

Forestry for life

Environment, Science and sustainability



Eastland Wood Council

# Role of science, research

Planted forests are an important worldwide resource that can provide solutions to many global problems. Science and research play an important role in working to ensure that our forest industry is sustainable for both the environment and economically, and this involves looking at minimising waste, using bio-technologies, and aiming to create a circular bio-economy.

Scion, a Crown research institute, provides technical and scientific capability in forestry, wood products and bioproducts research and development. It works closely with industry, government and Maori on research programmes that enable New Zealand to move from a non-renewable petrochemical-based economy to one using biological processes and renewable materials from trees. The biotechnologies Scion is developing are part of the growing global bioeconomy and are an exciting prospect for the New Zealand forest industry.

Growing healthy, resilient forests for multiple purposes is at the heart of Scion's aspirations for a low-carbon, biobased future New Zealand. Why? Because New Zealand, like other countries, must adapt to a world living with the effects of climate change and other major environmental

challenges, such as water quality and plastics pollution. Scion is helping to address these huge challenges and its strategic goal is to transition New Zealand to a circular bio-economy.

The science and research looks at a number of areas including forest systems and forest genetics, maximising forest productivity through the interactions between trees and the environment, growing the value by breeding better trees. Forest productivity depends on a number of variables, including soil and climate, tree monitoring and management, and efficient harvesting technologies. Understanding the effects and interactions of these will help us create highly productive future forests. Diversifying commercial forestry is about tree breeding programmes including exotic forest species such as Douglas fir, redwoods, eucalypts and cypresses, to meet a growing demand to diversify into other forest species, and to meet the needs of the "right tree, in the right place".

### Sustainable forest and land management

Plantation forestry will be a major contributor to a sustainable future bio-economy.

Sustainable management of forests in New Zealand involves several

aspects, including the important environmental role in protecting our soils and water quality, and providing for biodiversity.

### Healthy soils

Forest health and productivity is dependent on topsoil depth, soil structure, rooting depth, hard pans, texture, water-holding capacity and nutrient supply. Scion soil scientists are constantly seeking to understand more about processes that control soil and forest productivity and their interactions.

### The freshwater environment

Careful management of fresh water is needed to protect our water resources as increasing demands are made on a finite resource. Scion scientists are exploring the role that forests play in providing freshwater resources and ecosystem services to New Zealand.

### Valuing the forest ecosystem

Forests provide ecosystem services such as nutrient cycling, carbon sequestration, water quality and biodiversity for productive ecosystems. These are the cornerstone of sustainable land use.

Science and research are leading the way in ensuring our forests are sustainable.

For more information, visit [www.scionresearch.com](http://www.scionresearch.com)

# A co-operative approach to environmental management

A very public harvest project completed on the outskirts of Gisborne at the end of 2018 garnered plenty of praise from the wider community. The project was led by Logic Forest Solutions, on Nick's Head Station, and involved the harvesting of 28.8 hectare Mapere Woodlot.

It involved discussions with local iwi, Ngai Tamanuhiri, after archaeological sites were identified on the property.

Richard Smith, Managing Director, Logic said "We had to work around the day to day running of the farm and the archaeological sites added to the complexities of the harvest. We matched our contractor resources to the site ensuring minimum environmental impact."

The harvesting had to be done around the archaeological pits and terraces which were located on an internal ridge and scattered around the woodlot perimeter and there were also indigenous remnants that had to be preserved.

Logic's harvesting and roading manager, Ben Williams, worked closely with Nick's Head general

manager Kim Dodgshun, along with contractors McIndoe Logging and Tahurua Earthmovers ensuring that there was limited impact to the farm, and the protection of the archaeological sites.

McIndoe Logging used their highly advanced fully mechanized harvesting and felling tethered system, which has been designed for the steep slope harvest and eliminates personnel from the high risk area of manual tree falling.

"It was really high profile, as it is a site that is very much in the public eye," said Richard.

McIndoe's minimal use of mid-slope haul track access meant that the predominant ridges were used for the extraction of logs.

"That is the way of the future," says Ben, "and can only be achieved by using mechanized tethering."

The land will be replanted with a manuka/coastal native mix with the possibility of enclosing the area for native wildlife.

Another key success marker for the project was a big thumbs up from Nick's Head's Kim Dodgshun.



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# Stewardship — ‘doing well by doing good’

Local forestry investment company Forest Enterprises manages over 10,000 hectares of radiata pine plantation forest in the Gisborne Tairāwhiti region.

“Our investors want to make a return, but they want to do it in a way that is sustainable and safe,” says Forest Enterprises chief executive Bert Hughes, who is also a NZIF registered forester.

“We can do well from doing good. Environmental benefits often have monetary costs, so we must strike a balance. If we can strike that balance, then the benefits of commercial forestry will continue to reward us as a society — and individually — for generations to come,” said Bert.

Forest canopies intercept rainfall, and with deeper roots have a larger impact on soil stability. Downstream environmental benefits are an additional benefit from good forestry practice.

“We appreciate the diverse areas within our forests like native bush, wetlands and many

water features”.

## Streams

The tree canopy in the Clearview Forest gives shade to streams, reducing water temperature. Shading is beneficial to stream biodiversity and on the wetland margins. The tree crop, and understorey as land cover, also greatly slows the mobilisation of sediment from slips and erosion, leaving streams to flow clear and cool. Small insects present find habitat improvement and shelter. They feed on the timber and branches which fall in the streams, helping to further slow water flow and forms pools and areas of cover from predators.

## Ponds and wetlands

The ponds in the Bloomfield Forest, inland of Te Karaka, were established by the previous farming owner. They provide a beautiful setting as well as an excellent habitat for birdlife and wetland creatures.

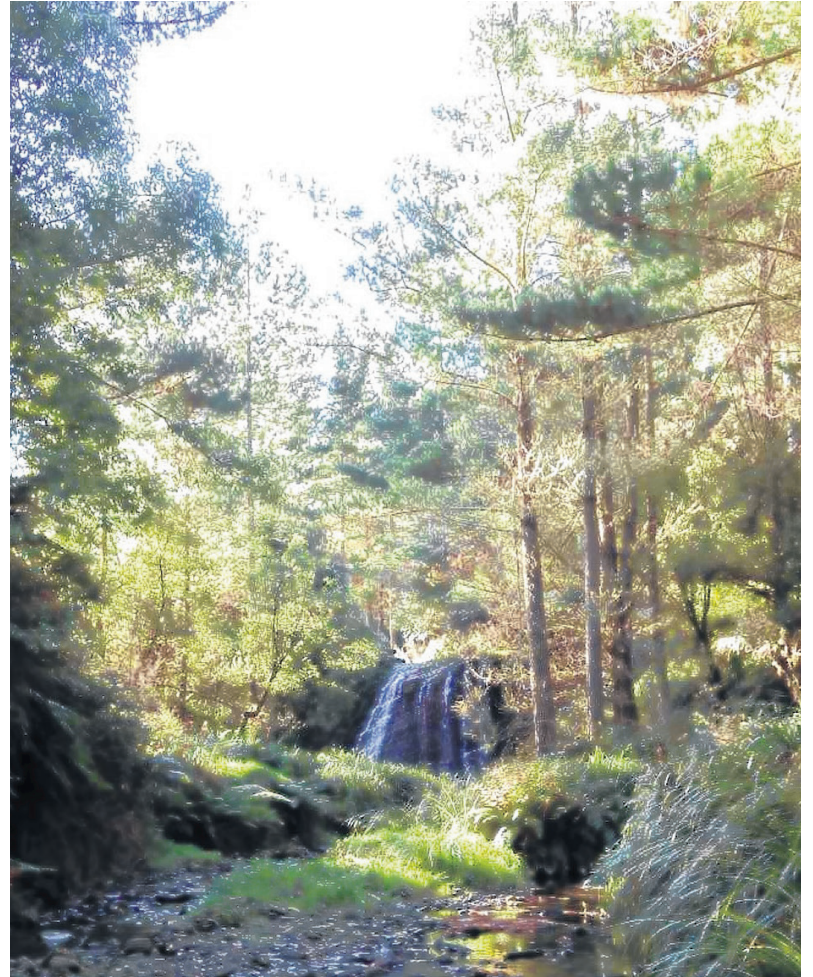
The goal in Bloomfield Forest is to maintain the natural

capital that existed when Forest Enterprises took over stewardship of the land, and improve it wherever possible. The company has protected the ponds and incorporated them into its management plan for the forests. Harvest of the pine crop is possible using careful harvest systems that retain the beneficial qualities of the ponds and cause no harm.

## Native bush

In the company’s Hokoroa Forest, large areas of kanuka are regenerating along the tree crop margins which are being preserved during harvest.

Kanuka provides a good environment for insects like weta and other invertebrates. Forest Enterprises retains these areas of diverse native tree species within its forest estate, as they protect waterways and offer habitat and cover for birds, lizards and insects to flourish. Kanuka and other native trees and shrubs are very resilient to well-managed logging practices.



One of many streams flowing from Clearview Forest



Mapere WoodLot, Nick’s Head Station



Ponds in Bloomfield Forest



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