



CASESTUDY



NZ LANDCARE TRUST
NGĀ MATAPOPORE WHENUA

Tasman Pine Forests leading the way

In New Zealand, forestry and wood products are the fourth biggest contributor to export earnings, just behind horticulture. It's a tough industry to be in. Increasing regulation and a global downturn in demand and prices have put the squeeze on many companies over the past decade.

Tasman Pine Forests Ltd is one of New Zealand's larger forestry companies. It is on a journey with others to find solutions and progressively find actions to maintain or improve our water quality and biodiversity across Nelson-Tasman now and into the future – while maintaining a viable business. NZ Landcare Trust – Ngā Matapopore Whenua is working with Tasman Pine Forests on this journey.

Who is Tasman Pine forests?

Tasman Pine Forests (TPFL) is a subsidiary of Sumitomo Forestry NZ Ltd, with a forest estate of around 36,000 hectares at the top of the South Island. Most of the area is planted with radiata pine (97% of the productive estate: *Pinus radiata*), and other exotics including Douglas Fir (*Pseudotsuga menziesii*) and Eucalyptus. The estate also includes 5049 hectares (ha) of native forest. Over the past three years, 534ha of forestry land has been converted into native regeneration.

The Sumitomo Group has a long history in forestry, stemming back centuries in Japan. Its Tsukuba Research Institute is behind a significant amount of research into the decarbonisation of the building industry. The Group is working on a goal to make sustainable high-rise buildings made of wood by 2041.

Sumitomo has been operating in New Zealand since 1986 with an MDF manufacturing facility (Nelson Pine Industries) before expanding into growing trees with TPFL. Each year, TPFL harvests around 500,000 tonnes of raw logs, of which 60% is used domestically. The company has a comprehensive inventory management system where the area and growth rate of the trees is recorded and updated regularly through extensive measurements. This allows them to ensure the sustainability of its estate, and the workflow of its harvest crews and customer requirements. TPFL is a significant employer in the Nelson-Tasman region, with 18 permanent staff and 100-plus contractors and sub-contractors.

Challenges for forestry

Some of the key challenges facing forestry include:

- ▶ **Slash management** – in the process of harvesting and felling trees, some branches and tree heads will break off and remain on the slopes. In the past it was common practice to set aside unmerchantable log lengths, log offcuts and cut branches from the main tree at the ‘skid site’ (the processing site) creating piles of ‘slash’. Slash is a controversial topic. Slash left on harvested land can return nutrients to the land and aid in erosion prevention, however, during storm events it may move off the slope – as was seen in the aftermath of Cyclone Gabrielle when an estimated 400,000 cubic metres of woody debris washed down hills causing damage to properties and waterways. In recent storms and major flooding events in Nelson/Tasman there has been minimal slash on the beaches.
- ▶ **Harvest practices** – not all trees reach the ideal harvest size at the same time, access can be difficult, and crews can cost up to \$20,000 a day, so forestry companies must make tricky economic decisions with legacy plantings of the forestry in mind.
- ▶ **Riparian and stream protection, and setbacks** – legislation now requires that riparian zones and streams in forests are not replanted in pines and there are minimum setback distances for replanting trees for different widths of waterways. Riparian areas can be in difficult terrain and often hard to access and manage.



- ▶ **Alternative species** – nationally, the sector is looking at forestry plans that boost wood processing, reduce clear felling and diversify the tree species that are grown in our forests. To this end, TPFL is trialling plantings of totara, alternative species (redwood etc) and totara/alder plantings and is not re-establishing Douglas fir in its forests due to its high wilding score.
- ▶ **Sediment control practices** – forestry land is most vulnerable to erosion immediately post-harvest and for up to four years before the new root growth stabilises the slope. A big challenge for the sector is the assumption that all sediment seen in waterways following storms come from forestry, when all land uses contribute to this including farming, eroding stream and riverbanks, and urban development.
- ▶ **Preserving native flora and fauna** – pest animals and weeds are the biggest challenges to the forestry sector.

Getting the balance right

TPFL aims to manage its estate as a renewable and sustainable resource and to obtain an economic return on investment while providing environmental benefits, including:

- ▶ Enhanced water quality
- ▶ Soil stabilisation and conservation
- ▶ Shading waterways for aquatic life
- ▶ Enhance wildlife and plant habitat leading to increased biodiversity
- ▶ A reduction in greenhouse gases
- ▶ Economic and social benefits to the community

TPFL's environmental practices have been lauded and they hosted workshops for other companies looking to improve their practices.



Challenge: Slash

Mitigation Measure

Skid sites are selected after considerable analysis using very high-resolution LIDAR imagery and risk analysis that includes potential effects downstream to people living in the catchment.

Before and after every big rain event the slash sites are all visited to establish if any mobilisation risks can be identified.

TPFL doesn't push any slash off the skid site anymore. Everything is pulled back from the edge and then it is either stabilised on the skid site or put on trucks and transported to stable ground with no movement risk. This policy has worked well in the recent big storm events. The land around the skid site is then available for replanting back into forest.

In Moutere, larger components of the slash are picked up and transported to Azwood, which has a wood pellet processing plant in Brightwater. Forests in the top of the South Island have much more slash than this processing plant can currently take so several companies are stockpiling the slash in the hope that the surety of supply will encourage more processing of waste wood

Opportunities for the sector:

- ▶ More processing capability for slash and new products developed.
- ▶ Markets need to be found for biofuels. It is possible for wood pellets to replace coal in industrial fires, and domestic pellet fires can be used and ultimately it could be used to make bio diesel.
- ▶ The transport costs of getting the slash to the processing plant will be a constraint to the foresters. The cost-benefit needs to break even.

1. Harvested trees and bare skid site after slash has been removed. 2. Chipped slash awaiting wood pellet processing. 3. Utilising fixed felling heads reduces log breakage allowing TPFL to harvest much smaller diameter logs and leave less slash on the cutover 4. Using appropriate equipment, such as the forwarder above reduces TPFL's environmental footprint.



3



4

Challenge: Harvest practices

Mitigation Measure

TPFL completes an environmental risk assessment before any harvest operation, which includes slope, aspect, soil characteristics, waterways, and potential downstream community effects.

To get the data for the risk analysis and their harvest plan, TPFL flies over the area with a plane to obtain highly accurate (higher precision than that collected by councils) light detection and ranging (LIDAR) imagery for sites. Slope, elevation, aspect and general soil type data is fed into its harvest planning tool that determines where soil mobilisation risks are located.

Harvest plans also include factors such as predicted forest growth, customer requirements (grade and volume), harvesting capacity, access and road infrastructure, resource consents, archaeological surveys, third party ownership requirements, clear fell catchment limits and other environmental constraints as well as, health and safety and finances. Components rated as part of each harvest plan include erosion, water quality, soil conservation, air quality, aquatic life, native wildlife, native vegetation, historical and cultural value, landscape visual values, neighbours and other forest owners and recreational values.

Many foresters, including TPFL, minimise dragging logs over the ground. Instead, they use suspended wires and logs are extracted hanging on wires. This requires the citing of towers to connect the high wires. LIDAR imagery identifies places to site the towers to minimise deflection (where logs may hit the ground on the trip).

TPFL is trialing the use introducing intermediate spars, using topped trees themselves as spars to further address areas with minimal deflection, reducing log contact with the soil.



In some catchments when all the trees were planted at once, TPFL has been staging harvest dates and not clear-felling whole catchments and taking the financial hit to reconfigure future harvests. Wind throw is a consideration and risk of wind throw is assessed on a case-by-case basis.

Machinery for use in forestry is constantly evolving and TPFL is using equipment that has a lower environmental impact. A lot of the new harvest methods have resulted in improvements both in health and safety and the environment.

Challenge: Sediment control practices

Mitigation Measure

Special attention is given to controlling water flows on skid sites and along tracks. This incorporates a whole range of erosion control systems including culverts, contouring of tracks and skid sites to prevent water flowing over the edge.

TPFL has been oversowing vulnerable slopes after harvest with a forestry mix which contains grass, clover and plantain mix.

- ▶ There is a small window after harvesting and after weeds have been sprayed (avoiding water courses, native areas, wetlands and spot spraying where practical) when over-sowing can occur and before the grasses will be overshadowed by the growing pine trees. TPFL is looking at ways to minimise chemical use and collects water samples to monitor for herbicide runoff before, during and after aerial agrochemical applications.

TPFL is trialling the use of Vetiver grass on sites vulnerable to slippage.

5. A landing in the middle of winter utilising corduroy to minimise pugging from heavy machines and stop sediment runoff. 6. Kea nest protection. TPFL has successfully fledged four Kea chicks using this enclosure

TPFL has a whole suite of erosion control measures during harvest, and these are self-audited weekly. These include hay bales, sediment traps, culverts, corduroy, flumes, use of lots of cut offs to divert water and keep water velocity low and ensure that native vegetation is being preserved in accordance with the harvest plan. It also checks on the temporary water crossing bridges, that slash storage is compliant with the plan, fuel is being stored appropriately and waste is being managed correctly.

Once harvest is completed, tracks are deactivated, and long-term water diversions are put in place. High environmental risk areas are being retired and allowed to return to native forest.

Challenge: Riparian and stream protection and setbacks

Mitigation Measure

TPFL identifies and classifies all the rivers and streams on their estate and rates them for risk before establishing the width of the setback. While the regulation stipulates minimum sets backs of 5m, TPFL has a self-imposed setback of 10m and in vulnerable streams that has extended to be as high as 100m.

Waterways with their setbacks are always included on the harvest map.

TPFL is currently undertaking herbicide trials to find herbicides and rates that can control weeds but do not kill native plants growing in native regenerating areas.

TPFL is trying to maintain deep pools in their waterways, which improve native fish survival over the hot months.

Challenge: Preserving native flora and fauna

Mitigation Measure

TPFL identifies areas within the estate that have high conservation value, these are mapped and assessed by a local ecologist. The ranking is based on site information such as bird count, type of bush, flora and fauna along with ecological pressures (browse damage, scat, weeds present). This ranking is used to prioritise areas for control.

In 2022 TPFL employees and contractors culled pigs, deer, goats, hares/rabbits and possums in its estate. It also encourages recreational hunting.

In partnership with local iwi, meat from these culls is collected and butchered at wild game butchers and distributed to the local community.

In 2022, 566 contract hours were used for weed control and planting in areas with high conservation values.

TPFL is currently restoring six wetlands in its estate and is participating in a partnership with Ngati Koata, Nelson City Council, Te Uru Rakau, DOC and MPI Jobs for Nature funding to restore the Peneāmine wetland area (Sharlands Creek).

TPFL records sightings of rare and threatened species within its estate and these are logged into its iNaturalist project database. When threatened species are found in an area the harvest plan includes a management plan to minimise the impact on the species. Monitoring of rare species in 2022 found 12 Karearea, six Kea, one South Island Robin and three Western Weka. Its kea protection project includes a predator fence and a successful breeding programme.

TPFL has retired plantation land, provided in kind work and contributed funding towards a project on direct seeding of native plants.

Challenge: Sediment and stream health monitoring

Mitigation Measure

TPFL undertakes its own turbidity monitoring using a portable turbidity meter. Over 100 sites have been assessed to date and many in rain events.

It has also established 25 fixed sites that are monitored annually using the SHMAK test system, which includes measurements on sediment cover, phosphate, nitrate and macroinvertebrates amongst others.

It works with the local council to monitor selected streams for native fish populations using electric fishing, spot lighting and eDNA; and has undertaken remedial work to ensure fish passage.



For more information:

NZ Landcare Trust: www.landcare.org.nz

Tasman Pine Forests Ltd: www.tasmanpine.co.nz

Te Uru Rakau: www.mpi.govt.nz/forestry