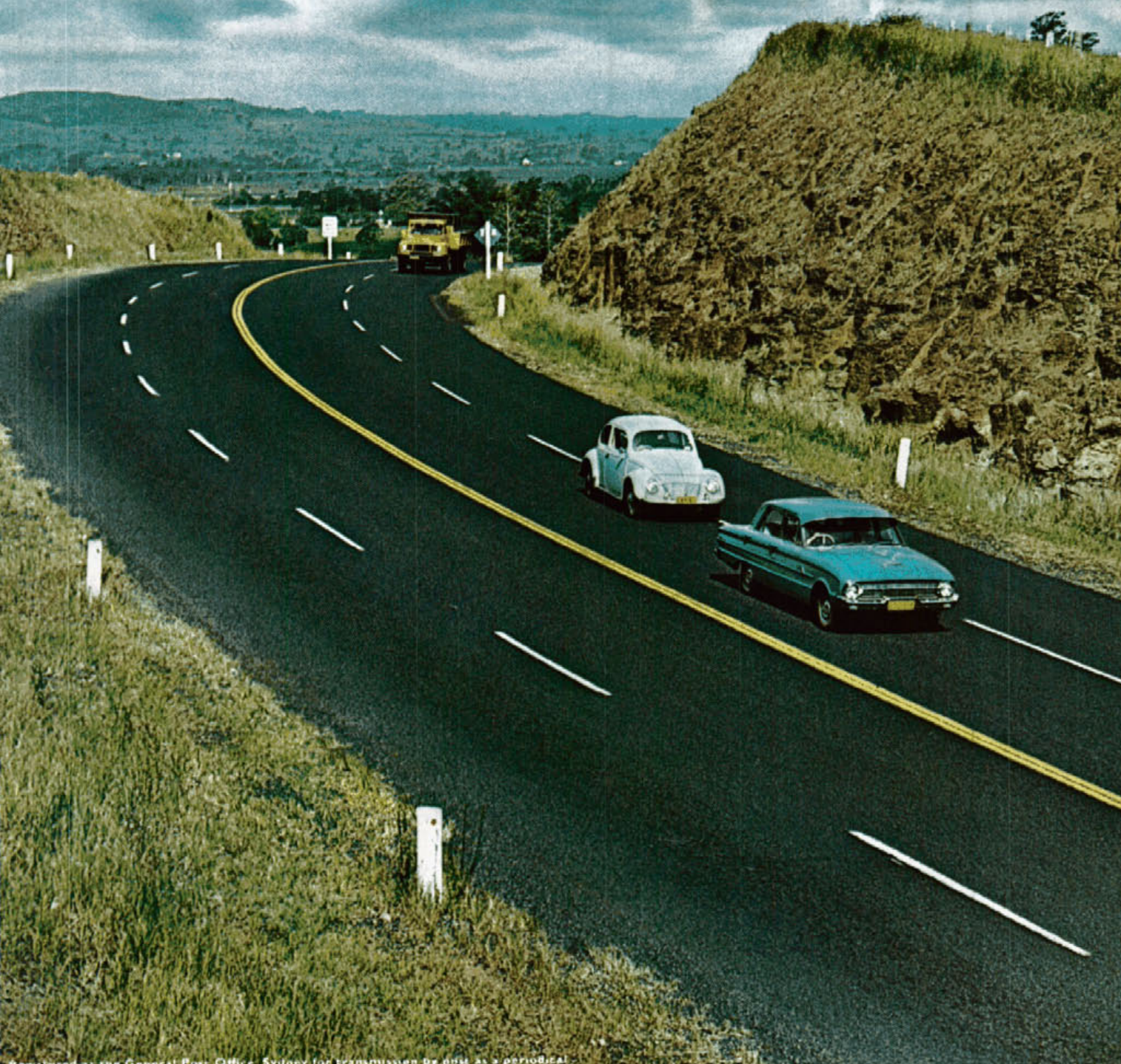
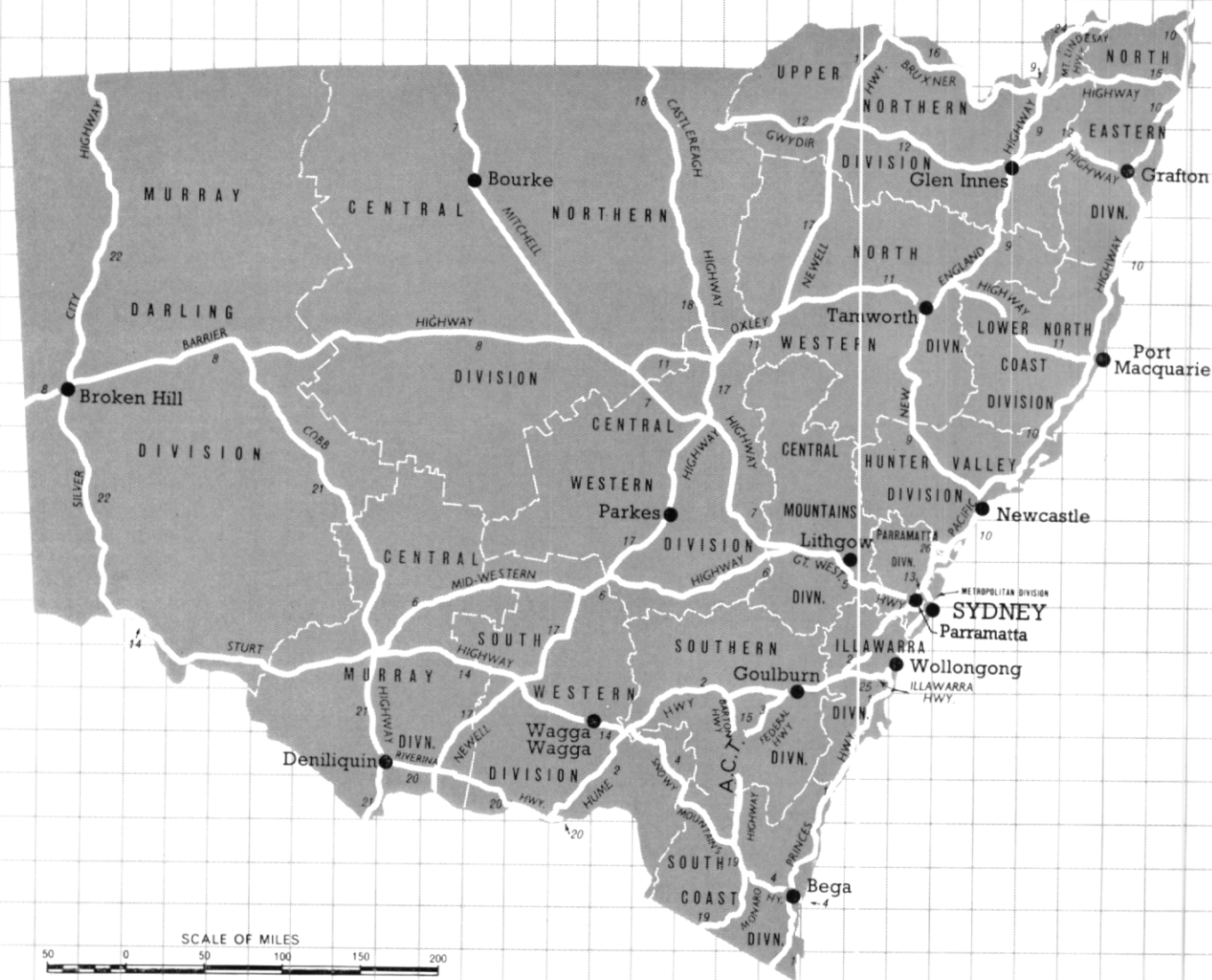


# MAIN ROADS

MARCH 1968







## HIGHWAY SYSTEM OF NEW SOUTH WALES

Mileage of Main and Developmental Roads,  
as at 30th June, 1967

State Highways	..	..	..	..	..	6,548
Trunk Roads	..	..	..	..	..	4,232
Main Roads	..	..	..	..	..	11,629
Secondary Roads (County of Cumberland only)	..	..	..	..	..	157
Tourist Roads	..	..	..	..	..	196
Developmental Roads	..	..	..	..	..	2,736
						<hr/> 25,498

Unclassified roads, in Western part of State,  
coming within the provisions of the Main Roads  
Act .. .. . 1,198

**TOTAL** .. .. . **26,696**

*Area of New South Wales, 309,433 square miles  
Length of public roads within New South Wales,  
131,300 miles*

*Population of New South Wales at 30th June,  
1967—4,300,083*

*Number of vehicles registered in New South  
Wales at 30th June, 1967—1,630,769*

	STATE HIGHWAYS
	DIVISIONAL BOUNDARIES
	DIVISIONAL OFFICES

# MAIN ROADS

Journal of the Department of Main Roads, New South Wales

MARCH, 1968

VOLUME 33 NUMBER 3

Issued quarterly by the  
Commissioner for Main Roads  
R. J. S. Thomas

*Additional copies of this journal  
may be obtained from*

Department of Main Roads  
309 Castlereagh Street  
Sydney, New South Wales, Australia

PRICE  
*Thirty Cents*

ANNUAL SUBSCRIPTION  
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available on request

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*Front and back covers: Sections of the Bruxner Highway following reconstruction*

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## Bridging the Waters

The recent announcement that the Department of Main Roads will shortly be inviting contractors to tender for the construction of a new bridge over the North Arm of the Hunter River between Walsh Island and Stockton Peninsular, Newcastle, heralds the commencement of construction of the longest bridge built in New South Wales for nearly 40 years.

When completed, the new bridge will be 3,357 feet, or about five-eighths of a mile long and will be second in length to only the Sydney Harbour Bridge, opened in 1932, which is 3,770 feet long.

The new bridge will have 23 spans of prestressed and reinforced concrete comprising 16 spans in the two approach viaducts, 8 on either side, varying in length from 90 to 110 feet and 7 main river spans varying from 210 to 270 feet in length. The central river span will provide navigational clearances for river traffic of 200 feet horizontally and 100 feet vertically.

The construction of this very long bridge will be a significant milestone in the extensive programme of bridge building undertaken by the Department in post-war years. This programme—designed to replace worn-out bridges; to replace vehicular ferries with bridges; to eliminate railway level-crossings; to provide wide bridges where conditions are inadequate for present-day traffic, particularly single-lane bridges on State Highways and two-lane bridges in the major urban areas; and to provide structures where none at present exist—has resulted in more than 1,600 bridges being built on the Main Roads System of New South Wales since 1947.

The tempo of work has increased to such an extent during this period that the Department is currently completing construction of an average of one bridge every 2½ days of the year.

An interesting and unusual feature of the bridge to be built at Newcastle will be the provision of a central footway five feet wide. Access to the footway will be by means of a stairway beneath either end of the bridge.

The completion of this bridge and the further improvement of the road connection north to Port Stephens will materially assist the development of the largely untapped maritime and tourist potential of this area.

The development, which will surely follow the completion of this work, is indicative of the development which always follows in the wake of "bridging the waters".

# historical roads of new south wales

*Clifton Station — 1879*

*Bridge over Wilson's Creek, Lismore — July, 1884*



# The Bruxner Highway

BY J. HARRISON, B.A.

## *Sir Michael Bruxner*

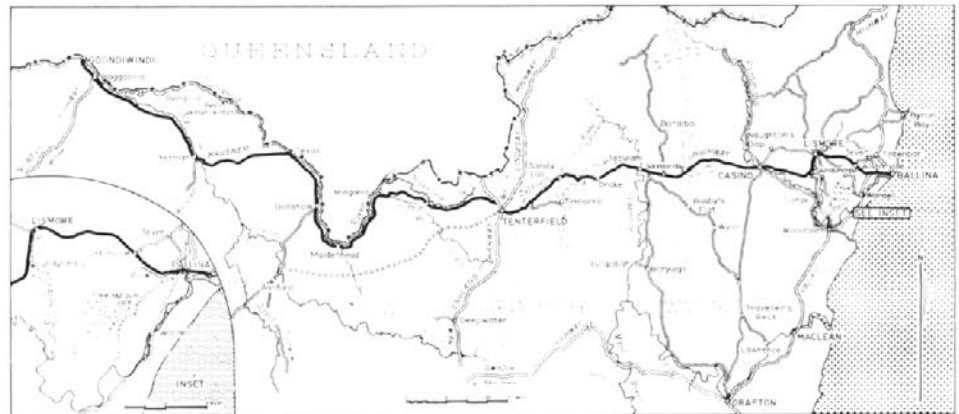
Lieutenant Colonel the Hon. Sir Michael Frederick Bruxner, K.B.E., D.S.O., M.Inst.T., represented the Tenterfield area in the Legislative Assembly of New South Wales for 42 years. He rendered distinguished service in the first world war at Gallipoli, in Egypt, Palestine and Syria.

The first leader and a founder of the Country Party of New South Wales, Sir Michael, as Minister for Local Government from 1927 to 1930, was responsible for an amendment to the Main Roads Act which provided for the re-classification of the principal roads of the State. The Country Main Roads were classified in accordance with their order of importance, as—

State Highways,  
Trunk Roads, or  
Main Roads

and the Sydney Metropolitan Main Roads as—  
State Highways, and  
Main Roads.

*Sir Michael Bruxner, K.B.E., D.S.O.,  
M.Inst.T.*



In connection with this reclassification, the State accepted the full financial responsibility for all work on State Highways.

This amendment has been of the greatest benefit to the road system of New South Wales, in that it has resulted in the progressive improvement of the principal Main Roads of the State.

Sir Michael was born and raised at Sandilands, near Tabulam, a property fronting State Highway No. 16 which stretches from Ballina to the Queensland border at Goondiwindi and serves the district where he spent most of his life.

As a fitting tribute to Sir Michael towards the end of his career in the Legislative Assembly, State Highway No. 16 was named the Bruxner Highway on 2nd November, 1959.

### *Description of the Route*

The Bruxner Highway, 272 miles in length, was proclaimed State Highway No. 16 in 1938, and is the State's most northerly highway from the coast to the interior plains.

Commencing at the Pacific Highway near the coastal town of Ballina at the mouth of the Richmond River, the highway traverses farmland and grazing country of the Richmond and Clarence Rivers passing through Lismore, Casino and Tabulam then climbs through the Great Dividing Range to Tenterfield on the New England Tableland.

Beyond Tenterfield, it closely parallels the south bank of Tenterfield Creek,

then leaving the tableland, it follows the bank of the Dumaresq River, on the Queensland border. Leaving the Dumaresq near Texas, the highway traverses undulating heavily forested country and crossing the Macintyre River immediately enters the western plains at Yetman. From Yetman, the highway closely follows the Macintyre north and west to Boggabilla and the Queensland border at Goondiwindi.

The eastern portion of the highway, the major link between the northern New England Tablelands and the coastal districts, connects the New England and Pacific Highways and provides a very important domestic and commercial artery for the local inhabitants.

The western portion provides a link for intercourse between south-central and southwestern Queensland and the northeastern region of New South Wales.

### EARLY EXPLORATION AND SETTLEMENT

In 1827, Allan Cunningham set out "to explore the entire unknown country, lying on the western side of the Great Dividing Range, between the Hunter's River in latitude 32° and Moreton Bay in latitude 27° 5'". In the course of his trek he crossed the Macintyre River near Yetman and the Dumaresq River west of Texas culminating his travels with the discovery of the rich pasture lands of the Darling Downs. On his return journey Cunningham crossed the Dumaresq near its junction with the

Mole River and proceeded to the south and west to join with his outward track.

Less than a decade after Cunningham's journey, the squatting movement was in full advance and the pioneers were ranging far out from the bounds of settlement in search of new runs for their herds of cattle and flocks of sheep—wool being the staple of the growing colony.

The northern New England Tableland was admirably suited for grazing of sheep and cattle—well grassed open eucalypt forest with cool temperatures and adequate rainfall. The extreme north-western slopes and the northeastern plains, although suitable for sheep, were, because of the economics of the pastoral industry at the time and the ravages of the dingo, mainly used for the grazing of cattle.

Stations were set up at Deepwater in 1839 and by the early 1840's Tenterfield and Clifton Stations had also been taken up. The Macintyre, Severn, and Dumaresq Rivers also attracted squatters; in fact some of the earliest stations were taken up on the lower Macintyre: Merrawah (near Boggabilla) by James Howe about 1837, and by 1840 Yetman by B. S. Dight. On the Dumaresq, runs were established in the early 1840's at Mingoola, at the junction with the Mole River, and at Maidenhead, Bonshaw, Texas, and Kittah Kittah (now Bebo).

Transport for supplies and station products was a very difficult problem for the early squatters especially in these northern areas far from the commercial metropolis of Sydney. In the 1850's

the cattle stations which predominated to the west of the Tablelands at Mingoola, Maidenhead, Bonshaw and Texas established very early links with Ashford which was the first centre of settlement in the district and supplies were transported overland by a track from Maitland via the route now generally followed by the New England Highway and the Trunk Road through Bundarra. The stations on the lower Macintyre were on a direct line of road that went to Warialda and Tamworth and thence to Maitland. In the Tenterfield, Glen Innes and Armidale districts, the heavy cost of transporting the wool-clip overland to the Hunter River reduced the profits of the squatter, who, having usually overextended himself in his initial capital outlay, could ill afford this additional financial burden.

However, settlement on the Clarence River in the late 1830's and the discovery of deep water as far as Grafton spurred some of the early squatters on both sides of the Great Dividing Range to try and discover a practicable dray route from northern New England to the Clarence.

In 1839 or 1840 a route was discovered from Tenterfield along the south side of the Cataract River and down the Sandy Range to Tabulam, thence across the Richmond Range to Busby's Flat, Wyan, and thence to Grafton.

There are conflicting accounts as to who discovered the route through the Great Dividing Range but it is certain that the honour must belong either to Thomas Hewitt of Stonehenge Station near Glen Innes or Edward Ogilvie who founded Yulgilbar Station on the Upper Clarence. In any case, Ogilvie was responsible for discovering an alternate route from Grafton to Tabulam which went directly up the valley of the Clarence.

Many squatters soon followed Hewitt and Ogilvie and by 1840 in fact, Henry Clay and George Stapleton had taken up runs on both sides of the Clarence at Tabulam. Failure to comply with the squatting regulations led to the forfeiture of the runs however, and in late 1840 they crossed the Richmond Range and settled Cassino Station, close to the present site of Casino. The station, taken over by Clark Irving in 1843, was re-named Tomki.

In August, 1828, a year after Cunningham's trek to Darling Downs, Captain Rous, RN., on survey work in the H.M.S. *Rainbow* crossed the Richmond bar and discovered the Richmond River. Rous named the Richmond after his great friend and

patron, the Duke of Lennox and Richmond. He explored the river for 17 miles to within the vicinity of Wardell.

Following Rous' discovery, there are no official reports that the Richmond was again visited until 1842 when Captain Steel in search of cedar crossed the treacherous shifting bar at the mouth of the Richmond. At the same time, an overland party from the Clarence reached the Richmond at a point where Woodburn stands today. The two parties met at East Ballina and the first cedar camp was born on the Richmond.

The building qualities of cedar were widely recognized at this time and the fine stands of red cedar which lined the banks of the Richmond and its tributaries were to command high prices at the Sydney and Melbourne markets. It was not long before shiploads of cedar getters were arriving and spreading up the river and by the 1850's into the vast "Big Scrub".

Many run seekers followed in Clay and Stapleton's footsteps over the new route from Tenterfield into the valley of the Richmond River and by 1845, despite a heavy economic recession in the colony, sheep runs had been established on all the good grazing land in the Richmond River Valley. Twenty-one stations extended from the mountains in the north and west to the flat eucalypt forest country stretching to the Clarence River in the south. Only the impenetrable "Big Scrub" country remained unoccupied.

Sheep runs were most prevalent in the early days but in the mid 1850's it became apparent that the climate was too humid for sheep and the squatters turned their attention to cattle raising. With the passing of Sir John Robertson's Land Act in 1861 which permitted selection before survey, settlers started to take up land on the Upper Richmond.

## DEVELOPMENT OF THE ROADS

### *From Ballina to Casino*

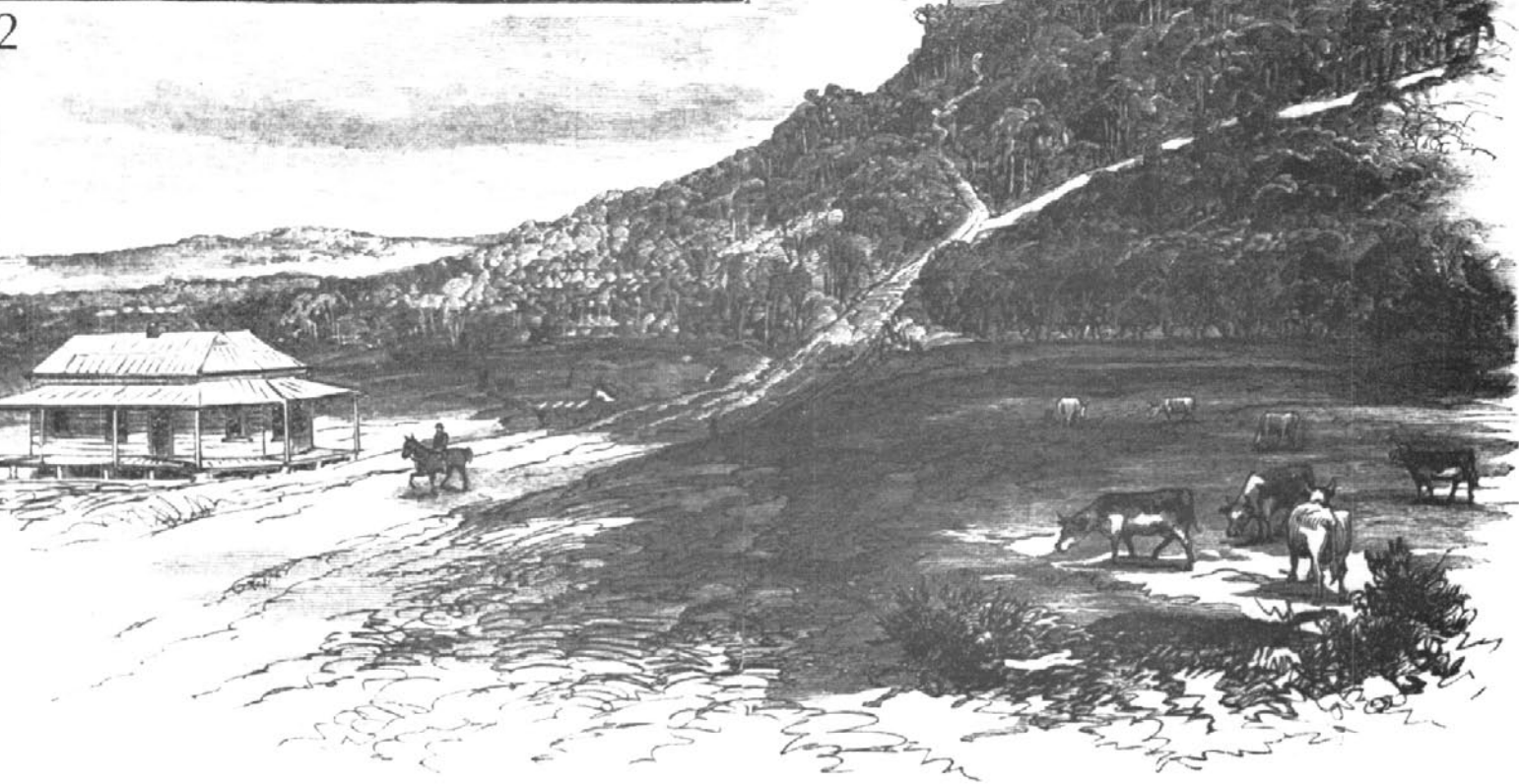
Prior to the passing of Robertson's Land Act, communication roads in the Richmond River district were practically non-existent.

From the earliest days, Lismore and Casino, hamlets situated near the navigable limits of the north and south arms of the Richmond respectively, became the focal points for the neighbourhood squatters who went there with their bullock drays filled with hides and tallow and returned with supplies at about half-yearly intervals.

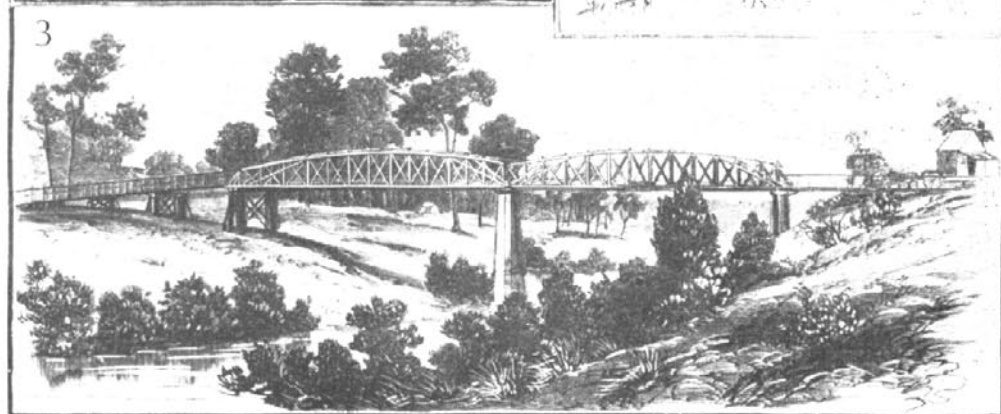
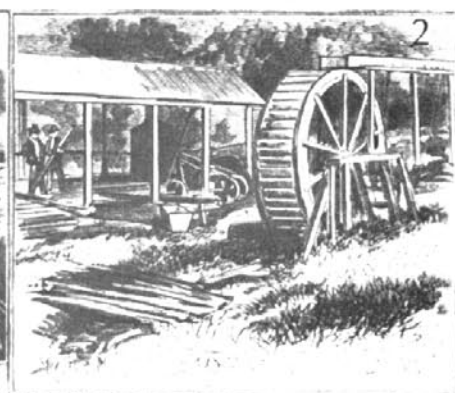
*Plaque on the cairn commemorating the landing of Captain Rous RN. at East Ballina, and the discovery of the Richmond River*







Sketches appearing in this article  
have been reproduced from  
*The Australian Town and Country  
Journal*



Above: 1. "A central corner in Lismore".  
2. The approach to the "Big Scrub" and  
the new Lismore Hospital — 1882

Right: 1. Falls on Duck Creek.  
2. Arrowmint Mill in the "Big Scrub".  
3. The Casino Bridge — 1881

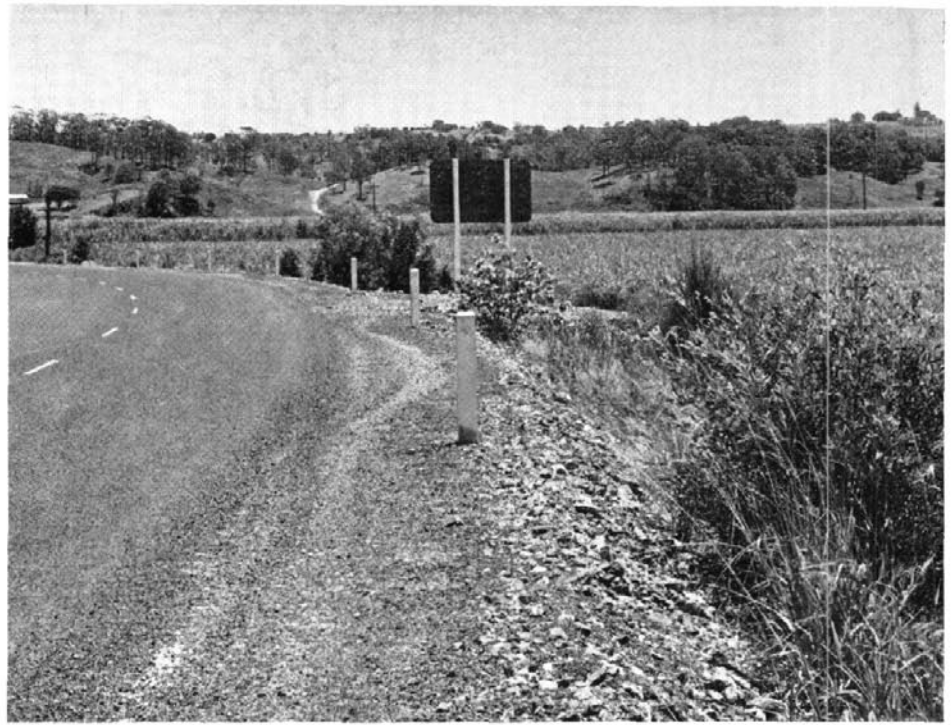




*Left: Looking towards the West and the Valley of the Disputed Plains*

*Below left: View of Mallanganee looking west about 23 miles from Casino*

*Right: The first view of the "Big Scrub" just west from the junction with the Pacific Highway*



A bridle track via Naughton's Gap and Disputed Plains connected Lismore and Casino as early as 1856 but there was no direct road connection between Lismore and Ballina for many years despite the relatively short distance of 20 miles. Virtually the whole of the uplands of the Richmond Valley from Ballina to Gundurimba northwards to the Tweed was covered by a dense virtually impenetrable rain forest known as the "Big Scrub" which presented a formidable barrier between the developing settlements of the Upper Richmond and the coast.

The windswept timber settlement of Ballina remained virtually isolated until the early 1860's when a track was finally cleared from Lismore via Gundurimba, skirting the edge of Tuckian Swamp, through Meerschaum Vale and thence over the low country to Ballina. *The Northern Star* (Lismore) described this track as being: "so bad and the roughly constructed bridges so dangerous that most people preferred to use the river".

In 1863 and 1864 Edmond Ross opened up a "good" road from Ballina via Tintenbar, Teven, and the locality where Alstonville stands today, to Lismore.

By 1865, farmers had begun to settle at Alstonville (Duck Creek Mountain) and the following year a road was constructed from Alstonville following the main line of ridges to an old cedar camp at Duck Creek, the settlers sharing the cost with the government on a pound for pound basis. The camp at Duck

Creek was reached from Ballina by means of the Richmond and Emigrant Creek and William Crawford established the first carrying business between the old camp and the Mountain (Alstonville) his equipment consisting of a slide and four bullocks. "This track was not adapted to pleasure jaunts, unless the parties were extraordinarily venturesome, and business had to be urgent to influence others to use this route, razorbacked ridges and steep slippery pinches provided too many opportunities for both thrills and spills."

For many years after the Duck Creek-Alstonville Road was opened, land traffic between Lismore and Ballina continued to travel Ross's Road via Teven and Tintenbar, although most people still preferred to travel on the river.

Road making on the Richmond lagged behind the establishment of settlements at Casino, Lismore, and Ballina. From the 1850's to the 1870's the wool trade and the gold rushes made the roads to the west (from the Clarence—the Richmond was virtually unsettled by comparison) all important, and, as a result, those of the Richmond were neglected.

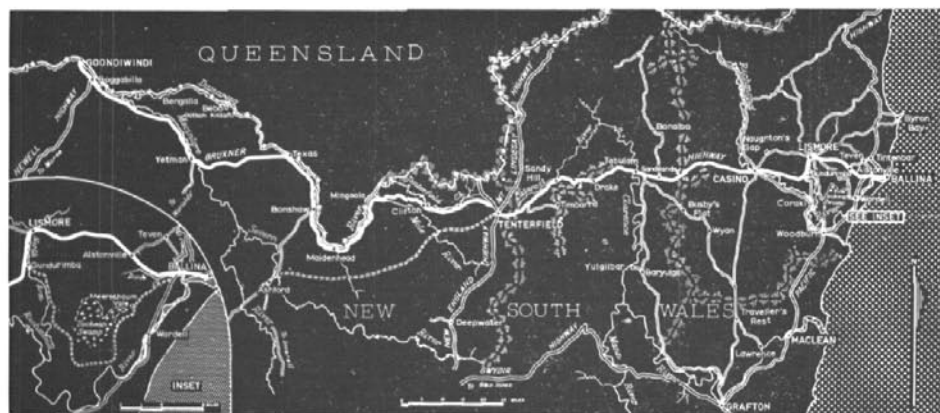
Arriving at Casino in June, 1870, R. L. Dawson was prompted to write: "Nowhere on the Richmond were there any banks, churches, newspapers, telegraph lines, or constructed roads, and only a few bridges."

There was in fact no resident Road Superintendent in the Richmond River

district until the early 1870's when Robert Donaldson was sent to Casino to supervise the building of the first bridge over the Richmond at Casino. Before his arrival, the Roads Superintendent from Tenterfield, and W. C. Bennett, the Chief Commissioner for Roads in Sydney had supervised the work in the Richmond Valley.

After Donaldson's arrival, the roads system for the Richmond began to show a marked improvement. In 1874 the Casino to Lismore and Lismore to Ballina roads were combined into a single thoroughfare, upgraded in classification, and progressive improvements made on them.

In 1875 the Government decided to improve the direct route from Alstonville to Ballina. A bridge was constructed over Emigrant Creek and a "corduroyed and metalled road" from the bridge to Ballina was in the course of construction. A correspondent for *The Richmond River Express* rode over the road on horseback in 1878 and described the work in progress near Ballina: "Some miles from Ballina you descend from the tableland, and enter on flat marshy country, intersected with saltwater creeks. In olden times the road here must have been very severe (Gundurimba via Meerschaum Vale to Ballina) on wayfarers, but within a few miles of the town you now come on an excellent piece of work, the metal and gravel for the construction of which is punted from hills some distance up Duck



Creek, to Emigrant Creek from thence it is conveyed on a tramway along the road, additional rails being laid down as the work progresses; the trucks used are large and answer well. A couple of miles of road made in this way reflects credit on the contractor, and when the distance to Ballina is completed, I have no doubt many of the inhabitants of the 'Big Scrub' will go there for their store supplies, etc.."

One of the first vehicles over this road was that owned by J. C. Vesper, coach proprietor, who in January, 1878, was reported by *The Northern Star*, to have driven a two horse coach from Lismore to Ballina and "found the road to be practicable for vehicular traffic".

Numerous improvements in the form of bridges, side cuttings and gravelling were also carried out on the Casino-Lismore road which by the late 1870's had also become part of the main road northward to the Tweed. A traveller on the road in November, 1878, had the following comments to make: "On the road to Lismore I found some very useful improvements had been made, and others were in the course of completion. If similar improvements are carried on for the next 12 months, this part of the road will be a nice and pleasant ride or drive, in place of the floundering of old, when a trip at any other time then in a very dry season was fraught with innumerable difficulties."

Donaldson's bridge over the Richmond at Casino was completed about 1875, and with a punt across Leicester Creek and a substantial drawbridge opened in June, 1884, across Wilson's Creek (Lismore), the Casino to Ballina Road became a major artery from the coast.

The road, however, was still far from being a reliable all-weather artery in the modern sense. In 1884 *The Richmond River Express* reported: "The road to

Ballina has been so bad (due to the heavy rains) that the mail contractor had to leave his coach behind on two or three occasions and convey the mail on horseback."

There were, as has been shown, a number of factors which retarded the development of roads in the Richmond River district but undoubtedly the greatest was the river itself. The river was the "Highway", the main means of travel and communication right up into the 1890's. The only major moderating influence on the river traffic was the shifting bar at the mouth which greatly retarded the early development of settlement.

#### *Roads from the Clarence to Tenterfield*

As stated earlier, the Grafton-Tenterfield Road via Busby's Flat and Tabulam was opened in the early 1840's and it became the great artery for drays travelling from the whole of northern New England to the Clarence port of Grafton. This period, prior to the development of overland routes, brought a great deal of prosperity to Grafton in the handling of the wool and station store trade.

Travelling on the Grafton-Tenterfield road in the 1840's and 1850's was a real test for the early teamsters. In fact by 1850 only £170 had been spent by the Government on roads and bridges in the entire Clarence District which in those days included the Richmond as well. Up until the gold rushes in the mid 1850's there was not a single bridge or culvert on the entire route from Grafton to Tenterfield. Commenting on the road, historian C. D. Rowley stated: "Improvement to the dray line meant the removal of trees to allow tacking space on stiff grades, logging of swamps, and occasional blinding of stoney surfaces. Soundness of surface, abundant feed

and water were more important than grades." These facts actually favoured the Grafton-Tenterfield route in the early days and offset the handicaps of the ranges and river crossings between New England and the coast.

This route had a virtual monopoly on the station traffic to the coast until about 1856 or 1857 when Thomas Pringle of Traveller's Rest on the Grafton-Tenterfield Road discovered a road to the Clarence at Lawrence. This event coincided with the discovery of gold at the Fairfield diggings and the Timbarra fields. A glance at the map will indicate that the Lawrence route saved a considerable mileage (versus the Grafton route) and, as diversion from established lines was simple and inexpensive, and the slowness of the drays made the saving of a few miles decisive in gold shipments, Lawrence began to develop as a terminus for the New England traffic as well as for the gold escorts.

Attempts were made by Grafton merchants to develop a new road up the valley of the Clarence to Tabulam and thus regain their lost business. Surveyor Geaves marked out a road in 1859 and favoured it in preference to the Lawrence road but the latter retained most of the traffic.

Surveyor Greaves also examined the road from Tabulam to Tenterfield and was rather critical of the route with its steep "pinches" and he was especially critical of the work carried out on Sandy Hill by Road Superintendent Yates. The following is an extract from his report about Sandy Hill: "There is no loose sand on this hill as its name would indicate; it would be firm and good to travel upon if once put in repair by cutting away the steep places. The rocks appear to be a kind of conglomerate, which when broken up, grind to coarse powder, and make a good road. This hill is the



ascent to the tableland. There is no other obstacle but a good road from here to Tenterfield."

Thus it was that the Lawrence road retained its status as the main artery from northern New England to the coast but despite its upgrading to a first class road in 1873 its sun was already beginning to set. The opening of the Newton-Boyd line from Grafton to Glen Innes in 1866 (for an account of this see "The Story of the Gwydir Highway" in the *Main Roads* issue of March, 1954) cut sharply into the trade from southern New England and a great deal of station traffic from New England was beginning to pass northward from Tenterfield to Warwick and Brisbane. Another great disadvantage to the route was the crossing of the Clarence River at Tabulam. Writing for *The Town and Country Journal* in 1879, a correspondent discussed the Lawrence Road: "One great obstacle in the road is the Clarence River at Tabulam, which in wet seasons is inaccessible for several weeks together. There is a punt there certainly, but, being fixed off the regular track, is so

difficult of access that carriers will not use it and have to camp until the river subsides. Coupled with this drawback is the bad state of the road in many places, which despite the energy of the indefatigable Superintendent of Roads, is not, nor never will be, fit to carry heavy traffic with the present vote of £50/mile, which is barely sufficient to patch a few of the bad places. Unless the Clarence River at Tabulam is bridged, the traffic must constantly be interrupted. A splendid road could be made along the route if the Government were to act as liberally in constructing it as they did in forming the Newton-Boyd line from Glen Innes to South Grafton."

In spite of the difficulties, there were still over 500 teams engaged in carrying on the Lawrence road prior to the railway connection to Tenterfield in 1886.

#### *From Casino to Tabulam*

With the closer settlement of the Richmond River area in the 1870's the district became aware of its virtual isolation from other centres of population

and slowly the residents became aware of the possibility of developing a direct route from Casino to Tenterfield. This would lead to an interchange of products of the two districts and develop Casino as the port to replace Lawrence. A correspondent, writing in *The Richmond River Express* in 1879 expressed the following sentiment for the new route: "Now the road from here (Casino) to Tenterfield at present in use, via Wyan, is far from being the shortest or the best. A petition should therefore be got up, and the Government asked to make a direct road from Casino to Tabulam. This road would at once shorten the distance by 15 miles, making it 25 to 30 miles less from Tenterfield to Casino than from Tenterfield to Lawrence."

In this same year both *The Richmond River Express* and *The Tenterfield Star* were in favour of opening up this direct link but approaches to the local Member of Parliament, Thomas Bawden, brought advice to get some traffic on the line first and then apply for an expenditure. This eventuality would be the strongest argument in favour of such a road, if

*The new Casino Bridge*



the government found that the track would pay, an application would then be lodged for its improvement for dray traffic.

As local agitation increased and found popular backing, the Government pledged £2,000 for work on the Casino to Tabulam road. A correspondent writing in *The Town and Country Journal* in July, 1882, filed the following report from Casino: "Messrs Donaldson and Mattheson, the Tenterfield and local road superintendents have inspected the proposed road from here to Tabulam and have, I understand, approved of it, so that the £2,000 promised will soon be utilized".

Approval was duly given and in 1883 contracts let for the various sections. In July, 1883 the following progress report was printed in *The Richmond River Express*: "Good progress is being made with the various contracts along the new road from Tabulam to Casino, and we are pleased to learn that the cuttings along Sandilands Mountain will shortly be completed, which will render this route practicable for teams. That a large traffic will spring up along this road is certain, and the number of

selectors who are securing land for themselves and making comfortable homes in this quarter of the district is ample proof of the richness of the country. Indeed, it is a wonder that this was not recognized sooner, and a road secured by this route years ago . . ."

Complaints, however, were ever present as this correspondent in June, 1884 testified:

"There are several bad places along this line, but the road through the Sandilands Range is the worst I have ever seen, it is hardly safe to ride over, as the mud, becoming stiff on the surface only hides treacherous ruts full of water by means of a frail covering so deceptive to the eye of the traveller. The late heavy rains have caused the face of the cutting to tumble down in several places where the cutting is steep; the drains are blocked up in some places, whilst hundreds of yards of earth have been torn away in others. It seems to be a most disgraceful waste of public money to expend so much money upon this road and then to let the road go to ruin . . ."

In 1885, a regular weekly coach service was established between Tenterfield and

Casino but it was still a number of years before the road could be considered reliable for vehicular traffic, and it was not until the Government built a substantial bridge at Tabulam in 1901 that adequate provision could be made for the intercourse between the northern New England and Richmond River districts.

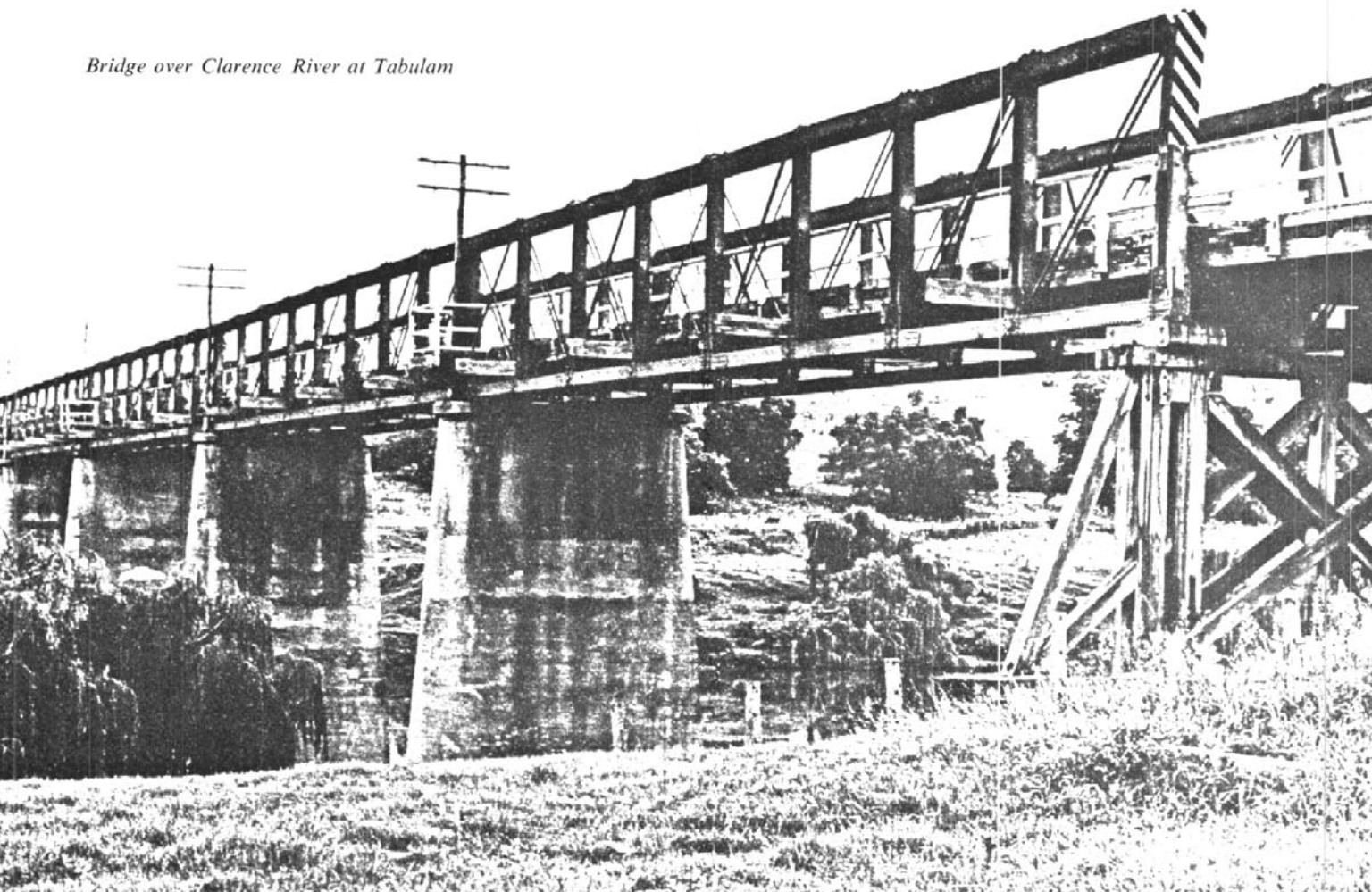
#### *From Tenterfield to Goondiwindi*

The Bruxner Highway west of Tenterfield developed as virtually a separate road from the Ballina-Tenterfield road to the east. Like the latter however, it did not evolve as a single, complete entity, but by a slow process of joining up lengths of different roads into the route of the highway as we know it today.

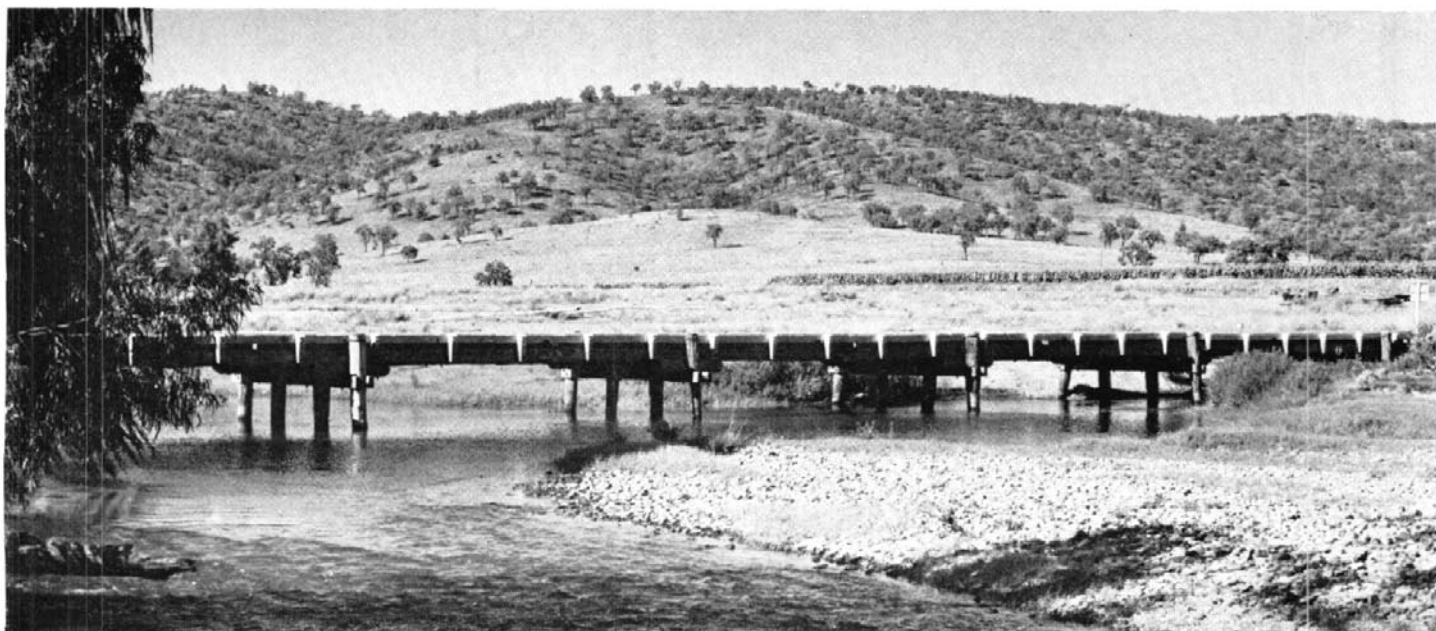
As mentioned earlier, the settlement of these northern areas took place at a very early period in the colony's history and the tracks linking the stations on the Dumaresq and Macintyre Rivers in most cases evolved into the route of the highway.

Unlike the districts nearer the coast which required good roads for the transportation of the wool clip and attracted many settlers, the western

*Bridge over Clarence River at Tabulam*







*Bridge over the Mole River*

areas remained backward by comparison. The great distances involved in taking wool or farming produce to market set somewhat of a limitation on the distance at which this was profitable, and although some sheep runs were established in the Ashford district, and on the lower Macintyre, it became more economical to run cattle. Cattle were driven overland to markets in Brisbane, Maitland and Sydney and the distances were not prohibitive as long as adequate feed and water could be obtained along the way.

Stations in the Ashford and Dumaresq districts were served by a road from Uralla and Inverell that terminated at Ashford in 1851. This track, that by courtesy was termed a road, was developed by the teamsters, who for the sake of comfort and hospitality often drove their teams from one station to another caring little about the extra distances involved by so doing.

The first road to the west of Tenterfield appears to be the one included on a map prepared by the Surveyor General's Office for the Post Office Department in 1858. It follows a gradual curving arc from Tenterfield to Ashford and thence to the south. It is extremely likely that in the very early days this road was used to transport the wool clip from the Ashford district which, during the 1850's and 1860's was the focal point for all the neighbouring stations from as far away as Texas.

Bonshaw, and quite likely Texas, had established tracks to Ashford by 1851, as a map of the Ashford district by

Surveyor Galloway would indicate. Maidenhead, and Mingoola Stations, which in the early days had established headquarters on the Queensland side of the Dumaresq were quite likely linked by a track which joined the Bonshaw-Ashford track.

Oscar de Satge, who came to Mingoola in 1854 to visit his brother mentions that "we didn't have many visitors to the station . . ." and this would indicate that what traffic there was in the district gravitated more towards Ashford and the south rather than Tenterfield and Grafton.

It is not known exactly when the track from Tenterfield to Mingoola was formed or who formed it, although it is quite likely that since Tenterfield, Clifton, and Mingoola Stations were all taken up by S. A. Donaldson and R. R. Mackenzie, they were responsible for its early development. In 1878 the government provided £750 for expenditure on the road from "Tenterfield towards Bonshaw" giving the road a rather high class three status and recording the length of the road as 50 miles. Government policy at this time in the expenditure of money on roads involved the working outwards from settlements, gradually forming the road year by year and for the next 8 years most of the money was spent on the section to Clifton. A correspondent for *The Town and Country Journal*, travelling from Tenterfield to Clifton in July, 1879, noted that "all along the road was under repair, several new culverts being made, and it will, in a few weeks be a very fine one . . .".

Proceeding beyond Clifton the writer continues: "for some distance the track lay over stiff, rough ranges, strewn with great rocks, and timber lay fallen by a late gale, in every direction; after which on getting off the range, we followed the Mole River . . . to Mingoola".

Taking the old route which was still the most travelled, even in the 1880's, the writer continues: "from Mingoola, the road, after crossing Pike's Creek, continues on down the river, now called the Sovereign (Dumaresq), on the Queensland side. The road all the way (to Maidenhead) is very good, and a canter can be indulged in without the chance of a 'header' into a boghole, or a tumble over a dead tree".

Early in 1884, Surveyor Holmes was instructed to survey a section of the road from Tenterfield to Mingoola (from near Clifton station) and to survey the proposed line of road from Tenterfield to Bonshaw. Holmes surveyed the road as far as Maidenhead the route of the present highway marking his lines by "blazed trees and stakes and trenches at every angle and ten chains". No records can be found at the Lands Department or the Mitchell Library which would indicate that Holmes completed his survey to Bonshaw but it is likely that he did so, as in the following year, 1885, the Government raised the classification of the road "Tenterfield to Bonshaw" and an additional 28 miles were added to its length.

The Tenterfield-Bonshaw Road carried a small amount of traffic and received

little government assistance. It was many years before the road came to be used on a regular basis.

As mentioned earlier, Texas and Bonshaw were on the main road to Ashford, the road consisting only of a track. This was one of the main stock routes from the Darling Downs but quite a bit of traffic probably went from New South Wales via Texas to Warwick and Brisbane.

Government expenditure on the Inverell-Bonshaw road commenced in 1878 but this road never received a high classification in the early days. Not until 1891 was money spent on the Bonshaw-Texas road and then only the sum of £5 per mile which could hardly lead to much improvement over the track that existed.

Between Texas and Yetman some sort of track must have been established from the early days but the first map which indicates a direct connection was one prepared by Surveyor Simpson in 1862. The country is heavily forested and undulating and must have presented difficulties in road building but this became essential as Yetman began to expand. Although taken up in 1840 and on the main road to Boggabilla and Queensland, the distance of 40 miles to Boggabilla across the heavy black soiled plains over roads described by a Boggabilla resident as a "bog in wet weather and a blacksmith's friend in dry" was much less inviting than the reliable 27 mile trip to Texas over higher and more solid ground. The Yetman-Boggabilla road although little used by the local residents, still retained some traffic and became a scheduled road in 1885. It also remained a prime stock route to and from the Darling Downs.

Arriving in Yetman in 1888 Mrs Holmes who still resides there can recall that

sulkies and drays were traversing the Texas-Yetman road at that time. The road itself was surveyed by George Arthur in December-January, 1885, but the improvements must have been done by local residents as the Government did not officially provide any money for the link until 1899, and then only the niggardly sum of £70. The Texas-Yetman road was initially opened as a domestic artery and as an outlet for locally produced goods to Brisbane. Commenting on the Boggabilla road, Mrs Holmes said: "No one went to Boggabilla unless it was absolutely necessary."

Goondiwindi developed rapidly in the 1880's, as did Boggabilla in the 1890's when connections were established with Moree and Brisbane. The main concern of the local inhabitants of Boggabilla was for a good road to Moree—especially when the railway finally arrived there in 1897.

Mr W. Ferguson speaking at a railway debate at Boggabilla in April, 1900, and discussing the plight of the local inhabitants was not far wrong when he commented: "They (the local people) were no better off than when the district was first settled; in fact they were worse because they must now adhere to the lanes, and the Government would not give them roads. In a time of drought the teams could hardly travel whilst in wet weather it was out of the question." These sentiments were echoed by the editor of *The Boggabilla Courier* who commented: "If we can't get our main roads scheduled, provision should at least be made to ensure their being kept in a passable state . . ."

## LATER IMPROVEMENTS

The present route of the Bruxner Highway closely follows the formation as it existed in the 1880's although of

course the highway has been reconstructed and realigned in many places to satisfy modern traffic requirements.

Numerous improvements were carried out on the Lismore-Ballina section around the turn of the century and a deviation of the road on the eastern approach to Yetman was also carried out at this time.

Since the inception of the Main Roads Board and its successor the Department of Main Roads, a number of important works have been carried out on the highway.

In 1928 the Board completely relocated the highway between Lismore and Casino. The old route was abandoned ostensibly because of its numerous railway level crossings, and its cuttings and steep grades. The present route follows the valleys via Gundurimba.

In the late thirties, virtually the whole section of the highway between Casino and Tabulam was reconstructed and realigned in order to provide a satisfactory outlet to the railway at Casino for the Bonalbo and Tabulam districts and to meet the requirements of through traffic.

During the 1950's the highway was rerouted between Main Road No. 382 south of Bonshaw and the Beardy River near Maidenhead.

At the present time, the Department, and the local councils with the Department's full financial assistance are carrying out extensive reconstruction and bitumen surfacing on the remaining sections of unsealed highway, primarily in the districts west of Tenterfield.

This is a programme of progressive improvement that will be carried out as funds become available.

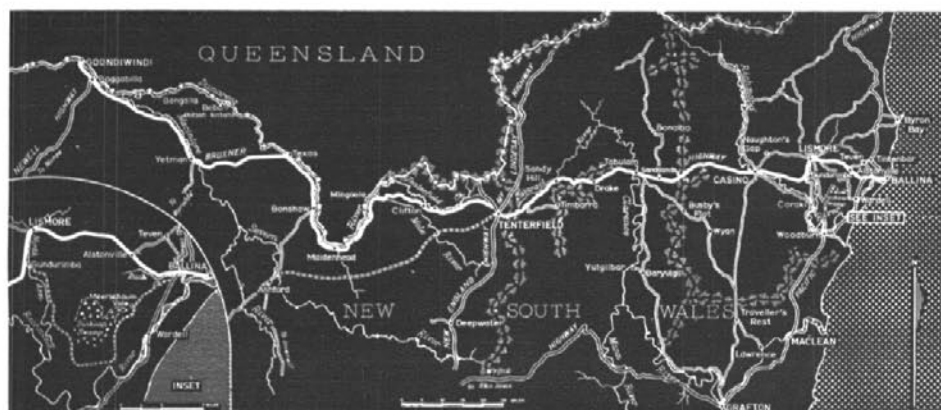
## ACKNOWLEDGMENTS

Mrs L. T. Daley, Armidale

The Public Library of New South Wales

The Mitchell Library, Sydney

The Department of Lands, Sydney



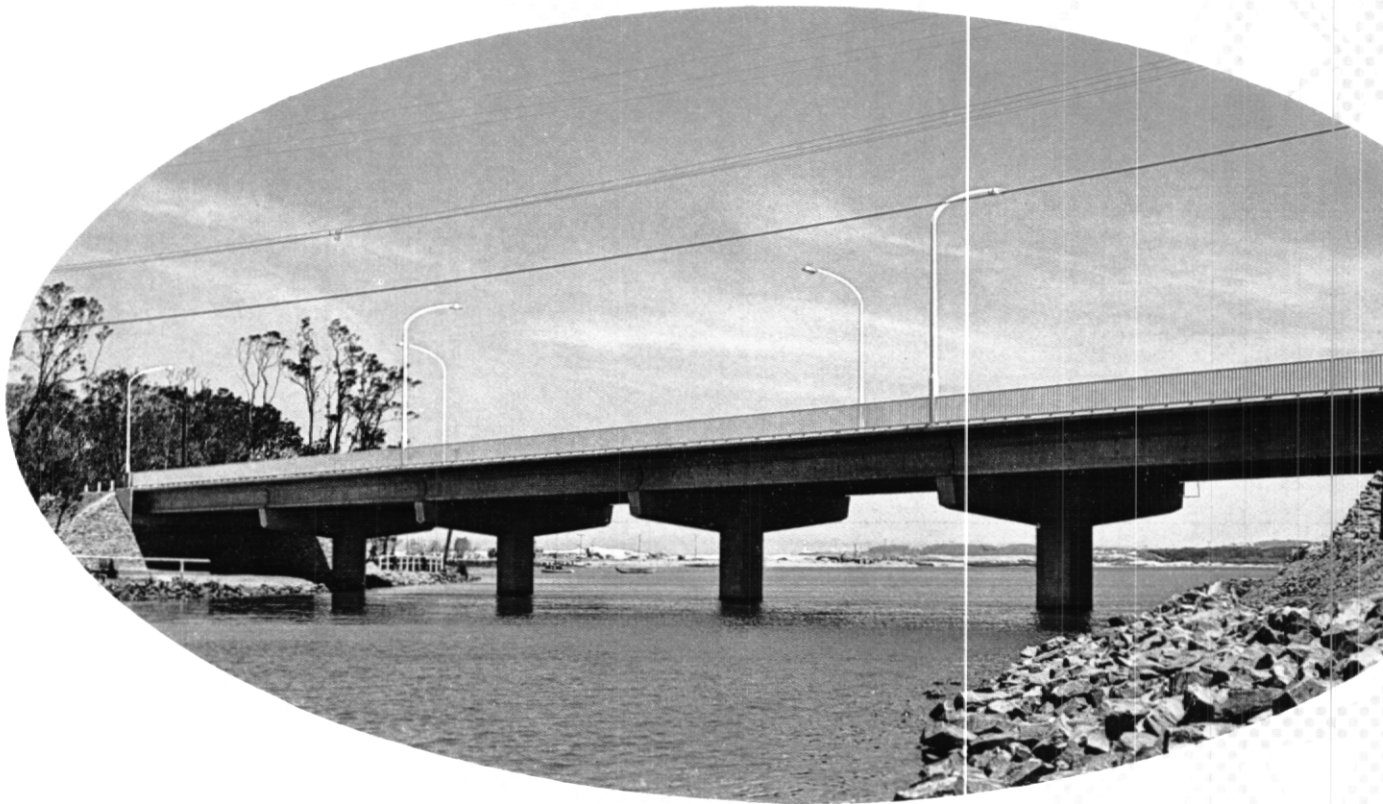


# Recently Completed Bridges

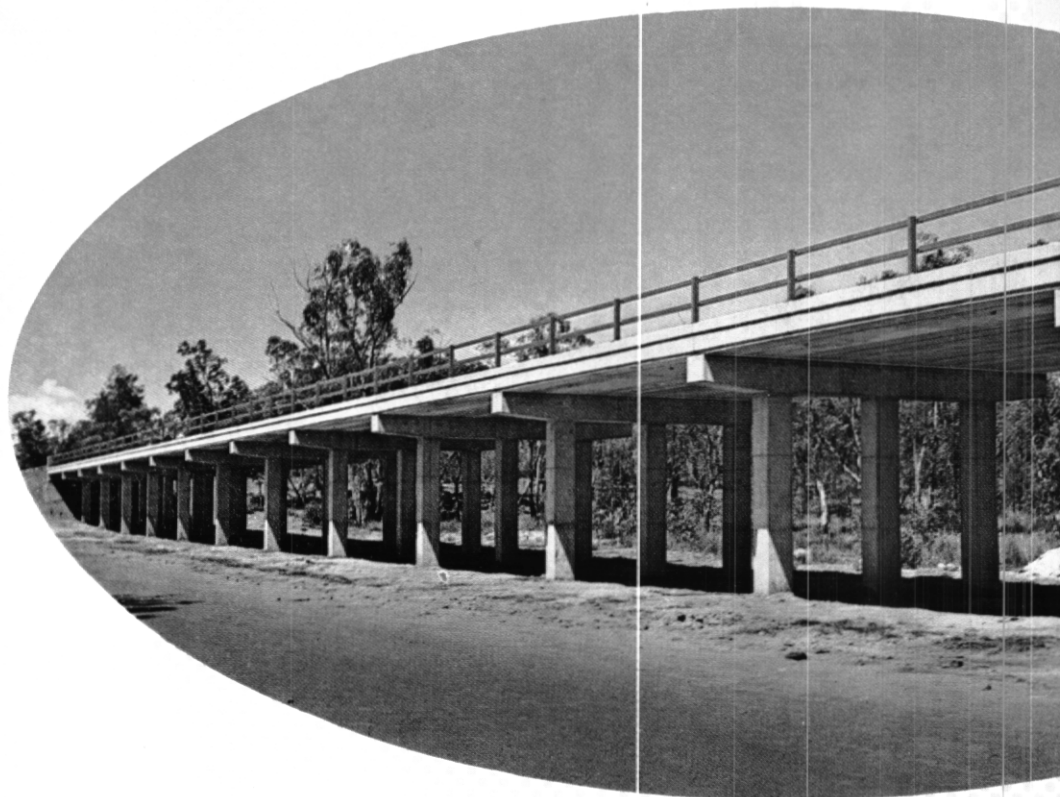
**Macdonald River** This new bridge over the Macdonald River on the Windsor-Singleton Road was completed and opened to traffic in July, 1967. It is a three span steel and reinforced concrete bridge, 265 feet long. Built at a cost of \$83,000 it replaced a narrow timber structure on a poor alignment.







Fennell's Bay, Tor  
\$405,000 this new bridge  
Toronto main road was o  
It is a 9-span prestressed  
a 28-foot wide roadw





**Creek** On the Wyee-Norahville main road, this new prestressed and reinforced concrete bridge was opened to traffic in August, 1967. It is 352 feet long, has a 24-foot wide carriageway two footways and was built at a cost of about \$170,000. It replaced a narrow timber bridge.

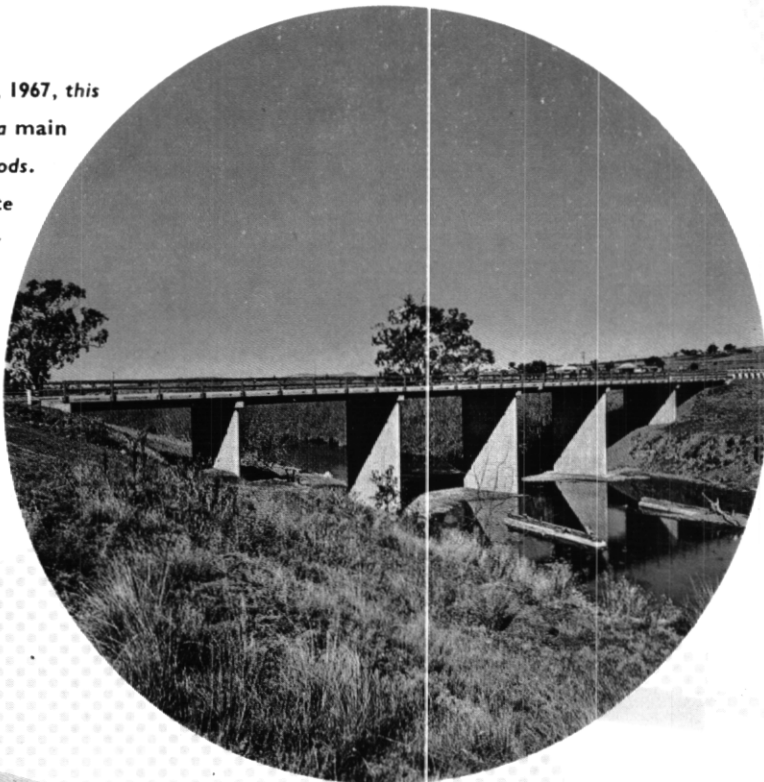


a cost of about \$170,000. It replaced a narrow timber bridge.



**Bohena Creek** This new bridge is on the Newell Highway approximately 11 miles southwest of Narrabri. It is a 15-span prestressed and reinforced concrete structure, 525 feet long and 24 feet wide. Built at a cost of \$123,000 it replaced an open water crossing which was subject to flooding. It was opened to traffic in December, 1967.

**Manilla River** Opened to traffic in June, 1967, this new bridge at Manilla on the Boggabri-Manilla main road replaced a timber bridge destroyed by floods. It is of composite steel and reinforced concrete construction and is 280 feet long. The new bridge cost about \$115,000.

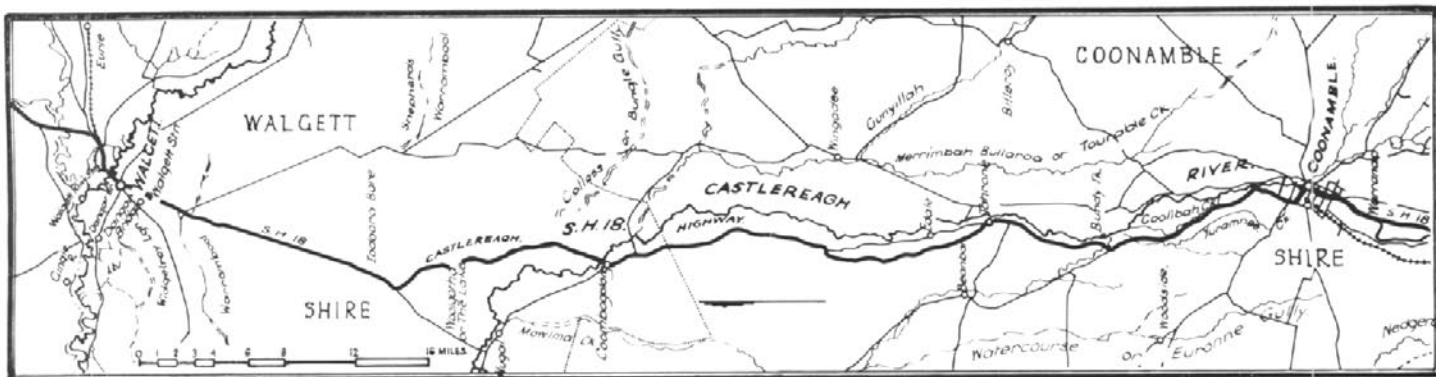


**Mirrool Creek** This bridge is located on a new deviation of the Newell Highway near Ardlethan between Narrandera and West Wyalong. The deviation and the bridge were opened to traffic in December, 1967. Two railway level crossings were eliminated from the route of the highway. The new bridge has six spans with an overall length of 240 feet. The cost of the deviation and the bridge was \$430,000.





# CASTLEREAGH HIGHWAY



## Reconstruction Coonamble to Walgett

The reconstruction and bitumen surfacing of the Castlereagh Highway (State Highway No. 18) between Coonamble and Walgett was completed in November, 1967. Thus a continuous bitumen surfaced road is available between Walgett and Sydney via Dubbo and between Walgett, Tamworth and the Coast.

The Castlereagh Highway commences at Gilgandra where it connects with the Oxley and Newell Highways (State Highways Nos 11 and 17) and runs in a generally north to northwesterly direction traversing the Shires of Gilgandra, Coonamble, Walgett and Brewarrina. It is approximately 212 miles long and passes through the towns of Gulargambone, Coonamble, Walgett and Angledool to the Queensland border near Hebel.

The land through which the Highway passes is mainly flat plains given over generally to pastoral pursuits, the raising of sheep and cattle and related industry.

Between Gilgandra and Walgett the Castlereagh River runs generally parallel with the Highway.

In 1956 the Department established a Works Office at Coonamble and commenced operations northwards. At that time the only bitumen on the road between Coonamble and Walgett was on short sections within those two town areas.

The Highway in Walgett Shire was then under the control of Walgett Shire Council which carried out reconstruction and bitumen surfacing work south from Walgett. As the Department's work progressed northerly from Coonamble

*New section of the Castlereagh Highway about 22 miles south of Walgett*





*Reconstruction in progress about 39 miles south of Walgett*

the Walgett Shire Council had reconstructed the Highway to a point 4 miles south of Walgett by 1960 in addition to the construction of two timber bridges over Cumberdoon Creek and Nugol Swamp. The Department assumed control of the Highway in Walgett Shire in June, 1960, and continued construction south for another 6 miles, completing this work by July, 1962.

In the meantime the Department had progressed with the work north from Coonamble and by October, 1965, reconstruction had been completed to 31 miles north of Coonamble. This section of highway was completed with a bitumen surface 18 feet wide. Two concrete bridges over Mowlma Creek and Kennedy's Creek had also been constructed. The section on which these two bridges were built including the approaches, 3.8 miles in all, was sealed to a width of 22 feet.

The remaining length between Coonamble and Walgett, approximately 30 miles, was completed in November, 1967, and provided with a 22 feet wide bitumen surface.

The Works Office at Coonamble was transferred to Walgett in October, 1966. This facilitated the reconstruction work south from Walgett and enabled a start on the road north from Walgett.

The proximity of the Castlereagh River and periodic flooding of the surrounding countryside influenced the design of the adjacent highway with provision for numerous floodways and "balancing" culverts.

Apart from other plant used on the work, the Domor elevating grader attachment was used for the construction of the raised formations required in this flat type of country. The Department carried out the bitumen surfacing with its own bitumen tankers and spraying equipment.

For several reasons construction costs on this length of road were relatively high. Firstly, the entire length of road lies in black soil country and special measures to stabilize this very active clay material were necessary over almost 50 miles of the work. The shortage of suitable base course and surface course materials was offset by the availability of sand in the southern section, for

stabilization of the black soil while in the northern 10 miles lime and cement stabilization were carried out. However, during 1962, base course and surface course gravels were located about 40 miles north of Coonamble and 20 to 30 miles off the highway and the use of these and other deposits found later enabled stabilization of the black soil subgrade to be discontinued.

Secondly, the shortage of water, at or near the work, for compaction of the pavement necessitated long hauls to provide water for this purpose until a bore was sunk nearer to the work. Conversely, falls of rain which did occur would hold up work, especially stabilizing, because of the characteristic "lumping" of the black soil when wet.

The total cost of the work between Coonamble and Walgett was \$3,038,784 including five bridges, the cost of which was \$152,944.

At the present time reconstruction has proceeded to a point 8.5 miles north of Walgett and the Department is continuing with this work towards the Queensland border.



# Pacific Highway

## Deviation near Raymond Terrace

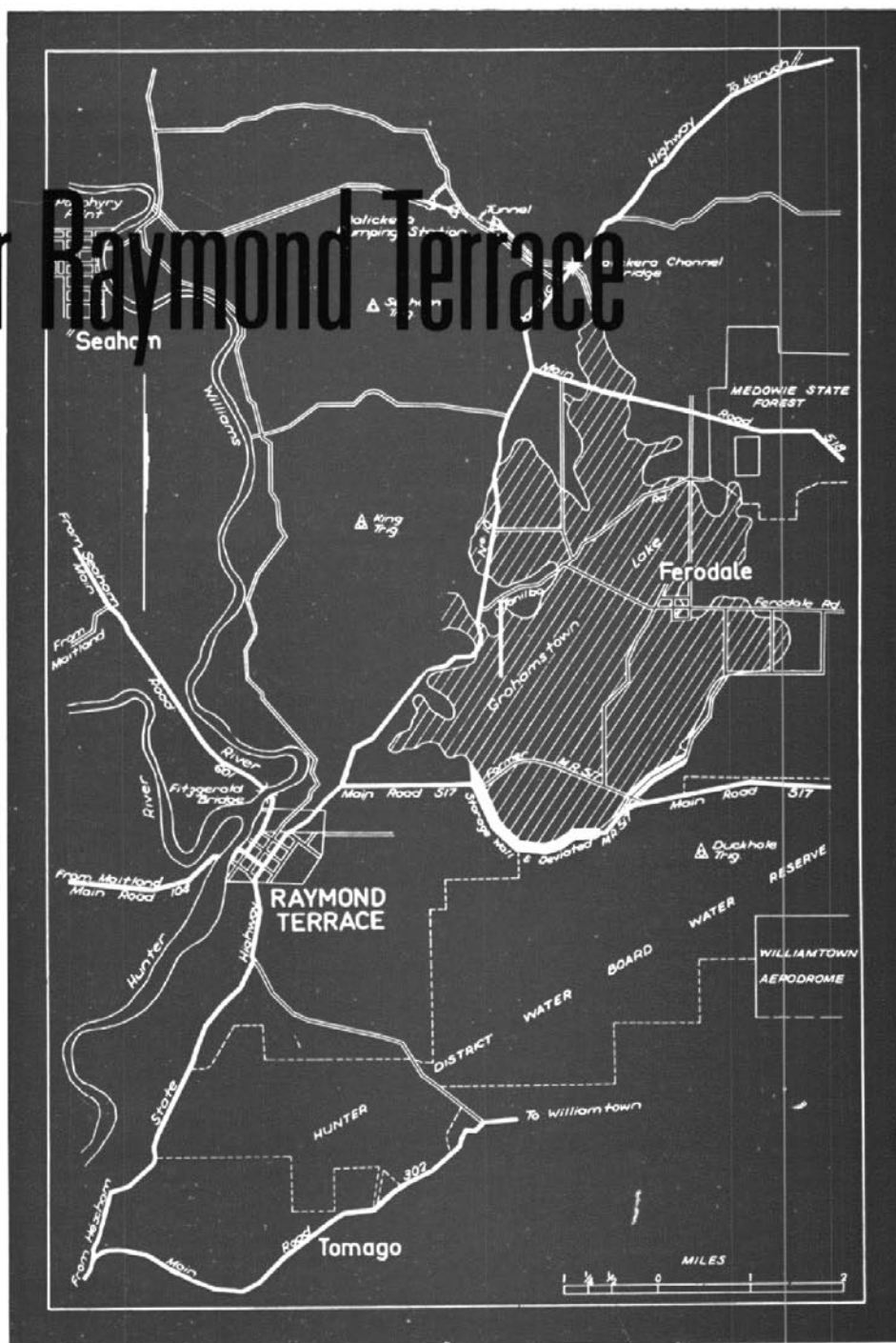
The Hunter District Water Board in 1957, commenced the construction of a water storage reservoir to serve the Newcastle area. It is located in a large natural depression north of Raymond Terrace, generally east of the existing Pacific Highway (State Highway No. 10). It is known as the Grahamstown Storage Reservoir.

The reservoir is an "off-catchment" storage, water being pumped from the nearby Williams River. It has a catchment of 30 square miles and a capacity of 34,000 million gallons.

The ultimate high water level will inundate the existing Highway by about 7 feet at two locations. A section of Main Road No. 517 east of the Highway and part of Main Road No. 518 north of Ferodale will also be covered by water.

The Board constructed an embankment at the southern end of the depression as a storage wall for the impounded water. It also constructed the Balickera Channel through which water from the Williams River is pumped into the reservoir. This Channel crosses the Pacific Highway near the northern point of the storage area. In addition the Board constructed a spillway structure through the fill, upon which the deviated Highway is being constructed, to take the overflow from the reservoir.

The Port Stephens Shire Council designed and constructed the deviation of Main Road No. 517. This new section of road has been built on the storage wall at the southern end of the reservoir.



*The old Highway passing through the lake area*







Council is also preparing a design to move a section of Main Road No. 518 above the level of water in the reservoir.

In 1962 a new bridge was constructed to carry the Pacific Highway over the Balickera Channel near the northern end of the storage. This prestressed and reinforced concrete bridge is 115 feet long and was constructed by Central Constructions Pty Ltd under contract to the Department. The cost, approximately \$56,000, including some associated culverts in the approaches, was met in full by the Board. It is located about 2 miles north of the Highway deviation.

The deviation of the Pacific Highway included the construction of an embankment 4,600 feet long. The Hunter District Water Board asked the Department to construct the new road not less than 10 feet above the top water level. The additional height of embankment was required as a control zone by the Board and to ensure that wave action would not overtop the roadway. Special precautions had to be taken in constructing the storage side of the embankment to protect it against damage from water and wave action.

Construction of the 44 feet wide embankment was carried out in two operations. Firstly, an impervious embankment 34 feet wide at the top was constructed of decomposed sandstone and conglomerate taken from the upper level of a cutting. Secondly, the rock taken from the lower level of the cutting was used to construct the remaining 10 feet width on the water storage side of the embankment. A slope of three to one was adopted for this side.

The length of the deviation to avoid the inundated area is 2.52 miles with one 10,000 feet radius curve. The formation width is 44 feet and the road pavement is 24 feet wide. Volume of earthworks was 233,000 cubic yards. The deepest cutting is 45 feet and the highest fill is 24 feet.

The Department commenced the roadworks in March, 1967, and completed the work by March, 1968. The cost of the deviation is estimated at approximately \$500,000 of which the Hunter District Water Board will meet about \$400,000.

While carrying out this work the Department proceeded with an extension of the deviation southwards for a further 1.83 miles towards Raymond Terrace. This extension will cost about \$258,000 and will be met in full by the Department. The whole work is expected to be completed by July, 1968.

## *Sections of the new road under construction*



# Training for Clerical Officers

Primarily, the Department's in-service training for Clerical Officers is designed to provide a highly trained and efficient staff capable of fulfilling an important public service. To the officers individually it provides a background for a successful career in the Department.

One of the more important initial objectives of the Department's programme of in-service training has been the provision of courses of instruction for officers responsible for clerical work in field or "Works" Offices. The content of these courses is, naturally, relevant only to the Department's particular requirements.

This article outlines the general aims of the courses, reviews the problems encountered, and looks at some of the lessons learned.

The Department's operations extend throughout the whole of New South Wales, and in order that these may be administered effectively a decentralized divisional organization has been established. In addition to Head Office in Sydney, there are two Divisional Offices in the Sydney Metropolitan area and fourteen Divisional Offices in large country towns. These offices are the administrative headquarters of the Department's operations within the divisional area. Each Division is administered by a Divisional Engineer, who is responsible for works carried out by Councils on the Department's behalf, for works carried out under contract to the Department, and for the activities of the Department's own Works Offices in the Division. There are also two other divisions which control specific works; the Sydney-Newcastle Expressway Construction Office, located at Mt Ku-ring-gai and the Warringah Express-

way Construction Office, located in Head Office.

Within the Divisional areas there are at present 48 Works Offices, each under the control of a Works Engineer. It is from these offices that maintenance and/or construction works are carried out by the Department's own forces, augmented as necessary by plant and motor vehicles engaged on a hire basis.

A typical Divisional Office/Works Office organizational structure is illustrated opposite.

The clerical staff in a Works Office may vary from year to year according to works programmes approved, and may range from three in a very small office to possibly twenty-five in a major office. The duties of the Works Office Clerical staff include the preparation of vouchers for the payment of wages employees, haulage contractors and owners of hired plant; the payment of accounts with local traders; the recording of the receipt and issue of stores and materials; the costing of all work, including repairs to Departmental plant and motor vehicles, carried out at the Works Office; and the submission of costing information to the Divisional Office and Head Office for the purpose of funds control. The senior clerical officer, designated the Cost Clerk, is responsible to the Works Engineer for these activities; the Works Engineer in turn being responsible to the Divisional Engineer, through a District Engineer.

A considerable measure of responsibility for the efficient conduct of clerical activities in the Works Office rests with the Divisional Chief Clerk. It was therefore decided that while the Works Office training programme should be designed essentially for Cost Clerks,

it should also include modified courses for Chief Clerks.

The programme provided for a series of courses to be conducted at Head Office. A training centre containing material required to demonstrate correct procedures was established and provision was made for course members to carry out a series of realistic exercises based on typical Works Office activities. Due principally to problems in providing relief staff, the duration of the courses was limited to 10 days for Cost Clerks and 5 days for Chief Clerks. Also, in order to facilitate instruction and encourage frank discussion, attendance at any one course was limited to a maximum of four officers.

## AIMS OF THE COURSES

The courses set out to achieve:

*Standardization of Procedures:* Although the Department provides a comprehensive manual of instruction on Works Office procedures and, indeed, officers are required to pass an examination based on this manual before becoming eligible for appointment as Cost Clerks, it has become apparent that these procedures were not always followed. This resulted in numerous problems, the following being typical:

- (a) A Cost Clerk transferred from one Works Office to another would find it necessary to study the procedures adopted by his predecessor and followed by members of the staff, before he could in a real sense assume control of the clerical work.
- (b) A more junior officer, regarded as competent in a particular sphere by the Cost Clerk of one office, would fail to meet the expectations of the Cost Clerk of another office.



(c) Officers on the relieving staff were failing to give effective relief because of the need to adjust to varying requirements at different offices.

The advantages of standardization were therefore strongly emphasized throughout the courses. Nevertheless, it was made quite clear that this emphasis on standardization was not in any way directed at stifling initiative, and that suggestions for change would be welcomed at any time, provided that they were submitted through the proper channels; if investigation showed suggestions to be acceptable they could then be incorporated in manuals of instruction and so become part of the standard procedure.

*Improved Standards of Supervision:* Throughout the courses the principles of supervision were related to the general activities of a Works Office. These were then discussed as a separate topic towards the conclusion of each course.

*Greater Recognition of the Need for Training "On-the-Job":* It was impressed on Cost Clerks, in particular, that they have a responsibility to train junior members of their staff in the various aspects of Works Office procedures. It was pointed out that this could be achieved by direct instruction or by adopting a policy of job rotation in the office.

## PROBLEMS ENCOUNTERED

There is little doubt that some Cost Clerks who had evolved their own procedures over a long period of time were reluctant to adopt the standardized procedures if these did not coincide with their own. This resistance to change is natural enough. However, it does present a problem in courses where a fairly demanding schedule precludes the discussion of pros and cons at any great length. In the final analysis, it is only through follow-up training sessions "on-the-job", and by close liaison with appropriate sections at Head Office, that it can be determined whether procedures taught at the training centre have been accepted and put into practice.

The training staff encountered a further problem during courses where groups comprised members with different backgrounds in Works Office procedures. In such cases it was sometimes necessary to discuss at length certain parts of procedures with which the more experienced members were already conversant. This is, of course, a problem which is likely to arise in any training programme where country officers are

involved, as unforeseen requirements can necessitate last-minute changes in the planned composition of a group. When this occurred the extent to which the interest of the experienced officers could be retained depended on the skill of the training officer in drawing on their experience and so involving them in the discussion.

## LESSONS LEARNED

Among the more important lessons learned by observation and discussion during the training programme was the need for:

*Improved Communication:* In spite of the care taken in Head Office in preparing circulars requesting action in field offices, it was found that doubts often existed regarding their interpretation. Very rarely, however, was guidance sought from the Divisional Office or Head Office, with the result that procedures adopted often varied.

It is clear that the utmost emphasis must be placed on the need for two-way communication.

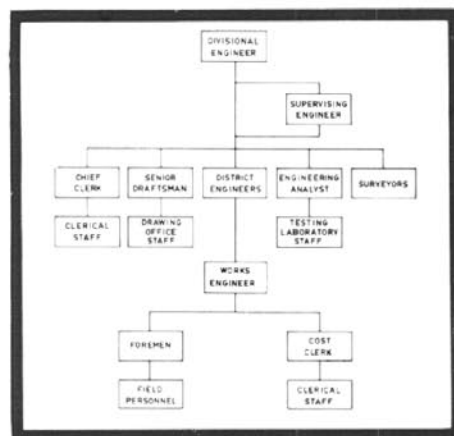
*Flexibility of Courses:* It is an advantage if the full training course is constructed so that:

- Selected segments can be readily extracted for courses of shorter duration on specific aspects.
- Changes in content or emphasis can be made with a minimum of disturbance of course material if experience during the courses shows that such changes are desirable.

*"Follow-up" Training:* It is most important that training received at the training centre should be followed up by "on-the-job" instruction. In this way a training officer can give assistance and assurance, to the officer who has some misgivings about his ability to change any defective procedures he has established, particularly in relation to costing, so that these conform to the procedures taught during the training courses.

*Stability of Training Staff:* The results of any training programme reflect the techniques and knowledge of the officer (or officers) actually conducting the courses. Even if he has a sound knowledge of the theory of training techniques, and practical experience of the matters covered in the programme, this officer can only become proficient in his job with considerable practice in the actual training situation.

The training officer is expanding his own knowledge with every course he conducts, either through discussion of



problems with members of the group, or in seeking information from appropriate sources when questions are asked which he feels he is not qualified to answer off-hand.

A firmly established training staff is therefore an important factor in the success of any programme of instruction.

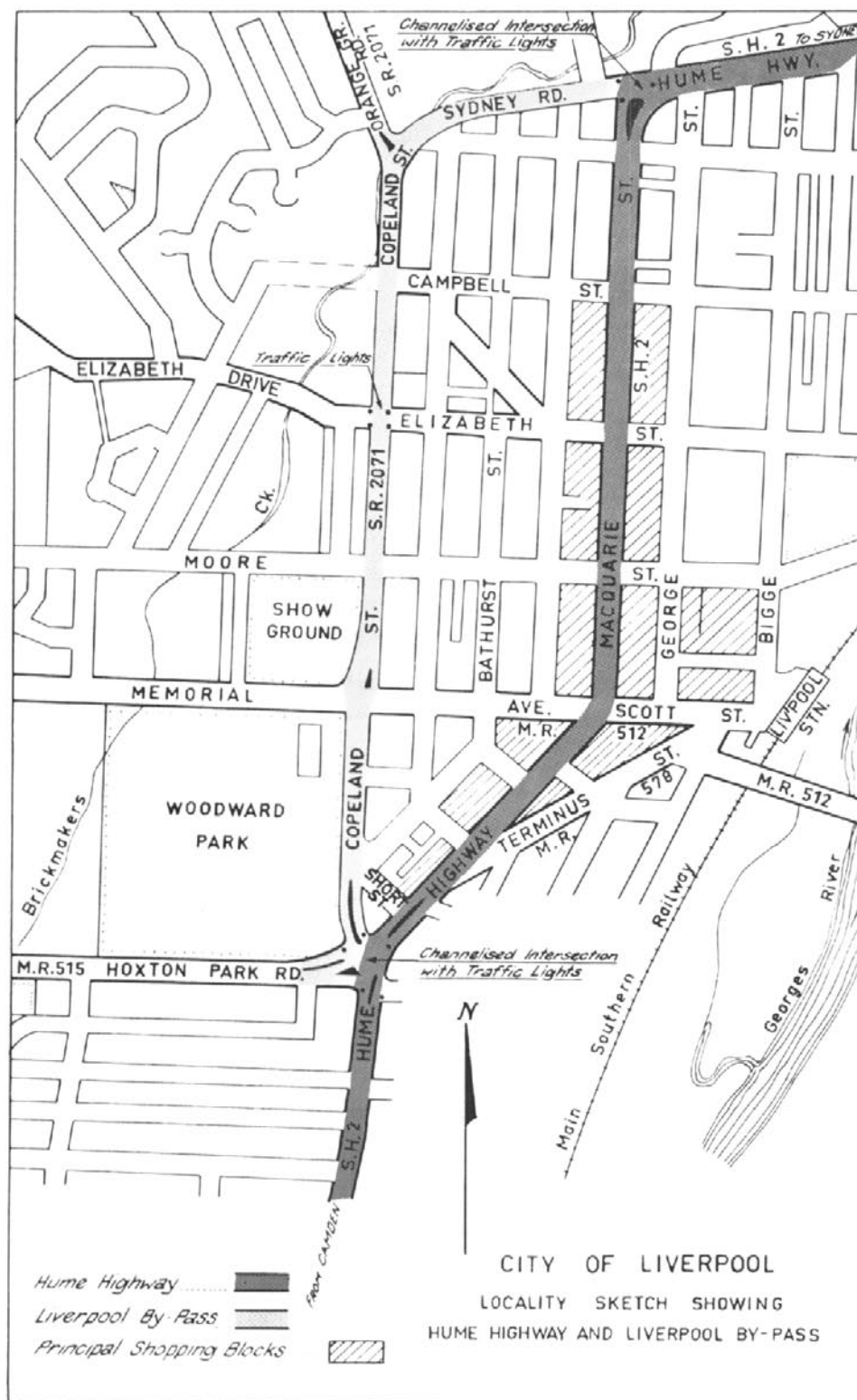
## CONCLUSION

Regardless of the care taken in initial preparation, the ultimate success of a training programme will depend largely on the attitudes of officers directly and indirectly associated with its implementation.

As the officers most directly concerned, members of the training staff should of course be constantly seeking means of improving the presentation of course material. They should endeavour, while the programme is in progress, to find out whether its objectives are being achieved. And they should be ready to change the structure or content of courses if this is shown to be desirable.

However, valuable contributions to the programme can be made by other officers. For example, supervisors who are responsible for accepting or referring back material which requires a sound knowledge of procedures taught in the programme, can provide much of the information needed by the training staff to determine whether changes in course structure or content are desirable. On a less tangible note, supervisors in general can assist by making it quite clear that the training programme has their full support. For there is little doubt that an individual's attitude to a course for which he is selected is influenced to a marked degree by his supervisor's attitude to the training programme.

# LIVERPOOL BY-PASS



The Hume Highway (State Highway No. 2), major road link between Melbourne and Sydney, passes through the main shopping and commercial centre of Liverpool, a busy and fast growing satellite city some 21 miles southwest of Sydney.

The Highway at this location carries a large volume of traffic including a high percentage of heavy transports. In 1966 the Annual Average Daily Traffic Volumes on the Highway between Woodville Road (State Highway No. 13) and the Cross Roads ranged between 23,300 and 31,600 vehicles per day. The huge volume of vehicles passing through the city created extremely difficult conditions both for through and local traffic.

The additional traffic in the area, generated by the rapid development of residential estates and industrial expansion, has greatly aggravated the already difficult conditions.

The need for a more direct route for through traffic to relieve the congestion in the City has been apparent for some time. In consequence the Department prepared plans for a road route by-passing the city centre which would serve through traffic. It was proposed that the route would provide similar facilities as the Hume Highway on either side of Liverpool, that is, two 3-lane carriageways divided by a central median.

Following discussions between the Liverpool City Council and the Department, it was agreed that part of the work involved would be carried out by the council and part by the Department. It was also agreed that the work would be undertaken in stages. Initially, a 33 feet wide carriageway would be provided throughout, followed at a later date by the ultimate provision of a second carriageway.

The route of the By-Pass incorporates existing streets and runs from the Hume Highway via Sydney Road, Copeland Street (Secondary Road No. 2071) re-joining the Hume Highway at its junction





*Sections of  
by-pass being used  
by traffic*



with Hoxton Park Road (Main Road No. 515). This route is 1.3 miles long.

The Department agreed to contribute 50 per cent of the cost of reconstruction of Copeland Street between Campbell and Short Streets and it would pay the full cost of the connecting links at either end including the necessary channelized intersections.

Liverpool City Council has completed the reconstruction of Copeland Street between Campbell Street and Short Street.

The Department carried out the work at the northern or Sydney Road section

which has been completed except for some minor work at the intersection with Orange Grove Road. It is currently reconstructing the intersection at the southern end at the intersection of Copeland Street, Hoxton Park Road and the Hume Highway. It is expected that work on this section will be completed at an early date.

Traffic lights have been installed at the intersection of Sydney Road and the Hume Highway and at the intersection of Copeland Street and Elizabeth Drive. Traffic lights will also be provided at the intersection with the Hume Highway at

the southern end of the By-Pass.

Because the intersection at the southern end of the work is not completed and traffic lights have to be provided it is not yet available for use by traffic. However many drivers are already taking advantage of the By-Pass route, travelling on the already completed section via the existing intersection of Copeland Street and Hoxton Park Road.

Throughout, the completed work has been provided with an asphaltic concrete pavement generally 33 feet wide. The total estimated cost of this stage of the By-Pass is \$385,000.

## TENDERS ACCEPTED BY THE DEPARTMENT OF MAIN ROADS

The following tenders (in excess of \$10,000) for Road and Bridge Works were accepted by the Department during the 3 months ended 31st December, 1967.

Road No.	Work or Service	Name of Successful Tenderer	Amount
			\$
State Highway No. 4	Snowy Mountains Highway. Shire of Monaro. Drilling and Blasting of Rock as directed between 35 miles and 40 miles from Bega.	Wilford & Grigg	36,450.00
State Highway No. 10	Pacific Highway. Shire of Lake Macquarie. Supply and delivery of up to 2,800 tons of Dense Mix asphaltic concrete between South Street, Bennett's Green and Oakdale Street, Gateshead.	Boral Road Services	33,320.00
State Highway No. 10	Pacific Highway. Shire of Lake Macquarie. Delivery of 20,000 tons of slag products to Highway at Bennett's Green.	G. A. Tillitzi & Sons Pty Ltd	15,600.00
State Highway No. 10	Pacific Highway. Shire of Lake Macquarie. Supply and delivery of 3,600 cu yd of surface course gravel to Highway at Bennett's Green.	Blue Metal & Gravel (Newcastle) Pty Ltd	10,664.00
State Highway No. 11	Oxley Highway. Shire of Walcha. Construction of a 3 span, reinforced concrete bridge, 180 ft long over Mainey's Creek, 6 miles east of Walcha.	A. Goor Pty Ltd	70,226.50
City of Newcastle	Drilling of rock sockets for Benoto Piles for bridge over North Arm of Hunter River.	Allan Royle Drilling Engineering Co.	26,000.00
City of Newcastle	Supply and delivery of 1½ in course aggregate for construction of Benoto Piles for bridge over North Arm of Hunter River.	Blue Metal & Gravel (Newcastle) Pty Ltd	11,103.00



# SYDNEY HARBOUR BRIDGE ACCOUNT

Receipts and Payments for the period 1st July, 1967 to 31st December, 1967

<i>Receipts</i>	\$
Road Tolls	1,977,959
Contributions—Railway Passengers	145,160
Omnibus Passengers	14,017
Rent from Properties	65,528
Miscellaneous	39
Loan Borrowings for the Warringah Expressway Approach	3,160,000
<b>Total Receipts</b>	<b>\$5,362,703</b>

<i>Payments</i>	\$
Cost of Collecting Road Tolls	254,572
Maintenance and Minor Improvement	300,170
Alteration to Archways	175
Provision of Traffic Facilities	40,603
Administrative Expenses	27,643
Loan Charges, Payment of Interest, Exchange, Management and Flotation Expenses—State Loans	601,380
Interest and Provision for Repayment—Loan Borrowings under section 7 of Sydney Harbour Bridge Administration Act	446,076
Miscellaneous	9,366
Transfers to Expressway Fund	3,472,000
<b>Total Payments</b>	<b>\$5,151,985</b>

# MAIN ROADS FUND

Receipts and Payments for the period from 1st July, 1967 to 31st December, 1967

	County of Cumberland Main Roads Fund	Country Main Roads Fund
<i>Receipts</i>	\$	\$
Motor Vehicle Taxation (State)	3,479,004	13,916,015
Charges on Heavy Commercial Goods Vehicles under Road Maintenance (Contribution) Act 1958 (State)	1,241,429	4,965,717
Commonwealth Aid Roads Act, 1964	2,641,330	10,287,321
Road Transport and Traffic Fund	..	..
From Councils under section 11 of Main Roads Act and/or for Cost of Work	3,774,235	35,238
Other	280,132	482,705
<b>Total Receipts</b>	<b>\$11,416,130</b>	<b>\$29,686,996</b>
<i>Payments</i>		
Maintenance and Minor Improvements of Roads and Bridges	2,931,638	7,865,326
Construction and Reconstruction of Roads and Bridges	2,897,275	15,000,950
Land Acquisitions	2,096,159	296,264
Administrative Expenses	841,460	1,580,843
Loan Charges, Payment of Interest, Exchange, Management and Flotation Expenses—State Loans	66,320	442,033
Interest and Provision for Repayment of Loan Borrowings under section 42A of the Main Roads Act	245,686	..
*Miscellaneous	742,871	1,508,959
<b>Total Payments</b>	<b>\$9,821,409</b>	<b>\$26,694,375</b>

\* Includes transfer to Special Purposes Account, in respect of finance for Operating Accounts, Suspense Accounts and Reserve Accounts.

# TENDERS ACCEPTED BY COUNCILS

The following tenders (in excess of \$10,000) for Road and Bridge Works were accepted by the respective Councils for the 3 months ended 31st December, 1967.

Council	Road No.	Work or Service	Name of Successful Tenderer	Amount
Ashford	S.H. 16	Construction of 4-cell 15 feet by 14 feet reinforced concrete box culvert over Greenhills Creek, 21.8 m. west of Bonshaw.	K. A. Constructions Pty Ltd	\$ 20,013.26
Bibbenluke	S.H. 19	Reconstruction between 9.71 m. and 11.26 m. south of Nimmitabel.	Lachlan Constructions Pty Ltd	26,501.00
Bibbenluke	S.H. 19	Reconstruction between 7.00 m. and 8.18 m. south of Bombala.	Heavy Haulage Plant Hire Pty Ltd	24,793.00
Bibbenluke	T.R. 91	Reconstruction between 4.83 m. and 6.54 m. east of Bombala.	Ack Wilton Pty Ltd	14,786.00
Boorowa	T.R. 56, M.R.'s 241, 248 & 380.	Bituminous surfacing at various locations	Boral Road Services Pty Ltd	17,106.80
Boree	M.R. 310	Construction of a 6-span prestressed and reinforced concrete bridge 180 ft 6 in long over Oakey Creek 4 m. south of Cudal.	S. Turner & Son	53,538.30
Coolah	Various	Bitumen surfacing at various locations	Shornccliffe Pty Ltd	14,191.90
Coolamon	M.R. 240	Bitumen surfacing 20 m. to 28 m. north of Coolamon	Emoleum (Aust.) Ltd	15,591.72
Coonabarabran	D.R. 1170	Construction of a 6-span steel and reinforced concrete bridge 360 feet long over the Castlereagh River, 1.00 m. from Binnaway.	S. Turner & Son	124,173.40
Copmanhurst	M.R. 150	Construction of a 4-span reinforced and prestressed concrete bridge, 130 feet long over Pulganbar Creek at Koorway 32.94 m. north of Grafton.	Enpro Constructions Pty Ltd	53,833.00
Gloucester	D.R. 3188	Construction of a 5-span steel and reinforced concrete bridge 300 feet long over the Barrington River 3 m. north of Gloucester.	Weir's Construction Service	59,963.34
Goodradigbee	T.R.'s 56 & 84, M.R. 278.	Bituminous surfacing at various locations	Emoleum Pty Ltd	15,175.27
Gundurimba	T.R. 65	Pavement stabilization 2.96 m. to 3.91 m. from Lismore.	Stabilizers (Aust.) Ltd	10,530.00
Gundurimba	S.H. 16	Construction of a 3-span reinforced and prestressed concrete bridge 105 feet long (at the foot of Bugden's Hill), 29.08 m. west of Ballina.	Dayal Singh Constructions Pty Ltd	35,595.00
Gunnedah	S.H. 11	Construction of a 12-cell 9 feet by 5 feet reinforced concrete box culvert and approaches at Blackjack Creek 1.1 m. west of Gunnedah.	Enpro Constructions Pty Ltd	20,476.86
Jerilderie	M.R. 552	Construction of approach to bridge at Algudgerie Creek, 7.2 m. west of Jerilderie.	J. Evans	23,748.84
Liverpool Plains	Various	Supply and delivery of 41,560 gallons of 80-100 bitumen.	Shell Co. of Australia	13,846.33
Macintyre	M.R. 134	Construction of 4-span reinforced concrete bridge, 120 feet long over Reedy Creek 7.25 m. north of Delunga.	N. Del Gatto	30,291.00
Macleay	M.R. 198, T.R. 4032.	Bitumen surfacing at various locations	Shornccliffe Pty Ltd	10,051.57
Mulwaree	M.R. 248	Construction of a 3-span precast concrete bridge 95 feet long over Dixons Creek 10.5 m. north of Goulburn.	Nello Pizzolitto	34,366.92
Mulwaree	M.R. 248	Construction of a 4-cell 10 feet by 9 feet concrete box culvert over Stoney Creek 10.73 m. north of Goulburn.	Nello Pizzolitto	10,116.05
Mumbulla	M.R. 272	Construction of a 2-span reinforced concrete bridge 70 feet long over Barragoot Swamp 2.5 m. south of Bermagui.	V. J. Jones	19,799.00
Namoi	M.R. 127	Construction of an 8-cell 15 feet by 5 feet reinforced concrete box culvert at Spring Creek 5.7 m. west of Narrabri.	N. Del Gatto	31,878.40
Tallaganda	T.R.'s 51 & 92, M.R. 271.	Supply and delivery of 1,736 cu yd of crushed aggregate.	Ready Mixed Concrete (Aust.) Pty Ltd	11,017.85
Tallaganda	T.R.'s 51 & 92, M.R. 271.	Bituminous surfacing at various locations	Allen Bros Pty Ltd	14,426.55
Tamarang	M.R. 129	Construction of a 16-span prestressed concrete bridge 320 feet long over Warrah Creek 15.15 m. west of Quirindi.	E. M. Moore Pty Ltd	59,091.00
Tumbarumba	T.R. 85	Bitumen surfacing at various locations.	Boral Road Services	34,889.93
Walcha	T.R. 73	Construction of a 12-cell 9 feet by 9 feet reinforced concrete box culvert 8.22 m. north of Walcha.	Enpro Constructions	24,687.00
Waugoola	S.H. 6, M.R. 576.	Bitumen surfacing at various locations	Boral Road Services Pty Ltd	13,711.21
Wellington	M.R. 206	Construction of a double 4-cell, 9 feet by 9 feet reinforced concrete box culvert over Baragonumbel Creek 29 m. west of Dunedoo.	Nello Pizzolitto	34,237.42
Wellington	M.R.'s 206, 353 & 573.	Bitumen surfacing at various locations	Boral Road Services Pty Ltd	10,726.11
Wentworth	T.R. 68	Emulsion Enrichment and Bitumen Surfacing 9.5 m. to 21.3 m. north of Wentworth.	South West Bitumen Surfacing Co. Pty Ltd	15,820.80
Yarrowlumla	T.R. 51, M.R. 249.	Bituminous surfacing at various locations	Allen Bros Pty Ltd	11,255.44



