

Melbourne Underground Rail Loop Authority





#### Front Cover

Escalator tunnel, Parliament Station. Work carried out at the station during the year included completion of excavation and concrete lining of upper and lower platform concourses, escalator tunnels, the platform tunnel for the North Melbourne loop, and the lift shaft at the northern end of the station.

#### Back Cover

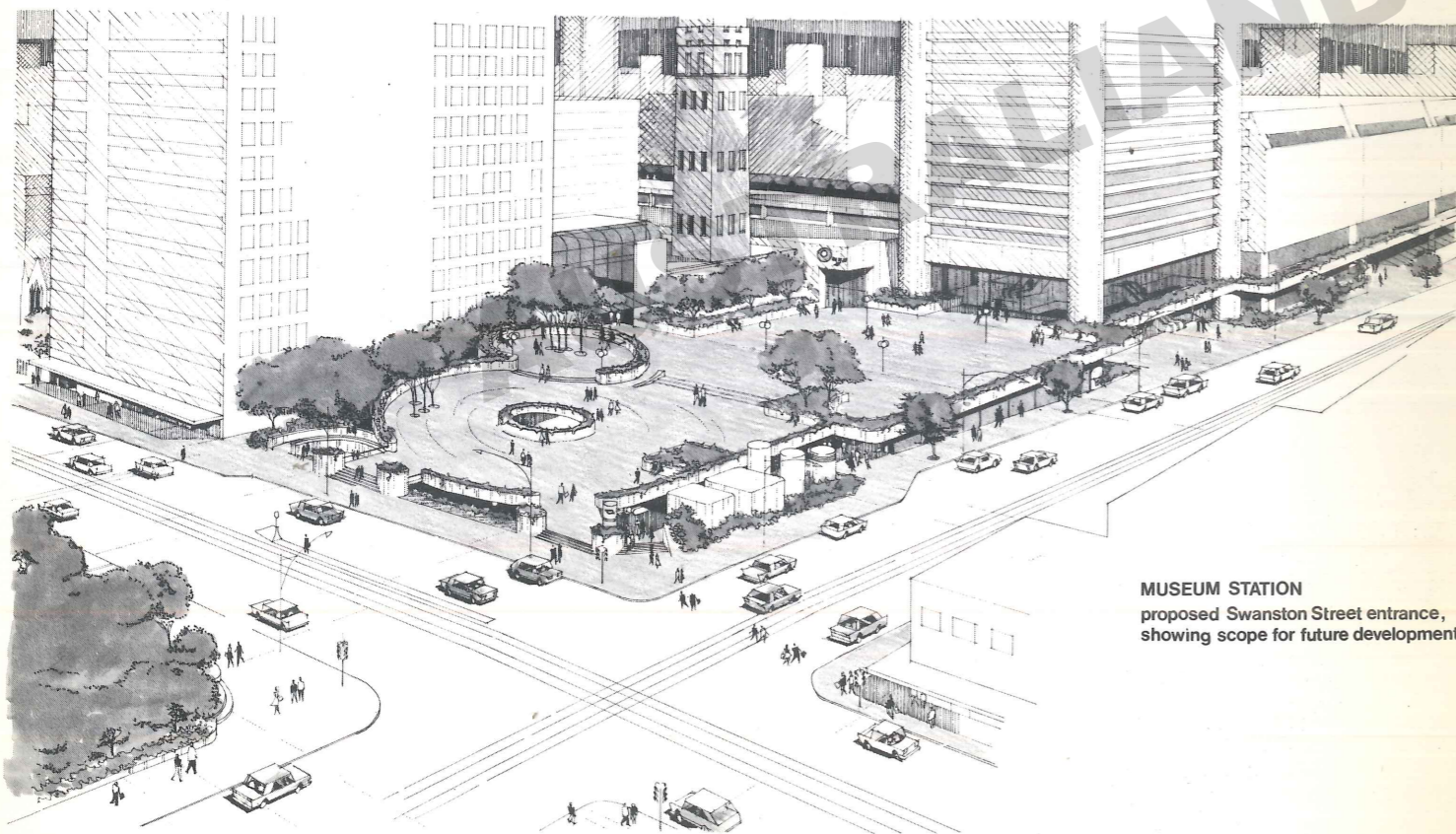
Within the immense excavation of Flagstaff Station, Victorian Parliamentarians inspect work. The Parliamentary group, introduced by the Minister of Transport, Hon. J. A. Rafferty, included representatives of all Parties and both Houses, and visited the project during June.

#### Centre Pages

Flagstaff Station construction. The tunnel (background) is for the Burnley loop, running towards Spencer Street Station. The vertical columns at the sides are formed by filling raised-bored holes with reinforcing and concrete. They support an arched roof and beams at the top from foundation beams, poured in drifts, along each side at the bottom level. Spreader beams across the station "box" support ground sideways as excavation and concreting of the station structure are progressed.

#### Below

Architectural concept of entrance to Museum Station at the corner of Swanston and LaTrobe Streets. Scope for future development is shown in the background.



MUSEUM STATION  
proposed Swanston Street entrance,  
showing scope for future development

# Report of the Melbourne Underground Rail Loop Authority for the year ended 30th June, 1977

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Rail Loop Authority**

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Melbourne  
Victoria  
Australia 3000

Postal Address  
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Victoria Australia 3001

The Honorable J. A. Rafferty, M.P.,  
Minister of Transport,  
570 Bourke Street,  
Melbourne 3000.

27th October, 1977

Dear Minister,

Pursuant to the provisions of the Melbourne Underground Rail Loop Act, 1970, we the Members of the Authority submit the following report on its operations for the year ended 30th June, 1977 together with statements of its financial transactions for that year and of its financial position as at 30th June, 1977 which, to the best of our knowledge and belief, are certified correct.

Yours sincerely,

*R. B. Roscoe*

Chairman

*T. P. Scott*

Deputy Chairman

*K. A. Allen*

Member

*I. F. Beaurepaire*

Member

*G. F. W. Brown*

Member

*W. H. B. Daddo*

Member

*W. C. S. Ellis*

Member

*A. G. Gibbs*

Member

*K. H. Vial*

Member

**Members**

- R. B. ROSCOE, Chairman
- T. P. SCOTT, Deputy Chairman
- K. A. ALLEN
- I. F. BEAUREPAIRE, C.M.G.
- G. F. W. BROWN, C.M.G.
- W. H. B. DADDO
- W. C. S. ELLIS, O.B.E.
- A. G. GIBBS, A.O.
- K. H. VIAL, C.B.E.

**General Manager and Director of Engineering**

F. G. Watson, B.A., F.I.E.Aust., F.A.I.M., M.I.E.T., M-S.A.E.-A.

**Secretary and Assistant General Manager — Administration**

W. L. R. Daniels, F.C.I.S., F.A.S.A.

**CONSULTANTS — Engineering**

**John Connell-Mott, Hay & Anderson, Hatch, Jacobs (Principal Consultants)**

Railway Construction Board  
Victorian Railways Board

**Sub-Consultants to the Principal Consultants**

McIntyre, McIntyre and Partners Pty Ltd  
Perrott, Lyon, Timlock, Kesa and Associates Pty Ltd  
Riley, Barden and Kirkhope  
Rider Hunt and Partners  
Alan S. Porritt and Associates  
Wolferstan Trower and Partners  
Golder Associates Pty Ltd

**Consultants — Property**

George J. Connor & Associates Pty Ltd

**Office and Registry**

50 Queen Street, Melbourne 3000

# Report of the Melbourne Underground Rail Loop Authority for the year ended 30th June, 1977

## Preamble

The Authority is responsible in accordance with the Melbourne Underground Rail Loop Act 1970, as amended, for supervising and co-ordinating the planning, financing and construction of the underground rail loop and for leasing land, acquired in terms of the Act, which is no longer required for Loop construction purposes, for redevelopment in accordance with the Authority's requirements. The purpose of the rail loop is to increase the capacity and efficiency of the existing Melbourne suburban rail network.

The Loop comprises four underground rail tracks in separate tunnels (the Burnley, the Caulfield/Sandringham, the North Melbourne and Clifton Hill/City Circle) forming a new link (and thereby a loop and city circle) in the existing suburban rail system from east of Princes Bridge/Flinders Street Station to the north of Spencer Street Station, together with three new city stations (Parliament, Museum and Flagstaff) and a new overpass structure to carry two additional elevated rail tracks between Flinders and Spencer Street Stations. A fuller description of the main works appears in the previous year's Report.

## Review of Activity

The Authority experienced a year of vigorous progress in all sections of the Loop. The program was maintained providing for the opening of the Burnley loop and Museum Station in December 1979 and completion of all works in 1982.

Borrowing powers authorising the raising of \$43 million new funds were fully utilised, \$37 million in Inscribed Stock for construction, and \$6 million in temporary accommodation for property acquisition. The allocation of \$51 million for 1977/78 (14.26% of Victoria's total allocation for semi-government issues) has permitted scheduling of an active works program for the coming year.

Relative freedom from industrial disruption, 1.6% of total work time compared with 21% in the previous year, assisted in maintaining the program.

With the approval of the Government the Authority purchased land in the Museum Station area and, in conjunction with the Melbourne City Council, sought registration of interests from competent and experienced parties with capacity to develop, finance and operate a multi-million dollar retail commercial complex (including a major department store), on an area of 1.8 ha. It was required that development be compatible with the Melbourne Strategy Plan and co-ordinated with the architectural and engineering requirements for the station entrances. Negotiations were subsequently opened with David Jones Ltd., Sydney, in association with Melbourne City Council.

Registration of interests was also sought for redevelopment of Flagstaff Station area, comprising 6523 sq m of land in one of the highest parts of the northern sector of the Central Business District, integrated with the main station entrances. Parties were sought with the capacity to develop, finance and manage the site for single purpose or multi-purpose use such as offices, professional suites, residential accommodation and special retailing and related facilities. Evaluation was being carried out at the end of the year.

The construction program was basically involved with the continuation and extension of works in hand, in some cases to completion stage. Tunnel excavation and station construction comprised a major part of the works together with trackwork, signalling, overhead wiring and structural work for Loop connections between underground and surface installations.

An important aspect of construction involved the Overpass between Flinders Street and Spencer Street stations. Two new elevated tracks are being provided, supplementing four existing viaduct tracks, to make a total of six tracks between the two stations. The overpass structure, with a length of 720 metres spans five principal traffic routes.

Included in new work planned for the 1977/78 year is installation of services in the Burnley loop tunnel; erection of a structure on the south west corner of Swanston and LaTrobe Streets for the east entrance and booking hall of Museum Station; construction of the ramp for the Caulfield-Sandringham loop in Spencer Street railway yards; re-alignment of LaTrobe Street, including tram tracks, over Museum Station; and the re-alignment of tram tracks at Flagstaff Station area. Parts of the city area temporarily alienated for construction purposes are being gradually returned to their original status.

The estimated cost of the project rose 9% to \$328 million reflecting the overall inflationary trend.

## Construction 1976/77

The main works undertaken during the year were the further tunnelling and station construction in the underground portion of the Loop, construction of the overpass for two additional elevated tracks between Spencer Street and Flinders Street Stations, and the trackwork, signalling, overhead traction wiring and structural work associated with the connections of the underground portion of the Loop to the existing surface rail tracks.

### UNDERGROUND PORTION

#### Eastern section—Flinders Street—Wellington Parade to Swanston Street via Spring & LaTrobe Streets by Codelfa-Holland Pty Ltd—tunnel and Parliament Station construction

##### (a) Tunnel construction included

- completion of excavation of the North Melbourne loop tunnel from Parliament Station in Spring Street to the railway boundary on the south side of Wellington Parade and further concrete lining of this tunnel
- extension of the excavation of the North Melbourne loop tunnel from Parliament Station to a point near Exhibition Street
- extension of excavation of the City Circle from its junction with the Clifton Hill loop under Spring Street to the railway boundary at Wellington Parade and concrete lining of this tunnel
- excavation of the Clifton Hill loop-City Circle tunnel in a northerly direction from the Y-junction to Parliament Station
- excavation of the Burnley loop tunnel from the ventilation shaft at the Commonwealth Centre (Spring & LaTrobe Streets) to Museum Station and start of concrete lining of this tunnel
- excavation of the Caulfield-Sandringham loop tunnel from a point under the Treasury Gardens, to the south end of Parliament Station
- completion of the excavation of the ventilation shaft and lower cross passages to the loop tunnels at the Commonwealth Centre
- completion of excavation and concreting of ventilation cross passages from the loop tunnels to the shaft in Treasury Gardens.



(b) Parliament Station construction

- completion of excavation and concrete lining of the lower and upper platform concourses, the escalator tunnels and the North Melbourne loop platform tunnel (lower level)
- completion of the relay rooms and cross passages at lower platform level, the lift shaft at the north end of the Station and the north and south draught relief shafts
- excavation of the Caulfield-Sandringham loop and the Clifton Hill loop-City Circle platform tunnels (upper level) and excavation of the south upper relay room.

**Central section—Swanston Street to William Street via LaTrobe Street**

(a) Tunnel construction

**by John Holland (Constructions) Pty Ltd**

- excavation and installation of equipment for two working shafts on the worksite in LaTrobe Street west of Elizabeth Street. (One of the shafts was constructed by the Melbourne and Metropolitan Board of Works as sub-contractor for the two upper tunnels which are to be driven through an old river bed area under Elizabeth Street)
- excavation (by M.M.B.W. as sub-contractor) of a cross adit from one of the working shafts and the excavation of two chambers in which the shields to be used for excavation of the upper tunnels under Elizabeth Street are being erected
- excavation of the two lower tunnels from the working shaft in an easterly direction below Elizabeth Street to Museum Station and the Burnley loop tunnel in a westerly direction under LaTrobe Street towards Flagstaff Station.

(b) Museum Station Construction

**by Leighton Contractors Pty Ltd**

- completion of excavation and the temporary support of the walls of the excavation
- substantial construction of the concrete structure including floor slabs, intermediate track and concourse slabs, wall piers and columns, escalator inclines and lift wells
- commencement of excavation of a ramp from the north side of LaTrobe Street to the Station's main concourse level.

**by Otis Elevators Pty Ltd**

- commencement of manufacture of 21 escalators and 3 lifts for the Station.

(c) Underpinning of buildings in LaTrobe Street

**by Pearson Bridge-Bachy**

- completion of underpinning of the ANZ Bank building and the Argus Building both on the western side of the Elizabeth Street-LaTrobe Street intersection
- completion of a diaphragm wall to protect Bourkes-A.C.T.U. store building foundations, close to Museum Station.

Formwork in place for pouring walls and crown of tunnel between Spencer Street railway yards and Flagstaff Station. Steel "ribs" provide initial ground support during excavation.





## Western Section—William Street to Adderley Street

by **Codelfa Construction Pty Ltd, Sogene (Australia) Pty Ltd and Cogefar Construction Pty Ltd, Joint Venture operating under the name of "C.M.T.—Construction of Metropolitan Tunnels"**—tunnel construction including **Flagstaff Station**

### (a) Tunnel construction

- completion of excavation of the North Melbourne loop, the Burnley loop and the Clifton Hill loop-City Circle tunnels under LaTrobe Street from Adderley Street towards Flagstaff Station and concreting the North Melbourne and Burnley loop tunnels
- further excavation of the Caulfield-Sandringham loop tunnel under LaTrobe Street from Adderley Street towards Flagstaff Station
- excavation and concreting of the draught relief shaft in Flagstaff Gardens at the western end of Flagstaff Station
- commencement of concreting of the North Melbourne loop ventilation and emergency access shaft in the Spencer Street railway yards adjacent to Adderley Street
- excavation of a short section of the North Melbourne loop tunnel from the Adderley Street access shaft towards Dudley Street.

### (b) Flagstaff Station construction

- completion of excavation and concreting of drifts and columns outlining the station structure
- commencement of excavation and concreting of all loop platform tunnels
- diversion of road, tramway tracks and other services to make way for the construction of the sub-surface concourse
- driving piles, excavating and installing concrete roof beams for the sub-surface concourse.

## APPROACHES FROM SURFACE TRACKS TO UNDERSTREET TUNNELS

by **Victorian Railways Board**

### (a) between Flinders Street and Richmond Stations

- further re-arrangement of trackwork and signalling.

### (b) Flinders Street east yard

- completion of alterations to trackwork and signalling to permit the construction of the City Circle ramp and tunnel
- further bridging and shoring to support the Clifton Hill lines and the construction of the City Circle box section tunnel including the section under the bridge abutment in Wellington Parade South
- completion of diversion by the M.M.B.W. of a sewer main to enable construction of the City Circle and the North Melbourne loop ramps.

### (c) between North Melbourne Station and Dudley Street bridge

- further construction of the east ramp, box tunnel and portion of west box tunnel at the junction of the North Melbourne loop.

### (d) between Spencer Street Station and Adderley Street

- further construction of the box tunnels for the Burnley loop, the Clifton Hill loop-City Circle and the Caulfield-Sandringham loop
- commencement of construction of the dual ramp from Spencer Street Station to the box tunnels for the Burnley loop and Clifton Hill loop-City Circle
- further re-arrangement of trackwork, overhead power lines and signalling in the Spencer Street yard to facilitate construction work
- further construction of a new signal control room north of Spencer Street Station.

### (e) In Spencer Street Station area

- further remodelling of platform 9/10 for through island operation and provision of access ramps from passenger and parcels subways and complementary additions and alterations to tracks, overhead power lines, signalling and verandahs
- commencement of re-arrangement of the parcels handling facilities necessitated by the re-modelling of platforms 9/10 at Spencer Street Station.

## OVERPASS STRUCTURE FOR ELEVATED TRACKS NECESSITATED BY LOOP OPERATION

by **John Holland (Constructions) Pty Ltd**

- commencement of construction of the overpass structure for the two additional tracks between Spencer Street and Flinders Street Stations including the driving of piles, erection of piers and the casting and post-tensioning of reinforced concrete beams.

by **various government instrumentalities and other contractors**

- continuation of diversion and alterations of roads and tramway tracks and other services to make way for construction of the overpass.

## Construction Status at 30th June, 1977

### Clifton Hill loop and City Circle

- the ramp for the Clifton Hill loop adjacent to Wellington Parade—completed
- box section tunnel for Clifton Hill loop under Wellington Parade—completed
- circular tunnel for Clifton Hill loop from the north side of Wellington Parade to the Clifton Hill loop-City Circle junction under Spring Street near Treasury Gardens—excavated
- box section tunnel and ramp in Flinders Street east yard—nearly completed
- box section tunnel for City Circle under existing Clifton Hill lines east of Princes Bridge Station—excavated and supported and the base concreted
- circular tunnel for City Circle from Wellington Parade South bridge to the Clifton Hill loop-City Circle junction—excavated and concrete lining nearly completed
- circular tunnel from Clifton Hill loop-City Circle junction to the south end of Parliament Station—top heading excavated
- circular tunnel between Museum and Flagstaff Stations—a working shaft sunk, upper cross-adit excavated, and a tunnelling shield erected in a shield chamber preparatory to tunnelling under compressed air to Museum Station
- circular tunnel from Flagstaff Station to the railway boundary at Adderley Street—excavated
- box tunnel under the Spencer Street railway yards—completed (except for a working access gap)
- ramp connection from the box tunnel to platform 9 Spencer Street Station—shoring completed, excavation 50% completed and concreting commenced.





#### Burnley loop

- ramp near the corner of Jolimont Road and Brunton Avenue and the box tunnel under the Flinders Street railway yards—completed (except for a working access gap)
- circular tunnel from Wellington Parade South to Parliament Station—fully excavated and lining 80% concreted
- circular tunnel from Parliament Station to Museum Station—excavated
- circular tunnel between Museum and Flagstaff Stations—40% excavated
- circular tunnel from Flagstaff Station to Adderley Street—fully excavated and lining 82% completed
- box tunnel under the Spencer Street railway yards—completed (except for a working access gap)
- ramp connection from the box tunnel in Spencer Street yards to platform 10 Spencer Street Station—shoring completed, excavation 50% completed and concreting commenced.

#### Caulfield-Sandringham loop

- ramp near the Melbourne Cricket Ground and the box tunnel under the tracks between Flinders Street and Richmond Stations and under the Flinders Street railway yards—completed (except for a working access gap)
- circular tunnel from the railway boundary at Wellington Parade South to Parliament Station—fully excavated and concrete lining 84% completed
- circular tunnel between Museum and Flagstaff Stations—tunnelling shield erected in a shield chamber west of Elizabeth Street off a cross adit preparatory to tunnelling to Museum Station in compressed air pressurised tunnel atmospheres
- circular tunnel from Adderley Street to Flagstaff Station—73% excavated
- box tunnel under the Spencer Street railway yards—60% completed.

#### North Melbourne loop

- circular tunnel from the railway boundary on the south side of Wellington Parade South to Parliament Station—fully excavated and 75% fully concrete lined
- circular tunnel from Parliament to Museum Stations—68% fully excavated
- circular tunnel from Museum to Flagstaff Stations—22% fully excavated and a further 5% top heading excavated
- circular tunnel from Adderley Street to Flagstaff Station—fully excavated and 90% concrete lined
- circular tunnel from Adderley Street to Dudley Street—excavated for a length of 40 metres
- ramp for the eastern branch connection with existing tracks at North Melbourne station, the eastern box tunnel and the splay tunnel for the western branch—completed
- box tunnels for the western branch—55% completed
- retaining walls on both sides of the suburban tracks—completed
- North Melbourne loop ventilating shaft at Adderley Street—excavated and 25% concrete lined
- tracks flyover south of North Melbourne Station—extension completed.

Preparation of formwork for precast, prestressed, hollow box concrete beams for erection in the Overpass between Flinders Street and Spencer Street Stations.



### Parliament Station

- North Melbourne loop platform tunnel—fully excavated and concreted
- Burnley loop platform tunnel—fully excavated and concreted
- Caulfield-Sandringham loop platform tunnel—47% fully excavated and top heading fully excavated
- Clifton Hill loop-City Circle platform tunnel—top heading 77% excavated
- lower relay rooms—excavated and concrete lined
- lower platform cross passages—excavated and concrete lined
- upper relay rooms—south end fully excavated, north end heading 17% excavated
- upper platform cross passages—heading 14% excavated
- escalator declines, platform concourses and machine rooms—excavated and concreted.

### Museum Station

- excavation and temporary supporting steelwork—completed
- concrete structure—base slab—completed; eastern half of station i.e. walls columns and suspended slabs—90% completed; overall structural concrete—68% completed.

### Flagstaff Station

- wall drifts and columns connecting the drifts—excavated and concreted
- North Melbourne loop and Clifton Hill loop-City Circle—main station arch roof and bulk excavation completed
- North Melbourne loop—track slab 95%, walls 50% and arch roof 20% concreted
- Caulfield-Sandringham and Burnley loops—main station arch roof concreted, bulk excavation 55% completed
- excavation for the sub-surface concourse roof—completed and 40% of roof beams installed
- West draught relief shaft—completed.

### Overpass Structure for elevated tracks

- investigations—completed
- foundations—all piling and 50% of foundations completed
- piers—50% of piers completed
- beams—3 (of a total of 44) precast concrete bridge beams fabricated
- special plant and equipment for lifting transporting and placing bridge beams—75% mobilised.

### Ancillary Works

- emergency exit from Caulfield-Sandringham box tunnel located at the corner of Brunton Avenue and Jolimont Road—concrete structural work completed
- new E signal box—constructed, equipped and commissioned
- new No. 2 Signal control room Spencer Street—constructed and installation of equipment commenced
- ventilation cross passages from the loop tunnels to the shaft in Treasury Gardens—completed
- ventilation shaft at Commonwealth Centre—excavated
- No. 8 platform Spencer Street Station—face of platform reconstructed
- new parcels subway access to platform 9/10 at Spencer Street Station—completed and construction of new parcels handling facilities commenced
- trackwork and signalling alterations associated with the construction of the Loop—effected as required by work progress
- in conjunction with the Victorian Railways Board—site cleared and foundations poured for a new Metropolitan Train Control Centre, Batman Avenue ("Metrol").

## Construction Program 1977/78

### UNDERGROUND PORTION

#### Eastern Section

##### (a) Tunnelling

- complete concrete lining of Burnley loop tunnel between Jolimont and Museum Station
- complete installation of services in Burnley loop tunnel
- complete construction of the North Melbourne loop tunnel between Flinders Street east yard and Museum Station
- proceed with construction of Caulfield-Sandringham loop tunnel between Parliament and Museum Stations
- continue construction of Clifton Hill loop-City Circle tunnel between Parliament Station and Wellington Parade South.

##### (b) Parliament Station

- continue construction of upper level platform tunnels
- proceed with construction of south booking hall
- proceed with construction of station platforms.

#### Central Section

##### (a) Tunnelling

- continue with the construction of the Burnley and Caulfield-Sandringham loop tunnels from Museum Station to Flagstaff Station
- commence installation of services in Burnley loop tunnel
- construct the North Melbourne loop and Clifton Hill loop-City Circle tunnels under Elizabeth Street
- proceed with the construction of the North Melbourne loop tunnel from Elizabeth Street to Flagstaff Station.

##### (b) Museum Station

- Complete construction of Museum Station structure
- continue with the manufacture, and begin installation of, escalators and lifts
- commence structure at the south west corner of Swanston and LaTrobe Streets for the east entrance and booking hall, and plant room for electrical and ventilation equipment
- commence installation of station services and architectural finishes
- re-align LaTrobe Street and the tram tracks between Swanston and Elizabeth Streets and re-instate services.

#### Western Section

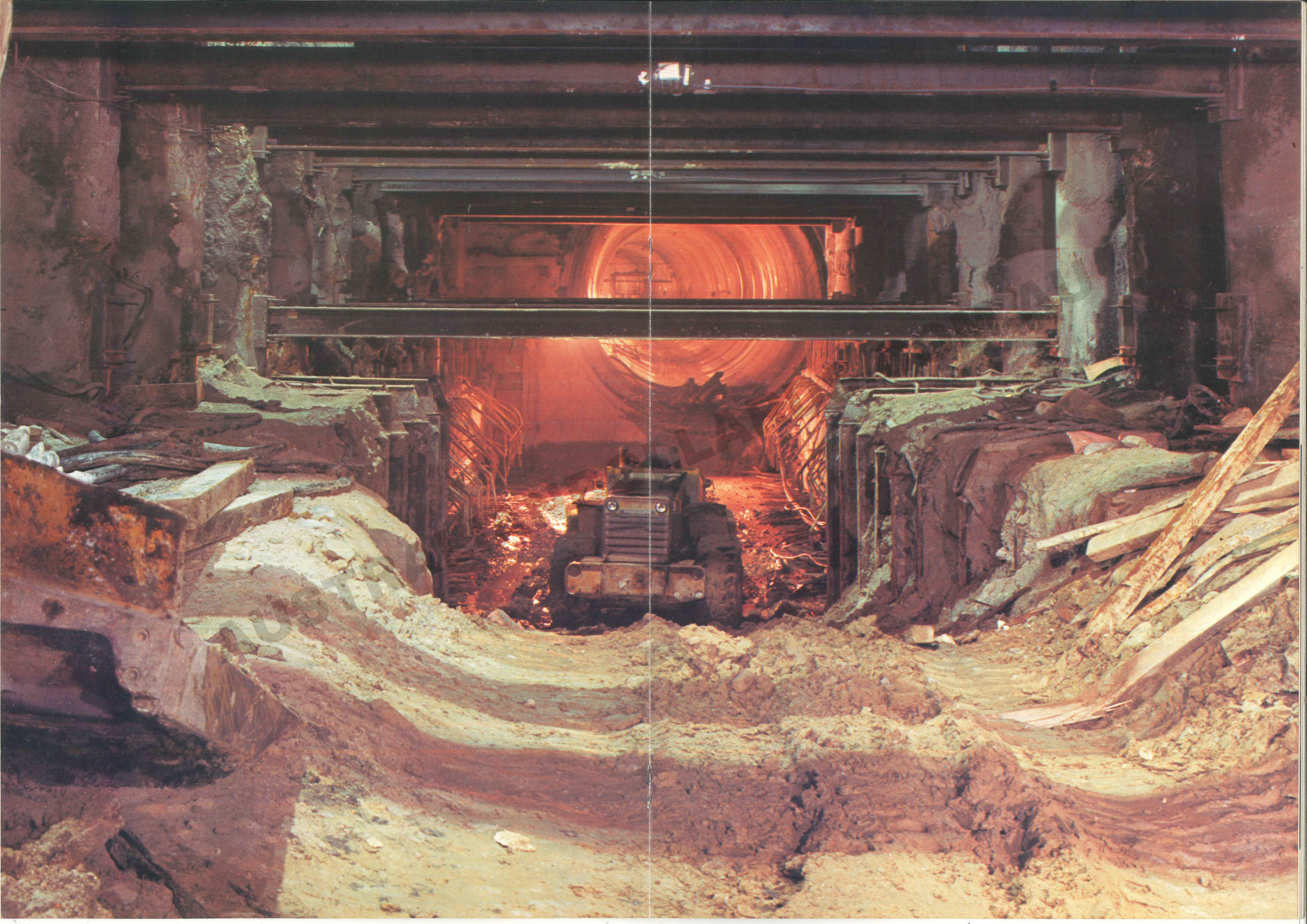
##### (a) Tunnelling

- complete construction of the four tunnels under LaTrobe Street from Adderley Street to Flagstaff Station
- commence installation of services in Burnley loop tunnel

##### (b) Flagstaff Station

- continue excavation and underground construction of Flagstaff Station
- re-align tram tracks in LaTrobe Street west of William Street.







## APPROACHES FROM SURFACE TRACKS TO UNDERSTREET TUNNELS

- continue the construction of the west ramp and box section tunnel leading from North Melbourne Station into the North Melbourne loop
- complete the Clifton Hill loop-City Circle, Burnley and Caulfield-Sandringham box section tunnels in the Spencer Street railway yards
- continue the construction of the ramps in Spencer Street railway yards for the Burnley loop and Clifton Hill loop-City Circle
- commence construction of the Caulfield-Sandringham ramp in the Spencer Street railway yards
- complete alterations to parcels handling facilities at the Spencer Street outward parcels depot
- rearrange trackwork in the overpass junction area to provide for loop operation
- continue with the installation of equipment required for loop operation in the new No. 2 Signal Control Room at the north end of No. 13/14 platform, Spencer Street Station
- construct the superstructure for "Metrol", the new Metropolitan Train Control Centre, Batman Avenue, in conjunction with the Victorian Railways Board
- construct a new relay room and provide overhead structures associated with the rearrangement for loop working of trackwork in the "A Box" junction area between the west of Flinders Street Station and the commencement of the overpass
- complete the construction of City Circle ramp leading from Princes Bridge Station to the Clifton Hill loop.

## OVERPASS STRUCTURE FOR ELEVATED TRACKS

- continue with construction of overpass structure to provide for two additional tracks between Spencer Street and Flinders Street Stations.

## Planning

The program—which provides for the opening of the Burnley loop and Museum Station in December 1979 and the completion of all works in 1982—is necessarily under constant review. The overall project cost and the annual cash flow forecasts are also under continuing scrutiny.

Planning of the entrances, booking halls and finishes for Parliament Station made significant advances in overall concept during the year and aspects of Flagstaff Station design were investigated. It is now proposed that the entrances to the South Booking Hall of Parliament Station will be from Carpentaria Place, from 91 Spring Street and from the ground floor of the Windsor Hotel Annexe.

Tests were carried out in the Jolimont cutting on the Clifton Hill line, on the R.S. STEDEF and conventional ballast and wooden sleeper systems of track support to determine the more effective method of suppressing ground-borne noise and vibration. A section of double concrete sleeper track support system, evolved from a design adopted by the Toronto Transit Commission, is also to be tested in the 1977/78 year.

Methods were evolved for reducing stray traction-current leakage from the electric train system with a view to avoiding electrolytic corrosion in nearby buried metallic structures.

Continuous programs of monitoring vibration and movement of the ground and structures adjacent to the works were maintained.

Specifications were prepared and tenders received for provision of a computer based train describer system for monitoring and control of train movements and display of despatch information at stations for the information of passengers. The system will be integrated with the "Metrol" train control facility.

Planning for the development of signalling and its integration with "Metrol" continued in conjunction with the Victorian Railways Board.

## Industrial Relations

Industrial action which affected the Authority's contractors on Loop work represented about 1.6% of the total work time available.

The Authority maintained close liaison with the State office of Industrial Relations Co-ordination and through it with other Government instrumentalities.

## Safety

The Authority, Principal Consultants and Contractors jointly operate a safety program.

Each major contractor employs a safety officer and follows a worksite safety discipline.

The Joint Safety Council, a group of senior directors and members of participating organisations under the chairmanship of an Authority representative which was set up in 1975, continued during the year under review to develop the overall safety program; and the Safety Working Committee, which reports to the Joint Safety Council and comprises representatives from management and worksites, continued to co-ordinate matters affecting job safety.

A Supervisors' Safety Handbook was produced as a reference on safety matters in the Loop operation. The Authority, Consultants and Contractors were involved in production of the publication and supervisors were issued with a copy.

The Safety Booklet which was issued last year and which outlines the basic principles of safe working, was translated and issued in Italian and Serbo-Croat.

A training course for Supervisors, supplementing the information in the Handbook, was at an advanced stage of planning at the end of the year and a pilot course was scheduled to precede a series of courses which would cover as many supervisors as possible in the shortest practicable time.

Quarterly trophies were awarded to the construction site with the best safety performance and supervisors with the best individual safety record.

## Property

### Land Acquisition

Settlement of compensation claims for land compulsorily acquired in previous years proceeded leaving only five claims unresolved. However, substantial interim payments have been made where warranted to four of these five claimants for whom final settlement has been protracted for technical and other reasons.

In September 1976 a lease of the land adjoining the area acquired by the Authority at the corner of Spencer Street and Flinders Street extension was arranged with the Melbourne Harbor Trust Commissioners. This land was required by the contractor for the overpass as an additional worksite for 12 months and the Authority was reimbursed in full by the contractor.

### LaTrobe Street Designated Area

The Authority's 1975/76 Annual Report included a resume of events which culminated in the Steering Committee, appointed by Cabinet in 1975, recommending adoption of a comprehensive development program for the north-western quadrant of the Designated Area and the central spine.



Following acceptance of the development program the Authority was authorised to consider purchase of the remainder of the north west quadrant, adjoining land previously acquired for Museum Station construction purposes, and bounded on the west, south and east by Elizabeth, Little Lonsdale and St. Francis Streets respectively.

An offer to sell the whole of this privately-held land was received by the Authority from the owners and, after due negotiation over terms and conditions, a contract acceptable to both parties was drawn up and settlement effected late in January 1977.

The amendments to the Melbourne Underground Rail Loop Act which gave the Authority power to purchase the additional land in the Museum Station Area also gave the Authority power to compulsorily acquire the lanes within the area bounded by the abovementioned streets and also to acquire St. Francis Street north of Little Lonsdale Street.

Following purchase of the additional land the Authority called for tenders for demolition of the buildings thereon and by 30th June demolition was proceeding at a rapid pace.

In March the Authority in conjunction with the Melbourne City Council placed advertisements in major daily newspapers of the capital cities seeking registration of interests of competent and experienced parties, alone or in a stated consortium, for the redevelopment of the whole of the land owned by the Authority on the south side of LaTrobe Street and the corridor of land leading therefrom to Lonsdale Street owned by the Council. The advertisement was also given publicity overseas through Australian and international banks and consular channels.

Registration of interests closed on 15th April and in the succeeding months discussions took place with those who had registered. After careful evaluation of the views and proposals put before the committee, appointed by the Authority and Council to interview registrants, both the Authority and Council were unanimous in recommending to the Government that approval be given for negotiations to commence with David Jones Ltd of Sydney as both developer and major occupier. The negotiations critical to the development, involve determination of a long term lease of the site on which the company proposes to construct a major retail and commercial complex in conformity with the Steering Committee's recommendation placed before Cabinet in 1976. The terms and conditions of the lease must be such as to provide for a satisfactory return to the owners of the land and also ensure the economic viability of the development.

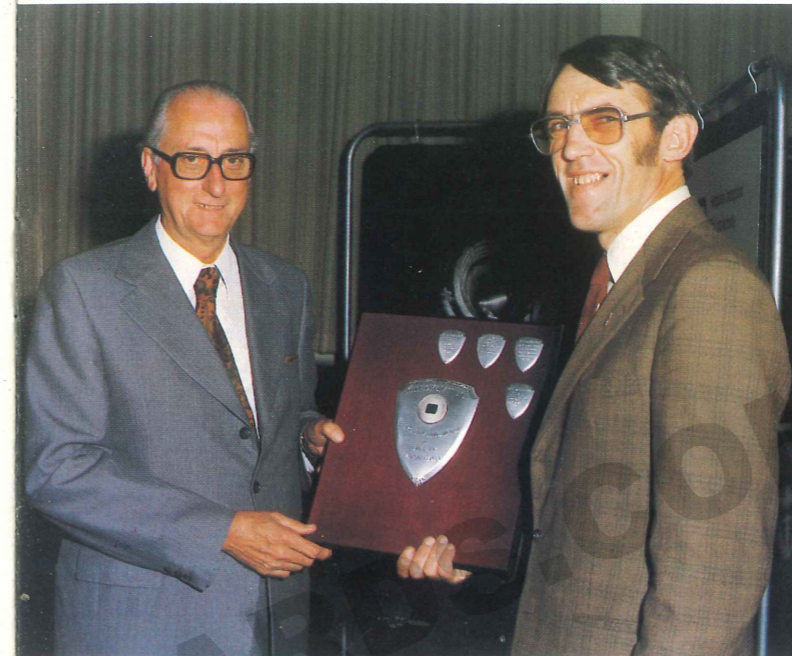
The Authority has continued to retain the services of property consultants to advise on development matters and recently in reporting on the proposed Museum Station Development they have said:—

"The development will be the largest modern central city retail complex yet undertaken in any of our major cities. In addition, the block between Museum Station and Lonsdale Street presents the finest opportunity in Australia for such a project both in terms of its large strategic site opportunity and also in terms of its market potential.

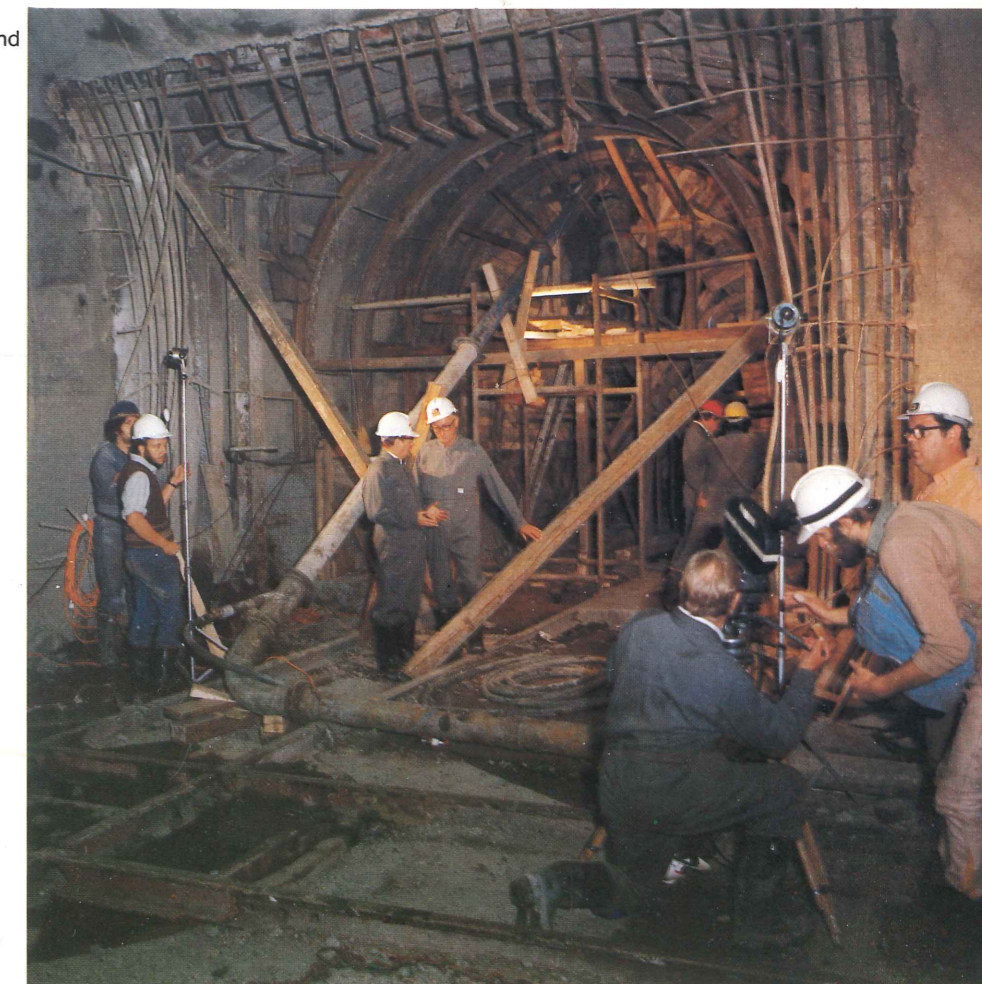
"The 1.8 hectare site is large enough to accommodate a new pedestrian concourse system incorporating a major department store to be integrated at one end with Melbourne's busiest new underground station and at the other end with Australia's largest and strongest city department store, as well as providing the city's largest shopper car park.

"The project, therefore, will combine all the features of a large modern suburban regional drive-in shopping centre with the larger department store and specialty shop merchandising strength, better public transport access facilities and the larger market potential of the city centre.

(Below) Safety. Authority Chairman, Mr. R. B. Roscoe, left, presents a site safety award to C.M.T. Engineer, Mr. J. Kelly.  
(Right) Council visitors. Councillors and executives of the Melbourne City Council inspected worksites during June.  
(Lower right) Out of the past. Fossilised starfish, over 400 million years old, unearthed during excavation near Parliament Station.



(Below) Stress measurement. Geomechanical Engineers make plate bearing tests at sides of tunnel.  
(Right) On location. Filming of the Authority's second documentary, "Action Loop", released in June.





"From a market and civic viewpoint, Melbourne's C.B.D. really needs a strong modern retail complex of this nature to stimulate and maximise its future retail sales potential. Its strongest stores are already trading to capacity and relatively few modern city retail developments of any significance have taken place over the past 40 years to greatly improve the city retail image in the light of modern suburban developments. Furthermore, despite the relatively stagnant level of city sales over the past few years, the city retail centre is still drawing in depth from a wide surrounding region.

"Studies have shown that Melbourne's C.B.D. is already drawing shoppers from a wider metropolitan region than does Sydney C.B.D., as well as from country districts beyond the metropolitan region, especially from the Geelong and Western District regions. Even within the metropolitan area, more than two-thirds of city shoppers come from beyond a 5 mile radius and one-quarter of them come from beyond 10 miles. City workers who shop in the city account for one-quarter of C.B.D. sales, so that most business is generated by shoppers travelling in from suburban and country areas. At the present time, some 31% of these shoppers come in by train, 29% by tram, 10% by bus and 30% by car.

"Basically, the two main factors contributing to Melbourne's C.B.D. retail strength are:—

- (a) its more comprehensive public transport system, and
- (b) the great drawing strength of the Myer Melbourne Store which ranks in terms of size and sales among the world's largest and most successful city department stores.

"Its main current weaknesses are its lack of adequate convenient shopper car parking facilities and its comparative lack of attractive integrated modern retail facilities along the lines that are now proving successful overseas.

"With the opening of the Melbourne underground city railway, the Westgate Bridge and the new inner city road systems over the next few years, the access of Melbourne's C.B.D. will be further improved for both shoppers and commuters at a time when the city's retail image and attractiveness will be greatly strengthened by this modern development.

"Apart from the unique locational advantages of the site for such a development, the similarity of the elements involved with some of the more successful recent developments in North America, such as the Eaton Centre in Toronto and the Water Place project in Chicago, points to its great potential.

"Both these schemes involve the building of new central city department stores, integrated with specialty shops, parking facilities and in the case of the Eaton Centre, integration with the Toronto subway system.

"In fact, the elements in the large Eaton Centre, which is currently enjoying a tremendous public reception, are almost identical with the proposed Melbourne project. They include a large new department store and office tower, integrated with a 3 level shopping mall, car parking for 1,500 cars and lower level connections with the Toronto underground stations and overstreet connection with a large existing department store. The Toronto development is larger than the Melbourne project and its success confirms the great confidence of Canada's largest retailers in the future of the C.B.D.

"The success of this and other similar recent C.B.D. retail projects in several large cities in Canada and U.S.A., augurs well for the Melbourne project, which must stimulate greater public interest and confidence in the future of our city centre.

## Flagstaff Station Development Area

Although Flagstaff Station will be the last of the three new stations to come into operation on the Loop the Authority is conscious of the need to have development of the land at the corner of William and LaTrobe Streets, acquired for station construction purposes, integrated if possible with the construction of the station entrance.

For this purpose advertisements were placed in the major daily papers of the capital cities and given publicity overseas, as for the Museum Station Development, seeking registration of those interested in the redevelopment of the area consisting of 6523 square metres of land which is presently used as a worksite. A good response from local and interstate developers was received and interviews to be held over the coming months should indicate the possibility of co-ordinating a redevelopment of the area with the opening of the station.

## Finance

### Loans

For 1976/77, approved borrowings totalled \$38,085,000 of which \$1,085,000 was to redeem maturing loans. The remaining \$37,000,000 represented 12.1% of Victoria's loan allocation for new works for that year.

Loans for the Authority's total allocation for the year were raised by private placements against the security of the Authority's Inscribed Stock which is guaranteed by the Government of Victoria. The subscribers were again principally the Savings Banks, Insurance Companies and Superannuation Funds.

The Inscribed Stock issued during the year, the total Inscribed Stock issued to the 30th June 1977 and the amounts of Inscribed Stock outstanding as at that date at the various interest rates applicable thereto are shown in the following table:

Rate % P.A.	Issued		Outstanding at 30/6/77 \$
	During 1976/77 \$	To 30/6/77 \$	
11.0	6,410,000	6,410,000	6,410,000
10.9	600,000	600,000	600,000
10.7	11,030,000	11,030,000	11,030,000
10.6	13,811,000	13,811,000	13,811,000
10.5	4,120,000	34,845,000	34,623,822
10.4	34,000	34,000	34,000
10.35		612,000	612,000
10.3	680,000	16,655,000	16,544,593
10.1	1,000,000	1,000,000	1,000,000
9.9		600,000	592,653
9.85		5,508,000	5,505,500
9.8	400,000	2,600,000	2,600,000
9.5		50,000	50,000
8.9		1,020,000	1,020,000
8.7		4,990,000	4,990,000
7.4		11,305,000	11,047,021
7.3		1,688,100	1,659,350
7.15		25,000	25,000
7.1		3,170,000	3,090,000
7.0		41,900	41,900
6.9		570,000	570,000
6.7		10,000	10,000
6.6		50,000	50,000
6.4		7,250,000	7,057,974
6.3		1,000,000	990,000
6.2		3,150,000	3,110,000
6.0		1,000,000	NIL
5.7		100,000	NIL
	<u>\$38,085,000</u>	<u>\$129,125,000</u>	<u>\$127,074,813</u>



(Below) Platform tunnel for Parliament Station.  
 (Right) Construction of box tunnels and ramps at north end of Platforms 9/10 Spencer Street Railway Station.  
 (Lower left) "Y" junction of tunnels under Wellington Parade.  
 (Lower right) Platform tunnel construction, Flagstaff Station.



Other borrowings of the Authority at the 30th June 1977 comprised an advance from the State Government's Works and Services Account of \$1,981,082, short term advances under Section 20 of the Melbourne Underground Rail Loop Act \$4,000,000, advance subscriptions for Inscribed Stock \$1,215,000 and bank overdrafts \$2,069,906.

The Inscribed Stock outstanding at the 30th June 1977 matures as follows:

Year Ending	\$
June 1978	611,360
9	2,688,180
1980	3,699,100
1	18,971,398
2	9,063,280
3	6,274,095
4	8,789,290
5	4,499,515
6	23,151,520
7	6,754,190
8	1,494,378
9	2,905,118
1990	2,618,336
1	2,419,673
2	15,584,317
3	4,117,548
4	5,937,011
5	1,245,134
6	604,307
7	115,063
2005	250,000
7	250,000
11	100,000
12	1,550,000
13	2,300,000
14	582,000
16	500,000
	<u>\$127,074,813</u>

When the amounts provided by way of Sinking Fund are insufficient to redeem the maturing loans, it is usual for additional loan allocation to be granted to refinance them.

**Temporary Financial Accommodation**

The Authority continued to enjoy overdraft and substantial standby arrangements with Banks. Although no recourse to the standby arrangements was necessary during the year, bridging finance was obtained from private lenders under determinations made by the Treasurer pursuant to Section 20 of the Melbourne Underground Rail Loop Act to enable the Authority to purchase additional land adjacent to the Museum Station site which had not been provided for in the Year's estimates.

**Investment of Unused Funds**

The Treasurer of Victoria has authorised the Authority to invest in a wide range of securities, any moneys held by it, which are not part of any sinking fund provided by the Authority for the purpose of redeeming loans, and are not for the time being required for the purpose of its Act. However, within the range of authorised investments, the Authority has continued to invest temporarily funds which are not immediately required, mainly with subscribers to the Authority's loan issues or their affiliated "official market" companies.



### Treasurer's Determination ("Loan Redemption Payments")

As required by the Act and in accordance with a Determination made by the Treasurer of Victoria, the Authority duly received the following contributions to loan redemptions and interest on loans

From City of Melbourne	\$915,000
Melbourne & Metropolitan Board of Works	1,372,500
Victorian Railways Board	1,833,033
Consolidated Fund	5,029,468

Interest earned by the Authority is deducted from interest payable by it in the calculation of the "Loan Redemption Payments".

No amount was required to be paid in the year to the Authority for the purpose of defraying administrative expenses.

The amounts contributed by the City of Melbourne and the Melbourne & Metropolitan Board of Works to the Authority's "Loan Redemption Payments" represented 10% and 15% respectively of the amount of the Treasurer's Determination. These percentages were reduced from 25% in each case under the amendments to the Melbourne Underground Rail Loop Act of the previous year.

Under a further amendment during the year under review, the City of Melbourne and the Melbourne and Metropolitan Board of Works are not required to contribute to "loan redemption payments" which relate to loans raised to finance the purchase of the additional land adjacent to Museum Station for redevelopment, referred to under the heading earlier herein "LaTrobe Street Designated Area".

### Proposed Borrowings 1977/78

For 1977/78 the Authority has been authorised to borrow \$51 million for new works by way of issues of Inscribed Stock or Debentures. This sum represents approximately 14.26% of Victoria's total allocation for semi-government issues in the year for new works and is a larger share of the State's allocation than any previously granted to the Authority.

As a result of a reduction from 50 to 45 in the percentage of Depositors' Funds which Savings Banks, (the Authority's largest subscribers in the past) are required by the Reserve Bank of Australia to invest in "prescribed securities", the Authority must anticipate more difficulty in arranging its borrowings than in previous years.

To meet its total commitments under its Works Program for 1977/78, the Authority expects to have further recourse to temporary accommodation under Treasurer's Determinations in 1977/78 pending its absorption into Inscribed Stock or Debentures.

Most of the amount which the Authority may borrow in 1977/78 is required to meet commitments under contracts which have already been let.

### Expenditure

The Authority's expenditure for the year on Loop works, other fixed assets and administrative expenses amounted to \$53,416,876. Total expenditure to date for the same items is \$142,464,143.

Interest payable, less interest receivable, amounted to \$10,299,484 for the year and totals \$20,622,642 to the 30th June 1977.

### Proposed Expenditure 1977/78

The total expenditure proposed by the Authority in 1977/78 is \$74.7 million including interest and redemption payments of \$16.1 million.

### Revised Construction Cost

The estimated cost of the works, based on costs of material and labour at June 1977 prices is \$244 million, exclusive of the cost of land acquisition, signalling and communications, booking halls not provided for in the first estimate, consultancy, administration and interest on moneys borrowed. This compares with \$226 million stated in the previous report based on June 1976 prices and the Authority's first estimate of \$117.23 million based on prices current in the last quarter in 1971.

The increased estimate is due principally to increases in the costs of materials and labour. The excluded items, other than interest on moneys borrowed, are expected to cost in the order of \$84 million (\$75 million last year) making a total estimate of \$328 million for the cost of the Loop at June 1977 prices (\$301 million at June 1976 prices).

### Information Services

The Authority's public information service involved

- the handling of continuous enquiries from interested members of the community, students and visitors from other states and overseas
- provision of specific assistance for collation of research material and preparation of theses
- talks and lectures to professional, business and student bodies, service clubs and special-interest associations
- installation of colour photographic displays in appropriate locations
- preparation and dissemination of educational and descriptive literature
- movie film production
- assistance to all branches of the news media and the preparation of articles for magazines and journals.

Information facilities were provided at the Authority's Office in Queen Street, at 204-206 LaTrobe Street (site office for Museum Station), and a lecture and display area was maintained at the Flagstaff Station site office.

Conducted tours of works areas were provided throughout the year and invited groups represented a wide cross-section of the community. Visits by Members of the Victorian Parliament and the Lord Mayor and Councillors of the City of Melbourne were arranged. A second colour film produced for the Authority, "Action Loop" was first screened at the State Film Theatre in June. It was produced in both 35 mm and 16 mm sizes, and accepted for commercial theatre distribution throughout Australia. Copies of the film were placed in the State Film Centre Lending Library.

### Acknowledgements

The Authority is especially appreciative of

- the assistance and advice given by The Honorable J. A. Rafferty M.P., Minister of Transport, the officers of the Ministry and officers of the Treasury
- the contributions of its Consultants
- the co-operation of the Melbourne City Council and its executive officers, particularly in relation to the Museum Station Development Area planning and negotiations
- the continued support of the banking system and the participation of the subscribers to its financial requirements
- the extensive coverage of Loop activity by the Media and the quality of the reporting and photographic presentation.



## Statement of Financial Position

As at 30th June 1976		As at 30th June 1977	
\$	\$	\$	\$
<b>Fixed Assets—See Note 1</b>			
74,104,206	Loop Development Account—See Note 2	120,128,612	
99,937	Plant	120,744	
94,204	Office Furniture Fittings & Equipment	101,706	
6,609	Motor Vehicle	6,609	
	Land Acquisitions & Expenses		
	Section 30A	6,101,014	
12,693,480	Other—See Note 3	13,281,304	
		19,382,318	
86,998,436			139,739,989
318,256	<b>Investment—Sinking Fund</b>		545,678
<b>Current Assets</b>			
66,548	Cash at Bank and on Hand	2,704	
6,971,000	Investments—Short Term	5,000	
384,052	Accrued Interest Receivable	38,125	
416,709	Prepayments	423,636	
		469,465	
7,838,309			469,465
<b>Intangibles—Capitalised Costs</b>			
2,048,831	Administrative Expenses—See Note 4	2,724,154	
10,323,158	Interest (Net)—See Note 5	20,622,642	
293,660	Contributions to Sinking Fund	490,035	
		23,836,831	
12,665,649			23,836,831
107,820,650			164,591,963
<b>Less Current Liabilities</b>			
	Bank Overdrafts	2,069,906	
	Short Term Advances—Section 20	4,000,000	
490,000	Inscribed Stock Applications	1,215,000	
307,487	Sundry Creditors	3,198,914	
2,055,984	Accrued Interest Payable	3,205,606	
6,967	Contractors' Deposits	32,375	
		13,721,801	
2,860,438			13,721,801
<b>Reserves</b>			
318,256	Sinking Fund Reserve	545,678	
		14,267,479	
3,178,694			14,267,479
\$104,641,956			\$150,324,484
<b>SOURCE OF FUNDS</b>			
<b>Contributions—Pursuant to Sections 25 and 26 of the Act</b>			
To Loan Redemption Payments			
3,315,340	Victorian Railways Board	5,148,373	
2,481,124	City of Melbourne	3,396,124	
2,481,124	Melbourne & Metropolitan Board of Works	3,853,624	
1,646,905	Consolidated Fund	6,676,373	
		19,074,494	
9,924,493			19,074,494
To Administrative Expenses			
56,975	Victorian Railways Board	56,975	
	For Capital Works		
2,137,121	Victorian Railways Board	2,137,121	
		21,268,590	
12,118,589			21,268,590
<b>Loans</b>			
90,535,423	Secured by Inscribed Stock	127,074,813	
1,987,944	Works and Services Account	1,981,081	
		129,055,894	
92,523,367			129,055,894
\$104,641,956			\$150,324,484

## Notes on Statement of Financial Position

Year Ended 30/6/76		Year Ended 30/6/77	
\$	\$	\$	\$
<b>Note 1</b>			
<b>Fixed Assets</b>			
Fixed Assets are shown at cost. No provision is made for Depreciation.			
<b>Note 2</b>			
Loop Development Account includes advances to contractors on account of future works of \$2,490,000. No provision has been made for the value of work which may have been done by contractors but which had not been certified by the Authority's Consultants (as "Engineer" under the Contracts) as at 30th June, 1977.			
<b>Note 3</b>			
The Authority has taken possession of certain land for which it has not reached agreement as to the amount of compensation payable. The value of that land and provision for such compensation are not included in the Statement of Financial Position.			
<b>Note 4</b>			
<b>Administrative Expenses</b>			
The expenditure for the year was as follows:—			
	Salaries and Allowances	372,836	
	Other Administrative Expenses	302,487	
		\$675,323	
<b>Note 5</b>			
<b>Interest</b>			
The net expenditure for the year was as follows:—			
	Paid and Payable		
	—on loans raised to finance the purchase of property acquired under Section 30A.		298,283
7,007,019	—on other borrowings	10,504,502	
	Less Interest Received and Receivable	503,301	
1,442,800		10,001,201	
			\$10,299,484
\$5,564,219			



W. L. R. Daniels  
Secretary.

### Audit Certificate

The books and accounts of the Melbourne Underground Rail Loop Authority for the year ended 30th June, 1977 have been audited.

The foregoing statement of balances, read in conjunction with the explanatory notes, is in my opinion, properly drawn up so as to exhibit a true and fair view of the financial position of the Authority as at 30th June, 1977.



B. J. Waldron  
Auditor General.  
27th October, 1977.



## Senior Officers

<b>J. W. Anderson, BE, GIEAust</b>	Assistant Executive Engineer, Electric Power Signals & Communicatons
<b>M. Armstrong, AASA, ACIS, AAIM</b>	Manager, Accounting and Contracts Administration
<b>G. G. Bennett, BCE, MIEAust, MICE</b>	Executive Engineer, Railway Activities
<b>W. L. R. Daniels, FCIS, FASA</b>	Secretary and Assistant General Manager— Administration
<b>J. C. Davey, AASA, ACIS</b>	Assistant Secretary and Registrar
<b>T. J. Dwyer, BA, AFAIA(Dip)</b>	Information Services Officer
<b>M. C. Healy, BME, FIEAust, FIArbA, AMAImm</b>	Chief Manager, Works and Contracts
<b>C. Davidson Johnstone</b>	Manager, Property Development
<b>J. Skopakow, Dip Arch</b>	Executive Architect & Assistant Manager, Architectural Contracts
<b>E. G. Terry, BE, MIEAust</b>	Executive Engineer, Structures & Buildings
<b>M. F. R. Thomson, Dip EE, Dip MechE, MIEAust</b>	Executive Engineer, Electric Power Signals & Communications
<b>F. G. Watson, BA, FIEAust, FAIM, MIET, M-SAE-A</b>	General Manager and Director of Engineering
<b>R. A. Wegener, ED, BE, MIEAust, AMAImm</b>	Senior Executive Engineer

## Design Concepts for Museum Station

Conceptual drawing for (right) platforms at Museum Station and (below) the station concourse.

Research, planning, investigation and evaluation of station designs and finishes were an important aspect of activity during the year.

Architectural Consultants to the Principal Consultants were appointed at an earlier date for Museum and Parliament Stations. At the end of the year a sub-consultancy appointment for Flagstaff Station was pending.

Museum Station will be the first of the three underground stations to come into service. It is planned to be in operation by the end of 1979.

