

**“A Prolific Individual ”-**

# **Queensland Railways and the work of George Phillips**

Prepared by Greg Hallam

Historian with QueenslandRail



Queensland Railways – A story of sleepers and Engineers



## Queensland Railways – A story of sleepers and Engineers

In the 1870s and 1880s, private groups and individuals were promoting the idea of a transcontinental railway to cross the plains of western Queensland to a port on the Gulf of Carpentaria providing a gateway to Asia, and a shorter journey to Britain.

In 1885 the Glasgow based Cloncurry Copper Mining and Smelting Company offered its prospectus to develop the Cloncurry mining field. As a result the government decided to proceed with a railway from the port of Normanton, to Cloncurry, connecting copper to the coast.

The first section towards Cloncurry was approved on 16th November 1886. 160 kilometres of rails were ordered for construction. Yet whilst these grand plans were being enacted by Parliament in Brisbane, other events were already overtaking the future direction of the railway.



## Queensland Railways – A story of sleepers and Engineers

Parliament agreed to amend the already approved plans so that the first few miles would be common whether the railway went to Cloncurry or Croydon. A budget was approved in October 1887 for construction of the first sixty-eight kilometres of railway to Croydon. Again in line with hedging your railway bets the government still maintained that a railway would be built to Cloncurry.

The first twenty one kilometres of the Normanton- Cloncurry railway was deviated for the new destination of Croydon. The rest of the railway to the goldfields was approved by parliament on 28th May 1889.

Cloncurry would ultimately have to wait nearly twenty years for a railway, and then it would arrive from the east, via the Northern (Great) Railway from Townsville, from Hughenden, and Julia Creek.



Ramsay Street, Cloncurry, 1911-12. QR Historical Collection.

QUEENSLAND.

### REPORT ON PROPOSED RAILWAY, CLONCURRY MINES TO GULF OF CARPENTARIA.

Presented to both Houses of Parliament by Command.

MEMORANDUM TO THE COMMISSIONER FOR RAILWAYS, BRISBANE.

Department of Public Works, Railway Branch,  
Chief Engineer's Office,  
Brisbane, 9th February, 1884.

I have the honour, by direction, to report upon the proposed railway from the Cloncurry Mines to the Gulf of Carpentaria.

#### GENERAL DESCRIPTION OF COUNTRY.

On referring to the accompanying map you will find that the mines are located at the apex of an isosceles triangle, the feet resting respectively in Burketown to the N.W. and Normanton to the N.E.; the distance from the mines in a direct line to either town being 210 miles.

From the southern shore of the Gulf the country rises towards the south as an inclined plane, with an almost uniform inclination of about twelve feet to the mile; this plane is intersected here and there by river beds, but there is no mountainous or broken country to cross whatever; the few mountains there are truncated cones rising abruptly from the plains like islands from the sea.

#### PORT AT GULF OF CARPENTARIA.

From the above description it may be inferred, and in some respects correctly so, that it is almost a matter of indifference what direction the line may take from the mines towards the Gulf; consequently a suitable port is the first question to be determined.

When stationed in the Burke District (1865-68), Mr. W. Landsborough and I examined and surveyed all the rivers flowing into the southern end of the Gulf, from the Albert on the S.W. to the Van Diemen on the S.E., a distance along the shores of the Gulf of 120 miles, and found that the then unknown Norman River was incomparably the best of these; and I may further add as the result of a tolerably large experience of Queensland rivers, that with perhaps the exception of the Estuaria, there is no unimproved river in Queensland that can compare with the Norman for depth and cleanness of channel up to the head of navigation, a few miles below the present town of Normanton.

The advantages of the Norman as a port were recognised by the early settlers to such an extent that Burketown (the original port) was entirely abandoned for a number of years, and has only recently been re-opened to meet the requirements of the squatters on the Upper Gregory River and Barkley's Tableland.

I will now enumerate some of the principal points constituting the Norman River the port *par excellence* of Carpentaria:—

1. There is no site on the immediate shores of the Gulf suitable for the formation of a city; the shore is almost invariably low and fringed with mud-flats and mangroves, that extend inland several miles, nor is there any fresh water supply adequate for the requirements of a city within thirty miles of the beach: it is apparent therefore that the terminus of the railway must be situated on the head waters of one or other of the Gulf rivers, and of these the Norman is far and away the best.

2. There is an unlimited supply of the purest fresh water in the upper reaches of the Norman River, within twelve miles of Normanton, amply sufficient for any conceivable growth of the Capital of Carpentaria, nor is there any difficulty in making this supply available at a reasonable outlay.

3. For eight (8) months in the year—March to October—the south-east trade wind, blowing with unvarying regularity and steadiness, causes the Norman Mouth to be in still water, most favourable for safe anchorage off the bar, and for the passage of vessels into or out of the river.

4. Three-quarters (¾) of a mile from the mouth of the river, turning to the S.W., forms a magnificent land-locked harbour three miles long by half-a-mile wide, with plenty of room and depth of water for any number of vessels to swing securely at anchor, whilst on the north head of the river (now known as Kimberley) there is rising ground admirably adapted for fortified earthworks to secure the entrance to the river from any possibility of attack. War vessels of large draught could not approach nearer than five or six miles, except by means of the channel that will require to be cut across the bar.

5. The

## Queensland Railways – A story of sleepers and Engineers

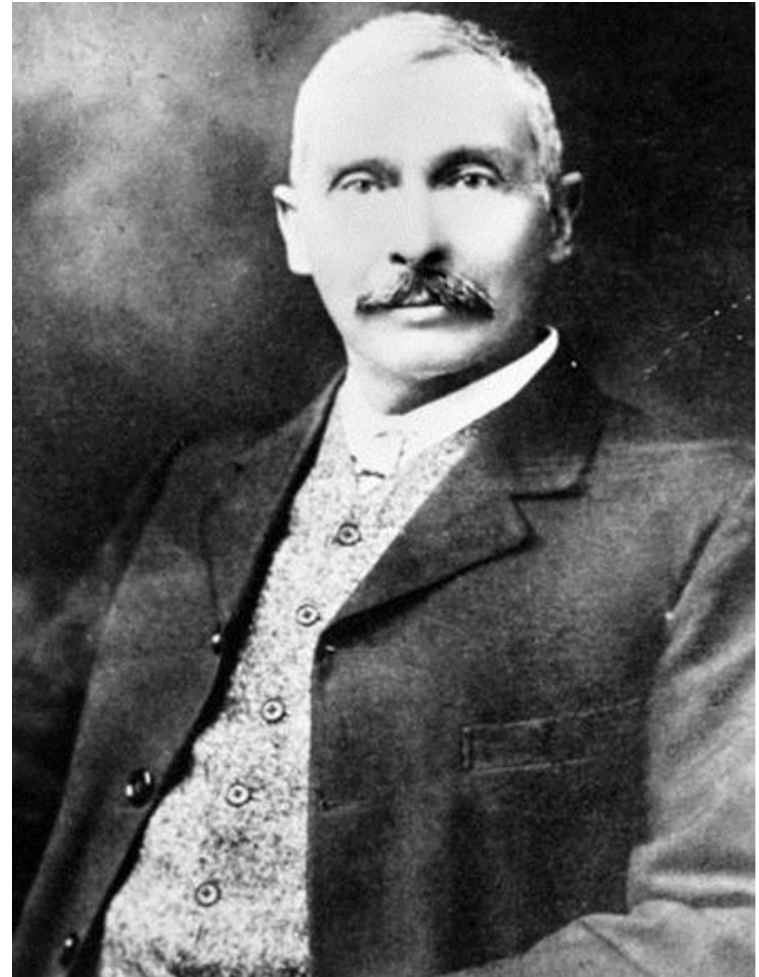
Phillips was a remarkably prolific individual, and his railway footprint can be found in many places throughout Queensland. Not only was he prolific in his working life, he was also prolific in the production of offspring. He fathered 15 children, and at his funeral 14 were in attendance.

“He was a man of tremendous breadth of interest, and wrote knowledgeably and intelligently on ports, mining, agriculture, water supplies and Aboriginal ethnology. He was a Parliamentarian and an alderman. His actions and opinions were influential in Queensland for some 60 years, especially in railway matters “.

J W Knowles, ‘George Phillips and His Patent Steel Sleeper’, ARHS Bulletin, No.392, June 1970. p132

In 1867 he explored south towards Cloncurry, from the Gulf, activities that would make him very familiar with the landscape and climate of that part of the North West, when he would supervise, and survey railway lines.

In 1868 he was appointed staff surveyor for the Kennedy district, and made surveys of what would become towns and settlements in north Queensland, places such as Bowen, Townsville, Cardwell, Ingham, and Mackay.



## Queensland Railways – A story of sleepers and Engineers



Materials train on the Great Northern Railway, around Julia Creek- Cloncurry, 1911-12. QR Historical Collection.

## Queensland Railways – A story of sleepers and Engineers

Phillips was greatly interested in the construction of light railways, or 'pioneer railways' as a low cost alternative for branch lines for the main lines, on the Queensland Railways. He had obviously been considering this approach for low cost lines, as around the time that he resigned his job with the Queensland government his first work appeared setting out his ideas for construction of such lines.

The first pamphlet, "Railways for Even Country- their Construction and Cost", detailed his approach to building these 'pioneer lines', laying the rails and sleepers, directly onto the natural surface of the land.

This meant doing away with embankments, low level bridges allowing for water in flood times to pass over the line.

When surveying the damage after the floods of 1887 in southern Queensland, on recently opened lines such as to Killarney etc., and noting the extent of damage, it was a theme he would return to, on several occasions..



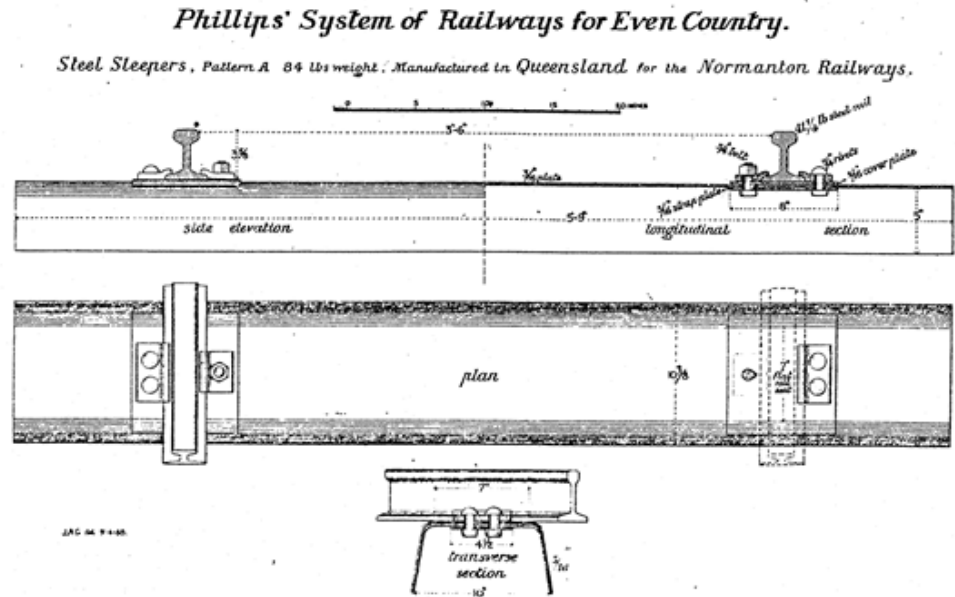
## Queensland Railways – A story of sleepers and Engineers

Phillips, who had patented the concept for his sleeper in 1884 envisaged a much heavier form of sleeper.

It was best described as being an inverted U shape. Also, as part of the design would be used to provide weight, the sleeper normally was 42kgs.

Phillips also devised a series of rail fastening and clips to hold the rails to the sleepers. The right of way was ploughed and lightly harrowed. The sleeper was then laid into that and gradually sank with trains until sides of sleeper cut through the ploughed earth, and as a result the sleeper came to be packed with soil.

Phillips also devised a series of rail fastening and clips to hold the rails to the sleepers. The rails once fastened, and the sleepers were then laid on to the ground (after the right of way had been cleared and ploughed in advance).





## Queensland Railways – A story of sleepers and Engineers

Phillips was very much aware of the problems that would be encountered in getting supplies of building timber:

“I purpose continuing in that direction for some distance past the 25-mile, and will cross Spring Creek about 40 miles from Normanton. Both grades and curves throughout this section will be very easy, but there is very little timber fit for railway or building purposes.

Occasionally I have seen a patch of eight or ten small bloodwood-trees which might be utilised; but it is quite clear to me that the timber required for the line must be brought from the southern part of the colony, and as little as possible should be used, for the whole country is so infested with white ants that they destroy even the growing trees, and they will attack boards which have only lain on the ground four or five days, while their nests are more frequent than trees in an ordinary forest...”

Extracts from the Minutes of the Proceedings of the Legislative Council. Minutes, no. 27.—Wednesday, 29 November, 1887.



Ant beds photographed around Quamby, during the Commissioner for Queensland Railways inspection, in July-August 1912. QR Historical Collection.

## Queensland Railways – A story of sleepers and Engineers

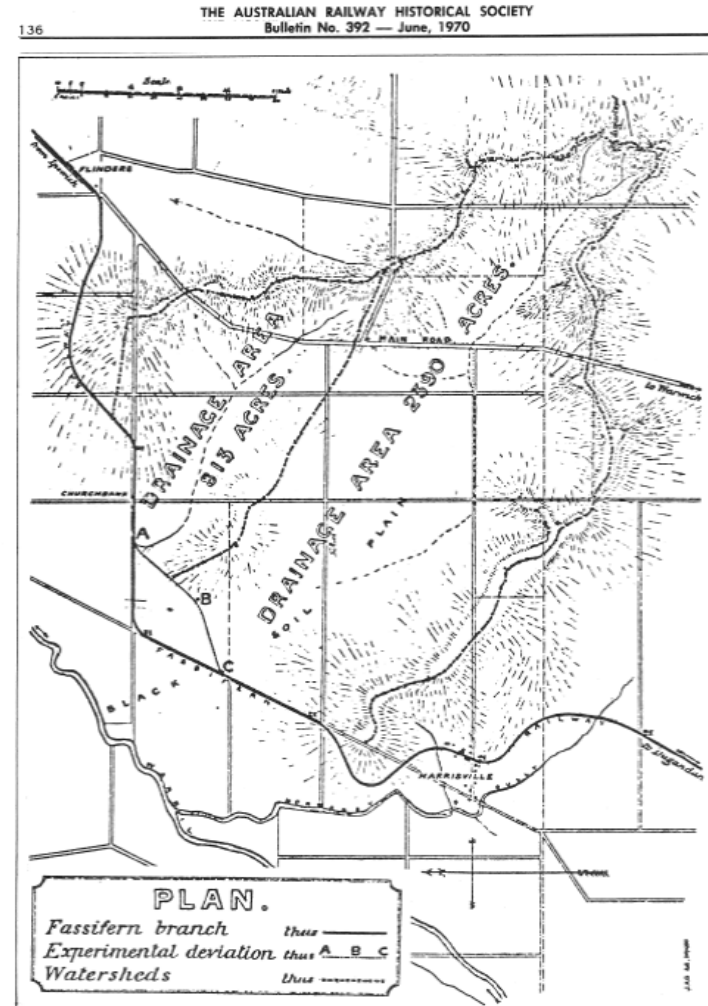
On the 12 October in the Legislative Assembly, Minister for Railways Miles laid plans for the line from Normanton- Cloncurry (38 miles) on table and a week later on the 19 October 1886 moved approval.

Miles said he regretted not having made personal inspection.

Willoughby Hannam, the Chief Engineer of the Northern and Carpentaria Division had reported on line and Mr Cullen reported that the Norman River was the only river suitable for a port. Hannam, said line mainly surface one, no heavy works, ruling grade 1 in 66 except a few chains of 1 in 44 approaching the Flinders River. It was noted that timber and ballast were scarce, but that a total of only 14,000 cubic yards required excavation, with a cost of £2400 per mile estimated.

Miles said the use of Phillips' patent steel sleepers under consideration but some members claimed need to test them would delay construction.

Miles finally suggested Beauraba [Pittsworth] branch as convenient quick place to test them . The use of the sleepers was suggested on two trial lines, the Beauraba line (Pittsworth) and the Laidley Valley (later Mulgowie Tramway).



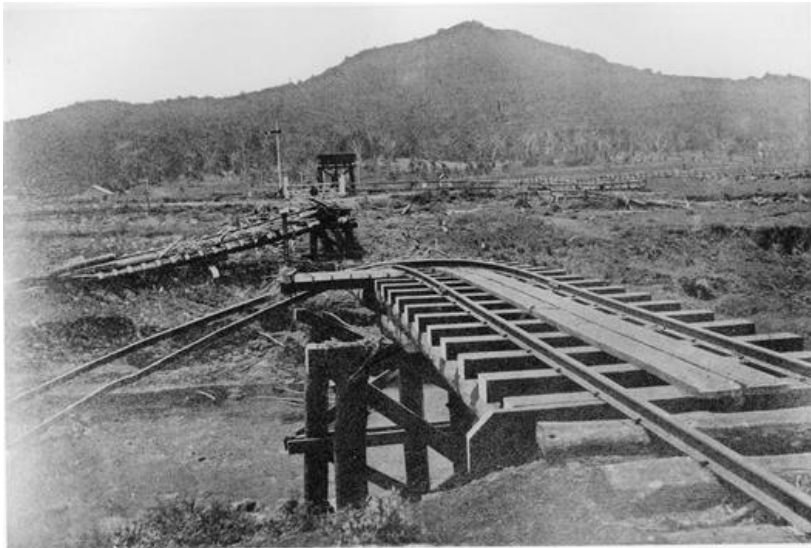
The experimental section of deviated line on the Fassifern branch showing the altered right of way.

## Queensland Railways – A story of sleepers and Engineers

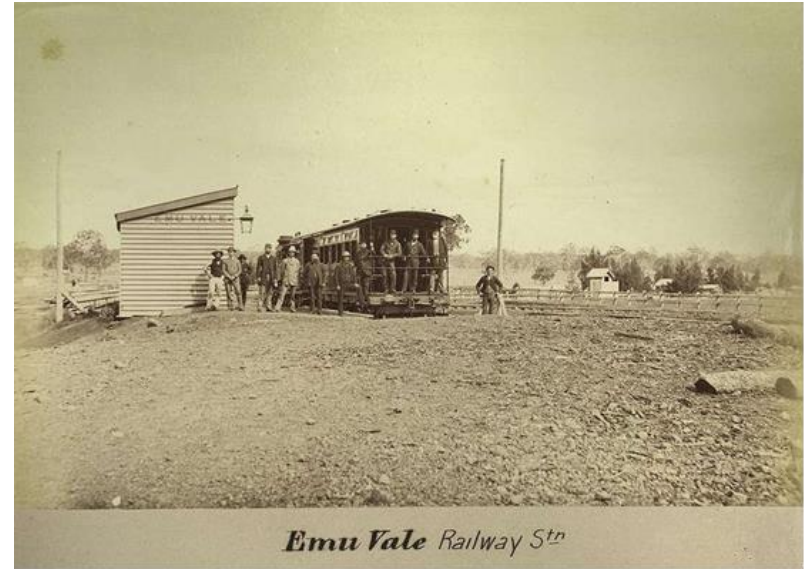
The trial section was also laid during one of the very wet periods of 1887, a year of heavy floods in Queensland..

It was also of great interest to the Chief Engineer of the Southern and Western Railway, H C Stanley, who opposed the Phillips system. Primarily as Stanley was building lines, to more 'traditional' approaches, (high level bridges, embankmenting, etc., although constrained by cost as well. Stanley put the Phillips sleepers and line through the wringer.

The trial section on the Fassifern branch was closed in 11 June, 1889



S. & W. Railway—Killarney Branch, built as a high level line. Emu Creek Bridge after great flood of January, 22nd, 1887.



*Emu Vale Railway Stn*

The first section of the railway line to Killarney, opened to Emu Vale, in 1885. Phillips provided photographic evidence of damage on the branch by the floods of January, 1887, to demonstrate his concept of providing a surface railway, with bridges etc. below the flood level, in an album. QR Historical Collection.

## Queensland Railways – A story of sleepers and Engineers

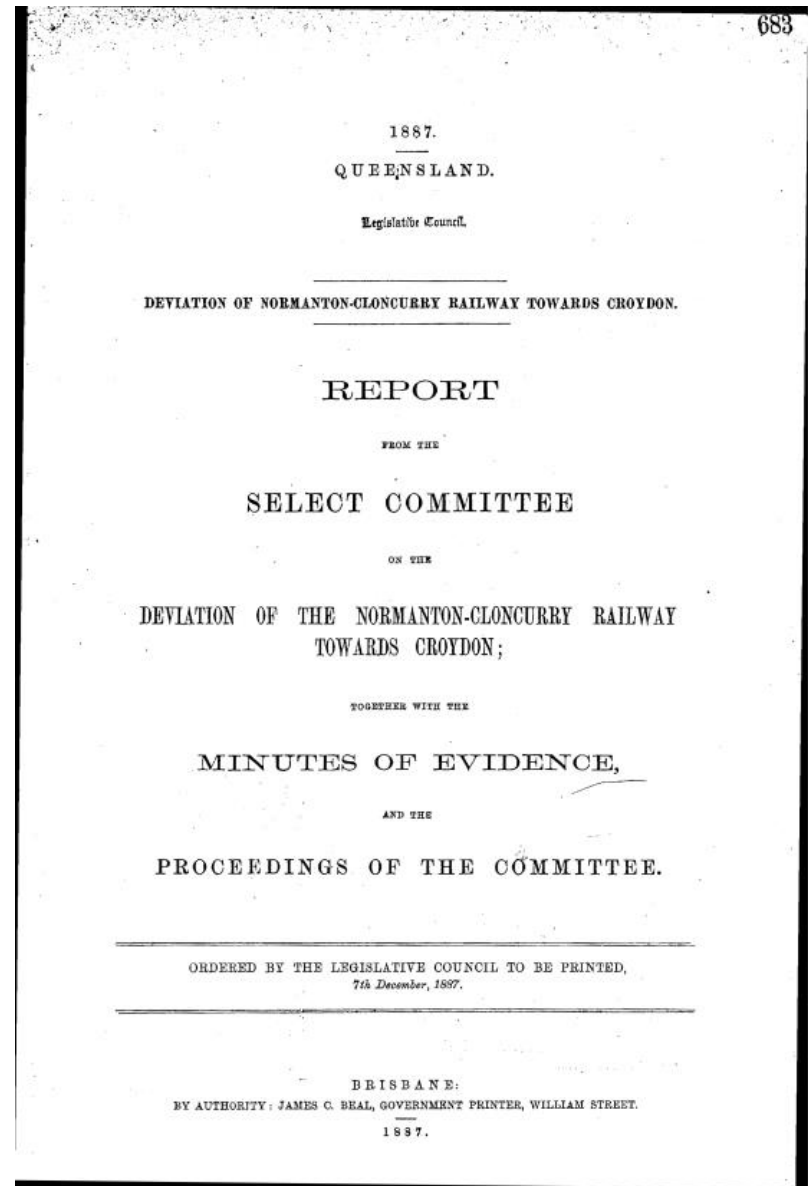
The relationship between H C Stanley and Phillips certainly was contentious, a fact that was borne out later in Phillips 1892 book on 'Pioneer Railways in Queensland'.

At the conclusion of the book, Phillips said:

"I had hoped that with the taking up of the experimental line, I and my system had passed out of the reach of the Chief Engineer; this however, unfortunately is not the case for the recent appointment of Mr Stanley as Chief Engineer of Queensland Railways, again brings my system under his review. For asserting a physical fact known to every schoolboy of the present day, Galileo was whipped; for asserting... that the surface soils... of Queensland can carry trains at fair rates of speed without the aid of artificial drainage and selected ballast, I am brought under the scourge of the Chief Engineer..."

In the Legislative Assembly on the 8 November, 1887, the Premier said that the Croydon line would open up pastoral and mineral land, but the government had no other way to raise money, for such a railway line.

The Railway Act required both money authorised and plans approved, by Parliament. Given the push for the line to Croydon, there was, he said no time before the end of the session to seek this. In order to have line complete or nearly so by end of 1888, the government had taken the unprecedented step of proceeding with construction although plans had not yet approved.



## Queensland Railways – A story of sleepers and Engineers

In July, 1887, the government called tenders for the purchase of 80 000 sleepers. Phillips was obviously in favour with the Griffith government, as the following year Phillips was appointed supervisor of construction of the first 70 kms (42 miles) of the Cloncurry railway, using his own sleepers.

The first 13 miles followed Phillips suggested route, to where a possible branch to Croydon, could deviate from the 'main line'. Contracts for the sleepers were let overseas, and also to the Toowoomba Foundry Company- which set up a purpose built works for the sleepers at Wooloongabba.

The Annual Report for the Commissioner for Railways for 1888 reported on the works that were underway. Section One from Croydon was not contracted for in usual way as it was decided to use Mr George Phillips 'patent new metal sleepers' and Mr Phillips was allowed to survey and supervise construction, with a schedule of prices being agreed upon

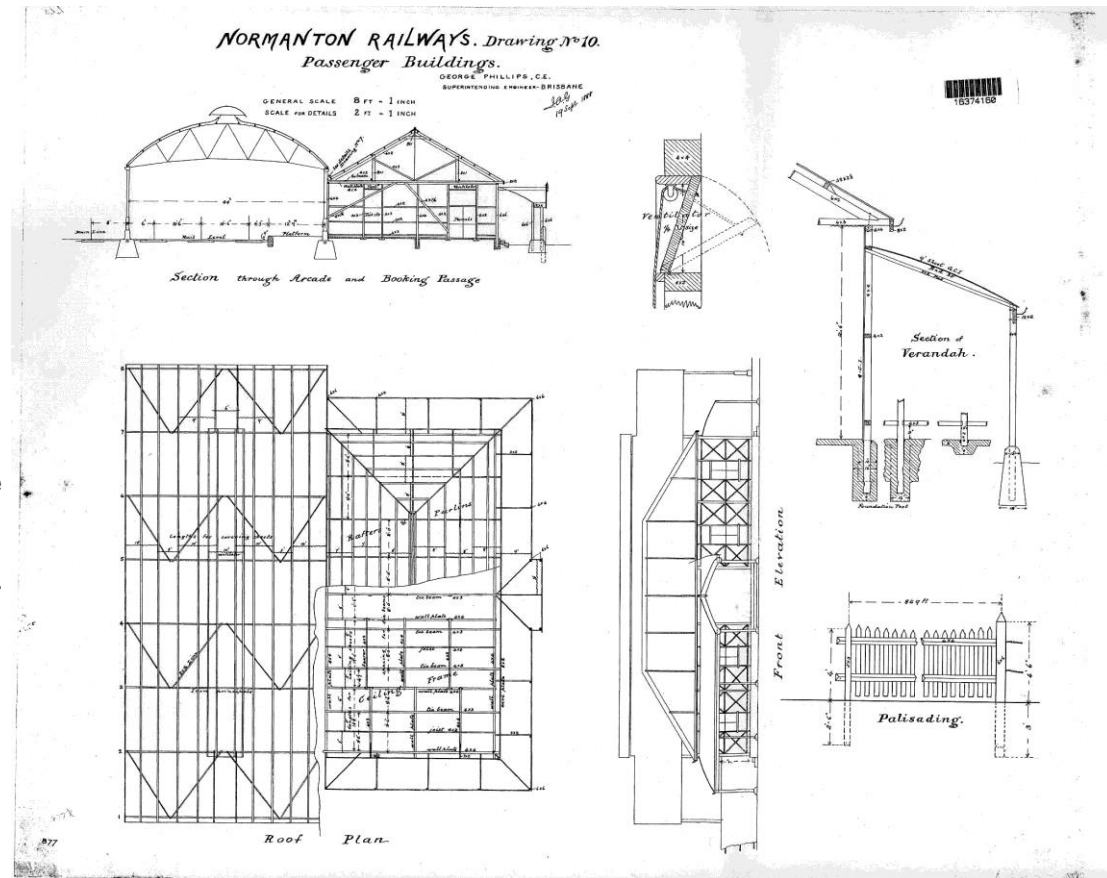


## Queensland Railways – A story of sleepers and Engineers

Plate laying began 7 July 1888, and reached the 32 mile post by the end of the year. The average amount of track that was being laid averaged 1 3/4 miles per week, however, this was allowing for delivery delays.

The average number of workmen engaged on the line was never more than 100. Phillips said again, in the Annual Report for the Commissioner for Queensland Railways estimated the total cost of Section One (37m43c) at £2600 per mile including station buildings, land, rolling stock etc., and not more £1788 for Section Two.

However, the construction of the Normanton station and the temporary terminus for Section One was not in hand until January of 1889. John Knowles also noted that apparently four or five of Phillips sons also assisted in the construction.



## Queensland Railways – A story of sleepers and Engineers

In 1889, the first trip in any numbers, (as it was referred to as), received a bit of coverage in the Queenslander.

“A large party, including the Mayor of Normanton (R.G. Shanklin), the chairman of the Carpentaria Divisional Board (A.S. Haydon), Phillips and Mr. Frew, started on the 10th of September (says the Times) on the first trip in any numbers on the railway line.

The train started at 5 p.m., stopping for a few minutes at the 6-mile camp, where it was noticed that a co-operative mess had been established by the men, then proceeding to the end of the line, ten miles from the Margaret and Jane landing, and about seven and three-quarter miles from the Normanton station.

Most of the party alighted, and Mr. Frew, at Mr. Phillips's request, explained the construction of the new line. But for the slow arrival of the sleepers much more work could easily have been done by now... over a portion of the line the speed travelled was about thirty miles per hour. All were pleased with the smoothness of the line”.



## Queensland Railways – A story of sleepers and Engineers

In early 1889 problems were again encountered in laying the railway. This was primarily with the supply and delivery to Normanton of the steel sleepers. Early in 1889, it was reported that the government had constructed the line to within 50 miles of Croydon but the supply of Phillip's sleepers had run out, and "there it remains for the present". Phillips dual role as both contractor and engineer on the line also caused concerns.

The Report for the Commissioner(s) for Railways noted that the tender for 134,000 steel sleepers was let just "before our appointment" but on finding these would be late, we authorised 20 miles to be laid with wood sleepers.

As the Griffith government wanted the line open as quickly as possible, the steel sleepers were not used throughout. On the first 36 miles the line was laid on 5ft 9inch by 10 inch by 5 inch steel sleepers weighing 84 pounds each that had been made in Brisbane from imported plate.

The next 45 miles were laid with steel sleepers 6ft by 10 by 5 inches, weigh 100 pounds empty, 7½ miles was laid with ironbark sleepers from Maryborough, 4s delivered Normanton, and the final 5 ¾ miles was laid with half round local bloodwood sleepers. Phillips stated that he expected that the bloodwood would resist white ants, but noted that the Ironbark used on the extension of old Haydon fork line "were much eaten" after only two years



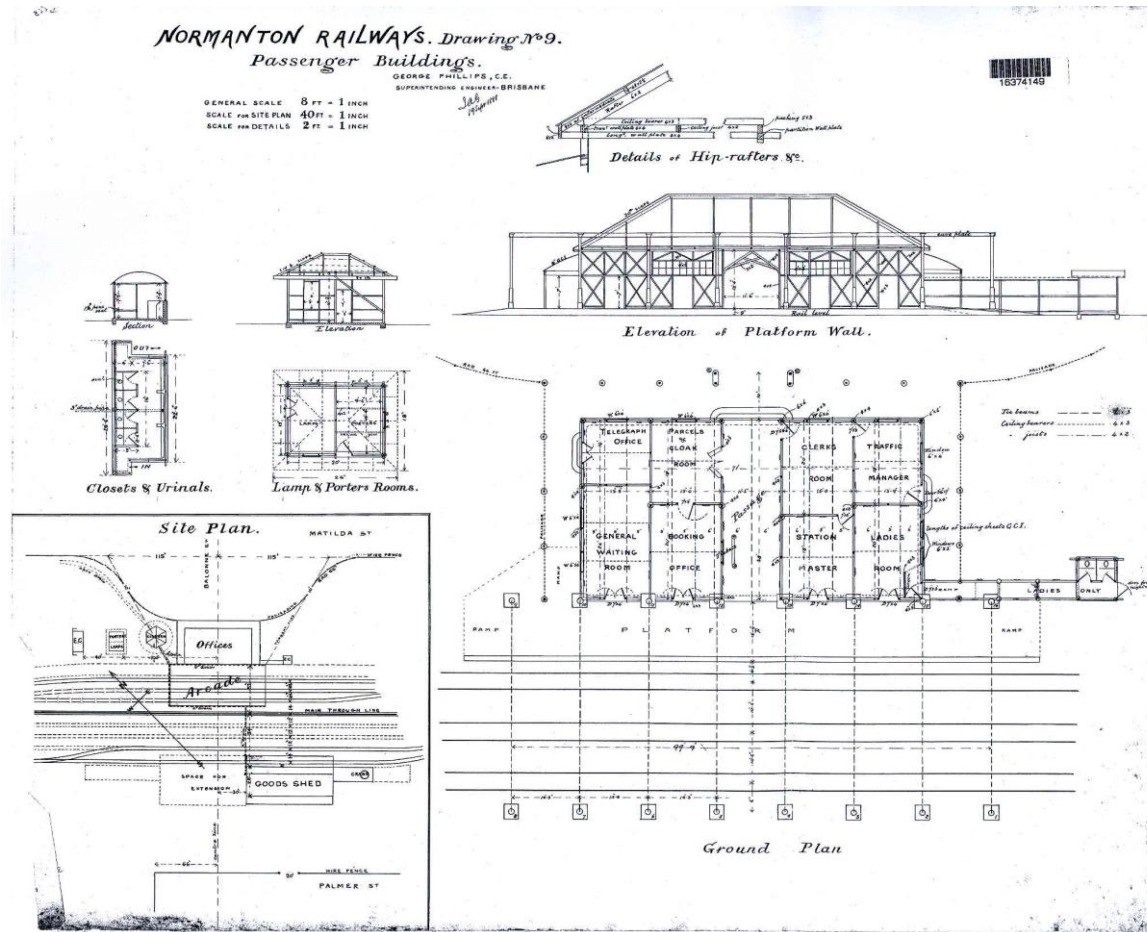


# Queensland Railways – A story of sleepers and Engineers

On 30 June 1891, the rails had been laid to 92 miles 30 chains, and the line opened 20 July 1891 for passengers and mails to Croydon although some buildings and permanent bridges not completed. Some of the statistics made interesting reading. The last 25 miles had been laid and lifted in 64 working days.

Best results were on a 40 chain section of wooden road one day with 87 men and 52 chain of steel road with 76 men. However, high wages had added to the cost.

The opening of the line was not to be the end of controversy about the experiment and the use of Phillips and his steel sleepers.



## Queensland Railways – A story of sleepers and Engineers

The success or otherwise of Phillips continued to fuel debate in many places. Croydon drank toasts and celebrated the opening of the railway. The Legislative Council considered it a success, but, other engineers disagreed. The fact that when flooding took place on the Norman River, in January 1890, covering 20kms of line with water was seen as a vindication by Phillips, when as soon as the waters receded, trains were able to start operating again.

“Perhaps the most worthless stretch of land in all Queensland is that piece lying between Croydon and Normanton, a distance of ninety-four miles... in the wet season the most active duck ever born would be sure to get hopelessly bogged.

Before the railway was constructed the coach journey between the two towns was one of considerable difficulty and risk. Coaches were wrecked and bogged, while the unfortunate passengers were half poisoned with strange compounds obtained from unique accommodation houses or nearly done to death by mysterious insects which prowled around by night... All these terrors have been removed by the railway, and the traveller can now reach Normanton from Croydon in five or six hours. In the construction of the Normanton - Croydon Railway Mr. George Phillips's steel sleepers have been used, and have proved a great success...”

The *Queenslander*, Saturday 24 October 1891, page 799

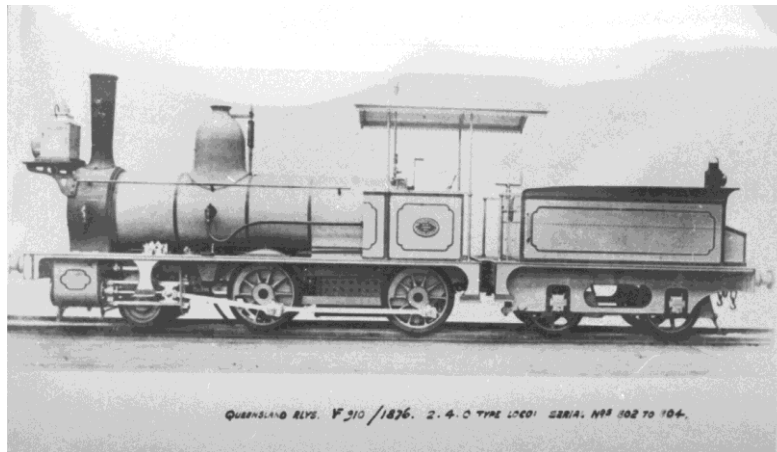
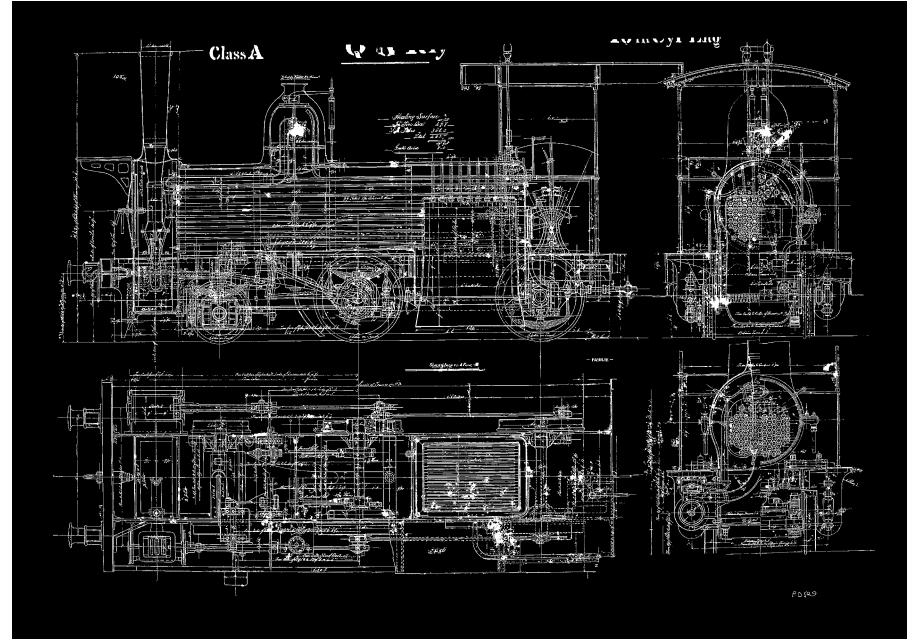


## Queensland Railways – A story of sleepers and Engineers

Phillips was to go on to truly make his mark, on the railway landscape of Queensland. Around the time of the publication of 'Pioneer Railways for Queensland', he gave an interview to a reporter in the Brisbane Courier, and he again pushed for his ideas on the developmental railway

"Light railways" have for many years been a special "hobby" with Mr. George Phillips, the late member for Carpentaria. In and out of Parliament, he has never wearied of urging the necessity for and the great advantages to be obtained from a cheaper system of railway construction than that followed in the colony...

Let every facility be given for the laying down of rails, heavy rails, medium rails, and light rails, on roads, or off roads, anywhere, everywhere, and almost anyhow. Remove all artificial and arbitrary restrictions on the laying down of rails ; get all the traffic you can to run on rails, and the country is bound to go ahead, as fast as nature will permit."



In 1890, Normanton Nos 1, 2 and 3 were became part of the system wide Queensland Government Railways (QGR) renumbering list as: no. 202 (Vulcan 802), No. 203 (Vulcan 803) No. 204 (Vulcan 804). Two of these locos were condemned at Normanton in 1895. QR Historical Collection.

## Queensland Railways – A story of sleepers and Engineers

Phillips however was to remain large in the story of the developmental railway for Queensland for the next three decades. He continued to recommend the use of surface railways for developmental lines in Queensland. Although, no longer with steel sleepers. H C Stanley retired in 1902, and a system of 'earth packed lines' were then built using an adaption of the Phillips.

Phillips retained a financial interest in one of the Croydon gold mines, and represented the Carpentaria electorate as a Member of the Legislative Assembly from 1893-96. He also stood as the Member for Nundah, in 1907. In 1903 Phillips visited New Caledonia, and his contributions after this visit to the 'Telegraph' newspaper were apparently widely read.

For many years he was a leading member and fellow of the Royal Geographical Society, and contributed several valuable papers.



## Queensland Railways – A story of sleepers and Engineers

Some of his other railway works show how much he obviously was kept busy, He investigated the Humpybong, (Redcliffe) railway, in 1892, (a railway finally being opened in 2016), and to Buderim.

He inspected the route of the Cairns Mulgrave Shire Tramway in 1895, and in 1896 was made Inspector of Artesian Bores. He also surveyed a railway from Clermont to Charters Towers, the Laheys' Canungra Tramway, and in 1899 was part of the three man board and Court of Inquiry that was charged with investigating the two boiler explosions on the Queensland Railways.

In 1902-03 he returned to railway building again, supervising the construction of the Beaudesert Shire Council Tramway that opened to Innesplain and Lilybank, (a branch up Christmas Creek), on 10 October 1903.

In the same year he inspected the tramlines of the Moreton Central Sugar Mill, surveyed the railway to Goombungee. Plus other lines out on the Darling Downs and the Burnett area.

He also surveyed and engineered the Belmont Tramway between, 1910-11. Other railways that he was involved with were the Palmwoods –Buderim Tramway, for the Maroochy Shire, and the Mapleton Tramway, in 1914. Another line that he was associated with for a Shire Council was the Aramac Tramway, that he supervised between 1911-13.



## Queensland Railways – A story of sleepers and Engineers



The only example of a PB15 class steam locomotive to be built at the Ipswich Railway Workshops, was specially built for the Aramac Tramway. PB15 A1 gave many years goods service on the line that lay in the grass between Barcaldine and Aramac. 'The Tram' was photographed at Bowyer, on the Tramway, in the early 1950s. Queensland Rail Historical Collection.

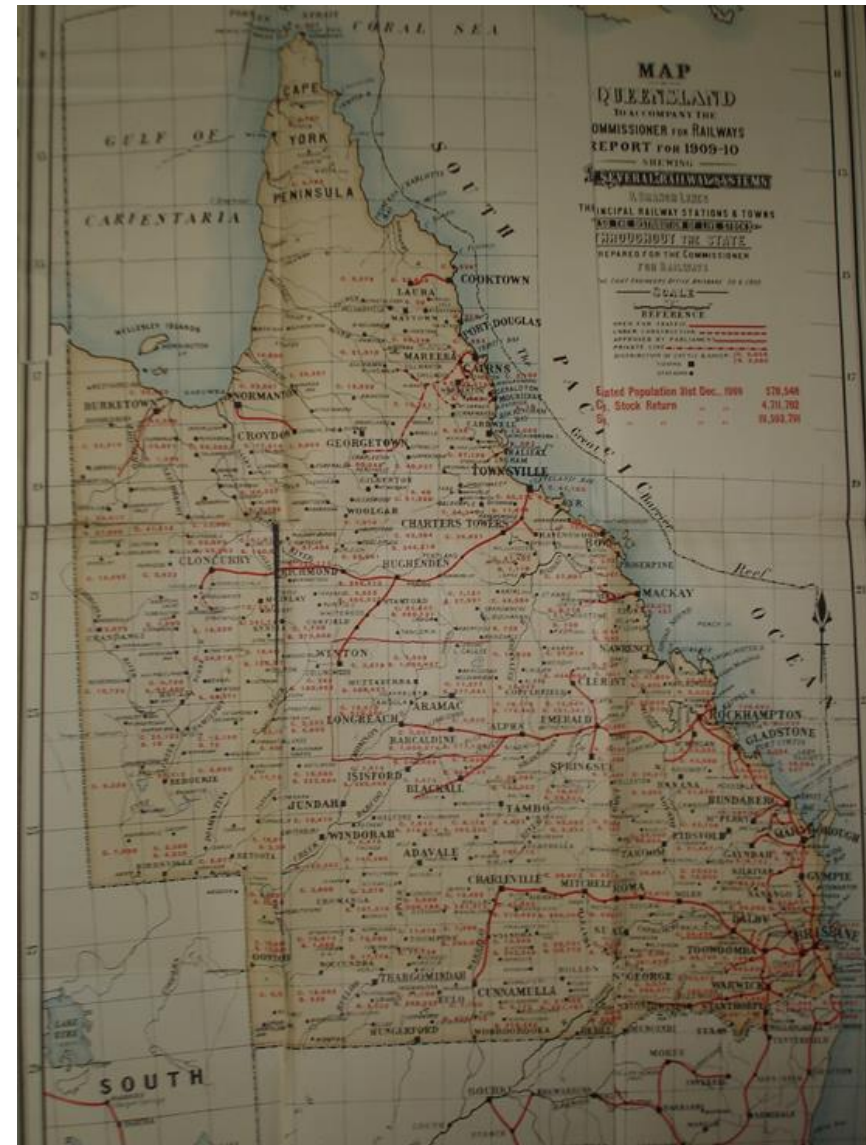
## Queensland Railways – A story of sleepers and Engineers

One thing that was obvious about Phillips and his prolific career, is that he was extremely competent, and also enjoyed working in Queensland. The engineers and contractors of the mid latter Victorian era in Queensland, and into the early 20th century were remarkable not only in their experience, but, also in their interests.

There was an interesting comparison made with him in relation to the engineer Robert Ballard, who had been in charge of the heavy works on the Main Range railway to Toowoomba (Section Five of the Southern and Western), and the art of self promotion of both

“George Phillips strove zealously to make Queensland great. He was a pioneer in thought as well as in the physical sense of exploration. All newspaper men knew him a man of great ability and of high professional reputation, but always ready for a chat or a joke and never failing when information was required... Quite recently reference was made to the work of [Robert] Ballard in pioneering, the cheap surface lines but really George Phillips did more than Ballard both in propaganda and in practical work.”

*Brisbane Courier*, Saturday 17 January 1925, page 19



The Queensland Railways system in 1909-10, showing the Normanton-Croydon Railway, plus the other isolated railway systems of the state, prior to the passing of the *Great Western Railway, and North Coast Railway Acts*, of 1910.

## Queensland Railways – A story of sleepers and Engineers

The steel sleeper was a success only because traffic light and axle loads low, and as a result speeds were kept low. A heavy axleload however, was likely to fracture the sleepers. The steel sleepers might have resisted white ants, but it was quickly corroded by salt (near the Norman River flats and bridge, and on line to Margaret and Jane Landing).

The vast majority of the steel sleepers (including those put in to replace the timber sleepers) are still in place. On the benefit side had termites not been a problem and timber sleepers had lasted as long as elsewhere on the Queensland Railways, the steel sleepers saved enormously on sleeper replacement.

The steel sleeper had good longitudinal stability, and held the track in that direction, but under the forces of heat expansion, it had poor transverse stability, allowing the sleepers to slide sideways, and resulting in the unique kinks of the Normanton Croydon Railway.





Q



The 'new' Croydon station, in 2004. The first roofed (carriage shade) station in Queensland, since Townsville station in 1913.

## Queensland Railways – A story of sleepers and Engineers

