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DMR.84/85 COMMISSIONER FOR MAIN ROADS

# ANNUAL REPORT 1984-85





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**COMMISSIONER FOR MAIN ROADS 1984-85  
ANNUAL REPORT****Charter**

The Commissioner for Main Roads is responsible for the administration of the Main Roads Act, 1924 which provides for the construction and maintenance of those roads throughout the State which have been classified under the Main Roads Act, both in country and metropolitan areas.

The Commissioner is also responsible to the New South Wales Government for maintenance of the Sydney Harbour Bridge, for the implementation of traffic management measures throughout the State, and for the disbursement of Commonwealth Government grants for local roads.

The Department of Main Roads carries out the work arising from the Commissioner's responsibilities under the Act.

The charter inherent in the Department's statutory obligations entails the development of a road system throughout New South Wales which will meet the reasonable needs of the community for the safe and efficient movement of people and goods.

*Safety at the intersection of the New England Highway and Liverpool Street at Scone has been enhanced by the provision of a roundabout.*

**Objectives****For the Road System**

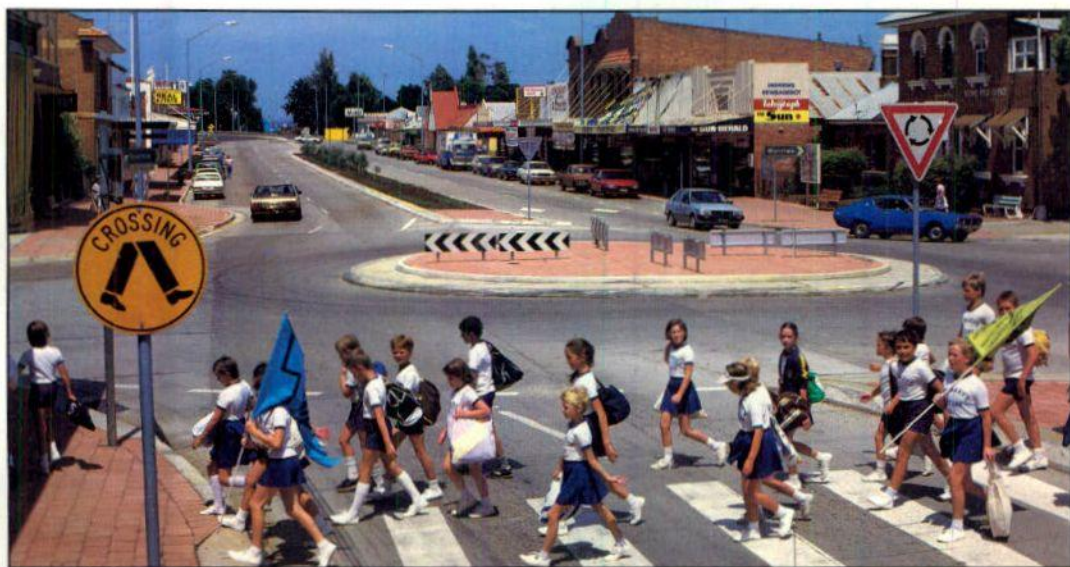
- to plan a road system which meets the reasonable needs of the community;
- to design, build and maintain the road system in the most economical and efficient manner;
- to enhance compatibility of the various transport modes;
- to have regard for the environment;
- to apply available funds in the most cost effective manner;
- to enhance traffic performance of the existing road system in terms of safety and ease of movement.

**For Interaction with the Community and Government**

- to respond to community needs in a positive, effective and timely manner;
- to inform the public on road matters;
- to respond to Government policies and directions;
- to co-operate with other Government organisations in a positive way.

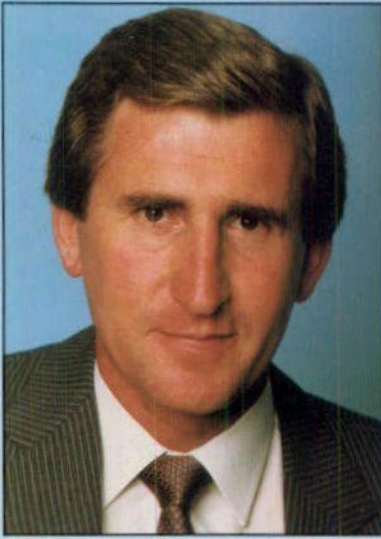
**For the Organisation and its People**

- to operate throughout the State in an efficient and effective manner;
- to provide fulfilling and challenging work opportunities;
- to provide just, non-discriminatory, safe and healthy working conditions.



L049340





*Sydney, New South Wales  
October 1985.  
The Hon. L.J. Brereton, M.P.,  
Minister for Public Works and Ports,  
and Minister for Roads, Sydney.*

As required by Section 6 of the Main Roads Act, 1924, I submit to you for presentation to Parliament an annual report and statement of accounts for the year ended 30 June 1985. Some references to happenings after that date have been included where appropriate to complete the record.

The past year has been particularly satisfying. With the largest budget ever at its disposal, the Department has been able to achieve real progress on its primary objective of improving the State's main road system. The Department's workforce, comprising 9,162 employees at all levels, continues to aim toward the provision of improved roads, better traffic management and safer road travelling conditions.

The expanded road budgets of recent years have provided considerable benefits to the community by promoting employment and through high returns from investment. In this respect, estimates indicate that prudent investment in roads yields an overall return of 16% in real terms from vehicle operating costs, reduced travel time and accident reduction. In addition, improvements to the road system provide opportunities to develop or intensify recreational and other land

uses, contribute to improvements in environmental and residential amenity and facilitate provision of faster and more dependable emergency services, all of which enhance the community's quality of life.

The Australian Bicentennial Road Development (ABRD) Program has also been an important component in our enhanced road improvement program, contributing 29% of the total value of improvements in 1984-85. Although the legislation was enacted in December 1982 by the Federal Government, its full impetus was not developed until this year. In part this was a consequence of the requirement that tenders be called for all projects except those on local roads.

Projects now approved in the various categories, which will comprise the major part of the program, total:

National Roads	45
Urban Arterials	24
Rural Arterials	52
Local Roads	450

The Act allows work on approved projects to proceed prior to funding being available within the trust funds. Advantage was taken of that provision in 1984-85 to continue the momentum on roadworks in respect to approved projects.

In the past year, significant progress has been achieved also in corporate planning activities within the Department. In April 1985, the first documented edition of the Department's corporate plan and its related strategic issues was produced. This was the result of a continuing process which in itself has proved to be of substantial value to management since it was first initiated some seven years ago. However, the most fruitful innovation in that area has proved to be the regular Main Roads Strategy Meetings which you, as Minister for Roads, introduced in June 1984.

These meetings have provided a valuable forum in which to review policy and develop strategy in harmony with Government objectives. As a consequence, the Department is now planning road network improvement on a regional basis rather than concentrating on single route development. In this vein, strategies for the Newcastle Region Road Improvement Program (1985-1992) and for the Central Coast Road Improvement



Program (1985-1992) were announced during the year.

From these strategy meetings stemmed the 'more for less' strategy, concentrating upon the optimum utilisation of resources. Consistent with this strategy the Department, with your support, has been able to concentrate resources into areas of greatest return.

Major works have been accelerated, enabling their commissioning at the earliest possible date. In this way, the community has obtained the benefits from the investment of considerable public funds earlier than expected.

Locations presenting major obstruction to traffic flow have been identified. By focusing on these bottlenecks, achievable, interim and longer range improvements have been identified.

Improved road safety has been achieved by concentrating upon sites with poor accident record. While most traffic accidents result from driver error, hazard can often be reduced by relatively minor road works. It has been estimated that the 'black spot' road improvement program alone will result in an annual saving to the community of \$4 million.

A special program to provide improved safe overtaking opportunities on major rural highways will not only enhance safety, but will raise the level of service substantially.

Programs aimed at achieving uniform and improved travel conditions along major urban arterial routes have been implemented. The merits of these programs were demonstrated by full-scale trials on Parramatta and Victoria Roads where a wide range of traffic control measures were introduced quickly over the whole length of each route. The result was an immediate and significant reduction in travel times together with a halving in the rate of serious accidents.

In those trials, the introduction of 'S' lanes proved particularly successful. While these measures sometimes affect businesses on the roadside, the legal situation is quite clear. That is, the road exists for public use, not private use. However, it is not sufficient for those in public administration to merely observe the law. In exercising authority, due regard must be paid to the effects on all, and

the Department seeks to apply this principle.

When major changes are introduced suddenly and unexpectedly, a special effort is justified to alleviate adverse impacts to the maximum feasible extent. In introducing the traffic measures on Parramatta and Victoria Roads, the Department received valuable assistance in identifying and evaluating adverse impacts from Local Government and from Members of both Houses of the State Parliament.

In seeking to achieve the most efficient and effective disbursement of the resources made available by the Government through the Department of Main Roads, the concept of a properly based priority program introduced by the Government in 1983 has been invaluable.

Recent reductions in Federal funding for arterial roads has meant some reassessment of this program, but the State Government has stated its commitment to the N.S.W. Road Improvement Program and expenditure of nearly a billion dollars on roads in 1985-86.

In conclusion, I take this opportunity to thank each and every one of the Department's personnel, as well as all those Council and other Government employees, contractors and consultants, whose combined efforts made 1984-85 another successful year.

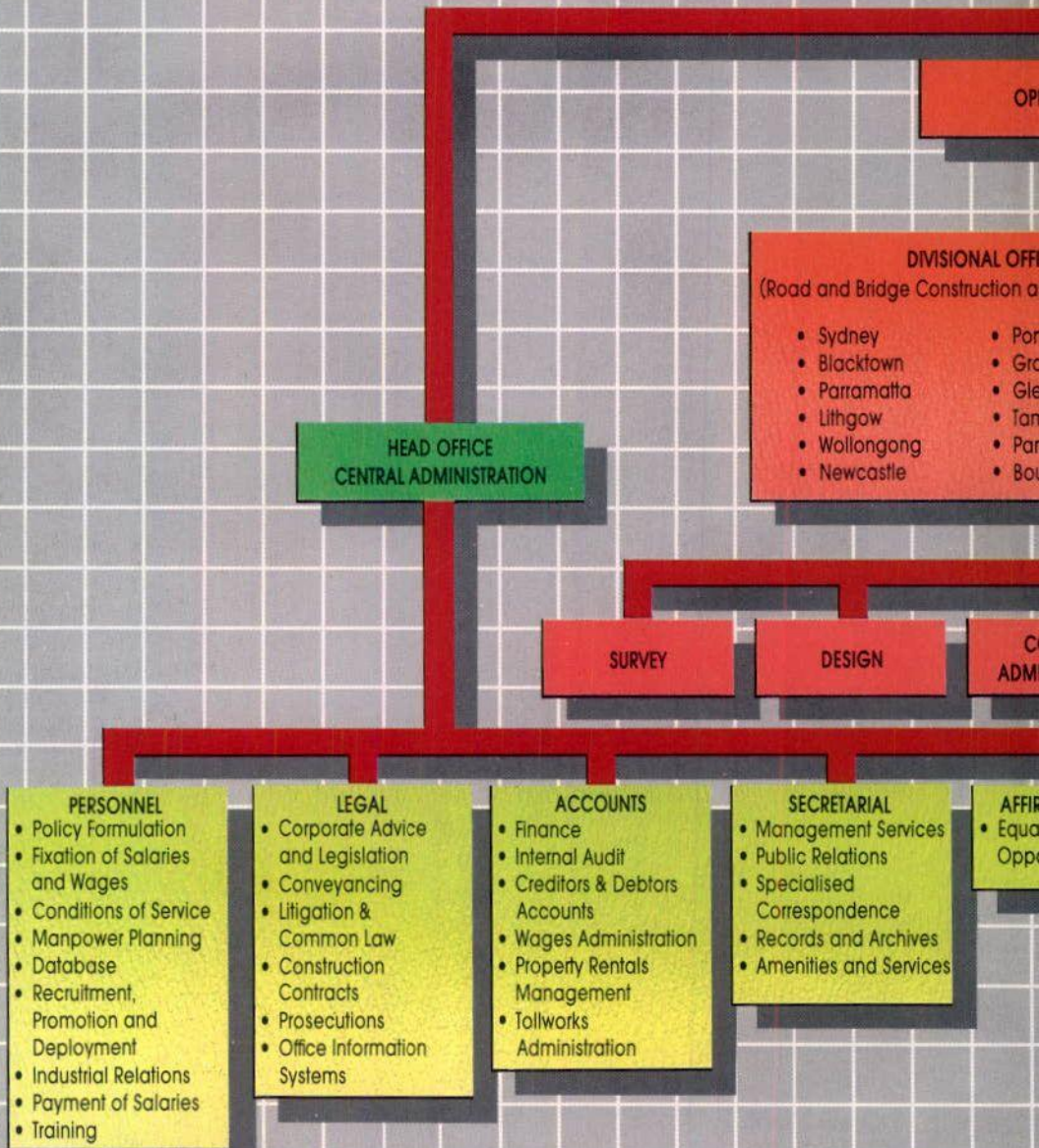
I also thank you, Minister, for your help and support throughout the year.



B.N. Loder  
COMMISSIONER FOR MAIN ROADS



# FUNCTIONAL ORGANISATION





# CHART

SSIONER  
ROADS  
ion Sole  
to the  
Act, 1924)

IONS

ADMINISTRATION  
(Maintenance-Traffic Management.)

- Broken Hill
- Deniliquin
- Wagga Wagga
- Bega
- Goulburn
- Outer Freeways

CIL  
RATION

MATERIALS  
INVESTIGATION

MANAGEMENT  
OF WORKS  
(42 Works Offices)

IVE ACTION  
ployment  
ity

POLICY AND  
ECONOMICS

## INTER-BRANCH FUNCTIONS

(Responsible to Steering Committees)

- Communication and Information Services
- Organisational Review

HEAD OFFICE  
TECHNICAL SUPPORT

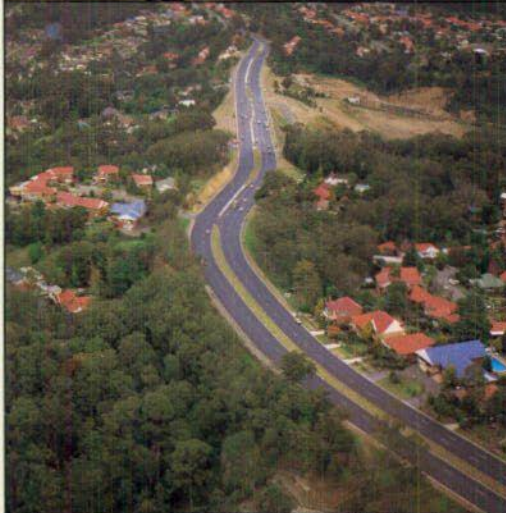
## PLANNING & DESIGN

- Strategic Planning
- Investigations
- Traffic Planning
- Planning
- Statutory and Environmental Planning
- Road Design
- Bridge Design
- Traffic Design
- Architectural Services

## ENGINEERING SERVICES

- Roads • Bridges • Traffic
- Contract Administration
- Council Works
- Programming and Budgeting
- Property Survey, Acquisition and Disposal
- Expenditure Control
- Research and Development
- Bituminous Works
- Plant and Equipment
- Job Safety and Health
- Weight of Loads Enforcement
- Materials Engineering
- Supply
- Library





### September 1984

In Sydney, new traffic management measures were announced for busy Parramatta and Victoria Roads, including modifications and improvements to traffic lights, banning of right hand turns at some intersections and introduction of 'S' lanes at others to provide at least two free flowing lanes at all times.

These and other measures proved successful in reducing accidents by as much as a half and reducing travel times by up to 15 minutes. Similar action is proposed on other routes.

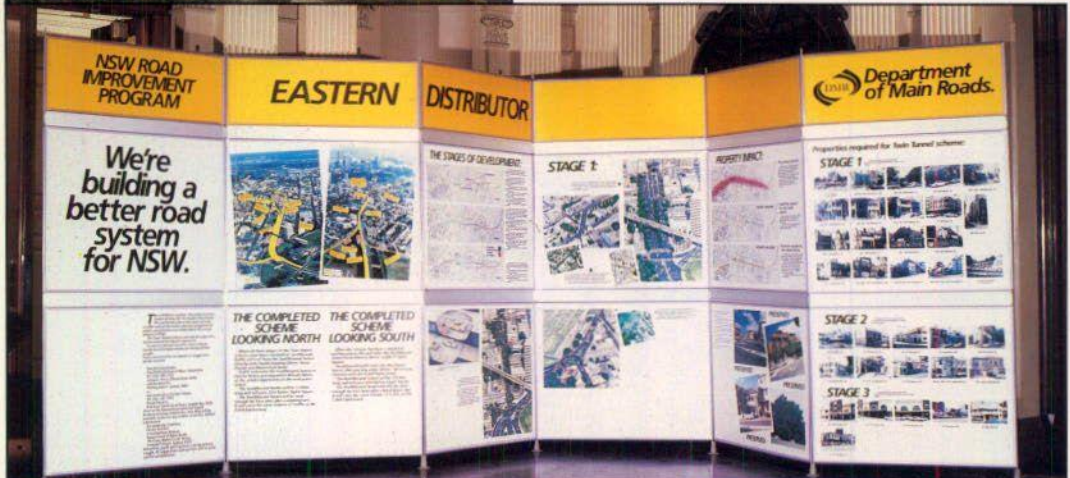
### March 1985

The launching of the Newcastle Region Road Improvement Program outlined extensive works to be carried out between 1985 and 1992 in this rapidly growing area. More than \$500 million will be spent on roads in this region over the next five years.

Major projects include a \$55 million high capacity ring road to the west of Charlestown between Windale and Sandgate and new bridges at Swansea and Hexham.

### April 1985

New proposals were announced by the Minister for Roads, Mr. Laurie Brereton, for the \$70 million Eastern Distributor from Woolloomooloo to Darlinghurst. The proposed route will be constructed largely below ground and the air space above is to be offered for development, including housing.





The new plans will drastically reduce estimated impact on the area compared to the original scheme, which entailed demolition of 800 residences and the displacement of 2,350 people.

## June 1985

The Minister for Roads, Mr. Laurie Brereton, announced plans for a \$70 million link between Victoria Road, White Bay, and the F4 — Western Freeway at Concord.

This work will provide an extension of the proposed road between the Western Distributor over Darling Harbour and White Bay, including a new high level Glebe Island bridge.

The planned four lane route will involve new road and bridge works as well as upgrading the existing road system through Lilyfield, Leichhardt, Dobroyd Point, Haberfield, Croydon and Burwood.

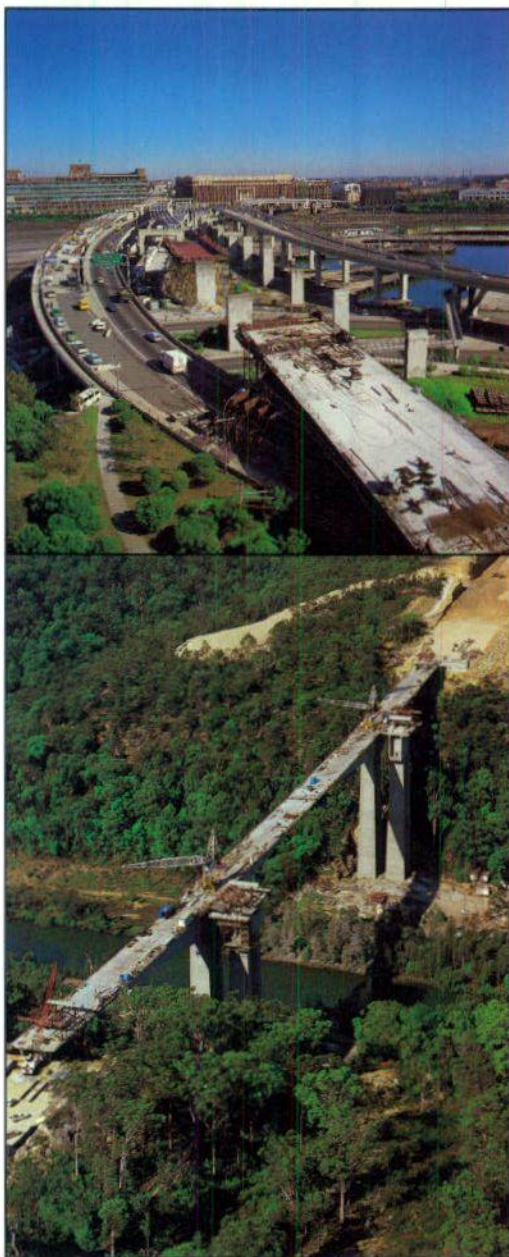
This work will increase capacity by 50 per cent, dramatically improve traffic flow and reduce travel time between the city and western metropolitan areas by more than 15 minutes. More importantly, it will take traffic off local roads and reduce the number of accidents.

## June 1985

Details were announced of a \$200 million Central Coast Road Improvement Program to be carried out between 1985 and 1992.

The program involves improving freeway conditions between the Central Coast and Sydney and Newcastle; providing better link roads to the Freeway; improving arterial routes within the region; upgrading local roads; and improving local 'trouble spots' to relieve congestion and improve road safety.

Overall benefits will include better local traffic flow and greatly reduced travelling times between Sydney and Newcastle.



**Top left:** Sign marking for new 'S' lanes to relieve congestion on Parramatta Road, Stanmore. **Middle left:** Recently upgraded section of S.H. No. 23 which will provide a high capacity ring road to bypass Newcastle. **Bottom left:** Proposals for the Eastern Distributor on display in the Sydney Town Hall. **Top right:** Work continued on viaducts over Darling Harbour which will provide expressway conditions between the City and White Bay. **Bottom right:** The \$20 million twin bridges at Mooney Mooney Creek are a spectacular feature of the Central Coast Road Improvement Program.



## PERFORMANCE INDICATORS

The Department is reviewing the performance indicators which it is now using, with the aim of producing indicators which might be more meaningful to the public and more useful to management.

In the meantime, the performance indicators which were published in the last two Annual Reports are continued this year, with updated values.

Previous graphs illustrating 'External Factors', 'Use of Resources' and 'Construction Completed', which are indicators of change rather than of performance, are now shown elsewhere in this Report, with the appropriate text.

### Figure 1. Sydney Travel Speeds

Marked recent fluctuations in average travel speeds are primarily due to values being plotted for each year since 1982, compared with smoothed 10 year trends prior to 1982. Nonetheless, the average p.m. peak hour travel speed has continued to improve and to approach the desired goal of 40 km/h, and the decline in travel speed on Victoria Road has been reversed. There are apparent reductions in travel speeds in the a.m. peak hour period on other specified routes listed in Sydney. The reduction in speeds on Parramatta Road largely occurred before, and does not reflect improvements flowing from, the introduction of 'S' lanes in late 1984.

### Figure 2. Country Travel Speeds

These show general improvements in 1983 and 1984, although the rating of travel speeds is rather subjective. While the increases in speed are due to road improvements, they may also be attributed in part to good weather conditions at the time of rating. The goal set for country travel speeds is 75 km/h on major routes to Sydney.

### Figure 3. Road Safety

The rate of incidence of fatal crashes in both Sydney and country areas remained unchanged in 1984 but there has been a slight increase in injury crashes. The country rate of fatal crashes is still excessive.

### Figure 4. Pavement Roughness

There are apparent reductions in roughness on rural State Highways, Trunk and Main Roads but an increase in roughness on main roads in Sydney in 1985 compared with 1984. However, the nature of data collection in these years suggests that in fact there may have been little if any change. In 1984 roughness data was collected from limited sample lengths of road. The top end of the roughness distribution curve is very sensitive and accordingly the omission of a rough pavement from the sample could have materially affected the 1984 value. More extensive testing was carried out in 1985, so these results are considered the more reliable.

### Figure 5. Industrial Relations

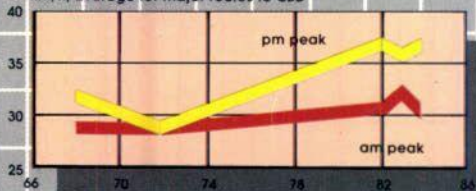
Although the number of working days lost through disputes is almost double that for the previous year, more than half the days lost this year resulted from industrial action in protest against changes to State superannuation. This action affected most Government organisations in New South Wales.

### Figure 6. Industrial Safety

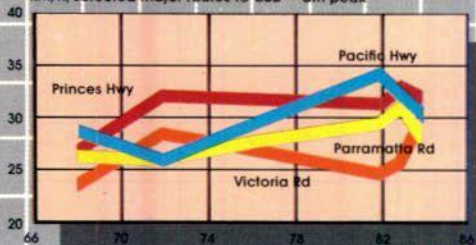
Reasonably stable conditions have applied in the area of industrial safety since 1980-81. However, there has been a reduction of 16% in days lost per injury since that time.



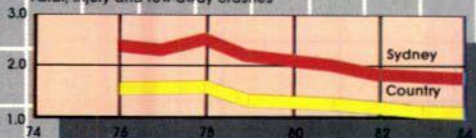
**Fig 1. Sydney Travel Speeds**  
km/h, average for major routes to CBD



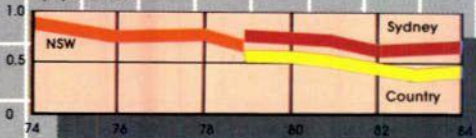
km/h, selected major routes to CBD - am peak



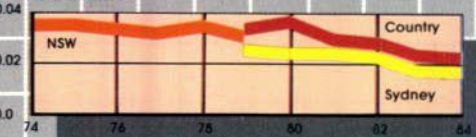
**Fig 3. Road Safety**  
Crashes per million vehicle kilometres  
fatal, injury and low-way crashes



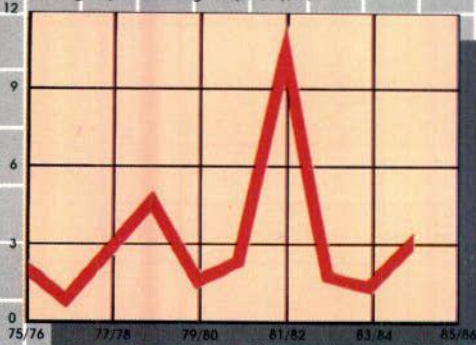
Injury Crashes



Fatal Crashes



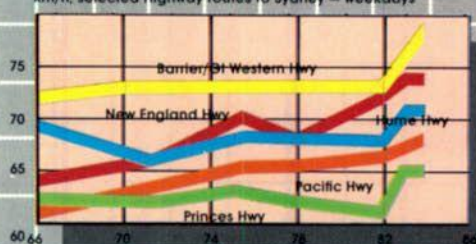
**Fig 5. Industrial Relations**  
Working days lost through disputes (000)



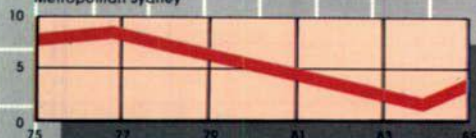
**Fig 2. Country Travel Speeds**  
km/h, average for all Highway routes to Sydney - weekdays



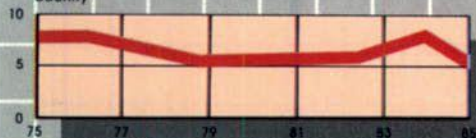
km/h, selected Highway routes to Sydney - weekdays



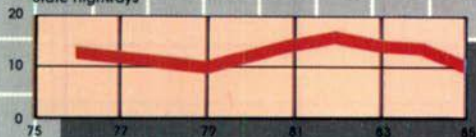
**Fig 4. Pavement Roughness**  
% of Main Roads rougher than NAASRA standards  
Metropolitan Sydney



Country



State Highways



**Fig 6. Industrial Safety**  
Number





## MAJOR ROUTE DEVELOPMENT

Roads in country areas of New South Wales are continually being improved to allow people and goods to be transported quickly over long distances in comfort and safety.

The Department seeks to use the funds made available to it to improve the road system in a way that yields immediate benefits to the community.

However, in some situations the most appropriate solution is to undertake major works which need to be programmed over several years. Where this is the case, every opportunity is taken to construct the work in self-contained stages which can be brought into use progressively as they are finished.

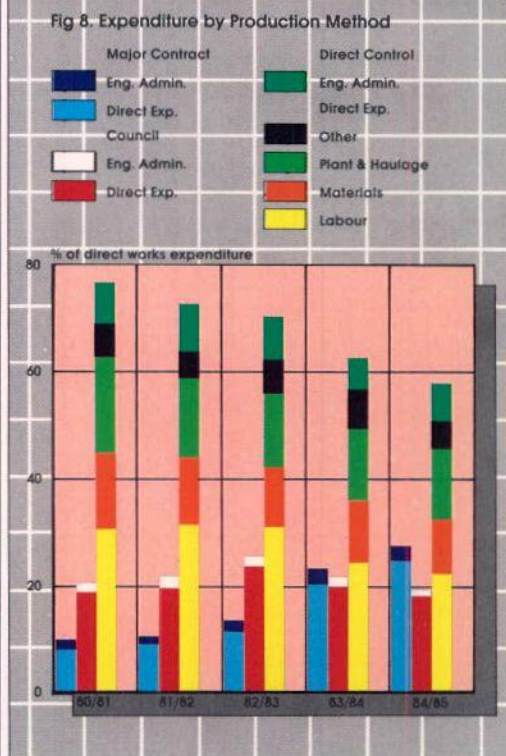
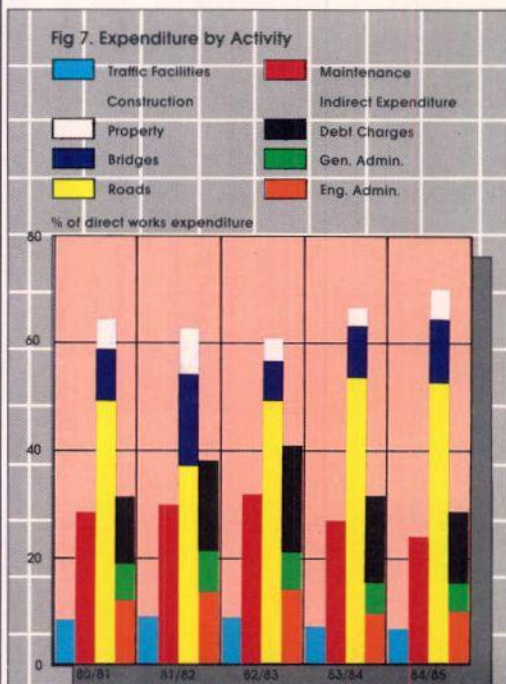
The Department seeks to undertake works on classified roads (State Highways, Trunk Roads and Ordinary Main Roads) by the most appropriate means. Consequently, some works are undertaken by the Department's own forces, some works are carried out by contract and other works are performed by Councils with funding provided by the Department. For the most part the Department's Divisional Offices are responsible for works administration.

### Figure 7. Expenditure by Activity

This figure illustrates the reduction in the proportion of funds applied to maintenance from 31 cents in each dollar spent on roadworks in 1982-83 to 23 cents in each dollar in 1984-85, and the increase in the proportion of funds applied to construction works from 61 cents to 70 cents in the dollar in the same years. A large part of this effect is due to the thrust of funds provided for construction works under the ABRD Program.

### Figure 8. Expenditure by Production Method

The influence of the ABRD Program is also reflected in this figure, which shows the increase in recent years in the proportion of work carried out by Contract, and reductions in the proportions of direct control work carried out by the Department and by Councils.





The following report describes the planned improvements proposed for the more important routes, outlines the objectives which were set in each case at the beginning of 1984-85 and records the progress achieved during the year.

## Freeways

### F3 — Sydney-Newcastle Freeway

This Freeway is planned to provide dual carriageways, with a minimum of four lanes, between Sydney and Newcastle. The total length from Wahroonga to West Wallsend is 120.4 km.

Sections built to freeway standard are now in use for approximately 25 km between Berowra and Calga, for 6.3 km between Somersby and Ourimbah and for 14.2 km between Kangy Angy Creek and Wallarah Creek near Wyee. Another 5 km of two lane single carriageway is in use linking the Freeway at Wallarah Creek Interchange with the Pacific Highway at Doyalson.

#### *Wahroonga to Berowra*

In Sydney's northern suburbs there is a major need to bypass the Hornsby Shopping Centre to relieve traffic congestion, reduce travel time and separate inter-city traffic from local traffic through the suburban areas of Asquith, Mt. Colah, Mt. Kuring-gai and Berowra.

To satisfy this need, a 15 km section of the Freeway is to be constructed between the junction of the Pacific Highway and Pennant Hills Road, Wahroonga (Pearces Corner), and the existing point of commencement of the F3 at Berowra.

The program required completion during 1984-85 of design, construction of side tracks, removal of buildings and public utilities and preconstruction planning to enable commencement of major roadworks contracts in 1985-86. These objectives were achieved.

In addition, a bridge to carry Edgeworth David Avenue over the Freeway was completed. Work commenced on a bridge to carry the Pacific Highway over the Freeway near Isis Street, Wahroonga and on a subway to carry the Freeway under the North Shore Railway Line at Wahroonga.

As the work is adjacent to Ku-ring-gai Chase National Park, some delay in accepting tenders has occurred while arrangements to minimise impact on the Park have been completed.

During 1985-86 it is proposed to complete the subway under the North Shore Railway and construct the bridges over the Pacific Highway, Alexandria Parade, Ku-ring-gai Chase Road and Windybanks Interchange (just south of Berowra). In addition, contracts will be let for earthworks and drainage on the Freeway.

Completion of the whole project is scheduled for December 1988.

#### *Calga to Palmers Road (near Freemans Waterholes)*

This length is being addressed in a number of discrete sections in order to obtain benefits as quickly as possible.

Work continued on schedule on the 12 km section between Calga and Somersby. This is expected to be completed towards the end of 1986 at an estimated cost of \$62 million, which includes approximately \$20 million for the construction of twin bridges over Mooney Mooney Creek. When completed this section will enable significant travel time savings to be achieved.

It had been intended to commence work on the Freeway connection between Ourimbah Creek and Kangy Angy Creek including an interchange with the Pacific Highway. It is now intended to call tenders for that work late in 1985.

A link from the Freeway via Wallarah Road to Kanwal will be completed during the 1985-86 financial year.

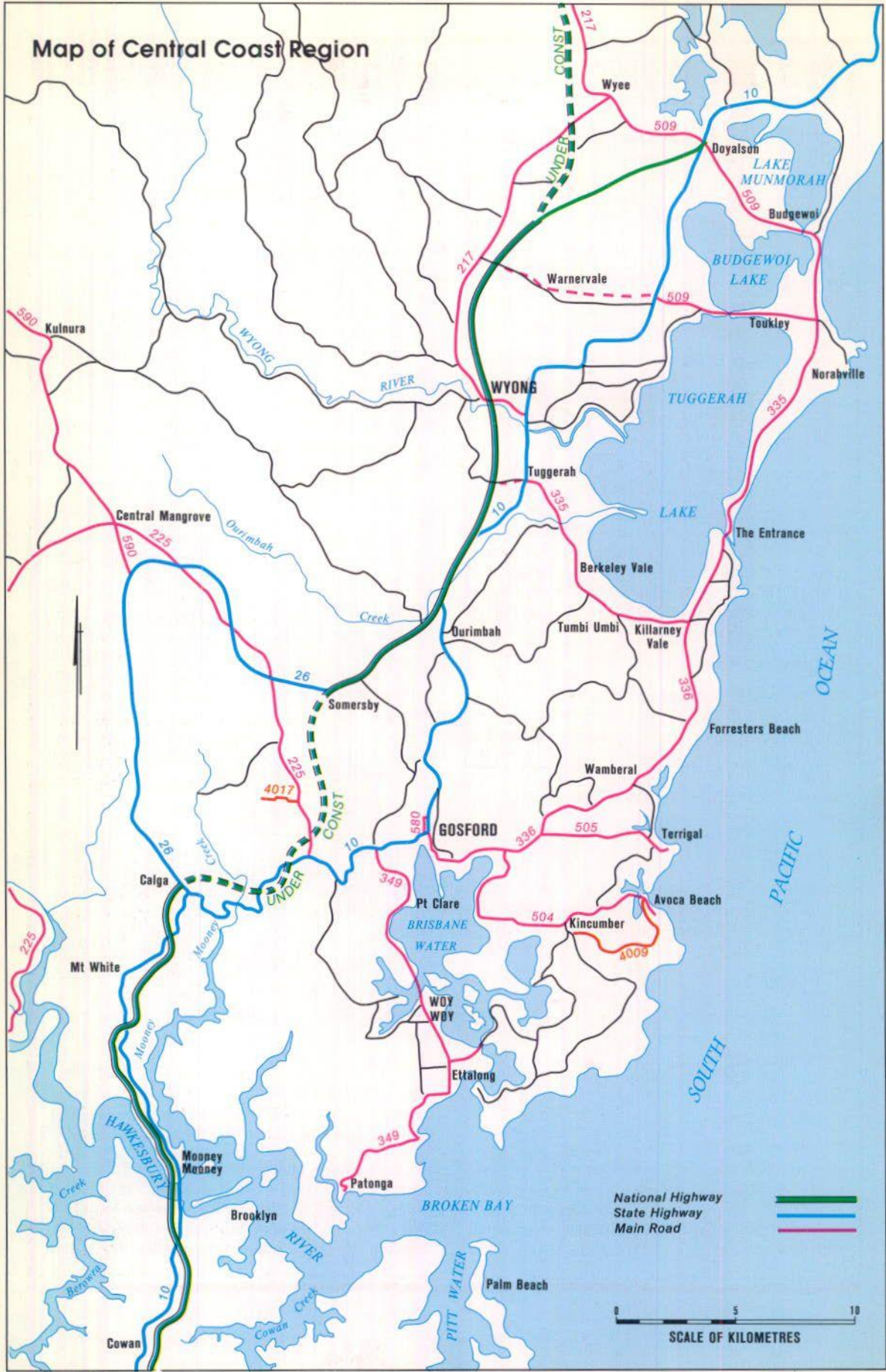
Work continued on the 16 km section between Wallarah Creek and Dora Creek which will cost an estimated \$28.2 million.

The 13 km from Wallarah Creek to an interchange at Morisset is expected to be opened to traffic in the latter half of 1986.

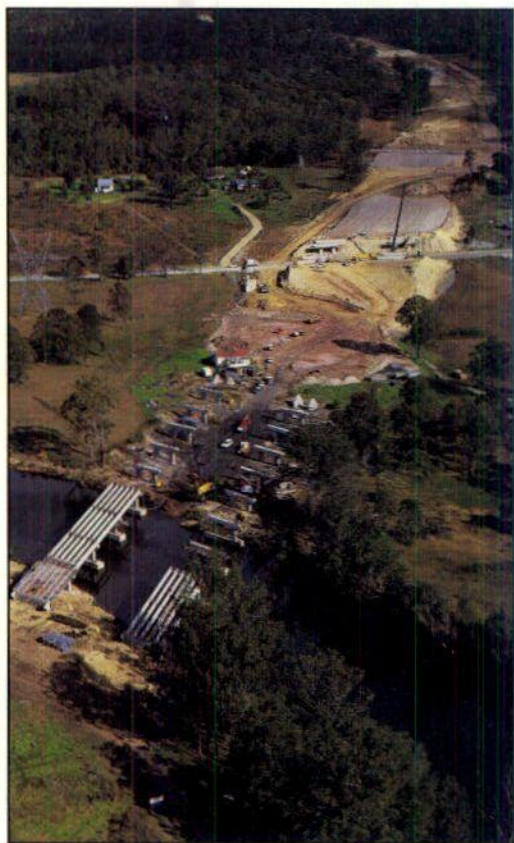
A tender was accepted for the 13.5 km section between Dora Creek and Palmers Road (Main Road No. 220) for approximately \$26.4 million, which is the highest tender ever accepted by the Department. The sections



Map of Central Coast Region







*Part of the 16 km section of the F3 between Wallarah Creek and Dora Creek which will cost about \$28.2 million.*

north of Morisset Interchange are expected to be completed by the end of 1988.

During the year a roundabout was constructed at the intersection of Wallarah Road and the Pacific Highway. Work commenced on a new bridge over the Northern Railway at Warnervale. These works are necessary to enable the link from the Freeway to Kanwal to be opened later this year.

#### *Palmers Road to West Wallsend*

Planning has continued with the objective of extending the Freeway to West Wallsend.

Planning is also continuing on the subsequent extension of the Freeway to connect with the New England Highway to the west of Maitland and for an interim connection with the New England Highway via Minmi Road.

## **F4 — Western Freeway**

This central east-west spine of the metropolitan road system is planned to extend from Concord to the lower Blue Mountains at Lapstone, linking the inner areas with Parramatta and the western region of Sydney. It will greatly improve the level of service for traffic and correspondingly improve environmental conditions along the Parramatta Road — Great Western Highway route.

More than 34 km of Freeway is now opened to traffic, comprising 7.8 km between Young Street, Concord, and Wentworth Street, Clyde; 3.2 km between Church Street, Harris Park, and Frances Street, Mays Hill; and 23.4 km between the Great Western Highway, Prospect, and Russell Street, Emu Plains.

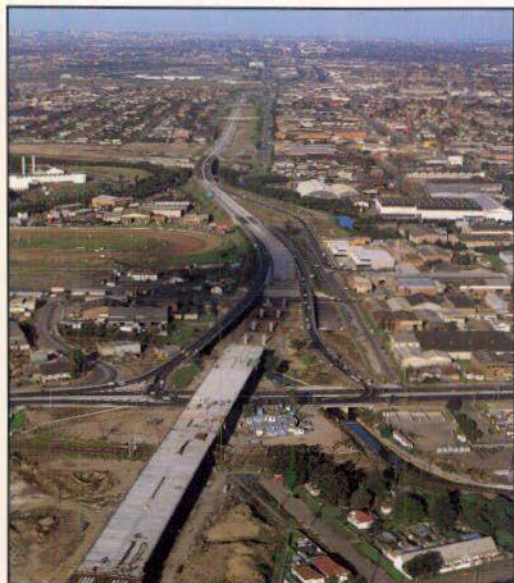
The major necessary projects on this route are to improve the Freeway connection to Parramatta Road at Concord, where the present terminal has insufficient capacity to meet traffic needs; complete the link between Wentworth Street, Clyde, and Church Street, Harris Park; strengthen existing sections of pavement between Prospect and Regentville; duplicate the Freeway over Mulgoa Road and the Nepean River at Regentville; and extend the Freeway west from the Nepean River to the Great Western Highway at Lapstone.

The aims for 1984-85 were to commence construction of the Concord terminal; complete the section of Freeway between Melton Street, Auburn and James Ruse Drive, Rosehill; continue construction of the viaduct link between Clyde and Harris Park; continue pavement strengthening between Prospect and Regentville; and continue construction of bridges over Mulgoa Road and the Nepean River at Regentville. All these aims were achieved.

Work proceeded on schedule on the \$8 million terminal at Concord which is due for completion in December 1985. The 2.1 km length of Freeway between Melton Street and James Ruse Drive was opened to traffic in September 1984.

Construction of the 1.8 km viaduct between Wentworth Street, Clyde and Church Street, Harris Park is continuing satisfactorily. This





project is being funded under the Australian Bicentennial Road Development Program and is expected to be completed in 1986 at a cost of \$32 million.

The bridge duplication at the Nepean River crossing at Regentville and at Mulgoa Road is proceeding according to plan. During the year additional access ramps were provided at Mamre Road, St Marys and ramps were under construction at Roper Road, Colyton.

Plans to continue pavement strengthening of the existing Freeway between Prospect and Regentville have been deferred temporarily, but no serious adverse effects will result.

**Left:** Construction of a 1.8 km viaduct between Wentworth Street, Clyde, and Church Street, Harris Park will provide a vital link on the F4 Freeway.  
**Below:** Duplication of the Nepean River Bridge at Regentville is part of the extension of the F4 Freeway to the Great Western Highway at Lapstone.





## F5 — South Western Freeway

The F5 now extends for 64 km from The Cross Roads, near Liverpool to Aylmerton, near Mittagong. This length supersedes the Hume Highway as a through traffic route, shortens the distance by 13 km and provides first-class driving conditions. Planning is in hand to extend it to south of Berrima and to King Georges Road, Beverly Hills.

When completed, the extension to Beverly Hills will provide an effective link between the National Highway and the urban road network, greatly improving accessibility between the commercial, industrial and port areas from the city to Botany Bay and the Campbelltown growth area to the south west. It will also alleviate serious traffic constraints in the Liverpool and Bankstown areas.

The extension to the south of Aylmerton will provide much needed traffic diversion around the townships of Mittagong and Berrima.

The aims for 1984-85 were to complete roadworks east of the Georges River, near Casula to enable the newly constructed bridge over the Georges River to be brought into service; to commence construction of a major bridge over the Wingecarribee River, west of Berrima; and to begin a deviation around Berrima.

All the specific aims for the year were achieved.

The 2.7 km length of single carriageway, opened in February 1985 from Heathcote Road, Moorebank, to the Hume Highway, Casula, provided immediate benefits by relieving congestion on the Liverpool Bridge and through the commercial centre of Liverpool. The work included a new 290 metre long bridge over Georges River and provides an alternative crossing to the flood-prone Cambridge Avenue, Glenfield.

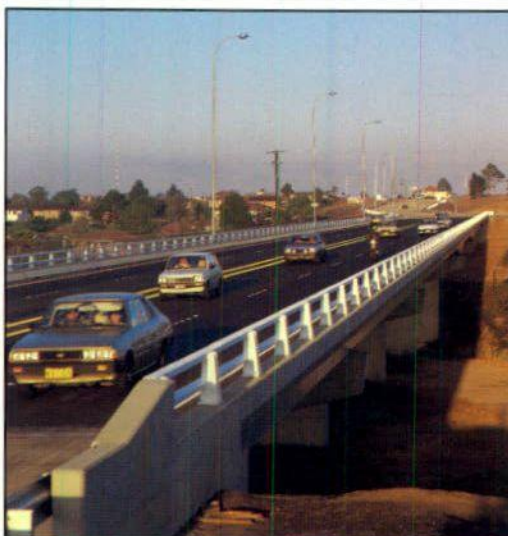
The first stage of the 15.5 km Berrima bypass was commenced in February 1985. The project includes 19 bridges and is expected to cost \$43 million.

Tenders have been invited for the bridge over the Wingecarribee River. Estimated to cost \$3 million, it is scheduled for completion in 1986-87.

During 1985-86 it is proposed to call a tender for the remaining section of the Freeway between Wingecarribee River and Welby with the aim of completing the Berrima bypass by 1988.

Planning envisages the completion initially of a single carriageway from Heathcote Road to Fairford Road. During 1985-86 work on the extension to King Georges Road will be confined to pre-construction activities such as adjustment of public utilities.

**Above:** The opening of a new bridge over Georges River at Casula marked the first stage of the extension of the F5 Freeway to Beverly Hills. **Below:** Construction in progress of a large box culvert on the Berrima Bypass.





## **F6 — Southern Freeway**

The F6 will eventually provide four lanes between St. Peters and Yallah, approximately 18 km south of Wollongong. The route will generally parallel the Princes Highway. Sections constructed to date consist of the 23 km Waterfall-Bulli Pass Tollway and a 15.5 km length of Freeway from Mt. Ousley Road to Fowlers Road, Dapto which bypasses the busy commercial centre of Wollongong.

The major needs for the Freeway over the next five years are to provide an interchange at Gwynneville with a link road from Mt Ousley Road (Trunk Road No.95) (see also comments for the Wollongong Northern Suburbs Distributor); to provide dual carriageways to Yallah; and to carry out rehabilitation works on the tollway, necessitated in part by subsidence of the surface following total extraction of underlying coal seams between Waterfall and Bulli Pass and, on the older section of the Freeway, between Gwynneville and Five Islands Road.

The aims at the beginning of the year were to complete a single carriageway from Fowlers Road to Yallah, where a major interchange with the Princes Highway is being con-

structed, and to complete the approaches to the duplicate bridge at Byamee Street.

The approaches to Byamee Street Bridge were finished, but the roadworks between Fowlers Road and Yallah were not completed because of the need to concentrate resources on higher priority works. This work is now expected to be opened towards the end of 1985 at a cost of some \$13 million.

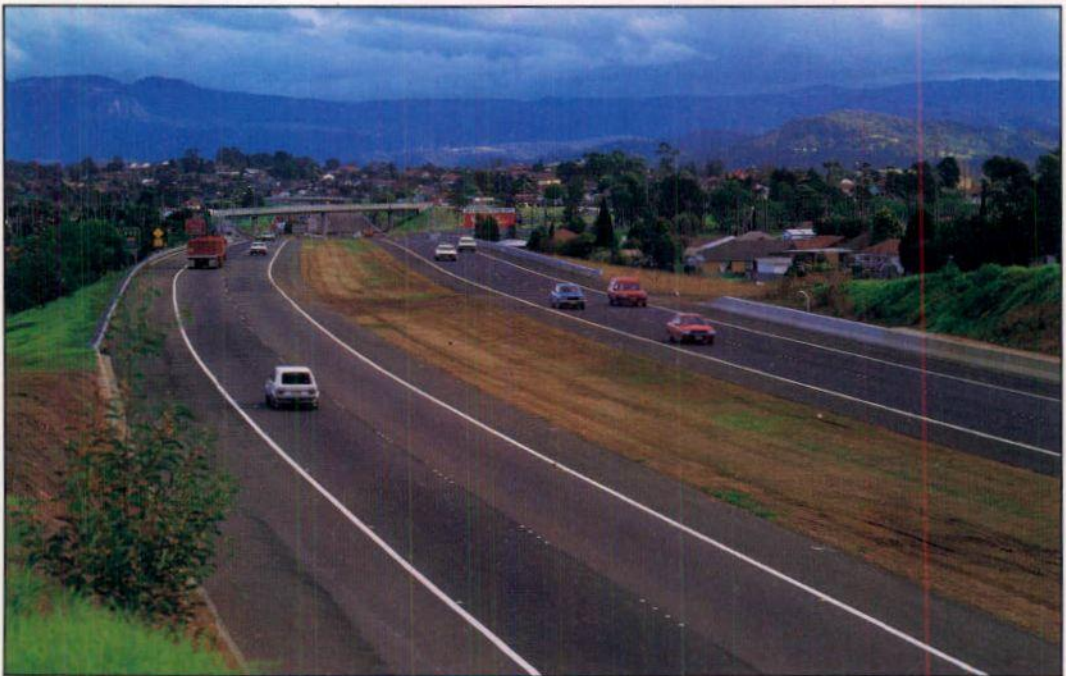
It is planned to commence pavement rehabilitation works on the Waterfall to Bulli Pass Tollway during 1985-86.

## **Wollongong Northern Suburbs Distributor**

This route is planned to run north from the F6 — Southern Freeway at Gwynneville, generally parallel to the Princes Highway, to provide easier access to the northern suburbs of Wollongong.

When construction reaches Bellambi Lane, with connection into York Street, Woonona the Distributor will relieve the Corrimal and Fairy Meadow shopping centres of the problems caused by coal trucks now travelling on the Princes Highway.

*A completed section of the F6 Freeway north of Fowlers Road, Dapto.*





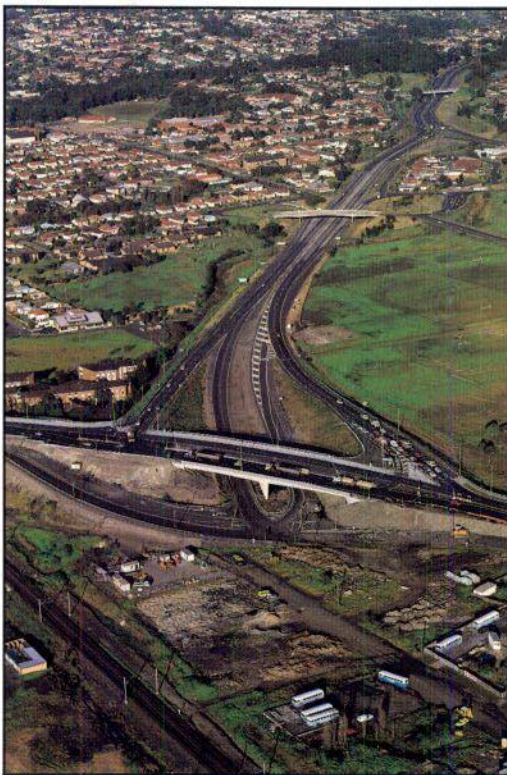
The major objectives over the next five years are to extend and complete the Distributor to York Street and to complete the interchanges at North Wollongong and Gwynneville.

At the beginning of 1984-85 the aims were to proceed with the construction of the interchange at North Wollongong and to commence preliminary works for the new overbridge at Elliots Road.

Stage I of the interchange was opened to northbound traffic in December 1984 and in June 1985, southbound traffic was also switched from the existing highway onto the overbridge. However, it was not possible to commence the Elliots Road Overbridge.

Completion of the interchange, with all ancillary works, is expected towards the end of 1985. Earthworks, bridgeworks and pavement construction will proceed on the section to Towradgi Road.

*The partially completed interchange at North Wollongong, now open to traffic on the Princes Highway.*



## Arterial Routes

### Barrier Highway

*(State Highway No.8)*

The Barrier Highway leaves the Mitchell Highway at Nyngan and proceeds west through Cobar, Wilcannia and Broken Hill to the South Australian border at Cockburn. The highway is sealed along its entire 640 km length.

On some sections, widening of the pavement and shoulders to present day standards would be desirable in conjunction with rehabilitation of the existing pavement.

It is necessary also to complete the approach works to the Talyawalka Creek flood plain bridges, 11.6 to 14.5 km east of Wilcannia; repair the old steel truss and timber beam approach span bridge over the Darling River at Wilcannia; construct a deviation including bridges at Stephens, Mt. Darling and Nurses Creeks (8 km to 22 km east of Broken Hill); and eliminate sub-standard curves between 30 km and 39 km west of Broken Hill.

Work on the Talyawalka Creek flood plain project has been further delayed by flooding and is now due for completion in October 1985. This will eliminate most of the effects on highway traffic movement consequent upon flooding in the Darling River system. In the past this section of the highway has been closed on occasion for up to 10 weeks.

The lengths of highway which were programmed for widening and rehabilitation during the year were completed as planned, including the section between 82 km and 112 km east of Wilcannia.

### Barton Highway

*(State Highway No. 15)*

This National Highway runs for 34 km from the Hume Highway near Yass, via Murrumbateman to the Australian Capital Territory boundary. It is sealed throughout.

Although the long term objective is to provide dual carriageways throughout its length, in accordance with National Highway standards, the priority for the work is substantially lower than the need to upgrade other sections of the National Highway network.



In the meantime, the objective is to eliminate potential accident sites and carry out pavement rehabilitation works on sections where badly deformed pavement creates poor riding quality.

During 1984-85 it was planned to complete construction of the new box culvert and approaches at Jeir Creek and to continue improvements near Kittys Creek to strengthen and widen the existing pavement.

The construction of 1.3 km of the ultimate northbound carriageway at Jeir Creek is nearing completion. This work eliminates a sharp curve at the end of a long straight section with a bad accident record.

Pavement strengthening and minor widening were also carried out north of Kittys Creek to improve safety.

Further pavement rehabilitation is planned for 1985-86.

### **Bruxner Highway** (State Highway No. 16)

This highway extends from the Pacific Highway near Ballina via Lismore and Tenterfield to the Queensland border near Goondiwindi — a length of 421 km. The road is sealed for 396 km, the balance being gravel pavement.

Completion of sealing of the whole length to a two-lane standard appropriate for the traffic volumes using the road is required.

At the beginning of the year it was proposed to commence reconstruction of the section known as Ballina Cutting (5.7 km to 10 km west of Ballina) to eliminate a steep, winding, narrow mountain pass. This work had to be deferred. However problems associated with land acquisition have been resolved and it is proposed to commence the work in 1985-86.

Rehabilitation, intersection improvements and the replacement of old narrow timber bridges proceeded on a priority basis.

Replacement bridges at Beardy River, Snake Creek, Unnamed Creek and new bridges at the Dumaresq Overflows Nos. 1 and 2 were completed during the year as scheduled.

During 1985-86 it is proposed to continue rehabilitation and intersection improvement works and commence replacement of bridges and approaches at Sandy Creek and Sheep Yard Creek, east of Tenterfield.

A deviation between 32 km and 46.6 km west of Yetman was completed at a total cost of \$1.4 million and work commenced on the adjacent section from 46.6 km to 50 km. This work will continue during 1985-86.

Remaining deficiencies will then be the section between the Pacific Highway and Lismore, which needs reconstruction to cater for present traffic needs; the sections 5 km to 9 km and 109 km to 145 km west of Tenterfield, which require rehabilitation; and the many narrow bridges and sections of highway which do not have adequate overtaking opportunities. These problems will be addressed in future programs.

### **Charlestown to Sandgate** (State Highway No. 23)

This highway forms the north-south bypass of inner Newcastle and travels from the Pacific Highway at Charlestown, through residential areas of Lambton and Birmingham Gardens, to the Pacific Highway at Sandgate. Although sealed throughout, much is located on temporary alignment.

Newcastle traffic volumes in recent years have accentuated the deficiencies in capacity and safety of the existing 13.2 km route, which includes sections of two-lane road with average daily traffic volumes of up to 23,000 vehicles.

The route needs to be upgraded to provide a high capacity ring road to bypass Newcastle.

Proposals for 1984-85 included the completion of reconstruction from Park Avenue to Cardiff Road (2.9 km to 3.6 km north of Charlestown). This work was completed and opened to traffic in December 1984 as scheduled.

It was also proposed to commence the construction of a section between Newcastle Road and Sandgate Road, Jesmond. This work had to be temporarily deferred because of pre-planning difficulties involving







environmental and detailed planning considerations. It is now proposed to commence this work during 1985-86 for completion in 1988.

Further works intended for commencement as funds become available are the construction of the section from the Pacific Highway near Windale to the existing highway near Kotara Heights and construction of a deviation from Sandgate Road, Shortland to the Pacific Highway at Sandgate.

After completion of these works there will remain a section between Jesmond and Rankin Park where it is ultimately proposed to construct a four-lane deviation.

### **Federal Highway**

*(State Highway No. 3)*

This National Highway links Canberra with the Hume Highway south of Goulburn and the ultimate aim is to provide dual carriageways along the entire 67 km length from Goulburn to the border of the Australian Capital Territory.

There are now 18 km of dual carriageway from the Hume Highway to Willow Tree Creek and it is planned to provide another 27 km by 1988.

The most pressing needs at present are construction of the grade separated interchange at Sutton Road (Trunk Road No. 52) where the existing intersection has been the scene of many accidents; construction of dual carriageways between Gearys Gap and Bungendore Road where the existing alignment is poor; and construction of the southbound carriageway over Willow Tree Creek, 29 km south of Goulburn. At present the old highway serves as the interim southbound carriageway and is subject to flooding.

Specific aims for improving the route during 1984-85 included continued pavement rehabilitation along the Lake George foreshore, commencement of construction of the bridge over Willow Tree Creek, and commencement of the Collector Bypass extension from 30.5 km to 39 km south of Goulburn. All these aims were achieved.

Although it was proposed to commence construction of the Sutton Road interchange, this aim was not achieved due to funding constraints.

Rehabilitation works were carried out at three locations between 43 km and 72 km south of Goulburn, including a section along the foreshore of Lake George.

Work commenced on a new bridge over Willow Tree Creek and construction of dual carriageway roadworks from Bungendore Road to Macs Reef Road (62.8 to 72.5 km south of Goulburn) progressed. Most of the earthworks have been completed and concrete paving is expected to start before 1986. It is expected that the project will be completed on schedule in the latter part of 1986.

Construction of the dual carriageway Collector Bypass, which includes six bridges, progressed steadily over the year and should be completed ahead of schedule by mid-1986.

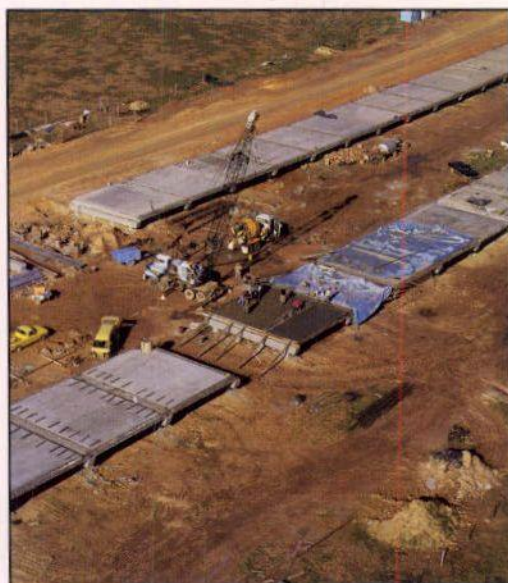
It is planned to commence work in 1985-86 on the construction of approaches to the new bridge on the southbound carriageway at Willow Tree Creek and to commence work on the Sutton Interchange early in 1986-87. Pavement rehabilitation is also planned on a section at the northern end of Lake George.

Heavy rains during August/September caused pavement maintenance problems, particularly around Collector.

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*Construction of the dual carriageway Collector Bypass on the Federal Highway includes six bridges and is due for completion by mid-1986.*

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## **Great Western Highway** (State Highway No. 5)

The Great Western Highway is the principal road access between Sydney and western New South Wales. It runs for 208 km across the Blue Mountains to Bathurst where it joins the Mitchell and Mid Western Highways. In the Sydney region the role of the highway has been supplanted by sections of the F4 — Western Freeway.

It is planned to develop the highway to provide six lanes to Penrith and four lanes between Lapstone and Katoomba.

The widening of this highway is essential to maintain an acceptable level of service through the Western Region of Sydney and the growing urban areas of the Lower and Upper Blue Mountains.

To achieve the six lanes to Penrith, only widening between Glossop Street and Walker Street, St. Marys remains outstanding.

*The Farmers Creek Deviation at Bowenfels was completed and opened to traffic in October 1984 at a cost of \$5.7 million.*

Between Lapstone and Katoomba significant improvements have already been achieved. However, work required includes reconstruction at Victoria Pass to replace Mitchells Bridge; replacing Denison Bridge at Bathurst; and the removal of narrow, winding sections between Marrangaroo and Lidsdale State Forest (9 km to 17 km west of Lithgow), and between Mt. Lambie and Meadow Flat (24 km to 29.5 km west of Lithgow). This latter work will reduce the distance between Marrangaroo and Meadow Flat by 3 km and save an average ten minutes travelling time as well as providing safer travelling conditions.

The Department is engaged on a program of works aimed at achieving four lanes from Lapstone to Katoomba by 1992.

During 1984-85 the Department planned to complete the Prospect Deviation; continue the highway widening through St. Marys; widen sections to four lanes at Blaxland, Valley Heights and Katoomba; complete the Farmers Creek deviation at Bowenfels (2.7 to 4.6 km west of Lithgow); and commence improvements to the alignment of the Great





Western Highway between Marrangaroo and Meadow Flat. All works proceeded according to plan.

Widening to six lanes and reconstruction of the highway between Blacktown Road and Reservoir Road completed the Prospect Deviation, which was opened to traffic in December 1984. This 2.6 km project cost \$4.5 million.

Nearly \$2 million was spent continuing widening to six lanes at St. Marys between Glossop Street and Charles Hackett Drive.

A bridge to carry the eastbound carriageway over the railway at Blaxland, and a pedestrian bridge over the highway at Blaxland Railway Station were completed at a cost of \$290,000 and \$170,000 respectively.

Intersection improvement works were completed at Wentworth Falls and Mt. Victoria.

A short section of the westbound carriageway of the Bent Street Deviation at Katoomba was opened to traffic in conjunction with the opening of Yeamans Bridge over the Main Western Railway Line. Yeamans Bridge will allow closure of the railway level crossing adjacent to Katoomba Railway Station as soon as the westbound carriageway of the Bent Street Deviation is completed later in 1985.

The Farmers Creek deviation at Bowenfels was completed and opened to traffic in October 1984. This work included twin bridges over Farmers Creek and the Western Railway Line, as well as traffic signals with audio tactile facility at the intersection of Bell Road (Main Street) with the highway. The total cost of the deviation was \$5.7 million.

Work has commenced on the first section between Marrangaroo and Meadow Flat on the deviation east from Meadow Flat. Tenders will be called for a further 3.4 km section east from Rydal Road junction, including a new bridge over the Western Railway Line late in 1985, subject to funds being available.

Progress was made this year on replacing sections of worn out pavement on poor alignments and removing accident blackspots on a priority basis to improve traffic flow and general safety.

### **Gwydir Highway** (State Highway No. 12)

This highway runs for 514 km from the Pacific Highway at South Grafton to Collarenebri via Glen Innes, Inverell and Moree. It is sealed from South Grafton to 80 km west of Moree, leaving a 47 km stretch of gravel between Moree and Collarenebri.

The major requirement on the route is to seal the remaining gravel section. It is desirable for selected sealed lengths to be upgraded where necessary to two lanes of adequate width and alignment for the traffic volumes using the road in association with pavement rehabilitation.

Specific aims for 1984-85 were to continue rehabilitation and widening of the highway, including the replacement of narrow bridges; extend the bitumen seal towards Collarenebri; and continue construction of a major bridge over the Barwon River at Collarenebri to replace a narrow timber truss bridge which is supported by Bailey bridging equipment as a temporary remedial measure.

Rehabilitation works were completed during the year at 67.4 km to 69.8 km west of Grafton; at five sections between 18 km and 56 km west of Glen Innes; and from 43.6 to 49.6 km west of Inverell. This last stretch eliminated the final section of single lane bitumen seal on the highway.

New sections were started as planned between 119 km and 133 km west of Grafton, and 23.4 to 25.6 km west of Glen Innes. These sections will cost an estimated \$2.2 million.

Two new bridges were completed at Burrandoon Watercourses No. 1 and No. 2 at 82 km west of Moree. A start was also made on the widening of a narrow concrete bridge at Bells Creek, 28.8 km west of Wyallda. This will be completed during 1985-86.

Work proceeded on the approaches to Bullarah Creek bridge (67 km to 72 km west of Moree). However it was necessary to delay application of the final bitumen seal, which will now be carried out early in the new year.

Work continued on the construction of a bridge over the Barwon River at Collarenebri, which is planned for completion in 1985-86.



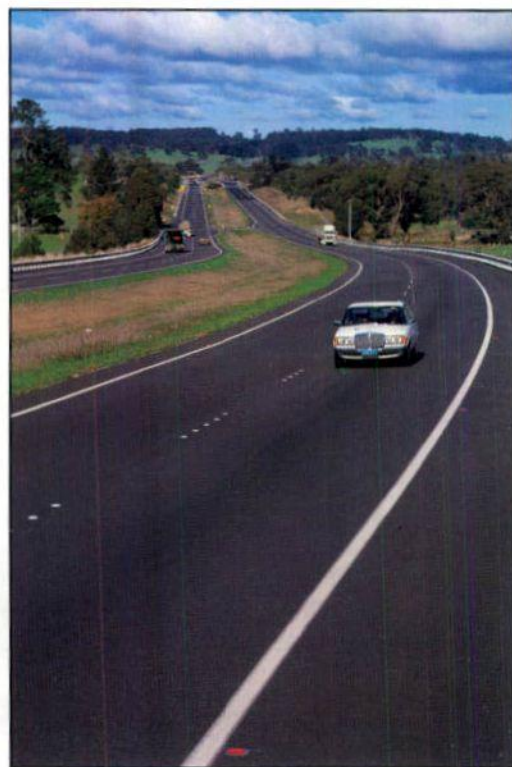
New works proposed for commencement in 1985-86 include bridges at Sawyers Gully and Spring Creek (approximately 5 km and 32 km west of Wyallda).

A start will be made on the reconstruction and bitumen sealing of the section between 80 km and 84 km west of Moree across the Burrendoon Watercourses as part of the continuing program of extending the bitumen seal towards Collarenebri.

Rehabilitation of the existing sealed length will also continue on a priority basis as funds permit. Remaining deficiencies consist of sections of old bitumen pavement requiring rehabilitation and the remaining gravel section between Moree and Collarenebri.

### **Hume Highway** (State Highway No. 2)

This Highway is the main Sydney-Melbourne route. It runs for 554 km within New South Wales and incorporates 64 km of the F5 — South Western Freeway from The Cross Roads, near Liverpool, to Aylmerton, near Mittagong.



In June 1984, the Federal and State Governments announced the injection of \$300 million to provide a minimum of four lanes, most of which will be dual carriageways, between Sydney and Albury by 1988. To achieve this the existing two-lane road will be retained wherever practicable and additional lanes constructed alongside.

At 30 June 1984, either dual carriageways or four lanes had been provided on 172 km of the Hume Highway in New South Wales. By 30 June 1985, this length had increased to 224 km.

The bulk of this remaining two-lane length is located south of Tarcutta.

Bypasses will be provided around Goulburn, Yass and Jugiong. A major deviation around the Cullarin Range, south of Goulburn will provide 31 km of new dual carriageways and will bypass the town of Gunning. This will reduce the travel distance by 2 km, and provide much safer and more comfortable driving conditions.

Interchanges are to be provided where the Illawarra, Barton and Sturt Highways meet the Hume Highway. These will be in addition to the interchanges already constructed at the Federal Highway and under construction at the Snowy Mountains Highway.

Construction north of Medway Rivulet, to provide deviations around the towns of Berrima and Mittagong and link with the F5 at Aylmerton, is an extension of the F5 and is described on page 15.

During 1984-85 the Department continued dual carriageway construction between Medway Rivulet and Cherry Tree Hill which is scheduled for completion in 1985-86 at a cost of about \$6.5 million.

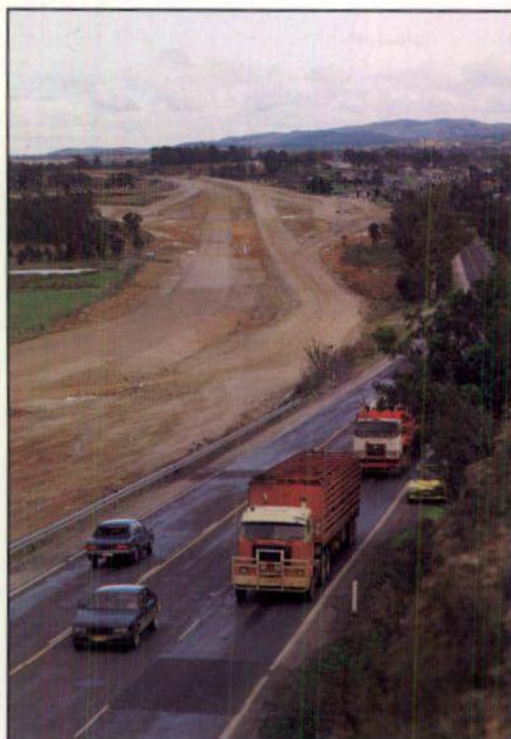
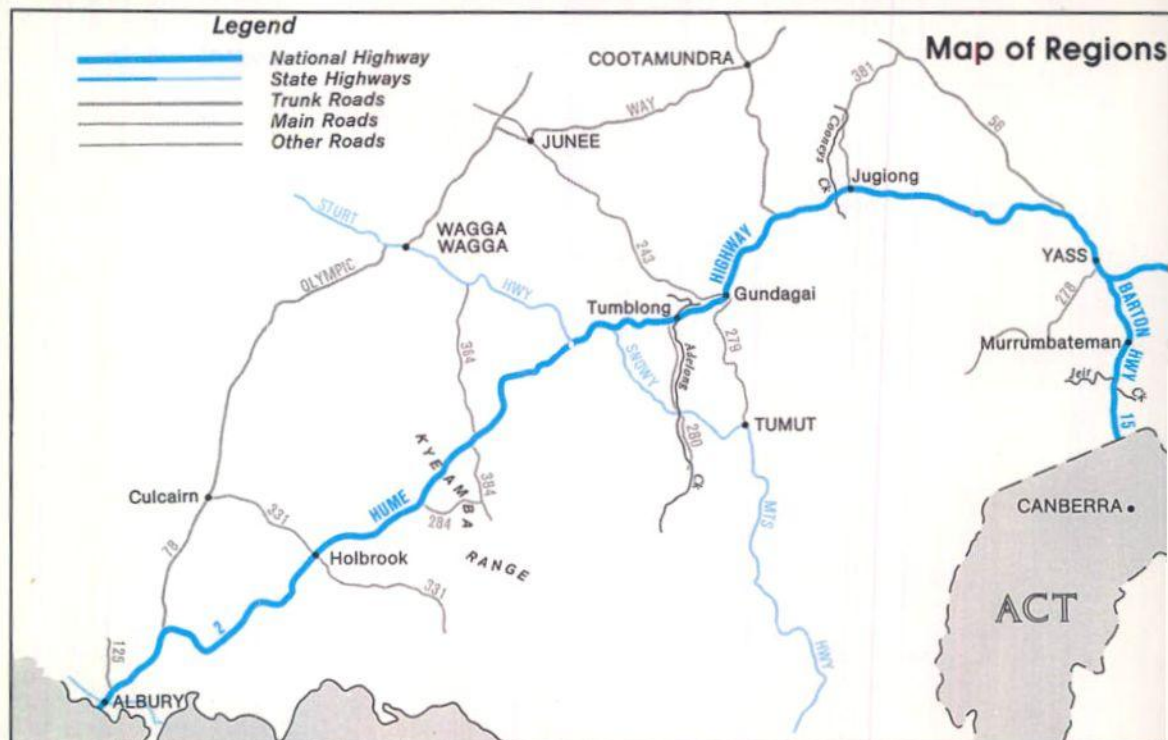
Preliminary works were begun at the interchange with the Illawarra Highway at Hoddles Cross Roads with construction of a large box culvert on the Illawarra Highway approach. The interchange is scheduled for completion in 1986-87 at a cost of about \$7 million.

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*Completed dual carriageways on the Hume Highway between Cherry Tree Hill and Black Bobs Creek, 10 km south of Berrima.*

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Commencement of the deviation around Cullarin Range had to be deferred.

At Uringalla Creek a new \$1.3 million bridge has been built with a wider deck and greater waterway area to carry the southbound carriageway.

The 7.3 km Marulan bypass, including four bridges and a new truck weighing station, is well advanced and expected to be completed in 1986, at a cost of about \$13 million.

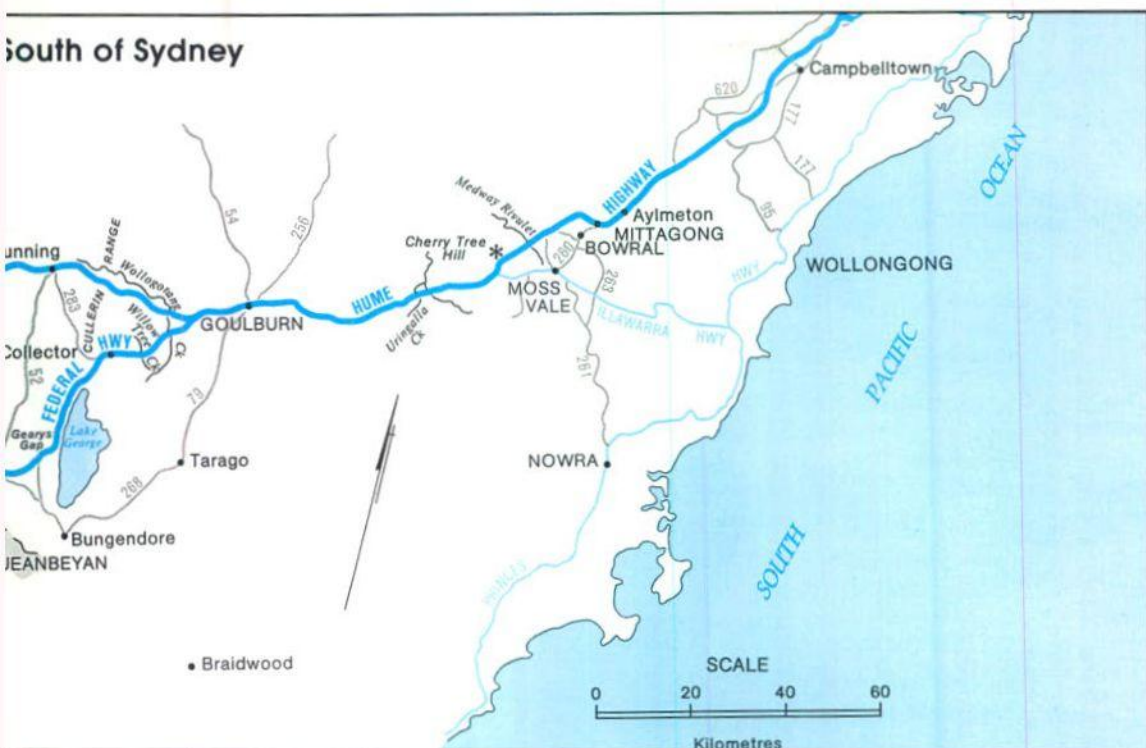
Construction of a new northbound carriageway is underway 13.5 km to 20.3 km south of Goulburn, including a new bridge over Wollagorang Creek. This is expected to be completed in late 1985 at a cost of about \$7.4 million.

More than \$9 million is being spent providing dual carriageways on an improved alignment 47.6 km to 57 km south of Yass. The section from 52 km to 57 km is expected

*The 7.3 km Marulan bypass, expected to be completed in 1986 at a cost of about \$13 million, will relieve the township of traffic problems associated with heavy vehicles.*



## South of Sydney



to be opened to traffic in late 1985 with the balance completed early in 1986.

Work is progressing ahead of schedule to provide dual carriageways from 70.1 km to 78.3 km south of Yass and is expected to be completed in 1985-86 at a cost of about \$10 million.

From 90 km to 99.5 km south of Yass, construction of a new southbound carriageway is expected to be completed in late 1985 at a cost of about \$7 million.

South of Gundagai new bridges have been commenced for the second carriageway between South Gundagai and Adelong Creek. Work is well advanced on the extension of the Tumblong deviation, including the interchange at the junction of the Snowy Mountains Highway. Its completion, expected in September 1985, will extend the dual carriageway length by over 5 km.

At Kyeamba Range one carriageway of the future dual construction (scheduled for completion late in 1986) was completed and brought into service, providing greatly improved driving conditions. The cost of this 10 km project is estimated at \$10 million.

At Albury the reconstruction of North Street was completed and work on Hume Street started. These works are providing four lanes for through traffic and two parking lanes. They will also improve traffic safety by separating opposing traffic flows with a raised concrete median and providing traffic signals at important intersections.

The Department continued on a program of pavement rehabilitation to strengthen the existing pavement to provide better riding qualities and reduce maintenance. In some sections, this rehabilitation is being extended to provide four lanes as an interim alternative to constructing dual carriageways.

Plans for 1985-86 include the progressive completion of work now in hand to provide at least another 37 km and possibly up to 54 km of dual carriageway; continuation of projects such as the Berrima Bypass; commencement of further lengths of dual carriageway such as Cooneys Creek to Gobarra-long, and South Gundagai to Tumblong; and widening to four lanes on the existing alignment at various lengths south west of the Snowy Mountains Highway.



## **Monaro Highway**

*(State Highway No. 19)*

The Monaro Highway extends for 209 km from Canberra via Cooma and Bombala to the Victorian border. It is sealed for 182 km, the remainder being on gravel pavement. Traffic volumes are significantly higher north of Cooma.

The major needs of the route are the replacement of the old timber bridges on a sub-standard alignment over Numeralla River and the replacement of bridges over the Bombala River at Bombala, the railway line at Ingelara and the Cooma Creek at Bunyan and the sealing of the 27 km gravel section between Bombala and the Victorian border.

Reconstruction continued on a 7.15 km length south from the border of the Australian Capital Territory and is programmed for completion in the latter half of 1985. Coupled with work being done in the Australian Capital Territory, this will provide 14 km of reconstructed highway to replace a narrow, poorly aligned and rapidly deteriorating section.

Work has commenced on the 5.5 km approaches to new bridges over the Numeralla River and its flood plain. The bridges, commenced by contract in 1983-84, were completed this year. This project will be completed in 1985-86 and will eliminate an old timber bridge on a substandard alignment.

Work has also commenced on the new bridge over the Bombala River at Bombala and a railway overbridge and 1.7 km of approaches at Ingelara.

Some 2.4 km of approaches to the new bridge over Cooma Creek at Bunyan were completed and 6.1 km of pavement reconstruction and rehabilitation immediately north of the Ingelara Railway Bridge approaches was substantially completed. These works will provide a greatly improved level of service over 10.2 km of the highway.

The Department has commenced a program to seal the length between Bombala and the Victorian border including replacing the bridge over the Genoa River.

All works were completed in accordance with approved programs during the year.

## **Newell Highway**

*(State Highway No. 17)*

The State's main north-south inland route, the Newell Highway runs 1,062 km (including 37 km of the Mid Western Highway between West Wyalong and Marsden and 95 km of the Oxley Highway between Gilgandra and Coonabarabran) from Tocumwal on the Victorian border to Boggabilla on the Queensland border, via Narrandera, Parkes, Dubbo and Moree.

While the road is sealed throughout, many sections of the pavement are inadequate in geometric standard and pavement strength for the heavy traffic using the route.

The Newell Highway is used by heavy vehicles travelling from Adelaide and Melbourne to Brisbane. These vehicles comprise as much as 46 per cent of the traffic on some sections of the highway. As a result, pavement edge failures are a major problem.

Because of the area's poor bearing capacity soils and the scarcity of suitable road construction materials, durable reconstruction works on this highway are becoming more and more costly. Edge wear and pavement deformation are a continuing problem requiring continuous attention.

There are flood prone areas near Marsden, Lampes Causeway, 54 km north of Parkes, and at Maynes Lagoon north of Moree. There are approximately 30 narrow bridges requiring widening and 12 timber bridges which will eventually need replacing.

At Tocumwal, the bridge across the Murray River is narrow, on a poor alignment and is shared with the Victorian Railways. The need for bypasses and deviations around the commercial centres of Tocumwal, Forbes, Parkes and Narrabri have become more pressing.

Construction commenced in July 1985 on the new prestressed concrete bridge of six spans, 220 m long over the Murray River at Tocumwal. Work also commenced on a town bypass and the widening of three bridges in Narrandera at Bundigerry Creek, the Murrumbidge Irrigation Area Main Canal and the Whitton Street Rail Overbridge.



A new bridge at Marthaguy Creek No. 1 was completed and Marthaguy Creek No. 2, 60 km north of Dubbo was commenced. North and southbound overtaking lanes 26 km north of Forbes were completed.

Reconstruction and rehabilitation of some 40.2 km of pavement was undertaken, which was only 2.3 km less than planned.

Deficiencies remaining to be addressed include the elimination of flood prone lengths; ongoing pavement rehabilitation and widening; and replacement and widening of the many sub-standard bridges.

Short-term goals include replacement of the Mogriguy Creek Bridge, 12 km north of Dubbo and Marthaguy Creek No. 3 Bridge; duplication of Fitzgeralds Bridge over the Lachlan River at Forbes; and deviation of the highway through Narrabri via Killarney and Tibbereena Streets. The latter will provide a flood free bypass of the main street for heavy traffic and a new railway overbridge in Narrabri West to eliminate two level crossings.

### **New England Highway** (State Highway No. 9)

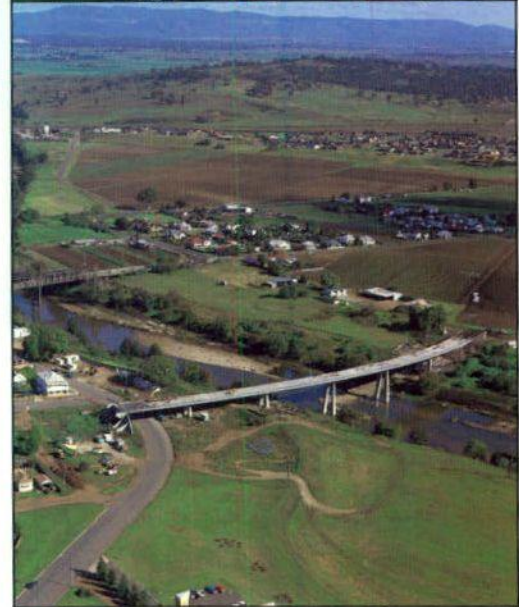
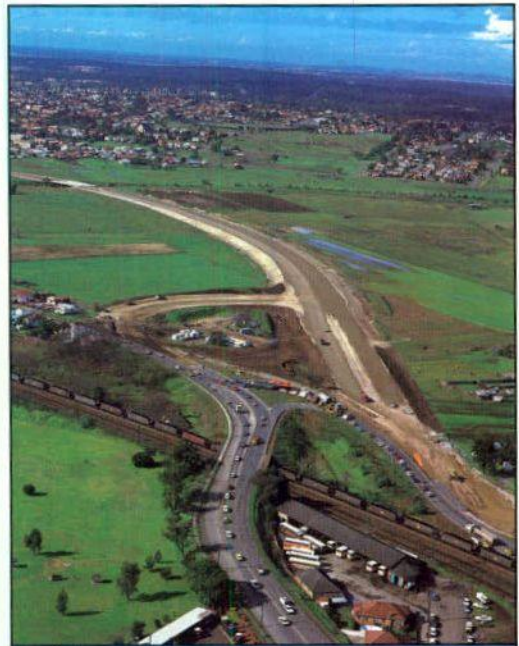
The New England Highway forms part of the National Highway network and extends from the Pacific Highway at Hexham via Tamworth to Wallangarra on the Queensland border — a distance of 562 km. The road has a sealed pavement throughout.

Planning envisages dual carriageways between Hexham and Scone with appropriate two lane standard on the section from Scone to the Queensland border. Adequate passing opportunities are to be provided and divided carriageways also need to be extended through Tamworth.

At present, dual carriageways exist between Hexham and East Maitland, through Rutherford, from 75.7 km to 78.2 km north of Hexham on the Liddell deviation, for 1 km on the southern approach to Muswellbrook, for

1 km through Scone and 3.6 km through Tamworth, for 4.2 km through the Moonbi Ranges and through Glen Innes.

During the year work continued on the construction of the southern approach ramp to the Hexham Bridge and tenders were invited for the reconstruction of the New England Highway section of the interchange.



**Above:** An aerial view of the first stage of the Maitland Inner City Bypass, expected to be completed early in 1986. **Below:** Construction of a new bridge to carry the New England Highway over the Hunter River at Singleton continued during the year.



Reconstruction commenced at East Maitland to extend dual carriageways from George Street to Grant Street at an estimated cost of \$1.9 million. This work will link recently completed dual carriageways at East Maitland to the Maitland Inner City Bypass project.

Work on the 1.7 km first stage of the bypass progressed well during the year. This \$5.4 million project provides a deviation of the New England Highway from near Melbourne Street, East Maitland to Parallel Street, near Anzac Street, Maitland.

A new bridge over Wallis Creek has been completed and the four-lane divided carriageway, featuring extensive earthworks and concrete pavement over a section of the Maitland flood plain, is expected to be completed early in 1986.

Construction of the bypass is continuing westerly from Anzac Street to rejoin the present route of the highway near Dwyer Street, west of the City centre. When completed in 1987 this 3.8 km length of four-lane divided carriageway will eliminate through traffic, including an increasing proportion of heavy vehicles, from the busy shopping centre and historic Regent Street and provide an improved connection to Cessnock Road (Main Road No. 218).

The project includes construction of two bridges and three pedestrian overbridges at an estimated cost of \$18 million.

Construction of the new bridge over the Hunter River at Singleton continued and work commenced on the 2 km deviation forming its approaches.

This \$5.9 million Bicentennial project, which is expected to be completed early in 1986, will significantly improve traffic safety and eliminate congestion caused by the existing river crossing at Dunolly Bridge.

Major rehabilitation and widening of the 12.6 km Liddell deviation continued, providing much improved traffic conditions. Some 2.5 km of dual carriageway was strengthened and resheeted and 6.4 km of overtaking lane has been added to this former two-lane road. The full deviation is expected to be completed in 1985 at a total cost of \$10 million.

Work on the 12 km duplication at Belford State Forest, Rixs Creek and Ravensworth was deferred because of a reallocation of funding.

Work commenced on the duplication of the narrow bridge at Aberdeen, 13 km north of Muswellbrook. Costing \$1.9 million, this will eliminate the hazard involved in passing heavy transports on the existing bridge. The new bridge is designed to match the form of the old bridge and enhance its lines.

The section of highway through the centre of Scone, 25 km north of Muswellbrook, was widened from four to six lanes at a cost of \$1.6 million and cross traffic congestion was reduced by the provision of a roundabout.

While completion of the roundabout at the intersection with Scott Road, Tamworth has been well received by the community, lengthy preconstruction activities have delayed commencement of the widening of Marius Street to six lanes, from White to East Streets (\$3 million), and the replacement of the narrow railway overbridge at Tintinhull, 12 km north of Tamworth, until later in 1985.

Although the contract for the construction of the new bridge over the MacDonald River at Bendemeer has been proceeding more slowly than normal, the 3.5 km deviation round Bendemeer will be completed before Christmas 1985 at a cost of \$3.7 million.

Wet weather on the Tablelands has delayed reconstruction at Ben Lomond Range. Completion of this work is now expected during 1985-86.

During the year a total of 43 km of highway was rehabilitated and widened to current standards and an additional 15.8 km of overtaking lanes were constructed.

Next year it is proposed to continue with works now in progress, commence duplication at Ravensworth and give emphasis to rehabilitation works, including the widening of pavements, provision of additional overtaking lanes, upgrading road junctions and widening of narrow bridges.

When the program of works outlined above is completed, consideration will be given to improving the steep and winding mountainous sections over Ben Lomond Range and Bolivia Range, having regard to available funds.



# Map of Regions North of Sydney

## QUEENSLAND





## **Pacific Highway**

*(State Highway No. 10)*

This highway extends 897 km from Sydney to the Queensland border at Tweed Heads. Between Sydney and Newcastle the role of the Highway is being supplanted by the Sydney-Newcastle Freeway. Although it is the major route for interstate traffic north of Newcastle, only the sections between Doyalson and Swansea and between Sandgate and Hexham have been declared National Highway.

Planning envisages providing a minimum of four lanes from Sydney to Raymond Terrace.

North of Raymond Terrace it is proposed to provide two lanes, with adequate overtaking opportunities. In addition, consideration is being given to a number of bypass routes around large towns to avoid conflict with local traffic in congested urban areas.

In pursuing this objective the Department has undertaken a program of construction works amounting to more than \$46 million during 1984-85.

In the Sydney region this includes the provision of a grade-separated intersection with Mona Vale Road and Ryde Road at Pymble, which is described under State Route 33 on page 37.

Upgrading of the 23 km National Highway length between Doyalson and Swansea continued with the reconstruction of the south-bound carriageway for 1.5 km between Chain Valley Bay Road at Lake Munmorah and Kanangra Drive.

This \$1 million improvement is being extended with the construction of a second carriageway northerly for 2.3 km to the southern Catherine Hill Bay turnoff.

This project which also includes the reconstruction of the existing carriageway at a total cost of \$2.2 million will provide 17.5 km of four lane highway north of Doyalson by the end of 1985.

All planned works were carried out except for the section from Mine Camp Road to Parbury Road, Swansea which was deferred for further investigation of the alignment and effects of mine subsidence.

One aim at the beginning of the year was to complete the construction of divided carriageways between Gateshead and Cains Hill, Newcastle. This was achieved with the opening of dual carriageway between Oxford Street and Warners Bay Road at the close of the financial year. This 1.2 km project eliminates a narrow, winding approach to the Charlestown Shopping Centre at a total cost of \$5.6 million. Landscaping work and construction of a median barrier is continuing and will be completed early in 1985-86.

Progress on the construction by contract of a new bridge over the Hunter River at Hexham has been slow and the work is well behind schedule.

Construction of the second carriageway north from the bridge continued and the 1.7 km length to Tomaga Road (Main Road No. 302) will be available to traffic early in 1986.

More than \$2 million was spent on dual carriageway construction between Tomaga Road and Heatherbrae over a length of 4.6 km. Completion of this Bicentennial project is now scheduled for 1986-87.

A new bridge and approaches at Stewarts River (35.8 km to 39.5 km north of Taree) were completed during the year, eliminating a narrow bridge on a poor alignment which was subject to frequent flooding and had been the scene of numerous accidents.

Construction of a new bridge and approaches at Camden Haven River (45.9 km to 48.2 km north of Taree) continued during the year. Bridgeworks were well advanced, but roadworks were interrupted due to funding restrictions. The project is expected to be completed late in 1985-86. This work will eliminate a narrow bridge on a poor alignment and will fit in with the recently completed work at Rossglen railway overbridge.

Construction of a deviation from Smiths Creek to Maria River State Forest (103.5 km to 108.5 km north of Taree) is being undertaken to improve a 5 km section of the highway which has been the scene of a number of fatal accidents. It had been scheduled for completion during the year but has been delayed due to adverse weather conditions. Completion is now expected early in 1985-86.



Construction began of two new bridges and approaches over Clybucca Creek and McAndrews Drain (19.4 km to 22 km north of Kempsey) which will replace two existing bridges and eliminate an obsolete section of road pavement which was becoming costly to maintain. Work is due for completion during 1985-86.

A deviation from Arrawarra Creek to Corindi (30.2 km to 30.6 km north of Coffs Harbour) was completed during the year, eliminating a narrow, winding, flood prone section of the highway.

Another deviation at Dirty Creek Range (43.1 km to 49.6 km north of Coffs Harbour) was begun which will eliminate a narrow, winding section with a poor accident record.

Completion of a deviation at Chatsworth Island (52.1 km to 59.6 km north of Grafton) was delayed by adverse weather and is now expected to be finished towards the end of 1986. This Bicentennial project will eliminate a series of sharp bends, bypass the village of Chatsworth, reduce road distance by 1.9 km, provide overtaking lanes in both directions and decrease the effects of flooding.

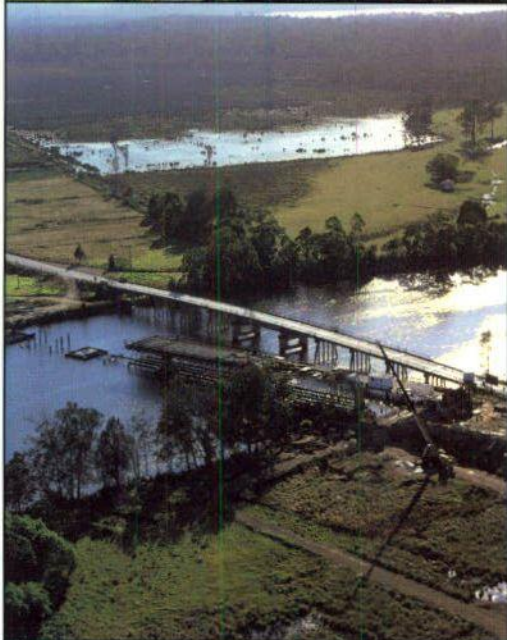
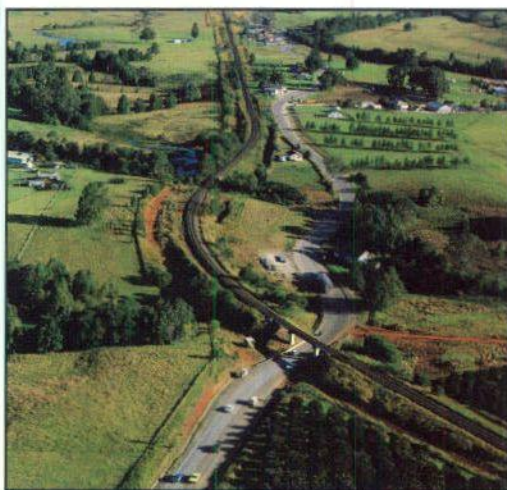
Construction of a deviation and approaches to a new bridge over Tabbimoble Creek (65.9 km to 69.5 km north of Grafton) is proceeding as scheduled and should be completed during 1985-86. This work will eliminate another narrow, winding, flood prone section of highway.

Construction of dual carriageways and approaches to the new bridge over Boyds Bay, South Tweed Heads was completed as scheduled along with the new bridge, which replaces a narrow lift span structure. The work now completes a 7 km length of dual carriageway from Barneys Point to the Queensland border, giving additional capacity and safety for the high traffic volumes in the industrial/commercial area.

The construction of stage 1 of the Tweed Heads Bypass via Kennedy Drive, a distance of 1.9 km, is scheduled for completion in July 1985.

**Above:** One of the worst accident sections of the Pacific Highway will be eliminated with the construction of the Warrell Creek Deviation, south of Macksville. **Below:** A new bridge to carry the Pacific Highway over Camden Haven River, north of Taree.

Planned works also include construction of four lanes from Kariong to Brisbane Water Road, West Gosford; construction of a new bridge and approaches over Wang Wauk River (132 km to 134.2 km north of Newcastle); construction of concrete pavement across the river flats at North Kempsey and Clybucca; construction of a deviation at Warrell Creek (45.8 km to 48.7 km north of Kempsey); reconstruction of the highway from Alipou Creek to Swan Creek (9.7 km to 11.2 km north of Grafton); and construction of an overtaking lane at McLeods Shoot (30.1 km to 31.7 km north of Ballina).





On remaining sections of the Pacific Highway, action is proposed to improve alignment and sight distance, provide increased overtaking opportunities, and widen narrow bridges and narrow pavements. Typical lengths are from O'Sullivan's Gap, north of Bulahdelah to Purfleet, south of Taree (106 km to 165 km north of Newcastle); Herons Creek to the Oxley Highway (55 km to 74 km north of Taree); Allgomera to Warrell Creek (39 km to 47 km north of Kempsey); Valla to Coffs Harbour (76 km to 112 km north of Kempsey); and Bangalow to

Barneys Point (25 km to 102 km north of Ballina).

### **Princes Highway** (State Highway No. 1)

This important southern route links Sydney and Melbourne via the coast. Between Waterfall and Bulli Pass and in the Wollongong region it has been supplanted to some extent by sections of the F6 — Southern Freeway. It runs for 530 km in New South Wales from Sydney to the Victorian border south of Eden. Traffic volumes are significantly higher to the north of Nowra.

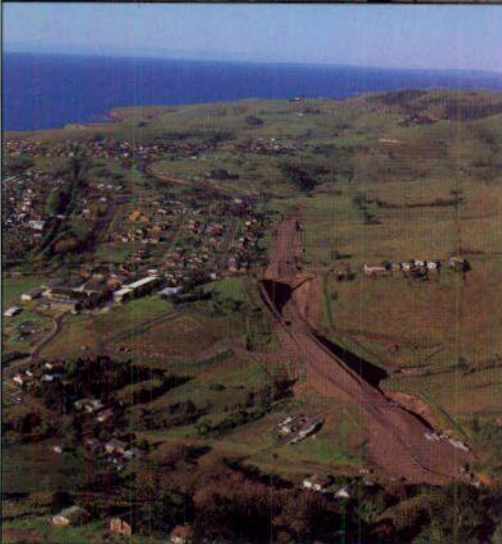
The main deficiency is traffic capacity in and around Wollongong and Kiama, between Wollongong and Kiama and over selected lengths to Batemans Bay.

Traffic volumes on this route increase significantly in summer holiday periods. This leads to frustration and delay. The bulk of the deficiencies will be alleviated through planned major works on the Southern Freeway and the Kiama Bypass. Pavement widening and provision of overtaking lanes at strategic locations will alleviate this situation in the balance of the route.

At the Sylvania end of the highway, duplication of the bridge over Georges River at Tom Uglys Point is proceeding on schedule for opening in the latter part of 1986.

In the Wollongong/Kiama region, a central median has been provided at the lower end of Bulli Pass following an undertaking by the Minister for Roads, after a fatal accident, to improve safety for road users and residents; the interchange with the Northern Distributor at North Wollongong has been partially opened; extension of the F6 — Southern Freeway from Fowlers Road to Yallah is proceeding; the intersection with Tongarra Road, Albion Park was completed; the Kiama Bypass has been commenced and the Kiama Bends have been improved.

Because of the difficult and hilly terrain between Batemans Bay and Moruya, safe overtaking opportunities are limited. In order to



**Above:** Launching of a precast steel box girder during construction of a new bridge over Georges River at Tom Uglys Point. **Below:** Traffic congestion on the south coast will be significantly improved with the completion of the Kiama Bypass.



improve this situation, three overtaking lanes were provided in 1984-85. In addition sections of deformed pavement were rehabilitated; the bridge at Dooga Creek was widened; a timber bridge at Mullenderry Creek was replaced and a new bridge was completed at Coila Creek.

Future plans provide for four lanes from Yallah to Omega (8 km south of Kiama); for deviations at Yatte Yattah (53 km south of Nowra) and Tilba Tilba (87 km south of Batemans Bay); for further general widening of obsolete narrow pavements and bridges, and the provision of enhanced safe overtaking opportunities.

In the longer term, bypasses around Narooma, Bega and Merimbula will need to be examined.

#### **Villawood to Wahrenonga** (State Highway No. 13)

This highway forms part of State Route 55, linking the Hume Highway at Villawood with the Pacific Highway at Pearce's Corner, Wahrenonga. Its total length is 25 km.

The traffic usage is expected to increase markedly when the F3 — Sydney-Newcastle Freeway is completed between Pearce's Corner and Berowra.

The major need is to widen Pennant Hills Road to six lanes. Currently this is generally four undivided lanes of extremely congested roadway. In conjunction with widening, a median strip with sheltered, controlled right turns will be provided to improve traffic safety and capacity.

The paramount need is to widen from Beecroft Road, Pennant Hills northwards to Pearce's Corner to connect with the new section of the F3.

The aim for 1984-85 was to proceed with widening from Beecroft Road through the Pennant Hills Shopping Centre to the railway line crossing, and to improve intersections with Duffy Avenue, Dartford Road and Normanhurst Road with the provision of right-turn bays. All of these works are underway at an estimated cost of \$8 million.

Pavement reconstruction was also carried out through Carlingford to improve the

riding quality of Pennant Hills Road and to reduce future maintenance commitments.

In 1985-86 it is proposed to complete the section from Beecroft Road through Pennant Hills Shopping Centre and to proceed with property and public utility adjustments northwards from the railway line to Normanhurst Road.

#### **Wollongong to Picton** (Trunk Road No. 95)

This arterial road extends for 47 km from the Princes Highway at North Wollongong via Wilton and Maldon to the Hume Highway at Picton. It provides a major road access to Wollongong and is used extensively for haulage of coal. It is sealed throughout.

The major needs over the next five years are to construct an interchange at the junction with Mt. Ousley Road; to construct a deviation from Mt. Ousley Road to "The Cuttings" (approximately 18 km west of Wollongong); and to provide additional overtaking lanes.

A deviation to bypass the township of Wilton is also under investigation.

Rehabilitation of sections with deformed pavement and the addition of extra overtaking lanes are also required.

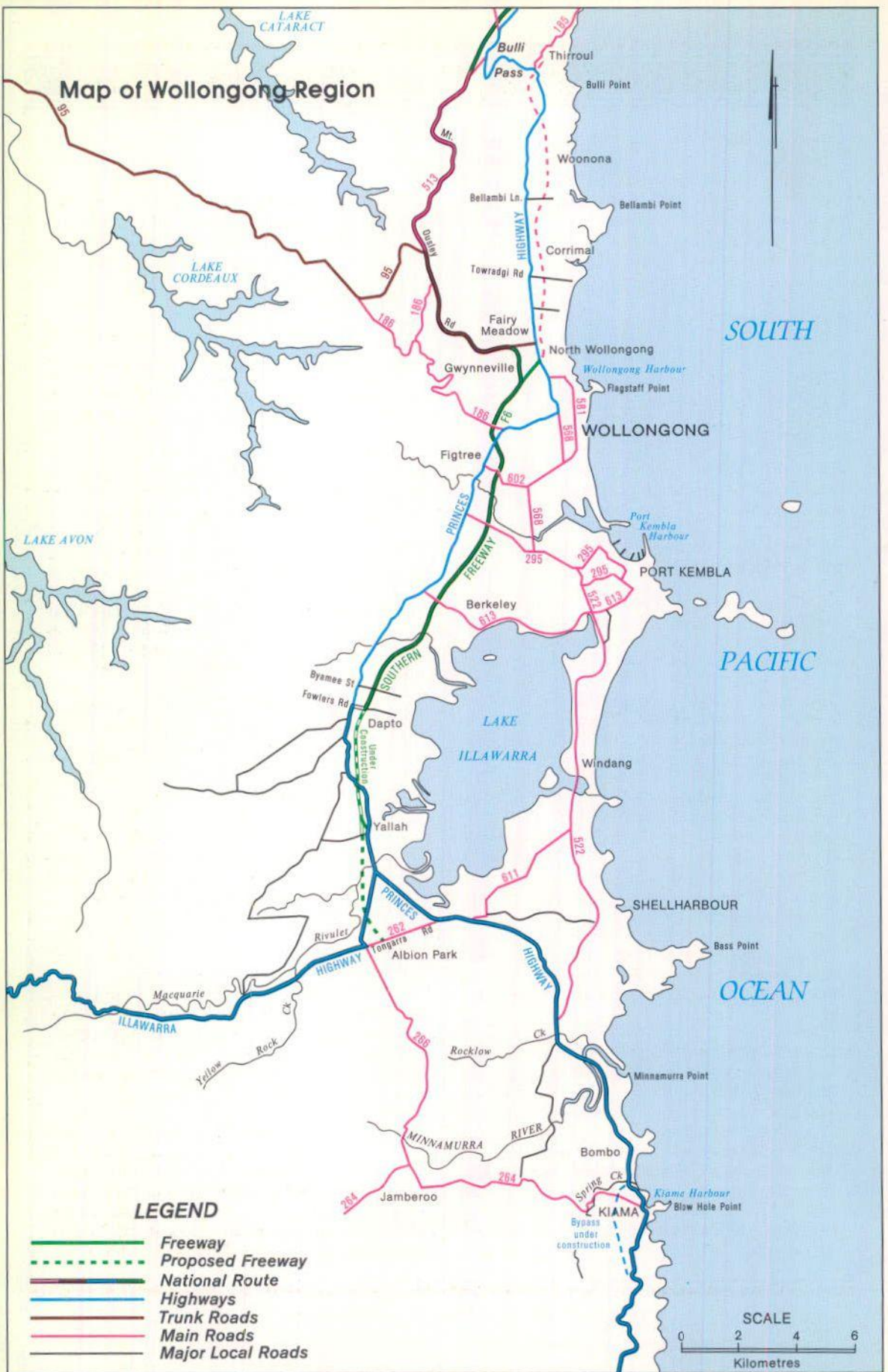
The program in 1984-85 provided for the initial construction of a channelised junction with Mt. Ousley Road as an interim measure; the provision of an overtaking lane for eastbound traffic between "The Cuttings" and Cordeaux Dam Road (17.2 km and 23.5 km west of Wollongong); the reconstruction on an improved alignment and grading near Cordeaux Dam turn-off (24.6 km to 27.6 km west of Wollongong); and the rehabilitation of the section between 27.6 km and 30.2 km west of Wollongong.

All these works were accomplished during the year.

The general condition of Trunk Road No. 95 has been considerably improved in recent years by work undertaken under the National Developmental Roads Construction Program.



# Map of Wollongong Region





## **Putty Road**

*(Main Road No. 503)*

This road provides an alternative route for traffic from the western areas of Sydney to Singleton and the New England Highway to the north. It runs from Wilberforce, north of Windsor, via Howes Valley and Bulga to the New England Highway at Singleton, a length of 166 km. The road has a sealed pavement throughout.

The major needs of the route include the provision of additional passing lanes, curve improvements and installation of guardrail in association with minor pavement widening, pavement rehabilitation and replacement of narrow timber bridges.

Noticeable improvements were effected during 1984-85 and safer travelling conditions have resulted.

The bridge at Howes Swamp, 72 km north of Windsor, was replaced with a concrete box culvert and pavement strengthening and widening was carried out between 33 km and 35 km north of Windsor. Similar work between 57 km and 59 km is continuing into 1985-86.

Pavement rehabilitation and shoulder improvements between 28.9 km and 33.9 km south of Singleton near Milbrodale, and curve improvements at Bobs Rock, 62.5 km south of Singleton, were completed along with guardrail erection at various locations.

Reconstruction at Staircase Hill, between 87.3 km and 89.0 km south of Singleton was begun. This work, including the provision of an overtaking lane, will be completed in 1985 at an estimated cost of \$800,000 and will considerably improve road safety at this location.

Pavement rehabilitation and widening work began to provide a passing lane for northbound traffic between 7 km and 8.6 km south of Singleton.

An old timber bridge was replaced over Terrys Creek, 36.3 km south of Singleton and construction of a new bridge was commenced to replace the aged timber bridge over Darkey Creek (North) on an improved alignment.

Current planning also includes the replacement of the timber deck of the Dunolly Bridge over the Hunter River at Singleton with a concrete deck in 1986, following the opening of the new bridge on the New England Highway deviation.

## **Sydney Region**

The Sydney region needs arterial roads with the capacity to safely handle large volumes of traffic at a reasonable level of service, without creating environmental problems for or imposing unreasonably high costs on the community.

This does not imply an entirely congestion-free system. However, the system does require a basic network of roads linked to the interstate highways which can handle volumes of traffic efficiently, without adversely affecting adjacent land use.

The Sydney road network must be developed to eliminate existing constraints; provide cross-regional, ring road and bypass routes; and support growth in developing areas.

With these objectives in mind, a number of major projects are either underway or planned for early commencement.

### **Eastern Distributor**

Cross-city traffic from the Cahill Expressway, which contributes significantly to congestion in Woolloomooloo and Taylor Square, will be relieved by the construction of the Eastern Distributor.

Extensive studies have been carried out to reduce the environmental impact of this scheme. As a result, significant lengths of each carriageway will be contained in tunnels between William Street and Moore Park releasing 418 properties which were earmarked for demolition under an earlier scheme.

Planning and design of the project is in progress and construction will take place in stages. When completed in 1992, traffic from the Sydney Harbour Bridge will have uninterrupted flow to Southern Cross Drive, Anzac Parade and Moore Park Road. The estimated cost of the work is \$123 million.



## Western Arterial Route

This new project will provide an arterial route to link the Western Freeway at Strathfield to the planned city arterial route at White Bay.

**Above:** The Western Arterial Route proposal on display at Leichhardt Council Chambers. **Below:** The \$63 million project at Darling Harbour is the starting point of the proposed Western Route to link the city with the F4 at Strathfield.



The route follows a viaduct through Pyrmont to a new Glebe Island Bridge, a grade separated interchange at White Bay, upgraded roads through Lilyfield and Dobroyd Point to a grade separated connection with Parramatta Road which is being improved to increase capacity.

The project will relieve other western outlets from the city and ease congestion on Parramatta Road through Leichhardt and Ashfield. Design is now in progress and, subject to the results of an Environmental Impact Study, construction will commence in 1985-86.

## Mona Vale to Blakehurst (State Route No. 33)

This is Sydney's most important cross-regional route, extending nearly 50 km from Mona Vale in the north via Pymble, Ryde, Strathfield and Hurstville to the Princes Highway at Blakehurst. It is planned to provide six lanes throughout most of the route and nearly half the length has already been constructed to this standard. Widening is underway on another 5 km, leaving 20 km to be completed.

The route is designed to increase capacity, reduce travelling time, overcome capacity constraints at major intersections and eliminate congestion through South Hurstville, Beverly Hills, Strathfield, Concord and Ryde.

Work is continuing on the extension of dual three lane carriageways along King Georges Road from the Princes Highway, Blakehurst to William Street, Hurstville at a total estimated cost of \$8.4 million.

The section of Roberts Road between Wilbur Street and Rawson Street, Greenacre, which provides the first stage of the deviation to bypass Strathfield, is now substantially complete and work has commenced to extend dual carriageways northwards along Roberts Road from Rawson Street towards the Hume Highway at a cost of \$2.5 million.

The \$2.8 million Hudson Park Deviation, opened in December 1984, has been named Centennial Drive.

Construction of the Homebush Bay Deviation and duplication of Ryde Bridge are planned to commence in 1985-86.



Construction of the interchange at the Pacific Highway, Ryde Road and Mona Vale Road has continued and the new railway overbridge was completed in June 1985. Work on the first stage of roadworks, the on and off loading ramps in Ryde Road, is well advanced. A contract will be let in 1985-86 for the second stage of roadworks, including the underpass beneath the Pacific Highway. Estimated cost is \$14.5 million and works are on target for completion by December 1988.

### **The Parramatta Ring Route**

This route extends from Parramatta Road at James Ruse Drive, Granville around the north of Parramatta to rejoin the Great Western Highway at Emert Street, Wentworthville.

When completed in 1986, the Granville-Mays Hill section of the F4 — Western Freeway will form the southern portion of the ring route.

The northern section of the ring road between Pennant Hills Road and the Great Western Highway at Wentworthville provides one of the links between the National Highways north and south of Sydney.

This route is of fundamental importance to the continued development of Parramatta as a major regional centre. Its extension from Old Windsor Road to the Great Western Highway at Wentworthville, together with the F4 Freeway at Granville, will effectively complete the ring road system, enabling all interstate and through traffic to be diverted away from the Parramatta Central Business District.

The 10 span bridge over the Carlingford Railway Line and A'Becketts Creek at Rosehill was completed in September 1984 to coincide with the opening of the Western Freeway extension from Silverwater Road to James Ruse Drive. The new 252 m long bridge, which cost \$9.6 million, provides six lanes for traffic.

Works by contract between Lower Mount Street and the railway underpass at Wentworthville are expected to be completed in August 1985 at a cost of \$3 million.

Duplication of the railway underpass west of Wentworthville Station has been completed.

The final section of the ring road between the railway underpass and the Great Western Highway at Wentworthville will be advertised for tender in August 1985. The total cost of the works between Lower Mount Street and the Great Western Highway will be about \$9 million.

Work on the grade separated interchange for the ring road at the Great Western Highway is planned to commence in 1985 at an estimated cost of \$5.5 million.

### **Liverpool to Wentworthville** *(Secondary Road No.2071)*

Development of this route is programmed for completion by the time that works on the Parramatta Bypass are completed south to Old Prospect Road, Wentworthville in 1988-89. This route will then provide traffic with an alternative to Woodville Road and relieve congestion on the Hume Highway, Lansvale for north-south traffic between the Parramatta area and Liverpool.

The development of this cross-regional route, initially to a four lane standard, linking the Hume Highway with the Parramatta Bypass, will provide an important new major arterial route in the metropolitan road network. Together with the Parramatta Bypass and Pennant Hills Road this route will provide the most direct connection between the National Highways north and south of Sydney.

The route of County Road No. 5020 generally follows the line of Secondary Road No. 2071 and links together several roads through Liverpool, Fairfield and Holroyd.

Works in progress include the reconstruction and widening of existing roads and the construction of new link roads.

Work is presently underway in Orange Grove Road from the Hume Highway to O'Brien Parade, Liverpool, and is expected to be completed in December 1985 at a cost of \$1.1 million.

Approaches to a new bridge over Cabramatta Creek, between O'Briens Parade and Links Avenue will be completed in June 1986 at a cost of \$1.6 million.

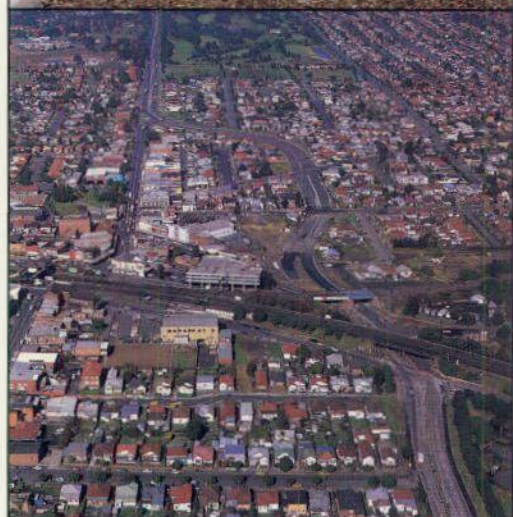


The \$1 million widening of Joseph Street, from Cabramatta Road to John Street, was completed in August 1984. The initial estimate for this work was \$458,800 per lane kilometre, but the final cost was \$600,800 per lane kilometre. This increase was incurred when the project was closed down on two occasions because of funding restrictions.

In February 1985 the widening of Cambridge Street between John Street and Canley Vale Road was completed for \$2.2 million.

Palmerston Road, between Hamilton Road and Polding Street, is due for completion in July 1985 at a cost of \$1.9 million.

**Above:** Looking south along the new Silverwater Road extension at Dundas, opened in January 1985. **Below:** Work in progress on the \$3.7 million Bede Street Deviation at Lidcombe.



The widening of Smithfield Road to six lanes from Alexander Street to Kenyons Bridge is due for completion in July 1986 for \$4.1 million.

Work valued at \$1.3 million on Warren Road, from Kenyons Bridge to Sturt Street, was finished in April 1985 and Betts Road, between Woodpark Road and Merrylands Road, is due for completion in September 1985 at a cost of \$2.1 million.

Works still required on this route include the link between Links Avenue and Cabramatta Road; the grade separated interchange between Palmerston Road and Smithfield Road at Polding Street; and the connection between Merrylands Road and the Parramatta Ring Road at Old Prospect Road, Merrylands.

All works to a four-lane standard are planned for completion by 1988, except for the grade separation at Polding Street which is planned for 1990.

#### **Alfords Point to Dundas**

(County Road No. 5016/Main Road No. 190/County Road No. 5051)

This major cross-regional route is being extended from areas to the south of Georges River, principally the growing area of Menai, to the Dundas — Eastwood — North Ryde route. It will provide bypasses around Bankstown and Lidcombe shopping centres, as well as eliminating serious congestion where it crosses Canterbury Road and the Hume Highway.

The new route links Fairford Road, Padstow with Stacey Street, Bankstown and then joins Rookwood Road (Main Road No. 190) at Brunker Road, Yagoona. The Lidcombe deviation follows the line of Bede Street into Olympic Drive and then via St. Hilliers Road into Silverwater Road.

Works include the provision of six lanes and grade separation at strategic intersections. The route is planned for completion by 1990.

Significant reductions in traffic congestion at two locations were achieved when the Fairford Road extension between Arkley Street and Canterbury Road, Bankstown and the Bede Street Deviation at Lidcombe were opened to traffic at the end of 1984.



The Bede Street Deviation cost \$3.7 million and included a new rail underpass on the Bankstown Line. A pedestrian underpass is also to be provided with completion scheduled for March 1986.

The Silverwater Road extension between Kissing Point Road and Kingsford Street was opened to traffic in January 1985 at a cost of \$4.1 million. Work included a pedestrian underpass at Bennetts Road, Dundas.

Construction of a six lane divided carriageway between Gow Street and Arkley Street, including grade separation at Canterbury Road, Padstow will cost \$6 million and is due for completion in December 1986.

The needs of the route are to complete the link between Stacey Street and Rookwood Road, which includes grade separation at the Hume Highway; improve the intersection between St. Hilliers Road with Rawson Street and Borea Street; provide grade separation for Silverwater Road at the intersection with Victoria Road and complete the link between Silverwater Road and Kingsford Street.

#### **Kensington to Botany** (County Route No. 5029)

It is intended to extend Southern Cross Drive from Wentworth Avenue, Eastlakes to General Holmes Drive, Botany to provide a more direct access to the southern suburbs and Sydney Airport.

Preliminary work has commenced in preparation for construction of the new link road with grade separation at Wentworth Avenue, Botany Avenue, and General Holmes Drive at an estimated cost of \$25.5 million.

The project involves complex technical problems associated with foundations in swamp areas and level constraints caused by the proximity of aircraft flight paths. A temporary railway embankment has been constructed to allow diversion of the Botany goods line while a bridge over the link road is built.

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Other works of major importance which have been carried out to overcome capacity restraints, improve safety standards and provide improved riding quality are listed below.

#### **Northern Suburbs**

Major projects underway north of the city include construction of the Wahroonga-Berowra section of the F3 — Sydney-Newcastle Freeway (see page ) and the widening of Pennant Hills Road to six lanes between Beecroft Road and Pearce's Corner.

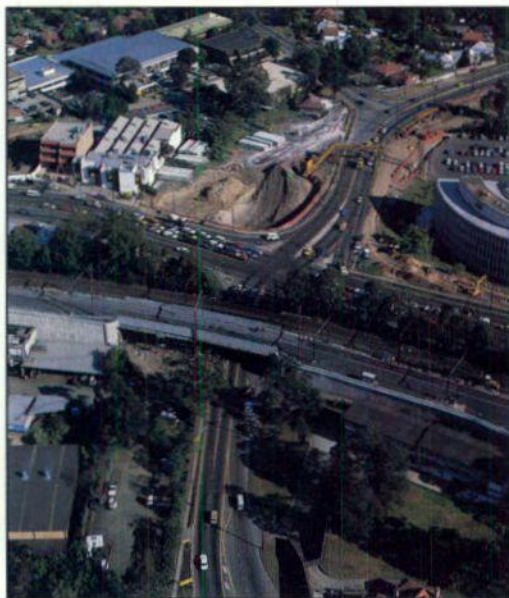
Work continued during the year on adjustments to properties and relocation of public utilities in preparation for widening the section between Beecroft Road and Yarrara Road, and improving intersections at Duffy Avenue, Dartford Road and Normanhurst Road by providing right turn bays.

At Balgowlah, the Burnt Bridge Creek Deviation has been completed, alleviating traffic problems in Balgowlah by providing motorway conditions for through traffic on a new route from Sydney Road to Condamine Street. The new road provides six lanes on a divided carriageway. The total cost was almost \$14 million, including a bridge over the new road to link Kitchener Street and Myrtle Street.

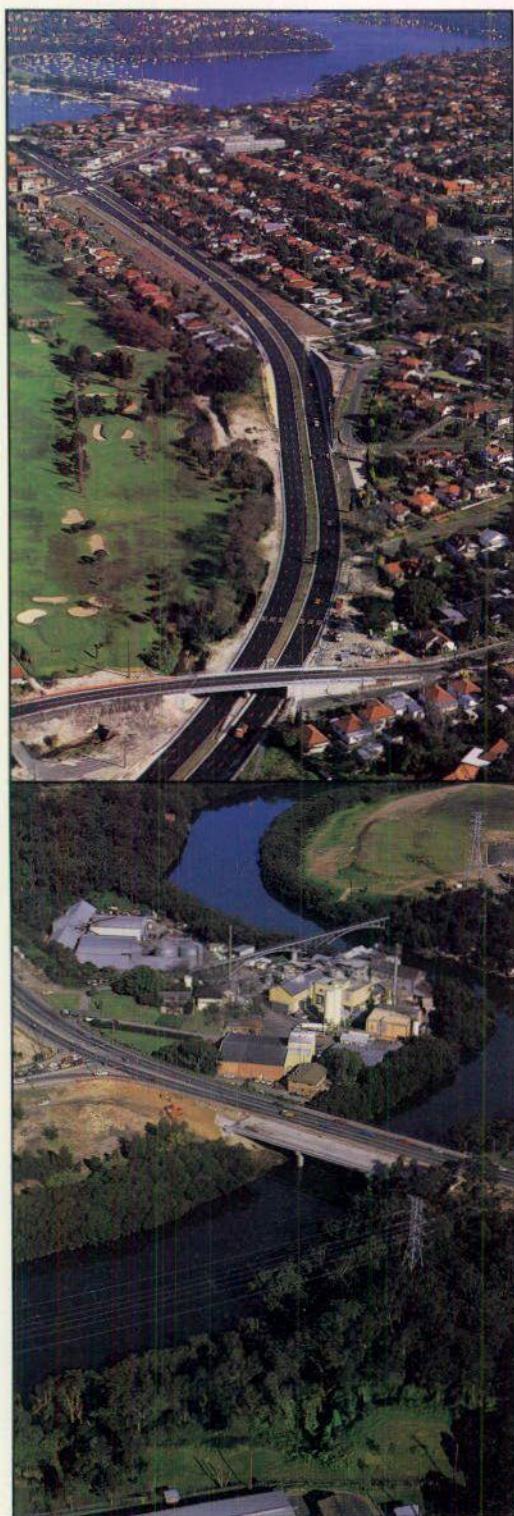
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*Work on the \$14.5 million Pymble Interchange at the intersection of the Pacific Highway, Ryde Road and Mona Vale Road continued and is on target for completion in 1988.*

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Reconstruction and widening to four lanes in Castle Hill Road (Main Road No. 156) has continued at a cost of \$630,000. Work has also commenced to widen Old Northern Road north of Rogans Hill and provide four lanes for traffic from the developing areas in Glenhaven and Dural.

Widening of Galston Road has commenced (Main Road No. 161) at Hookhams Corner to improve the alignment and increase capacity at the Galston Road intersection with the Pacific Highway.

Work on the Pymble Interchange, where Mona Vale Road and Ryde Road intersect the Pacific Highway, is included under State Route No. 33 (page 37).

The duplication of Lane Cove River Bridge in Epping Road (Main Road No. 373) has been completed and construction of the approaches is in progress. On completion in October 1985 the traffic bottleneck near Mowbray Road will be eliminated.

In Victoria Road (Main Road No. 165), an additional lane has been constructed between Glebe Island Bridge and The Crescent, Rozelle to improve flow for traffic leaving the City.

Widening of Griffin Road (Main Road No. 530), Dee Why was completed at a cost of \$500,000. The new works provide four traffic lanes and an improved vertical alignment. Intersection improvements costing \$350,000 have also been completed in Forest Way (Main Road No. 529) at Warringah Road.

Widening to four lanes was completed in Archbold Road (State Route 2043) between Margaret Street and Earl Street. Work has also commenced on Eastern Arterial Road to provide a roundabout which will improve safety at the intersection with Horace Street, Eucalyptus Street and Hunter Avenue.

Work was completed to improve the intersection of Mowbray Road (State Route 2092) with Penshurst Street and Willoughby Road.

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**Top left:** The opening of the \$14 million Burnt Bridge Creek Deviation at Balgowlah in March 1985 brought improved access to Sydney's northern beaches. **Left:** Duplication of Lane Cove Bridge in Epping Road was completed during the year, with the approaches to be completed in October 1985.

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Bicentennial works are in progress in Balacava Road (State Route 2024), Eastwood to reconstruct the pavement and provide four traffic lanes. The total cost of this work is expected to be \$1.2 million.

### **Western Suburbs**

Some of the many works underway in Sydney's rapidly growing western areas have been mentioned elsewhere in this report under sections dealing with F4 — Western Freeway; Great Western Highway; and Parramatta Ring Route.

North of Parramatta River in Dundas, work has continued on widening Kissing Point Road (Main Road No. 574) to six lanes between Spurway Street and Dundas Public School. The total cost of this project is estimated at \$5.5 million.

Kissing Point Road provides a link between the proposed Silverwater Road extension

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*This roundabout at the intersection of Old Windsor Road and Seven Hills Road, Seven Hills, is one of the largest built by the Department, costing \$1.2 million.*

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and the Parramatta Ring Route and will eventually provide relief for traffic in Victoria Road through Ermington and Rydalmere. A part of the proposed Silverwater Road extension from Kissing Point Road to Kingsford Street, Dundas, has been completed at a cost of \$4.1 million.

Old Windsor Road is being progressively reconstructed and widened from two to six lanes to cater for the development of the Blacktown — Parklea area. Ultimately, this work will be extended to Windsor Road, Kellyville. During the year, widening has continued between Johnstons Bridge and Seven Hills Road.

A roundabout has been constructed at the intersection with Seven Hills Road, Kings Langley which will relieve congestion and considerably reduce the accident potential at this busy intersection. The roundabout was estimated to cost \$322,000 per lane kilometre with the final cost being \$342,000 per lane kilometre.

Work has continued on strengthening the pavement on The Northern Road (Main





Road No. 154) in Cranebrook and Windsor at a cost of \$350,000. A section of Mulgoa Road (Main Road No. 155), South Penrith has been widened and strengthened at a cost of \$350,000 resulting in improved alignment and riding quality.

Reconstruction works have been carried out at the Windsor Road (Main Road No. 184) intersection with Showground Road, Castle Hill. Works to widen Windsor Road have continued through Kellyville, while further along Main Road No. 184, on Bells Line of Road, widening has been undertaken at Kurrajong Heights and Bellbird Hill at a cost of \$540,000.

Pavement reconstruction has been undertaken in Carlingford Road (Main Road No. 373) to extend the pavement life and improve riding quality.

Pavement rehabilitation, reconstruction and widening at a cost of nearly \$2 million has been carried out on Wallgrove Road (Main Road No. 515) between the Great Western Highway and Eastern Creek. This work has improved riding quality and will increase capacity south of the F4 — Western Freeway intersection.

A roundabout costing \$250,000 has been constructed in Francis Road (Main Road No. 537), Rooty Hill to eliminate a recognised accident blackspot at the intersection with Willis Road.

Failed pavement in Garfield Road (Main Road No. 546), Riverstone has been replaced to improve riding quality and reduce nuisance flooding.

A series of works costing \$2.6 million has been undertaken on State Route 2085 with reconstruction and widening to four lanes in Richmond Road and Bungarribee Road. Bungarribee Road has been extended from Lock Street to Blacktown Road to provide a southern outer bypass to the Blacktown City centre. Also in Bungarribee Road, a roundabout has been constructed at the intersection with Knox Road and Station Road, Doonside to improve safety standards.

Work has been completed on the Parkes Street link across James Ruse Reserve on State Route 2049 and reconstruction works have begun in Hassall Street.

## Southern Suburbs

Reconstruction of the roundabout in Anzac Parade (Main Road No. 171) at Kingsford has commenced at an estimated cost of \$500,000. This will improve traffic regulation at the Nine Ways intersection and improve traffic safety at a recognised accident black spot.

Further accident reduction measures have been completed in Canterbury Road (Main Road No. 167), at the Bexley Road — Beamish Street intersection.

Significant works have been carried out in O'Riordan Street (State Route 2008), Mascot which include the provision of right turn bays at Gardeners Road intersection and widening to provide six lanes between High Street and Joyce Drive. These measures will improve traffic flow on the approach to Sydney Airport and improve safety standards. The new roundabout constructed at the Joyce Drive intersection has already contributed to improved traffic flow near the Domestic Airline Terminal.

Bridge widening over Salt Pan Creek is continuing in Henry Lawson Drive (Main Road No. 508) at Peakhurst. The bridgeworks are being carried out under the Bicentennial program and will remove a traffic bottleneck and costly lane changing operations at Salt Pan Creek. The work is being undertaken in conjunction with pavement widening between Salt Pan Creek and Simone Place in Peakhurst at an estimated cost of \$3 million.

In Sutherland Shire, widening of the Kingsway (Main Road No. 227) to six lanes between Gympie Bay Road and Sylvania Road has been completed at a cost of \$800,000.

Widening in River Road (State Route 2034) has been completed at a cost of \$450,000 and works to improve the hairpin bends in Menai Road have commenced.

Widening of Kiora Road (State Route 2075) has commenced at Miranda and pavement reconstruction has been carried out in Elouera Road, Cronulla.

A contract has been let for the construction of a new bridge over the railway line at The Grand Parade, Sutherland at a cost of \$1.7 million. Approach roads are being constructed at an estimated cost of \$4.9 million,





*Access to and from Sydney Airport has been improved by a number of works in O'Riordan Street (State Route 2008), Mascot, including right turn bays at Gardeners Road intersection, widening to six lanes between High Street and Joyce Drive and a roundabout at Joyce Drive.*

including \$1 million for public utility adjustments.

A major reconstruction of Unwins Bridge Road (State Route 2099) is underway.

The first stage of a program to provide passing lanes at various locations in Heathcote Road (Main Road No. 512) has been carried out at a cost of \$700,000. Intersection construction in Heathcote Road has been completed at the junction with the F5 — South

Western Freeway and at Nuwarra Road and Anzac Road, Moorebank.

Bridge widening is in progress on The River Road, Revesby to provide four traffic lanes under the railway line.

Roundabouts have been constructed in Campbelltown Road (Main Road No. 177) at Raby Road and St. Andrews Road intersections to improve safety standards at recognised accident black spots.

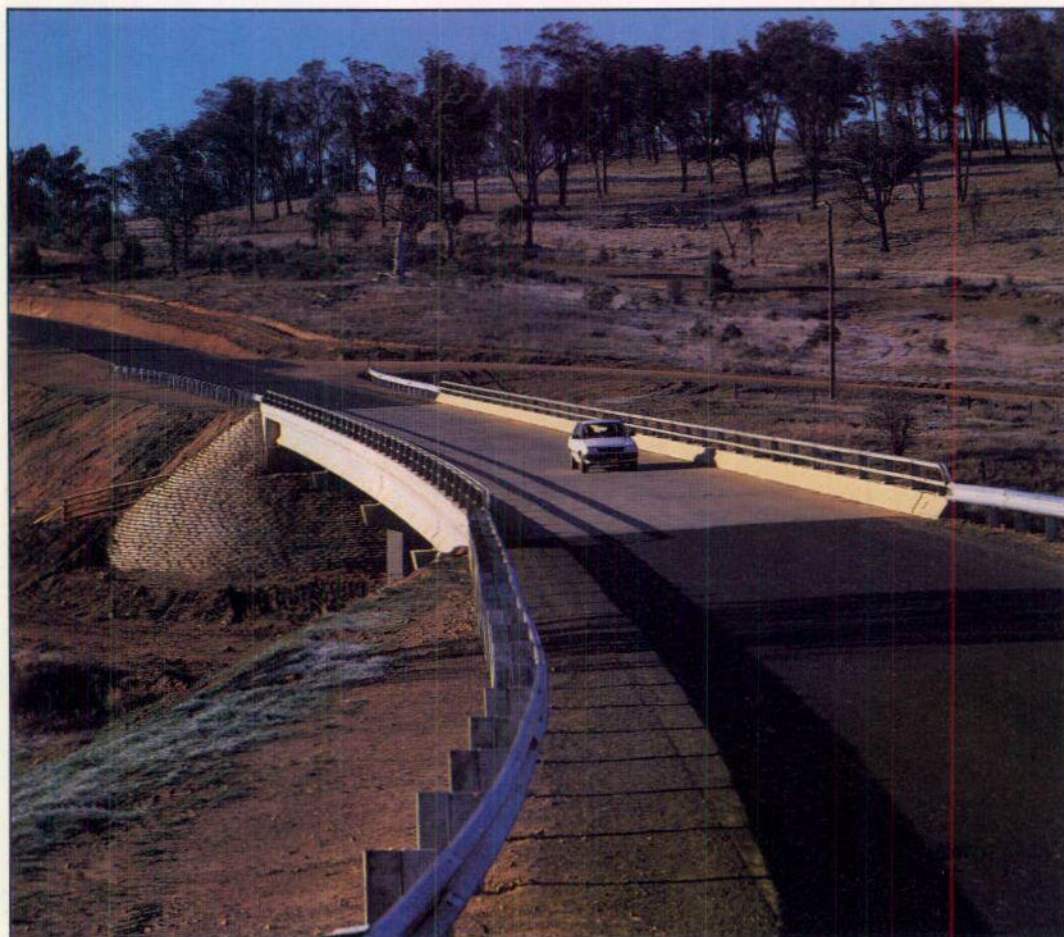
Works have been completed in Appin Road (Main Road No. 177) to provide the southbound carriageway of the divided road between Therry Road and Woodland Road, Campbelltown. The cost of the work was \$1.3 million and the improvements will serve the rapidly developing southern suburbs of Campbelltown.



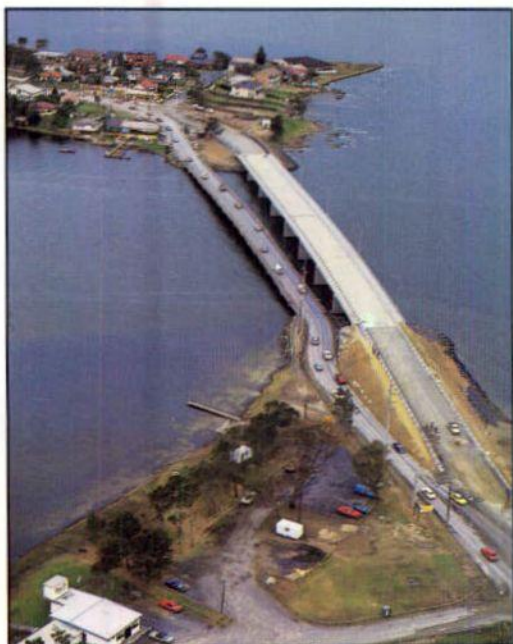
## BRIDGEWORKS

Table 1. Bridgeworks on Classified Roads, 1983-84 and 1984-85

Road Classification	Completed and opened to traffic		Completed but not opened to traffic		In Progress	
	At 30/6/84	At 30/6/85	At 30/6/84	At 30/6/85	At 30/6/84	At 30/6/85
Freeways	20	9	11	6	20	26
State Highways	25	46	27	21	47	40
Trunk Roads	8	15	1	5	12	4
Main Roads	17	29	5	8	26	35
Secondary Roads	2	1	2	2	5	3
Tourist Roads	—	—	—	—	—	—
Rural Local Roads	—	1	—	—	—	—
County Roads	—	—	—	—	—	2
Developmental and Unclassified Roads	1	4	1	—	3	7
TOTALS	73	105	47	42	113	117







**Above:** A new bridge over Tuggerah Lake at Toukley was officially opened by the Minister for Roads, Mr. Laurie Brereton, and the Federal Minister for Transport, Mr. Peter Morris, on 5 July 1985. **Left:** A new bridge at Commissioners Waters, on Trunk Road No. 74, replaces an old bridge that was severely damaged by a truck accident.

## Figure 9. Construction Completed — Roads

In 1984-85, 396 km of roads were constructed or reconstructed. Of these, 15% were works adding to the capacity of the system by either the addition of lanes or the construction of new roads and 80% (representing about 1.3% of the total sealed road length) involved the replacement and/or improvement of sub-standard sections of road. Assuming an average pavement life of 40 years, the length of road reconstructed annually will need to be doubled over the next decade.

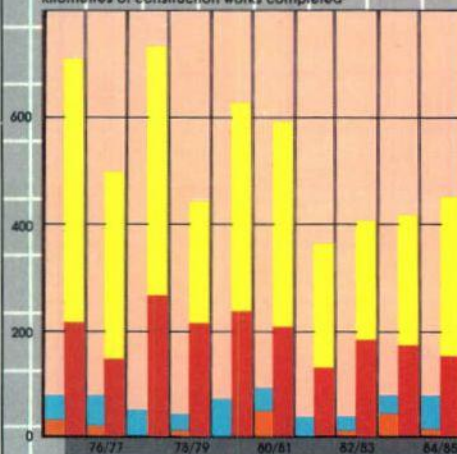
## Figure 10. Construction Completed — Bridges

In 1984-85, 8.1 lane km of new structures were constructed and 7.3 lane km of existing structures were replaced. These represent increases of 62% and 92% respectively over the work completed in 1983-84.

**Fig 9. Construction Completed — Roads**

Capacity Expansion      Reconstruction  
Lane Additions      Widen/Strengthen  
New Roads      Realign/Regrade

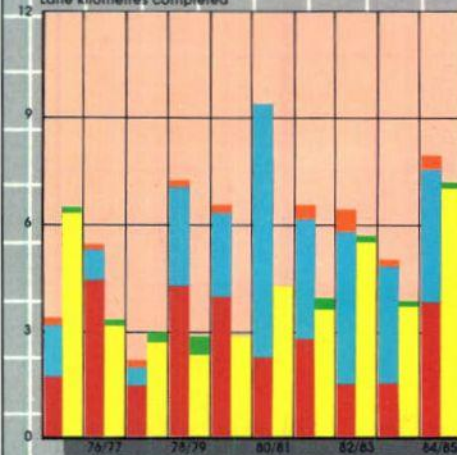
Kilometres of construction works completed



**Fig 10. Construction Completed — Bridges**

New Structures      Replacement Structures  
Pedestrian Facilities      Lane Additions  
Freeway Structures      Other  
Others

Lane kilometres completed





### Maintenance

During the year the Department, with the assistance of Councils, maintained the Main Roads System to an adequate standard, at a cost of \$174 million.

Maintenance embraces all those operations necessary to retain the asset in a stable condition. It includes attention to the pavement, shoulders, drainage and roadside furnishings. However, it does not include large scale renewal of bitumen sealed or concrete pavement.

Both weather and traffic have major influences on the standard which can be achieved economically. For example, during long periods of dry weather, it is not practicable to maintain a smooth surface on a gravel road by grading.

During wet weather excessive use of four wheel drive vehicles can cause irreparable damage to lightly gravelled pavements. Sustained wet weather, particularly in combination with the passage of heavy vehicles, can result in severe potholing or even complete destruction of weaker sealed pavements.

In the Sydney metropolitan area, the Department carries out maintenance operations on State Highways and the majority of improved metropolitan Main Roads. The Department provides grants to Local Government to undertake maintenance operations on other Main Roads and on Secondary Roads.

For most of the year dry weather assisted in maintaining pavements in good condition. However, during early summer and autumn, exceptionally heavy storms caused extensive damage in some areas.

It is becoming increasingly difficult to carry out maintenance work on the heavily trafficked routes in the metropolitan area during normal working hours without causing excessive delay to traffic and subjecting workmen to undue hazard. It is also difficult to work at night without creating a noise nuisance.

Available working times are becoming more limited and even relatively small maintenance operations involve detailed pre-planning and the co-operation of the police, public transport and other authorities.

Outside the Sydney metropolitan area the Department maintains State Highways, except through towns, and provides grants to Councils for the maintenance of Main and Trunk Roads.

The Department is continually seeking means of reducing the cost of maintenance. Work continued on landscaping roadsides with the objective of reducing mowing and improving appearance. During 1984-85 special attention was given to the Botany Foreshore Road, the South Western Freeway and Western Freeway.

The program of replacing sprayed acrylic pavement markings with the longer lasting thermoplastic marking was continued.

Special attention has been given to improving the skid resistance of pavements at locations with serious accident records. Open graded asphalt overlays using aggregate such as Rhyolite, which is resistant to polishing, or sprayed bituminous seals using Rhyolite as cover aggregate, were used for this purpose.

Lengths of weak pavement have been identified and reconstructed to the standards adequate to withstand heavy vehicle loadings under prevailing subgrade and climatic conditions, with the objective of reducing future maintenance.

Rubber-bitumen seals continued to be used successfully as elastic membranes to prevent moisture penetrating cracked pavements pending reconstruction.

Efforts to achieve further economies in maintenance continued through the training of personnel in more productive maintenance techniques.

### Surfacing

At 30 June 1985, 25,916 km of roads for which the Commissioner for Main Roads is responsible had a dust free surface. This is 54 km more than at 30 June 1984 and represents 60% of the total of 42,340 km.

Most dust free surfacings on N.S.W. roads consist of sprayed bituminous seal coats. The road lengths surfaced and types of surfacing laid during the last three years on main roads are shown in Tables 2 and 3 respectively.



During 1984-85 2561 km of road were surfaced — 104 km less than the previous year. The Department was the constructing authority for 1133 km while Councils arranged for 1428 km of surfacing. As illustrated in Table 4, most of this work comprised maintenance resurfacing.

The 2561 km surfaced during the year comprised 5377 lane kilometres, which is the equivalent of about 2688 km of normal two-lane road. This represents 9.9 per cent of the surfaced road for which the Department is responsible and is close to the level required for proper maintenance. The bar chart 'Bituminous Surfacing Work' shows these lengths expressed as normal two-lane road surfaced over the last 10 years.

## Asphalt

The amount of asphalt spread during the year was 43% less than the record 650,838 tonnes used in 1983-84.

Of the 368,654 tonnes used during 1984-85, 240,000 tonnes were produced at the Department's Central Asphalt Depot (CAD) at Granville and 24,000 tonnes at the Bellambi plant. Commercial plants supplied the remainder.

The amount of mix produced by CAD was 112,679 tonnes less than that produced in 1983-84. All routine mixes produced at CAD,

*A slipform paving machine at work on a 5 km extension of the Tumbalong Deviation, south of Gundagai on the Hume Highway.*





except 5 mm mixes, contained reclaimed asphalt pavement (RAP) material. During the year 26,095 tonnes of RAP were used in the manufacture of 107,500 tonnes of asphalt. The use of RAP materials saves energy and cost and conserves natural materials for future use.

### **Sprayed Bitumen and Rubber Bitumen Seals**

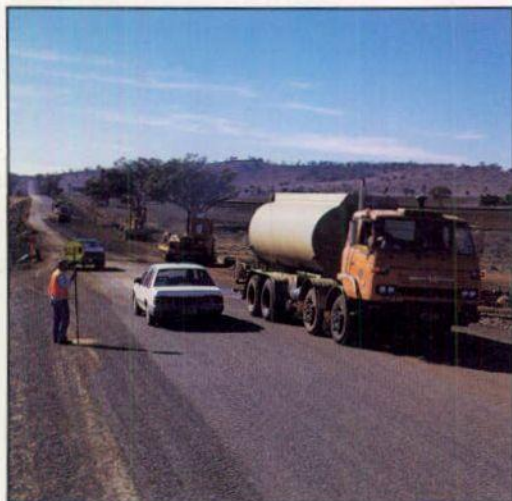
The Department operates 10 bitumen sprayer units throughout the State, each with a capacity of either 8,500 or 5,500 litres. Eleven smaller sprayers work on priming, sealing and patching in country Divisions. Contractors supplement the Department's forces where necessary.

During the year 42,537,144 litres of bitumen were sprayed. Of this, rubber was incorporated in 30,013,262 litres. The use of rubber in bitumen extends the life of the seal. This practice is growing as it is now proving to be cost effective.

### **Concrete Surfacing**

The Department currently uses about 750,000 tonnes of concrete involving some 200,000 tonnes of cement a year. Nationally, this represents almost 4% of all cement production, making the Department the single largest end-user of cement in Australia.

*Damping down of the gravel surface during reconstruction of the Oxley Highway near Gunnedah to reduce dust nuisance for drivers.*



The sharp increase in the use of cement has resulted from a shift towards concrete pavement construction. Currently, contractors are operating seven slipform paving machines on Departmental works. Techniques have been developed to enable extraordinary quantities of concrete to be produced and placed in road construction.

The Australian record for concrete paving now stands at 1876 cubic metres per day, equivalent to a one kilometre length of two-lane carriageway with shoulders. This record was set during construction of the Kariong to Somersby section of the F3 — Sydney-Newcastle Freeway in November 1984 and is three times the rate of paving achieved before the introduction of slipform pavers.

The economies of concrete paving have been enhanced by adopting a two layer pavement. The top layer is high quality concrete, usually between 180 mm and 230 mm thick, while the lower layer, known as the sub-base, is a low strength concrete with a thickness generally between 100 mm and 150 mm.

Apart from its use in rigid pavement construction, concrete is finding increasing application as a sub-base under a flexible pavement. Concrete used for this purpose usually contains flyash from power stations, which allows significant reductions in the cement content.

### **Bridge Maintenance**

There are 6,214 bridges on the State's classified road system, having a combined total length of 223 km.

Timber bridges still make up a significant proportion of the bridges on the system. After allowing for the nine timber truss bridges now being replaced, 90 will remain in service. There are also 1,209 timber beam bridges, most of which have been in service since before 1939. Until these bridges are replaced they will require inspection and continuing necessary maintenance.

The Department maintains bridges on State Highways, together with National and Ex-National Bridges and some special subsidy works, while Councils maintain those on other Main Roads and on Secondary Roads.

Generally, work on timber bridges consisted of the replacement of worn-out decking and



longitudinal sheeting, together with repair or replacement of damaged or deteriorated truss members, piles, girders, capwales, corbels and braces.

Work on concrete bridges consisted mainly of repair or replacement of expansion joints, traffic barriers and pedestrian railings, as well as repair of cracks.

Repainting of steel structures continued, including a major contract to repaint the Shoalhaven River Bridge at Nowra.

In conformity with the Department's maintenance policy, regular inspections of all bridges continued.

## Ferries

There are 10 vehicular ferry services operating throughout the State in which the Department is financially involved. Most are extensively used, with Wisemans Ferry over the Hawkesbury River carrying some 310,000 vehicles per year.

The Berowra and Wisemans Ferries were overhauled at Mortlake slipway during the year, while the Department's Central Workshop personnel assisted and supervised the major overhaul of three ferries on the North Coast.

A routine overhaul was also carried out on the ferry over the Murray River at Speewa.

**Table 2. Road Lengths Surfaced with Bituminous or Cement Concrete Materials, 1982-83 to 1984-85**

Classification	1982-83 km	1983-84 km	1984-85 km
Freeway	3	70	11
State Highway	829	1269	1078
Trunk Road	403	396	488
Main Road	984	903	941
Secondary Road	14	16	21
Tourist Road	13	10	11
Developmental Road	6	1	3
Unclassified Road	2	0	8
<b>TOTALS</b>	<b>2,254</b>	<b>2,665</b>	<b>2,561</b>

**Table 3. Types of Surfacing, 1982-83 to 1984-85**

	1982-83 km	1983-84 km	1984-85 km
Concrete	Not recorded	22	14
Asphalt Surfacing	102	221	154
Sprayed Seal	2,004	2,113	2,218
Bitumen Enrichment	101	186	98
Primer Seal	44	101	75
Prime	3	22	2
<b>TOTALS</b>	<b>2,254</b>	<b>2,665</b>	<b>2,561</b>

**Table 4. Types of Bituminous Surfacing Work and Lengths, 1983-84 and 1984-85.**

Type of Work	Road Length		Lane Length		Equivalent Two-lane Road Length	
	83-84 km	84-85	83-84 km	84-85	83-84 km	84-85
<i>Bituminous Surfacing</i>						
1. Initial treatment — of previously unsealed road	121	73	246	145	123	73
2. Heavier treatment — of primed or primer sealed road	87	89	175	187	88	93
3. New surface/restoration following construction/reconstruction	336	394	807	894	404	447
4. Maintenance resurfacing	2099	1991	4442	4113	2221	2056
<i>Cement Concrete</i>						
5. Surfacing	22	14	90	38	45	19
<b>TOTALS</b>	<b>2665</b>	<b>2561</b>	<b>5760</b>	<b>5377</b>	<b>2881</b>	<b>2688</b>



## PLANNING AND DESIGN

The Department's planning and design process was reviewed during the year in order to streamline the procedure, co-ordinate it with the requirements of the Planning and Environmental Act and provide for increased community involvement.

The revised process includes distinct stages for:

- strategic planning to develop forward road networks as part of the land use/transport plans of the State;
- reservation of corridors in Council land release areas; and
- development of road and bridge designs for construction.

Environmental factors are considered for all projects, while Environmental Impact Statements (EIS) are published for projects identified as having significant social or physical impact.

Community involvement is enhanced by undertaking road development studies in the Department's regional offices throughout the State. This places decision-making closer to the community involved and ensures close interaction with local government, public transport authorities and other interest groups.

In addition, displays are arranged to encourage public response to road proposals and assist in developing schemes that best meet the overall community wishes.

### Strategic Planning

The prime functions of strategic planning are to prepare and maintain, under continued review, long range Main Roads Development Plans for both rural and urban areas of New South Wales, and to undertake long range programming of road improvements, having regard to forecasting of available funds and assessment of priorities.

As a first step in establishing its own road data management systems, the Department is adopting the Road Data Location Reference System (ROADLOC) as its standard reference for road-related information. Road data systems within the Department will be progressively converted to the use of ROADLOC for the ultimate establishment of an integrated data base (ROADATA).

Typical applications for the data base include road and bridge inventory, planning, budgeting and programming, project and contract management, traffic analysis, pavement condition and history, and road location.

The collection of improved vertical and horizontal alignment data, using the Road Geometry Data Acquisition System (RGDAS) developed by the Australian Road Research Board (ARRB), was also carried out during the year.

### Statutory Planning

The Department operates within the statutory planning provisions of the Environmental Planning and Assessment Act.

During the past year the Department has co-operated with the Department of Environment and Planning in developing a number of State Environmental Planning Policies and numerous Regional and Local Environmental Studies and Plans. Examination of Local Environmental Studies and Plans is now being undertaken in the Department's Divisional Offices.

Increasing emphasis has been given to ensuring that road construction proceeds smoothly in co-ordination with the requirements of statutory planning bodies.

### Environmental Assessments

In examining construction proposals, the Department operates in accordance with the environmental assessment provisions of the Environmental Planning and Assessment Act.

All proposals are subject to environmental review by the Department and Environmental Impact Statements are prepared for proposals which are likely to have a significant impact.

The Department also responds to Environmental Impact Statements prepared by other organisations.

During the year, Environmental Impact Statements were completed for the Hume Highway bypass of Goulburn, the section of State Highway No.23 from Rankin Park to Jesmond, Newcastle, and the Glebe Island Arterial Route, Pyrmont.



Other statements are being prepared for the F5 — South Western Freeway between Moorebank and Beverly Hills; the Princes Highway near Minnamurra River, Kiama; the Eastern Distributor; the Federal Highway between Collector and Brooks Creek (beside Lake George); the Rutledge Street route between Epping Road at North Ryde and Marsden Road at Eastwood.

## Route Investigations

Investigation and location for new roads and for the relocation of some existing roads are continuing Departmental activities. Aerial photography and photogrammetry are important aids in these projects. Appropriate upgrading of aerial photographic coverage of all State Highways provides comparatively inexpensive management tools for field monitoring of development, access control, and maintenance and construction operations.

The Department has considerable interaction with other State Government agencies including the Lands Department, Central Mapping Authority, Water Resources Commission and Mineral Resources and Mines.

A highlight of the year was the adoption of a computer-aided design package. This allows rapid investigation of alternative road locations.

Creation of three dimensional models allows perspective presentation to assist the designer in studying the relative visual impacts of a range of design options and solutions.

Besides increasing productivity, the resulting flexibility available to the road designer will allow closer integration of environmental aspects with technical considerations.

Combined with precise control field survey and real property search details, development of extensive cadastral maps allows location and definition of the effects of road proposals on individual properties in urban and rural areas, for the information of Departmental valuers and for members of the public.

Investigations are nearing completion into the current and future through traffic movements in a planned bypass of the commercial and tourist centres of Tweed Heads and Coolangatta.

During the year there has been a significant increase in requests from the NSW Department of Lands for information on future road proposals.

This has arisen as a consequence of claims by local Aboriginal Land Councils under the Aboriginal Land Rights Act (NSW) 1983.

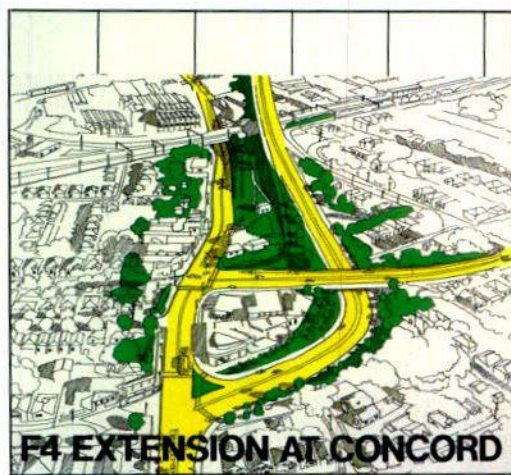
Claims cover large tracts of vacant Crown Land, Crown reserves and land held under short term occupancies, such as Permissive Occupancies and Travelling Stock Reserves, any of which may involve undefined road reserves.

Once lands are vested in an Aboriginal Land Council they can only be appropriated or resumed by an Act of Parliament. Consequently, a substantial amount of additional work has been generated in order to establish and substantiate any requirements for road needs within the time framework of the legislation.

Achievements during the year included:

- Upgrading of aerial photographic records of 1,948 km of State Highways, an increase of 135% on the previous year. Project aerial photography for current investigations covered 72 km.
- Photogrammetric plotting by the Central Mapping Authority, the Department and private practitioners covered 7,680 hectares.

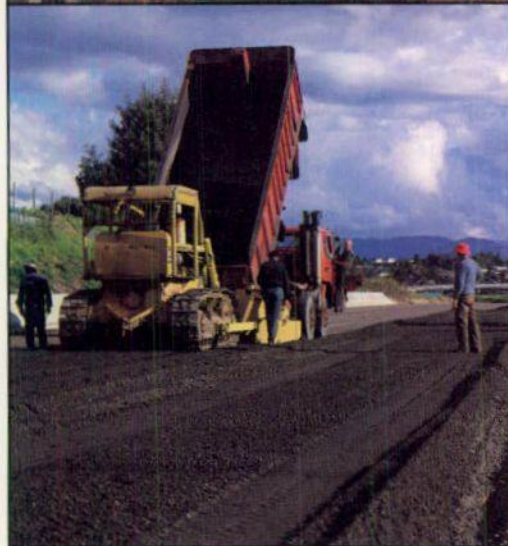
*Design of the F4 extension at Concord was completed during the year.*





- Cadastral overlays covering 165 km and 25,000 hectares were produced for rural and urban property work.
- Digital terrain models were supplied for three projects.
- Thirty-three road location proposals were examined during the year, of which 24 have been approved for final survey and design. Over half of these involved replacement of bridges and approaches.

*Design work has also been completed for the Berri-ma Bypass, commenced in February 1985 (above) and the southern extension of the F6 to Yallah (below).*



- Investigations continued on a further 15 projects covering 158 km and involving 53 bridges. This includes the 43 km of National Highway extension between Estelville-Beresfield and Allandale.
- Stereometric photography enabled the recording and preservation of a number of Aboriginal relic sites prior to construction work on the Sydney-Newcastle Freeway between Hornsby and Berowra.

## Road Design

Road design output continued at a high level during the year, with designs being completed for 444.6 km of work on classified roads maintained by the Department and 354.6 km on Council roads. Approximately 81 km of design were carried out by consultants. Included in these totals are significant lengths of urban and rural multi-lane design.

Major projects included:

- F3 — Sydney-Newcastle Freeway: four sections including Burdett Street, Wahroonga to Berowra, and a new interchange at Calga.
- F4 — Western Freeway: James Ruse Drive to Church Street, Parramatta plus an eastern extension to improve traffic arrangements at Concord.
- F5 — South Western Freeway: Berrima Bypass from Welby to the Wingecarribee River.
- F6 — Southern Freeway: southern extension which includes an interchange at Yallah.
- Hume Highway: dual carriageways over Cullarin Range (19.9 km to 51.3 km south of Goulburn), and at Jugiong (56 km to 66 km south of Yass).

As the major portion of this work is to be done by contract, the production of specifications proceeded concurrently with design work.

Designs in progress include:

- F2 — Gore Hill Freeway: extension from Naremburn to Artarmon.
- F3 — Sydney-Newcastle Freeway: southern extension from Pennant Hills Road to



Burdett Street and northern extension between Freemans Waterholes and Barnsley.

- F4 — Western Freeway: interchange with County Road from Homebush to Rhodes.
- F5 — South Western Freeway: northern extension from Heathcote Road to King Georges Road together with the Mittagong Bypass.
- Glebe Island Arterial — western extension from Harris Street, Ultimo to Victoria Road at White Bay.
- Great Western Highway: Marrangaroo to Meadow Flat (9.6 to 30.8 km west of Lithgow).

A review of geometric standards resulted in amended details for pavement and shoulder widths, with dimensions depending on traffic volumes rather than road classification. This should result in economies for both construction and maintenance without affecting safety.

## Bridge Design

Major bridge designs completed during the year included:

- the two remaining sections of the F4 — Western Freeway viaduct between Granville and Parramatta, which will form 1.2 km of the 1.8 km long viaduct structure;
- the duplication of Ryde Bridge over the Parramatta River in Sydney;
- the duplication of the bridge over the entrance to Lake Macquarie at Swansea;
- new twin bridges over the Wingecarribee River on the Berrima Bypass section of the F5 — South Western Freeway;
- a new bridge over the Murray River at Tocumwal; and
- a new bridge over the Darling River at Bourke.

Over 200 bridge design projects were in progress at 30 June 1985, including designs for 20 new bridges associated with the extension of the F3 — Sydney-Newcastle Freeway, and 35 new bridges for various sections of the Hume Highway.

Thirty-two consulting engineering firms with experience in bridge design were engaged to assist the Department with site investigation, detailed design, checking, and preparation of final drawings.

The Department also examined a number of bridge designs submitted by Councils for local road projects, and by other organisations for structures over or under classified Main Roads.

## Landscaping

During the year, the Department has been implementing various landscape works in its effort to upgrade the visual and physical environment of all road corridors.

These landscape works are also aimed at reducing the increasing maintenance costs along road reserves by tree and shrub planting, together with native seeding for bushland revegetation in both urban and rural areas.

Major landscape projects completed were the F4 — Western Freeway — Duck Creek to James Ruse Drive; Burnt Bridge Creek Deviation — Sydney Road to Condamine Street; Cahill Expressway; Great Western Highway — Glenbrook to Blaxland; intersection of The Crescent and Victoria Road, Rozelle; intersection of Parramatta Road and Wattle Street, Haberfield; intersection of the Hume Highway and Great Western Highway, Ashfield; Marulan Bypass; F4 — Western Freeway — Bennett Road to Mamre Road, St. Clair; Hume Highway south of Goulburn; and the F6 — Southern Freeway from Yallah to Dapto.

Various roundabouts were also landscaped, including those at Windsor Road and Showground Road, Kellyville and at State Highway No.23 and the Pacific Highway at Charlestown.

In all, some 36,000 trees and shrubs were planted during the year.



### Traffic Authority of New South Wales

Under the Traffic Authority Act, the Department is responsible for the implementation of a program of traffic works approved by the Traffic Authority and financed from the Traffic Facilities Fund. The 1984-85 expenditure on traffic facilities, such as intersection improvements, traffic signals, emergency services, driver aid scheme, signs and roadmarking, was \$52.4 million.

As the operating arm of the Traffic Authority of New South Wales, the Department undertakes the installation of traffic control devices on Main Roads. Local Councils have a similar responsibility for local roads, and the Department liaises with Councils through their Traffic Committees.

### Routine Maintenance and Operations

The Department undertook all routine operations, maintenance and emergency repair work of traffic facilities, including traffic signals, in the Sydney, Wollongong and Newcastle areas. Elsewhere, signal maintenance was carried out by the local electricity supply authority for the Department, while other traffic facilities were maintained by either the Department or by local Councils.

### Signs and Markings

Over 26,000 new facilities including marked pedestrian crossings, traffic domes, regulatory, warning and guide signs, together with over 39,000 replacement signs, were provided during the year.

The Department re-marked approximately 58,500 km of longitudinal traffic lines on classified roads. Raised pavement markers continued to be used to augment painted lines and to simulate traffic lines on freeways. Approximately 149,000 square metres of transverse lines, zebra crossings and road symbols were marked or re-marked during the year. Hot-applied thermoplastic material is now commonly used for transverse markings on heavily trafficked roads and self-adhesive marking tape is used for special applications.

### Intersection Control

The program of State-wide intersection control, involving the establishment of a road

hierarchy in all Council areas and relevant signposting of all road junctions, is now complete.

### Clearways

Two additional lengths were established during the year at:

- Old Northern Road — Castle Hill Road, Castle Hill to Windsor Road, Baulkham Hills;
- Gardiners Road — Racecourse Place, Eastlakes to Botany Road, Mascot.

### Speed Zoning

New speed zones and the extension of existing speed zones during the year increased the lengths of 60 km/h and 80 km/h zones by 88 km and 100 km respectively.

### Traffic Signals

One hundred and sixteen new sets of traffic signals were brought into service during the year, distributed throughout New South Wales as shown in Table 5.

Seventy-six sets of traffic signals were reconstructed because of changing traffic factors or road reconstruction. Temporary signals were installed at seven locations to assist in controlling traffic movements at the site of roadworks.

### SCATS

The connection of signalised intersections to the Sydney Co-ordinated Adaptive Traffic System (SCATS) and to similar systems in the Wollongong and Newcastle urban areas continued during the year. A total of 1,138 intersections including the Sydney Central Business District are now connected to SCATS. The system includes a central supervisory computer at the Department's Traffic Control and Emergency Centre in Oxford Street and 12 regional computers at key locations in the metropolitan area.

Through this system, the operating cycles of connected traffic signals are controlled and co-ordinated in response to traffic flows and conditions. Travel time surveys indicate that SCATS is contributing significantly to keeping traffic flowing on urban arterial roads and is reducing stops by up to 45 per cent, delay by 23 per cent and fuel used by 12 per cent. As well as monitoring and adjusting to



**Table 5. Traffic Signals in Service, 1984 and 1985**

Area	Vehicle Actuated		Pedestrian Actuated		Inner City		Totals	
	At 30.6.84	At 30.6.85	At 30.6.84	At 30.6.85	At 30.6.84	At 30.6.85	At 30.6.84	At 30.6.85
Blacktown	172	195	22	27	—	—	194	222
Parramatta	294	328	37	40	—	—	331	368
Sydney	938	965	118	122	120	120	1176	1207
Newcastle	113	118	26	26	—	—	139	144
Wollongong	80	88	9	9	—	—	89	97
Country Centres	62	67	14	14	—	—	76	81
<b>TOTALS</b>	<b>1659</b>	<b>1761</b>	<b>226</b>	<b>238</b>	<b>120</b>	<b>120</b>	<b>2005</b>	<b>2119</b>

traffic flows, the system provides a direct means of checking the operation of signal equipment.

During the year the SCATS computer programs were enhanced to improve both peak hour and off-peak operation with particular emphasis on reducing side street delays and ensuring that main road traffic delay and stops were reduced for drivers who did not exceed the speed limit.

### Improvements for Pedestrians

Twelve mid-block traffic signals were installed specifically for pedestrian use, and pedestrian push-buttons were incorporated in the majority of new or reconstructed intersection traffic signals.

The installation of audio-tactile push-button boxes continued during the year, and further installation of these facilities will be carried out as the need arises.

### Intersection Improvements

Channelisation in permanent materials was carried out at 29 intersections. A further 53 intersections were reconstructed and improved.

Roundabouts were installed at 77 sites during the year. This intersection control device is effective in improving safety and reducing traffic delays.

Special attention was directed towards corrective treatment at those intersections which were classified as blackspots on a State-wide ranking of intersections where most accidents were recorded.

During 1984-85, corrective action was taken to reduce the accident potential at 54 of

those intersections, including skid resistance surfacing, right turn provisions and signal reconstruction.

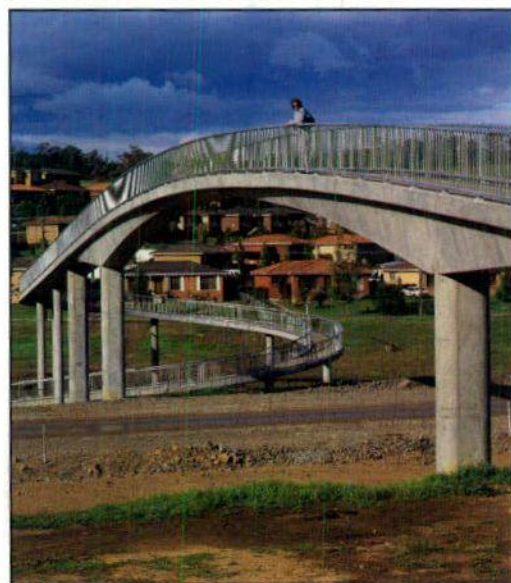
**Table 6. Growth in Use of Roundabouts in New South Wales**

	July 82	July 83	July 84	July 85
Built Before	82	83	84	85
Total Constructed	20	55	85	162
Total on Classified Main Roads	8	13	22	51

### Main Road Traffic Flow

Major changes were instituted on Parramatta and Victoria Roads to improve driving

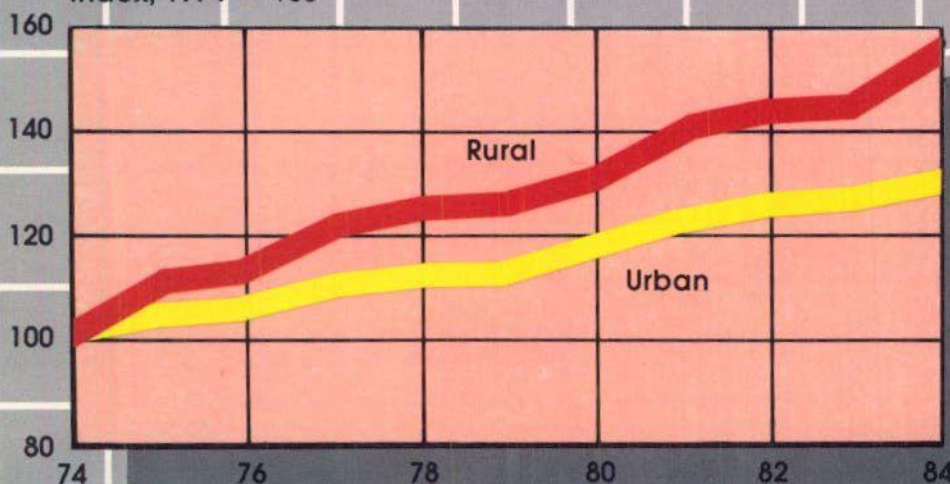
*A pedestrian bridge over the route of the F6 Freeway south of Fowlers Road, Dapto.*





**Fig 11. Traffic Growth on Main Roads**

Index, 1974 = 100



*This flashing arrow warns motorists of approaching roadworks on the Hume Highway near Marulan.*

conditions throughout the day. Measures included provision of right turn bays, signal rephasing and increased surveillance of vehicle breakdowns.

This has resulted in considerable benefits for all classes of vehicles and further work is planned in 1985-86 to consolidate the changes already made and to extend the benefits to major arterial roads in both Sydney and Newcastle.

**Figure 11. Traffic Growth on Main Roads**

Growth of traffic in rural areas is slightly higher than in the urban areas of Sydney, Newcastle and Wollongong, averaging about 5% per annum over the past decade in the rural areas against 3% in the urban areas.





*Emergency telephones were installed on Southern Cross Drive to aid stranded motorists.*

## Cycleways

The Department continued to administer grants under the Bicycle Facilities Program on behalf of the Minister for Transport. These grants are made available to Councils for cycleways construction on a 50/50 basis.

Funds were also made available for cycleways construction under the Commonwealth Employment Schemes. While the Department was not involved with the administration of these works, it provided a service to the Ministry of Transport examining Council's plans and estimates.

## Miscellaneous Projects

Seventy-four other traffic management and safety projects were completed during the year, including skid resistance improvements, provision of additional lanes and bus bays.

## Traffic Volumes

Traffic volume surveys, which are carried out on a calendar year basis, provide valuable data for Departmental planning purposes. They are also used by other organisations and individuals in the fields of planning, transport and associated areas.

Over the last 12 years, traffic volumes registered at the Department's continuous count stations have increased on average by about 4 per cent per annum, with a slightly greater growth rate in rural than in urban areas. The increase from 1983 to 1984 was 4.2 per cent in rural and 2.8 per cent in urban areas, giving 3.6 per cent overall.

State-wide traffic volume surveys are carried out in a four-year cycle. Surveys were undertaken last year in the Hunter Valley, Upper Northern, North Western, Central Western, Southern and Central Mountains Divisions and the urban areas of Illawarra. Surveys are in progress in the County of Cumberland.

During the last financial year, the semi-permanent count stations have been reclassified to permanent, while two further sites have been introduced and one deleted. There is now a total of 243 permanent counting stations.

**Table 7. Arterial Road Speeds in Sydney for 1984**

Peak Period	Route	Total Distance Surveyed km	Median Speed km/h	Proportion of Route travelled at 40 km/h or above
Morning	To Parramatta	338	39	68%
	To Sydney CBD	315	32	48%
	Average (distance weighted)	653	36	58%
Evening	From Parramatta	338	37	70%
	From Sydney CBD	314	37	66%
	Average (distance weighted)	652	37	68%



Work is continuing to convert the permanent counting stations in the County of Cumberland to electronic counting, and to review traffic volume data processing generally in order to improve efficiency and make data more readily available to users.

## Travel Times

Travel time measurement in the Sydney Metropolitan area involves surveying approximately 650 km of arterial roads in both the morning and afternoon peak periods. These surveys are conducted three times a year in March, July and November, amounting to nearly 1,000 individual surveys per year.

For the 1984 fiscal year, the Department adopted a corporate objective of maintaining a speed of 40 km/h or above on its urban arterial road system. Table 7 shows the position for the 1984 calendar year for morning and evening peak period travel to and from Parramatta and the Sydney Central Business District (CBD). The distances surveyed refer to a combined total of various routes to and from Parramatta and the Sydney CBD respectively. This gives an overview of the current performance of the greater Sydney

road-network. The figures illustrate that more than half of the Sydney network already operates at above 40 km/h in peak periods.

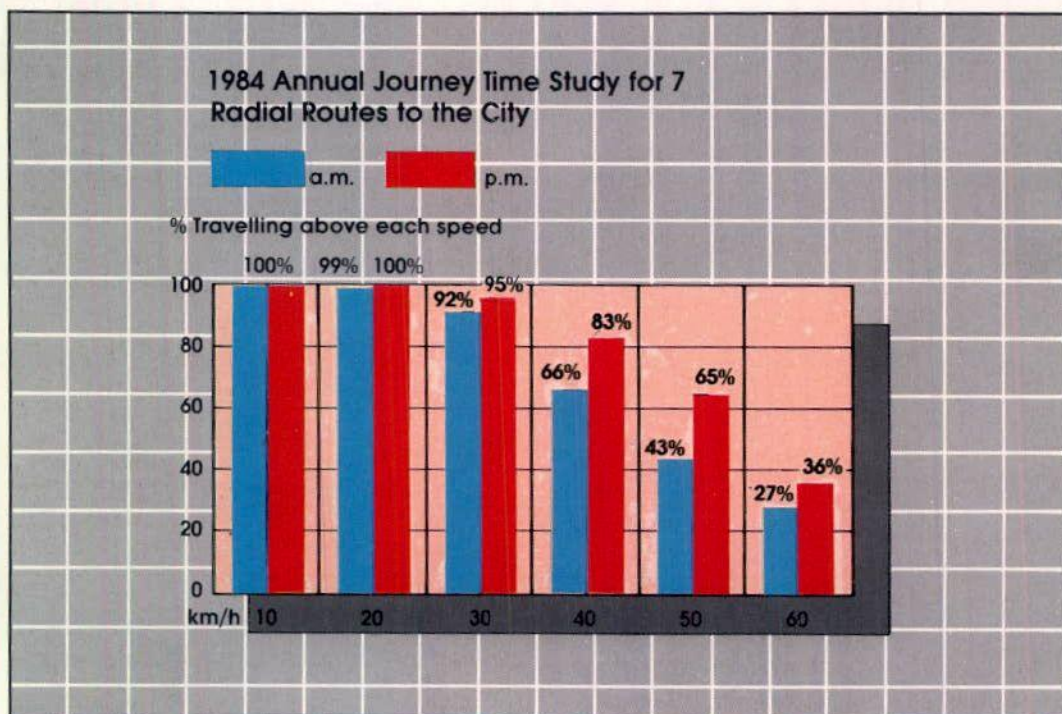
Looking at the network performance in more detail, Figure 12 shows the proportion of traffic travelling above certain speeds on the seven main radial routes to the Sydney CBD.

## Control of Overloaded Vehicles

The prime purpose of policing weight limits for heavy vehicles is to reduce the damage caused to the community's road asset. There is an additional benefit in road safety because all road users have to be protected from hazards inherent in the mechanical failure of vehicles or in damaged road surfaces.

In the 1984-85 financial year, the Department spent \$949 million on road and bridge maintenance and construction works in New South Wales. Of this amount, it is estimated that \$24 million per year is spent to repair the damage of overloading.

The effect of vehicles passing over a road pavement is cumulative. Road pavements





are commonly designed to last 30 years under normal traffic conditions, but overloading to a comparatively small extent can reduce the pavement life by a substantial amount. For example, a 10 per cent overload on a standard axle vehicle can reduce the working life of a 20 year pavement to 13.8 years. A 40 per cent overload can reduce it to only 5.2 years.

Because of the State's extensive network of main roads, the Department's policing resources must be carefully employed to produce the best results.

The Department currently employs 98 Weight of Loads Inspectors. In addition to mobile patrols, five principal heavy vehicle checking stations located at Berowra, Marulan, Mt. Boyce, Kankool and Bell provide rapid screening and detection of overloaded vehicles on main roads.

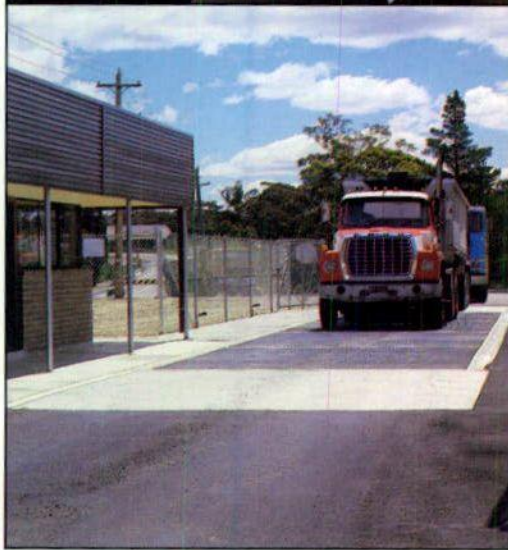
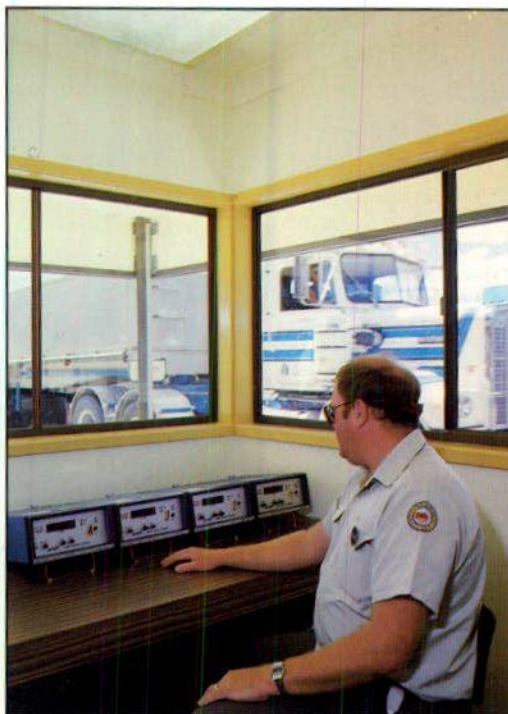
Local Councils also give valuable assistance to combat overloading, and the Department assists by training Inspectors and advising on administrative matters.

Of the 12,185 vehicles reported for overloading during the year, 81 were impounded and the owners or drivers were required to reduce their loads before proceeding. The heaviest load encountered was 67 tonnes, compared to the legal limit of 38 tonnes.

Special permits issued for the movement by road of large indivisible loads totalled 9,801, with periodical permits reaching 1,248 for the year. These special trips moved a total of 886,614 tonnes.

Ordinance 30C of the Local Government Act, 1919, provides for maximum fines of \$1,000 for the first overloading offence and \$2,000 maximum for second and subsequent offences. In addition, it provides that the owner of an overloaded vehicle may also be guilty of an offence. The Department has embarked on a policy of prosecuting owners as well as drivers where appropriate.

Penalties imposed during the year are shown in Table 8. The Department's progress in reducing overloading is hampered by the decrease in average fines imposed by the Courts for overloading, measured in real terms against inflation. This effectively reduces the deterrent, and little headway will be made in this area until heavier penalties



*Senior Weight of Loads Inspector Richard Rosengren is pictured at the controls of the Department's heavy vehicle checking station on Bells Line of Road.*

are imposed on all offenders. The \$4.5 million fines imposed in the last year represents only 19% of the cost of repairing roads damaged by overloaded vehicles.



**Table 8. Control of Overloaded Vehicles, 1980-81 to 1984-85**

Weight Checks and Penalties	1980-81	1981-82	1982-83	1983-84	1984-85
Vehicles stopped and checked	71,546	75,760	638,527	1,451,512	1,494,286
Vehicles reported overloaded	6,602	8,104	9,561	12,141	12,185
Prosecutions authorised	6,942	8,130	9,229	12,672	11,161
Number of convictions recorded	7,353	6,437	6,069	11,325	12,631
Drivers prosecuted for failing to obey a lawful direction	58	90	84	60	74
Total penalties imposed (including Court Costs)	\$2,153,144	\$1,840,992	\$1,972,023	\$3,667,368	\$4,541,484
Average penalty imposed (including Court Costs)	\$ 293	\$ 286	\$ 325	\$ 324	\$ 360
Number of maximum penalties imposed	3	2	5	9	38





## Railway Level Crossing Improvements

The Department is represented on the Inter-Departmental Level Crossing Committee which is responsible for improvements to or elimination of level crossings throughout the State. The Committee recommends to the Minister for Transport works at level crossings which are appropriate for sharing of costs through the Special Level Crossing Fund. Also represented on the Committee are the State Rail Authority, the Police Traffic Branch, the Department of Local Government, the Traffic Authority, The Treasury and the Australian Federated Union of Locomotive Enginemmen.

The Department is directly concerned with level crossings on classified roads, and can become involved with any level crossing on a public road, except those in built-up areas, if the Council seeks assistance.

The State Rail Authority carries out the installation of flashing lights and warning bells while the Department or Council, as the road authority, carries out the roadworks required in conjunction with the installation. Where a bridge eliminates a level crossing, the State Rail Authority designs and constructs the railway bridge over the road, or, more commonly, the road authority designs and constructs the road bridge over the rail track.

Three level crossings were eliminated from the Main Road system during the year by the construction of overbridges:

- on the Great Western Highway (State Highway No.5) at Parke Street, Katoomba;
- on a 1.7 km deviation of the Blayney-Orange Road (Main Road No. 245) at Millthorpe, to replace the level crossing at Nyes Gate; and
- on James Ruse Drive (Main Road No. 309) at Rosehill, over the Carlingford Railway Line and A'Becketts Creek.

**Left:** The Bent Street Deviation of the Great Western Highway will eliminate a level crossing at Katoomba. **Right:** A recently completed section of James Ruse Drive has eliminated a level crossing at Rosehill.

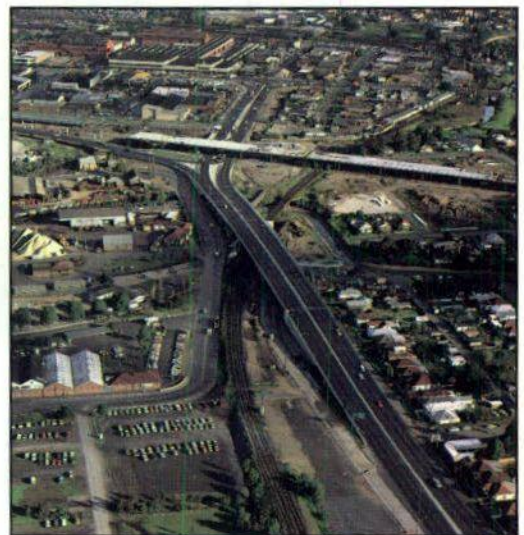
One new level crossing was provided, on Main Road No. 598 near Ulan, as a result of the construction of a new railway line from Ulan to Gulgong. Warning bells and flashing lights have been installed at this location.

This brings the number of level crossings on classified roads in the State to 332.

Work is in progress to eliminate level crossings at five other locations:

- on a deviation of Main Road No.335 over the Main Northern Railway Line at Tuggerah;
- on a deviation of Sparks Road (Main Road No. 509) over the Main Northern Railway Line at Warnervale;
- on a deviation of Trunk Road No. 51, 9.7 km east of Queanbeyan at Burbong (funded by the National Capital Development Commission);
- on the Princes Highway (State Highway No.1) over a duplication of the Maldon-Port Kembla railway line at Unanderra (funded by the State Rail Authority); and
- on the Berrima Bypass, Hume Highway (State Highway No. 2) over the Berrima Colliery railway line.

Improvements to existing level crossings were completed. One crossing was widened and fourteen were provided with flashing light and warning bell installations, eight on classified roads and six on local roads.





The Minister for Roads, Mr. Laurie Brereton, turned on the lights to illuminate the western face of the Bridge in June 1985. Now fully floodlit on both the eastern and western sides, this famous landmark can be seen at its best from all vantage points.

## Maintenance

The area of steelwork repainted on the Bridge during the last year was 26,650 square metres out of a total area of 485,000 square metres. In addition, painting was completed of all new steelworks and several stairways.

Apart from routine maintenance works, several projects were undertaken to improve access and productivity, including extension of the catwalk under the north-east cycleway; motorisation of a gantry on the south approach; replacement of lighting on the Quay Overhead Road; and investigation of the proposed installation of an arch gantry crane.

## Electronic Lane Control System

The Sydney Harbour Bridge Electronic Lane Control System is being installed to automate the present system of lane control and selection for the different configurations required on the Bridge.

This will bring many benefits in terms of reduced delays, increased safety and greater flexibility in traffic management.

Eventually the system will provide for computer assistance in lane selection, and assistance to drivers with regard to route choice and delay and congestion information.

During 1984-85, Stage I of the Electronic Lane Control System was completed, consisting of installation and upgrading of moveable medians; installation or modification of advance warning message or direction signs; provision of electrical remote control equipment and control panel; and installation of various concrete slabs upon which the moveable medians will travel.

Work also began on Stage 2, to complete the remote control of all manually changed lane control devices from Milsons Point to the south side approaches. This will be achieved by the use of variable message signs, over-



Table 10. Sydney Harbour Bridge Traffic Volumes, 1973

	1973	1974
<b>Annual Totals</b>		
Annual total northbound	26,345,700	27,375,000
Annual total southbound	24,546,250	25,929,600
Annual total road vehicle crossings	50,891,950	53,304,600
<b>Daily Traffic Volumes</b>		
Annual average northbound traffic	72,180	75,000
Annual average southbound traffic	67,250	71,000
Annual average daily traffic	139,430	146,000
Maximum daily traffic	175,100	179,000
<b>Average Peak Hour Volume</b>		
In direction of major flow		
Morning	10,030	9,800
Evening	9,940	9,100
In direction of minor flow		
Morning	3,800	3,400
Evening	4,220	3,600
<b>Maximum Hourly Volume</b>		
In direction of major flow		
Morning	10,740	10,900
Evening	10,430	10,300
In direction of minor flow		
Morning	4,730	3,700
Evening	5,540	4,300





1984				
1979	1982	1983	1984	1983-84 % Increase/Decrease
9,882,550	31,338,900	32,102,800	31,985,044	- 0.4
8,251,000	30,054,100	30,834,400	31,337,852	+ 1.6
8,133,550	61,393,000	62,937,200	63,322,896	+ 0.6
81,870	85,860	88,020	87,871	- 0.2
77,400	82,340	84,550	86,093	+ 1.8
159,270	168,200	172,570	173,964	+ 0.8
198,240	208,710	211,460	212,063	+ 0.3
10,220	10,320	10,290	10,089	- 2.0
9,760	9,380	9,440	9,347	- 1.0
3,810	3,790	3,860	3,985	+ 3.2
4,060	4,620	5,160	5,293	+ 2.6
10,790	11,140	11,350	11,399	+ 0.4
10,430	10,720	10,610	10,104	- 4.8
4,320	4,610	4,540	4,624	+ 1.9
5,100	5,730	5,870	5,833	- 0.6

**Table 9. Breakdowns on Sydney Harbour Bridge and Approaches**

Cause of Breakdown	Number of Breakdowns			
	1981-82	1982-83	1983-84	1984-85
Mechanical Breakdown	1,905	1,814	1,886	1,709
Lack of Petrol	988	1,273	1,153	1,104
Flat Tyres	388	322	302	277
Accidents	294	178	182	194
Abandoned	113	72	113	116
TOTALS	3,688	3,659	3,636	3,400

head lane indicators to show which lanes are open to traffic by displaying a red cross or a green arrow, and a trial installation of pavement lane marker lights in the vicinity of the Toll Plaza.

## Emergency and Patrol Service

The Bridge and its approaches are serviced by emergency telephones, which are connected to the Toll Office, and a patrol service to help motorists in difficulty.

The number of vehicles assisted in the last year by the Department's Traffic Patrol Service between the Cahill Expressway and the Warringah Freeway was 4,074. A comparison of the causes of breakdown over the last four years is shown in Table 9.

The cost of providing the Traffic Patrol Service during 1984-85 was approximately \$1.6 million, but this is more than compensated by the benefit to the community through quick removal of disabled vehicles.

## Traffic Volumes

The highest daily traffic volume over the Sydney Harbour Bridge in 1984 was 212,063, recorded on Friday, 14 December 1984.

Both the average morning and evening peak hour volumes in the direction of major flow remained virtually the same as in the previous year, with a slight increase in the direction of minor flow.

Traffic volumes over the Bridge at selected intervals appear in Table 10 for the calendar year shown. The directional peak hour volumes listed were selected during the hour of the highest combined volume.



## RESEARCH AND DEVELOPMENT

The Department's research and development activities are the responsibility of the Research and Development Committee.



The Committee examines research and development proposals to ensure the desirability of including the project in the Department's program; there is a genuine need for the research; its priority in respect to other projects; and that the estimated cost of the project is commensurate with the benefits likely to be derived.

A separate Research and Development Report is produced each year to record progress and results obtained for each project. The Report is essentially for the information of the Department's personnel, but copies are distributed to other State Road Authorities and libraries.

Circulars and instructions are issued within the Department and specifications and standing publications are updated on the basis of knowledge gained from research and development activities.

The expenditure on research and development during 1984-85 was \$3.5 million, or approximately 0.41 per cent, of the Department's expenditure on operations.

### Achievements

The Department's activities are directed to applied research and development, having particular relevance to operations and administration, rather than to pure research, which is considered more the domain of academic and research institutions.

To avoid unnecessary duplication, the research activities of the Department and other State Road Authorities are co-ordinated through the National Association of Australian State Road Authorities (NAASRA) and the Australian Road Research Board.

General areas covered during the year included:

- investigation of problems relating to the operations of the Department in the use of materials, environmental matters and overall planning;

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**Above:** John O'Neill operating the Electro Hydraulic Flexure Tester at the Materials and Research Laboratory. **Below:** Roderick Moore testing a steel reinforcing bar in the 200 KN Mohr and Federhaff Tensile Testing Machine.

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- investigation and application of new technology; and
- development of new equipment and procedures where these are not otherwise available.

Specific projects were undertaken in the following areas:

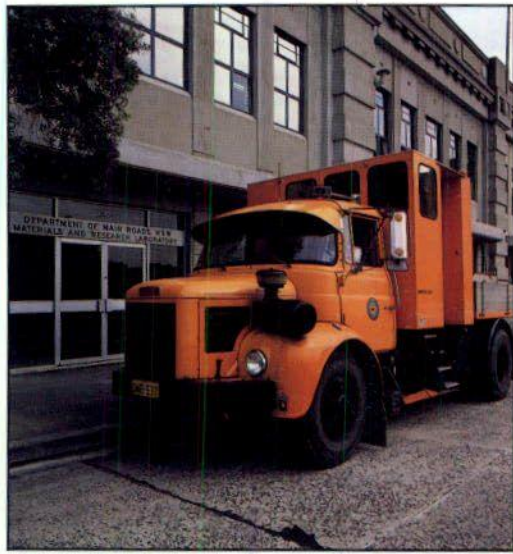
The Department commenced a laboratory program to determine the flexural fatigue life of asphalt mixes. At the same time field trials are proceeding on particular mixes designed to withstand the effects of large numbers of heavy vehicles, such as coal trucks. These projects will aid the design of asphalt mixes to meet particular service conditions of traffic or environment, leading to longer pavement life, economy to the Department and better comfort and safety for road users.

The development of methods and equipment for testing geotextiles is a new project resulting from the use of synthetic fabrics in civil engineering. In highway engineering, these fabrics have made possible simpler and more economical solutions to such routine construction problems as embankments over soft ground, temporary access roads on soft ground, slope stabilisation, subsoil drains and surface erosion control. A manual describing the proper use of these materials is being prepared for the guidance of the Department's staff.

The Department supplied data on axle loads and road surface roughness for a NAASRA study on vehicle load and dimension limits. Similar data are also used by the Department for improving the efficiency of pavement design and construction techniques.

Work continued on the development of electronically controlled equipment for data collection, to keep pace with technology. Current projects include the replacement of the aging imported La Croix Deflectographs (for monitoring pavement deflections), with the local design and construction of a 'Deflectolab'. Two other States are participating in this project. On a smaller scale, manually operated devices for measuring deflection and surface profile are being instrumented to improve their efficiency.

An integrated computer aided system for road design was tested for use in Divisions



*This Deflectograph will soon be replaced by modern equipment for monitoring pavement deflections.*

and Head Office. The Department's road design procedures have involved the use of computer programs for many years but the need for upgrading had become apparent.

Improved methods of recording survey data electronically, which had previously been investigated under this program, and the availability of comprehensive computer programs for road design will provide a number of benefits. It will enable designs to be produced and plotted more quickly by computer than by traditional manual methods and will also facilitate the investigation of alternative designs, leading to better and more economical solutions. These trials are now complete and the design facilities will be progressively made available to several urban and country Divisional Offices.

In a similar application of computer technology, an automated system for processing surveys to check construction in progress is being investigated. This system, or an extension of the one referred to above, should enable setting out to be checked more quickly and more economically. Software is currently being tested and evaluated.



## ACCOUNTS BRANCH

The Accounts Branch comprises a number of sections whose responsibilities are divided into two broad categories: financial accounting and budgeting, and the daily administration of receipts and disbursements. Other responsibilities include internal audit, the toll collection offices on the Sydney Harbour Bridge, Berowra to Calga Tollworks and Waterfall to Bulli Tollworks, and the management of properties acquired for future roadworks.

Significant achievements and initiatives of the Branch during the year included:-

### Management Information Systems

The computer-based management information systems for financial management have been extensively upgraded to provide a comprehensive range of management reports relating to the Department's capital works program.

The new system provides for a wide variety of reports to suit the particular needs of senior and line management and is used to sup-

ply information required by the New South Wales Treasury and Capital Works Unit.

It has also provided for a more efficient method of monitoring monthly expenditures and forecasts, with net savings in effort in both field offices and Head Office.

### Sundry Debtors

A computer-based system was introduced for the management of debts owing to the Department. It provides for computer-generated debit notes, automatic follow-up action for outstanding debts and the retrieval of up-to-date information on debtors.

The new system provides for improved control of debts through the production of more timely information. It provides exception reports on aging debts and overdue instalments and statistical information for management.

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*A computer based system has been introduced for the management of debts owing to the Department. Seated at the terminal is Ken Clark, while Teri Cipriani examines printed debit notes.*

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### Micro-filming and File Management System

A computer system was introduced during the year for the micro-filming and indexing of vouchers and associated invoices.

It is now possible to microfilm and store images of up to 100,000 paid vouchers and 150,000 supporting documents annually, using a high speed camera with a capacity of 4,000 images per file cassette.

This has brought major benefits through savings in storage and by the speedy retrieval of data.

### Rented Properties

Properties acquired for future roadworks are made available for tenancy at market rental until required for road construction. The income derived is applied to current road programs. At 30 June 1985, the Department owned 2,217 such properties and net income from rents for 1984-85 was \$5.7 million.

A rationalisation of property management functions was effected during the year. This resulted in the establishment of the Property Rentals Section which assumed the responsibility for a number of property-related activities formerly undertaken by other Sections of the Department.

A further change aimed at improving efficiency and control was the implementation of a computer-based property management and accounting system. Stage 1 of this system, which provided for a register of property information, was introduced in early 1985. The implementation of Stage 2, a revenue system, is expected to be in operation by late 1985.

### Internal Audit

In keeping with modern audit practice, systems-based auditing has been introduced to replace the traditional transaction-based approach.

In conjunction with this change, other modern techniques have been introduced, including auditing by computer, statistical sampling, and audit involvement in the design stage of new computer applications.

### Main Roads (Amendment) Act, 1984

This Act, which was assented to on 4 December 1984, deletes Section 36(1A) of the original Act. This section validated the opening of main and developmental roads prior to 1936 even though they were less than the width prescribed under the Local Government Act.

Section 36(1A) was made obsolete by the passing of the cognate Local Government (Amendment) Act 1984 which abolished the existing standard width requirements for opening new roads and set up a scheme which allows a Council flexibility in determining the widths of new roads.

### Main Roads (Amendment) Act, 1985

The two significant objects of this Act, which was assented to on 26 April 1985 are:

- to extend the purposes for which toll moneys received in respect of toll works may be used; and
- to permit the toll moneys received from the Berowra to Calga Tollwork to be used for the maintenance and improvement of main, secondary, developmental and tourist roads, developmental works and ancillary works which are situated within the City of Gosford and Shire of Wyong and are connected, directly or indirectly, to that toll work.

The Act also provides for the payment of toll moneys into the appropriate fund on the basis of where the tollwork is located and makes other minor amendments.

### Ordinance No. 30C (Local Government Act, 1919)

Ordinance No. 30C, which prescribes the load limits for vehicles using main roads, was amended by proclamation in the Government Gazette dated 2 November 1984.

These amendments increased the load limits for vehicles using wide profile tyres less than 450 mm wide and also extended concessional load limits for omnibuses until 31 December 1986.



### Survey and Acquisition of Land and Property

#### Surveys

The Department conducts surveys for the purposes of land acquisition, road design and construction as well as to establish an accurate basis for the control of other surveys.

During 1984-85, 150 surveys were carried out for the purpose of land acquisition, covering a distance of 216 km. This was similar to last year's figure of 155 surveys covering 206 km. On some occasions, it was necessary to engage consultant surveyors to complete priority tasks.

Extensive control surveys were also carried out on 245 km of State Highways and Main Roads, based on the State Geodetic Network.

Work continued on the appraisal of new equipment and methods for application in Departmental surveys. An automated system for processing surveys to check construction of contract roadworks was devised using consultants. The associated hardware has been purchased and the introduction of the process is imminent.

#### Acquisitions

During the year the Department made 857 formal offers to acquire property for proposed roadworks and associated activities. Sixty-two of these offers related to purchases on the grounds that owners were unable to sell because of the effect of future road proposals; 104 were resumed properties; and 34 were for land vested under the realignment provisions of the Main Roads Act. The remaining 657 offers were made for properties required for programmed roadworks. Upon settlement, the total expenditure on these acquisitions will be \$35.5 million, an increase from the previous year's total of \$33.75 million for 869 properties.

#### Residue Properties

The sale of 108 surplus properties no longer required for roadworks resulted in a return of \$7.15 million. In the previous year, 81 properties were sold for \$9.2 million.

The Department seeks to maximise the return from land no longer required for

roadworks and where appropriate has sought rezoning and has obtained development consent prior to disposal.

In the case of the old Police Station site at Neutral Bay, which was sold for \$1.25 million, a Development Application was approved in principle by Council, and the purchaser used plans prepared by the Department to assist in formulating a proposal for the land.

Although this procedure can result in delays of up to 12 months prior to disposal, this is justified by the increased return.

The Department is progressively building up a computer bank of the properties it owns, a facility which will further assist in the identification and management of surplus land disposals. In this regard, the computer bank has been expanded to include administrative properties, staff housing and residue properties in most of the Divisions.

The Department is currently considering proposals for the development of air space over the North Western Distributor and Kings Cross Tunnel.

### Materials Engineering

#### Quality Assurance

Although the Department is currently the largest single consumer of cement in Australia, the demand for testing of cement has not increased significantly.

This results from the New South Wales Government Cement Quality Assurance Scheme which utilises the producers' process control data to monitor the quality of cement. In this way, the overall cost to the community of quality control testing is minimised.

Similar savings will flow from plans to reduce the frequency of testing steel reinforcing bars, and equivalent schemes are being considered for the quality assurance of concrete, quarry products and other manufactured products.

At the same time an increased need for concrete testing has resulted in the installation or ordering of additional testing facilities by the Department at nine strategic locations throughout the State. There has also been an



increase in the amount of concrete testing by commercial laboratories under contract to the Department.

A marked increase has also occurred in the contract testing of soil and rock materials, both for quality control on construction sites, and for geotechnical site investigations for proposed new work.

An investigation into the use of blast furnace slag as a road pavement material resulted from changes in the steelmaking process and slag properties, and from community concern over the disposal of slag.

Although the slag currently produced is a much weaker material than that in the past, suitable procedures have been specified to provide for its use in any type of road pavement.

These requirements are contained in the Department's "Specification for the Supply and Delivery of Base and Sub-base Materials for Surfaced Road Pavements" (M.R. Form No. 744).

This specification has been completely revised, in consultation with industry, to provide for a wider range of materials to be used under differing service conditions. This means that relatively low quality materials, which were previously unacceptable, may be suitable for minor roads.

At the same time, greater control is exercised over materials bound (or stabilised) with lime or cement. These materials will also be subject to more efficient testing techniques in future, with the planned acquisition of an atomic absorption spectrophotometer, which will also be used in the pursuit of industrial and occupational hygiene.

The Department is testing a wide range of industrial by-products to determine suitable treatments to enable their use in road pavements. These materials may also offer considerable economies for road construction.

### Road Pavement Technology

In the area of flexible pavement technology, the Department is participating in the revision of the national pavement design manual which involves major advances in structural design techniques.

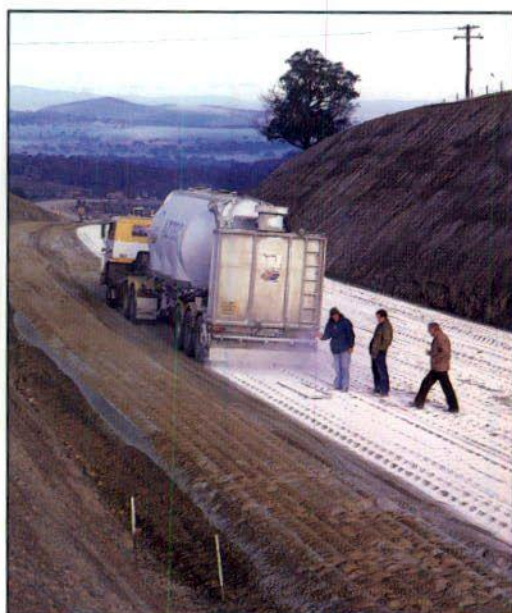
These techniques may be further refined with the help of a relocatable pavement testing machine called the Accelerated Loading Facility (ALF). During the year the ALF was used for its first field trial adjacent to the F3 — Sydney-Newcastle Freeway at Somersby. The ALF is owned and operated by the Australian Road Research Board, and is now being used in other States.

In order to relate the test results from the ALF to pavements in real service, an essential activity is the measurement of the axle loads using these pavements. For this purpose the Department has commissioned three data collection systems.

One of these involves electronic data capture at the Department's heavy vehicle checking stations at Berowra (Pacific Highway) and Marulan (Hume Highway).

The other two systems, known as 'Fast Weigh' and 'PAT', are not associated with the enforcement of axle load limits. They consist of a mobile unit using instrumented bridges ('Fast Weigh'), and a plate-in-road system ('PAT') in association with experimental pavements at Rooty Hill in Sydney's western suburbs.

*Lime stabilisation in progress during reconstruction of a section of the Federal Highway, south of Goulburn.*





## Geotechnical Investigations

This year has seen a marked increase in the number of geotechnical site investigations for proposed new work. Of the 85 investigations carried out, 78 per cent were performed by the Department and the rest by consultants. The consultants undertook the larger jobs at a cost of \$600,000.

The investigation of some soft ground areas has led to surcharging and vertical drainage being used as construction techniques. In one soft ground case, geotextiles have been used as reinforcement under an embankment and for erosion control.

Unstable slopes on existing roads are routinely investigated with the aim of recommending control measures. These measures include retaining walls of various kinds,

horizontal drains, trench drains lined with geotextile, dowel piles and geotextile soil reinforcement.

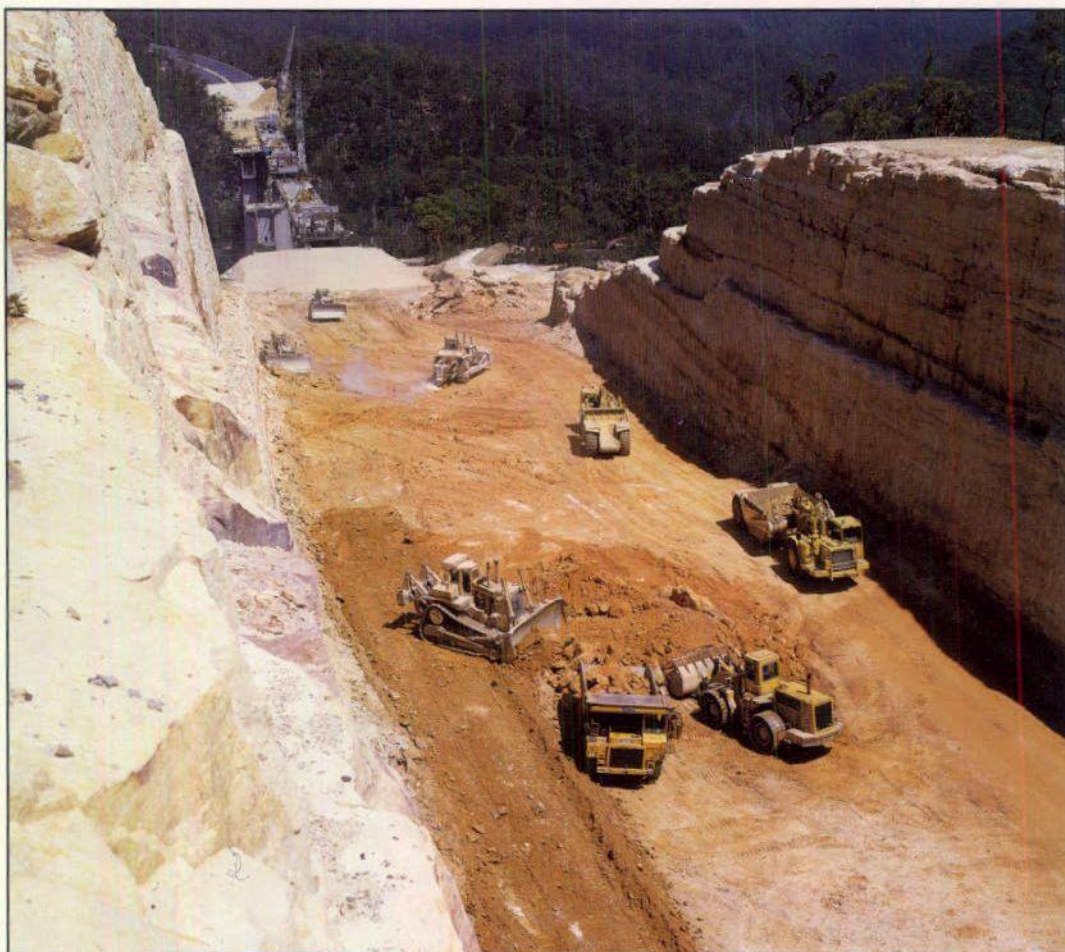
In the field of rock mechanics, the Department has undertaken studies of stress release phenomena in deep cuttings which have led to cost effective remedial measures.

In mine subsidence areas, computer simulation of both ground subsidence and surface strain development has been undertaken in conjunction with the University of New South Wales and the Snowy Mountains Engineering Corporation. This work was required to ensure rational design proposals for both bridges and road pavements.

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*This 40 m deep cutting on the eastern approach to twin bridges at Mooney Mooney Creek is one of the largest undertaken by the Department.*

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## Communication and Information Services

The Department's Communication and Information Services include telecommunications, data processing and an information systems consultancy.

Since the early 1960s, several major systems have been developed which are continuously maintained and processed on behalf of the user areas.

These include systems for reports to Treasury; calculation of salaries and wages; maintenance of superannuation and leave records; processing infringements of vehicle weight regulations; accounting for stores and materials; calculation of payments for contract haulage; accounting and financial reports; recording road related data and statistics; processing surveyors' field data; analyses for design of roads and bridges; recording and modelling traffic flows in road networks; processing laboratory test results; tracking movement of Departmental papers; and preparing five year construction plans.

The computing equipment providing these services includes a Sperry 1100/72, a CDC Cyber 830, four Honeywell minicomputers (DPS 6/95, DPS 6/74, Level 6/57 and Level 6/47) and several microcomputers.

The Sperry computer primarily supports managerial and administrative users on 90 terminals in Head Office Sections, and an interface to the Telex Network permits all field offices to have access for data transmission.

The Cyber computer principally supports engineering and other technical users through a network of 90 terminals in Head Office Sections and in ten of the Department's Divisional Offices.

The Honeywell mini-computers provide word processing facilities to 24 Head Office Sections through a network of 65 terminals. In addition, they process a cataloguing system for the Library, a registration system for political correspondence, an interim rents system for Tenanted Properties Section, and the stock system at Central Workshop, Granville.

Development staff were engaged on tasks associated with the maintenance and enhancement of production systems, and with the



*Information once held on some 400,000 wages employees' record cards is now stored on microfilm and is available through this Microimage Terminal, operated by Anne Drewitt-Smith.*

development of the Personnel Data Base, a tenanted property rentals system and a re-designed wages system. Studies were also carried out on a road data base and a computing strategy for the next five years. The road design system, MOSS, was installed on the Cyber for use with interactive graphics terminals.

Data preparation services were provided for users of the Sperry and Cyber computers and excess data preparation loads were sent out to commercial bureaux. Consultants were engaged to carry out a number of specific tasks in systems design and programming and further relief was provided by the attachment of four industrial trainees from the NSW Institute of Technology.



### Personnel Branch

The year saw the consolidation of previously disparate sections within the one Personnel Branch, providing a greater facility to assess, review and formulate personnel policies and procedures on a Departmental-wide basis.

The move to promotion on merit demanded concentration on relevant promotional policies and procedures, and included:

- extending the practice of advertising all promotional positions internally by adopting rules for outside advertising consistent with those applying in the New South Wales Public Service;
- review of promotion rules emphasising efficiency, which involved consultation with staff associations with a view to promulgation on 1 July 1985;
- refinement of selection procedures and their use by selection committees; and
- continued training of personnel to act as convenors and members of selection committees.

The delegated authorities pertaining to staff and personnel functions were revised and have given increased responsibility to officers at lower and local levels within the Department.

Other policy reviews underway include those on promotional barriers for administrative and clerical officers; study assistance; performance appraisal; and clerical recruitment procedures.

Phase I of the development of the personnel data base was completed and the entry of data from manual records was well advanced. This will provide immediate access to all relevant information needed to aid personnel decision making.

Phase II will update existing salaries, wages, leave and superannuation systems and incorporate them into the data base.

### Employment Figures

The number of personnel directly employed by the Department at 30 June 1985 was 9,162. This represents a decrease of 468 (or 4.9 per cent) from the figure at 30 June 1984.

Another 2,740 contractors' employees were working under the direct supervision of the Department and 4,301 Council employees were engaged on subsidised roadworks.

This brought the total number of people engaged in all facets of developing the State's Main Road network to 16,203. An analysis of employment figures is set out in the accompanying table.

### Equal Employment Opportunity

A number of changes have taken place recently in the personnel and administration of the Equal Employment Opportunity Unit.

A new E.E.O. Co-ordinator, Paula Sieradzki, was appointed in May 1985, and the E.E.O. Unit has been re-established in more appropriate quarters in the Head Office complex. In addition, extra professional and support staff will be appointed to the Unit in the near future.

A number of important changes in the area of personnel policies within the Department have significantly advanced the achievement of E.E.O. objectives. These changes have been outlined in the section of this report dealing specifically with personnel practices. Of these, perhaps the most significant is the substantial increased emphasis of promotion on merit.

Further, in recognition that E.E.O. principles form an integral part of a manager's skills, an appropriate requirement has been included in the person specification for all management/supervisory positions within the Department.

Although E.E.O. objectives have continued to form an essential element of appropriate training programs conducted by the Department, one particular aspect has received increasing attention. This aspect is the training of selection panel members to objectively assess recruitment and promotion candidates in order to properly implement the policy of promotion on merit.

The Department successfully completed a resurvey of 20 per cent of staff to comply with an initiative of the Office of the Director of Equal Opportunity in Public Employment.

The E.E.O. Grievance Service continued to offer counselling for personnel and has



proved to be a valuable support service. A new grievance solving mechanism has been adopted with the rationale of placing the initial onus of grievance settlement on line managers. This is consistent with the accountability of such managers in this area.

The Women's Information Officers' network has continued to provide an effective means for the distribution of information about women's issues throughout the Department. A number of regional Women's Information Officers have been elected in Divisional Offices.

Preliminary planning is in progress for a major revision of the Department's E.E.O. Management Plan. After input from all levels of staff, it is envisaged that it will be available by early 1986.

## Industrial Relations

The Department's workforce embraces more than 70 occupational groups employed under some 72 Awards or Industrial Agreements. Negotiations for conditions of employment are held with 23 unions.

There were nine industrial disputes during the year which resulted in work stoppages, compared with 13 stoppages the previous year.

Except for a statewide campaign by officers in connection with the State Superannuation Scheme, the disputes were local in nature and effect. They involved 2,252 employees with a combined loss of 3,028 working days. This figure is 1,624 working days more than for the previous year, although 1,997 days were lost as a result of the superannuation campaign.

Two of the local disputes which resulted in work stoppages were related to travelling allowances paid to employees. They arose from the Department's decision to rationalise payments to employees for daily travel to and from work in the Wollongong area (715 days lost); and for weekend work at the Central Asphalt Depot (137 days lost and a ban was placed on weekend work for 10 weeks). Both disputes came before a Conciliation Commissioner and are awaiting resolution.

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*During the year the Minister for Roads, Mr. Laurie Brereton, met workers on the Sydney Harbour Bridge to experience first hand their working conditions. Pictured with the Minister above the Sydney skyline are (from left) James Turnbull, Peter Crisp, James Collins, Hugh Strain and Brian Davis.*

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Bans were applied in four other disputes when:

- Employees refused to work with another employee who was not a member of the appropriate union. Following a conference the matter was resolved.
- Operators of the opening bridges at Pyrmont, Glebe Island and The Spit imposed an overtime ban in support of increased staffing levels. The matter is currently being considered by a Conciliation Committee.
- A one week ban was imposed in November 1984 on the supply of concrete to works under the control of Homebush Works Office in support of higher award classifications for five concrete workers. This was resolved by negotiation.
- A ban was imposed on reconstruction of traffic signals in the Wollongong area because of perceived delays in the appointment of personnel. This matter has been resolved.

Work stoppages and bans were avoided in a number of other disputes which were settled either by negotiation or with the assistance of an industrial tribunal.

Other events of significance during the year were:

- An agreement for a 38 hour week for ferry personnel was ratified by the Industrial Commission of New South Wales.
- All wages and salaries and most associated allowances were increased by 2.6 per cent in accordance with National and State Wage Case decisions of April, 1985.

The Industrial Commission of New South Wales is to consider the ratification of arrangements for a 38 hour week for traffic signals personnel in July 1985.

A review of facilities provided in Departmental camps has been completed. The position has now been reached to negotiate major improvements in camp standards.

In all wages and salaries negotiations, the Department continues to adhere to the wage fixing principles of the Industrial Commission of New South Wales. In considering conditions of employment generally, accepted community and Public Service standards are followed.

## **Work Experience Programs**

The Department continued its involvement in work experience programs for secondary school students throughout the State.

More than 185 students in both city and country areas were attached to the Department for a period of up to one week, which allowed them to become acquainted with the duties of engineers, surveyors, drafting officers, clerks, typists, tracers, foremen, testing operators, plant operators and mechanics.

This first hand experience of the working environment often helps young people in their choice of a career, and the Department is pleased to assist them in this way.

## **Job Creation Schemes**

The Department participated in two Government-sponsored job creation schemes to provide work experience for unemployed young people and other disadvantaged groups:

- The National Employment Strategy for Aborigines, conducted in co-operation with the Department of Employment and Industrial Relations, enabled two Aboriginal trainees to be employed on office duties.
- The Youth Employment Scheme, administered by the New South Wales Office of Special Employment, provided \$120,529 for employment in the job categories of General Office Assistant, Trainee Typist, Surveyor's Assistant or General Labourer. Upon referral by the Commonwealth Employment Service, the Department engaged 17 young people (who had not previously been employed) for periods of between 17 and 31 weeks.

## **Training and Development**

The Department's formal training and development program provided opportunities for personnel at all levels to acquire the skills and knowledge necessary for effective work performance. The program was designed to meet training and development needs as identified by line managers, to support their on-the-job training initiatives and to comply with legislative requirements for trained and certificated personnel.



Forty-seven different types of courses of various duration were conducted during the year, with over 1,800 personnel attending. The number of person training days was 5,722. The program provided courses in a wide range of technical subjects and subjects related to the supervision and management of staff. In both technical and management courses emphasis was placed on the need for supervisors and managers to review functions and operations under their control to ensure that effective use was made of available resources.

Courses for managers and supervisors promoted the adoption of participative objective setting methods within work groups. Personal skills courses included instruction in written communication, the selection of personnel for promotion, industrial relations, and the conduct of conferences and meetings.

The technical training program included formal courses for engineers, draftsmen, foremen, potential foremen and testing laboratory operators. A series of refresher courses for road foremen was commenced and addressed their changing role from direct control works to supervision of contract works. Regional seminars were also conducted for engineers on contract administration, concrete pavement construction, sprayed sealing and asphaltic concrete.

Four plant instructors continued to travel the State giving practical field training in the operation and maintenance of various types of plant, machinery and motor vehicles.

Greater emphasis was placed on running courses in Divisional locations and course members were encouraged to help develop courses more relevant to actual work. Assignments were directly related to work problems and the output from these was often able to be directly applied to work situations.

Courses provided by external educational and training insitutions were used to supplement the Department's internal training program. Nine personnel attended senior programs conducted by the Australian Administrative Staff College and the Institute of Administration, University of New South Wales. Over four hundred and sixty personnel attended a variety of external short



*Training Officer, Janet Wren, conducting a Written Communication Workshop at Wagga Wagga Divisional Office.*

courses related to particular Departmental functions.

Sponsorship was provided to 35 officers to attend full-time degree courses in civil, electrical and mechanical engineering and business studies. A new sponsorship scheme was commenced to enable officers to attend post-graduate studies in technical and management subjects. Thirteen officers are participating in this scheme.

Study assistance was provided to 170 persons who are studying part-time to gain an initial degree, diploma or certificate.

## **Apprentices**

The Department indentured 59 apprentices (compared with 51 last year), bringing the total number employed in 15 different trades to 207. At the end of 1984 and in early 1985, 60 apprentices completed their apprenticeships with the Department.

During the year, a number of first year apprentices participated in the Department's OFF-THE-JOB Training Program, which is supported by the Federal Government's CRAFT (Commonwealth Rebate for Full Time Training) Scheme. Apprentices spend up to 12 months in special training sections set aside from the main workshops to ensure that each apprentice attains a desired level of basic skills during the initial stage of their apprenticeship.

Departmental apprentices won a number of awards during the year, including Leading





*The Department trains apprentices in 15 trades, including Carpentry and Joinery.*

Apprentice in New South Wales, in the crafts of Signwriting and Plant Mechanics, and Technical College Awards in the crafts of Plant Mechanics, Electrical Fitter Mechanics, Bricklaying, Carpentry and Joinery, Sheetmetal Working and Boilermaking.

Wayne Hickenbotham, apprentice Plant Mechanic at Narrandera, won the Department's Brian Sexton Apprentice of the Year Award.

## Occupational Health Service

The Occupational Health Service was curtailed for six months following the resignation of the nurse in charge late in December, 1984. A replacement was appointed in June 1985 and another position is expected to be filled shortly. This will enable Head Office to be continually staffed while one nurse visits field offices for consultation.

Some 745 staff contacted the Service during the first half of the year regarding work, home and travel injuries, illnesses, vision tests for operators of screen-based equipment and counselling.

Health monitoring of personnel exposed to toxic materials continued and arrangements were made for regular general health, blood, urine and vision testing of persons handling toxic chemicals and paints, laser equipment and nuclear density meters. Film badges are issued to persons using nuclear density meters and records kept of names and radiation dose assessment.

One of the Department's chemists was sponsored to attend a three month occupational hygiene course run by the Commonwealth Institute of Health (which covered the field of Occupational Hygiene Measurement Technology). Three Departmental employees attended a short course in ergonomics at the New South Wales Institute of Technology.

Arrangements are being made for the National Safety Council to conduct a pilot course for training convenors and secretaries of Workplace Committees set up under the Occupational Health and Safety Act.

The Department commissioned an investigation into the working conditions, particularly the ergonomic aspects, of word processor operators in order to reduce the incidence of Repetitive Strain Injury (RSI). A report has been received and its recommendations have been adopted.

During the year, 32 First Aid Classes were conducted throughout the State, 379 Departmental personnel participated, and 324 certificates were awarded by the St. John's Ambulance Association. Some 132 employees obtained levels above the basic certificate.

## Safety and Accident Prevention

The Department's safety activities have continued to emphasise compliance with the Occupational Health and Safety Act, particularly in relation to the provision of a safe place of work.

Accident statistics for the year ending 30 June, 1984 (the last full year for which details are available) indicate a slight decrease in the accident rate per million man hours worked from 65.72 in 1982-83 to 65.1 in 1983-84. Work injuries accounted for 17,730 lost working days.

One of the Department's flagmen was fatally injured on 3 April 1985. This was the first



fatal accident on a Departmental work site for nearly three years. Otherwise there was only one serious accident requiring investigation, discussion and action during the year.

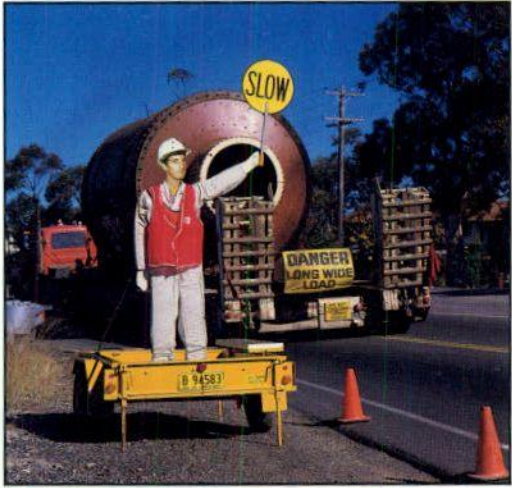
The Safety Officer and Safety Inspectors conducted 850 work site inspections throughout the State to ensure compliance with safe working practices and statutory requirements.

The Department's safety education program has continued throughout the year with the Hearing Conservation Program being finalised by presentation to an additional 2,000 employees. The Office Safety Program was presented to a further 220 staff employees, and safety segments have been included in 16 in-service training courses involving 250 employees.

Three Divisional, ten Works Offices and six special establishments were visited by the Fire Control Officer to review local fire fighting arrangements and give practical demonstrations of fire fighting and the effectiveness of different types of fire extinguishers. Fire fighting drills and demonstrations were conducted in another seven Divisions and nine were conducted at the Granville complex. In the interest of simplicity the Department is reducing the number of types of appliances available and, where practicable, is adopting a universal type dry powder extinguisher.

The fire precaution and evacuation system for the Head Office buildings is reviewed continually and practised regularly.

A three-year review of fire fighting arrangements at field offices will be completed next year.



*The use of mechanical flagmen will reduce the hazards of this job in situations of poor visibility.*

**Safety Committees**

The Regulation of the Occupational Health and Safety Act, which came into effect on 1 June 1984, sets out details regarding the establishment, members, procedures and functions of Occupational Health and Safety Committees.

The Department has taken the initiative to have these committees established at Works or Divisional Offices throughout the State. At 30 June 1985 some 39 committees had been established.

Apart from raising general issues of safety and health, these committees are providing a valuable local contribution and increasing the general awareness of both staff and employees to health and safety consideration at the workplace.

**Table 11. Male/Female Distribution in Workforce, 1984 to 1985**

	At 30 June 1984		At 30 June 1985	
	Males	Females	Males	Females
<i>Full-Time</i>				
Salaried Officers	3,195	716	3,139	709
Direct Wages Employees	5,599	19	5,198	20
<i>Part-Time *</i>				
(20 hrs per week and over)	8	29	7	25
(Less than 20 hrs per week)	3	12	3	13
TOTALS	8,805	776	8,347	767

\* Includes 96 part-time and casual personnel converted to 48 full-time equivalents.



**Table 12. The Department's Workforce, 1984 to 1985**

	At 30 June 1984	At 30 June 1985	Increase/Decrease Number		%	
<i>Salaried Officers *</i>						
Professional	1,482	1,441	- 41	-	2.77	
Clerical	1,251	1,244	- 7	-	0.56	
General	1,091	1,075	- 16	-	1.47	
Traffic Signals Technicians	113	114	+ 1	+	0.88	
SUB TOTAL	3,937	3,874	- 63	-	1.60	
<i>Direct Wages Employees *</i>						
Skilled Trades	806	764	- 42	-	5.21	
Apprentices	209	206	- 3	-	1.44	
Labourers	2,604	2,228	- 376	-	14.44	
Plant Operators	780	823	+ 43	+	5.51	
Gangers	373	375	+ 2	+	0.54	
Survey Field Hands	142	146	+ 4	+	2.82	
Lorry Drivers	405	388	- 17	-	4.20	
Tolls	92	89	- 3	-	3.26	
Others	282	269	- 13	-	4.61	
SUB TOTAL	5,693	5,288	- 405	-	7.11	
<i>Departmental Contracts</i>						
Contractors' Employees under Direct Supervision by Dept.	1,242	1,395	+ 153	+	12.32	
Haulage — Truck Owner-Driver	738	523	- 215	-	29.13	
— Fleet	148	90	- 58	-	39.19	
Minor	275	215	- 60	-	21.82	
Plant	924	517	- 407	-	44.05	
SUB TOTAL	3,327	2,740	- 587	-	17.64	
<i>Councils</i>						
Employees on subsidised roadworks	3,114	3,255	+ 141	+	4.53	
Trucks	1,033	1,046	+ 13	+	1.26	
SUB TOTAL	4,147	4,301	+ 154	+	3.71	
TOTALS	17,104	16,203	- 901	-	5.27	

\* Includes 96 part-time and casual personnel



## COMMISSIONERS AND BRANCH HEADS



*Commissioner  
Mr. B.N. Loder, B.E.,  
Dip.T.C.P., F.I.E. Aust., F.C.I.T.*



*Deputy Commissioner  
Mr. J.G. Crowe, B.E.,  
M.Eng.Sc., M.I.E.Aust., M.C.I.T.*

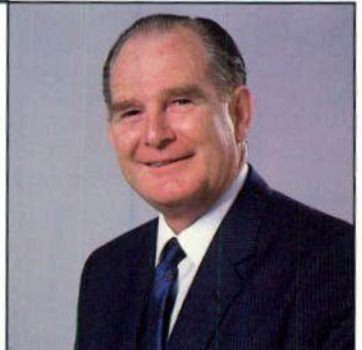


*Secretary  
Mr. W. McL. Cable,  
LL.B., A.A.S.A.*

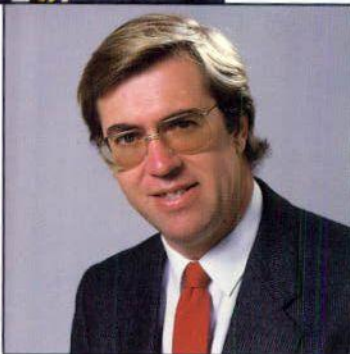
*Chief Accountant  
Mr. E.J. Hanlon  
F.A.S.A., C.P.A.*



*Engineer-in-Chief  
Mr. L.R. Browne, B.E.,  
M.Eng.Sc., L.G.E.,  
M.I.E.Aust., M.A.I.T.P.M.*



*Chief Legal Officer  
Mr. K.B. Ford.*



*Chief, Personnel Branch  
Miss C.J. Slattery,  
B.A., M.Ed.Admin.*





## Engineer-in-Chief's Branch

Deputy Engineer-in-Chief (Planning and Design)	K.W. Dobinson
Deputy Engineer-in-Chief (Operations)	P.G.L. Wolfe
Chief Engineer (Bridges)	B.J. Pearson
Chief Engineer (Traffic & Design)	J.M. McKerral
Chief Engineer (Services)	A. Tinni
Principal Mechanical Engineer	S.P. Scrivener
Highways Engineer	C.N. Penney
Engineer for Programmes and Budgets	P. Moore
Research and Development Engineer	D.G. Medbury
Road Design Engineer	R.A. Dunstan
Bridge Engineer (Design)	A.R. Smith
Operations Engineer	K.T. Jones
Strategic Planning Engineer	D.H.L. Francis
Engineer Special Duties	P.M.B. Pope
Operations Engineer	D.J. Black
Traffic Engineer	F.C. Hawes
Bridge Engineer (Operations)	U.D. Fraser
Investigations Engineer	K.M. Anderson
Deputy Principal Mechanical Engineer	W.P.H. Burton
Systems Engineer (Computing)	J.C. Webb
Graphic Services Manager	A.W. Emery
Mechanical Engineer (Plant)	W.D. Smith
Special Functions Engineer	D.J. Rae
Assistant Investigations Engineer	W.L. Gordon
Assistant Bridge Engineer (Administration)	T.C. Thornton
Assistant Bridge Engineer (Design) <i>†</i>	O.J. Broug
Mechanical Engineer (Services)	W.D. McIntyre
Asphalt Engineer	J.A. Walker
Contract Administration Engineer	R.L. Jones
Assistant to Engineer-in-Chief	A.G. Kennedy
Assistant Traffic Engineer	J.W. Shattock
Assistant Bridge Engineer (Operations) <i>‡</i>	R.J.L. Wedgwood
Engineer for Country Councils' Works	G.J. Ross
Materials Engineer	G.S. Donald
Mechanical Engineer (Plant)	E.A. Fairfield
Assistant Road Design Engineer	B.R. Fishburn
Engineer Manager Central Workshop	R.G. Jones
Assistant Bridge Engineer (Design) <i>‡</i>	H.J. Audova
Assistant Traffic Engineer	J.R. Bliss
Assistant Bridge Engineer (Operations) <i>—</i>	B.J. Judd
Principal Surveyor and Property Officer	A.J.R.M. Watson
Principal Planner	B.J. Watters

## Secretarial Branch

Deputy Secretary	K.D. Hadley
Assistant Secretary	J.H. Tarleton
Assistant Secretary (Administration)	C. Cawley



## Accounts Branch

Deputy Chief Accountants

Group Accountants

Assistant to the Chief Accountant  
Auditor

K.B. Kerr  
D.R. Williams  
R.S.J. Price  
R.B. McDowell  
A.R. Alderton  
N. Hunziker

## Personnel Branch

Deputy Chief, Personnel Branch (E & T)  
Deputy Chief, Personnel Branch (A & C)

J. Kelly  
D.P.B. Jones

## Legal Branch

Deputy Chief Legal Officer

T.J. Hagan

## Policy & Economics Unit

Chief, Policy & Economics Unit  
Corporate Planner

P.J. O'Neill  
R.B. Allen

## Communication & Information Services

Communication & Information Services Manager

T.M. Liptak

## Divisional Engineers

### Divisions

Sydney  
Parramatta  
Blacktown  
Central Mountains  
Illawarra  
Hunter Valley  
Lower North Coast  
North Eastern  
Upper Northern  
North Western  
Central Western  
Central Northern  
Murray Darling  
Central Murray  
South Western  
South Coast  
Southern  
Outer Freeway Construction

### Headquarters

Milsons Point  
Parramatta  
Blacktown  
Lithgow  
Wollongong  
Newcastle  
Port Macquarie  
Grafton  
Glen Innes  
Tamworth  
Parkes  
Bourke  
Broken Hill  
Deniliquin  
Wagga Wagga  
Bega  
Goulburn  
Milsons Point

### Divisional Engineers

L.R. James  
R.A. Dubedat  
G.A. Cruickshank  
G.J. Vidler  
P.B. Sheil  
L.J. Bonnefin  
F.E. D'Adam  
R.L. Smythe  
W. Choy  
J.R. Jordon  
J.R. Gowing  
M.R. Foster  
A.A. Kerle  
R.H. Brown  
R.J. Roughan  
R.H.T. Harris  
D.M. Dash  
J.R.M. MacBride

## Assistant Divisional Engineers

Sydney  
Parramatta

Milsons Point  
Parramatta

D.L. Pook  
E. Sancbergs



## OTHER ACTIVITIES

### Community Relations

The Department seeks to provide an effective information service regarding its activities and invites members of the public to write, telephone or call at the Public Relations Section with matters of interest or concern.

An exciting initiative in this area, which has been in planning throughout the year, is the new public relations 'shop front', to be built adjacent to the main Head Office entrance foyer. This convenient location will make it easier for the public to make enquiries, obtain publications and view displays and scale models.

An interesting range of maps and publications about past and present roadbuilding

projects is available, and most are free of charge. Those produced during the last year include a revised edition of the Wollongong and Surrounding Districts Map; a 1985 edition of the Main Road Maps of New South Wales; and brochures entitled 'Central Coast Road Improvement Program', 'Newcastle Region Road Improvement Program', 'The Eastern Distributor', 'New Bridge over the Murray River at Mildura-Buronga', and 'F4 — Western Freeway'.

This year's display at the Royal Easter Show was the Department's largest yet. The theme 'We're Building a Better Road System' was illustrated by 42 panels showing major projects under construction, planning proposals and safety improvements. The display also featured scale models, a random access slide presentation, rear illuminated transparencies and a competition to win a computer. During the year, displays were also set up at Lithgow and Wollongong Shows, and various other venues for media conferences and public information purposes.

*The Department's display at the Royal Easter Show attracted thousands of visitors, including this family group inspecting a project model.*





The public is welcome to use the Department's information resources for reference material or general interest. This comprises the Head Office Library, which has a comprehensive range of technical and historical publications; a library of 16 mm films which are available for loan; and an extensive collection of colour transparencies and black and white photographs of roads and bridges, copies of which can be purchased.

Written requests for information about Departmental activities or for guest speakers should be addressed to the Secretary of the Department, or to the local Divisional Engineer (see addresses on inside back cover of this Report).

### International Interchange

A number of Departmental officers made overseas visits during the year to exchange specialised knowledge and skills with other nations.

Dr. G. Donald, Materials Engineer, attended the 10th International Road Federation World Meeting in Rio de Janeiro, Brazil from 22 to 26 October 1984 to present a paper entitled "Industrial By-Products in Road Pavements", of which he was co-author. Dr. Donald was abroad from 12 October to 9 November 1984 and inspected road and bridge works in both the United States of America and Brazil.

Mr. A. Sims, Traffic Systems Manager, and Mr. P. Lowrie, Supervising Engineer, who are both involved in the development and operation of the Sydney Co-ordinated Adaptive Traffic System (SCATS), spent two weeks in Shanghai in December 1984. The purpose of the visit was to provide technical assistance to Engineering Consultants engaged by the Shanghai Traffic Authorities.

Mr. Sims and Mr. A. Finlay, an Engineer at the Traffic Control and Emergency Centre, subsequently visited Shanghai for three weeks in February-March 1985 to assist the Traffic Authorities with the design of Stage I of the traffic signal system to be implemented in Shanghai.

To provide continuing assistance to the Shanghai Authorities in the development of this system Mr. P. Lowrie, Supervising Engineer, travelled to Shanghai for three weeks in May 1985.

Mr. N.C. Lamb, Resident Engineer on the F3 — Sydney-Newcastle Freeway, undertook a study tour of the United States of America from 19 April to 10 May 1985 which was arranged by the Cement and Concrete Association of Australia. The tour included the Third International Conference on Concrete Pavement Design and Rehabilitation at Purdue University, Indianapolis.

At the same time, the Department was pleased to act as host to 12 overseas visitors:

Tamas Lukovich, an engineer from Hungary who was in Australia under the Australian-European Awards Program, observed the Department's planning and design procedures at both Head Office and Sydney Divisional Office.

- Two traffic engineers from China, Messrs. Gu Li and Gu Guodi, studied Departmental methods of traffic planning and management, notably the Sydney Co-ordinated Adaptive Traffic System (SCATS).
- Two mechanical engineers from Burma, Messrs. U Aung Min and U. Tin Myint, were attached to Mechanical Section to study methods of plant and equipment inspection and the field servicing of plant.
- Messrs. Ganda Suraperwata, Tjalik Yuswadi, Sukirwan and Dodo Junar Sudigo, civil engineers from Indonesia, were sponsored by the Snowy Mountains Engineering Corporation under the Indonesian-Australian Concrete Bridge Project. They undertook a study of bridge construction management and site operations at numerous locations.
- Messrs. Imtiaz Gaffer Hassan, Ali Mahmood Saeed and Muneer Mohamad Hashim, engineers from the People's Democratic Republic of Yemen, were also sponsored by the Snowy Mountains Engineering Corporation under the Nagabah-Nisab Project. They studied road and plant maintenance practice and procedure, as well as traffic management and control.



## Australian Road Research Board

This year marked the 25th anniversary of the founding of the Australian Road Research Board (ARRB), the country's national road research body. Through its information services, ARRB publishes and disseminates papers and articles to appropriate organisations and specialists involved in the design, maintenance and construction of roads.

The 'Australian Road Index' and 'Australian Road Research in Progress' are examples of these publications.

The Board also provides on-line access to the International Road Research Documentation facility through its computer-based information system. This allows research and investigative efforts to be co-ordinated and optimum use made of available funds.

The Board's policy is guided and reviewed by a board of directors comprising the executive heads of the sponsoring road authorities, including Mr. Bruce Loder, Commissioner for Main Roads, New South Wales. The 1984-85 annual budget was \$4.82 million, of which the Department contributed \$752,000.

The highlight of the year was the 12th ARRB Conference. Nearly 600 delegates attended the conference, which was held in Hobart from 26-31 August 1984. Seventy papers were presented in the areas of materials, pavements, traffic, transport and safety while nine workshops were held on topics ranging from urban drainage and road studies to child safety.

The Accelerated Loading Facility (ALF), which had been designed and constructed by the Department, was handed over to ARRB on 12 July 1984. ARRB is responsible for the use of ALF in pavement research throughout Australia, which is now a major item of its research program.

Various workshops and seminars were conducted during 1984-85. Departmental officers presented papers at both the 22nd Regional Symposium at Grafton in November 1984 and a Seminar on ALF at Gosford in February 1985.

The Board also continued to assist with projects in developing countries, and to play a

significant role in the Road Engineering Association of Asia and Australasia (REAAA). Planning is progressing for a joint ARRB/REAAA Conference to be held in Adelaide during 1986.

Requests for information about any of ARRB's activities should be addressed to The Executive Director, Australian Road Research Board, P.O. Box 156 (Bag 4), Nunawading, Victoria, 3131. Telephone (03)233 1211.

## National Association of Australian State Road Authorities

The National Association of Australian State Road Authorities (NAASRA) comprises the authorities responsible for roads in the six States, the Northern Territory and the Australian Capital Territory. It provides a central organisation aimed at achieving a uniform approach to the development and improvement of the Australian road network. Through its publications and meetings of its various committees, NAASRA is able to co-ordinate road and bridge design standards in both maintenance and construction.

Two meetings of the association were held during the year, attended by the heads of the member authorities. The Principal Technical Committee also met and was assisted by meetings of various specialist committees. Subjects dealt with included bridge engineering, information and computing services, materials engineering, plant and equipment, road design, traffic engineering, and road construction and maintenance practices.

Publications issued during the year included 'Bituminous Surfacing Vol. 2 - Asphalt Work', '50 Years of NAASRA', 'Guide to the Selection of Bituminous Surfacing for Pavements', 'Report on Strain Alleviating Membranes incorporating Rubber Modified Bitumen Binders', and 'Road Medians'. A full list and the publications themselves are obtainable from the Department's Graphic Services Section at Head Office.

The NAASRA Review of Road Vehicle Limits commenced in late 1984 and is due for completion in October 1985. The basic objective of the Review is to increase the overall efficiency of road transport and, at the same time:





*Dual carriageway construction on the Hume Highway between Medway Rivulet and Cherry Tree Hill, 6 km south of Berrima, is part of the initiative to upgrade National Highways.*

- protect the public investment in roads and bridges;
- maintain road performance for all road users; and
- maintain a safe road environment with minimal environmental impact.

The cost of NAASRA's operations during 1984-85 is estimated at \$2,137,000, of which the Department's contribution will be approximately \$484,000.

The NAASRA Secretariat is on the 5th Floor of the Legal and General Building, 2 Dind Street, Milsons Point, N.S.W. 2061. Telephone (02)957 6188. Written enquiries should be addressed to the Engineer-Secretary.

### **Local Co-ordinators**

Six country Divisional Engineers served as Local Co-ordinators (State Administration) during 1984-85. In this capacity they co-ordinated complementary operations of the various Government departments and instrumentalities in their respective areas.

Activities organised by co-ordinators included the sharing of office facilities among Government Authorities; newspaper monitoring and distribution of media releases; provision of micro-fiche facilities; Government courier service; Public Service Board examinations; centralisation of Government services; and discussions on staff accommodation, Public Service Handbook for staff and personnel and resource sharing.

### **Army Supplementary Reserve Unit**

The 21st Construction Regiment is a Supplementary Reserve Unit of the Royal Australian Engineers, formed in 1950.

The Department was active in its formation and has continued to sponsor the Regiment, in particular, Regimental Headquarters, 101 Construction Squadron and 108 Plant Squadron (Heavy).

In 1985, the Annual Camp was held at Singleton where military training was undertaken. In conjunction with this, a number of projects were initiated, including the upgrading of roads in the Singleton training area and the construction of a large bunker. Engineering support was also provided for a major infantry exercise.



## ORGANISATION OF DEPARTMENT OF MAIN ROADS

The Department's Head Office is at 309 Castlereagh Street, Sydney. However, in the interests of efficiency the Department has decentralised its operations. The State is divided into 17 geographical divisions, each under the control of a Divisional Engineer whose headquarters are located in a major centre within the area. The Divisional Engineers are responsible to the Engineer-in-Chief in Sydney. But, being part of the local community they serve, the Divisional Engineers have an 'on-the-spot' appreciation of local road conditions and needs. There is also a special division to supervise freeway construction outside the urban areas.

Each division is equipped with its own design office, testing laboratory and small technical library.

*The Department's Divisional Office at Wagga Wagga moved to these new premises during the year.*

Each division contains works offices which supervise maintenance and construction operations undertaken by direct control. There are 42 of these throughout the State and some have small field control laboratories.

The Department's Materials and Research Laboratory is at Milsons Point while the Central Workshop, the Supply Section and the Central Asphalt Depot are all at Granville in Sydney's western suburbs. The Traffic Signals Workshop is at Rhodes, and Departmental personnel assist the police in staffing the Traffic Control and Emergency Centre in Oxford Street, Sydney.

Business hours are generally from 8.30 a.m. to 4.30 p.m., Monday to Friday. Head Office and Divisional Office addresses and telephone numbers are as follows:





**Head Office**

309 Castlereagh Street  
(P.O. Box 198, Haymarket)  
SYDNEY. N.S.W. 2000  
Tel. (02)218 6888

**Sydney Division**

2 Dind Street  
(P.O. Box 51)  
MILSONS POINT. N.S.W. 2061.  
Tel. (02)929 6555

**Outer Freeway Division**

5th Floor, 2 Dind Street,  
(P.O. Box 51)  
MILSONS POINT. N.S.W. 2061.  
Tel. (02)922 3599

**Parramatta Division**

111-113 George Street  
(P.O. Box 240)  
PARRAMATTA. N.S.W. 2150.  
Tel. (02)633 0888

**Blacktown Division**

1st Floor, 11 Kildare Street  
(P.O. Box 558)  
BLACKTOWN. N.S.W. 2148.  
Tel. (02)671 6711

**Central Mountains Division**

244-270 Mort Street  
(P.O. Box 191)  
LITHGOW. N.S.W. 2790.  
Tel. (063)52 2555

**Illawarra Division**

71-77 Kembla Street  
(P.O. Box 1753)  
WOLLONGONG. N.S.W. 2500.  
Tel. (042)20 2460

**Hunter Valley Division**

59 Darby Street  
(P.O. Box 488)  
NEWCASTLE. N.S.W. 2300.  
Tel. (049)26 1200

**Lower North Coast Division**

1 Mort Street  
(P.O. Box 147)  
PORT MACQUARIE. N.S.W. 2444.  
Tel. (065)83 1144, 1476, 1759

**North Eastern Division**

31 Victoria Street  
(P.O. Box 576)  
GRAFTON. N.S.W. 2460.  
Tel. (066)42 3093, 3733, 3802

**Upper Northern Division**

362-370 Grey Street  
(P.O. Box 58)  
GLEN INNES. N.S.W. 2370.  
Tel. (067)32 2733

**North Western Division**

111 Brisbane Street  
(P.O. Box 530)  
TAMWORTH. N.S.W. 2340.  
Tel. (067)66 5322

**Central Western Division**

28 Currajong Street  
(P.O. Box 334)  
PARKES. N.S.W. 2870.  
Tel. (068)62 1244, 1484, 1577

**Central Murray Division**

72-74 Wellington Street  
(P.O. Box 21)  
DENILQUIN. N.S.W. 2710.  
Tel. (058)81 1005, 1388, 1461

**South Western Division**

1 Simmons Street  
(P.O. Box 484)  
WAGGA WAGGA. N.S.W. 2650.  
Tel. (069)21 1133

**South Coast Division**

Cnr. Auckland & Upper Streets  
(P.O. Box 399)  
BEGA. N.S.W. 2550.  
Tel. (0649)2 1600

**Southern Division**

211 Bourke Street  
(P.O. Box 183)  
GOULBURN. N.S.W. 2580.  
Tel. (048)23 1511

**Central Northern Division**

51-53 Mitchell Street  
(P.O. Box 489)  
BOURKE. N.S.W. 2840.  
Tel. (068)72 2611

**Murray Darling Division**

270 Crystal Street  
(P.O. Box 680)  
BROKEN HILL. N.S.W. 2880.  
Tel. (080)88 1411, 1626, 1239



## THE CLASSIFIED ROAD SYSTEM

There are approximately 205,000 km of public road in New South Wales. The total length for which the Commissioner for Main Roads had full or partial financial responsibility at 30 June 1985 was 42,340 km, including 6,300 bridges.

The remaining 162,660 km of public road are the responsibility of the local Councils in whose areas they are situated.

The accompanying tables show lengths of road types in general, freeways, types of surface and sealed single and dual carriageway as at 30 June 1985.

### Types of Road Referred to in this Report

**Freeways** are roads which are primarily for through traffic and which have a divided carriageway and grade separation at all intersections, with no access for traffic between interchanges. These roads, including those lengths proclaimed as tollworks, are under the direct control of the Commissioner, who meets the full cost of all road and bridge works, including maintenance.

**State Highways** are the principal means of road communication throughout the State, in many cases connecting with similar roads in other States. The Commissioner is directly responsible for planning, maintenance and improvement of State Highways and meets the full cost of road and bridge works on these roads.

**Trunk Roads** are the secondary avenues of road communication which connect with the State Highways to link the main regions of the State. Trunk Roads are the responsibility of the local Councils through whose areas they pass and grants are made by the Commissioner to Councils to meet the full cost of approved works on these roads.

**Ordinary Main Roads** mainly join towns and important centres of population with each other, and, in conjunction with State Highways and Trunk Roads, effectively link all districts in the State to the overall road network. In country areas, ordinary Main Roads are the responsibility of the Councils through whose areas they pass and grants are made by the Commissioner to Councils to meet the full cost of approved works on these roads. In the County of Cumberland

the Commissioner is responsible for planning and implementing all works on ordinary main roads.

**Secondary Roads** — certain roads within the County of Cumberland (Sydney and environs), which carry a substantial volume of through traffic and relieve neighbouring Main Roads, may be declared by the Commissioner to be Secondary Roads. Works on Secondary Roads are the responsibility of the local Councils through whose areas they pass, although usually half the cost of construction and maintenance is met by the Commissioner with the balance being met by the Council.

**Tourist Roads** specially serve the tourist industry by providing access to particular scenic and tourist attractions. They are usually under the care and control of local Councils, which may be assisted financially by the Commissioner through grants of up to half the cost of construction and maintenance.

**Developmental Roads** are roads which, if constructed or improved, would help develop a district or any area of Crown or private land, by providing access to a railway station, shipping wharf, or to a road leading to them. There is also provision for individual works in the nature of missing links, such as a new bridge or an isolated unconstructed length of road, to be proclaimed as Developmental Works. The full cost of Developmental Roads and Works is usually met by the Commissioner, while maintenance after construction is the responsibility of the local Council.

**Unclassified Roads** — the Commissioner also maintains a number of unclassified roads, most of which are within the unincorporated area of the Western Division of New South Wales.

### Road Lengths

Table 13. Lengths of Sealed Road at 30 June 1985

	km
Single Carriageway	25,027
Dual Carriageway	889
TOTAL	25,916



**Table 14. Types of Road and Lengths at 30 June 1985**

	km
State Highway	10,263(a)
Trunk Road	7,085
Main Road	18,337
Secondary Road	295
Tourist Road	444
Developmental Road	3,256
Unclassified road in the unincorporated area of the Western Division	2,489
Unclassified road in the incorporated area of New South Wales	171(b)
<b>TOTAL</b>	<b>42,340</b>

Notes: (a) Includes the 64 km length of the South Western Freeway between the Crossroads at Prestons and Aylmerton which has been proclaimed as State Highway.

(b) Includes the remainder of the length of the Freeways listed in Table 16.

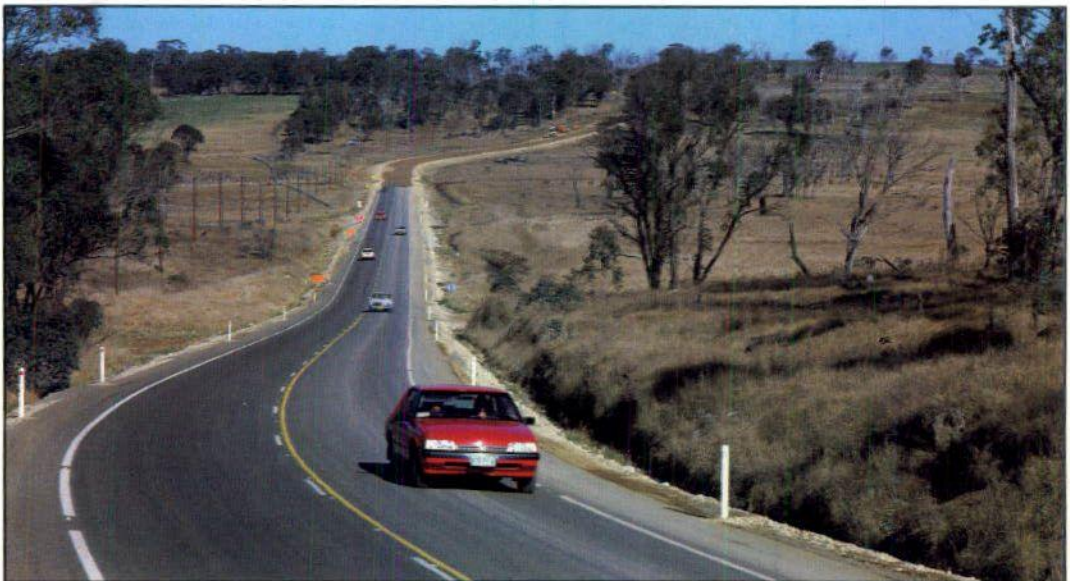
*Reconstruction, widening and the provision of a climbing lane are part of the upgrading of the New England Highway, 60 km north of Armidale.*

**Table 15. Types of Surface at 30 June 1985**

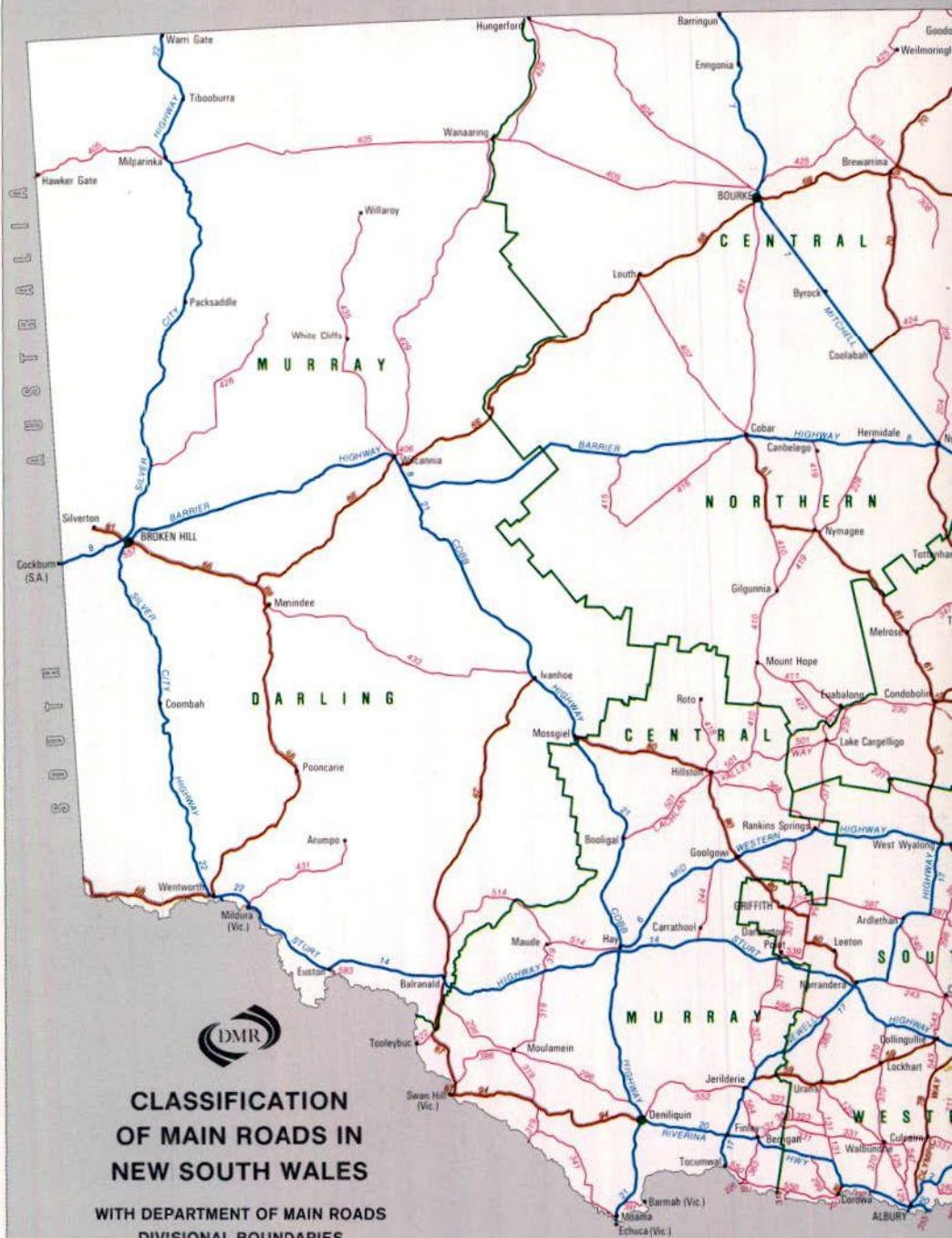
	km
Natural Surface	953
Formed Only	6,068
Gravel	9,403
(Total Unsealed)	(16,424)
Primed/primer seal	306
Sprayed seal	22,432
Enrichment reseal	742
Asphaltic concrete	2,271
Cement concrete	165
(Total Sealed)	(25,916)
<b>TOTAL</b>	<b>42,340</b>

**Table 16. Lengths of Freeway at 30 June 1985**

	km
F1 — Warringah Freeway, Cahill Expressway and Sydney Harbour Bridge	7
F3 — North Western Freeway and Sydney-Newcastle Freeway	57
F4 — Western Distributor and Western Freeway	39
F5 — South Western Freeway	67
F6 — Southern Freeway	39
<b>TOTAL</b>	<b>209</b>













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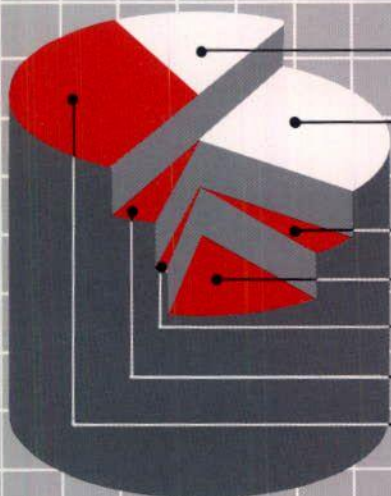
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#### **Notes to Financial Statements and Supplementary Information**

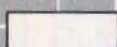
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# Year in Brief 1984-85



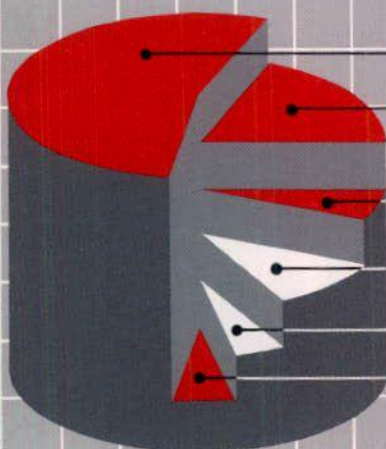
Funds Available	Actual \$M	Budget \$M
ABRD, Employment Programs	132	132
Roads Grants Act	258	258
<b>Total Commonwealth</b>	<b>390</b>	<b>390</b>
Diesel Fuel Levy	38	36
Loans	123	123
Tolls	11	11
Other	32	35
Motor Vehicle Taxes	336	333
<b>Total State</b>	<b>540</b>	<b>538</b>
<b>Total Funds Available</b>	<b>930</b>	<b>928</b>



Commonwealth Grants



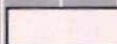
State Sources



Expenditure	Actual \$M	Budget \$M
Construction	524	507
Maintenance	179	189
Council Local Roads	74	74
Loan Charges	91	95
Administration	42	41
Traffic Facilities	50	50
<b>Total Expenditure</b>	<b>960</b>	<b>956</b>



Works



Other



## 1984-85 Budget

The first budget for 1984-85, as published in the State Budget Paper No. 2 and last year's Annual Report, amounted to \$953 million based on the accounting format used to prepare the Department's financial statements for 1983-84. As indicated in Note 2 to this year's financial statements, the method of reporting some internal contra transactions has been amended.

The budget of \$956 million to which the accounts for 1984-85 have been related is based on the revised accounting format and takes account of increased receipts from motor vehicle taxes and the diesel fuel levy.

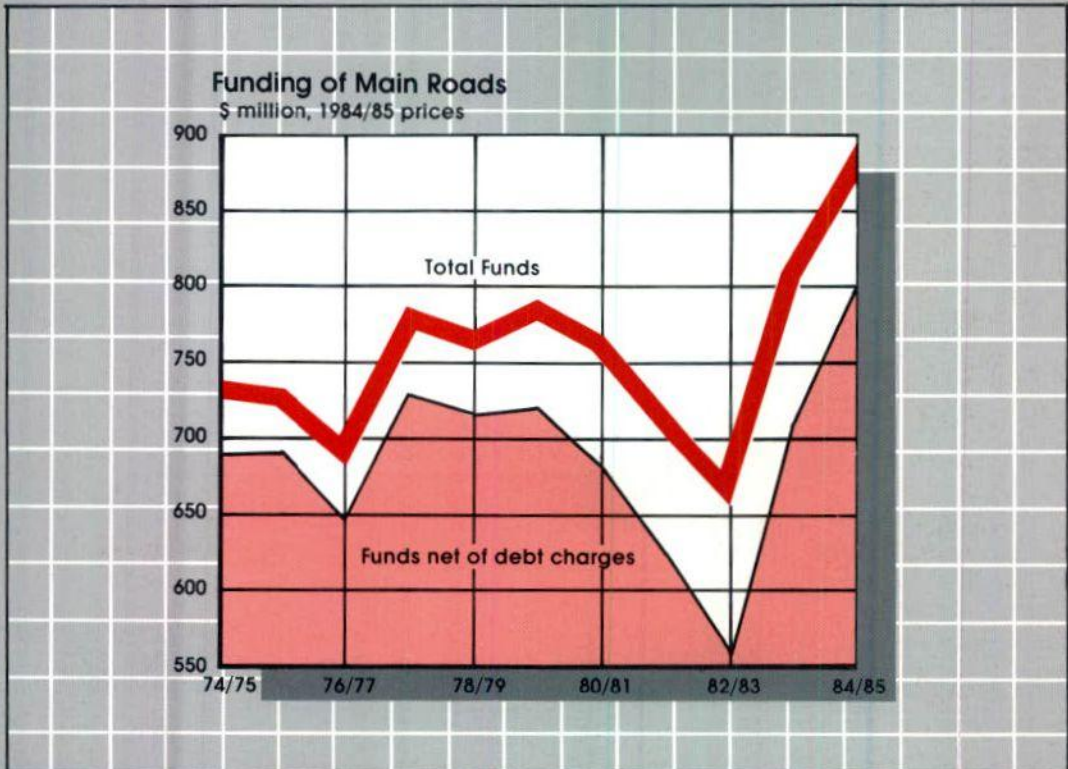
Details of variations from the original budget are as follows:-

		\$M
First Budget		953
<i>Contra Adjustments</i>		
Transfer of amounts from reserve for loan repayment used for works	24(-)	
Proceeds from sale of properties no longer required for roadworks	9(+)	15(-)
<i>Increase in Receipts</i>		
Motor vehicle taxes	14	
Diesel fuel levy	4	18(+)
		<u>956</u>

## Funding of Main Roads

The graph titled 'Funding of Main Roads' shows details of funding for the State classified road system since 1974-75. Commonwealth grants for local roads have been excluded.

The growth in funds since 1982-83, following the decline in the real value of funds over the previous decade, is primarily due to the additional funds available under the Australian Bicentennial Road Development Trust Fund Act.





# STATEMENT OF RECEIPTS FOR ALL FUNDS

## RECEIPTS

County of  
Cumberland  
Fund  
\$,000

### State Sources

Motor vehicle registration weight tax and tax levy	(Note 19)	80,459
Motor vehicle registration fee — allocation from the road transport and traffic fund		—
Diesel fuel levy	(Note 18)	24,523
Financial accommodation	(Note 21)	
— semi-government loan raising		48,736
— repayable Treasury advance		—
— deferred payments contracts		1,224
Road tolls (net of collection costs)	(Note 6)	4,486
Interest — on sinking fund investments		3,270
— on Treasury fund balances		742
Contributions for specified works		
— from other departments	(Note 14)	517
— from other sources		580
Natural disaster grant		—
Sale of properties (no longer required for roadworks)		5,491
Rents from properties acquired for works (net of collection and maintenance costs)		4,278
Miscellaneous		1,610
<b>Total State Sources</b>		<b>175,916</b>

### Commonwealth Grants

Roads Grants Act, 1981	(Note 20)	
— national roads		—
— arterial roads		44,500
— local roads		—
Australian Bicentennial Road Development Trust Fund Act, 1982	(Note 20)	
— national roads		—
— arterial roads — urban		21,397
— rural		—
— local roads		—
Wage pause employment program	(Note 20)	58D
Steel regions assistance program	(Note 20)	—
<b>Total Commonwealth Sources</b>		<b>65,839</b>
<b>Total Receipts</b>		<b>241,755</b>
Cash at Treasury as at 1st July 1984		13,201
<b>Total Funds Available</b>		<b>254,956</b>



# FOR THE YEAR ENDED 30 JUNE 1985

Country Fund \$,000	Commonwealth Fund \$,000	Sydney Harbour Bridge Accounts \$,000	Traffic Facilities \$,000	Total 1984-85 \$,000	1983-84 \$,000
208,195	—	3,283	35,000	326,937	306,921
—	—	—	8,979	8,979	10,631
13,012	—	—	—	37,535	30,318
73,000	—	—	—	121,736	52,000
—	—	—	—	—	10,000
—	—	—	—	1,224	5,371
2,185	—	321	4,221	11,213	11,009
1,389	—	434	—	5,093	4,957
779	—	—	—	1,521	1,547
4,022	—	667	181	5,387	6,234
1,054	—	—	756	2,390	2,749
—	—	—	—	—	12,400
772	—	—	—	6,263	9,203
430	—	964	—	5,672	4,076
3,816	—	—	—	5,426	3,625
308,654	—	5,669	49,137	539,376	471,041
—	121,487	—	3,263	124,750	117,643
33,177	—	—	—	77,677	73,252
—	55,721	—	—	55,721	52,549
—	70,915	—	—	70,915	64,573
3,100	—	—	—	24,497	34,062
19,996	—	—	—	19,996	24,743
—	10,260	—	—	10,260	22,519
143Dr	—	—	—	201Dr	4,665
6,700	—	—	—	6,700	2,300
62,830	258,383	—	3,263	390,315	396,306
371,484	258,383	5,669	52,400	929,691	867,347
11,808	7,374	103	—	32,486	29,979
383,292	265,757	5,772	52,400	962,177	897,326



# STATEMENT OF PAYMENTS FOR ALL FUNDS

PAYMENTS	County of Cumberland Fund \$,000
State Road System	
— construction and reconstruction	96,377
— construction under A.B.R.D. program	37,640
— property acquisitions	25,836
— maintenance and minor improvements	33,592
Local Roads	
— construction and maintenance	—
— construction under A.B.R.D. program	—
— natural disaster restoration works	73
Intersection improvements, traffic signals, signs and roadmarking	
— construction and reconstruction	—
— maintenance and operations	—
Land and buildings	
— for works operations	2,436
— for administration	288
Net transactions of operating and suspense accounts	2,456
General administration	9,749
Research	3,012
Financial accommodation charges	
— repayable Treasury advances — interest	517
— state loan allocation — interest and management expenses	9,115
— semi-government loan raising — interest and management expenses	22,176
— deferred payments — interest and management expenses	777
— leveraged lease finance — interest and management expenses	—
<b>Sub-Total</b>	<b>244,044</b>
Financial accommodation repayments (Note 21)	
— repayable Treasury advances — principal	360
— state loan allocation — sinking fund	991
— semi-government loan raising — principal	2,066
— leveraged lease finance — principal	—
Investments for loan repayments for loans raised by the Commissioner (Note 21)	5,783
<b>Total Payments</b>	<b>253,244</b>
Net transaction of trust accounts	16
Cash at Treasury as at 30 June 1985 (Note 5)	1,696
	<b>254,956</b>



# FOR THE YEAR ENDED 30 JUNE 1985

Country Fund \$,000	Commonwealth Fund \$,000	Sydney Harbour Bridge Accounts \$,000	Traffic Facilities \$,000	Total 1984-85 \$,000	1983-84 \$,000
156,072	84,489	—	—	336,938	318,280
27,171	75,805	—	—	140,616	115,826
8,892	9,957	—	—	44,685	33,751
115,082	22,368	3,166	—	174,208	161,600
908	55,721	—	—	56,629	54,997
—	12,744	—	—	12,744	20,035
4,513	—	—	—	4,586	8,299
—	—	—	13,123	13,123	11,309
—	—	—	36,478	36,478	34,235
1,928	—	—	—	4,364	2,812
818	—	—	—	1,106	821
243	—	—	145Cr	2,554	7,897Cr
17,386	4,673	215	2,944	34,967	29,130
3,012	—	—	—	6,024	4,387
660	—	—	—	1,177	1,019
4,467	—	982	—	14,564	14,457
39,495	—	822	—	62,493	57,470
—	—	—	—	777	12
1,098	—	—	—	1,098	1,112
381,745	265,757	5,185	52,400	949,131	861,655
10,309	—	—	—	10,669	610
586	—	105	—	1,682	1,710
1,266	—	36	—	3,368	3,480
613	—	—	—	613	620
11,548Cr	—	444	—	5,321Cr	2,129Cr
382,971	265,757	5,770	52,400	960,142	865,946
9	—	—	—	25	1,106Cr
312	—	2	—	2,010	32,486
383,292	265,757	5,772	52,400	962,177	897,326



# STATEMENT OF SOURCE AND APPLICATION OF FUNDS EXCLUDING TRAFFIC

Source of Funds	1984-85 \$,000	1983-84 \$,000
<b>Grants and Taxes</b>		
Commonwealth		
— Roads Grants Act	254,885	240,698
— Australian Bicentennial Road Development Trust Act	125,668	145,897
— Employment generating programs	6,499	6,965
	<b>387,052</b>	<b>393,560</b>
State		
— Motor vehicle registration tax (Note 19)	291,937	276,921
— Diesel fuel levy	37,535	30,318
— Flood restoration grant	—	12,400
— Contributions for specified works	6,841	7,627
	<b>336,313</b>	<b>327,266</b>
<b>Total Grants and Taxes</b>	<b>723,365</b>	<b>720,826</b>
<b>Operations</b>		
— Road tolls (Note 6)	11,378	12,589
— Rents from properties for works	9,925	9,015
— Miscellaneous	5,426	3,625
<b>Total Operations</b>	<b>26,729</b>	<b>25,229</b>
<b>Other</b>		
— Interest	6,614	6,505
— Loans — semi-government program	121,736	52,000
— repayable Treasury advance	—	10,000
— Deferred payment contracts (Note 21)	1,224	5,371
— Sale of properties no longer required	6,263	9,203
<b>Total Other</b>	<b>135,837</b>	<b>83,079</b>
<b>Total Source of Funds</b>	<b>885,931</b>	<b>829,134</b>

"We certify that the financial statements of the Department of Main Roads as required under Section 41(A) — 41(B) of the Public Finance and Audit (Amendment) Act, 1984 have been prepared in accordance with provisions of the Act and the Regulations thereunder and in our opinion exhibit a true and fair view of the Department's financial operations and transactions as at 30 June 1985. We also state that at the date of signing the statements we are not aware of any circumstances which would render any particulars included in the statements to be misleading or inaccurate."

E.J. Hanlon FASA CPA  
Chief Accountant

B.N. Loder B.E., Dip.T.C.P.  
F.I.E. Aust, F.C.I.T.  
Commissioner



# **FUNDS FOR THE YEAR ENDED 30 JUNE 1985**

## **FACILITIES WORK**

<b>Application of Funds</b>	<b>1984-85 \$,000</b>	<b>1983-84 \$,000</b>
<b>Construction and Maintenance of Roads</b>		
State Roads		
— Construction and rehabilitation	477,855	431,629
— Property for roadworks	44,685	33,751
— Maintenance	173,058	160,026
	<b>695,598</b>	<b>625,406</b>
Local Roads	73,959	83,331
<b>Total Construction and Maintenance</b>	<b>769,557</b>	<b>708,737</b>
<b>Operations</b>		
— Administration and research	39,394	31,673
— Purchase of property for works administration	5,470	3,634
— Toll collection costs (Note 6)	4,387	4,293
— Rental property expenses	4,385	4,664
<b>Total Operations</b>	<b>53,636</b>	<b>44,264</b>
<b>Other</b>		
— Interest and loan expenses	78,235	72,946
— Capital debt repayments	15,718	5,801
— Leveraged lease instalment (Note 21)	1,710	1,732
— Deferred payment contracts (Note 21)		
— interest and other charges	777	12
<b>Total Other</b>	<b>96,440</b>	<b>80,491</b>
<b>Net decrease in monetary assets</b> (Note 8)	<b>33,728Cr</b>	<b>3,252Cr</b>
<b>Variation in trust accounts</b>	<b>26</b>	<b>1,106Cr</b>
<b>Total Application of Funds</b>	<b>885,931</b>	<b>829,134</b>

The accounts of the Department of Main Roads for the year ended 30 June 1985 have been audited in accordance with Section 34 of the Public Finance and Audit Act, 1983.

In my opinion, the statement of receipts and payments, the statement of balances, the funds statement and the accompanying summary of loan liabilities, read in conjunction with notes 1 to 13 and note 21, comply with Section 41B of the Act and exhibit a true and fair view of the financial position at 30 June 1985 and transactions for the year then ended.

Sydney  
23 September 1985

K.J. ROBSON, FASA CPA  
Auditor-General of New South Wales



# STATEMENT OF BALANCES AS AT 30 JUNE 1985

	1984-85 \$,000	1983-84 \$,000
<b>Capital Debt</b>		
Loans provided from State loan allocation	139,156	151,878
Loans raised under semi-government program		
— stock held by outside bodies	576,782	457,069
— stock held by Department	4,764	6,109
Loans provided from reserves for loan repayments	60,600	41,600
	<b>781,302</b>	<b>656,656</b>
<b>Fixed Assets</b>		
Land and buildings (at cost and valuation) (Note 9)		
— works administration	52,901	47,431
— staff housing	15,559	14,173
— rented properties acquired for roadworks	98,190	82,652
— property, acquired for roadworks, no longer required	39,479	35,666
	<b>206,129</b>	<b>179,922</b>
Plant, equipment and motor vehicles (at cost) (Note 9)	100,801	91,883
	<b>306,930</b>	<b>271,805</b>
<b>Investments (at cost) — Reserves for Loan Repayment</b>		
Negotiable government securities (Note 7)		
— issued by other authorities	15,573	21,142
— issued by Department	4,764	6,109
Non-negotiable inscribed stock of Department	60,600	41,600
Deposits with Treasury Funds Management	7,626	6,033
	<b>88,563</b>	<b>74,884</b>
<b>Current Assets</b>		
Cash at Treasury (Note 5)		
— general purposes	7	7,792
— trust accounts	2,003	5,468
— advances for 1984-85 works		
• Commonwealth (ABRD)	—	15,454
• State (local roads)	—	3,772
Debtors	5,748	4,618
Stores (at cost)	21,726	18,419
	<b>29,484</b>	<b>55,523</b>
	<b>424,977</b>	<b>402,212</b>
<b>Less Liabilities</b>		
<b>Current</b>		
— creditors (Note 10)	8,602	9,541
— trust accounts (mainly PAYE tax)	5,442	5,468
— leave entitlements (Note 11)	61,743	56,332
	<b>75,787</b>	<b>71,341</b>
<b>Non-Current</b>		
— deferred payments contracts (Note 21)	6,595	5,371
— leveraged lease	6,567	7,180
	<b>13,162</b>	<b>12,551</b>
	<b>88,949</b>	<b>83,892</b>
	<b>336,028</b>	<b>318,320</b>
<b>Net Monetary Liability</b>	<b>445,274</b>	<b>338,336</b>



## Notes to the Financial Statements and Supplementary Information

### 1. Format of Accounts

The requirements regarding the submission of financial statements by statutory bodies are set out in Section 41B of the Public Finance and Audit (Amendment) Act, 1984.

In compliance with these requirements the Department's financial statements comprise:

- statement of receipts and payments
- statement of source and application of funds
- statement of balances.

The Treasurer has approved of the Department's financial statements being prepared using a modified accrual accounting basis where material items of expense are either brought to account in the financial statements or referred to in the notes to those accounts. They are generally in compliance with the Australian Society of Accountants' recommended standards. The accounts show historical costs unless otherwise noted.

Transactions in the Traffic Facilities Fund, as shown in the receipts and payments statement under the Traffic Facilities heading, have been excluded from the source and application of funds statement. This treatment has been adopted to conform with the Auditor-General's requirements to avoid duplication of reporting with the Traffic Authority of New South Wales.

Other general matters relating to the accounts are:

- Secured or unsecured loans or advances have not been made to any officer, employee or corporation for other than official purposes.

- No accounting provisions have been made other than amounts set aside in the reserves for loan repayments.
- There were no material assets provided free or at a nominal charge to the Department by other government departments, authorities or persons, nor was there any material expenditure by such bodies in direct support of this Department.
- Audit fees in an amount of \$150,000 were paid to the Auditor-General for services during the year.

### 2. Variation in Accounting Treatment

In preparing the receipts and payments statement for 1984-85 the method of reporting some internal contra transactions has been brought into line with the method used for the statement of source and application of funds. These variations are as follows:

- The amounts from the reserve for loan repayments used for works were shown in previous years as both a receipt and an investment. The amounts are offset in the 1984-85 accounts.
- Proceeds from the sale of property no longer required for roadworks were offset against payments for property acquisitions in statements for previous years. The amounts are shown as receipts in the 1984-85 accounts.

### 3. Statement of Receipts and Payments

The statement of receipts and payments summarises all the transactions of the Department of Main Roads for the financial year 1984-85.



The transactions of the Department are shown under five main headings:

- **County of Cumberland Main Roads Fund** — covers that area which is generally the Sydney Metropolitan Area bounded by the Hawkesbury River in the north, Bulli Pass in the south and the Blue Mountains in the west.
- **Country Fund** — covers that area of the State outside the County of Cumberland.
- **Commonwealth Fund** — used to record expenditure of Commonwealth grants for National Roads (excluding funds transferred to the Traffic Facilities Fund) and Local Roads. Commonwealth funds for works on other classified main roads are recorded under the County of Cumberland and Country Main Roads Funds.
- **Traffic Facilities** — shows receipts and payments relating to the activities of the Department on traffic facility works. These amounts are also included in the annual report of the Traffic Authority of New South Wales.
- **Sydney Harbour Bridge Accounts** — cover transactions for the maintenance of the bridge and the Cahill Expressway and Warringah Freeway approaches, loan charges and tolls. Transactions relating to traffic facility works are included under the heading 'Traffic Facilities'.

#### **4. Operating and Suspense Accounts**

Operating and suspense accounts have been established within the general receipts and payments framework to provide for accrual accounting in selected areas of the Department's operations. This provides up-to-date costing for works programs.

All transactions for the purchase of stores and materials and their issue to individual works are processed through stock suspense accounts.

Operating accounts are maintained for the Department's Central Workshop at Granville, Central Asphalt Manufacturing Plant at Granville and Traffic Signal Workshop at Rhodes. Works are charged with the costs of services rendered.

The costs of the purchase and operation of road plant and motor vehicles are processed through operating accounts and a hire charge is made to works on which the items are used. During 1984-85, purchases of plant and motor vehicles totalled \$19,796,424 of which \$13,257,646 was provided from the internal hire system and \$6,538,778 from trade-in and auction of used plant and vehicles.

The net increase or decrease in the operating and suspense accounts is shown in the receipts and payments statement under the item 'Net Transactions of Operating and Suspense Accounts'.

#### **5. Cash Balance at Treasury**

The Cash Balance as at 30 June 1985 of \$2.010 million included \$0.007 million from the Reserve for Loan Repayments. The balance of cash comprised trust funds consisting mainly of group tax P.A.Y.E. deductions and contractors' deposits. These funds were held in the County of Cumberland and Country Funds.

#### **6. Road Tolls**

Net revenue is shown in the statement of receipts and payments. Gross toll receipts (\$15.599m) and collection costs (\$4.387m) are shown in the detailed statements for the Berowra to Calga, Waterfall to Bulli Pass Toll Works and the Sydney Harbour Bridge.



An amount of \$4.221 million representing contributions from tolls to the Traffic Facilities Fund to cover charges in respect of tow truck services, driver aid and other traffic facilities is shown under the heading 'Traffic Facilities' in the statement of receipts and payments. These items are excluded from the statement of source and application of funds to avoid duplication with reporting by the Traffic Authority of New South Wales.

## 7. Investments

Investments are shown at cost in the statement of balances. The amount for negotiable government securities is \$20.337 million of which only \$13.427 million is for inscribed stock listed on the Stock Exchange. The market value of these listed securities is \$13.119 million.

## 8. Movement in Monetary Assets

The decrease in monetary assets of \$33.728 million is represented by:

	\$M
Decrease in cash	30.476(-)
Decrease in sinking fund investments	5.321(-)
Decrease in creditors	0.939(+)
Increase in debtors	1.130(+)
Net decrease in monetary assets	33.728(-)

## 9. Fixed Assets

### (i) Land and buildings

#### • Works administration

The value of property used for works administration is \$52.901 million. This amount is based on an assessment by the Department's valuers at 14 May 1984 (\$47.431 million) together with additions to properties since that date (\$5.470 million — at cost).

#### • Staff housing

Properties under this category are valued at \$15.559 million. These properties have been assessed by the Department's valuers at 14 May 1984 (\$14.173 million) together with subsequent purchases since that date (\$1.386 million — at cost).

#### • Rented properties

Other than staff housing, the Department owned 2,217 income-producing properties, which have a total book value of \$98.190 million. It is expected that assessment of the current market value of these properties will commence in 1985-86.

#### • Property acquired for roadworks, no longer required

The book value of residues being the land surplus to current requirements for roadworks is \$39.479 million. Sale of residues for the year amounted to \$6.263 million. The book value of these properties was \$5.640 million.

The valuation of residue properties has commenced and is being undertaken progressively within country areas. Because of the very large number of individual residues, the task in the valuation of each property involves considerable Departmental resources and will take some years to complete. Many of the surplus areas are small severed parcels of land without development potential and have little or no value.

### (ii) Plant, equipment and motor vehicles

All plant, equipment and motor vehicles held by the Department are shown at original historical cost values (\$100.801 million). Based on the estimated economic life of the asset the Department apportions an annual capital cost by way of charging an internal hire rate to the works.



## 10. Creditors

The amount of \$8.602 million comprises:

	\$M
Stores and materials	6.71
Payroll	1.89
Total	<u>8.60</u>

## 11. Leave Entitlements

The amount of \$61.743 million included in the statement of balances comprises:

	\$M
Accrued annual leave	13.81
Assessed long service leave	47.93
Total Leave Entitlement	<u>61.74</u>

The amounts are based on salary and wage rates applicable at 30 June 1985.

The long service leave calculation is based on entitlement for those employees who have the basic 10 years qualifying service.

## 12. Superannuation Liability

The amount calculated at 30 June 1985 as the Department's unfunded past service costs for deferred superannuation contribution (\$267 million) to the State Superannuation Fund and the New South Wales Retirement Fund (changed to Public Authorities Superannuation Scheme from 1 July 1985) is based on a formula applied to an actuarial review of the liability by the Government Actuary as at 30 June 1984. The assumptions adopted in the review were:

Growth of salaries:	10½%p.a.
Indexation increases in pensions:	10%p.a.

Funds are not set aside to meet the unfunded past service costs. Charges are met directly from revenue. As a going concern the annual cost is not materially different to the charge which would be made against works if funds were being set aside.

## 13. Outstanding Commitments

In addition to items shown in the statement of balances the following commitments exist:

	\$M
Executory contracts (work to be completed on road and bridge contracts as at 30 June 1985)	165
Orders placed for road plant and motor vehicles	3
Actuarial assessment of deferred superannuation contributions (see note 13)	267
Total	<u>435</u>

## 14. Contributions for Specified Works

The amount under this heading consists of:

	\$M
State Government Departments	2.6
Commonwealth Government Departments	1.3
Other State Road Authorities	1.5
Councils	1.8
Private Firms and Individuals	0.6
	<u>7.8</u>

An amount of \$0.9 million for traffic facilities included in the statement of receipts and payments has been excluded from the statement of source and application of funds.

## 15. Payments to Councils (excluding traffic facilities)

Payments made to local government councils during 1984-85 were as follows:

	\$M
Classified Main Roads	
— Construction	61.242
— Maintenance	<u>57.171</u>
	118.413
Local Roads	
— Roads Grants Act	52.025
— ABRD Trust Fund	12.014
— State Funds	<u>4.541</u>
	68.580
Total Payments to Councils	<u>186.993</u>



## 16. Cost of Individual Projects

The Department issues a separate publication titled 'Financial Appendices to the Annual Report of the Commissioner for Main Roads' which shows the costs incurred during the financial year for the individual works carried out by the Department and Local Government bodies.

## 17. Road Cost Index

The Department's Road Cost Index, which is used to adjust money values in a number of tables and graphs in the financial section and in the section dealing with performance indicators, is shown in the table 'Department of Main Roads Road Cost Index'.

The index has been specially developed by the Department and is widely accepted as a measure of changes in the cost of roadworks.

During the year it was reviewed and restructured to encompass an up-to-date and wider range of items and representative units to cover the Department's current operations. The review concluded that the previous Road Cost Index reasonably reflected most actual cost movements.

The index is now based upon the changes in prices of 145 samples within the broad elements of wages, materials, plant, haulage and miscellaneous charges. Each sample has been allocated a predetermined weighting which is adjusted annually in line with changes in the element in the works.

The Road Cost Index has been recompiled for the period 1980-81 to 1983-84 using 1980-81 as the base year and linked to the previous index to form a continuous series. The figures in brackets are the percentage changes calculated from the previous index.

### Department of Main Roads Road Cost Index

(Base Year — 1980-81)

Year	Index	% Increase Over Previous Year
1969-70	26.77	—
1970-71	29.15	8.9
1971-72	31.34	7.5
1972-73	34.35	9.6
1973-74	39.12	13.9
1974-75	50.15	28.2
1975-76	58.02	15.7
1976-77	65.10	12.2
1977-78	70.76	8.7
1978-79	75.29	6.4
1979-80	86.58	15.0
1980-81	100.00	15.5
1981-82	116.60	16.6 (14.3)
1982-83	137.35	17.8 (16.4)
1983-84	146.96	7.0 ( 8.3)
1984-85	152.99	4.1



## 18. Diesel Fuel Levy

The Business Franchise Licences (Petroleum Products) Act, 1982 from 1 August 1982 introduced licence fees for the sale of motor spirit and also for diesel fuel used, or capable of use, in propelling a diesel engined road vehicle.

The Act prescribes a fee of 8.4% to be paid on the wholesale value of motor spirit and 14% on the wholesale value of diesel fuel. The wholesale values for this purpose are determined by the Treasurer.

The fee for diesel fuel was originally equivalent to 5 cents per litre, was reduced to the equivalent of 3.57 cents per litre from 1 October 1982 and has remained unchanged from that date. The fee for super motor spirit was originally equivalent to 3 cents per litre and was increased to the equivalent of 3.53 cents per litre from 1 November 1983.

Revenue from fees for motor spirit and diesel fuel is paid to the Consolidated Fund at the Treasury, New South Wales. The total amount raised from diesel fuel is then appropriated in the State Budget to the Department for roads. The total amount received in 1984-85 was \$37.50 million.

## 19. Motor Vehicle Taxation

### (i) Weight Tax and Tax Levy

Motor vehicle registration weight tax and tax levy are levied under the Motor Vehicles (Taxation) Act. These charges are collected by the Department of Motor Transport when vehicles are registered. The proceeds are paid firstly to a Treasury Statutory Trust Fund titled 'Main Roads Account (Main Roads Act, 1924)' and then distributed to the Department's County of Cumberland Main Roads Fund and Country Main Roads Fund in the following proportions in accordance with the terms of the Main Roads Act, 1924.

	County of Cumberland Main Roads Fund	Country Main Roads Fund
Weight Tax	20%	80%
Tax Levy	50%	50%

This apportionment results in about 28% of these taxes being available for the County of Cumberland Area and 72% for the Country Area.

In 1984-85, receipts from motor vehicle taxation paid into Main Roads Funds totalled

### Number of Registered Motor Vehicles in NSW

Year	Number of Motor Vehicles Registered*	% Increase Over Previous Year	Index
1969-70	1,715,222	—	100.0
1970-71	1,821,185	6.2	106.2
1971-72	1,912,739	5.0	111.5
1972-73	2,009,238	5.1	117.2
1973-74	2,080,112	3.5	121.3
1974-75	2,186,187	5.1	127.5
1975-76	2,236,812	2.3	130.4
1976-77	2,296,203	2.7	133.9
1977-78	2,375,927	3.5	138.6
1978-79	2,476,544	4.2	144.4
1979-80	2,573,574	3.9	150.1
1980-81	2,676,911	4.0	156.1
1981-82	2,773,780	3.6	161.7
1982-83	2,825,441	1.9	164.8
1983-84	2,876,661	1.8	167.8
1984-85	2,970,746	3.3	173.3

\* Excluding plant, tractors, trailers and caravans



\$326.9 million compared with \$306.9 million in the previous year.

The total receipts from motor vehicle taxation have been shown in the receipts and payments statement. However, an amount of \$35 million shown under the heading 'Traffic Facilities' has been excluded from the total shown in the statement of source and application of funds.

The graph titled 'Average Receipts per Vehicle from Motor Vehicle Registration Tax' shows that the level of tax per vehicle in 1984-85 terms has fallen from \$117 in 1974-75 to \$110 in 1984-85. Increases in 1975-76 and 1979-80 were a result of a 33 1/3% increase in motor vehicle taxation rates from 1 November 1976 and a 30% increase from 21 November 1980.

The real level of receipts is now being maintained by annual adjustments of motor vehicle taxation rates to cover increases in the cost of roadworks. The formula used to determine the annual percentage adjustment is contained in the Motor Vehicle Taxation Act, 1980 and is based on four relevant labour and material price indexes published by the Australian Statistician. The cost rises deter-

mined by this formula since 1980 are as follows:

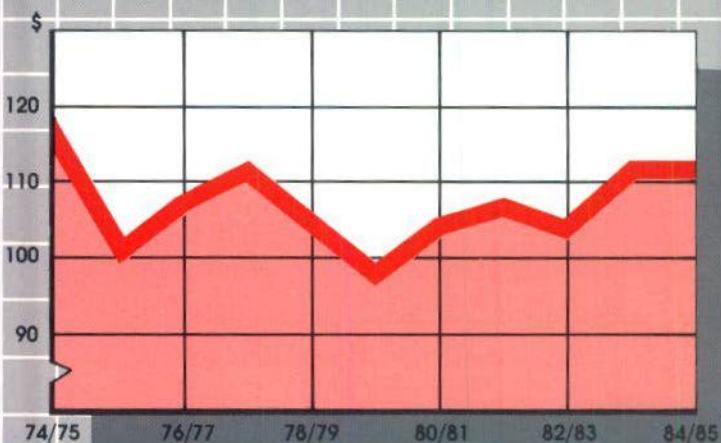
from 21.11.81	13.6%
from 1. 7.82	11.8%
from 1. 7.83	13.2%
from 1. 7.84	7.2%
from 1. 7.85	6.2%

#### (ii) Driver's Licence Fee and Vehicle Registration Fee

Driver's licence fees and vehicle registration fees were both increased from \$15 to \$20 on 1 September 1984. The revenue from both fees is paid into the Road Transport and Traffic Fund administered by the Department of Motor Transport. The revenue is mainly used to meet administration costs of the Department of Motor Transport, but allocations are also made from the Fund towards the cost of police services in supervising and controlling traffic and to the Traffic Facilities Fund.

A total amount of \$13.5 million was allocated from this source to the Traffic Facilities Fund in 1984-85 of which \$9.0 million was expended by the Department of Main Roads on traffic facility works.

**Average Receipts per Vehicle from Motor Vehicle Taxation Constant Dollar (1984-85) Terms**





## 20. Commonwealth Grants

### (i) Roads Grants Act

The Roads Grants Act, 1981 provided for the allocation from Consolidated Revenue of specific purpose grants for roads over a five year period from 1980-81 to 1984-85. Grants were provided for the construction and maintenance of national roads, construction of arterial roads and for local roads.

The classification of roads is determined by the Commonwealth Minister in consultation with the States. The legislation requires that all construction projects on National Roads be approved by the Commonwealth Minister and be carried out by contract.

In 1984-85 grants totalling \$258 million were provided under the Act for New South Wales. This was an increase of 6% over the grant of \$243 million for 1983-84.

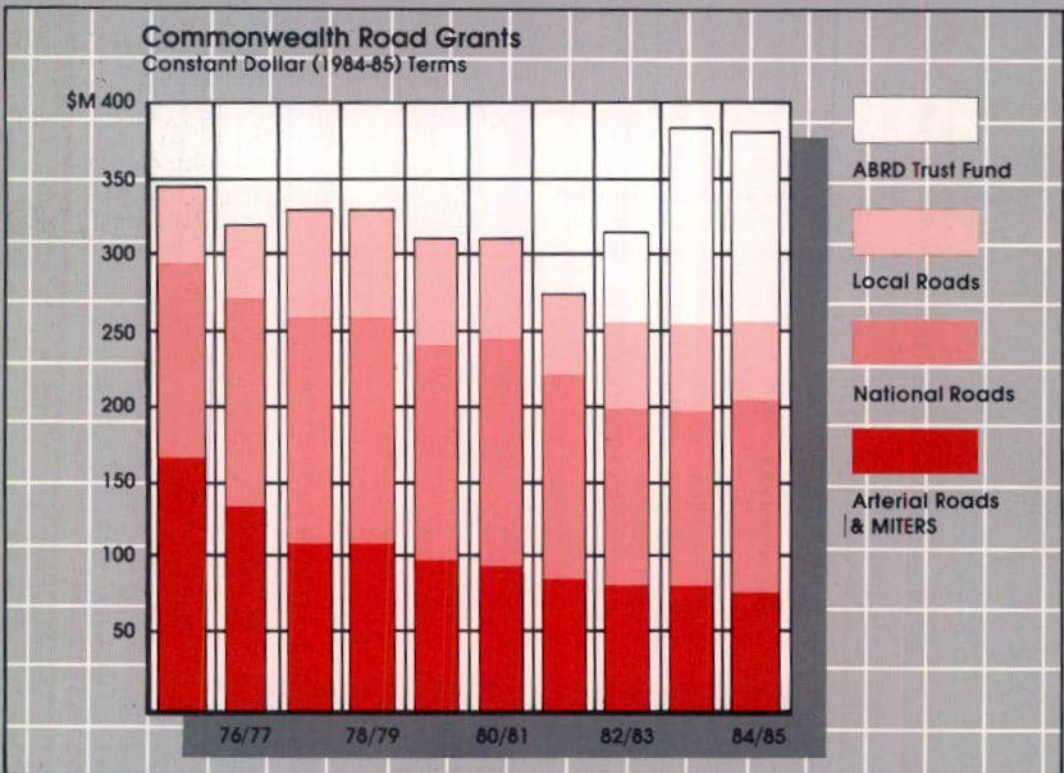
The increases provided in Commonwealth road grants since 1974-75 have not been suf-

ficient to provide for the cost rises in the road industry and for the increased demand for road improvements caused by the growth in the number of registered motor vehicles.

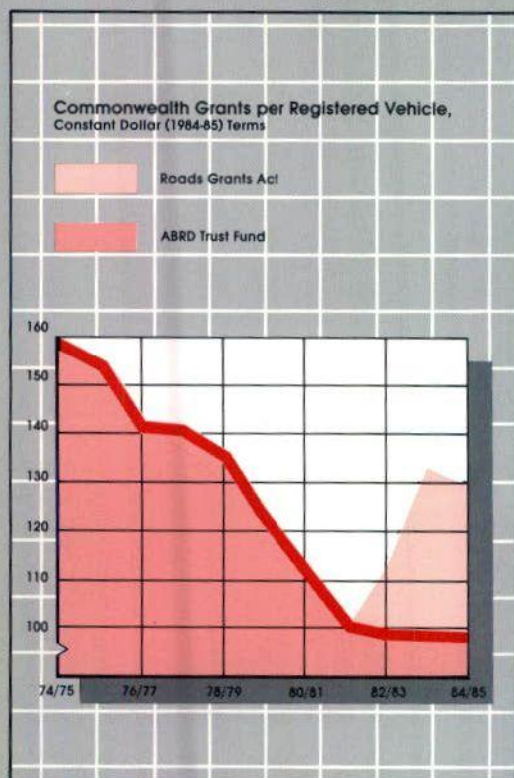
A comparison of the Commonwealth grants in constant dollar (1984-85) terms for the various road categories over the eleven year period 1974-85 is provided in the bar chart titled 'Commonwealth Road Grants'.

This chart shows that the cut back in grants in real terms has been directed mainly at the Arterial Road category where the grants have fallen in real terms from \$186 million in 1974-75 to \$78 million in 1984-85.

The graph titled 'Commonwealth Grants per Registered Vehicle' shows that the Commonwealth grants have failed to provide for the increased traffic needs. The graph shows the grants per vehicle in real terms falling from \$155 per vehicle in 1974-75 to \$87 per vehicle in 1984-85.







New legislation, the Australian Land Transport (Financial Assistance) Act, 1985 will apply from 1 July 1985. The grants to be provided will be funded from an earmarked share of existing fuel excise on motor spirit and diesel fuel. The share of fuel excise to be set aside for roads will be indexed to the Consumer Price Index and funds collected will be paid into a Trust Fund.

## (ii) Australian Bicentennial Road Development Trust Fund Act

The Australian Bicentennial Road Development (ABRD) Trust Fund Act, 1982 introduced a surcharge on the excise of motor spirit and diesel fuel to provide funds for a special program of road improvement works to be completed by 1988, to coincide with the Australian Bicentenary.

The Act provided for a 1 cent per litre surcharge to be applied from 17 August 1982, and a fixed rate of 2 cents per litre from 1 July 1983 until 31 December 1988. Provision has been made for unspent funds in one year to be carried over into future years. Surplus funds are invested and the interest is credited to the Fund.

No provision has been made under the Act for the ABRD Program to receive additional funds arising from indexation of fuel excise which is deposited wholly into the Federal Consolidated Revenue Fund.

Receipts by the Department in respect of the ABRD Program for the three years to 30 June 1985 are shown in the accompanying table titled 'ABRD Program Cash Receipts'.

## (iii) Employment Generating Programs

Funds received under the Steel Regions Assistance Program in 1984-85 amounted to \$6.7 million.

In respect of the Wage Pause Employment Program, an amount of \$0.201 million received in 1983-84 was refunded in 1984-85.

## ABRD Program Cash Receipts

	National Roads \$M	Urban Arterial Roads \$M	Rural Arterial Roads \$M	Local Roads \$M	Total \$M
1982/83	24.0	5.7	4.0	—	33.7
1983/84	64.6	34.1	24.7	22.5	145.9
1984/85	74.4	24.7	19.2	7.4	125.7
Total Receipts	163.0	64.5	47.9	29.9	305.3



## 21. Financial Accommodation

### (i) Semi-Government Loan Program

The Commissioner for Main Roads is empowered to borrow funds under Schedules 4, 6 and 7 of the Public Authorities (Financial Accommodation) Act, 1981. The Department's borrowing allocation under the Semi-Government Loan Program for 1984-85 was \$121.7 million.

Outstanding semi-government loans at 30 June 1985 totalled \$581.547 million and they mature as follows:

	\$M
1985-86	94.569
1986-87	34.866
1987-88	39.393
1988-89	53.666
1989-90	27.182
Beyond 5 years	331.871
	<u>581.547</u>

The sinking fund for repayment of these loans amounted to \$88.6 million at 30 June 1985. The increase in 1984-85 was \$13.7 million, comprising \$2.7 million from contribu-

tions and \$11 million from interest on investments. Of the total sinking fund, \$60.6 million has been invested in inscribed stock of the Department of Main Roads and applied to the construction works. This included \$19 million in 1984-85.

### (ii) Deferred Payments Contracts Scheme

The scheme was discontinued in September 1984 and the total liability of \$6.595 million at 30 June 1985 has been refinanced by the New South Wales Treasury Corporation.

### (iii) Leveraged Lease

During 1981-82, the Department entered into a leveraged lease arrangement over plant and trucks for \$7.8 million and is liable for rental and expenses totalling \$13.520 million payable in eight annual instalments which commenced 1 October 1983.

At the end of the term:

- a payment of \$1.4 million is due, being the residual value of the plant and trucks.
- the Department is to have no title to the items but does have an option of renewal for a further term of eight years at a rental to be determined.

## OTHER FINANCIAL ACCOMMODATION

### Internal Loans from Reserves for Loan Repayments

Internal loans outstanding prior to 1 July 1985	10.500	31.100	—	—	—	41.600
add — Loans 1984-85	—	19.000	—	—	—	19.000

<b>Internal Loans Outstanding at 30 June 1985</b>	<b>10.500</b>	<b>50.100</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>60.600</b>
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### Summary of Leveraged Leases as at 30 June 1985

Lease outstanding prior to 1 July 1984	—	7.180	—	—	—	7.180
less — principal repaid in 1984-85	—	0.613	—	—	—	0.613
<b>Net Liability at 30 June 1985</b>	<b>—</b>	<b>6.567</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>6.567</b>

### Summary of Deferred Payments Contracts as at 30 June 1985

Financial Accommodation Negotiated Prior to 1 July 1984	5.371	—	—	—	—	5.371
Add Financial Accommodation Negotiated 1984-85	1.224	—	—	—	—	1.224
	6.595	—	—	—	—	6.595
Less Instalment paid 1984-85	—	—	—	—	—	—
<b>Net Liability at 30 June 1985</b>	<b>6.595</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>6.595</b>



# SUMMARY OF LOAN LIABILITIES AS AT 30 JUNE 1985

	County of Cumberland Fund \$M	Country Fund \$M	Waterfall to Bulli Pass Toll Work \$M	Berowra to Calga Toll Work \$M	Sydney Harbour Bridge \$M	Total \$M
<b>A. General Loan Account (State Loans)</b>						
State loans outstanding prior to 1 July 1984	55.221	40.240	2.948	24.282	8.750	131.441
less — repayments of principal and sinking funds during 1984-85	0.854	0.739	0.044	0.288	0.130	2.055
State loans outstanding at 30 June 1985	<b>54.367</b>	<b>39.501</b>	<b>2.904</b>	<b>23.994</b>	<b>8.620</b>	<b>129.386</b>
<b>B. Repayable Treasury Advances</b>						
Advances outstanding at 30 June 1985	5.620	14.817	—	—	—	20.437
Less principal repaid in 1984-85	0.360	10.308	—	—	—	10.668
Advance outstanding at 30 June 1985	<b>5.260</b>	<b>4.509</b>	—	—	—	<b>9.769</b>
<b>C. Loans Raised by Commissioner (Semi-Government Loan Program)</b>						
Semi-Government loans outstanding prior to July 1984	147.439	283.980	20.197	4.439	7.123	463.178
add — loans 1984-85	48.736	73.000	—	—	—	121.736
	196.175	356.980	20.197	4.439	7.123	584.914
less — principal repaid in 1984-85	1.357	1.266	0.666	0.043	0.035	3.367
Semi-Government loans outstanding at 30 June 1985	194.818	355.714	19.531	4.396	7.088	581.547
less Sinking Fund:						
— inscribed stock securities	3.949	5.956	2.844	4.789	2.799	20.337
— deposits with Treasury funds management	2.770	3.048	—	—	1.809	7.627
— cash on hand	0.003	0.002	—	—	0.002	0.007
— non-negotiable inscribed stock	10.300	10.950	10.299	23.601	5.450	60.600
Sub-total Sinking Fund	17.022	19.956	13.143	28.390	10.060	88.571
Net liability at 30 June 1985 — loans raised under Semi-Government Program	<b>177.796</b>	<b>335.758</b>	<b>6.388</b>	<b>23.994Cr</b>	<b>2.972Cr</b>	<b>492.976</b>
<b>Net Loan Liability as at 30 June 1985</b>	<b>237.423</b>	<b>379.768</b>	<b>9.292</b>	—	<b>5.648</b>	<b>632.131</b>



# RECEIPTS AND PAYMENTS SUMMARY FOR ALL FUNDS 1974-75 TO

	1974-75 \$M	1975-76 \$M	1976-77 \$M	1977-78 \$M
<b>RECEIPTS</b>				
<b>State Sources</b>				
Motor vehicle registration tax	254.746	226.643	249.341	265.668
Road maintenance contribution	63.358	53.443	46.556	41.130
Motor vehicle registration fee	25.186	28.432	16.991	29.443
Diesel fuel levy	—	—	—	—
Tolls	23.367	23.388	21.496	21.591
Other	44.326	53.238	52.031	73.540
<b>Contributions</b>				
— County of Cumberland Councils	0.476	0.274	0.134	0.017
<b>Sub-Total (State Revenue)</b>	<b>411.459</b>	<b>385.418</b>	<b>386.549</b>	<b>431.389</b>
Loan funds	30.506	56.032	51.678	56.236
Deferred payments contracts	—	—	—	—
Leveraged lease finance	—	—	—	—
<b>Total — State Sources</b>	<b>441.965</b>	<b>441.450</b>	<b>438.227</b>	<b>487.625</b>
<b>Commonwealth Sources</b>				
Classified roads and research	293.459	302.549	269.848	268.396
Local roads	58.114	54.105	53.512	71.782
ABRD program	—	—	—	—
Employment generating Programs	—	—	—	—
<b>Total — Commonwealth Sources</b>	<b>351.573</b>	<b>356.654</b>	<b>323.360</b>	<b>340.178</b>
From cash balance	1.125	1.474	—	35.819
Add to cash balance	—	—	6.380	—
<b>Total Receipts</b>	<b>794.663</b>	<b>799.578</b>	<b>755.207</b>	<b>863.622</b>
<b>PAYMENTS</b>				
Construction	420.431	421.358	365.903	414.276
Maintenance	177.457	186.559	191.448	190.217
Traffic Facilities	27.614	30.890	42.568	52.813
Operating and suspense accounts	17.919	6.811	2.099Cr	29.098
General administration and research	47.583	45.949	48.526	45.196
<b>Sub-Total (Works Expenditure)</b>	<b>691.004</b>	<b>691.567</b>	<b>646.346</b>	<b>731.600</b>
Loan charges and repayments	42.034	36.509	41.850	47.400
<b>Sub-Total</b>	<b>733.038</b>	<b>728.076</b>	<b>688.196</b>	<b>779.000</b>
Local roads	61.625	71.502	67.011	84.622
<b>Total payments</b>	<b>794.663</b>	<b>799.578</b>	<b>755.207</b>	<b>863.622</b>



# 1984-85 IN CONSTANT DOLLAR (1984-85) TERMS

1978-79 \$M	1979-80 \$M	1980-81 \$M	1981-82 \$M	1982-83 \$M	1983-84 \$M	1984-85 \$M
264.558	253.526	279.061	297.120	296.031	319.505	326.937
39.782	2.161	0.036	—	—	—	—
29.556	33.799	28.309	24.108	9.358	11.067	8.979
—	—	—	—	33.543	31.561	37.535
20.403	18.036	16.702	14.386	11.694	11.460	11.213
46.011	30.970	27.838	25.130	28.715	50.594	31.752
0.002	—	—	—	—	—	—
400.312	338.492	351.946	360.744	379.341	424.187	416.416
104.445	189.113	145.532	112.056	60.859	60.576	121.736
—	—	—	—	—	5.591	1.224
—	—	—	10.234	—	—	—
504.757	527.605	497.478	483.034	440.200	490.354	539.376
264.526	247.127	236.960	220.523	200.612	198.722	202.427
72.148	67.433	64.894	60.707	55.223	54.703	55.721
—	—	—	—	37.538	151.879	125.668
—	—	—	—	0.938	7.250	6.499
336.674	314.560	301.854	281.230	294.311	412.554	390.315
6.819	11.222	28.160	—	—	—	30.450
—	—	—	5.613	17.416	1.458	—
848.250	853.387	827.492	758.651	717.095	901.450	960.141
423.578	432.814	429.818	373.460	351.902	487.039	522.239
195.787	177.057	172.083	158.321	151.123	171.152	178.572
56.973	57.804	54.125	48.599	43.541	46.926	49.455
0.055Cr	14.975	10.820	4.073	8.829Cr	7.736Cr	2.699
38.532	38.922	39.992	38.859	35.416	35.746	42.097
714.815	721.572	706.838	623.312	573.153	733.127	795.062
51.409	63.405	54.243	73.651	87.897	81.575	91.120
766.224	784.977	761.081	696.963	661.050	814.702	886.182
82.026	68.410	66.411	61.688	56.045	86.748	73.959
848.250	853.387	827.492	758.651	717.095	901.450	960.141



## SYDNEY HARBOUR BRIDGE

### STATEMENT OF RECEIPTS AND PAYMENTS FOR 1984-85

	\$ ,000	1984-85 \$ ,000	1983-84 \$ ,000
<b>RECEIPTS</b>			
Tolls	5,928		6,018
Less cost of collection	2,327		2,238
Net tolls received		3,601	3,780
Contribution by U.T.A. and S.R.A.		668	544
Rent from properties		964	794
Interest received on sinking fund investments		1,173	1,025
Transfer of motor vehicle registration tax from Main Roads Funds	[Note (a)]	3,283	1,600
<b>Total Receipts</b>		<b>9,689</b>	<b>7,743</b>
Cash balance at 1 July 1984		102	898
		<b>9,791</b>	<b>8,641</b>
<b>PAYMENTS</b>			
Maintenance and lighting		3,165	3,188
Provision of new driver aid facilities		1,407	321
Tow truck service and driver aid operations		1,873	1,837
General administration		216	240
State loan charges paid to Treasury		1,087	1,085
Interest on loans raised by Commissioner		821	812
Sinking fund and principal on loans raised by Commissioner		1,219	1,055
<b>Total Payments</b>		<b>9,788</b>	<b>8,538</b>
Cash balance at 30 June 1985		3	103
		<b>9,791</b>	<b>8,641</b>

#### Dissection of Construction and Improvement Works at Cost and their Source of Finance — Position as at 30 June 1985

	Source of Finance				Total Cost \$ ,000
	State Loans \$ ,000	Semi-Govt. Loans \$ ,000	Toll Revenue \$ ,000	Other Sources \$ ,000	
Bridge and original approaches	15,709			3,352	19,061
Removal of tram tracks and miscellaneous works			2,375		2,375
Cahill Expressway to Sir John Young Crescent	4,512		4,465		8,977
Warringah Freeway to Miller Street, Cammeray	300	9,320	16,843		26,463
Driver Aid Facilities			4,773		4,773
<b>Total</b>	<b>20,521</b>	<b>9,320</b>	<b>28,456</b>	<b>3,352</b>	<b>61,649</b>
Total loans	20,521	9,320			
Less repayments of loans to 30 June 1985	11,901	2,232			
<b>Outstanding loans as at 30 June 1985</b>	<b>8,620</b>	<b>7,088</b>			

Note (a) Moneys advanced from Main Roads have been provided on the basis that these funds are applied towards maintenance and administration charges.



# SYDNEY HARBOUR BRIDGE

## STATEMENT OF FUNDS EMPLOYED AS AT 30 JUNE 1985

	\$,000	\$,000	1984-85 \$,000	1983-84 \$,000
<b>FUNDS EMPLOYED</b>				
Loans Raised to Finance Works				
State Loans				
— Repaid from tolls	10,000			9,895
— Repaid by Commonwealth Government	1,901			1,876
— Amount outstanding	8,620	20,521		8,750
Loans Raised by Commissioner				
— Repaid from tolls	2,232			2,197
— Amount outstanding	7,088	9,320		7,123
			29,841	29,841
Works financed from Other Sources				
— Capital works financed from tolls		28,456		27,049
— Contributions by Councils and miscellaneous		3,352		3,352
			31,808	30,401
			61,649	60,242
Accumulated Funds				
— Sinking Fund for loan repayments		6,990		6,989
— Reserve for loan repayments		3,070		1,898
— Working funds		—		90
			10,060	8,977
			71,709	69,219
<b>REPRESENTED BY</b>				
Works at Cost				
— Bridge and original approaches		19,061		19,061
— Removal of tram tracks		2,375		2,375
— Cahill Expressway to Sir John Young Crescent		8,977		8,977
— Warringah Freeway to Miller Street		26,463		26,463
— Driver Aid facilities		4,773		3,366
			61,649	60,242
Securities and Cash				
— Inscribed Stock Securities		2,799		3,301
— Treasury Fund Management Deposits		1,808		123
— Non-Negotiable Inscribed Stock		5,450		5,450
— Cash at Treasury		3		103
			10,060	8,977
			71,709	69,219



# BEROWRA TO CALGA TOLL WORK

## STATEMENT OF RECEIPTS AND PAYMENTS FOR 1984-85

	\$,000	1984-85 \$,000	1983-84 \$,000
<b>RECEIPTS</b>			
Tolls	7,599		7,321
Less cost of collection	1,184		1,169
Net tolls received		6,415	6,152
Interest received on sinking fund investments		2,394	2,623
<b>TOTAL RECEIPTS</b>		<b>8,809</b>	<b>8,775</b>
Cash balance at 1 July 1984		107	92
		<b>8,916</b>	<b>8,867</b>
<b>PAYMENTS</b>			
Lighting		90	83
Provision of new driver aid facilities		368	291
Tow truck service and driver aid operations		311	—
General administration		95	100
State loan charges paid to Treasury		2,942	2,922
Interest on loans raised by Commissioner		372	545
Sinking fund and principal on loans raised by Commissioner		2,553	4,819
Transfer of Toll Receipts to Country Main Roads Fund		2,185	—
<b>TOTAL PAYMENTS</b>		<b>8,916</b>	<b>8,760</b>
Cash balance at 30 June 1985		—	107
		<b>8,916</b>	<b>8,867</b>

## STATEMENT OF FUNDS EMPLOYED AS AT 30 JUNE 1985

	\$,000	1984-85 \$,000	1983-84 \$,000
<b>FUNDS EMPLOYED</b>			
Loans Raised to Finance Works			
State Loans — Repaid from tolls	3,788		3,500
— Repaid by Commonwealth Government	1,168		1,168
— Amount outstanding	23,994		24,282
Loans raised by Commissioner — Repaid from tolls	1,604		1,560
— Amount outstanding	4,396		4,440
Treasury advance repaid from tolls	800		800
		<b>35,750</b>	<b>35,750</b>
Accumulated Funds			
— Sinking Fund for repayment of loans raised by Commissioner	4,340		4,340
— Reserve for loan repayments	24,050		21,540
		<b>28,390</b>	<b>25,880</b>
		<b>64,140</b>	<b>61,630</b>
<b>REPRESENTED BY</b>			
Works at Cost			
— Roads and bridges	35,110		35,110
— Toll office land and building	640		640
		<b>35,750</b>	<b>35,750</b>
Investments			
— Inscribed Stock Securities	4,789		7,730
— Deposits with Treasury Funds Management	—		3,600
— Non-Negotiable Inscribed Stock	23,601		14,550
		<b>28,390</b>	<b>25,880</b>
		<b>64,140</b>	<b>61,630</b>

The above receipts and payments are included in the statement shown on pages 96 and 98 under the headings 'County of Cumberland Fund' and 'Traffic Facilities'. Maintenance of Berowra to Calga Toll Work is met from National Road Grants in the Commonwealth Fund.



# WATERFALL TO BULLI PASS TOLL WORK

## STATEMENT OF RECEIPTS AND PAYMENTS FOR 1984-85

	\$,000	1984-85 \$,000	1983-84 \$,000
<b>RECEIPTS</b>			
Tolls	2,072		1,963
Less cost of collection	875		886
Net tolls received		1,197	1,077
Interest received on sinking fund investments		1,612	1,334
Transfer of motor vehicle registration tax from County of Cumberland Fund	[Note (a)]	2,532	2,817
<b>TOTAL RECEIPTS</b>		<b>5,341</b>	<b>5,228</b>
Cash balance at 1 July 1984		—	—
		<b>5,341</b>	<b>5,228</b>
<b>PAYMENTS</b>			
Maintenance and lighting		420	545
Tow truck service and driver aid operations		263	264
General administration		50	50
State loan charges paid to Treasury		361	359
Interest on loans raised by Commissioner		1,899	1,797
Sinking fund and principal on loans raised by Commissioner		2,348	2,213
<b>TOTAL PAYMENTS</b>		<b>5,341</b>	<b>5,228</b>
Cash balance at 30 June 1985		—	—
		<b>5,341</b>	<b>5,228</b>

## STATEMENT OF FUNDS EMPLOYED AS AT 30 JUNE 1985

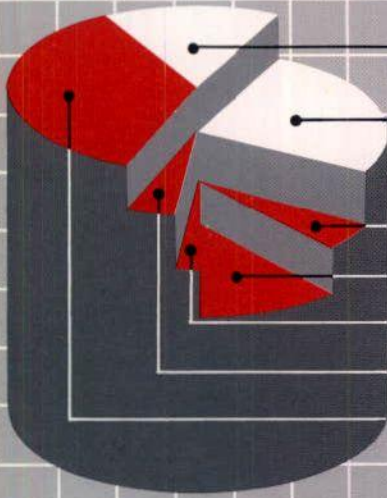
	\$,000	1984-85 \$,000	1983-84 \$,000
<b>FUNDS EMPLOYED</b>			
Loans Raised to Finance Works			
State Loans — Repaid from tolls	391		356
— Repaid by Commonwealth Government	104		95
— Amount outstanding	2,905		2,949
Loans raised by Commissioner — Repaid from tolls	8,069		7,403
— Amount outstanding	19,531		20,197
		<b>31,000</b>	<b>31,000</b>
Accumulated Funds			
— Sinking Fund for repayment of loans raised by Commissioner		13,143	11,462
		<b>44,143</b>	<b>42,462</b>
<b>REPRESENTED BY</b>			
Works at Cost			
— Roads and bridges including debt charges up to time of opening	30,338		30,338
— Toll office land and building	662		662
		<b>31,000</b>	<b>31,000</b>
Investments			
— Inscribed Stock Securities	2,844		4,137
— Non-Negotiable Inscribed Stock	10,299		7,325
		<b>13,143</b>	<b>11,462</b>
		<b>44,143</b>	<b>42,462</b>

The above receipts and payments are included in the statement shown on pages 96 and 98 under the headings 'County of Cumberland Fund' and 'Traffic Facilities'.

Note (a). The funds for the construction of the Waterfall to Bulli Pass Toll Work were provided from loans on the basis that a major portion of the loan charges would be met from general revenue in the County of Cumberland Fund.



## The Year Ahead



Funds Available	1985-86 \$M	1984-85 \$M
ABRD, Employment Programs	129	126
Roads Grants Act	253	258
<b>Total Commonwealth</b>	<b>384</b>	<b>390</b>
Diesel Fuel Levy	39	38
Loans	143	123
Tolls	12	11
Other	35	32
Motor Vehicle Taxes	357	336
<b>Total State</b>	<b>585</b>	<b>540</b>
<b>Total Funds Available</b>	<b>969</b>	<b>930</b>

Commonwealth Grants
  State Sources



<b>Expenditure</b>		
Construction	527	524
Maintenance	187	179
Council Local Roads	77	74
Loan Charges	87	91
Administration	40	42
Traffic Facilities	51	50
<b>Total Expenditure</b>	<b>969</b>	<b>960</b>

Works
  Other