

Ecosystem services in sustainably-managed native forest

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Tāne's Tree Trust*

Forest Ecosystem Services Workshop 2nd Sept 2019





Acknowledging The Tindall Foundation

Tāne's Tree Trust gratefully acknowledges The Tindall Foundation for funding the ***Our Forest Our Future*** programme

This includes funding for the business case for forestry with native species, which includes research on non-timber values (NTVs)

Who are Tāne's Tree Trust?



- Established in 2000, with the following aims:
 - Promote best practice establishment of native forests for multiple benefits.
 - Reduce impediments to planting and management of natives.
 - Identify information gaps and priorities for applied research.
 - Increase funding into applied research and information transfer.
- A national organisation with trustees spread throughout the country – details on our website: <https://www.tanestrees.org.nz/>
- Committed to scientific research - a base for best practise guidelines.
- Our publications & research results are freely available to all.
- Keen to collaborate with like-minded organisations where there are good synergies.
- Compete for & receive funding from a variety of central & local government sources, Trusts, NGOs etc..
- Always on the lookout for other funding sources – (if you've got money, see me afterwards 😊).



OUR VISION

To see the majority of NZ land owners successfully establishing and sustainably managing native trees for multiple uses





Workshops are held throughout the country, covering everything from nursery plant quality, species selection, through to ...



... silvicultural management, including harvesting under continuous cover forestry regimes.

All of which is underpinned by robust science.

Resources are available on our website:

www.tanestrees.org.nz/resource-centre/



Historical loss of much of NZ's native forest

- Before humans arrived, NZ was heavily forested with about 80% forest cover.
- This forest provided stability to soils, maintained clean waterways, conserved nutrients, harboured immense biodiversity, provided food & resources, & stored massive amounts of carbon (in soil & vegetation).



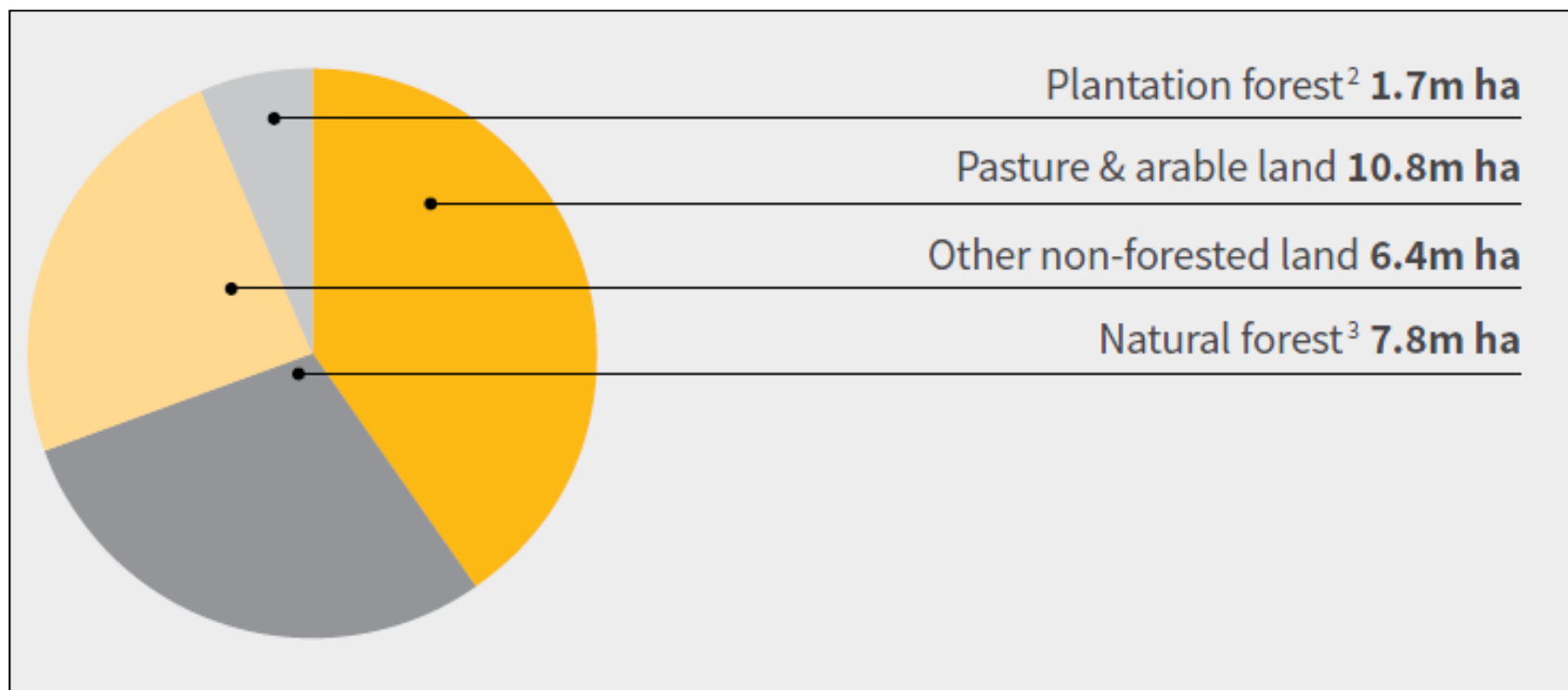


Historical logging of native forest was highly unsustainable, but most of our native forests were burnt, not utilised.



Current land use in NZ

(NZFOA Facts & Figures 2016/2017)



Today nearly 36% of NZ's land area is in forest cover, with over 29% in native forest



NZ's polarised forestry land use

- Much of the remaining native forest is restricted to upland regions, with intact lowland podocarp-hardwood forest now scarce in most regions.
- We have a dichotomy of exotic forest plantations managed under clear-fell regimes, & native forests mostly protected in the conservation estate – & not much between.



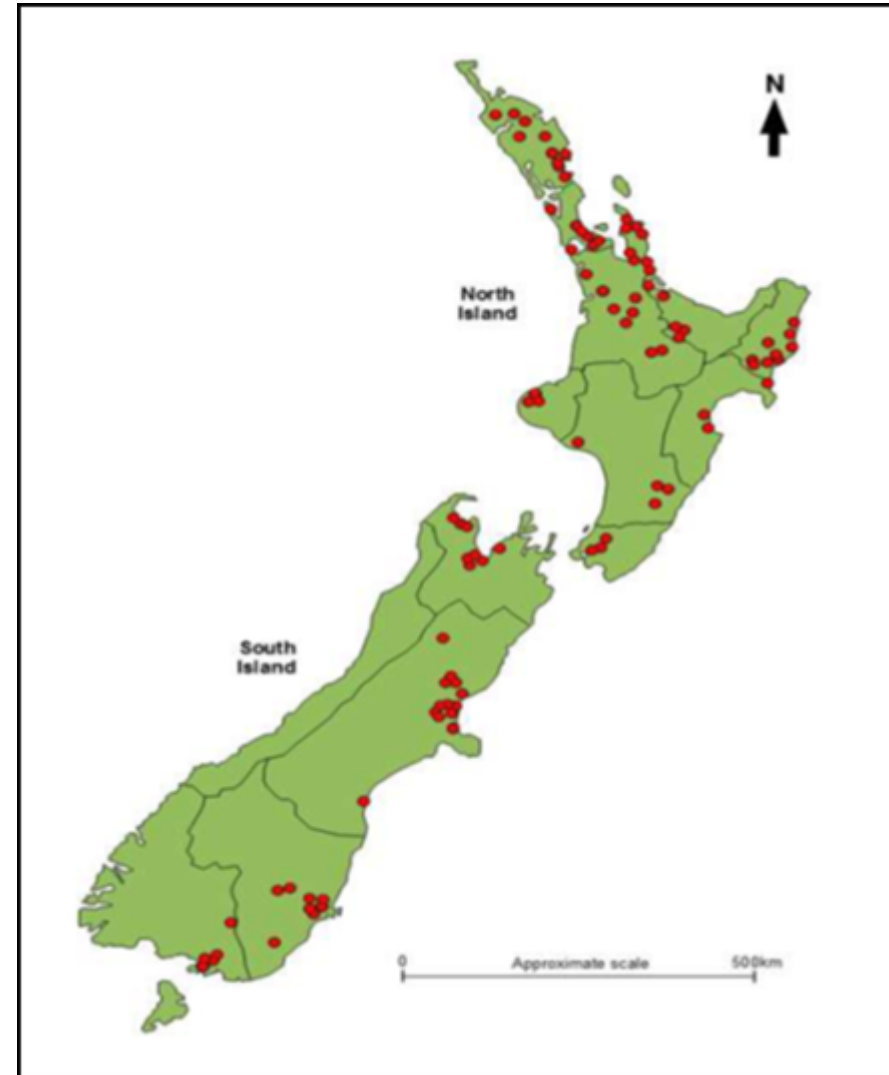


The business case for establishing native forest

- A review of establishment costs, marketing issues & economic models/calculators generally indicate poor financial returns based on timber production alone.
- This is largely due to high establishment costs & longer rotation times compared with exotic production forestry.
- We consider that there is a great need to properly value our native forests on characteristics other than solely timber values - there are multiple non-timber values (NTVs) to consider.

TTT field data

- Field trials & demonstration sites have been established throughout NZ.
- Includes PSPs - measuring growth of key species for 40 years.
- Tāne's Tree Trust databases:
 - Planted native forestry archive
 - TTT Indigenous Plantation Growth Database
 - TTT planted native forestry reference database
- These databases are a work in progress & underpin development of our models, **Timber Calculator** and **Carbon Calculator**.





TTT Timber Calculator

- Value = Volume x Price
- **Volume:** growth measurements from field trials – based on average sites.
- **Price:** obtained either from (limited) current sales, or from prices of similar materials being sold.
- The model caters for volumes of different quality at different ages (heartwood/sapwood).
- The timber calculator is currently under development & will be made publically available.

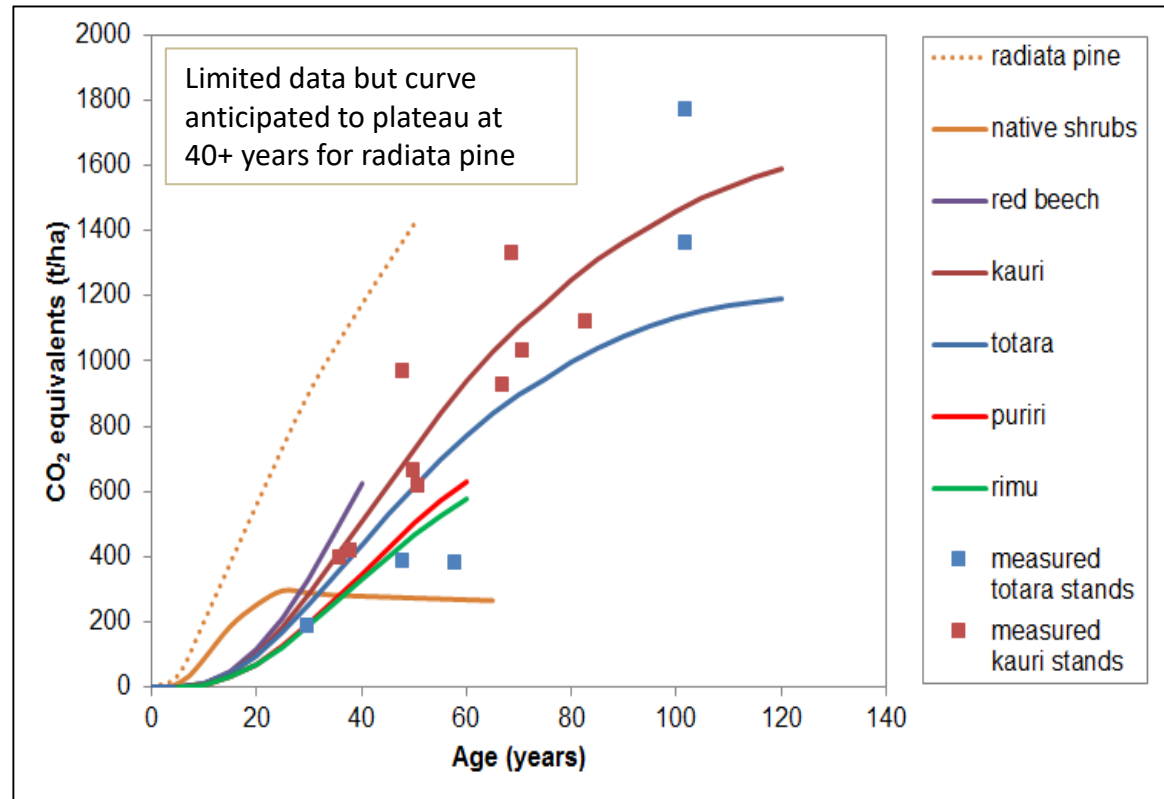


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Native Trees for the Future



High-value native timbers
can be obtained from
forests managed under
Sustainable Forest
Management (SFM) Plans.

TTT Carbon Calculator



Predicted carbon sequestration on average sites

- The carbon calculator uses growth models developed from TTT Plantation Database – it is currently being fine tuned & will soon be publically available.
- **Carbon sequestration:** m³/ha/year = tonne CO₂



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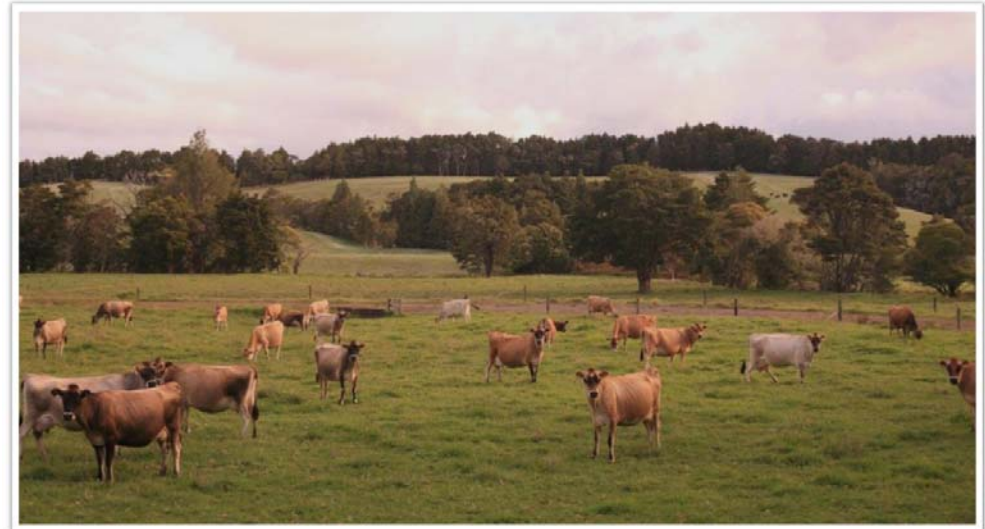
High establishment costs for native forest on bare land



- Estimated cost for establishing native forest on bare land is typically \$20,000/ha, but ranging from \$5,000/ha - \$40,000/ha.
- Radiata-pine establishment costs average approx \$1800 – \$2000/ha.
- TTT is working to reduce the cost of establishing natives.

Natural reversion

Managing natural reversion is a much more cost-effective way of establishing native forest in NZ.



The Northland totara example

200,000 ha + of reverting country may be representative of many other hill country areas in NZ.



Northland Totara Industry Project

Collaboration between Tāne's Tree Trust, MPI, Te Tai Tokerau, Northland Inc, & Scion.



Continuous Cover Forestry (CCF)

- Demonstrating an alternative to clear felling for totara, (& native beech species,)
- Only single trees or small groups of stems are removed.
- Retention of high-forest values, i.e., CCF minimises impact on biodiversity, environmental & aesthetic landscape values.



Northland Totara Industry Project

Check out the website & watch the video:

<https://www.totaraindustry.co.nz/>

A photograph of two men standing in a forest of tall totara trees. The man on the left is wearing a plaid jacket and dark trousers, and the man on the right is wearing a blue jacket and blue trousers. The forest floor is covered in dry leaves and branches.

Paul Quinlan

Pita Tipene

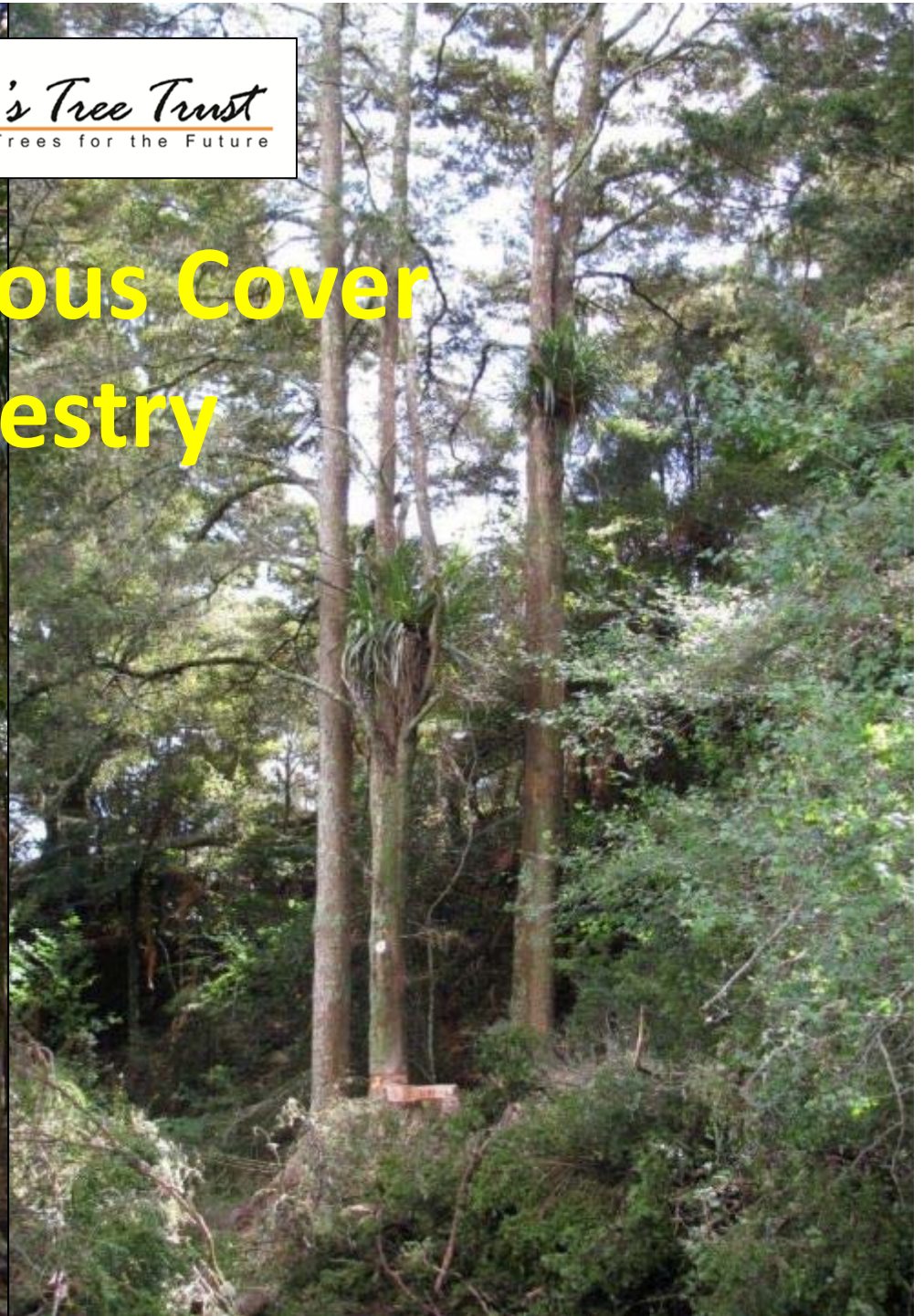


Tōtara Industry Pilot, 76 Mangamanihi Road, RD2
Kaeo 0479, Northland
enquiries@totaraindustry.co.nz



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Continuous Cover Forestry





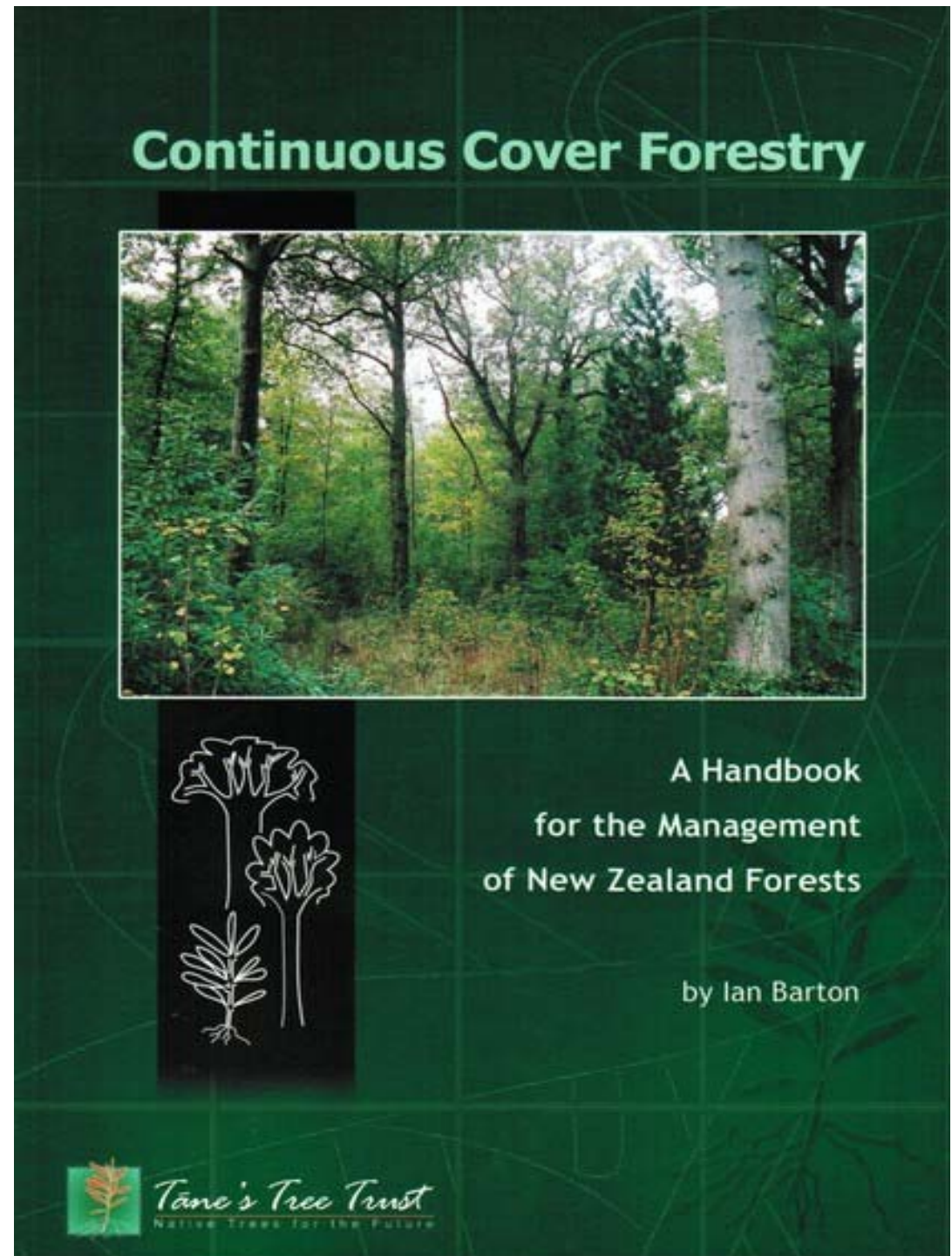
Totara log after releasing



TTT Handbook on Continuous Cover Forestry (CCF)

- Written by Ian Barton & published in 2008.
- One of the Trust's many handbooks.
- Available from Tāne's Tree Trust:

www.tanestrees.org.nz/resource-centre/





Conclusions

- Poor financial returns are indicated for native forests based on timber production alone - because of high establishment costs & longer rotations compared with radiata-pine.
- However, managing natural reversion is a much more cost-effective option than establishment on bare land.
- Native tree species tend to initially have slower growth rates compared with radiata pine, therefore, initially have lower rates of carbon sequestration.
- However, native forests will continue to sequester carbon for hundreds of years, whereas radiata pine is a short-lived, light-dependent species.
- Sustainably-managed stands of some species - particularly totara, beech, and kauri – have much faster growth rates than old-growth, native forests.
- **Credible business cases for establishing native forests are dependent on non-timber values (NTVs).**



Non-Timber Values (NTVs)

Preliminary research indicates:

- Aggregated NTVs of native forests are highly likely to be larger than that for exotic plantations in clear-fell regimes.
- In many cases this is likely to exceed timber values.
- There is better maintenance of NTVs in CCF regimes, or in unharvested forests.



We invite you to our subsequent talk

Review of non-timber values in sustainably-managed native forest

Jacqui Aimers, David Bergin & Gerard Horgan

OESF Workshop, Wednesday, 4th Sept 2019
(Parallel session 2c)

