as a preferable alternative



Buildings and structures should sit comfortably in the landscape

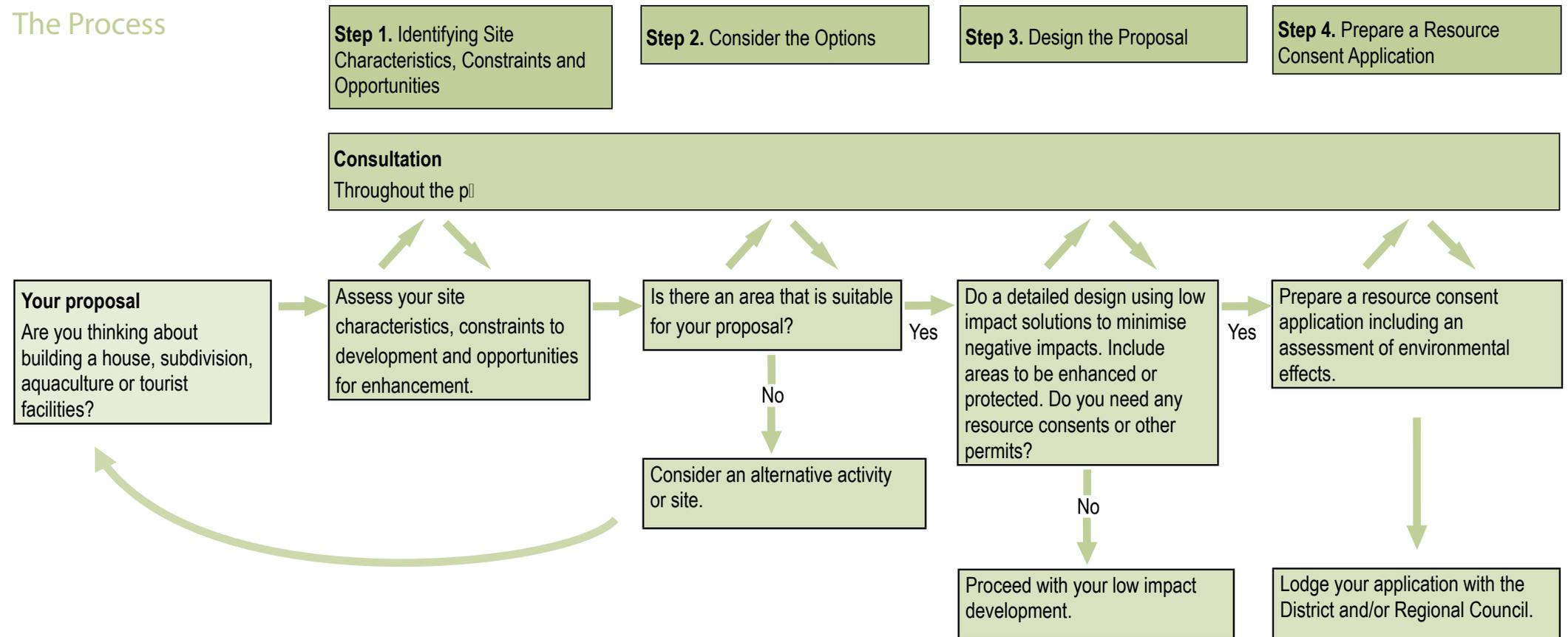
# Achieving Low Impact Development

To design a low impact development, follow these four steps:

- Step 1 Identify Site Characteristics, Constraints and Opportunities**
- Step 2 Consider the Options**
- Step 3 Design the Proposal**
- Step 4 Prepare a Resource Consent Application**

These steps are detailed in the next pages. Remember that by following these steps you will not only help to create sensitive sustainable development and reduce delays with your resource consent application, you will also help to care for our coast.

## The Process



## Step 1. Identify Site Characteristics, Constraints and Opportunities

Before you consider a development you need to establish what are the characteristics, constraints and opportunities of the site. It is important that this happens as the first step in the process so that your development can be designed around and in sympathy with the unique attributes of the site. This part of the process will highlight the opportunities your site has for ecological protection or enhancement and will indicate areas that are suitable or unsuitable for development.

First you should establish the statutory constraints to the site. You should contact LINZ (details on page 53) to find out if there are any restrictions on the certificate of title. Also check regional and district plans and the *Wairarapa Coastal Strategy*. It can also help to ask around to find out what issues were encountered in surrounding sites when they were developed.

Then you should identify, assess and map the physical features and characteristics of the site. By doing this you can see how the characteristics, constraints and opportunities overlap and interact. This will allow you to design a development around and in sympathy with these qualities in Steps 2 and 3.

The following pages list the six main characteristics you should map and assess. They are:

- A. Landscape and Natural Character Values**
- B. Ecological Features, Processes and Values**
- C. Heritage**
- D. Hazards**
- E. Infrastructure**
- F. Access**

You may need professional advice and assistance to identify, assess and map some of these, but some can be identified by the landowner and neighbours, or be taken from existing public information.



## A. Landscape and Natural Character Values

Landscape relates to how we see and experience an area. When assessing the landscape characteristics of a site you should ask yourself what are the prominent features and elements of the landscape? What are the special scenic qualities you notice when looking at your site from within or from outside, and how can these be protected or managed?

Natural character is a measure of how unmodified an area is. Due to its largely undeveloped nature, much of the Wairarapa Coast has a reasonably high level of natural character. When assessing your site identify and assess areas where there has been minimal modification. Also identify areas that already have buildings or infrastructure and therefore a lower level of natural character. The natural character of an area can be enhanced by encouraging native ecosystems.

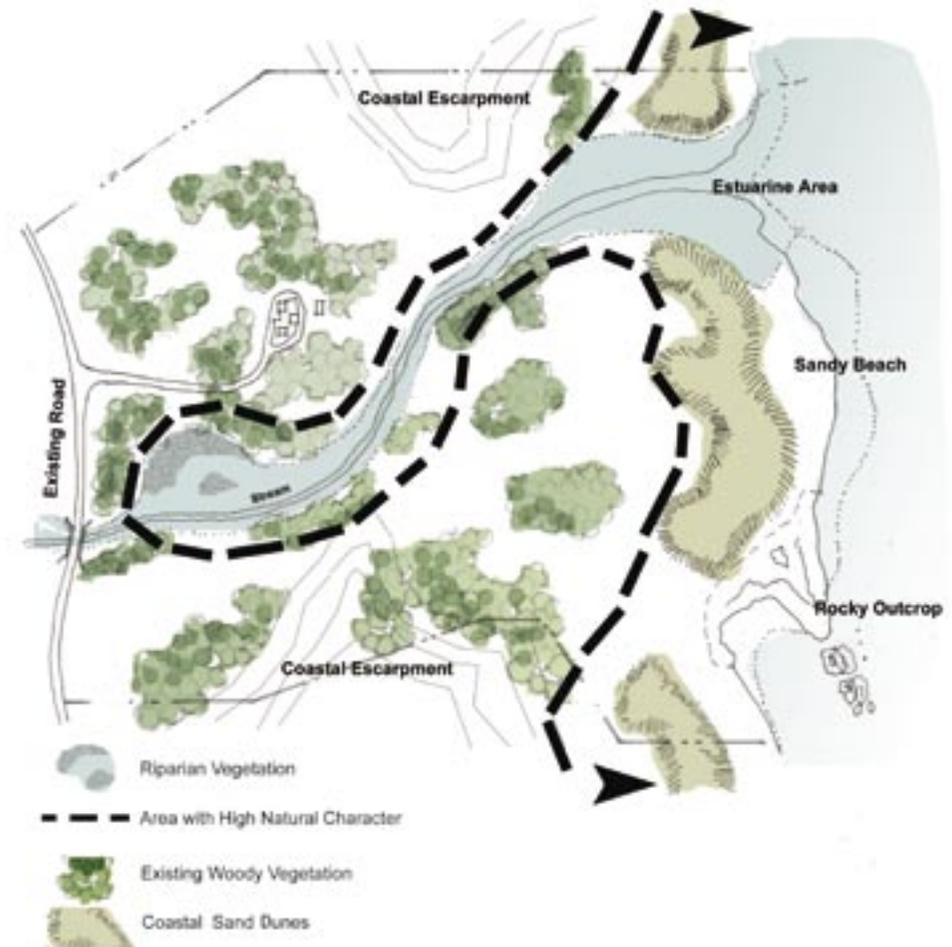
For more detailed information refer to the *Landscape Technical Report* and the *Natural Environment and Ecology Technical Report* prepared for the *Wairarapa Coastal Strategy* (available in Wairarapa libraries and council offices). You may also need to engage the advice or assistance of a landscape architect.

## B. Ecological Features, Processes and Values

Ecological features and processes have intrinsic values but also contribute to the natural character of an area. You should identify and assess ecologically important areas, drainage patterns and native and exotic vegetation. You should consider how natural processes impact on the site and adjoining sites and whether there are areas where development should be avoided. Also consider whether there is the opportunity to enhance native ecosystems by fencing off or revegetating areas.

For more detailed information refer to the *Natural Environment and Ecology Technical Report* prepared for the *Wairarapa Coastal Strategy* (available in Wairarapa libraries and council offices). To find out what information, technical support, or funding is available to help protect or enhance the ecological values on your site, talk to staff from the Department of Conservation and Greater Wellington Regional Council.

## Landscape, Natural Character and Ecological Mapping



## C. Heritage

The Wairarapa Coast is rich in physical heritage including the remains of middens, whare, and stonewalls, as well as built heritage and shipwrecks. There are also cultural associations from Maui and Kupe, from the first Maori inhabitants along Kawakawa (Palliser Bay) and from Captain Cook and the first European settlers. Your site may have important historical artefacts or associations and it is important that you identify, locate and map these before you design your proposal.

Pages 48 to 50 of this booklet outline the steps you should follow to assess the heritage of your site. In some cases it may be as simple as talking to your two local iwi authorities and the district council, but in others a more detailed investigation may be required.

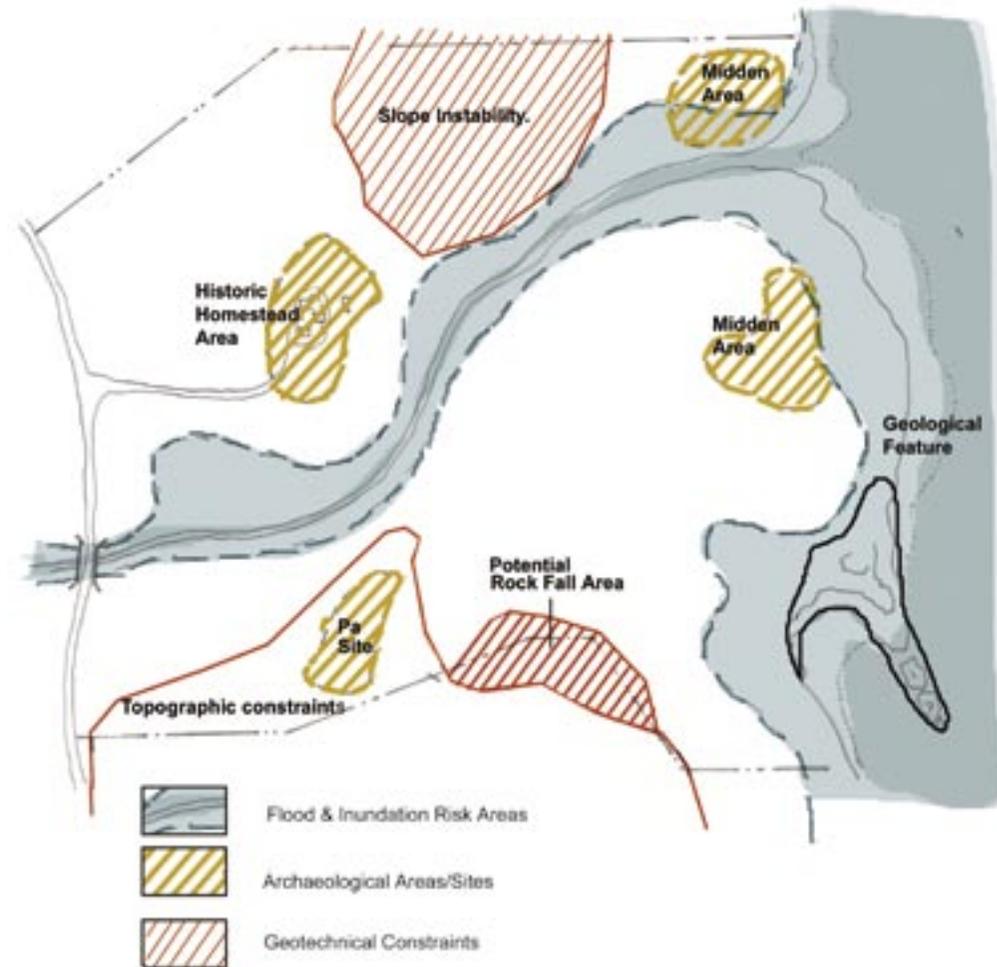
## D. Hazards

The Wairarapa Coast is at risk from sea level rise, storm surge, tsunami, coastal erosion, and onshore hazards such as landslides, flooding, rockfalls and extreme winds. Our desire to develop close to the water can increase the risk to life and property from these hazards.

You will need to identify and map any areas that are likely to be affected by land instability or flooding and be aware of coastal hazards such as tsunami, coastal erosion and storm surge. This way you can avoid areas that are unstable or at risk from hazards. Pages 51 and 52 outline the steps you should follow to do a hazard assessment.

You can also ask your district council or Greater Wellington Regional Council for information on hazards including geological and soil characteristics. In areas where there has not been enough research to clearly identify the level of risk, you may need to employ someone to undertake this work.

## Heritage and Hazard Mapping



## E. Infrastructure

All development will require some level of infrastructure whether it is roads, electricity, stormwater disposal, or the treatment and disposal of effluent. There may be parts of your site that are unable to accommodate this infrastructure because of the values you identified earlier, or steep slopes, water courses or fast or slow draining soils.

Identify the site characteristics and constraints that will impact on the type and location of infrastructure. Will community or individual systems be more effective? Is there existing infrastructure like roads and septic systems that need to be upgraded? You should also consider where to locate infrastructure so it will have minimal impact on landscape and natural character.

Contact Greater Wellington Regional Council about the type of soils on your site and talk to a wastewater and geotechnical engineer.

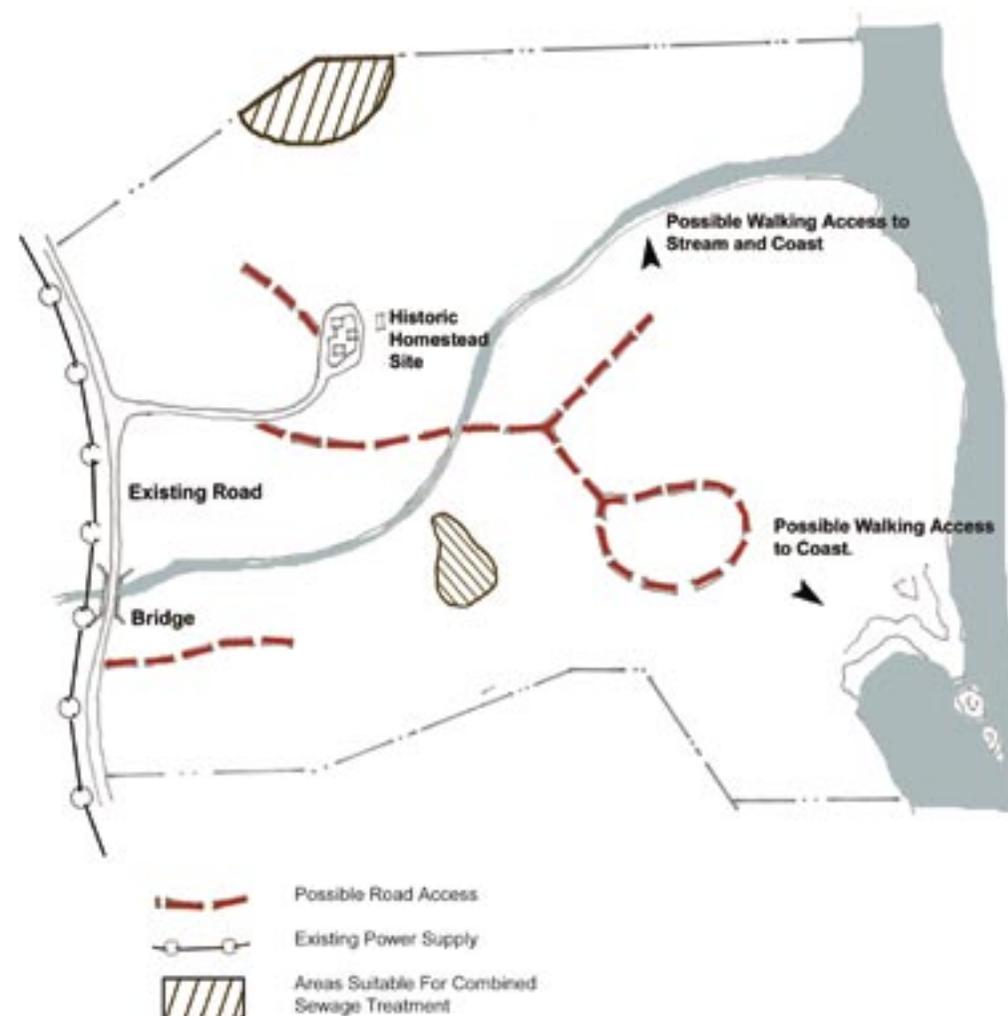
## F. Access

Maintaining and enhancing public access to and along the coast is identified as a matter of national importance in the Resource Management Act, however, access needs to be provided in a sensitive and sustainable way.

Identify existing access or current constraints to public access to the coast and opportunities to enhance public access. Identify areas where access may need to be managed to avoid hazards or damage to native ecosystems.

Contact your district council, the Department of Conservation and Greater Wellington Regional Council to find out what options are available for managing public reserves and access.

## Infrastructure and Access Mapping



## Step 2. Consider the Options

Once you have mapped the site characteristics, constraints and opportunities you can combine the maps to give an indication of potential development areas, areas that should be avoided, and areas that could be protected or enhanced.

At this stage it may become evident that there are too many constraints on the site to accommodate the development you had in mind, or indeed any development at all. Similarly it may become clear that the development you had in mind would have significant impacts on the unique character and values on the site.

However, you may also have identified opportunities to improve your development and will certainly have gained a greater appreciation of the site. With a clear understanding of what your options for development are you can move to Step 3 – Designing the Proposal.

Land Suitability Mapping



### Step 3. Design the Proposal

Now that you have a good appreciation of the site and of the scale of development it can accommodate, you can begin to design your proposal. At this stage you should explore a range of design options, and concepts. The following pages provide some options but it is also helpful to look at good examples of local and overseas development, parts of which may be applicable to your site and development.

Remember that designing a proposal that simply fills the gaps left over from the constraints analysis (Steps 1 and 2) will not necessarily produce an appropriate or environmentally sensitive solution. You will need to make decisions on which design solutions are most appropriate for your site.

Do not expect to get the most appropriate design immediately. You may have to explore a series of options or re-think aspects of the development once you start to identify building sites, road and access alignments, effluent disposal systems, landscape impacts and so on. It is very important to have an open and flexible approach to designing the proposal.

An important part in this step is determining where lot boundaries should go. Step 1 identified natural boundaries (terrace edges, streams, remnant plantings etc). Utilising these features for lot boundaries will lessen the impact of boundary fencing and shelter plantings on the landscape.

You should also consider how the land will be managed. Smaller lots, preferably in clusters, will still enable people to enjoy the coast and maintain a degree of privacy, and will leave a larger residual lot that can continue to be farmed, can be replanted, or can be managed to help protect and enhance the site. Whatever form of subdivision or development is finally proposed, it is most important the residual land is able to be well managed.

Indicative Subdivision Layout



Before finalising your proposal, discuss the development with the district council and Greater Wellington Regional Council and anyone else that may be affected by the proposal (Department of Conservation, iwi, neighbours, community groups etc). It is often helpful to be in contact with these groups throughout the process. However, at this stage your draft plan will enable them to better understand your proposal and make more informed comment. Discussion will also help identify other issues or solutions that you may not have previously considered.

Use the ideas and solutions on the following pages, along with the references listed below, to create a low impact development. It will also help you in the final step - Preparing an Application.

This reference list will assist you to create a development that minimises adverse environmental effects and maximises positive and sensitive outcomes.

- *The impact of rural subdivision and development on landscape values.* (July 2000) Ministry for the Environment or available at: [www.mfe.govt.nz/publications/rma/development-impact-on-rural-values-juloo.pdf](http://www.mfe.govt.nz/publications/rma/development-impact-on-rural-values-juloo.pdf)
- *Guidelines for on-site sewage systems in the Wellington Region.* (December 2002) Wellington Regional Council or available at: [www.gw.govt.nz/pub/index.cfm](http://www.gw.govt.nz/pub/index.cfm)
- *Erosion and sediment control guidelines for the Wellington Region.* (September 2002) Greater Wellington Regional Council or available at: [www.gw.govt.nz/pub/index.cfm](http://www.gw.govt.nz/pub/index.cfm)
- *Subdivision for people and the environment.* SNZ HB 44:2001. Contact Standards New Zealand on 0800 735 656.
- *Low impact design manual for the Auckland Region.* (April 2000). Auckland Regional Council, Technical Publication 124. Contact [publications@arc.govt.nz](mailto:publications@arc.govt.nz) or phone (09) 366 2000.
- *Stormwater treatment devices: design guideline manual (TP10).* Auckland Regional Council. Online at [www.arc.govt.nz](http://www.arc.govt.nz), contact [publications@arc.govt.nz](mailto:publications@arc.govt.nz) or phone (09) 366 2000.

## Site Development Plan

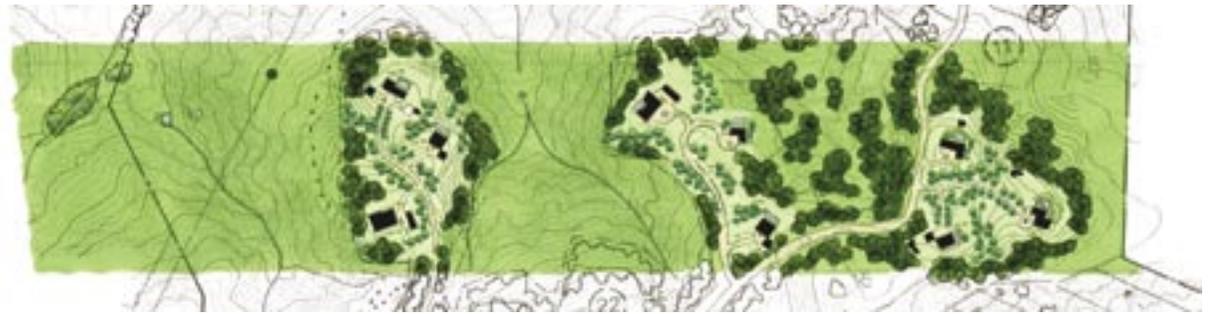


## Design Considerations

- Identify potential building sites on the basis of site characteristics (heritage, landscape, native ecosystems, hazards) and not simply on achieving the best views.
- Be open to innovative and alternative design options, after all each site is different and design solutions should recognise this.
- Discuss your proposal with neighbours and consider how your development will affect them. Talking to them may result in additional opportunities, a joint approach to development, or shared facilities.
- Plan and design the development so that it is in keeping with any approved structure plan or management plan.
- Consider the needs of future residents and visitors to the coast, including access to, and views to and from the foreshore and public recreation areas.



Development that "fits in" with the landscape.



Cluster development is an alternative to conventional subdivision.

Houses and access should be sited on safe high ground.



Pleasant views may be obtained across the wetlands.

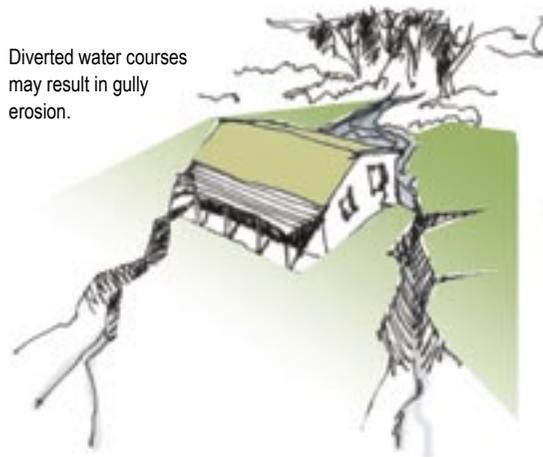
Wetlands provide valuable habitats for unique vegetation and wildlife.



Streams should not be disturbed. They are important elements in the water cycle and provide valuable wildlife habitats.

- Be realistic about what the site will need to accommodate. Consider the number of people and vehicles that are likely to be on each site during peak summer periods. Is there enough room for boat parking? Will the infrastructure, such as water or sewerage, cope with peak visitor numbers?
- Plan and design developments to avoid hazard areas. Ensure development is designed so that the risk to people and property from natural hazards (including coastal erosion and fire) will not be increased.
- Avoid development that will reduce the high natural character of an area or will make the landscape appear over developed or cluttered. Develop discrete clusters of housing or develop in and around existing development.
- Enhance the natural character of the site through planting or protection of native ecosystems to offset the impacts of the development.
- Minimise the visual effects of lot shape and boundary definition. Use natural features and elements for boundary definition where possible. Avoid roads, straight-line boundaries and plantings that create straight lines in the landscape.
- Minimise earthworks and retain natural landforms and drainage patterns.
- Make sure buildings and structures sit “within” the landscape. Do not site buildings and structures such as water tanks and antennae in prominent locations where they will be visually intrusive and dominant in the landscape.

Diverted water courses may result in gully erosion.



Wet areas can be susceptible to subsidence and uneven settlement when loads are imposed.



Well sited building access follows natural contours and preserves the natural character of the site.

- Avoid skyline development, particularly where there are no background features.
- Consider the relationship between buildings and how they relate to each other in terms of privacy, views and the maintenance of the rural and coastal character of the area.
- Building style and form should be appropriate to the site and the area in general, and reflect the distinctive context and character of the Wairarapa Coast.
- Avoid building materials and colours that contrast highly with the coastal landscape or are highly reflective.
- Retain existing trees, vegetation and indigenous ecosystems and integrate them into the development particularly where they are visible and appreciated beyond the site. Trees as a backdrop to buildings assist in “anchoring” buildings into the landscape.

High impact



Low impact



Building breaks tree canopy line and has increased visual prominence.



Line of tree canopy remains intact with building blending into the site.

- Find out the best way to protect areas of significant heritage, landscape, natural character and native ecosystems and consider how to best manage land that will remain undeveloped. It may be through fencing, a covenant or other land management techniques.
- Use new planting to complement and enhance the area. See the plant list in the section on Living on the Coast and where possible use plants propagated from seed collected locally.
- Protect and enhance riparian and wetland vegetation particularly those that add to conservation, landscape and amenity values.
- To avoid and minimise impacts on sand dunes, wetlands and areas of coastal vegetation, use sensitive access solutions like boardwalks, bridges or stepping platforms.
- Avoid using plants that could spread to become weeds in the coastal environment.



A. Protect and manage sensitive wetlands.



B. Shelter planting should be sensitive to important coastal views.

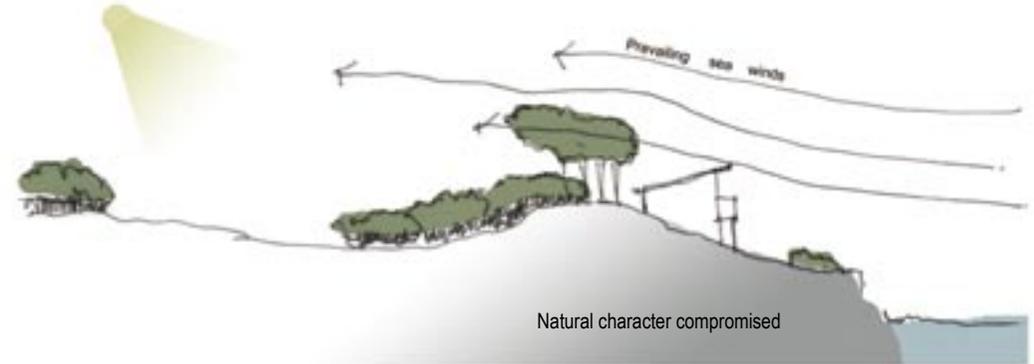


C. Planting should be sensitive to the coastal landscape and natural character values.

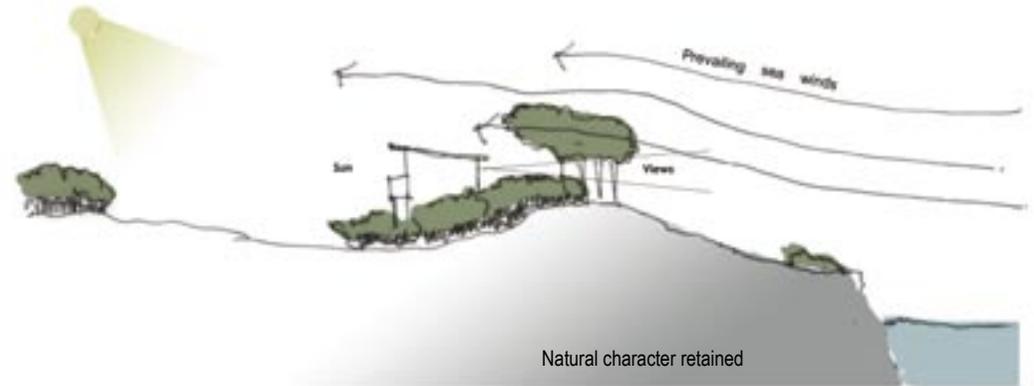


D. Avoid and control exotic weed species and garden escapes.

- Use appropriate infrastructure that reflects the existing community character and expectations. Determine what type of roading, stormwater drainage and lighting are most appropriate.
- Explore the range of infrastructure options with a consultant and discuss with council officers. Will the infrastructure you have chosen be able to accommodate future growth?
- As far as practicable seek low impact solutions through the use of “soft” or “green” engineering techniques while at the same time ensuring design quality and safety standards.
- Locate and site houses so they are able to use passive solar design. This will reduce the need for heating and cooling and increase energy efficiency.
- Where possible, place electricity, telecommunications and other reticulated services underground.
- Street lighting should be low key and the minimum necessary for safety. Talk to Council officers about light levels and alternative lighting solutions. Avoid unnecessary light poles and consider bollards instead.



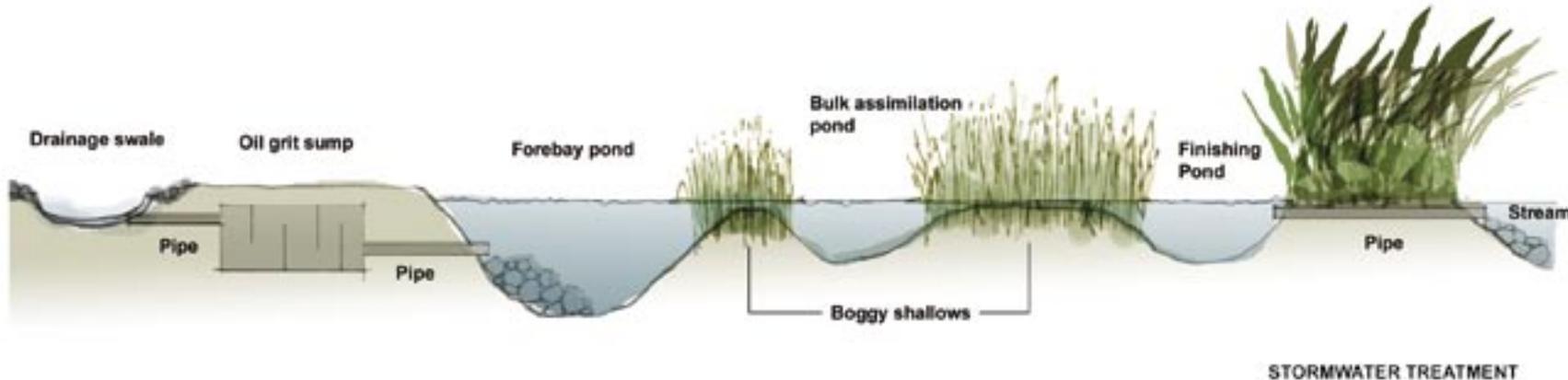
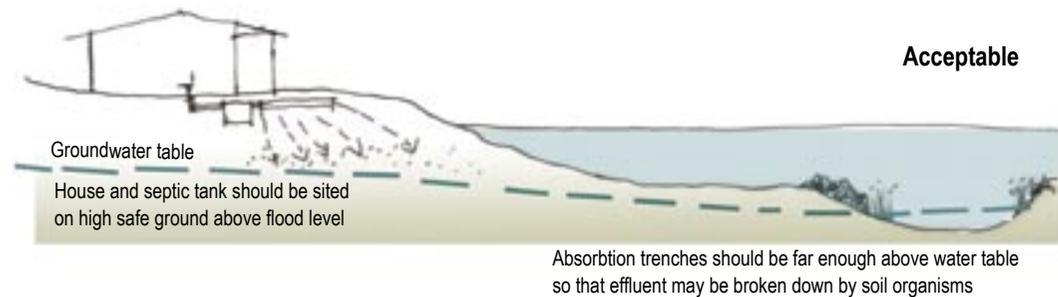
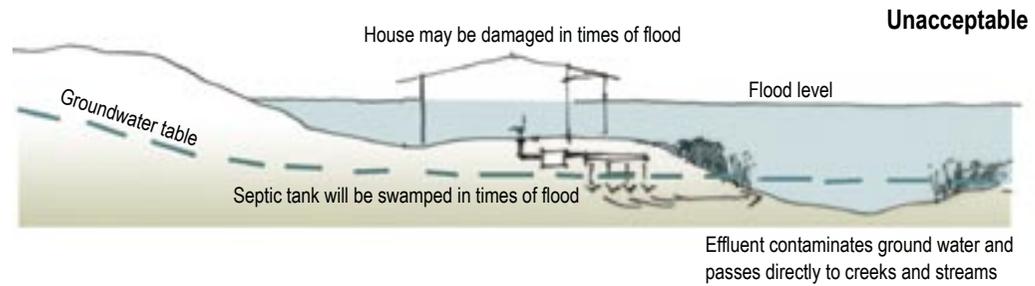
This house with sea views is highly visible and has ignored local climate considerations.



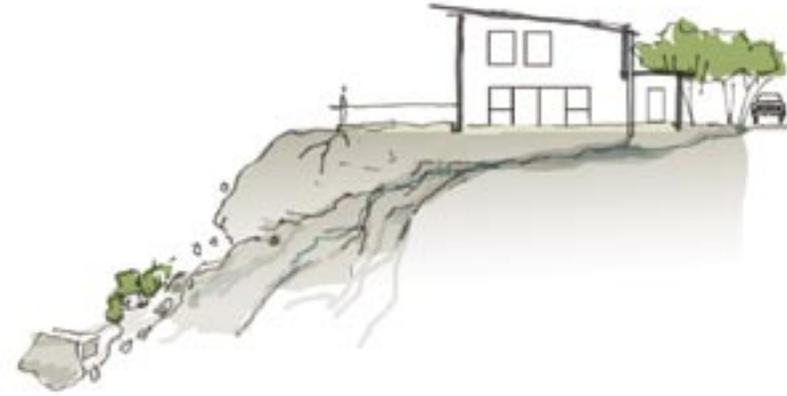
This house, which retains a sea view, is sheltered from onshore winds and has a pleasant sunny living area.



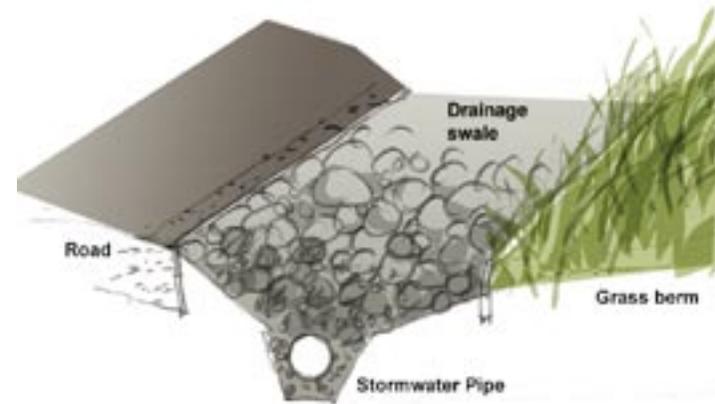
- Consider alternative systems and technology for provision of electricity. Services like wastewater systems require electricity for their function and the long-term provision of electricity should be considered.
- Ensure the wastewater system proposed is the most appropriate for the site and the development. Would a community based disposal system be better for the environment or allow for better lot size and location?
- Dwellings need to collect rainwater for drinking, toilet flushing, fire protection storage, garden irrigation and other uses. Consider shared systems for fire fighting, toilet water flushing and irrigation.
- Use technology and systems that enable wastewater to be re-used. Separate blackwater and greywater. Store and use the greywater to water gardens.



- Supplement on-site irrigation/water supply needs with storage ponds and small dams that can also serve as conservation or amenity features and provide water for fire fighting.
- Ensure rural fire fighting services can reach your site and the water stored on site. Fit your water tank with a coupling the fire fighting service can connect to.
- Stormwater systems should use low impact designs that minimise erosion, contamination of natural watercourses and downstream flooding. This can include the use of small-scale detention dams and treatment of stormwater runoff with planting areas and small wetlands.
- As far as possible avoid piping, hard channeling and culverting. Where these are required, consider the best methods and costs of maintenance.
- Hard surfaces for parking and yard areas increase the amount of stormwater run off because they do not allow water to seep into the ground. To minimise this impact, vegetate these areas or use surfaces that allow water to infiltrate.



Uncontrolled stormwater runoff can lead to potential slips.



Low impact stormwater system.

## Step 4. Prepare a Resource Consent Application

Many developments require a resource consent from the district council and some also require consent from the regional council. This final step will help you prepare a resource consent application. A well thought out proposal supporting information will help the resource consent process run more smoothly and will reduce delays often caused by poorly considered designs or inadequate provision of information.

Talk at an early stage with staff at the district and regional councils to determine what consents may be needed, and the type and depth of information needed to support an application. Council staff will also advise on the process itself, including who needs to be consulted, and whether a resource consent application might be publicly notified. A pre-application meeting to discuss a draft application may also be useful.

Under the Resource Management Act your application for resource consent must include an assessment of environmental effects. Fortunately much of the work that you undertook in the design process (Steps 1-3) will help you prepare your application and pages 48 to 52 have information on hazard and heritage assessments.

Remember, if you do not specifically state how you addressed a particular issue (hazards, heritage, wastewater etc) the deciding authority may assume you have not considered it at all.

Now that you have your low impact development proposal and have established that you do require resource consent, use the following checklist to help make sure your application and assessment of environmental effects is ready to be lodged.

Before lodging an application, make sure you have included:

- A location map with the site clearly marked
- A written description of the proposal and any special aspects of the proposal (including areas to be protected or enhanced)
- A site plan or aerial photograph marked with the features identified in Step 1 (waterways, wetlands, steep slopes, hazard areas etc)
- A site plan or aerial photograph showing proposed building sites, effluent disposal areas, roads and tracks, stormwater disposal systems, and other proposed infrastructure and development
- A description of the constraints and special qualities of the site and how these have been incorporated into the design
- An assessment of landscape and natural character and description of how the proposal has been designed to minimise the impact on or enhance these qualities
- A heritage assessment
- A hazard assessment (where necessary)
- A description and drawings of the type and design of stormwater and effluent disposal systems
- A planting plan including species, locations and timeframes
- What mitigation measures or conditions you are proposing (building heights and colours, planting, setbacks etc)
- Whether public access will be provided (where applicable)
- Whether regional/district council consent is also required and has been applied for
- Results of any consultation undertaken
- Any other council requirements

Note – District and regional plans often specify the type of information required to be included in a resource consent application. You will need to check those requirements.

## Heritage Assessment

Heritage is a limited resource that, once destroyed or altered, cannot be replaced. The heritage on the Wairarapa Coast is unique and special because it represents our history. Provisions in the Historic Places Act 1993 (HPA) ensure protection of heritage. Activities such as earthworks for roading, landscaping, building sites or cultivation can destroy heritage values. Building or removing a house or other structure can also alter heritage values. Apart from our obligations under law to protect heritage, we should consider heritage in subdivision and development as a potential asset. Appropriately managed, a historic site or building could be an asset to your property.

The protection of historic heritage is a matter of national importance and it will be considered by council if you need to make a resource consent application.

### The Historic Places Act 1993

The Historic Places Act 1993 makes it unlawful for any person to destroy, damage or modify any part of an archaeological site without the permission of the New Zealand Historic Places Trust. This is the case regardless of whether the site was previously known or whether the activity is permitted under the District or Regional Plan or a resource or building consent has been granted. The HPA provides for substantial penalties for unauthorised destruction, damage or modification.

### Obtaining an Authority from the Trust

If there is a chance you may damage a site, you must apply to the Historic Places Trust for permission to do so. The Trust can advise you of the most suitable course of action. If you uncover a previously unknown site during earthworks, you may also need permission to continue. You must stop any work that would affect the site and contact the Trust for advice on how to proceed.

## Dealing with Heritage in Subdivision or Development

### Do your research

Find out if there are any recorded sites

Check: District Plans, NZ Archaeological Association, NZ Historic Places Trust and Wairarapa Archive



### Talk to iwi

- There are two iwi in the Wairarapa; Rangitaane o Wairarapa and Ngati Kahungunu o Wairarapa.
- Contact them early on in the planning stage as they may have information on the area you are developing or can direct you to someone who does.
- Often, they will ask for permission to carry out a site visit and may be able to tell you more about the site then.
- Let them know what information you have gathered so far, the area of land being developed and what is planned for the site.

Are there any identified sites or issues?

Yes

- More information is needed. You need a professional assessment of the heritage values of the site and how to design your proposal to minimise effects on heritage.
- The NZHPT can refer you to a list of appropriate consultants. Alternatively a list of local archaeologists is available on the NZAA website.
- If iwi have issues, engage with them directly to reach a solution.

No

- It is likely that no further heritage investigation is required.
- Remember that the HPA requirements still apply if you do come across a site during work.
- Remember also to include a record of your correspondence, including any correspondence with people or agencies in your consent application if you are making one.

### Sources of Information

#### District Plans

Check the district plan for the area you are developing in. What are the provisions in the plan for heritage protection? Is there a list or schedule of protected heritage or sites? Plans are available to read at council offices or local libraries.

#### New Zealand Archaeological Association - NZAA

The NZAA maintains a National Site Recording Scheme that contains over 50,000 records of archaeological sites. A regional file keeper is responsible for the records in each area. Contact NZAA for details of the regional file keeper. See [www.nzarchaeology.org](http://www.nzarchaeology.org)

The NZAA website has a list of current archaeologists working in this area.

#### New Zealand Historic Places Trust - NZHPT

The New Zealand Historic Places Trust has the overarching responsibility for protection of our heritage and provides advice on protection of archaeological sites. NZHPT also has the responsibility to assess and issue an Archaeological Authority to destroy, damage or modify an archaeological site. See [www.historic.org.nz](http://www.historic.org.nz)

#### Wairarapa Archives

The Wairarapa Archive collects records relating to the Wairarapa region. It provides access to these collections through an extensive database and personal assistance.

The records include photographs and negatives, architectural plans and maps, records of community organisations, newspapers, family information and histories, film, video and oral recordings and school records. See <http://library.mstn.govt.nz/archive.html#Contact>

#### Archives New Zealand

Archives New Zealand holds rare documents and resources that are available for public scrutiny. See [www.archives.govt.nz](http://www.archives.govt.nz)

#### National Library of New Zealand

The National Library holds historic books, photos, documents and maps. They have an extensive cartographic (map) collection. See [www.natlib.govt.nz](http://www.natlib.govt.nz)

## Iwi

Iwi are keen to ensure that inappropriate development does not occur on or near *waahi tapu* or sites sacred to Maori. Therefore they appreciate the opportunity to visit sites and advise you if such sites are present or if there are any issues that need to be considered. Their investigation is not funded by any agency and they take it upon themselves to investigate sites. There is no legal obligation for landowners to pay for their services but you should be aware of this in light of the time and effort they give.

Consultation is handled directly with the landowner and or developer and both iwi are keen to develop a professional and mutual relationship.

### Rangitaane o Wairarapa Inc

Rangitaane o Wairarapa have a Cultural Unit that has been set up to respond to resource consent applications and planning issues in the Wairarapa. They have collated a large amount of information on known heritage sites and continue to investigate and add to their database. Recently they have incorporated a GIS model to help collate and store information. Tribal elders often assist the unit on site visits.

Please contact their offices for assistance.

Rangitaane o Wairarapa Inc, 'Te Haamua', 12 Cornwall Place, PO Box 354, Masterton,  
Ph (06) 370 0600 Fax (06) 378 8653 Email: row.dane@xtra.co.nz

### Ngati Kahungunu o Wairarapa Taiwhenua Inc

The Taiwhenua provides a useful contact for many hapū throughout the region. They too are keen to respond to consents and planning issues in the region. The Taiwhenua holds a large record of recorded sites in the Wairarapa. Taiwhenua staff undertake site visits or are able to direct landowners or developers to the right hapū contacts along the coastline.

Please contact the office for assistance.

Ngati Kahungunu o Wairarapa , Maori Executive Taiwhenua Inc, PO Box 146, Masterton  
Ph (06) 370 3240 Fax (06) 370 3242



Stone walls marking garden plots are a widespread archaeological feature from Whatarangi to Flat Point. They date back 700 years.

## Natural hazard assessment

The Wairarapa Coast is at risk from sea level rise, storm surge, tsunami, coastal erosion, maritime and recreational hazards and onshore hazards such as landslides, flooding, rockfalls, earthquakes and extreme winds. Most of these coastal hazards present a risk to life and property because of our desire to be close to the water.

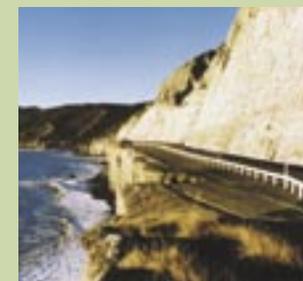
A large destructive tsunami is likely to impact somewhere on the Wairarapa Coast once every 150 years. Damaging storm surges causing accelerated erosion and coastal flooding can be expected about every 50 years. The majority of the coast is in a state of natural erosion and sea level is expected to rise between 30 and 50 cm by 2100.

Due to the Wairarapa Coast being mostly undeveloped, Wairarapa people have a great chance to help protect land, infrastructure and people from the risks which inevitably come with new development on the coast. Unfortunately there is not yet a lot of easy-to-follow and practical information for land owners on the risks we actually face from coastal hazards and what we can do to make life easier and safer. These guidelines are provided as a starting point.

## Dealing with hazards in subdivision and development

You have two main ways in which you can help protect yourself from coastal hazards in the Wairarapa:

1. **Do not locate any permanent valuable assets too close to the shoreline.** The majority of the Wairarapa Coast is eroding and all of it is vulnerable to tsunami and storm surge hazards, so always act on the side of caution when in doubt.
2. **Seek professional advice.** Professionals involved in the development of land, from building design engineers to landscape architects and infrastructure planners have the skills to begin applying some of the principles contained in the reports suggested in this guideline. It is up to you to ensure this is done.



Coastal erosion at Te Kopi and Whatarangi.

## Do I need a hazard assessment?

If your site is below 10 metres above mean sea level or within 50 metres of mean high water springs, you may be required to provide a "hazard assessment" as part of your resource consent application. Anyone within this hazard area should consider carrying out a hazard assessment.

In some places along the Wairarapa Coast this hazard area runs a long way inland, especially on low-lying areas such as beaches and river valleys. You need to seriously consider the potentially significant harm and damage to people and infrastructure that coastal erosion, waves, storm surges, tsunami and slope failures can cause in these areas.

Helpful references on coastal hazards in the Wairarapa, which discuss how to reduce the harmful effects on people and property, include:

- *Greater Wellington Hazard Fact Sheet Series.*
- Barrow, S., 2002. *Wairarapa Coastal Strategy Technical Report – Hazards.* A report prepared for the Wairarapa Coastal Strategy, Greater Wellington Regional Council.
- Tonkin and Taylor Ltd., 2002. *Options for managing risks from tsunami in the Wellington Region.* A report prepared for the Wellington Regional Council.
- National Tsunami Hazard Mitigation Program, 2001. *Designing for Tsunamis – Seven Principles for Planning and Designing for Tsunami Hazards.*
- National Tsunami Hazard Mitigation Program, 1999. *Surviving a Tsunami – Lessons from Chile, Hawaii and Japan.* United States Government Printing Office.
- Auckland Regional Council, 2000. *Coastal hazard strategy/coastal erosion management manual.* Auckland Regional Council Technical Publication No. 130.

These publications can be obtained from Greater Wellington. Parts of the tsunami publications listed above are just as relevant for other coastal hazards as well, and can be easily applied to the Wairarapa situation.

The following report, prepared by the American Federal Emergency Management Agency, provides guidance for the design and construction of coastal buildings that will be more resistant to natural hazards:

- *Coastal Construction Manual: Principles And Practices Of Planning, Siting, Designing, Constructing, And Maintaining Residential Buildings In Coastal Areas.* (FEMA 55 -- 6/2000).

## How do I make an assessment?

The hazard assessment will need to be carried out by engineering, geotechnical and/or scientific professionals.

Contacts of professionals to carry out this work can be obtained from Greater Wellington, your district council or your resource consent advisor. You could also call any listed engineering geologist or civil/environmental engineer (accessed through the phone book) or coastal process scientist (accessed through university departments) to discuss your area and your development plans.

Your own local knowledge may also be able to be used in the assessment, especially if you have photographic, monitoring or anecdotal records.

The main elements of a hazard assessment are:

- A detailed physical site description (geology, geomorphology, orientation and exposure),
- Recognition and discussion of any previous reports or research carried out in the area,
- General geotechnical assessment of ground conditions,
- Assessment of slope hazard for sites backed by steep slopes (rock fall, landslide etc),
- Estimates of erosion/accretion rates (e.g. 0.4-0.8 m/year erosion),
- Estimates of a 50 year storm wave runup on top of a 0.5 and 1.0 metre storm surge at high tide,
- Mapping the 5 and 10 metre contour lines above mean high water springs to identify areas at risk from tsunami,
- A prediction of the likely effects of a rise in sea level of 0.5 metres by 2100 on the property,
- A detailed description of the type of land use and any structures proposed below 10 metres above mean sea level or within 50 metres of mean high water springs, and
- General comments on any other natural hazard which may have a compounding effect or cause a problem on its own e.g. wind storms