

CHAPTER 2

# RESTORATION PLANNING

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Several hundred wetland restoration projects are currently underway around New Zealand. Projects cover the full spectrum – from large-scale, multi-wetland initiatives such as the Department of Conservation’s Arawai Kakariki programme, to small-scale projects on private land undertaken by community groups and individual landowners. All wetland restoration projects whether large (and involving many stakeholders) or small (and involving a single family) call for good planning.

This chapter briefly outlines what a Wetland Restoration Plan is, and what it should include. To meet ecological restoration goals many

projects typically require a range of expertise, hence providing a list of useful agencies and organisations. Key lessons learned by community groups around New Zealand involved in restoring wetlands are also included, given their substantial experience in on-ground works such as volunteer management, sourcing funding, weed and pest control, native plant growing, revegetation and plant releasing. A case study on the Punawhakaata wetland (Taupo) highlights that to achieve significant goals many different people must come together, and that for planning purposes, it can be a lengthy process to find common ground.

**Previous page:** Waikato Institute of Technology students and the NZ Landcare Trust discussing the planting programme at Lake Serpentine, Waikato.

Photo: Abby Davidson, NZ Landcare Trust



Core samples tell a story: Keith Thompson a Waikato based wetland ecologist explains the development of the Ramsar listed Kopuatai peat dome on World Wetlands Day, 2006. Photo: Monica Peters, NZ Landcare Trust

Weed clearance is likely to be one of the most common actions taken in the course of wetland restoration. Te Hapua, Wellington.  
Photo: Monica Peters, NZ Landcare Trust



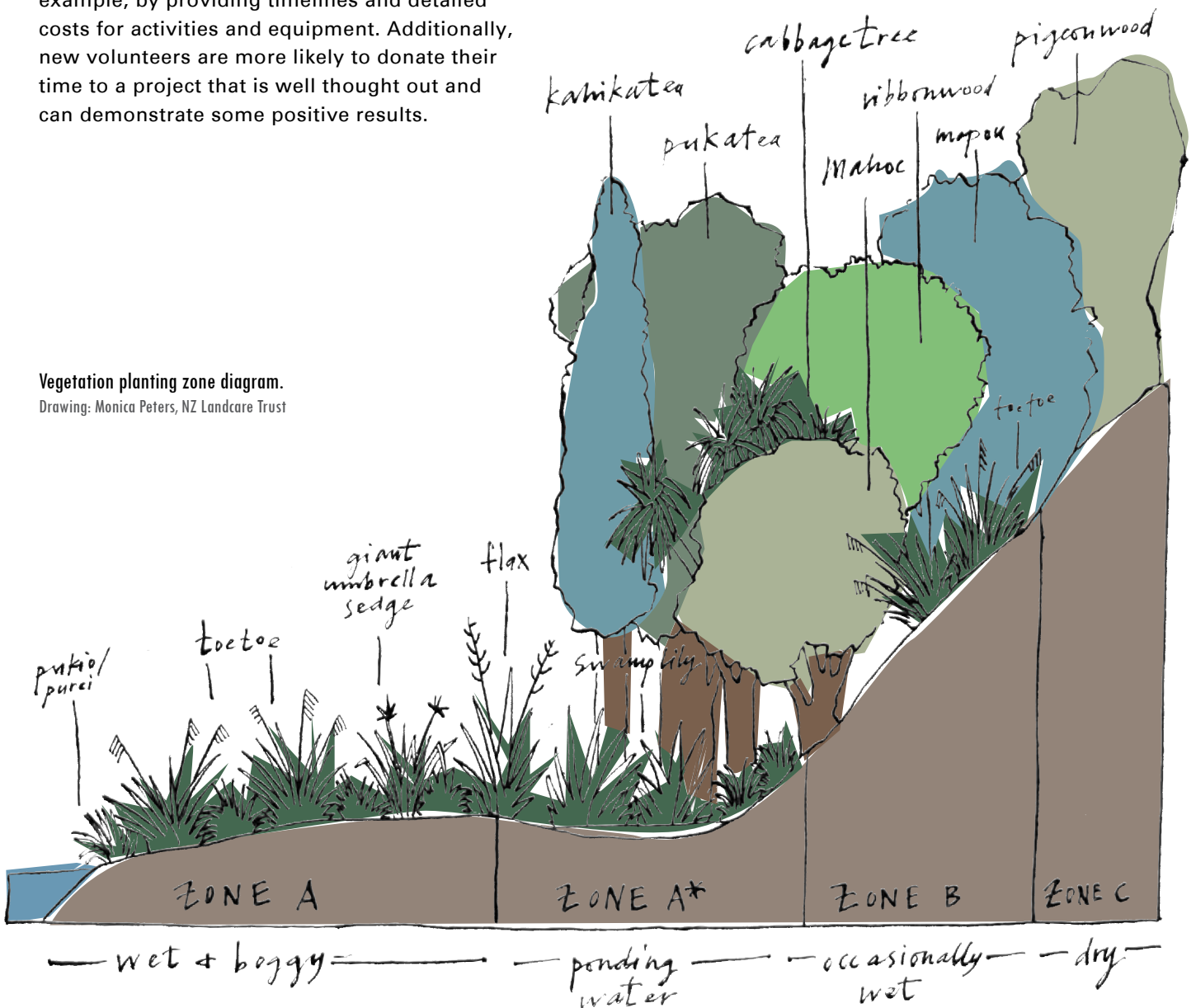
# 1 Wetland Restoration Plan

The function of a Wetland Restoration Plan is to help you achieve your goals. A Plan need not be complex, instead it should "...help you clarify issues, suggest solutions, estimate likely costs, record the best time for fieldwork and help you keep track of results" (Department of Conservation Action Plan for Landowners and Community Groups). A cohesive Plan is one of the necessary steps for developing a robust monitoring programme to determine whether the restoration is successful or which aspects may need modifying. A Plan is also useful for bringing together funding applications, for example, by providing timelines and detailed costs for activities and equipment. Additionally, new volunteers are more likely to donate their time to a project that is well thought out and can demonstrate some positive results.

## 1.1 Developing a Wetland Restoration Plan

The following basic set of steps is a summary of several available planning templates, links to which are provided at the end of the chapter. Where relevant, reference has been made to Handbook chapters where steps are outlined more fully.

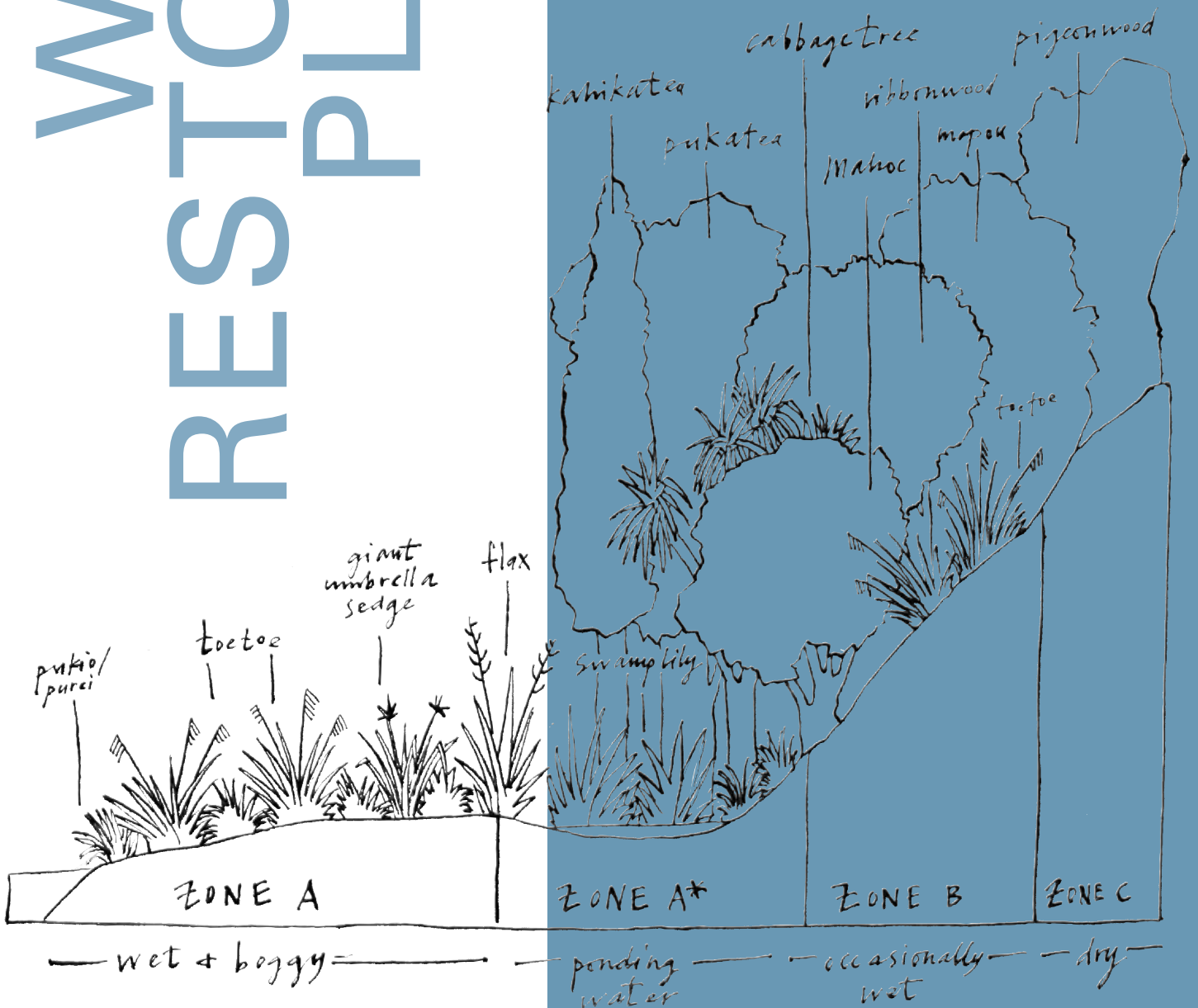
Vegetation planting zone diagram.  
Drawing: Monica Peters, NZ Landcare Trust



# WETLAND RESTORATION PLANNING

## STEP 1 Provide basic details about the wetland

- Ownership and contact details
- Status  
(note that different classifications for public land, e.g., Wildlife Management Reserve, Ecological Area, Amenity Area, will have implications for how the site can be managed)
- Location
- Current size



## STEP 2 Describe the key features of wetland restoration site

A useful tool is a sketch map which should include: (see Chapter 10 – Revegetation for a basic example)

### VEGETATION

Dominant vegetation types:

- Kahikatea forest, Carex sedgeland, kuta emergent aquatic community, Sphagnum mossfield, raupo reedland

Any species of note:

- Rare species, infestations of invasive weeds, unusual plant communities

### HYDROLOGY

Water sources and outflows:

- Streams, rivers and seeps, rain-fed only sites

Water level:

- Permanent open water >1 m deep
- Shallow water 5 cm – 1 m deep
- Saturated –5 cm to +5 cm deep
- Seasonally saturated
- Generally dry
- Dry

Modifications:

- Drains, weirs, culverts, canals and stopbanks (note that drains may be a source of nutrients into the restoration site)

### SOIL TYPE

- Organic (peat), mineral or a combination of both

### MAN-MADE FEATURES

Infrastructure:

- Easements for roads and powerlines
- Buildings
- Access points such as gates, paths, boardwalks and tracks, bridges
- Rubbish piles

### SPECIAL FEATURES

Sites of cultural significance:

- Archaeological features, e.g., pa, kainga, urupa
- Areas of cultural harvest
- Historical sites, e.g., battle sites, walkways

## STEP 3 Determine your wetland type

Swamp, bog, fen, marsh and/or shallow water?

Chapter 3 – Wetland types outlines the basic characteristic of freshwater wetland types found in New Zealand.

## STEP 4 Learn as much as you can about your restoration site

- Research the history of the site
- Find a reference wetland
- Understand the ecology of the site

Chapter 4 – Site interpretation 1 and Chapter 5 – Site interpretation 2 summarise a range of basic and in-depth methods that can be used to understand the past and present state of the wetland.

## STEP 5 Develop your goals and objectives

Chapter 6 – Goals and objectives provides a basic outline on key consideration for this activity. Chapters 7–12 contain goals and examples of objectives relevant to the chapter subject.

## STEP 6 List the activities needed to meet your goals and objectives

Chapters 7–12 outline the major activities required for managing site hydrology and nutrients, controlling weeds and pests, revegetating the wetland restoration site, and encouraging the return of native fauna.

## STEP 7 Design your monitoring programme

Chapters 7–12 include a range of monitoring techniques relevant to the chapter subject. Monitoring overall changes in wetland condition is the subject of Chapter 13 – Monitoring.

# CASE STUDY

## PUNAWHAKAATA: RESTORATION PLANNING & ACTION FOR THE MIRROR SPRINGS

Nestled within the 1540 ha mosaic of wetlands on the southern edge of Lake Taupo lies Punawhakaata, the “mirror springs”. Makere Rangitoheriri, Punawhakaata Trustee, one of the oldest surviving members of the Tuwharetoa iwi, Te Rangiitā hapu, was the main driver behind the restoration of the wetland. The project is now being led by the family. The goals are ambitious and include recreating habitat for native species, developing walkways, a working marae to showcase Maori arts and culture, and camping sites for visitors.

“The land was in trouble...”

Changes in water levels began in the 1930s with the development of State Highway One on land taken by the Crown under the Ministry of Works Act. The intake for the hydroelectric power station nearby at Turangi artificially raises and lowers water levels. Flood protection works to protect Oruatua village have deprived the area of its main water source. Grey and crack willow, blackberry and other noxious weeds now form the dominant cover in many areas. Stoats and possums impact on bird populations.

### Forging new partnerships

When Makere first began to approach her extended family with the plan to restore the wetlands, she met with intense resistance on account of previous land confiscations by the Crown. Opening communication channels between local people, government agencies, private industry and science providers is an important part of the story because it has taken 20 years for this to happen. Linking up with Nga Whenua Rahui, which supports Maori to retain ownership and control of their land, gave Makere the confidence to know she was on the right track.

### Raising awareness

The on-going restoration of Punawhakaata will rely strongly on community volunteers. People need to understand how important places like Punawhakaata are for critical functions such as protecting the water quality of Lake Taupo and that their input, no matter how small, plays a valuable part.

### What's being done

Noxious weeds such as blackberry are being targeted, and eco-sourced native plants are being established on the wetland margins to enhance forest diversity and bring back native birds. Pest control is being carried out by the Department of Conservation to protect the plants and birds from predation by stoats, rats, possums and rabbits.

– *Monica Peters, NZ Landcare Trust*

REF: [www.doc.govt.nz/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/funding/for-landowners/nga-whenua-rahui/nga-whenua-rahui-fund/featured-projects/punawhakaata/](http://www.doc.govt.nz/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/funding/for-landowners/nga-whenua-rahui/nga-whenua-rahui-fund/featured-projects/punawhakaata/)



**Makere Rangitoheriri and Rob McGowan (Nga Whenua Rahui).** Makere used a single word to sum what up what is needed to keep the project going, “Persistence”. Photo: Monica Peters, NZ Landcare Trust



Situated at a natural crossroads, Punawhakaata was used as a stopping point by Maori journeying across the central North Island.  
Photo: Nick Singers. Crown Copyright, Department of Conservation



The extensive wetlands stretching from Waihi to Punawhakaata have been heavily invaded by crack willow.  
Photo: Monica Peters, NZ Landcare Trust



After controlling weeds such as blackberry, the vegetation alongside a drain that cuts through the wetland is regaining its vigour.  
Photo: Monica Peters, NZ Landcare Trust

## 2 Getting good advice

If you need advice, there are a range of avenues that can be explored. This section provides an overview of who can help, while each chapter highlights a range of key contacts most relevant to the given subject area. With the exception of private contractors and consultants, the advice in most cases is free.

Key stakeholders in wetland restoration:

- Regional and District Councils (e.g., Planning, Land/Lake Management Officers, Biosecurity – note department titles will vary between different councils)
- Department of Conservation (e.g., scientists, rangers and Technical Support Officers)
- Science providers, e.g., Landcare Research and the National Institute of Water and Atmospheric Research (NIWA)
- Iwi (e.g., Iwi Liaison Officers at the Department of Conservation, Regional and District Councils)
- Non-government organisations (e.g., National Wetland Trust, Fish & Game, NZ Landcare Trust, Forest and Bird, QE11 National Trust)
- Universities (e.g., Earth Science, Biology, Ecology, Botany and Zoology Departments)
- Voluntary societies (e.g., local botanical societies, ornithological societies)
- Pest control suppliers and contractors
- Weed control contractors
- Private ecological consultants
- Other community wetland restoration groups

Every two years, the National Wetland Trust runs a 2–3 day symposium dedicated to wetland restoration that is attended by many of the abovementioned organisations and groups. The emphasis is on creating a practical forum to share sharing knowledge and best practice for restoring wetlands. See the web links at the end of the chapter for further information.



**Constructing an experimental site for wetland restoration at Lake Serpentine, Waikato.**  
Photo: Monica Peters, NZ Landcare Trust



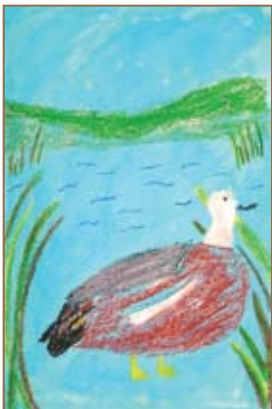
**Although restoring a wetland can be a daunting task, advice is available from a wide range of sources.** Photo: Monica Peters, NZ Landcare Trust

**The result after many years of hard work at Milnthorpe Park, Tasman.**  
Photo: Monica Peters, NZ Landcare Trust



### 3 Planning tips

With so many wetland restoration projects underway around New Zealand, a host of valuable lessons have already been learned. The following tips provide a community view based on the practical experience of restoring wetlands. Web links to sites on how to bring a community group together and how to sustain existing community groups can be found at the end of the chapter.



Raising awareness about wetland values – a child's drawing of a paradise duck.  
Image: Waikato Society of Arts

“It takes time to examine the possibilities, to contact the relevant authorities, seek guidance, research historical evidence, raise funds and bring a group together...”



This sign at Waiwhakareke (Waikato) provides information on the site and restoration goals. Photo: Monica Peters, NZ Landcare Trust

#### THINK AHEAD

- Be clear in your goals and objectives; plan early, plan well, and plan ahead
- Get as much expert advice as you can
- Divide the planning into phases – be realistic about how much you can achieve

#### PARTNER UP

- Start building relationships early and consult frequently with the local community to understand their needs
- “I find that local people who I know personally tend to come on a regular basis”
- Although agencies may lack enthusiasm initially, they may come on board when the project is underway
- Regional Council can source help for larger parts of the project such as willow clearing and spraying
- “It’s difficult to get enough volunteers to sustain long-term work and people move on, so involve others like a local school”
- Create a positive synergy by mixing age groups – many who have the time to get involved in projects are elderly. “The enthusiasm and interest of Fergusson Intermediate is a spur to the older members – these are after all, the next conservationists in the making and we enjoy working with them and encouraging them to continue caring for the area they helped recreate”

#### COMMUNICATE CLEARLY

- While time consuming, phoning people is worthwhile. If you need to email, describe what you are doing in the subject line, e.g., Saturday 12th, planting in Robinsons Bay
- Make sure contractors understand what you want – for many contractors the principles behind constructing a wetland are completely contrary to their usual objectives

### KEEP THE COMMUNITY INFORMED

- Make sure you can answer questions posed by local people, get them on your side. Questions may start with “why did you remove those large trees?” move to “what a dreadful mess you are making” and then “now we can see what you are doing!”
- Consider creating a notice board with details of work being carried out to raise public awareness and project profile
- As an environmental education experience created wetlands provide a good place to interpret nature and talk about wetland issues.

### PROVIDE SOUND TRAINING

- Understand what different skills people can bring to your project
- Coordinating different project stakeholders to help with ecological monitoring is a challenge; so is gauging their level of competence for collecting robust data
- Train your group so that other groups’ operating procedures and objectives for environmental monitoring can be matched

### AVOID BURNOUT – ENJOY YOURSELVES!

- Value your people: if volunteer travel distances are significant, provide petrol vouchers
- Monthly working bees may not suffice when rapid follow-ups are needed for, e.g., hare repellent
- “It is nice to have some lunch together and just relax in the grass. We usually work from 10am till at most 2pm. There needs to be a coordinator to organize, as well as chat with people. It is easy to get absorbed in work and forget people like to connect and feel they belong. It is a wonderful way to spend time together...”



Auckland Regional Council pest control workshop on Great Barrier Island. Photo: Monica Peters, NZ Landcare Trust



A great days work! Photo: Abby Davidson, NZ Landcare Trust

## 4 Useful websites

### **Wetland restoration templates**

Environment Waikato Wetland Restoration Plan templates

[www.ew.govt.nz/PageFiles/5799/Wetlandtemplate1.pdf](http://www.ew.govt.nz/PageFiles/5799/Wetlandtemplate1.pdf)

[www.ew.govt.nz/PageFiles/5799/Wetlandtemplate2.pdf](http://www.ew.govt.nz/PageFiles/5799/Wetlandtemplate2.pdf)

### **Wetland restoration guides and factsheets (New Zealand)**

**Northland Regional Council**

[www.nrc.govt.nz/upload/2217/Wetland%20Restoration%20Guide%20\(second%20edition%20Feb%2009\).pdf](http://www.nrc.govt.nz/upload/2217/Wetland%20Restoration%20Guide%20(second%20edition%20Feb%2009).pdf)

**Auckland Regional Council**

[www.arc.govt.nz/albany/fms/main/Documents/Environment/Plants%20and%20animals/wetlandsfacts2.pdf](http://www.arc.govt.nz/albany/fms/main/Documents/Environment/Plants%20and%20animals/wetlandsfacts2.pdf)

**Environment Waikato**

[www.ew.govt.nz/Environmental-information/Rivers-lakes-and-wetlands/Freshwater-wetlands/](http://www.ew.govt.nz/Environmental-information/Rivers-lakes-and-wetlands/Freshwater-wetlands/)

**Hamilton City Council**

[www.gullyguide.co.nz/index.asp?pageID=2145821537](http://www.gullyguide.co.nz/index.asp?pageID=2145821537)

**Bay of Plenty Wetlands Forum**

[www.doc.govt.nz/upload/documents/conservation/land-and-freshwater/wetlands/wetland-restoration-guide.pdf](http://www.doc.govt.nz/upload/documents/conservation/land-and-freshwater/wetlands/wetland-restoration-guide.pdf)

**Greater Wellington**

[www.gw.govt.nz/a-beginner-s-guide-to-wetland-restoration/](http://www.gw.govt.nz/a-beginner-s-guide-to-wetland-restoration/)

**Environment Southland**

[www.es.govt.nz/environment/land/wetlands/wetlands-toolkit.aspx](http://www.es.govt.nz/environment/land/wetlands/wetlands-toolkit.aspx)

**Department of Conservation Protecting Natural Areas Design Guide**

[www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/nature-heritage-fund/protecting-natural-areas-design-guide/](http://www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/nature-heritage-fund/protecting-natural-areas-design-guide/)

**Wetland restoration guides (International)**

**USA Environmental Protection Agency**

[www.epa.gov/owow/wetlands/pdf/restdocfinal.pdf](http://www.epa.gov/owow/wetlands/pdf/restdocfinal.pdf)

**Guides for community projects**

**Department of Conservation “From Seed to Success – Guidelines and Toolkit”**

[www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/guidelines-for-community-conservation-partnerships/from-seed-to-success-guidelines/](http://www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/guidelines-for-community-conservation-partnerships/from-seed-to-success-guidelines/)

[www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/guidelines-for-community-conservation-partnerships/from-seed-to-success-tool-kit/](http://www.doc.govt.nz/publications/getting-involved/volunteer-join-or-start-a-project/start-or-fund-a-project/guidelines-for-community-conservation-partnerships/from-seed-to-success-tool-kit/)

**Community net**

[www.community.net.nz/how-toguides/crk](http://www.community.net.nz/how-toguides/crk)

**Seeking advice – Agencies, science providers and non-government organizations**

**Regional and District Councils**

[www.localcouncils.govt.nz/lqip.nsf](http://www.localcouncils.govt.nz/lqip.nsf)

**Department of Conservation**

[www.doc.govt.nz](http://www.doc.govt.nz)

**Landcare Research**

[www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)

**National Institute of Water and Atmosphere (NIWA)**

[www.niwa.co.nz](http://www.niwa.co.nz)

**Fish & Game New Zealand**

[www.fishandgame.org.nz](http://www.fishandgame.org.nz)

**NZ Landcare Trust**

[www.landcare.org.nz](http://www.landcare.org.nz)

**Queen Elizabeth II National Trust**

[www.openspace.org.nz/](http://www.openspace.org.nz/)

**Forest and Bird**

[www.forestandbird.org.nz](http://www.forestandbird.org.nz)

**National Wetland Trust**

[www.wetlandtrust.org.nz](http://www.wetlandtrust.org.nz)

**Seeking advice - Flora and Fauna Societies**

**Botanical Societies**

[www.nzbotanicalsociety.org.nz/pages/links.html](http://www.nzbotanicalsociety.org.nz/pages/links.html)

**Ornithological Society of NZ**

[www.osnz.org.nz/](http://www.osnz.org.nz/)