

Planting and Managing Native Trees



Photo: Fraser Gunn, Lake Tekapo

Technical Handbook

Managing Editor:

David Bergin – Environmental Restoration Ltd

Contributors:

Ian Barton – Tāne's Tree Trust

Bruce Burns – University of Auckland

Warwick Silvester – Tāne's Tree Trust

Peter Berg – Tāne's Tree Trust

David Bergin – Scion

Mark Dean – Naturally Native New Zealand Plants Ltd

Roger MacGibbon – Natural Logic Ltd

Robert McGowan – Nga Whenua Rahui

Colin Meurk – Manaaki Whenua - Landcare Research



Tāne's Tree Trust
Native Trees for the Future

To obtain copies of this Technical Handbook, or for information about Tāne's Tree Trust, please contact:
Tāne's Tree Trust
www.tanestrees.org.nz

Reproduction of information in this Technical Handbook for non-commercial purposes is welcomed, providing there is appropriate acknowledgement of its source.

Handbook Management Committee

Ian Barton, Tāne's Tree Trust
Richard Cooper, FITEC
Peter Berg, Tāne's Tree Trust
David Bergin, Environmental Restoration Ltd

Production Team

Photography - Jonathan Barran, Jonathan Barran Photography
Layout and graphics - Teresa McConchie, Natural Talent
Technical review - Murray McAlonan, Ian Barton, Peter Berg, Warwick Silvester, Tāne's Tree Trust
Proof-reading - Tiena Jordan
Printing production - Sarah Davies, Scion Digital Print Centre

© Copyright Tāne's Tree Trust, 2011

ISSN 2230-3014

Funds for the writing and production of this Technical Handbook have come from:

Tāne's Tree Trust (TTT),
Forest Industries Training and Education Council (FITEC),
Ministry of Agriculture and Forestry's Sustainable Farming Fund (SFF),
Scion,
Future Forests Research (FFR).



Tāne's Tree Trust
Native Trees for the Future



Disclaimer

In producing this Technical Handbook, reasonable care has been taken to ensure that all statements represent the best information available. However, the contents of this publication are not intended to be a substitute for specific specialist advice on any matters and should not be relied on for that purpose.

Tāne's Tree Trust shall not be liable on any ground for any loss, damage, or liability incurred as a direct or indirect result of any reliance by any person upon information contained or opinions expressed in this work.



Foreword - Why Plant Native Trees?

by Peter Berg

*Chairman of New Zealand Forest Owners Association
and member of Tāne's Tree Trust*

The isolation of New Zealand from other land masses for tens of millions of years means that as many as 80% of its indigenous plant species are endemic. This means that most of our native plants occur nowhere else in the world and accordingly have global significance.

Sadly, the widespread conversion of forest land to pasture and heavy demand for many native timbers by settlers, in particular the conifers matai, rimu, kauri, totara and kahikatea, has reduced New Zealand's forest cover from about 80% of the land surface to a little over 20% - with some species now having threatened status. If New Zealanders wish to retain the unique character of their native trees and forests, and the benefits that arise from these trees, they must be active in their efforts to both protect and enhance this resource.

As land clearance caused a decrease in the volume of native timbers, plantation-grown exotic species - particularly radiata pine (*Pinus radiata*) - became dominant in the wood products industry. Protection was afforded to most of the remaining indigenous forest and native timber became almost non-existent in the New Zealand timber industry. Farmland was almost completely cleared of native bush with only scattered fragments remaining in occasional gullies and other less accessible areas.

Times are now changing. There is wide general agreement that native trees have many values, some economic and others less easy to define, but just as important. We are emerging from the dichotomous state of having native forests protected in conservation reserves, with our wood product requirements met by exotic species, to a position where many more native trees are being planted with some productive use in mind. This new approach is already adding significantly to the overall native forest estate, bringing economic benefits and also pleasure to the people who are involved in planting, managing and protecting native trees for the future.



In addition to preserving native tree species, this planting also preserves the habitat of other native species, especially birds and insects. Riparian stream margins planted with native trees and shrubs moderate water temperature and enhance their habitat value while reducing stream bank erosion. In both urban and rural environments, such plantings have additional landscape and aesthetic values.

Native trees also provide economic benefits. The New Zealand wood products industry revolves around radiata pine because of its relatively easy management, rapid growth and versatile wood properties. However, this timber has a number of limitations, particularly in high value end-use markets. Our native trees provide an alternative suite of timbers with a range of characteristics including greater hardness, durability, more distinctive colour and form, and outstanding wood-working properties. Accordingly, a number of native species are prized for high value end uses.

The focus on forests has recently widened to include a range of environmental benefits ranging from carbon sequestration as a counter to global warming, to holding in place the country's precious soil mantle. Forests are also acknowledged as sources of clean water and as reservoirs of natural biodiversity. Where these objectives are paramount, permanent forests with a mix of species are more robust, but still have the capability to supply economic supplies of wood on a sustainable basis. In addition, New Zealand trees have an established resistance to native pests and the local climate, and have an inbuilt genetic diversity that may not exist in the quite selective importations of exotic species.



With a well planned planting regime and careful management it is now recognised that a number of native species can provide utilisable timber from thinnings, as early as 30-40 years after planting. Once a cycle of selective logging and continuous cover is established the system can continue in perpetuity.

There are a host of other potential productive benefits from forests. For example, the pioneer/nurse species manuka (*Leptospermum scoparium*), is increasingly being used for a variety of purposes, including honey, oils, wound dressings and cosmetic products. There is a base of cultural knowledge now becoming more widely supported by scientific evidence that several native shrub and tree extractives have important medicinal properties.

From a considered perspective then, there is a strong and easily understood rationale for planting native trees. But there is more ... our native trees and forests may endure and continue to provide these values over several human lifetimes. So by planting trees we are making a decision that can provide the same benefits to our children's children and beyond.

*Time is the best test of the quality of our contribution...
plant native trees and ensure it is a long one.*



Tāne's Tree Trust
Native Trees for the Future

www.tanestrees.org.nz

TABLE OF CONTENTS

(Number of pages; year published or revised)

	Title page Foreword
1.	<p>Introduction</p> <p>1.1 Why do we need a Handbook? (2 pages, revised May 2012)</p> <p>1.2 How to use the Handbook? (2 pages, revised May 2012)</p> <p>1.3 Introducing Tāne's Tree Trust (2 pages, revised May 2012)</p>
2.	<p>Objectives for establishing natives</p> <p>2.1 Objectives and strategies for planting (4 pages, revised May 2012)</p> <p>2.2 Options for establishing native trees (8 pages, revised May 2012)</p>
3.	<p>Cultural and historical perspective on planting native trees</p> <p>3.1 Nga Taonga o te Wao Nui a Tāne – a cultural perspective (8 pages, revised May 2012)</p> <p>3.2 Native forests – an historical perspective (8 pages, revised May 2012)</p>
4.	<p>Requirements for establishing native trees</p> <p>4.1 Physiological factors – trees and environment (8 pages, revised May 2012)</p> <p>4.2 Lessons from nature – using ecology to help grow native trees (8 pages, revised May 2012)</p>
5.	<p>Seed and propagation of natives</p> <p>5.1 Seeding of native trees and shrubs (yet to be published)</p> <p>5.2 Eco-sourcing natives (yet to be published)</p> <p>5.3 Choice of nursery method – container or open-ground (8 pages, published 2014)</p> <p>5.4 Establishment performance of native shrubs – a comparison of container and open-ground plants (4 pages, published 2014)</p>
6.	<p>Site selection for establishing natives</p> <p>6.1 Key factors in site selection (12 pages, revised May 2012)</p> <p>6.2 Sites for planting native trees (4 pages, revised May 2012)</p>
7.	<p>Site preparation</p> <p>7.1 Planting – getting started (2 pages, revised May 2012)</p> <p>7.2 Livestock and pest management (8 pages, revised May 2012)</p> <p>7.3 Preparing grass sites for planting – use of herbicides (8 pages, revised May 2012)</p> <p>7.4 Preparing gorse, broom and blackberry sites for planting natives (12 pages, revised May 2012)</p>

TABLE OF CONTENTS

(Number of pages; year published or revised)

8.	Planting and maintenance of natives
8.1	Planting techniques for natives (8 pages, revised May 2012)
8.2	Planting patterns and density for natives on open sites (12 pages, revised May 2012)
8.3	Maintenance – weed control (yet to be published)
9.	Planting and managing natives in riparian areas
9.1	Riparian margins – an introduction (4 pages, revised May 2012)
9.2	Riparian planting for sediment, nutrient and pathogen management (8 pages, revised May 2012)
9.3	Riparian planting for aquatic and terrestrial biodiversity (4 pages, revised May 2012)
9.4	Riparian planting for native timber and multiple purposes (4 pages, revised May 2012)
9.5	What is it with willows –pest, resource or opportunity for native forests? (8 pages, revised May 2012)
10.	Native tree plantations
10.1	Nationwide survey of planted native trees (8 pages, revised May 2012)
10.2	Performance of planted native conifer trees (8 pages, revised May 2012)
10.3	Performance of planted native hardwood trees (8 pages, revised May 2012)
10.4	Performance of planted native shrubs (8 pages, revised May 2012)
10.5	Carbon sequestration by planted native trees and shrubs (12 pages, published 2014)
10.6	The Kauri 2000 Trust – plant a kauri – recreate a forest (4 pages, revised February 2013)
10.7	Establishing a native production forest – Rewanui Forest Park, Wairarapa (8 pages, revised November 2012)
11.	Ecology, establishment and management of totara
11.1	Ecology and distribution of totara (yet to be published)
11.2	Establishing and managing plantations of totara (yet to be published)
11.3	Management of naturally regenerated totara on farms (12 pages, published 2014)
	TTT Newsletters
	Further sections and articles are planned – refer to the Tāne's Tree Trust website for details on new and revised Handbook articles www.tanestrees.org.nz