

The Generator

Issue 483
October 2021



Palmerston Model Engineering Club
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Managers of the Marriner Reserve Railway - Marriner Street - Palmerston North
PO Box 4132 - Manawatu Mail Centre - Palmerston North 4442

The Palmerston North Model Engineering Club

Upcoming Club Events

Club Nights typically start at 7.30pm and are usually held at the Hearing Association Hall, 435 Church Street, Palmerston North.

All events subject to change at short notice, cancellations via email

28 October

Project Progress

Bring along and show off the progress that you have made on your projects over the past few months

27 November (Saturday)

End of year get together

A visit to a property south of Levin where things of interest to you all take place and then back to Levin for some lunch and maybe an afternoon visit also!

Marriner Reserve Railway

7 November

Railway operations with no public passenger hauling
1pm to 4pm

Thursdays

Railway operations for club members
Subject to ongoing track maintenance and weather
Contact track manager (Richard Lockett 06 323 0948)

PRESIDENT'S REPORT

The committee has received a number of enquiries from club members regarding the status of regular Club Meetings while we are under Covid level 2 restrictions. We understand there are members who rely on club meetings for social interaction, and we are very aware of the effect the current restrictions are having on them.

The committee is planning to hold our regular club meeting on the evening of Thursday 28th October. It will be a "Project Progress Night". Members are asked to bring along their current projects to show and demonstrate the progress they have made.

The committee wishes to highlight the following:

- The numbers likely to attend this meeting will be less than the maximum allowable for indoor gatherings under level 2 restrictions.
- The committee will be monitoring the Covid risk in our region. If the situation deteriorates the meeting will be cancelled. If this transpires, members will be notified by email.
- Face covering will not be mandated by the committee, but we strongly advise their use while in the hall.
- If members are uncomfortable about attending an indoor meeting, the committee invites them to come to our regular Thursday morning gathering at Marriner Reserve.
- Organising a club meeting for October does not indicate we have returned to regular club meetings. The committee will be progressing cautiously one meeting at a time.
- The committee is investigating the possibility of hosting a members only running day at the Marriner Reserve in November. More information to follow.

I wish I was writing this report in easier times, but we are going to have to make the most of the cards we have been dealt.

Finally, it is with a heavy heart that we acknowledge the passing of Dave Sparks wife Eileen. Dave there is nothing we can say that will make things easier, but we all look forward to seeing you around the club again.

Your welfare is our concern.
Keep Healthy and Keep Building

David Bell

David Turner's Case Traction Engine
with Alex Mudgway driving and with
David steering.. Locomotion 2020
Photo D Bell

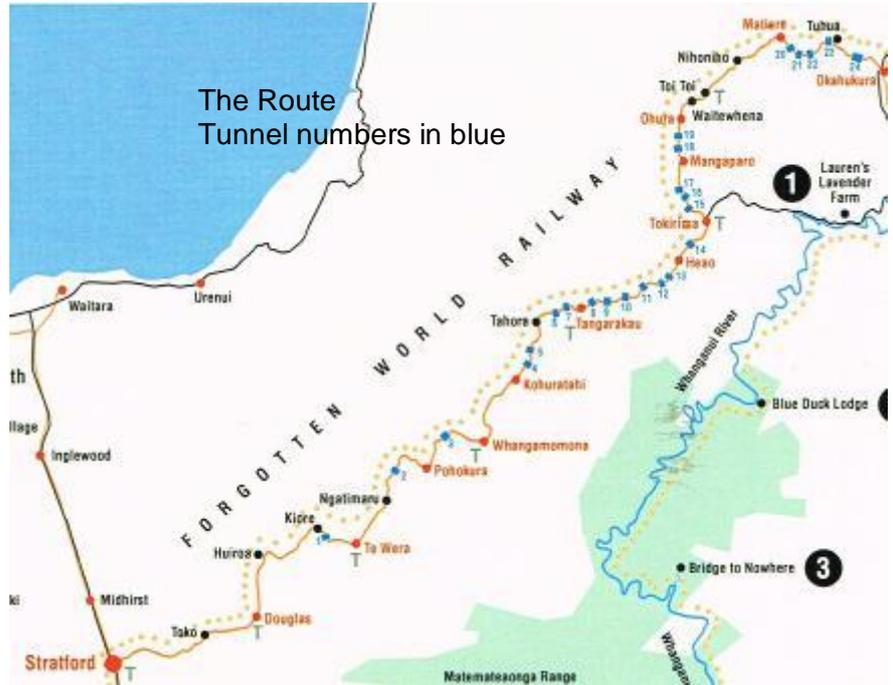


The Generator

Stratford to Okahukura Railway Line

I grew up in the settlement of Douglas, 18 km East of Stratford. Like many of the farming settlements this area became firmly established and thrived when the Stratford to Okahukura Railway arrived in 1905. Now abandoned by KiwiRail this line has become a tourist attraction with over 7000 tourists a year travelling along the line in rail mounted golf carts. Passengers view the marvels of the area called the “Forgotten World”. They look in amazement at the feats of civil engineering that went into building this railway.

The main driving force behind the construction of the railway was the economic benefit it would bring. Coal mining, timber milling, and agriculture were all industries waiting for reliable transport and the railway provided that. Despite the extremely high cost of construction the payback period for this investment was relatively short. The statistics are staggering:



- The railway is 144 km in length and took 32 years to construct. Started on March 29 1901, the line was formally handed over from the Public Works Department to NZ Railways in 1933. This is still the longest construction period of any rail line in New Zealand.
- Because this was a project of national significance, construction continued even through the great depression, a period that saw most large-scale public works stopped.
- The railway was the most expensive construction project ever undertaken by the Public Works Department, and the cost per mile was the highest of any railway line in NZ. This line includes 24 tunnels (with a combined length of 10.55 km) and 91 bridges.
- The railway formed an important freight link, and was also used as an alternative to the then problematic Main Trunk Line on the central plateau when that was impassable.
- All regular passenger services along the line stopped in 1983, but special trains continued to operate for some time. Freight services continued, but lack of maintenance on the line severely impacted operability in later years.
- In 2007, 3 years before the line was mothballed, a working group was established to investigate the state of the line and to develop a case for upgrading it. Considerable maintenance was required to bring the line up to the safety standards required for passenger trains. The cost of this additional work was estimated to be NZ\$6 million, according to Stratford's Mayor Brian Jeffares, (the mayor at the time) who chaired the committee.
- In 2009 a partial derailment damaged 6 kilometres of the line, causing all operations to cease. The line was mothballed in 2010.
- In 2019 KiwiRail revealed that it is undertaking a review of the line to assess the viability of reopening for Fonterra and Log Traffic. KiwiRail CEO Greg Miller stated that a NZ\$40 million project to reopen the line was a priority.

With KiwiRail now actively investigating the reopening Jean and I decided to travel the last section of the line we have not explored, the 83 km section from Okahukura to Whangamomona.

Soon after we set off from Okahukura, speeding along in our golf cart at a bone shaking 20 km/hr, we entered our first tunnel, number 24, a 1.5 km concrete lined structure. The train of golf carts halted in the middle of this tunnel for an education stop. I was amazed at the condition of the structure.

This tunnel is at least 90 years old and according to the commentary given to us, like most of the structures along this line have not had a lot of money spent on it for at least 40 years. The tunnels at the Okahukura end of the line are lined with site mixed concrete, with walls 300 mm thick. There is a significant amount of water spilling from the drainage pipes set into the walls, but they are dry to the touch. Our tour guide was someone with an in-depth knowledge of civil engineering and his education stops were fascinating:

- The tunnels were all dug by hand with no blasting. This methodology may be slower but it produces a much stronger and more durable structure. The shock waves produced by blasting forms cracks in the surrounding clay and these catch the water that naturally seeps down through the soil and funnels this towards the tunnel lining. Water build up on the soil side of the lining is undesirable, and any water migrating down through the cracks in the soil has to be intercepted and drained. Keeping water away from the tunnel lining is the best policy.
- Keeping the concrete lining of the tunnel dry is a key factor in improving the longevity of the structure. Having a slight gradient in the line is useful for draining water out. However, increasing this grade further brings about natural air movement along the length of the tunnel. This passive ventilation was used to great effect by the builders and this is continually drying the walls. Somebody certainly knew what they were doing.



Tunnel 21 Mind your head1

So after taking this knowledge on board we set off on our merry way and several tunnels later we stopped on a hill side overlooking a nondescript valley. This was just north of Matiere, another education stop. Pointing down into the valley below our guide explained that this is where the rail constructors built a brick works. Coal was plentiful in the area, and the clay was suitable for brick making. As we stood on the side of the track the rationale behind this move was explained.

- The railway was not constructed sequentially, by starting at one end and then building to the other. The tunnels along the line were built in advance of the rail head, and they were dug from both ends simultaneously by work crews literally living in the bush.
- The tunnels were lined with whatever materials the tunnellers had at hand. If they were close to a river the tunnellers lined the structures with concrete made from aggregate hauled up from the river. If they could not access this aggregate the tunnels were lined with brick bought to the site by bullock trains and cart, or trains after the railhead arrived.
- This construction methodology led to some interesting anomalies. As we travelled further along the line we saw situations where the tunnels were lined with concrete on one end and brick on the other. The construction crews at one site had access to a river and made concrete from the aggregate. However hauling that aggregate over the top of the hills to supply the tunnellers at the other end was not always an option. Once the railhead arrived, the unlined sections of the partly built tunnels were lined with brick hauled by train from Maitere.

David Bell
To be continued

Rigby's Patent Steam Hammer

Some months ago I gave a presentation at a club night on my journey down through the South Island as part of my 2020 Tour Aotearoa Bike packing event . One of the images used was taken at the historic gold mining town of Waiuta located in the hills behind the settlement of Ikamatua in the Grey River Valley just before one climbs up and over the Reefton Saddle towards Reefton. To extract gold here one had to go underground, deep underground. By the time of the mines closure in 1951 the main shaft was 850 metres deep and below sea level! The gold was contained in hard quartz reefs and was mined using pneumatic drills and chisels. The ore brought to the surface to be crushed and processed with the toxic cyanide process to extract the gold. So back to that image that I took whilst passing through Waiuta. I had lent my bike up against the old blacksmiths shop while I had some food and stretched my legs etc and took the photo of my bike and the shops Steam Hammer.



Blacksmiths Shop, Waiuta 2020

Photo R Lockett

I thought at the time that the steam hammer looked a bit forlorn, out there in the hostile environment at 800 metres or so above sea level. But with this area being under the management of the Department of Conservation one cannot remove to the comfort of someone's shed what are historic items of our nations past . You can get into deep trouble doing that. Mine shaft deep! A big lump of cast iron can handle a bit of weather but hopefully someone will give the hammer a loving rub with a suitable rust preventative oil sooner rather than later!

On looking at this image when putting my presentation together I zoomed in on the hammer as there is some lettering cast into the hammers column. It says Rigby's Patent, No 1354, R G Ross and Son, Engineers, Glasgow, 1901. A quick Google search under R G Ross and Son brings a wealth of information on this company one of the biggest manufacturer's of steam, pneumatic and engine driven hammers and these tools are still an important part of the heavy metal working industry. Back in the late 1800's with the increasing size of ships being designed these hammers had to increase in size along with the ships they helped to build. A lot of effort went into perfecting their design and operation hence the Rigby's Patent. No 1354 is its manufacture number and 1901 being the date of manufacture. With the mine at Waiuta not opening until 1906 this hammer would not have been purchased as new but would have come from some other mine operation etc at a later date. It would have been used to manufacture the chisels and drills used by the miners. If you are keen to see a Steam Hammer in use there are some good youtube clips of large modern hammers with not a person in sight. An interesting clip of an very large version of the Waiuta example being used by a large group of workmen in loin cloths and wearing sandals whilst working the red hot steel bar hanging on a chain!



The Start Steam Hammer Photo B Geange



The Google search also brought to light the fact that the Steam Hammer Kit produced by Stuart Models is modelled on a R G Ross and Son Rigby's Patent hammer, most of you properly knew this but I didn't . A fine example having been built by Bruce Geange from a Stuart casting kit that he purchased from another club member .

Those of you who visited the Tokomaru Steam Engine Museum Back in July may recall seeing an example of similar size to the Waiuta hammer no 1040 of 1892 lying out behind the main building.

Does anyone know where Colin Stevenson picked this hammer up from ?

R Lockett

To see an Howrah Steam Hammer in action go to <https://www.youtube.com/watch?v=noDf6bmZw5w>



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