The NEW ZEALAND TIMBER MUSEUM

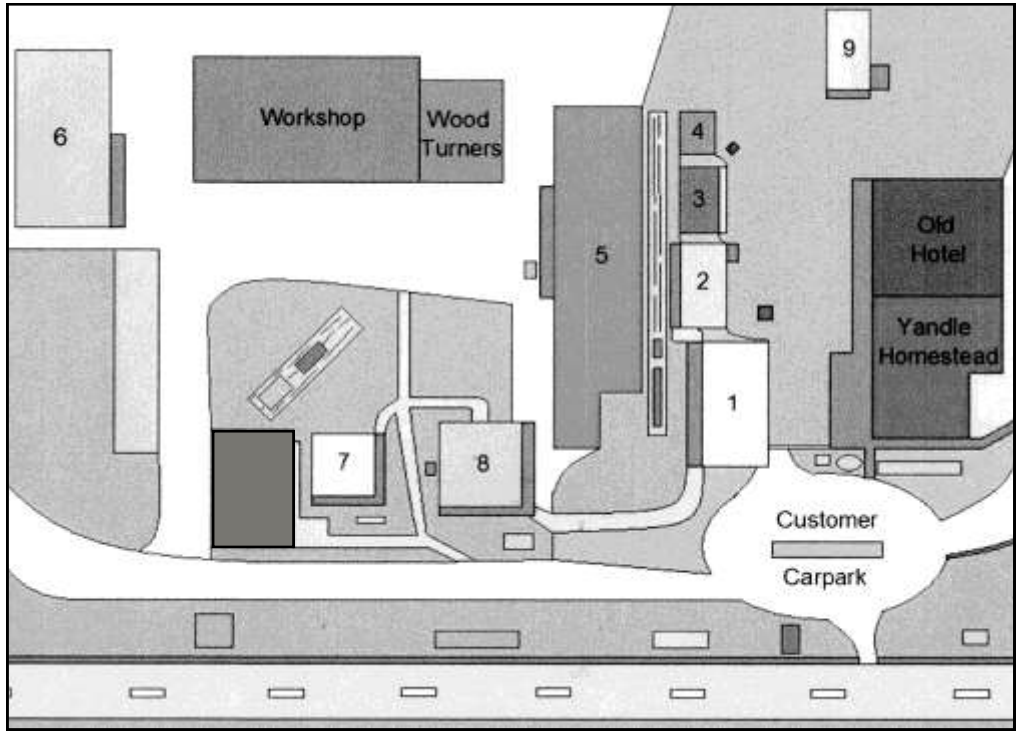
Early days

South Waikato &
the timber industry

Welcome to the New Zealand Timber Museum

The NZ Timber Museum tells of early life in South Waikato and the early days of logging and sawmilling. Timber played an important part in the district economy and contributed to the development of New Zealand . Exhibits include:

1. **Lichfield House.** Reception area, with information panels and illustrations of early days in South Waikato and the logging industry.
2. **Puketurua School.** Moved to the Museum site after it closed at Puketurua, the one-room school is typical of many that operated in small towns more than 50 years ago.
3. **Bush cookhouse (replica).** Cookhouses like this served many remote logging camps as kitchens, dining areas and social centres.
4. **Putaruru Police lock-up.** The lock-up was Putaruru's first holding cell. Before it was built offenders were sometimes held in railway carriages.
5. **Tuck & Watkins sawmill.** The original sawmill on the Museum site now houses displays of old logging and milling tools and machinery. A cabinet displays examples of rare bush roses, *Dactylanthus Taylorii.*
6. **Natural History Hall.** The hall houses examples of native and exotic birds and animals, forest and bush timber, and more bush roses.
7. **Mokai Mill House.** A replica of one of the houses in Mokai Village, a sawmilling settlement built by the Taupo Totara Timber Company (T.T.T.) in the early 1900s at Mokai, 82 kilometres south-east of Putaruru.



8. **T.T.T. Office.** The former order office of the Taupo Totara Timber Company now houses displays about some of the district's major timber companies.
9. **St Michael's Church.** Built at Arapuni and consecrated in 1926, the church was moved to the Museum and preserved as a historic building after it was deconsecrated in 1989.

For your safety

Keeping safe will ensure you enjoy your visit. We ask that you follow a few simple rules to help us keep you safe:

1. **Keep together in your group and obey your guide's instructions.** If you want to look at something the group has not visited, ask your guide first so we know where you are.
2. **In case of an emergency, your guides are also fire and emergency marshals. Follow their instructions. If buildings are evacuated, the main assembly point is the visitor carpark and a secondary assembly point is the lawn behind the Mokai Mill House. Stay in your group so we can ensure everybody is safe.**
3. **No smoking or other open fires.**
4. **Machinery has hard edges and surfaces.** Please do not touch or climb on the equipment and machinery.
5. **Any cut, scrape or bruise should be reported to your guide so we can arrange first aid if necessary and deal with any safety risk.** Parents or other adults can also report any "near miss" or potential hazard so we can add remedial action to our safety plan.
6. **Please bear with us as we document group numbers and names so we can check that everyone is safe when the tour ends.**
7. **Enjoy your visit, safely!**

Land, forest and timber in the central North Island

When people first arrived in Aotearoa, they found a huge lake in the centre of the North Island, surrounded by vast areas of low forest and scrub growing on light pumice soils of great depth. On the steeper upland areas were rich stands of temperate rain forest supporting large bird populations – what we now refer to as native bush.

Before the red-hot ash showers blasted out of the Taupo basin to form this great sheet of pumice, almost the entire central North Island bore heavy native bush. Hundreds of prehistoric logs have been unearthed and salvaged, some still with scorched bark.

Had it not been for the arrival of people bringing grass seed from the northern hemisphere, the scrubby growth would in time have been re-seeded by birds from the surviving bush, and great trees would once more have risen to await another eruption.

Until the early 19th century much elevated land in the central North Island still carried heavy native bush. This resource, containing huge trees with valuable timber, was a major source of food, shelter and fuel for the *tangata whenua* (local Maori people), who operated effective conservation measures befitting an asset of irreplaceable value.

By the middle of the 19th century however, with less dependence on the bush for a basic living, many Maori landowners were selling harvesting rights to sawmilling companies. But because of the central North Island's rugged terrain and relative inaccessibility to transport (coastal shipping or railways), its native forests remained largely untouched until the end of the 19th century.

By the 1880s Government engineers had built railway lines as far south as Te Awamutu and Morrinsville and were surveying extensions to Rotorua and Taupo. Their plan for a line to Taupo through Putaruru and Atiamuri was abandoned when they reached Lichfield, where an 1886 brick water tower still stands close to SH1.

They chose instead a route with fewer engineering challenges, running from Putaruru over the heavily forested Mamaku Plateau to Rotorua, already a world-renowned tourist destination. The Rotorua railway line opened in December 1893.

The building of the Rotorua line stimulated the Putaruru district. A two-storey hotel was built in 1895, the town developed beside the railway and farming extended further into South Waikato. Sawmills sprang up within reach of the new railway wherever cutting rights could be bought.

At about the same time the Wellington Industrial Development Co. Ltd was formed to acquire rich native bush north of Lake Taupo and to build a sawmill at Mokai. In the Whangamata Bush, near the northern edge of the lake, there was a large totara forest. The trees were so closely packed that after harvesting it was possible to walk for hundreds of metres on the stumps.

The company, soon to be re-named The Taupo Totara Timber Company Limited (TTT for short), started building a private light railway line from Putaruru to Mokai (about 82km) to take the timber to the Auckland and Wellington building markets.

Surveying and construction started in 1902, over country that very few would tackle even today. And they did it with picks, shovels and wheelbarrows, with horse-drawn scoops for moving larger quantities of soil. That was about 25 years before bulldozers were seen in NZ.

The rail bridge that TTT built over the Waikato River at Ongaroto was at the time reputed to be the longest wooden suspension bridge in the world. A scale model of this bridge may be seen at the Timber Museum.

An early forest planting camp

In 1908 the Government completed the North Island Main Trunk line. This gave access to the huge bush resources of the King Country, including the Rangitoto and Hauhungaroa ranges.

In 1913 a Royal Commission on Forestry recommended more planting of exotic trees to fill the fast-approaching gap between demand for timber and dwindling reserves of native bush. The New Zealand Forest Service was the eventual outcome of this.

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At the end of the First World War the Government made a lot of easy-contoured scrubland in the South Waikato available for settlement by returned servicemen. They cleared, ploughed and fenced the land and sowed pasture grasses. However it soon became obvious that on most of the new farms south of Putaruru the young cattle were not thriving in spite of good grass growth.

They were suffering and dying from a wasting disorder commonly known as "bush sickness", which had no clear cause and no cure. It took another 15 years or so to confirm it as cobalt deficiency, preventable by adding cobalt salts to the soil. Meanwhile a lot of farmers in the affected area were forced to walk off their properties, which reverted to scrub.

During this period, two young businessmen in Auckland, Landon Smith and Douglas Wylie, had been testing the qualities of a tree which they believed could fill the gap in millable timber supply. They obtained logs of this tree for testing and it exceeded the productivity of any other useful species. It was *Pinus insignis,* later re-named *Pinus radiata*, a tree with a very restricted natural range on the coast of California.

They had also found that its grew well on the bush-sick country of the Central North Island. They began negotiating to buy large tracts of bush-sick land between Putaruru and Taupo.

In 1923 they formed a forest planting and management company, NZ Perpetual Forests Limited, and three other companies to raise money by selling bonds internationally.

Initial bond issues sold quickly. They established a forest nursery to grow *P.radiata* from seed on the flats east of the present Timber Museum, and cleared land on their first two forestry blocks – one at Waotu and the other at Pinedale, right next to the nursery.

NZ Perpetual Forests office, Putaruru

A group at Mokai Mill circa 1920

They started planting those blocks in 1924 and by the end of 1928 they had planted 50,586 hectares, stretching from Pinedale in the north to Mokai in the south.

With the start of the great depression of 1929, bond sales dropped drastically and planting diminished accordingly. By the end of 1936 the company, by then being consolidated to become NZ Forest Products Limited, owned over 71,000 hectares.

NZ Forest Products built a small test sawmill at Waotu in 1939, then in 1941 they opened the first production-scale pine sawmill in South Waikato at Pinedale, beside the Rotorua railway line. This was followed in 1944 by the Tuck & Watkins Ltd pine sawmill, which is now the centrepiece of the NZ Timber Museum.

As the local native timber sawmills ran out of log supplies, more companies in the area built pine sawmills. Among them were PTY Industries, Ellis & Burnand, TTT, Bunn Bros and others. In 1954 NZFP opened the giant pulp & paper complex at Kinleith.

When Great-Grandpa Worked in the Native Bush

Bushmen were employed or contracted by a sawmill owner who had bought cutting rights in a bush area. Their job was to:

- cut down all the useful trees in the bush;
- cross-cut them into logs;
- drag the logs out of the bush so they could be transported to the sawmill.

In the early days before sawmills were common, the bushmen had to pit-saw the logs into planks right there in the bush.

One man stood on top of the log working one end of a long vertical saw blade, and the other stood in a pit underneath the log working the other end of the blade. The man underneath would have had the worst job, because all the sawdust landed on top of him!

In those days there were:

- almost no roads in (or to) the bush;
- no bulldozers, tractors or skidders;
- no trucks or other motor vehicles;
- no chainsaws;
- no radios or cell phones or other portable communication devices.

So to fell a tree, bushmen used axes, a two-man crosscut saw (like a pit saw, but with different teeth and handles), iron wedges, and a wooden maul. When the tree was on the ground they would cross-cut it with the same saw into log lengths.

They could move these logs using hand-cranked timber jacks, but only half a metre or so at a time. So far so good – but they still had to get these big heavy logs down to the sawmill skids, from up in the steep muddy bush. In some blocks the sawmill could be kilometres away.

In those days there were three sources of energy available for moving large loads:

Gravity

Before wheeled transport was introduced to bush operations, chutes made of timber were sometimes used down suitable slopes.

Light railway lines (bush tramways) were introduced in NZ in about 1862. Many of the early versions relied on gravity and had wooden rails and sleepers, all pit-sawn in the bush.

The main requirement for a gravitational tram was a continuous downhill slope in the right direction, with an easy gradient to enable the speed to be controlled. And of course some draught horses or bullocks to tow the unladen wagons or bogeys back to the top of the tram.

At the top of the tram, each log would be rolled onto a pair of bogeys (wheel sets) from skids beside the tramway, and chained down. The bogeys had crude brakes, operated by ropes.

A bushman would ride on one bogey as it ran down the slope, pulling on the brake ropes when necessary to moderate the speed. This relatively cheap though somewhat hair-raising method was one of the techniques used by the Taupo Totara Timber Company to transport logs to its Mokai sawmill.

Animal power

Before about 1870 the bullock had become the bushman's indispensable ally and teams were to be found in almost every bush camp. The simplest bullock "road" was a roughly-cleared strip known as a snigging track, along which the bullocks dragged the log. To allow the log to slip over minor obstacles, it was "snibbed", that is rounded off with axe cuts at the leading end.

Next came skidded or fascine tracks. The ground was levelled and stems of small trees up to 30cm in diameter (skids) were laid about 2.5 metres apart and partly sunk into the ground to

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enable the bullocks to walk over them. These made the log much easier to pull, especially over soft or muddy soil. Fascines (bundles of smaller stems) were also used on swampy ground.

The next improvement was the introduction of a sledge, known as a catamaran, or cat. It had two hardwood runners underneath, carrying two cross-bolsters about three metres apart, on which the logs were placed. On a good average skidded track a team of seven or eight pairs of well-handled bullocks would walk away with two cats loaded with as much as 20 tonnes of logs.

Bullocks were always yoked up in the same order and the same pairs were always yoked together. Each bullock had a name, such as Belle, Tiger, Darling or Wonder, and would respond to it. The leaders were the mainstay of the team and were nursed carefully. They responded to the least variation in the tone of their driver's voice. No reins were used, guidance being given entirely by the whip and spoken commands. The main job of the leaders was not to pull, but to guide the remainder wherever the driver directed.

Logs were dragged to a central skid area to be sorted and loaded. The skids there were made of at least two long logs, laid at right angles to a road or railway line, on a bank high enough to allow logs to be rolled on or off the rail bogeys. Logs were manoeuvred into position with timber jacks (man power), or using draught animals with ropes.

Draught horse breeds such as Clydesdale, Shire and Suffolk Punch were also used to haul logs. A single horse in a spider harness could haul smaller logs that were close to a skid. Logs further afield were dragged off the steep faces and bunched ready for a team of two or three horses to haul to the skid.

The horses were left at night to forage for themselves and were probably hobbled to stop them from wandering away. The horses were shod using hardened shoes and regularly had their hooves looked after by their owners to prevent cracking. Veterinary care was often impossible to obtain.

Steam Power

After stationary steam engines became available, steam haulers became the main energy source in the bush, burning wood rather than expensive coal in their boilers. They had two big winches with enough steel cable to haul logs many hundreds of metres to the skid.

They could also be rigged with a crane boom to lift logs onto the tram bogeys, and some were able to winch themselves along on runners when they needed to be moved to a new skid.

At the same time, small steam locomotives were being introduced to haul logs from the bush, and bush tramways proliferated. Engineers became more venturesome with tram design, building tunnels through ridges, and quite large timber viaducts over stream gullies. At Ongarue in the early 20th century Ellis & Burnand Ltd operated a spiral tramway near the top of the Mangakahu Valley.

The only way that that logs or sawn timber could be taken long distances inland was on the NZ Government railway network, because until the middle of the 20th century we had neither good roads nor big trucks to do the job.

And because of New Zealand's broken terrain, building railways through steep country was difficult but a lot of our best bush was on steep country! A sawmiller lucky enough to secure a block of bush close to a Government railway would aim to build his mill beside the railway, enabling the sawn timber to be sent to retail yards in the towns and cities.

This meant that supplies of all kinds could also be brought in, for a country sawmill was usually a self-contained village many miles from the nearest town. When the local log supply ran out it was not unusual for a sawmill to be dismantled and moved to a new location.

Even today there is no railway from Putaruru south to Lake Taupo. The North Island Main Trunk line, completed in 1908, runs much further west on the other side of the Rangitoto and Hauhungaroa Ranges. This is why, in 1902, the Taupo Totara Timber Company Ltd (TTT), which had bought large bush areas near Mokai, decided to build its own railway from Putaruru to Mokai, a distance of 84 kilometres.

The TTT railway builders had daunting obstacles to conquer:

- crossing the Pokaiwhenua stream south of Lichfield;
- going over the Whakamaru-Maungaiti range, which rises nearly 400 m above the Tokoroa plains, with steep rock outcrops on its upper slopes;
- crossing the Waikato River at Ongaroto;
- negotiating the uneven ascent from the river crossing to Mokai.

The line was completed in 1905, and for the next 40 years carried sawn timber from Mokai to TTT's Putaruru yards, using steam locomotives.

By 1945 TTT's logging activity had moved well away from the Mokai mill towards State Highway 1.

In the 1920s TTT built a branch from the main tramline which ran eastwards to eventually cross State Highway 1 at Maroa.

The line from Kinleith south was closed in 1945.