

Background on the closure of the Main North Rail Line north of Armidale

Grahame McClenaghan, former State Rail Engineer and Structures Manager in charge of the rail line prior to and after the cessation of rail services north of Armidale in 1989.

1. Closure of the Main North Line north of Armidale

The **Queensland** rail line north of the NSW border (Wallangarra) closed to passenger and freight services in **1972** (some **54 years** ago). Queensland Railways built their lines to narrow gauge standard which also meant a lower standard of alignment in difficult terrain. The Qld rail line to Warwick was built to the lower branch line standard, not main line standard.

The NSW Main North Line was built to mainline steam standards of the day and was always hampered by the break of gauge at the Qld border and lower standard of rail line to the north. Freight and passengers had to be offloaded and reloaded at the border onto different trains.

Since 2019 the Queensland line between Wallangarra and Ballandean was badly damaged by bushfires destroying many of the timber bridges and other structures.

The Sydney to Brisbane main coastal continuous standard gauge rail line was completed in 1932. Interstate passengers on the Main North Line then started to reduce in number, particularly closer to the Qld border.

The last train service between the **Qld border at Jennings and Tenterfield** ceased in **1988** (38 years ago). It had been kept open to allow military rail freight access to the border munitions dump until the military started using road-based transport.

The last train service between **Tenterfield and Armidale** ceased in **Oct 1989** (37 years ago).

I was responsible for closing the line north of Armidale in 1994 due to the degraded state of the timber bridges. At about this time, Angry Anderson during the drought of 1994, had arranged a fodder train to Moree. When there were problems getting to Moree, due to a derailment at Baan Baa, political pressure was applied to try and take the train instead to Glen Innes.

However, the condition of bridges at the time made this impossible. I was contacted twice by control to approve the line open for the fodder train. This was refused due to the condition of timber structures with multiple "A" category defects. I informed control that the train will derail. *Defect categories are explained under point 6 below.

The passenger rail service between Armidale and Tamworth was also closed in Feb 1990 (former Northern Tablelands Express) until political pressure resulted in its reopening in Oct 1993 with the Xplorer passenger service. During this period some upgrades were undertaken to facilitate the new Xplorer service including replacement of some sleepers and rail to 90lb, minor timber culverts, and some embankment widening.

Even at its peak, the line north of Armidale was only suitable for lighter weight locomotives. The line was restricted to 48 class diesel electric locomotives with 12.5 tonne axle loads. The heavier, now heritage C38 steam class locomotives with 22.8 tonne axle load could not run on the line. This is due to the two wrought iron constructed truss bridges at Tamworth (Peel River) and Woolbrook (Macdonald River).

2. Cost of refurbishing passenger rail to Glen Innes

In 1996, I undertook a project to examine the cost of refurbishing the bridge structures between Armidale and Glen Innes to allow a light 2-car motor rail passenger service.

Cost in 1996 was estimated at \$39 million (including the normal 30% contingency) just to refurbish the route for a passenger service travelling at a maximum 80 kph and did not include freight services. Freight services would require much more extensive upgrading.

Based on calculations using the Australian Bureau of Statistics consumer price index (CPI), \$39 million in 1976 would be worth approximately **\$87 million AUD** in 2026.

3. State of the Main North Line

Between West Tamworth and Armidale, some 80 lb/yard line (39.6 kg/metre) was upgraded using second hand 90 lb/yard line (44.6 kg/m), some with welded sections, to enable the new Xplorer passenger rail service to Armidale.

The 80 and 90 lb line south of Armidale limits the total speed in affected sections and weight of freight trains overall.

In some sections, every fourth sleeper, and in other sections one in six was renewed with steel and timber sleepers during this same period.

Most of the rail line consists of shorter, jointed sections and not the more modern welded continuous line.

The Main North Line **north of Armidale** has been disused for **37 years** and has deteriorated through expansion and contraction due to weather causing misalignment. The steel is high

tensile and prone to fracture due to weather. Extremes of temperature and extreme wet impact the formation and vertical and horizontal alignment of the line.

Each joint whether bolt and plated, or welded, would need to be re-examined and rebuilt as these joints regularly break due to weather extremes.

Due to no maintenance since closure, the rail line will be out of alignment due to uneven formation, deterioration from expansion and contraction and consequent plated joint failure at all joints, points and crossings and curves. Formation failure, embankment collapse and all timber structures were decommissioned due to 'A' category defects.

The line would have to be completely rebuilt and the current rail lines themselves "could never be certified for rail use" due to the deterioration described above.

The rail corridor and rolling stock are designed to certified structure and rolling stock gauge standards. These specify the width and heights for appropriate clearances. Current structure gauges north of Armidale (ie. cutting widths, overhead bridge heights and widths) would not permit modern passenger and freight traffic on current designs being steel truss bridges, tunnels and road over bridges

Modern containerised rail freight services such as for the proposed Inland Rail, specify double stacking of containers. Whilst this has been suggested for the Main North Line, it is not currently possible. Height restrictions from Murrurundi north to Tenterfield would make this unrealistic and impossible.

Height restrictions that effect this freight system are the Ardglenn tunnel; the Tamworth steel under bridge over the Peel River; the Woolbrook steel under bridge over the McDonald River; the Limbri tunnel; and all the road over bridges including the heritage brick arch over bridge on the New England Hwy at Tintinhull, near Tamworth.

The structures at Tamworth, Tintinhull and Woolbrook all have permanent speed restrictions.

The railway corridor north of Armidale is gazetted a fenced line, thus defining the corridor from adjoining properties.

4. State of MacDonald River Bridge (Woolbrook) and Peel River Viaduct/Bridge (Tamworth)

Both the MacDonald and Peel River truss bridges are showing many hairline cracks in the wrought iron structures over the entire bridges. To increase passenger train speed limits, significant maintenance and additional supports are required on both bridges.

Both bridges have 10km/hr speed limits as well as weight limits due to these defects. The crack areas on the MacDonald River Bridge are spray painted white.

The MacDonald and Peel River bridges would have to be completely rebuilt before any major freight services could travel north.

Any major failure of either the MacDonald River Bridge and/or Peel River Bridge and viaduct would result in passenger rail services terminating in West Tamworth.

5. Infrastructure Defect Categories

After the 1966 South Coast Line landslide disaster at Coalcliff, the coroner's report found that there was a process of examining structures in NSW, but that there were not any processes to categorise defects or a formal reporting procedure apart from written documentation in the bridge and structures reporting books.

A new process was implemented and was made up of defect categories, 'A to E'.

A minor defect, where no action is required except for regular cycle examination was categorised as 'E'. On the other end of the scale, category 'A', is a defect that exceeds the safe working of the structure's members. When the defect was found and documented as category 'A', control was to be informed, no train was to pass by that section, and the Structures Manager was to be contacted immediately. The Structures Manager was then to immediately undertake his own inspection to determine what action should be taken.

In 1996, the track manager Tamworth and I were instructed to each compile an estimate to reinstate the structures and the line from Armidale to Glen Innes for a two-car set rail motor at 80 kph track speed.

My estimate was 30 million dollars plus 30% for bridge replacements and the track estimate was greater due to track work and major earthworks required.

A detailed examination was carried out by my bridge examiner to determine the severity of structure's defects at the time, and determine the severity of the line condition, mainly due to timber structure's condition. Each timber structure examined had multiple 'A' category defects resulting in the line being moth balled.

I believe that by now the structures that had lesser categories of 'D' or 'E' would now be 'A'.

The various gauges (widths, heights) for the NSW rail network are:

- rolling stock gauge,
- structures gauge,
- platform gauge, and
- rail gauge.

6. Heritage rail services

To run a heritage train to Guyra, the rail would have to be completely rebuilt before the line could be certified for use. All rail carrying trains must be certified for the specific train and this is a rigorous process. The cost of bringing this line up to certified standards would be very significant.

The line south of Armidale is certified for the Xplorer passenger train, and it would be easier to run heritage rail. However, New England Railway Inc (NERI) would have to obtain a permit to use the line and may run into the Transport for NSW (TfNSW) “ghost train” requirement. TfNSW may require clear lines so they could run any sort of train, such as inspection and ballast trains on the line at any time during weekdays. It may be that only a weekend heritage permit is possible.

Train drivers, as well all personnel involved in the day to day running of trains need to be certified for the piece of rail line intended to be used by the rail regulator, TfNSW. In addition, the regulator also needs to approve the required insurances before any train can be certified.

Insurances have proved very expensive and restrictive for Tenterfield and Guyra heritage train interests. I believe the Tenterfield group could no longer continue to operate due to blow out in insurance costs, as for the Guyra group and operate basically within yard limits.

Certified engineers would likewise need to inspect and certify any train sets using the line. Licences are only valid for the section of line being applied for.

A scheduled, regular funded maintenance program would also need to be approved by TfNSW.

Currently, the heritage C3801 steam train is unable to travel north of West Tamworth because of axle load and wheel spacing limitations of the existing line north to Armidale.

Summary

Rail services north of Armidale have not operated for between 32 and 54 years due to falling demand against rising costs of running the service and maintaining safe infrastructure.

The rail line between **Tamworth and Armidale** is currently only suitable for passenger services and not for heavy freight. Vulnerabilities also currently exist for passenger services due to the condition of the Peel and MacDonald River bridges.

To reinstate passenger or freight rail services north of Armidale requires:

1. a complete rebuild to ensure a satisfactory alignment and formation upgrade,
2. replacement of all railway bridges,
3. replacement of some overhead bridges due to gauge issues (clearance widths),
4. replacement of sleepers and rail line upgraded to a predetermined weight carrying standard, and
5. major upgrade of bridges and other infrastructure between West Tamworth and Armidale.

The history of low passenger numbers and minor bulk freight north of Armidale to the border has not changed. The growing efficiency of multi trailer road transport is outcompeting rail freight on regional and many interstate rail lines.

The change of rail gauge at the Queensland border coupled with a lower standard of alignment in Qld has always impacted on the practicality of the Great North Line being an interstate line.

Employment History

1983-1992: Bridges and Buildings Inspector, Binnaway with NSW State Rail, Rail Infrastructure, Freight Rail and Public Transport Commission. All NSW government employed.

1992-1998: Structures Manager, Werris Creek with NSW State Rail, Rail Infrastructure, Freight Rail and Public Transport Commission.

From 1983 managed all rail infrastructure structures in the New England from Scone north as Bridges and Buildings Inspector and Structures Manager Engineer.

In these roles, I was totally responsible for the maintenance and safety for all structures within my track district.

Rail lines included in my area of responsibility were the Great North Line, Werris Creek to Wallangarra; Werris Creek to Binnaway; Merrygoen, Binnaway to Gwabegar; and Werris Creek to Narrabri Junction.

1998 – 2007: Projects Engineer/Manager. Involved in project construction teams metropolitan and north and northwest NSW.

2007-2010: Bridge Certifier assisting with project works. Seconded to Australian Rail and Track Corporation (ARTC)

Qualifications: Certified Railway Engineer; Railway Civil Engineer (Rail Engineering College, Blue Mountains 4yrs); qualified Bridge Examiner and Certifier (timber, concrete and steel); Safety Certifier.

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