



news

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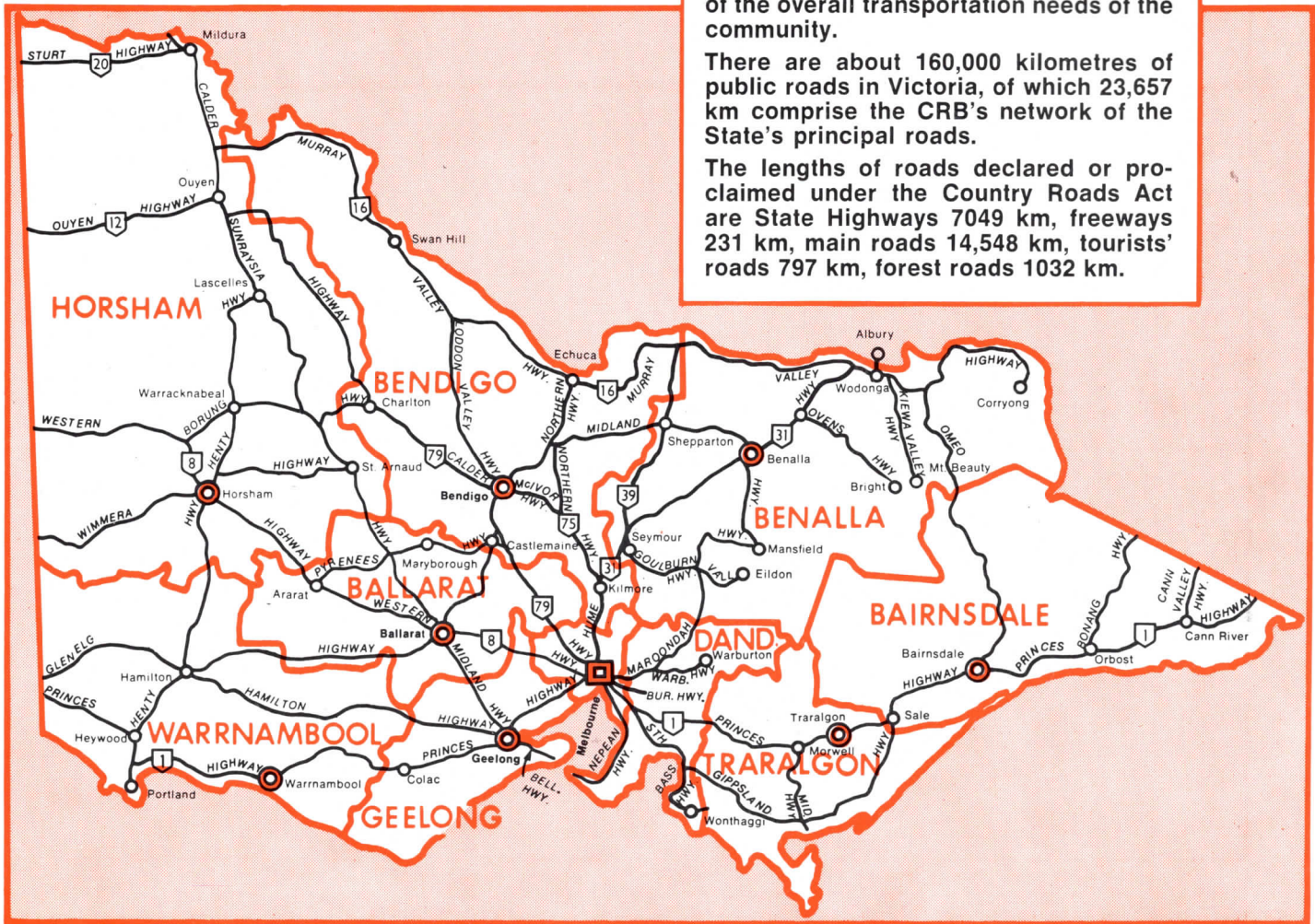
Melbourne's new
freeway: Pages 9-12



The CRB is the State Road Authority of Victoria. The CRB's aim is to create an efficient road system within the context of the overall transportation needs of the community.

There are about 160,000 kilometres of public roads in Victoria, of which 23,657 km comprise the CRB's network of the State's principal roads.

The lengths of roads declared or proclaimed under the Country Roads Act are State Highways 7049 km, freeways 231 km, main roads 14,548 km, tourists' roads 797 km, forest roads 1032 km.



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Our Cover

Aerial view of the Eastern Freeway from Kew and Ivanhoe looking towards Collingwood. The overpass in the centre of the picture is the Chandler Highway interchange. See pages 9-12.

Personnel

BOARD MEMBERS

R E V Donaldson
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Chief Bridge Engineer
P M Jeffreys
Chief Mechanical Engineer
R T Underwood
Chief Planning Engineer
H W P Hobbs
Chief Road Design Engineer
V R Moll
Chief Urban Projects Engineer
R C Handley
Chief Works Engineer

CRB litterbags to fight litter costs

The CRB has produced car litterbags in a move to reduce its annual \$600,000 litter collection costs.

The CRB Chairman, Mr R E V Donaldson, said the litterbags were part of a State-wide Summer campaign by the CRB to counter the "motorised litterbug".

"The cost of cleaning up the road reserve after the motorist is increasing every year. We would much rather be spending the money on improving the road system," Mr Donaldson said.

He said the litter campaign was also linked with the State Government's Garden State program.

The startling proportions of the litter problem are shown by these examples:

- In a recent survey, 1500 drinking cans were collected from a one-kilometre section of the Western Highway near Stawell in one month.
- In 1976 the Dunkeld Lions Club collected litter from a 19-kilometre section of the Glenelg Highway between Dunkeld and Glenthompson.

In one day the clean-up resulted in:

- 10 tons of rubbish
- 71 dozen beer and soft drink bottles
- more than 6500 cans
- four 44-gallon drums of broken glass

Motorists are urged to make an effort to help keep the roadsides clean by carrying and using a litterbag in their cars.

The plastic bags, carrying the message "We build roads . . . Please keep them clean", are available from CRB head office and all divisional offices.

About 25,000 litterbags were distributed from the CRB stand at the Royal Melbourne Show.

In September the State Government launched an anti-litter campaign with the announcement of tough new penalties under proposed amendments to the Litter Act:

- The maximum fine for dropping, throwing or

depositing litter will rise to \$500 — an increase of \$300.

- "On the spot" fines for offenders will rise from \$5 to \$50.
- "Owner-onus" will apply where litter is thrown from a vehicle which is intercepted.

All Government vehicles have been fitted with re-usable tidy bags for rubbish, together with bumper stickers bearing the slogan "Victoria the Garden State — Too Lovely to Litter".

★ **Wanted: Piggy Litter — See back cover**

CRB News wins award

CRB News has won the First Award in the Magazine Category of the 1976-77 Society of Industrial Editors' National Industrial Publications Competition.

The winning edition was the No. 35 issue published in May 1977.

The issue featured a major article on CRB land acquisition titled "Your Property . . . Your Roads", which was commended in the Feature Article category of the Society's awards.

The issue was wholly designed by the CRB's Public Relations Section, and printed by the Board's Printing Section.

The CRB also received the Society's First Award in the Annual Report category of the awards.

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For further information relating to articles in this publication, or other matters concerning the CRB, contact the Public Relations Section, telephone 860 2160 or 860 2584.

David Webb,
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Steve Parsons
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Danny Gocs

130,000 trees and shrubs for Victoria

The CRB planted almost 130,000 trees and shrubs on Victoria's major roads during financial year 1976/77 ...

... And 90,471 of them were planted in Melbourne and its surrounds.

The Melbourne total was planted within the CRB's two metropolitan divisions, whose areas included outer districts such as Melton, Healesville, Pakenham and the Mornington Peninsula.

In announcing the road landscaping figures, CRB Chairman, Mr Donaldson said the plants had been purchased from the National Resources Conservation League and nurseries around the State at a cost of \$46,813.

Mr Donaldson said the metropolitan figure for the year included plantings on major urban projects such as the Eastern Freeway (7000), Mulgrave Freeway (5700), the future Greensborough Freeway (700), and on St Kilda Road (580).

Mr Donaldson said that landscaping of road reserves had always been an integral part of the CRB's roadmaking and maintenance practice.

"We have always aimed at careful selection of native species for the particular locality involved," Mr Donaldson said.

Examples of this practice in action included the landscaping plans now being developed for the Nepean Highway widening project between Elsternwick and Moorabbin.

Mr Donaldson said that vandalism and pilferage from newly planted areas was still causing concern and hindering landscaping operations.

LANDSCAPING and roads

Landscaping of the roadsides plays an important role in providing a better travelling environment for the motorist.

The landscaping treatment of a road takes into account the needs of the road users, in terms of driver safety as well as visual appeal, and the needs of people living adjacent to the road.

The CRB is responsible for the management of the roadsides of State Highways, freeways, tourist and forest roads.

In planning road improvements — new freeways and widening and duplication of existing roads — the landscaping treatment is considered as part of the process.

WHEN A NEW ROAD IS PLANNED

During the planning and design stages of a new road, an analysis is carried out of the corridor through which the road will pass.

Among the factors that are evaluated are land form, land use, drainage and existing vegetation.

These factors are then examined together with the functional demands of the road. The design of the road will determine the landscaping treatment to be used.

A new freeway that will carry a high proportion of large trucks is designed with long gentle curves and flat grades. The landscaping treatment is planned to integrate the freeway with the countryside, and where possible vegetation that is native to the area is used.

IMPROVEMENTS TO AN EXISTING ROAD

When improvements to an existing road are needed, care is taken to preserve as much of the vegetation on the road reserve as possible.

Trees and shrubs are only removed where it is necessary to allow safe and efficient use of the road.

For major improvements, such as a major duplication of a State highway, the CRB investigates purchasing additional land for the second carriageway so that trees and shrubs already growing in the road reserve can be retained.

During earthworks, the topsoil is generally removed and stored for use in the final restoration and planting.

LANDSCAPING TO IMPROVE SAFETY TO MOTORISTS

The main safety function of landscaping the median between carriageways is to screen the headlight glare of oncoming vehicles.

Trees and shrubs planted in the median can also help to prevent motorists making illegal U-turns across the median.

Landscaping principles can be utilised to improve the safety and efficiency of roads, as in the following:

- Concentrated plantings near cross roads, especially in undulating country, can help to warn motorists of the location of an intersection. Plantings of this type must not restrict visibility at intersections.
- Linear plantings within the road reserve in undulating terrain can be used to define the route of the road ahead.
- Trees can be grouped into separate stands along a road to complement the surrounding landscape, and provide variety and contrast for the motorist.
- By planning the most suitable treatment for roadside vegetation, the monotonous effect of a line of trees at a constant distance from the road can be avoided.

- A band of trees along a road can be formed to follow a wave effect which varies in distance from the road to provide a more interesting travelling route.
- In many rural areas, the roadside vegetation provides a pleasant travelling environment through country that is dominated by large, cleared grazing areas and land under cultivation.
- Roadside rest areas and wayside stops also contribute to the motorists' travelling environment.

While trees and shrubs are planted to provide an interesting travelling environment, careful planning is necessary so that they do not constitute a hazard in themselves.

CONTROLS

Fire

The vegetation in road reserves requires regular maintenance and management — cleaning up, thinning and burning off in cool weather — to minimise the likelihood of fires being started in roadside areas as a result of cigarette butts or matches being thrown from passing vehicles.

In this way, the fire hazard risk of the reserves is reduced while the attractiveness of the roadside is retained.

During maintenance work, the CRB ensures wherever possible to avoid a conflict between the fire prevention measures and the demands of conservation.

Roads are used as fire-breaks by fire control authorities.

Noxious weeds

Noxious weeds are a problem on roadside reserves. Wind carries the weed seeds on to medians and batters, and they quickly spread to endanger the vegetation.

As every gardener knows, repeated clearing of noxious weeds is an irksome, time-consuming task and adds to the costs of maintenance of the roadside.

PRESERVING LOCAL FLORA AND FAUNA

The CRB plants indigenous trees and shrubs in roadside reserves wherever possible. In this way,

roadside reserves play an important role in helping to preserve a region's native vegetation.

For example, much of the distinctive character of the Mallee farmlands is derived from the native vegetation on the road reserves. The value of this vegetation for landscape preservation and conservation is especially high in the eastern and southern Mallee, where roadside vegetation often comprises the only remaining stands of indigenous flora in the area.

Native animals use reserves for their habitat, and birds use the trees and shrubs for nests and sources of food.

The continuation of an indigenous species in an area may also prove useful for land

studies, as it permits the original pattern of the vegetation to be pieced together.

However, there are a number of situations where the planting of indigenous species is not possible.

For example, major new roadworks may alter drainage patterns and affect water tables, or the micro-climate may be changed so that the indigenous species would not survive.

In such cases there would be a need to go further afield for planting material. Often only specially selected species will grow in the harsher environment of a roadside.

Engineering factors, such as the type of delineation and the width of the median, may result in non-indigenous plants being selected for an area.



TOP: Trees, shrubs and ground cover planted as part of the landscaping treatment on the Mulgrave Freeway, Doveton.

ABOVE: The Hume Freeway between Wallan and Broadford where landscaping has been used to integrate the freeway with the countryside.

HIGHLIGHTS OF THE 1976-77 ANNUAL REPORT

A total of \$204,312,788 was available for CRB expenditure in 1976-77.

The funds were derived from:

- State sources \$104,958,848
- Commonwealth sources \$91,191,634
- Balance brought forward from 1975-6 \$8,162,306

Expenditure amounted to \$203,519,868 resulting in a balance of \$792,920 to be carried forward into 1977-78.

Motor Registration fees

An increase in the rates of motor registration fees by about 36 per cent from 1st January, 1977, resulted in additional revenue of about \$14.5 million being paid into the Country Roads Board Fund and the Roads (Special Projects) Fund during 1976-77.

The additional revenue helped to ease the financial crisis facing the CRB.

The total gross revenue received from motor registration fees, including trailer registration fees, amounted to \$100,754,000. Of this, \$69,162,000 was paid into the Country Roads Board Fund and \$31,592,000 into the Roads (Special Projects) Fund.

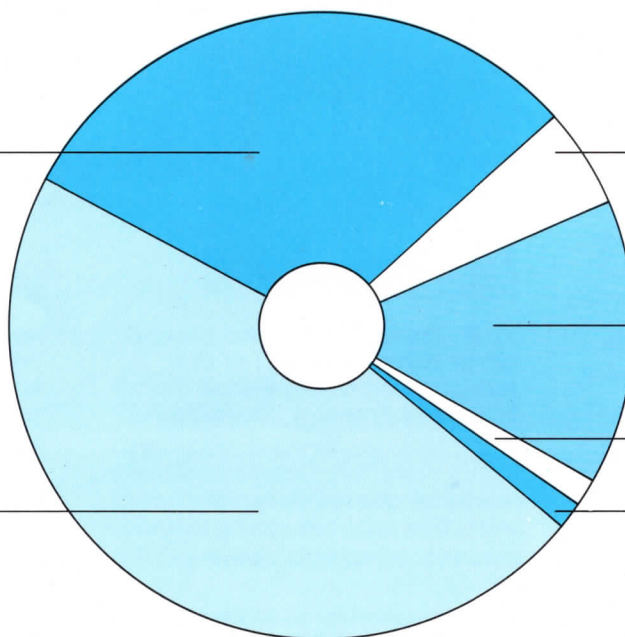
State Highways

A total of \$36,408,900 was spent on Victoria's 32 State highways. This included \$3,720,000 made available from the Roads (Special Projects) Fund.

Receipts 1976-77

Registration fees, drivers' licence fees etc.
31% \$60,801,000

Commonwealth Grants
46.49% \$91,192,000



Tonne kilometre tax
5.08% \$9,968,000

Allocation from Roads
(Special Projects) Fund
14.77% \$28,963,000

Municipal repayments
1.28% \$2,518,000

Other
1.38% \$2,709,000

Metropolitan road improvements.

The CRB adopted a tentative construction program for major works in the metropolitan area over the next decade (1977-78 to 1986-87).

The table of "Projects Under Way" lists projects that have already begun and are scheduled to be completed in the first five-year period to 1981-82.

The costs given are the estimated expenditure at 1977-78 prices required between 1977-78 and completion of the project.

The table of "Planned Projects" lists projects expected to be initiated during the first five-year period.

All cost estimates are based on 1977-78 prices.

Projects under way

Project	Estimated expenditure (\$ million)	Year of completion
Eastern Freeway, Hoddle Street to Doncaster Road	22.96	1979/80
Johnson Street Bridge and approaches	3.44	1977/78
Freeway F9	72.00	1981/82
Mulgrave Freeway, Warrigal Road to Forster Road	13.4	1980/81
South Gippsland Freeway	2.19	1977/78
Mornington Peninsula Freeway, Springvale Road to Eel Race Drain	8.43	1978/79
Tullamarine Freeway, Lancefield Road conversion	4.45	1979/80
Nepean Highway, widening between Elsternwick and Moorabbin	32.44	1981/82

National Highways

The Hume Highway/Freeway and the Western Highway/Freeway are declared national highways under the provisions of the Commonwealth National Roads Act.

A total of \$21,018,000 from Commonwealth sources and \$861,000 from State sources was spent on these two national highways.

Freeways

A total of \$55,747,000 was spent on the construction and maintenance of freeways and the purchase of land for future freeways. This included \$19,235,000 made available from the Roads (Special Projects) Fund.

Construction of new bridges

The construction of 111 new bridges estimated to cost \$16,457,000 commenced during 1976-77. 56 bridges were under the direct supervision of CRB staff and 55 bridges were under council supervision with financial assistance from the CRB.

Four new urban projects

The CRB began preliminary work on four major urban projects:

- the construction of the F9 Freeway (since renamed the West Gate Freeway) from Graham Street, Port Melbourne to Grant Street, South Melbourne;
- the widening of the Nepean Highway between Cochrane Street, Elsternwick and South Road, Moorabbin;
- the extension of the Eastern Freeway from Bulleen Road to Doncaster Road, North Balwyn;
- the widening of Bell Street, Preston between James Street and O'Keefe Street.

Bituminous surfacing.

The length of bituminous surfacing, including both sprayed work and plant mix work, amounted to 4826 km at a cost of about \$26 million.

Payments 1976-77

State highways
17.89% \$36,409,000

Other
.82% \$1,675,000

Planning and research
1.40% \$2,844,000

Capital
1.03% \$2,092,000

Management and operating
11.81% \$24,041,000

Statutory payments
1.05% \$2,133,000

Interest and sinking fund
1.44% \$2,934,000

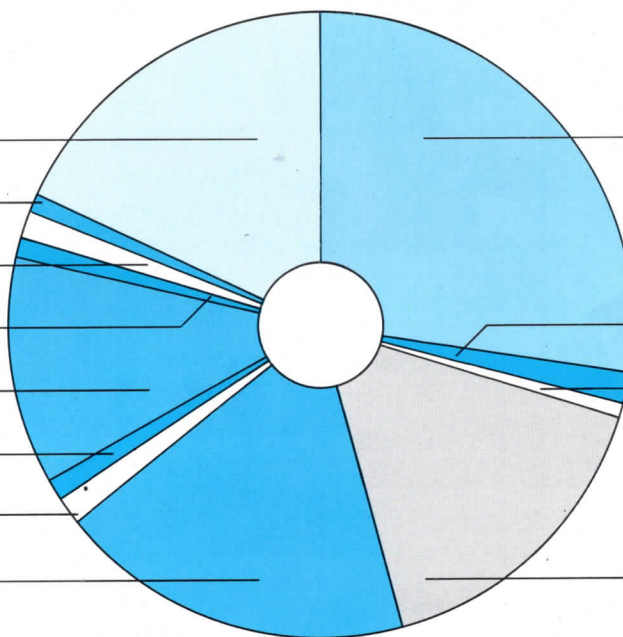
Unclassified roads
18.83% \$38,328,000

Freeways
27.39% \$55,747,000

Tourist roads
1.51% \$3,066,000

Forest roads
.73% \$1,480,000

Main roads
16.10% \$32,771,000



Planned projects

Project	Estimated cost to complete	Year of Completion
	(\$ million)	
Chandler Highway extension (Route E6), Eastern Freeway to Harp Road	12.0	1981/82
Mornington Peninsula Freeway, Moorooduc Road to Dromana (single carriageway)	9.92	1981/82
Calder Freeway, Keilor Section	19.21	1982/83
Princes Highway East, Hawthorn Road to Waverley Road	6.5	1982/83
Princes Freeway, Berwick bypass	10.6	1982/83
Maroondah Highway, Hull Road to Warburton Highway	3.54	1981/82
Greensborough Freeway — F5	24.7	1983/84

Land purchase.

Under the provisions of the Country Roads Act, the CRB is required to make full compensation at current market values for any property acquired and all damages sustained.

During the year the CRB paid compensation and costs amounting to \$20,970,000 to 671 owners of land.

Personnel

The CRB employed a total of 5028 people as at 30th June, 1977.

Technological staff (professional) — 609; Technical staff — 509; Administrative staff — 738; Field and depot supervisory staff — 243; Clerks of works — 86; Construction and maintenance personnel — 2224; Workshop and depot personnel — 619.

WORLD ROAD NEWS

All major public transit systems in typical large cities throughout the world were operating at a deficit, according to the International Road Federation. The IRF says costs were being subsidised from local, regional, or national tax funds. The size of these deficits was usually much greater than anticipated, and cost-benefit projections for new systems were no longer realistic soon after the system went into service.

Private vehicles are used by 86 per cent of Americans to travel to and from work, says a recent report of the Motor Vehicle Manufacturers Association. Twelve per cent use public transport and the remaining two per cent use bicycles and motorcycles, or walk.

Passenger traffic on Bulgaria's road system will increase by 25 to 30 per cent by 1980, Bulgarian representatives told the Economic and Social Council of the United Nations recently. To meet this demand, existing trunk motorways would be improved and their capacity increased. New motorways would be built. Measures were also being taken to increase road safety by improving horizontal and vertical road signs and markings, and by limiting maximum travelling speeds. Roads will play a major part in the country's transport network, carrying an estimated 65 per cent of all Bulgaria's freight by 1980.

The opening of the motorway bypass in Exeter, England, in May represented the final link in the longest continuous stretch of motorway in Britain, running from Exeter to Carlisle, near the Scottish border, a distance of 570 kilometres. Britain now has 2342 kilometres of motorway and another 204 kilometres under construction.

Turkey is gearing up for a \$14 billion motorway program incorporating 500 kilometres of modern four-lane divided highways. They will stretch from Edirne on the Bulgarian border, across the Bosphorus, linking Europe with Asia, and extend to Turkey's eastern borders with Iran and Iraq. Development of these motorways is being co-ordinated with the proposed Trans-European Motorway.

Help is on the way for drowsy drivers, especially if they are short-sighted. An English inventor has designed spectacles incorporating a battery-operated buzzer that sounds in your ear if your eyes close for longer than a normal blink. *Could also be useful at business meetings and for watching summer reruns on television...*

● From 'World Highways', monthly publication of the International Road Federation.

Two new bypasses planned...

Two major bypasses are planned for north-eastern and western Victoria.

The CRB has developed preliminary plans for the Hume Freeway bypass of Euroa, 150 km north-east of Melbourne, and the Western Freeway bypass of Ballarat, 115 km west of Melbourne.

EUROA

The CRB has investigated alternative bypass routes north and south of Euroa, and favours adoption of the 11.7 km southern bypass route.

This route, estimated to cost \$19.2 million, is 0.4 km longer than the northern route, but the northern route would cost \$3.6 million more due to the need for additional bridging.

During the investigations, careful consideration was given to the impact each route would have on the township and the environment.

Both routes investigated had minimal overall impact on the existing environment, but there would be some local impact with the southern route in the vicinity of the crossing of Seven Creeks.

However, extensive landscaping will minimise the effects of either

route on the environment and also present an attractive "shop window" for Euroa.

Details of the alternative routes have been forwarded to the Euroa Shire Council, and comments from the council will be considered before final adoption of the route.

Construction of the freeway is expected to begin in the early 1980's, and initially provide two lanes for traffic in each direction.

BALLARAT

The CRB has developed preliminary plans for a 14.5 km Western Freeway bypass of Ballarat.

The bypass route will run to the north of Ballarat from Woodman's Hill east of Ballarat to the Sunraysia Highway.

The proposals at this stage are preliminary and the bypass is a long-term project.

Detailed design has not yet been started and no cost estimate is available.

The CRB's aim is to define the route so that it can be incorporated in planning for the Ballarat region.

Comment and agreement from the local councils and authorities is being sought prior to seeking a Planning Scheme Amendment.

CRB AT WORLD CONFERENCE

Limited budgets and changing community values had altered the long term planning strategies for large metropolitan cities, the CRB Chief Planning Engineer, Mr R T Underwood, told the 8th International Road Federation World Meeting in Tokyo, Japan, in October.

The CRB Chairman, Mr R E V Donaldson, and Mr Underwood were among delegates from more than 90 countries attending the conference.

Mr. Underwood presented a paper titled "Some Aspects of the Planning of Urban Roads".

He said that until recently, long term

urban road planning had usually shown the need for a fairly extensive system of new major roads, often to freeway standard, to cater for the predicted future demand.

"Now, due largely to limited budgets and to changing community values, this type of long term solution is generally not acceptable," he said.

Mr Underwood said it would be necessary to adapt or modify past road planning processes to develop less extensive programmes more in line with likely budgets. These programmes should be designed to maximise the operation and efficiency of the existing arterial road network, and to protect the local environment.



THE EASTERN FREEWAY

Victoria's motorists will soon have a major new freeway . . . the Eastern Freeway between Collingwood and Bulleen.

It will provide a safe and interruption-free journey for an expected 70,000 vehicles a day.

The freeway, recommended by the Metropolitan Transportation Committee in 1969, took almost seven years to build.

The freeway was started by the Melbourne and Metropolitan Board of Works in 1971. In July, 1974, the CRB took over the work as part of the transfer of metropolitan roading responsibilities from the MMBW to the CRB.

The project involved millions of tonnes of earthworks, the construction of 16 bridges and

the asphaltting of 9 km of road pavement.

The estimated total cost is \$87 million.

The Eastern Freeway carries four lanes of traffic in each direction, with five lanes in each direction between Hoddle Street, Collingwood and the Chandler Highway, Kew.

The freeway was designed to provide an aesthetic travelling environment for the motorist.

It follows the line of the Yarra River Valley, bordering the Yarra Bend Park and three golf courses.

Extensive landscaping was carried out on the freeway reserve. During the past seven years trees, shrubs and ground cover were planted progressively as earthworks were

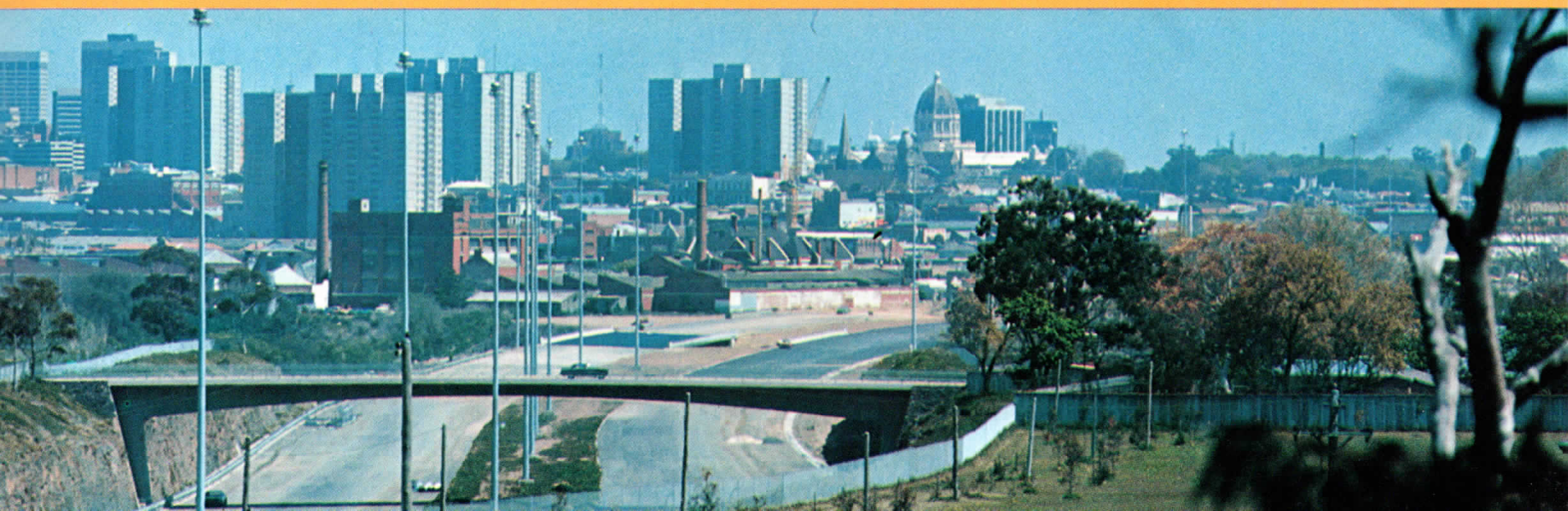
completed, and much of the vegetation is now well established.

The new freeway provides significant benefits for motorists, and adds vital additional road capacity in the area.

Residential streets, as well as existing arterial roads, in Collingwood, Kew and Balwyn will benefit as much of the through traffic will use the Eastern Freeway.

This will result in greater freedom of movement for local traffic, pedestrians and shoppers; reduced hazards and accidents; and improvements to the local residential environment.

This colour feature has been prepared to mark the opening of this important new road facility for Melbourne.





ABOVE: *The freeway lights up . . . high pressure sodium lamps provide highly directional, even lighting.*

LEFT: *Construction of the Columba Street Overpass. (Pictured in 1976).*

BELOW: *Kew Golf Course adjacent to the freeway.*



Melbourne's new freeway takes shape



★ November, 1977 — the Eastern Freeway is almost ready for traffic. In the background are the northern inner suburbs.



★ Burke Road Overpass looking south towards Kew.

★ Belford Road Overpass, Kew, pictured through a wide-angle lens.



THE EASTERN FREEWAY

Summary of main features

Traffic lanes

The freeway generally consists of four lanes in each direction (8-lane capacity) with five lanes in each direction (10-lane capacity) between Hoddle Street and the Chandler Highway.

Lane composition

The composition of the freeway carriageway — the pavement — is:

Asphalt	15 cm
Wetmix crushed rock	25 cm
Imported rock	8 cm

The total pavement depth is 48 cm. For the entrance and exit ramps, the depth of asphalt is reduced to 10 cm.

Lighting

Number of light masts: 116.

Type: High pressure sodium lamps each of 400 watts (four per mast).

Height: Various heights from 18 metres to 50 metres.

Distance between poles: 120 metres.

Benefit: Highly directional, light spread restricted to freeway carriageways. Even lighting for drivers.

Comparison to conventional lighting: 116 masts compared with 1200 conventional masts.

Cost: \$1 million.

Landscaping

About 10,000 trees and shrubs, and almost 50,000 ground cover plants, have been planted along the route to date, and by the time the landscaping and vegetation program is completed more than 250,000 plants — mainly ground cover — will have been planted.

The landscaping and vegetation program extends along the freeway, Yarra Bend Park and Glass Creek Reserve.

Excavation work

About 2.5 million cubic metres of material was excavated during construction of the freeway.

More than 1.5 million cubic metres of fill material was "imported" on to the project.



● The National Park overpass on the Yarra Bend Park Road.

A certificate of merit was awarded for the bridge by the Concrete Institute of Australia in its 1977 Excellence in Concrete Awards.

The Institute made the award — one of

Noise barriers

Four noise barriers have been constructed on the freeway:

- **Kellett Grove:** 350 metres long and 4 metres high, comprising a 2 metre high landscaped earthmound topped by a 2 metre timber acoustic wall.
- **Kilby Road:** 300 metres long, comprising a landscaped earthmound up to 7 metres high.
- **Fairway Drive:** 470 metres long, comprising landscaped earthmound up to 4 metres high.
- **Princess Street:** 90 metres long and about 3 metres high, comprising a landscaped earthmound and rock wall topped with a timber acoustic wall.

Bridges

six merit certificates from 40 entries of buildings and structures — for the "excellent way in which the concrete was used in this project".

The bridge was designed by the consulting firm, Macdonald Wagner and Priddle Pty Ltd for the Planning and Highways branch of the MMBW. It was constructed by Central Constructions Pty Ltd, which has become part of Leighton Contractors Pty Ltd, and was completed in 1975.

Bridge	Length in metres	Width between kerbs in metres	Type
Merri Creek Bridges	66	24	Twin bridges each 2 span
Boulevard Overpass	96	12	Single span
Chandler Highway Overpass	170	20	5 span
Chandler Highway Ramp	60	20	3 span
Bulleen Road Overpass	91	20	2 span
Hoddle Street Overpass	84	32	3 span
Clifton Hill Railway Overpass	148	13	4 span
National Park Road Overpass	78	7	Single span
Belford Road Overpass	96	9	3 span
Columba Street Overpass	115	5	2 span
Burke Road Overpass Main Bridge	321	18	9 span
Burke Road Overpass Ramp	75	8	2 span
Willsmere Road Underpass	96	10	
Yarra River Bridges	140	25	Twin 5 span
Pedestrian overpass			
Trenerry Crescent	218	2.1	8 spans plus ramps



Yarra River diversion

During construction of the freeway, the Yarra River was diverted near its junction with the Merri Creek to run parallel to the freeway. The diversion is about one kilometre long adjacent to the Latrobe Golf Course. In this area the freeway lanes have been constructed over the old river bed.

★ **Dights Falls, a scenic picnic spot near the Eastern Freeway.**

RESEARCH

Reflecting on road safety improvements...

Work was recently completed on a \$170,000 program of installing reflective road markers on nine major Victorian highways.

The locations for the markers were selected on the basis of the frequency of accidents at night.

Markers were placed at 24-metre intervals in the centre of the highway carriageway in addition to the painted white dividing line. This provides for safer driving conditions for motorists on rural highways.

The CRB has installed markers on more than 1100 kilometres of State highways:

- the Hume Highway between Melbourne and Wodonga
- the Calder Highway between Melbourne and Bendigo
- the Western Highway between Melbourne and Great Western
- the Princes Highway East between Melbourne and Sale
- the Princes Highway West between Melbourne and Stoneyford
- the Nepean Highway between Frankston and Portsea
- the Burwood Highway between Burwood and Ferntree Gully
- the Goulburn Valley Highway between Eildon and Shepparton
- the South Gippsland Highway between Dandenong and Foster

The CRB has already received favourable reaction to the markers from truck drivers and motorists who travel regularly on the State's major highways.

The installation of the markers was mechanised to speed up the laying process.

A Meter Mix Adhesive Dispenser machine was used to lay up to 900 markers a day. It also reduced wastage due to imperfect laying.

This machine used fast-setting epoxy adhesives to enable the laying process to continue in cold weather and under reasonably heavy traffic with minimal disturbance to the markers during setting.

Research to improve roadside delineators

In another development to improve road safety the CRB is currently carrying out research to improve roadside delineators.

Delineators are reflective markers placed on roadside guideposts. They are an important road safety device which can help to reduce accidents at night by making the boundaries of the road more easily identifiable.

Delineators in various shapes and colours are available on the

market, but the CRB believes an optimum delineator needs to be developed for the best long term benefit to motorists.

Research is now being carried out to determine the optimum delineator for night-time safety — the best colour, size, brightness and position for differing weather and glare conditions.

From CRB tests so far, the most effective marker appears to be a high intensity corner-cube delineator. This type of delineator assisted in reducing night-time accidents on a stretch of the Calder Highway between Gisborne and Woodend.

Test delineators were installed in July, 1972. Data of accidents that

BANKSIA - BELL STREETS STUDY

The CRB is currently carrying out a study of environmental effects of a road link between Banksia Street and Bell Street, Heidelberg.

The CRB is looking at several alternative proposals.

The preliminary proposal was for a direct link from Banksia Street — Lower Heidelberg Road to Bell Street to remove through traffic from the Burgundy Street shopping centre and enable traffic to avoid the steep hill in Burgundy Street.

The environmental study involves discussions with residents and community groups, and investigations into traffic conditions, noise and landscaping in preparation for an Environmental Effects Statement.

CRB Chairman, Mr R E V Donaldson said it was important to evaluate the effects on the community and the environment. He said there was an increasing traffic problem in the area.

"About 16,000 vehicles move through the Burgundy Street shopping centre and past the front of the Austin Hospital each day," he said.

"In addition, heavy transports travel along Bell Street and Burgundy Street towards Banksia Street."

occurred for three years before the delineators were installed was compared with statistics for the same period after their installation.

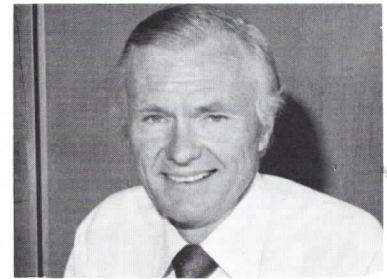
It was found that 19 fatal and personal injury accidents occurred in the "before" period and six in the "after" period.

Although these statistics may have been influenced by other factors, the CRB researchers believe that the high intensity corner cube delineators were an important factor in reducing the accident rate.

They felt that delineators also reduced the number of "run off the road" accidents that occurred on the highway.

The road needs of Melbourne

★ *Highlights of a speech by CRB Assistant Divisional Engineer, Metropolitan, David James (right) to the Urban Land Institute of Australia forum on transportation held in October.*



David James

As car travel increased in popularity over the years the pattern of our road traffic changed . . . the traditional system of radial access between outlying areas and the central city had worked admirably when road capacities were adequate and the primary need was to commute goods and people between the city, suburbs and rural areas.

Gradually the volume of cross town traffic increased. Now it has become so predominant that our traditional radial road pattern is not able to fulfil our principal requirements.

The radial routes are still popular because they are relatively few in number. But congestion becomes painfully apparent as peak hour traffic is squeezed around the relatively small hub of the Central Business District.

The average motorist tends to regard this as the major traffic problem, since he finds it more difficult to appreciate the vastly greater traffic volumes carried around the city.

Scarcely 12 per cent of the total traffic is destined for the CBD. The remainder has origins and destinations away from the city centre.

Trend away from the city

The proportion of 12 per cent to 88 per cent is based on traffic surveys, and it is the CRB's responsibility to provide adequate roads in accordance with these priorities set for us by the community. This trend away from city commuting is continuing to increase and it is predicted that within seven or eight years less than 10 per cent

of all traffic will travel to and from the CBD.

In addition, the total amount of all traffic is increasing steadily at a rate which varies quite sharply in certain areas but which overall is about an extra five per cent per annum — or half as much again in 10 years.

Most individual journeys to and from the CBD are made by public transport — 66 per cent over the whole day and 83 per cent in peak hours. But cross town suburban journeys for both goods and vehicles cannot be easily made by public transport and are more effectively and cheaply completed by self-drive vehicles.

The CRB would be among the first to agree that Melbourne needs an improved and better balanced transport system, which will carry commuters more

THE EASTERN FREEWAY

The full text of the Transport Minister's statement of 14th September, 1977 on the Eastern Freeway

Melbourne's \$87 million Eastern Freeway between Collingwood and Bulleen would open before the end of the year, the Minister of Transport, Mr Rafferty, said.

And he announced that the Government was preparing an overall transport plan for the whole State.

Mr Rafferty said the Government had made these decisions on the Eastern (F19) Freeway:

- The freeway would be connected to Alexandra Parade (Eastern Highway) and the necessary work would be started immediately between Hoddle Street and Gold Street. The plantation strip on the west side of Gold Street would not be affected.
- The Government wanted more land to be provided for open

space and recreation along the route. It was now negotiating with the Gas and Fuel Corporation for land on the gasometer site on the northern side of Alexandra Parade (Eastern Highway) between Smith Street and George Street.

- The Government had now decided that the F2 freeway would not be extended south of Bell Street, and would end there. Bell Street was now being widened. Steps were being taken to delete the main road reservation in the Merri Creek Valley south of Bell Street. This would release for disposal a number of properties originally bought by the CRB.

Mr Rafferty said the Government had made its decision on the

freeway after careful and thorough consideration of a great number of submissions put forward by people and organisations.

He said the advantages to be gained from the freeway must flow to the whole community in improved traffic flows, greater economy and safety.

He said residents along the route would benefit particularly because the freeway would take a large volume of traffic from their local streets.

Mr Rafferty said the diversion of traffic from Johnston Street and Queens Parade to Alexandra Parade (Eastern Highway) would provide the most satisfactory solution to traffic problems in the area.

"It is obvious that Johnston Street and Queens Parade are

speedily, reduce the cost of shifting goods and minimise pollution. In the metropolitan area more than 90 per cent of all our goods are moved by road vehicle.

Community requirements

In meeting the requirements of the general community the CRB is mindful of the need to protect neighbourhoods adjacent to new or widened roads. The CRB employs landscape architects, sociologists, horticulturists, noise experts and other professional staff well versed in environmental issues . . .

With the great demands set upon Government budgets, the equally strong demands set by road users will always outstrip the improvements that can be achieved with the available limited finance. Although we have a sound basic road system throughout the State, the cost of major road building in the metropolitan area is so great that we have not achieved an adequate road pattern around Melbourne to meet the enormously diverse traffic flows, and we probably never will. For other reasons perhaps we should not do so anyway.

Many people do not always realise that road building in an urban area is not merely constructing the road pavement as one would do in a rural area. In fact, the cost of actual road and bridge works usually forms only a small proportion of the total cost. For example, in St Kilda Junction with its complicated structures the \$11 million total cost was made up by one-third property acquisition, one-third service alterations and one-third road and bridge works.

Independence and mobility

Our community enjoys the freedom of unrestricted mobility, the wonderful independence and convenience of the private motor car. It is hard to imagine any reduction in traffic volumes in spite of issues over energy conservation and what people ought to be doing as against what they want to do. Perhaps we can raise car occupancy from under 1½ persons per car to two or even three people per car?

With the thought in mind that we will always be well behind the demands set for us by traffic volumes and community requirements, our primary

objectives in the metropolitan area will be to:

- Maximise the capacity of existing arterial roads with a range of aids which will include traffic signals, improved intersection treatments, safer road surfaces, widening, straightening and better sign posting.
- Maximise the use of existing freeways by linking disconnected sections and extending some others where demands are particularly acute.
- Continue to assist municipal councils with finance and technical expertise on many other roads, not merely the major highways.
- Plan for the future in conjunction with the Planning Authority by protecting and retaining road reservations in the Planning Scheme for Melbourne.

"Speaking Of . . ." is a regular feature of CRB News, where reprinted or discussion articles are published on matters relating to roads and transport in general. They do not necessarily represent the views of the CRB but are published as a matter of interest and discussion.

very important to the local community," he said.

Mr Rafferty said it was planned to establish high standard bus services along the Eastern Freeway, linking Doncaster and East Doncaster with the city.

"These services will operate until the Eastern Railway is built in the centre of the freeway."

Mr Rafferty said immediately the freeway was opened, traffic use and the effects of surrounding street systems would be monitored and studied.

"Where necessary, traffic management techniques would be applied to protect local streets from use by through traffic. We will ask councils and residents to co-operate."

He added that the Government was committed to extend the freeway from Bulleen Road to Doncaster Road.

SWAN HILL'S HIGHWAY SHOPPING PARK

The CRB has completed a \$780,000 project incorporating the "Shopping Park" concept in the reconstruction of the Murray Valley Highway in Swan Hill.

The project involved remodelling one kilometre of the highway from south of Rutherford Street to Pye Street.

The "Shopping Park" has already attracted considerable interest from local shoppers, tourists and motorists.

Traffic flow has been improved with two free-flowing traffic lanes, and right turn lanes have

been constructed at each intersection.

Manoeuvring lanes have been included so that vehicles can move in and out of angle parking spaces without affecting through traffic.

For pedestrian safety in the shopping park, controlled pedestrian crossings have been installed and lower vehicle speeds have resulted from the new road alignment.

Swan Hill City Council has planted claret ash trees in the median and in the footpath area, at intersections and mid-block locations as part of an extensive beautification program.

It is the first time in almost 50 years that Swan Hill has had trees in the main street.

Although the beautification program has not yet been completed, the shopping park has created considerable interest from tourists and residents.

Towards better roads

• **TOWARDS BETTER ROADS** details progress on improvements by the CRB to the major road network of the State.

The cost estimates used are current as at December, 1977.

Major works currently under construction by the CRB are summarised below.

Bellarine Highway

Reconstruction of Sydney Parade (the Bellarine Highway) between Swanston Street and Sydney Avenue in Geelong is expected to begin in December, 1977.

Cost estimate — \$110,000.

Duplication of the highway at Wallington is almost completed.

Cost estimate — \$790,000.

Completion expected — Christmas, 1977.

Calder Freeway

• Keilor

Work on diverting the Maribyrnong River upstream of the Calder Highway was scheduled to start in December, 1977 as part of the first section of the 5 km freeway bypass of Keilor. The total project is from Erebus Street to the Keilor-Melton Road.

Cost estimate (total project) — \$16.5 million.

Completion expected — 1983.

Calder Highway

Work has commenced at the intersection of the Calder Highway and St Albans Road in Keilor. This work, combined with the freeway bypass of Keilor, will improve traffic flow in the area.

Cost estimate — \$250,000.

Completion expected — February, 1978.

Camp Road

This road over rail project in Camp Road, Broadmeadows, is well under way and the new overpass will be partially opened to traffic in December, 1977.

Cost estimate — \$4.5 million.

Completion expected — 1978.

Fisher Parade Bridge, Footscray

Work is continuing on the construction of a replacement bridge and new approaches over the Maribyrnong River at Fisher Parade, Footscray.

Cost estimate — \$1.2 million.

Completion expected — late 1978.

Glenelg Highway

Reconstruction of 8.3 km of the highway between Casterton and the South Australian border is almost completed.

Cost estimate — \$307,000.

Completion expected — Christmas, 1977.

Greensborough Freeway

Construction of road over rail overpasses is continuing at Watsonia Road and Grimshaw Street, Watsonia, to eliminate these railway level crossings.

Cost estimate — \$5.5 million.

Completion expected — early 1978.

Great Ocean Road

Reconstruction of 7 km of the Great Ocean Road west of Apollo Bay is under way.

Cost estimate — \$1 million.

Completion expected — mid 1978.

Henty Highway

Construction of a 2.1 km deviation of the highway at Portland North has started.

Cost estimate — \$542,000.

Completion expected — late 1978.

Hume Highway

Work is under way on four sections of freeway north of Seymour.

• Bypasses of Seymour and Avenel

Work is continuing over a 20 km section of the 27 km project from the Goulburn Valley Highway, north of Seymour, to north of Avenel, and work on freeway bridges across Hughes Creek at Avenel has begun.

Cost estimate (total project) — \$35 million.

Completion expected — 1983.

• Avenel to Tubbs Hill

Duplication work on the 12 km section is continuing.

Cost estimate — \$7.5 million.

Completion expected — mid 1979.

• Bypass of Violet Town

Earthworks and the construction of bridges over Honeysuckle Creek are under way. At the southern end of the 6.1 km project, highway traffic has been diverted on to a side track.

Cost estimate — \$6.5 million.

Completion expected — late 1979.

• Violet Town to Baddaginnie

Two-way traffic has been diverted on to the new carriage-way by temporary connections at each end of the 10.4 km project. The original carriageway of the highway is being upgraded to eliminate flood-prone areas and is expected to be opened for one-way (Melbourne-bound) traffic in April, 1978.

Cost estimate — \$4.3 million.

Completion expected — April, 1978.

Johnson Street Bridge

Work is well advanced on the construction of the twin bridges across the Yarra River, linking Johnson Street, South Melbourne and Footscray Road, Melbourne.

The deck of the eastern bridge is almost complete and beams are now being placed on the western bridge.

Cost estimate — \$32 million.

Completion expected — mid 1978.

Mornington Peninsula Freeway

Earthworks are progressing on this 6.6 km freeway from Eel Race Drain, Seaford to Springvale Road, Keysborough. Work has begun on the construction of bridges over the Patterson River and the Thompson Road interchange bridge.

Cost estimate — \$11.2 million.

Completion expected — 1980.

Mulgrave Freeway

Current work on the Mulgrave Freeway between Forster Road, Mt Waverley and Warrigal Road, Oakleigh includes construction of a side track at Huntingdale Road and the relocation of services.

Cost estimate — \$12 million.

Completion expected — to Huntingdale Road, 1979; to Warrigal Road, 1980.

Nepean Highway

Demolition of properties on the first 2.4 km section of this widening project between Cochrane Street, Elsternwick and Hampton Street, Brighton is almost completed. Demolition work on the second section has already commenced. The total widening project is 6 km long from Cochrane Street to South Road, Moorabbin.

Cost estimate (total project) — \$32 million.

Completion expected — 1983.

Omeo Highway

Reconstruction of the Mossface Road intersection, replacement of Dirty Hollow Creek Bridge and reconstruction of 1.9 km of highway has begun.

Cost estimate — \$410,000.

Completion expected — late 1978.

Princes Freeway

• *Bypasses of Drouin and Warragul*

Work has begun on the construction of the Princes Freeway between Robin Hood and east of Warragul.

This length of the Princes Freeway will relieve the existing traffic congestion in the towns of Drouin and Warragul.

Current work involves the duplication of 2 km of the existing Princes Highway East between Drouin and Warragul to provide for the interchange of traffic between the existing highway and the future freeway.

Cost estimate — \$31 million.

Completion expected — Drouin, 1981; Warragul, 1984.

• *Moe Section*

Work has begun on the construction of a second carriageway to provide an

additional 3.4 km of divided roadway.

Cost estimate — \$2 million.

Completion expected — late 1978.

• *Orbost Bypass*

Work is nearing completion on the 8.4 km freeway bypass of Orbost. Traffic is now using the whole section. Minor works and landscaping remain to be completed.

Cost estimate — \$9.7 million.

Princes Highway East

• *Wingan River*

Reconstruction of 1.5 km of highway east of Wingan River has begun.

Cost estimate — \$275,000.

Completion expected — March, 1978.

• *Cann River*

Reconstruction of 3.3 km of highway east of Reed Bed Creek near Cann River has begun.

Cost estimate — \$480,000.

Completion expected — April, 1978.

• *Morwell to Traralgon*

Duplication of 12 km of highway is continuing. 9.5 km has been opened to traffic, with 2.5 km of work remaining to be completed.

Cost estimate — \$4 million.

Completion expected — mid 1978.

• *Warragul*

Duplication of 0.7 km between Tarwin Street and Hunter Crescent is well under way.

Cost estimate — \$500,000.

Completion expected — early 1978.

• *Officer to Pakenham*

Duplication of 8.8 km of highway is continuing.

Cost estimate — \$3 million.

Completion expected — Easter, 1978.

Princes Highway West

• *Werribee*

Work is scheduled to start in December, 1977 on the first stage of highway duplication between the Princes Freeway and Hoppers Crossing.

Cost estimate — \$250,000.

• *Weerite*

Construction of a road over rail overpass and 1.6 km of highway is continuing.

Cost estimate — \$700,000.

Completion expected — Easter, 1978.

Tullamarine Freeway

Lancefield Road is being upgraded to freeway standard. Work is continuing along the western boundary of Essendon Airport.

The project will provide an interchange to Essendon Airport and improve local street access to the freeway.

Cost estimate — \$6 million.

Completion expected — 1980.

Western Freeway

• *Ballan Section*

Construction of the 8.4 km bypass of Ballan is continuing.

Earthworks are nearing completion and drainage and pavement works are progressing. Construction of twin freeway bridges over Werribee River, Eastern Moorabool River and Racecourse Road, together with overpass structures at Daylesford Road, Greendale Road and the eastern interchange are well under way.

Cost estimate — \$8.2 million.

Completion expected — mid 1978.

West Gate Freeway (F9)

Site clearance is continuing for the West Gate Freeway (F9) between Graham Street, Port Melbourne and Grant Street, South Melbourne.

Work on alterations at Rogers Street, and improvements to local roads in Port Melbourne are expected to be completed prior to the opening of the West Gate and Johnson Street bridges, scheduled for mid 1978. Other works programmed for this financial year include improvements to Grant Street, between St Kilda Road and Sturt Street, and City Road east of Maffra Street to the St Kilda Road Underpass.

Cost estimate — \$80 million.

Completion expected — late 1981.

ROAD PUBLICATIONS

The following publications can be obtained from the CRB by filling in the attached coupon and returning it to Public Relations Section, Country Roads Board, 60 Denmark Street, Kew, 3101.

CRB—General

- ☐ The Roadbuilders
- ☐ Victoria's Rest Areas
- ☐ Snow Driving—It's an Art
- ☐ Colouring Book (for children)
- ☐ Science in Road Development
- ☐ Urban Freeways
- ☐ Back Issues, CRB News
- ☐ Your Property . . . Your Roads (Land Acquisition Guide)

CRB—Project brochures

- ☐ Widening of Nepean Highway (Revised)
- ☐ The Hume Challenge
- ☐ Orbost (Princes Freeway)
- ☐ Calder Freeway (Keilor Section)
- ☐ Converting Lancefield Road to Freeway
- ☐ Bypasses of Drouin and Warragul (Princes Freeway)
- ☐ Violet Town Bypass (Hume Freeway)

NAASRA

- ☐ Roads and Traffic Noise
- ☐ Roads and Traffic Safety
- ☐ Roads and Pollution
- ☐ Roads and Public Utilities

Name

Organisation

Address

Dear Sir,

Early last year, I had occasion to write to the Board seeking information and contact with an engineer on a freeway project, as part of my Civil Engineering course at Monash University.

Since then, I have been pleased to receive copies of "CRB News" and I wish to advise that I would like to remain on the mailing list for this informative publication.

The CRB has lately received a lot of criticism, but I can only

LETTER

state that in my experience the Board has been most friendly and helpful. "CRB News" certainly presents a different viewpoint from the discouraging one so often seen in the media.

Thanking you for your past assistance.

Matthew L James.

CONTRACTS

● A summary of major contracts over \$100,000 entered into by the CRB from 9th July, 1977 to 14th October, 1977.
from 9th July to 14th October, 1977.

Road construction

ROAD	DESCRIPTION	CONTRACTOR	AMOUNT
Pascoe Vale Rd/ Johnstone St/ Camp Road (Broadmeadows)	Supply, delivery, spreading and compaction of asphalt.	The Readymix Group Ltd, Burwood	\$113,278
Burke Road (Heidelberg/ Camberwell/ Kew)	Construction of an 11 span prestressed and reinforced concrete bridge 139 m long and 7.920 m between kerbs with one footway on Burke Road over the Yarra River.	Cargill Constructions P/L, Glen Waverley	\$437,257
Princes Freeway (Drouin Section)	Construction of two 3 span prestressed and reinforced concrete bridges 39.96 m long, 11.6 m between kerbs over Buln Buln Road.	K P Seidel P/L, Mount Waverley	\$169,000
Hume Freeway (Seymour-Avenel)	Construction of two prestressed and reinforced concrete bridges each 11.4 m long by 11.0 m between parapets over Hughes Creek on the Hume Freeway.	FDJ Constructions P/L, Wangaratta	\$302,014
Midland Highway (Buninyong)	Supply and delivery of crushed rock base.	Dunnstown Quarries P/L, Wendouree	\$149,940
Murray Valley Highway (Wodonga)	Construction of three reinforced concrete bridges on the Murray Valley Highway over the Kiewa River Flats.	Allan Tessier P/L, Dandenong	\$212,832

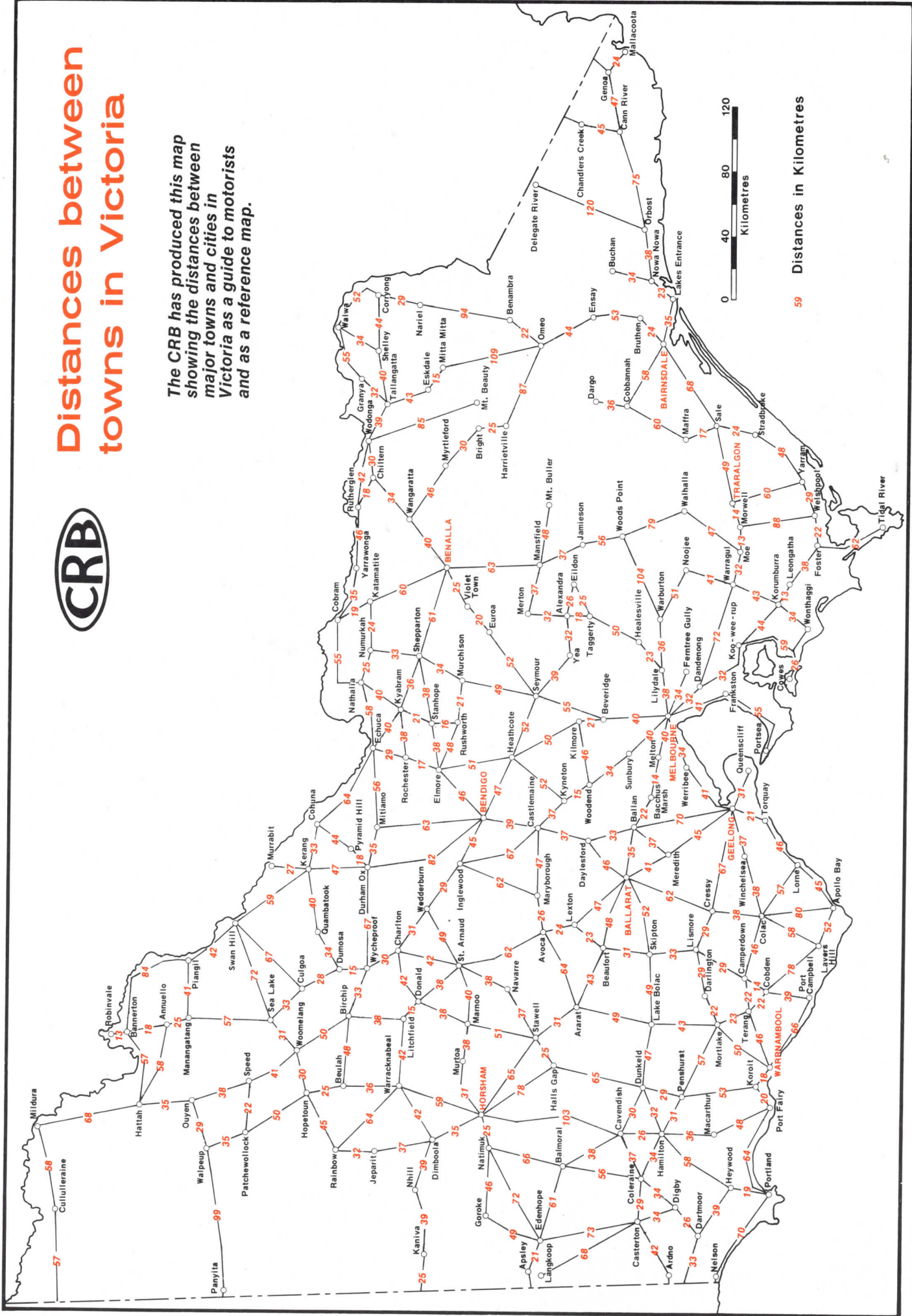
Other contracts

Priming and/or primer sealing roads in Bendigo Division.	Boral Resources (Vic) P/L, Hawthorn	\$140,000
Supply and delivery of cutback bitumen throughout the State.	Mobil Oil Australia Ltd, Melbourne	\$109,000
Supply of bituminous surfacing aggregate in Horsham Division.	The Readymix Group Ltd, Burwood	\$175,000
Supply and delivery of aggregate in Dandenong Division.	Pakenham Blue Metal Holdings P/L, Pakenham	\$270,000
Priming and/or primer sealing various roads in Dandenong Division.	Emoleum (Australia) Ltd, North Melbourne	\$525,000
Priming and/or primer sealing various roads in Warrnambool Division.	Spraypave P/L, Melbourne	\$315,050
Supply and delivery of crushed rock products in Geelong Division	Geelong Quarries P/L, Fyansford	\$206,640



Distances between towns in Victoria

The CRB has produced this map showing the distances between major towns and cities in Victoria as a guide to motorists and as a reference map.



59 Distances in Kilometres

WANTED



\$600,000 REWARD

**Piggy Litter [alias Oink Oink]
Wanted for visual pollution**

Piggy and his mates cost you \$600,000 a year . . .
that's how much it costs the CRB to pick up the garbage from the roadside. That
money could be better spent making the roads safer for you.

We don't want to pick up the garbage.

We want you to pick up your \$600,000 community reward.

Don't be a Piggy. Pick up your reward right now by using a litter bag* in your car.

(CRB) Roads to take you home...

* Available from the CRB on request, Phone 860 2633 or divisional offices.