

# A Chronology of Tramways and Railways in Papua New Guinea

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### Introduction.

Papua New Guinea (PNG) was a late entrant to the development of transport systems and, for the most part, the country has remained on the periphery of advances in transport technology. This is particularly true of railed transport which has provided the basis of modern transport networks elsewhere. However, although many people regard PNG as a country without railways, there have been a surprising number of light tramways and railways over the past century, as the following chronology amply illustrates.

There was limited development of transport prior to European intrusion. Owing to the lack of any suitable animal, coupled with the low status of women and limited social development, most land transport was handled by the New Guinea beast of burden - women. Journeys were made by foot, with the men walking ahead carrying weapons, while the women laboured behind with heavy loads.

Water transport required canoes which varied greatly in their manner of construction. Some of these canoes were very large, and it was in their manufacture, always by men, that the first organisation of land transport emerged. Large trees, up to 30m tall and 4m in girth, were cut in the forest and transported to the coast. Often whole clan groups were required to pull the log. Saplings were cut and placed as rollers under the log, and vines were used to pull it to the shore where the log was carved into a canoe.

Such was the evolution of transport in PNG when Europeans first began to arrive by sea from 1794 onwards. Various traders, missionaries and adventurers landed on the shores over the following decades. The Brothers of the Society of Mary were the first missionaries, arriving on Woodlark in 1847. The Rev George Brown, a Methodist missionary settled at Port Hunter in the Duke of York Islands in 1875, in that year The Mission of the Sacred Heart arrived and started a station at Port Leon (Yule Island) and also an Australian trader, Andrew Goldie began operating at Port Moresby. Five years later Emma Forsayth established a trading station at Mioko in the Duke of York Islands. In 1884 Germany proclaimed North-Eastern New Guinea as a protectorate and Britain responded with a similar claim over South-Eastern New Guinea(BNG) in the same year. In 1885 a charter was granted to the Neuguinea Kompagnie(NGC) to administer German New Guinea(GNG). Initially the company established its main station at Finschhafen.

### The First Tramways

1888 The NGC built the first recorded tramline in PNG(1) on Mole Island (in the Purdy Group, south of Manus Island). It was constructed to convey phosphate across the reef of this isolated island to ships.

1890 The London Missionary Society had a rail wagon built at Cooktown, North Queensland.(2)

Burns Philp & Coy (BPs), after purchasing Goldie's store, lay a tramline on their wharf at Port Moresby and up to the store(3). The gauge was 3ft 6in, and its gradient 1 in 6. The trucks had to be hand pushed over the 200m length of the line. At this time labour was cheap (and was to remain so until after the Second World War), but pushing railway trucks did not have the status of a canoe voyager or even a carrier, and was heavy work.

Railway materials (approximately 100 yards of track) valued at Pounds 18/5/- were

imported to Samarai Island.(4)

1891 The NGC, after finding Finschhafen a tropical death trap, moves their administrative centre to Stephansort, but found it little relief from the ravages of disease. By this time a rival company, Deutsche Handels and Plantagen Gesellschaft(DH&PG), had built a tramline between their wharf and store on Mioko Island(5). (NB. This line may have been built before the Mole Island tramway, as it was definitely in use in 1891 when it was recorded and the station at Mioko had been operating in 1884 when Germany Proclaimed GNG a protectorate although in the 1884 etchings there is no evidence of a tramline, it could possibly date from 1886 when this trading station was purchased from E Forsayth, but, as yet there is no positive evidence to support this view.)

The Most Sacred Heart Mission sent out post cards of their new mission station at Port Leon, Yule Island, showing the pier and station buildings. A tramline for transporting cargo(6) is clearly evident on the pier.

Sir William Macgregor, Administrator of BNG, initiated investigations for the purchase of rails from Cooktown for use in construction of tramways at Samarai and Port Moresby(7). They finally arrived in 1894.

### **Plantations and Mines**

The 1890s were a period of gradual expansion by both the Germans and the British administrations. Trading pioneers had found the rich volcanic soils of the Gazelle Peninsula much more suited to agriculture than the harsh conditions of the mainland, and extensive plantations were established from 1881 by pioneers such as Emma Forsayth("Queen Emma") and Richard Parkinson.(8) Transport improvements included the introduction of both horses and mules and the building of bridle trails and cart roads around the main centres. The islands of Milne Bay were found to be rich in gold with extensive leases being mined on Woodlark Island. Narrow gauge tramways were constructed to serve the expanding plantations and infant mining industries.

1892 Materials were ordered for a narrow gauge tramway at Herbertshohe (Kokopo) station to link the landing place with a cotton store. The tramway was to be 300m long and 3 sets of points were planned(9). A later report indicated that 1000m of tramway was completed by November 1894.(10) In 1896 a landing jetty, 30m long, was completed with a new transit shed which "makes it possible to bring the narrow-gauge railway trucks with goods from the jetty into dry storage quickly".(11)

In Friedrich Wilhelmshafen the NGC established a few hundred metres of light tramway to link the wharf to the store. This 60cm was later extended 5Km to serve tobacco plantations at Jomba, but plans for a further 23Km of track to link the tramway with those at Erimahafen did not eventuate.(12) The tramway was operated by oxen and remained in use until the thirties.

1893 A 60cm gauge railway was completed between Stephansort and Erimahafen to service NGC tobacco plantations. This tramway system, which was to total over 17Km of track and used oxen as its motive power, is described in *Light Railways* No 81.(13)

1895 In British New Guinea, gold was discovered on Woodlark Island by R Ede and C Lobb.

Charles Able, of the London Missionary Society mission at Kwato near Samarai used a tramline to carry out swamp reclamation and to build a cricket field.(14) He was a pioneer in introducing cricket to Papua.

1898 Raniolo Plantation was recorded to have a funicular railway across a steep sided valley to the plantation.(15)

Importation of railway material into BNG amounted to Pounds 221 in the period 1898 - 1900.(16)

1900 The gold mines at Woodlark Island in BNG built a tramline from the harbour to Kulumadau, a distance of about one mile.(17)

### **Traders and Missionaries**

By the turn of the century the growing demands of administration and trade stimulated the growth of early settlements into townships. Mission societies were also expanding and the provisioning of their stations required improved transport links. These centres relied heavily on sea transport and short tramways were built in a number of locations to transport goods from warehouse to ship.

1901 On Samarai Island, BNG, Burns Philp and the Administration constructed a 2ft gauge tramway to carry coal and goods from ship to stores.(18)

1902 The Catholic mission established a 70cm gauge timber/logging tramway at Toriu River on New Britain Island.(19) In 1917 it was moved to Kuriendal.

1904 In Port Moresby the Administration laid down 200m of 2ft gauge tramline to

connect their store to the wharf. It was used until 1918.(20) Imports of railway materials to BNG in 1904/05 were valued at Pounds 106/14/3.(21)

1905 Nord Deutsche Lloyd(NDL) established a settlement and wharf at Simpson Harbour(Rabaul). A 60cm gauge Rabaul tramway network was built up from this site to connect with various stores and administration departments. In 1914 the *Sydney Mail* reports "it is a curious fact that each residence in the settlement has a line like this (photograph of a hand pushed wagon conveying mail) connecting it with the wharf, so that goods can be conveyed direct from the boat side".(22) Although damaged by fire in 1923 the tramway was used until the 1937 volcanic eruption and parts on other wharves were in use until the reduction of Rabaul in 1945.

At Alexishafen, the Societas Verbi Divini(SVD) established a steam powered sawmill and an associated 60cm gauge tramway which used donkeys and buffalo as draught animals(23).

### **Mineral Wealth?**

In 1906 British New Guinea was handed over to the Australian Commonwealth and became known as the Territory of Papua. The Astrolabe mineral field outside Port Moresby was proclaimed after discoveries of copper in the area. This led to hopes for economic development in Australia's infant colony and more ambitious proposals for railway construction were soon put forward.

1910 In Papua the Astrolabe mineral field was being developed, but the high cost of transport by mules was a major limiting factor and proposals were made for the construction of a railway to the area.(24) The British New Guinea Development Company (BNGDC) indicated its willingness to take on the proposal if it could also negotiate the rights to the hydro-electric potential of the Rouna Falls.(25)

The first mechanised road vehicles were introduced at this time in the form of steam tractors.(26) The remains of one of these steam tractors after also being used as a boiler for Port Moresby's Ela Beach Hospital now stands(upside- down) in the Ela Beach Reserve.

In the Northern District of Papua a gold mining venture established a portable railway, a mile long, to transport equipment from the coast to the Yodda mineral field.(27) The line had to be continually relaid ahead of the moving equipment. The project, however, failed to anticipate the terrain and weather, and collapsed before it had proceeded many miles.

1914 The Administration in Papua began construction of a light 2ft gauge railway from Ela Beach to Rouna, a distance of 17 miles.(28) For this purpose the Railway Ordinance, 1914 and the Port Moresby to Rona Railway Ordinance, 1914 were passed.(29) Clearing commenced along Ela Beach, but the work stopped with the outbreak of World War I.(30)

By the Beginning of World War I the German colony had established permanent tramlines at Mioko, Herbertshohe, Erimahafen, Ralum, Modilon, Raniolo, Kabakaul, Toriu River Alexishafen and Rabaul. In Papua Tramlines were operating at Port Leon, Port Moresby, Woodlark and Samarai. During the War there was no further development in either the occupied territory or Papua.

### **A New Colonial Order**

In September 1914 an Australian Expeditionary force captured Rabaul and German New Guinea(GNG) became an occupied territory. Under war time conditions, no further development of railways took place.

With the cessation of hostilities, Australia retained control of GNG under the Terms of the Armistice and the area became the Mandate to the Territory of New Guinea (MTNG) in 1920. All German properties were expropriated and war reparations were paid to Australia. Over the period 1920-30 the tramlines established by the Germans became the property of Australian Companies who continued their operation.

With Australian administrations in both Papua and the MTNG, the immediate post-War period held high hopes for a more prosperous future. German plantations were resold to some 350 - 400 individual Australian soldier settlers who brought new hopes for tropical agriculture, and Australian companies were active in prospecting for mineral wealth.

1917 The British New Guinea Development Corporation established extensive sisal plantings at Bomana Plantation, outside Port Moresby and a tramway was constructed to bring the sisal from the fields.(1) Available records indicate that only hand pushed trucks were used. Similar tramways were also constructed on nearby Fairfax Plantation. The crop was not a success and the venture was abandoned in the twenties.

On Daru Island in western Papua, the Administration and the British New Guinea Trading Company constructed a 500 yard 2ft gauge tramway from the wharf to serve the Government Store, post office and BNG Trading Company store.(2) It was in use until 1963. Apart from the jetty tramways at Rabaul, Port Moresby, Samarai and Madang (formerly Friedrich Wilhelmshafen) described in *LR. 93*, there is also evidence that tramways were used at

Kavieng and Malaguna to service the wharves.(3)

On New Britain the 70cm gauge Sacred Heart Mission timber tramway was moved from the Toriu River to Kuriendal.(4) In 1928 it was moved again to Ulamona, in the shadow of Mount Ulawan, an active volcano known as 'The Father'(see below).

1920 The Block 10 Misima Gold Mine NL completed construction of a 7.5 mile 2ft gauge railway to connect its mine at Umuna on Misima Island in the Milne Bay District with the port of Bwagaioia.(5) A second hand 0-4-2T Kerr Stuart locomotive(B/No. 743/1901) was imported from Australia and was probably the first locomotive to operate in Papua New Guinea. A detailed description of the railway is presented in LR. 51.(6) By 1922 the company was facing financial difficulties and the mine and railway closed in September of that year. The locomotive was returned to Australia and continued an active life.(7)

1921 Papua's most ambitious mining venture, the New Guinea Copper Company, opened a 6.5 mile 3ft 6in gauge railway to connect their mine at Dubuna, on the Astrolabe field, to smelters and wharf at Tahira on Bootless Bay near Port Moresby. A second hand Andrew Barclay 0-6-0T locomotive(B/No.1544 of 1918) was imported from Australia in 1920 to assist with construction and was used to operate the line from 1921. Later a Shay locomotive(Lima B/No.2478 of 1911) was also imported second hand from Hampton-Cloncurry Mines, Queensland in 1924. The history of the railway was covered in LR 47 and LR 74.(8) The railway closed in 1926 and the locomotives were abandoned at Bootless Bay until cut up for scrap after the Second World War.(9)

1923 At Rabaul the tramway system continued to expand. However when the Administration constructed a 1.5 mile extension to connect the Rapindik Hospital at Matupit with the NDL wharf it was to 2ft 6in gauge instead of 2ft as the rest of tramway system.(10) In 1923 the NDL wharf and its tramline was damaged by fire, but continued in use until 1942.(11) The Administration also built a 2ft gauge line to service the Malaguna coaling wharf. Another 2ft gauge line was also built from Ah Tams Wharf to a copra store as Rabaul developed to become the social and Administrative hub of New Guinea. Around the harbour WR Carpenters also constructed a 2ft gauge tramline in 1928 to carry copra from the wharf to their new storage sheds at Toboi.(12) Bogie wagons were hand-pushed on the tramway and from 800 to 900 tonnes of copra could be handled per day. In 1930 Ah Tams wharf and tramline were destroyed by fire.(13)

### **Plantation Expansion**

Prior to 1920 the British New Guinea Development Company (BNGDC) and Burns Philp and Company were the only significant trading firms in Papua. Trading in German New Guinea had been dominated by the Neuguinea Kompagnie (NGK), Deutsche Handels-und Plantagen Gesellschaft and Hernstein & Company, but the assets of these firms were expropriated by the Australians. WR Carpenters, an offshoot of the NGK from Western Samoa and Fiji, bought out most of the NGK holdings. Burns Philps also sought to expand its activities into the MTNG and was most successful on Bougainville Island where it established plantations through a subsidiary company, Choisal Plantation. The charter of the BNGDC precluded it from taking advantage of expropriation to expand into the MTNG. Australian policies encouraged individual soldier settlers to take over plantations, but most were inexperienced in tropical agriculture and many had to sell out to the larger companies during the Depression. The plantation companies constructed tramways on a number of properties. They included:

Soraken Plantation, Bougainville: a Choisal plantation where a 2ft gauge tramway system, which eventually totalled 14 miles, was constructed from the 1920s(14) Originally materials were supplied by Robert Hudson Ltd Leeds, UK and trucks were hand pushed on the tramway. The system was used for the transporting of cocoa and coconuts to the fermentary and driers.

Kunua Plantation, Bougainville: this Choisal plantation constructed 7.5 miles of 2ft gauge tramway. The tramway equipment was originally supplied by Robert Hudson in the 1920s.(15)

Tinputz Estate, Bougainville a private plantation where a 2 ft gauge tramway was used between the wharf and copra and cocoa stores up to the late 1960s.(16)

Teopasino Plantation, Bougainville: a 2.5 mile 2ft gauge tramway was in use on this Choisal plantation prior to World War II and subsequently operated until the 1960s.(17)

Banio Plantation, Bougainville: a 3 mile 2ft gauge tramway was used on this Burns Philp Plantation prior to the Second World War.(18) It was destroyed during the war.

Arigua-Kurwina Plantation, Bougainville: this 3 mile 2ft gauge tramway connected the Burns Philp plantation of Kurwina with the Choisal estate of Arigua prior to the Second World War.(19) The tramway was destroyed during the war.

Boau Plantation, Bougainville: this BPs plantation has 2.5 miles of 2ft gauge

tramway.(20) Wagons are hand-pushed and the line is still in use.

Numa Numa Plantation, Bougainville: this plantation, owned by Buka Plantations, operated about 4 miles of 2ft gauge tramway prior to World War II.(21) The tramway was removed after the war

Lindenhafen Plantation, New Britain: another extensive tramway operated on this Burns Philp property. By 1942 there were 12.5 miles of tramway.(22) The tramway continued operations until 1980.

Ilia Plantation, Gurove Island: this Catholic Mission plantation is located off New Britain. A half mile tramway was constructed from the wharf at Peter Harbour through Burns Philp's Meto Plantation to the copra store at Ilia Plantation.(23) It is still in use.

Bali Plantation, Unea Island: a 1 mile tramway is known to have operated from the wharf to the store at the plantation, off New Britain.(24)

Pondo Plantation, New Britain: WR Carpenter & Coy built a 70cm gauge tramway from their dessicated coconut factory to the store near the wharf.(25) The tramline was removed in 1963.

There are reports that other plantations tramways operated at Robinson River, Eilogo, Itikinumu and Koitaki rubber plantations in the Central District of Papua; at Waigani Plantation in Milne Bay; at St Anna Catholic Mission in the Sepik District(1 mile); at Longan and Palleluka plantations in Manus District;and at Neinduk and Namburg plantations on New Britain. Burns Philp, as a major trading company, also established tramlines at a number of its stations.

In Papua's Northern District there were moves to establish a sugar industry in the 1930s. The most ambitious venture was Sangara Sugar Estates Limited, floated in Australia in 1931 to develop 20,000 acres of Crown Land at Sangara as a sugar plantation. Trial plantings were made over some years and the company planned a Pound 37,000 investment in a 3000 acre plantation, sugar mill, tramlines, rolling stock and wharf.(26) Although trials continued until 1935, the backers were unable to gain a sugar quota and the scheme lapsed. By 1934 Lt Governor Murray reported "our hopes of seeing extensive sugar plantations in Papua has by no means been abandoned, but it has unfortunately been deferred.(27)

### **Gold Fever**

In 1922 a solitary prospector 'Sharkey' Park found gold on Koringa Creek in MTNG.(28) Symbolically, the first *balus* (Pidgin for aeroplane) made its historic flight over Port Moresby in the same year.(29)

News of the Koringa Creek gold find sparked a 'gold rush', but miners and their equipment had to travel to the field by foot over inhospitable country. Carriers were able to handle 20kgs apiece, but it took two weeks for the journey, so half the load of each carrier consisted of food for the journey.(30) A carrier line consisted of up to 200 men. Conditions were wet and slippery, while disease and accidents, as well as head hunting Kukukuku (a local tribe) took their toll on the carriers.(31)

Obviously improvements in transport were of vital importance if the field was to prosper.

1925 CJ Levien, the main driving force on the Koranga Creek field, in a letter to his director, Wells, on 6 April suggested "it should be possible to build a light narrow gauge railway" to overcome the transport problem.(32) He felt that such a railway would not only bring in the equipment needed by the miners, but could also back-load timber from the fine stands of klinki pine in the area. The idea was taken up, but the lack of railway or tramway ordinances presented a legal problem concerning the right-of-way width and freight rates.(33)

1927 Levien, frustrated over protracted legal battles for the right to construct a railway, decided to try aeroplanes to overcome transport problems.(34) Other groups settled for donkeys. Both machine and beast were on the same ship from Australia when it ran into a cyclone off the Queensland coast. The donkeys bolted and disappeared overboard, but the plane was securely lashed down and it arrived safely in Lae.(35)

On 18 April the first flight was made from Lae to Bulolo, putting an end to hopes that a railway or road would be built.(36) Guinea Airways proposed that aircraft would be able to handle the transport problems posed by New Guinea's rugged terrain without the expensive infrastructure cost of roads or railways and promoted the catch cry "airways are the cheapest highways".(37)

1928 New Guinea Goldfields commissioned Mr Jensen, a former railway draftsman, to prepare a plan for a railway to link the Bulolo goldfield to the coast. He proposed a 90 mile line down the Buang route at an estimated cost of Pounds 250,000.(38) The proposal was criticised as impractical and the company rejected the scheme.

1929 The gold beds at Bulolo were assessed to be suitable for profitable dredging.(39) However, the transport of dredging equipment to the isolated field was a formidable challenge. The Ellyou

Corporation, backed by the massive Mining Trust of London, commenced a survey for a railway to the Bulolo field.(40) This was completed in November. The proposed line would be 166 miles in length with many bridges and tunnels. It would have taken three years to build at great cost in money and lives.

Levien backed aircraft to handle the task. He formed the Bulolo Gold Dredging Company, ordered a new all metal Junkers G-31 for Guinea Airways, the largest transport plane of the times, and had a dredge prefabricated into parts of not more than 3-tons, the G-31 payload.(41)

1930 On Bougainville Island a small gold mine opened at Kupei in the mountains behind Arawa Plantation.(42) A short tramline is known to have operated at the mine. However the gold was difficult to win and was mixed with low grade copper ore.

1931 For the Bulolo Gold Dredging operation, a 1 mile 4ft 8.5in (standard) gauge railway was constructed from the wharf at Voco Point to the Lae airstrip in 5 weeks(43) Dredge components and other equipment were transported along the line for airlifting to Bulolo in the Junkers G-31. The railway was operated by a 10-ton self-propelled crane and the rolling stock consisted of a number of bogie flat cars. The airlift was the largest in the world to this time.(44) By November the G-31s were lifting over short tons a month and some 40,000 tons of material were carried between 1931 and 1942. In August 1932, an earthquake and subsidence occurred at Voco Point resulting in the loss of the wharf, steam crane 100 yards of railway line and 3 acres of foreshore.(45) The wharf and the railway line were rebuilt closer to the airstrip, opposite the Cecil Hotel, and a 7-ton steam crane replaces the lost unit. A petrol mechanical locomotive also operated on the the railway. It was purchased from Brookville Locomotive (USA) in 1932 and was used to pull the loaded flatcars while the locomotive crane was busy at the wharf. The railway remained in operation until destroyed by Japanese bombing in 1942.(46)

At Salamaua, south of Lae, a small airstrip also serviced the Bulolo goldfields and a tramline was constructed to transport goods to the aircraft.(47)

### **The Missions**

Between the wars, missionary activities expanded as additional organizations joined those which had operated in German New Guinea. By 1940 the missions in MTNG claimed 410,465 adherents or 60 per cent of the indigenous population and the missions carried the major burden of education and health services in both the MTNG and Papua.(48) They also had a considerable stake in economic activities, with extensive plantation holdings. Tramways were constructed on a number of the major mission stations.

1928 The Sacred Heart Mission established a sawmill at Ulamona, in the shadow of Mount Ulawan, an active volcano on New Britain known as 'The Father'. They moved their 70cm gauge tramline from Kuriendal to service the mill.(49) A steam locomotive was introduced to operate the line and in 1938/39 it was joined by an 0-6-0WT locomotive built by Arn. Jung Locomotivfabrik of Germany (their B/No. 8644 of 1938). Both locomotives operated until the war.

1930s On Bougainville the Catholic Mission established a sawmill a Tinputz. A half-mile 2ft gauge tramway was constructed for the transport of logs and timber.(50) It was later used as a tramway from the wharf to store.

1935 The Catholic Mission at Alexishafen acquired a light aeroplane for mission work in the Highlands. The airstrip was 2.5 miles from Sek and was linked to the station by a tramline.(51)

Unknown At Vunapope on New Britain the Catholic Mission built a 70cm gauge tramway from a wharf to a timber and ship building yard.(52) It was in use until the 1980s.

### **Gathering Storm Clouds**

The Depression years saw the prices of plantation products sink to all time lows. As the decade came to a close growing international tensions brought a boom in commodity prices and the plantations began to look forward to prosperous times. Instead, external forces brought a dramatic upheaval to the colony. But first, nature made its mark.

1937 On 29th May Valcan and Matupit, two small volcanoes one each side of Rabaul Harbour, erupted showering ash all over the town.(53) There was extensive damage to property and it was decided to move the capital to Lae.(54) This was the beginning of the end for the Rabaul tramways as they were buried under ash. Although the roads were quickly cleared, most of the tramway was abandoned and only the wharf lines remained in use. By 1942 the move to Lae was almost complete.

1939 The outbreak of World War II provided an initial boom to Papua and the

MTNG through bouyant commodity prices.(55)  
1941 The Japanese attack on Pearl Harbour in December marked the outbreak of the Pacific War.

1942 On 23rd January Japanese forces landed at Rabaul. Most Australians had already been evacuated. Nearly all of those who remained were captured and kept in POW camps at Rabaul. The tramway systems in Japanese occupied territory were either ripped up for use elsewhere or were destroyed by Allied bombing. The Lae railway was damaged by Japanese bombing on 25th February.(56)

### **Japanese Occupation**

The Second World War brought both construction and destruction on an unprecedented scale to New Guinea and, to a lesser extent, Papua. Most of the existing tramlines in occupied New Guinea were ripped up or destroyed by bombing, but new airstrips, roads and tramlines were constructed at a frantic rate. Both sides built numerous airstrips or enlarged existing ones (70 in all)(1); the Americans built an extensive road system; and the Australians commenced construction of a road over the backbone of New Guinea, from Bulldog to the gold mining centre of Bulolo.(2) The Japanese built numerous tramlines for the construction of airstrips and the exploitation of timber stands. These were constructed by the Japanese Imperial Navy to 2ft(610mm) gauge. Those documented so far are:

Buin Naval Railway; on the south of Bougainville Island, Japanese Navy Units constructed a 2ft gauge railway from Buin Port (Kangu Hill) to Kara airstrip (now Buin), a distance of 12 - 13 km. It was constructed with 12 kg rail for locomotive operation. At least seven locomotives were used on the line.(3)

Rabaul Barge Tunnels: tramway tracks of between 500 and 1000 metres in length were laid into the tunnels constructed around Rabaul Harbour for storing barges.(4)

Talena Airstrip construction, Bougainville,(5)

Chabai Airstrip construction, Bougainville,(6)

Bonis Airstrip construction, Bougainville,(7)

Buka Passage Airstrip construction, Bougainville,(8)

Tobera Airstrip construction, New Britain,(9)

Vunakanau Airstrip construction, New Britain,(10)

Lakunai Airstrip construction, New Britain,(11)

Boram Airstrip construction, Wewak, East Sepik(12)

Kairiru Island Airstrip construction, East Sepik(13)

Between 1941 and 1943, the Kato Works Company Ltd, Shinagawa, Tokyo, constructed a total of 729 2ft gauge 4-wheel petrol mechanical locomotives for the Japanese Imperial Navy. Official records indicate that 93 units were dispatched to "Big Harbour" (Rabaul), comprising 5 5-ton, 25 4-ton and 63 3-ton locomotives. It is not known how many of these units actually arrived in New Guinea. The Works No of the Locomotive restores at Buin (22086/1942) does not tally with those on the official Japanese Navy list.

The Allied forces also tried their hand at tramway construction. The following lines have been documented:

1943 Bulldog Trail; Kunimaipa-Base Area Tramline: As part of the Bulldog to Bulolo road construction in 1943, the Australians built a 7 mile section of 3ft 6in gauge railway to bypass the heavily silted Tivari branch of the Lakekamu River. The route was only used for 16 days when the fall of Lae rendered the road no longer necessary.(14)

Gamodoudou Naval Tramway: In Milne Bay the Americans constructed a 2ft gauge tramway for the movement of naval supplies.(15)

Barges Hill Cable Haulage: In central Bougainville Island, the Australians built a cable haulage to haul supplies up the escarpment to the Numa Numa trail. It rose 894 ft in 2245 ft, with a maximum gradient of 1 in 1.(16)

There are reports of tramlines used at bases in Port Moresby, Lae, Milne Bay and Torekina, but these have yet to be confirmed.

### **Peace and Reconstruction**

The commencement of hostilities in New Guinea in January 1942 had seen the cessation of civil administration in both the Mandated Territory of New Guinea and the Territory of Papua. To fill this gap, the Australian New Guinea Administrative Unit (ANGAU) was established in April 1942. Its purpose was:

- a. Operational: to organise the native population to be a useful part of the war effort as carriers and soldiers;
- b. Production: to continue and increase the production of the strategic products of New Guinea namely copra and rubber, and

c. Administrative: to, as well as possible, continue the administration in Allied held areas, look after the welfare of misplaced persons and, after victory, to repatriate natives back to their homes and restore civil administration.

The Japanese surrender on 6th September 1945 meant that ANGAU was fully involved in repatriating Prisoners of War and the local population over the next year. ANGAU continued its control until June 1946, when both territories were embodied in the 'Papua-New Guinea Provisional Administration'. In December 1946 the United Nations granted a Trusteeship over the Territory of New Guinea to Australia. A single administration for the Territory of Papua and New Guinea was established with its headquarters at Port Moresby.

The Australian people had discovered a closer affinity with their neighbours to the north through the fears of war and the post-War era brought a new awareness that colonised people's had a right to independence and self determination. The Government prepared plans for massive increases in assistance in education and health to prepare the people of Papua New Guinea (PNG) for self determination. But first, both the Administration and the commercial sector were faced with a massive task of rehabilitating industries and getting the economy back on its feet.(17)

1946 The waste of war provided a field day for scrap metal merchants and rapid fortunes were made collecting material to feed the furnaces of post-War reconstruction. The remains of railways were swept up by eager metal collectors or were used by all and sundry for copra driers, bridges, fence posts and numerous other construction tasks. Some were used for short tramlines from copra sheds to wharves.

1948-52 Burns Philp decided to rebuild tramways on Soraken, Lindenhafen, Tinputz, Boau and Kunua plantations. Salvaged and second-hand railway materials imported from North Queensland were used in this reconstruction.(18)

1950 At Tsiroge Catholic Mission, Bougainville, Br Pius constructed a 200 yard 2ft gauge tramline from the wharf to his workshop and included a 6ft turntable. It remained in use until 1987, when Br Pius returned to Germany in ill health.(19)

Similar short lines built about this time were:

Selapia, New Ireland - wharf to store(20)

Asitavi, Bougainville (Catholic Mission) - Sawmill to wharf(21)

Skotlan, Bougainville (Methodist Mission) - wharf to store(22)

Sewa Bay, Milne Bay - wharf to sawmill and return ("U" shaped)(23)

Tubiana, Kieta (Catholic Mission) - wharf to store, 2ft gauge (24)

Bakiwa Plantation, Milne Bay - wharf to store, 2ft gauge (25)

Wong You, Kieta, Bougainville - wharf to store (26)

During the 1950's the Administration developed the light aircraft fields of the country as the basis of inland transport, while flying boat services existed in the island's regions. Air control centres, such as Madang, became the busiest in the world until road links to Highland centres were established in the mid-1960's. Coastal shipping dominated by Burns Philp & Company and Steamships Trading Company, remained the basis of coastal and inter-island transport.

1951 The Railway Ordinance of 1914 and the Port Moresby to Rona Railway Ordinance were repealed as no longer useful. The tramway ordinance was revised.(27)

1956 The Borneo New Guinea Mangrove Company established a pioneer factory in the swamps of the Kikori River Delta at Aird Hills to extract crutch (a tanning fluid from mangrove bark). A short tramline (about 1300 metres) was built from the wharf to the factory. By 1958 the venture had failed and the equipment was abandoned. Mr Keith Tetley, a local Trader, collected rails to build a wharf and copra drier.

Steamships Trading Company (STC) eventually purchased the assets of the Borneo New Guinea Mangrove Company from receivers with the intention of using them at their Baimuru Sawmill. On arrival to collect their bountry, STC crews discovered its disappearance. Its whereabouts was soon discovered and the company took Mr Tetley to court: thus commencing the case of PNG's "Great Railway Robbery". Mr Tetley eventually won the case as there was no caretaker at the site and the rails were not on land belonging to the company, and therefore, they could be considered abandoned. He is reported to have arrived at the Kerema Hall for the annual Christmas party pulling a toy train, much to the delight of those present.(28) Steamships lost out badly, not only losing the rails and the money paid for them but also having to pay court costs.

At Suassi in the Papuan Highlands, the London Missionary Society used a short tramway for construction of an airstrip. The local missionary, Bert Brown, arranged for carriers to bring in two sets of railwheels, weighing 90lbs each, and eight lengths of rail. A one-ton wooden truck was built by the station using fish tins as bearings. The wagon was pushed back and forth along 60ft of track, which was moved as the airstrip was made.(29)

1960 The decade saw extensive sales of scrap iron to Japan, including the Bootless Bay locomotives, trucks and rails, together with plantation tramlines.(30)

1962 The Tramway Ordinance was finally repealed, as there appeared little likelihood that new lines would be constructed in a 'motor age'.(31)

1963 The tramline at Daru was removed after the construction of a new wharf, which was able to take motor vehicles, was completed.(32)

1966 The Catholic Mission moved part of their 70cm gauge timber tramway at Ulamona in West New Britain to Kaliai. The line runs from the wharf, through a village to a store and is still used.(33) At Ulamona the Jung 0-6-0WT steam locomotive was converted to an 0-6-0 diesel mechanical locomotive. It is still operating.

### **Towards Independence**

By the mid-1960s the Australian Government began to accept international pressure that PNG should be granted Independence sooner rather than later. In 1966 a World Bank Mission advised the Administration on the need for large infrastructure and agricultural projects to establish the economic base for Independence and, in the following year, exploration commenced for a giant copper mine on Bougainville Island. Political development was stepped up too: in 1972 the Territory was granted self-government status and on 16th September 1975 Papua New Guinea became an Independent Nation.

Until the late 1950s and early 60s the only substantial roads in the country were from Wau to Lae, from Port Moresby to Sogeri and on the Gazelle Peninsula.(Most of the roads built during the war years had long since disappeared back under the jungle and no longer constituted a useful infrastructure.) The aeroplane served the Administration's needs for a transport link to isolated settlements.

Road construction was begun as feeder links to main centres, with construction mainly by pick and shovel. Along the coast, feederroads came to ports, while inland they connected plantations and villages to government centres and airstrips. In 1965, the most ambitious transport infrastructure project was commenced, a road from Lae and Madang up to Goroka, Kundiawa, Mt Hagen and Mendi, to be known as the Highlands Highway. Eventually it would become a tar sealed road from Lae through to the highlands moving up to 500 tonnes of produce and materials each day. As the road construction proceeded, the need for air services to isolated settlements was diminished and many airstrips were either down graded to charter services or closed completely. Railways as infrastructure were not envisaged. Railed transport was to be confined to construction and industrial applications.

1967 In order to test the extent of the Panguna copper deposits on Bougainville, Dillingham Construction drilled mining audits in the hills behind Arawa Plantation. 2ft gauge tramways were used on this project between 1967 and 1969(34)

1971 On 14 July, PNG's first palm oil factory was opened at Mosa in West New Britain. Initially 530 metres of 600mm gauge railway track was constructed for the transport of oil palm bunches through the mill. This railway was operated by a 1.5 tonne 4wDM Lister locomotive (B/No. 56115 of 1969) and there were 40 steel bins of 2.7 tonne capacity. The tramway is described in *Light Railways* No 69.(35)

1972 Construction of the Ramu Hydro-Electric Scheme commenced at Yonki in the Eastern Highlands District. Hyundai Construction was awarded the contract for the construction of a 2.4 km tail water tunnel and they used a 914mm gauge railway and underground locomotives for this work.(36) The tunnel was completed in 1976.

1974 High yields on the West New Britain oil palm scheme necessitated an expansion programme to increase the mill capacity to 10,000 tonnes of fruit per month. The 600mm gauge railway was replaced with 1.6km of 700mm gauge track.(37) Conventional wheel tractors now provide the motive power on this railway.

### **Post-Independence**

Following Independence in 1975, a number of large infrastructure projects have been implemented in Papua New Guinea. Railed transport has continued to play a role in construction work.

1976 Exploration work on the giant Ok Tedi copper deposits in the isolated Star Mountains of Western Province resulted in audits being driven. It is understood that tramways were used.(38)

PNG's national airline *Air Niugini* undertook an advertising campaign for their 'Sky Train' DC3 freighter services based on the theme "Who needs trains when we've got planes".(49)

1977 Bougainville Copper Limited commenced construction of a 7 km drainage tunnel at their Panguna mine using a 900 mm gauge tramway. Seven locomotives, including three Gemco battery locos ex-Mt Lyell Mine, Tasmania (B/No 899, 972 and

2265/6/171/77), two Com-Eng 4wDH, ex-Mt Isa Mines (B/No. EC4585/1964 and HD51102/1967) and two EM Baldwin underground locos ex- John Hollond's Molonglo Tunnels project, were imported from Australia.(40)

New diesel locomotives were imported from the UK by Choisel Plantations for the Soraken and Kunua tramways in the North Solomons Province. They were standard 43 hp "Hunslet" 4 wheel diesel mechanical locomotives, weighing 3.5 tonnes, being built by the Hunslet Engine Coy of Leeds, UK, Builders Nos 7531/2 of 1977.(41)

1979 A second oil palm mill, owned by Hargy Oil Palms Pty Limited, was opened one lister locomotive to push the wagons into the sterilizer.(42)

1980 A third oil palm mill commenced operations near Popondetta in the Northern Province. Higatura Processing Pty Limited have a short U shaped tramway from their beins to the sterilizer.(43) The hopper wagons are pushed into the sterilizers by tractors and are removed by winches.

1981 The development of a sugar industry at Gusap in the Ramu-Markham Valley revived proposals to construct a railway up the Markham Valley. A feasibility study was carried out, but the price tag of K88 million, plus K1 million per annum running costs was prohibitive. Nothing came of the proposal and the sugar mill uses road transport for its cane.(44)

The tramline at Lindenhafen was closed. The locomotive and rolling stock were sent to Soraken.(45)

1983 Boau Plantation, Bougainville, was purchased from Burns Philp by Mr O Bond, who kept the tramline operating until 1987.(46)

1984 Soraken Plantation abandoned the use of its tramline and the equipment was left derelict. In 1987 the tramline was bulldozed out of the way to make way for roads.(47)

1985 Bougainville Copper completed work on the drainage tunnel and the railway was dismantled.(48)

Since the completion of the Ramu Hydro-Electric power station, the Electricity Commission has completed two more schemes which used railways for construction purposes: at Warangoi, East New Britain (49) and Rouna No4 at Sogeri near Port Moresby.(50)

1988 The Kunua tramline, although still used for some hand operations, was being dismantled.

The only tramlines known to be operating in 1988 are those at the Mosa, Bialla and Higaturu oil palm mills and the sawmill railway at Ulamona.

### **Restoration and Preservation**

One Kato Works locomotive from Buin and trucks from the war were partly restored by the author with the assistance of Buin High School students during the 1980s. They have now been moved to Kieta, Bougainville where the Lions Club and the local branch of the RSL plan to restore them to working order on a tramline adjacent to the RSL Club premises. Railway tracks have been obtained from the dismantled Kunua system.

### **Postscript 1992**

The Bougainville Crisis which began in 1989 has brought to a halt all restoration plans. All those involved in the restoration have left the Island in fear of their lives and it is not known what has happened to the equipment at both Kieta and the tracks at Kunua.

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