BTE Publication Summary

Assessment of Investment in Urban Public Transport 1977/78 to 1979/80

Report

This is the fourth Report by the BTE on capital investment in urban public transport. It differs from previous Reports produced in that it presents an estimate of economically warranted investment for the period 1977-78 to 1979-80 rather than an evaluation of a specific program of projects put forward by State Authorities.







BUREAU OF TRANSPORT ECONOMICS



Bureau of Transport Economics

ASSESSMENT OF INVESTMENT

IN URBAN PUBLIC TRANSPORT

1977-78 TO 1979-80

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FOREWORD

This is the fourth report by the BTE on capital investment in urban public transport. It differs from previous reports produced in June 1972, August 1973 and April 1975 in that it presents an estimate of economically warranted investment for the period 1977-78 to 1979-80 rather than an evaluation of a specific program of projects put forward by State Authorities.

The work, which was carried out by the Transport Engineering Branch under the general direction of R.W.L. Wyers, drew heavily on previous evaluations in developing criteria for warranted expenditure. The study team was led by R.H. Heacock assisted by L.M. Oxlad.

> J.H.E. Taplin Director

Bureau of Transport Economics, Canberra, November 1975.

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SUMMARY

The objective of this study has been to delineate a program of expenditure on urban public transport for the period 1977-78 to 1979-80 which is economically warranted and within the physical and financial capabilities of the States.

The approach has been to investigate each States likely urban transport needs, taking cognisance of the recommendations of urban transport studies, and to integrate the future needs with the improvements already being made. The development program has been constrained by the capacity of industry to maintain high levels of civil engineering construction and rolling stock manufacture. The ability and willingness of State Treasuries to finance both existing programs and their share, presumably one-third, of the programs outlined in this report has also been taken into account.

The investment program developed by BTE envisages expenditure of \$771.6 million during the period 1977-78 to 1979-80. This total is composed of \$77.8 million for projects already approved for Australian Government support and \$693.8 million for a recommended program of new works. In addition, the States are expected to fund investments of \$167.9 million from their own resources.

On a State by State basis the money for the recommended and already approved projects is allocated to the States as follows:

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State	Expenditure (\$m)	Percent of Total	
New South Wales	301.8	39.1	
Victoria	220.7	28.6	
Queensland	129.2	16.7	
South Australia	73.2	9.5	
Western Australia	32.1	4.2	
Tasmania	14.6	1.9	
AUSTRALIA	771.6	100.0	

On a modal basis the composition of the program is:

Mode	Expenditure (\$m)	Percent of Total	
Rail	462.4	59.9	
Bus	190.2	24.7	
Tram	40.3	5.2	
Ferry	8.4	1.1	
Passenger Interchanges	49.6	6.4	
Miscellaneous	20.7	2.7	
TOTAL	771.6	100.0	

The BTE has examined the problems of developing an expenditure allocation formula. Given the transport task to be performed in each city a tentative allocation is suggested:

Sydney	46%
Melbourne	32%
Br is bane	8%
Adelaide	7%
Perth	7%
Hobart	1%

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New South Wales

Public Transport Commission of New South Wales Ministry of Transport

Queensland

Department of Transport Metropolitan Transit Project Board Queensland Government Railways Main Roads Department Co-ordinator General's Department Brisbane City Council

South Australia

Department of Transport South Australian Railways Municipal Tramways Trust

Tasmania

The Transport Commission Metropolitan Transport Trust

Victoria

Ministry of Transport Victorian Railways Melbourne and Metropolitan Tramways Board

Western Australia

Office of the Director General of Transport Metropolitan (Perth) Passenger Transport Trust

CHAPTER 1

PUBLIC TRANSPORT IN AUSTRALIAN CAPITAL CITIES

1.1 HISTORY

In the past, the various modes of public transport (trains, trams, buses and ferries) have been operated by separate authorities and have developed individually with some degree of competition between them. Thus improvements have tended to be mode oriented and capital expenditure has been related to the individual mode rather than to the total system. Under pressure of continuous losses underwritten by State authorities moves have been made to rationalise urban public transport systems under single controlling authorities, such as the Public Transport Commission in NSW, but the solution to each problem tends to be sought within the framework of a single mode. However, system thinking is reflected in the number of passenger interchange projects being considered and the introduction of single ticketing systems to cover all modes.

The magnitude of the urban public transport task in any city is the sum of the individual passenger journeys undertaken by public transport. A simple statistic which gives a fair reflection of the task is the number of passenger journeys undertaken by public transport. The combined total for the six State capital cities since 1960/61 has been plotted in Figure 1.1. Also shown in that figure is a breakdown of the total in terms of the tasks performed by government buses and trams, trains, private buses and ferries.

The figure shows that there has been a steady decline in the passenger journeys undertaken by public transport since 1960/61 although there is some sign of a flattening of the curve since 1972. The decline in patronage has mainly been in trips by government buses and trains, but this trend has been reversed in the period 1972/73 and 1973/74. At least part of this reversal is spurious, however, being



SOURCE : BTE ESTIMATE

FIGURE 1.1 URBAN PUBLIC TRANSPORT PASSENGER JOURNEYS FOR SIX STATE CAPITALS

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the result of public authorities taking over private bus routes. Thus the upturn may be more apparent than real. Train patronage remained relatively constant from 1960/61 to 1971/72, but shows a decline since then.

Overall then there is little evidence of any increase in the use of the existing urban public transport services and the downward trend in patronage would seem likely to continue unless significant system improvements can be undertaken. In this context it should be noted that the provision of Australian Government funds for urban public transport capital projects since 1972 has not yet had time to take full effect.

A major problem facing the public transport operator is the peakiness of the demand. This is illustrated by Figure 1.2 which shows the distribution of person journeys by time of day for Sydney in 1971. The data are plotted by purpose of journey and show that the school load morning peak coincides with the peak for journeys to work.

FIGURE 1.2 - DISTRIBUTION OF PERSON JOURNEYS BY TIME OF DAY, BY JOURNEY PURPOSE

SYDNEY 1971



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The peak to off-peak ratio is very important in public transport planning since the capital investment and labour requirements are a function of the peak load. A "peaky" journey distribution means that inefficient use is being made of available resources. Thus it is desirable that any program of capital investment to overcome peak load capacity constraints should be complemented by an operational program aimed at reducing the difference between peak and off peak loading. Such a program would need to be largely outside the transport sector and would involve attempts to stagger working hours, school hours, shop opening times, etc.

Since capital investment is associated with meeting the peak load condition, it would be economic for fares to be higher in peak periods than off-peak. It is unlikely that such a surcharge would lead to significant changes in travel pattern because of the inelastic nature of the public transport demand⁽¹⁾, but it would be a financial benefit to the operating authorities and a more equitable distribution of capital costs. The magnitude of any peak period premium to be applied is difficult to determine, however, because of the use by operators of old rolling stock to supplement the main vehicle fleet in peak periods. Many old vehicles are used only in peak periods so that their high maintenance cost (on a per hour or per kilometre basis) is of little significance. Labour costs are also heavily dependent on peak loads, especially as one continuous shift will not, in general, cover both morning and afternoon peak and the cost of meeting these wage premiums is attributable directly to the peak load.

While the fall-off in urban public transport patronage has been steady the change relative to motor car usage has been striking. The proportion of the workforce travelling to work by car in State capitals rose from 60 percent in 1970 to 66 percent in $1974^{(2)}$. There is no doubt

(2) Australian Bureau of Statistics Bulletin, Journey to work and school, 1974.

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Indications are that demand for public transport has a price elasticity of about -0.5.

that this change is a reflection of many factors, including the trend away from the concentration of the workforce in the central business district of major cities and the radial structure of most public transport systems. It may well prove that the ability of a public transport system to serve the needs of a decentralised workforce will be decisive in deciding whether or not it will remain viable. This factor must be given due weight in evaluating capital projects for urban public transport improvements.

Current Australian Government policy is aimed at providing funds for capital expenditure in the urban public transport field to raise the standard of service provided. This is in line with general policy on improving the quality of life for city dwellers and reducing dependence on the private motor car. It is emphasised that the current program is concerned with capital investment within the current institutional framework. Thus this report is concerned with the preparation of a capital expenditure program and is not concerned directly with operating procedures and pricing policies. The evaluation procedures are based on the estimation of total community benefits and costs and no account is taken directly of the financial effect on the operating authorities. Thus while many of the projects under consideration may lead to reduced operating deficits, this is not the main criterion for approval.

1.2 CAPITAL NEEDS FOR URBAN PUBLIC TRANSPORT

Logically, the capital stock of a particular public transport system should be compatible with the transport task undertaken by the system. Similarly, division of expenditure between systems should be on the basis of providing additional capital to those systems whose capital stock is least in proportion to their task. A satisfactory estimate of capital stock for the 'arious capital city urban public transport systems is not available, but it is possible to estimate the transport task in each case and to calculate the proportion of funds which should go to each State based

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on the assumption that existing capital stocks are about the same, in proportion to the task, for each $\operatorname{city}^{(1)}$.

Table 1.2.1 gives the actual passenger journeys undertaken by public transport in each State capital city in $1971^{(2)}$.

City	Passenger Bus/Tram	Journeys Train	(millions) Total	Distribution by city (%)
Sydney	229,9	196.1	426.0	46
Melbourne	132.5	138.1	270.7	29
Brisbane	65.2	27.6	92.8	10
Adelaide	43.5	13.4	56.9	6
Perth	57.7	10.8	68.5	7
Hobart	14.8	-	14.8	2
Total	543.6	386.0	929.6	100

TABLE 1.2.1	- PASSENGER	JOURNEYS	$\mathbf{B}\mathbf{Y}$	URBAN	PUBLIC	TRANSPORT

It is generally accepted that the number of trips generated in an area is proportional to the population of that area. Table 1.2.2 shows the population for the urban areas for 1971 and the distribution between cities.

(1)In fact, the following number of vehicles per million passenger trips indicate that Sydney and Melbourne have less capital stock relative to their tasks than do the smaller cities: Sydney Nelbourne Brisbane Adelaide Perth Hobart City Buses (or trams)/million 7 bus or tram trips 8 8 13 13 13 6 Carriages/million train trips S 14 11 8 -

(2) Public Transport Authority published records.

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City	Urban Area (Sq. miles)	Population (Millions)	Population Distribution (%)
Sydney	16.85	2,725	36
Melbourne	13.01	2.394	32
Brisbane	9.30	0.818	11
Adelaide	8.56	0.809	11
Perth	8.56	0.642	9
Hobart	3.75	0.130	3
			100

TABLE 1.2.2 - POPULATION OF URBAN AREAS OF STATE CAPITAL CITIES

Comparison of tables 1.2.1 and 1.2.2 shows that the number of trips by public transport in each city is not a simple proportion of the population of that city, reflecting the fact that the modal split differs from city to city. Published figures are available for the modal split among work trips in $1970^{(1)}$ and these are given in Table 1.2.3.

TABLE 1.2.3 - MODAL SPLIT FOR WORK TRIPS IN STATE CAPITAL CITIES

City	Modal Split - %				
	car public transp		ort other		
Sydney	53.4	36.7	9.9		
Melbourne	58.0	30.9	11.1		
Brisbane	63.6	28.5	7.9		
Adelaide	69.5	19.6	10.9		
Perth	69.8	21.0	. 9.2		
Hob ar t	64.2	19.7	1 6.1		
All Cities	59.1	30.6	10.3		

(1) Australian Bureau of Statistics Bulletin, Journey to Work and School, 1974. If the journey to work is accepted as an analogue of the urban transport task in general then the population distribution between cities must be factored by the appropriate modal split value to generate the expected number of public transport trips. The result of this process (using the data in Tables 1.2.2 and 1.2.3) is the following distribution of public transport trips among cities:

Sydney	44%
Me1bourne	32%
Brisbane	10%
Ad ela ide	7%
Perth	6%
Hobart	1%

Thus there is close agreement between the actual trip distribution and the predicted values using work trip modal split.

If the overall public transport task for a city is expressed as a function of the population and the average trip distance then, from the data contained in Table 1.2.2, it is possible to predict the distribution of task by city as:

Sydney	46%
Melbourne	32%
Brisbane	8%
Adelaide	7%
Perth	6%
Hobart	1%

1.3 INCOME DISTRIBUTION EFFECTS

Trips by public transport are subsidized by the community, through taxes, to the extent that fares fall short of the cost. Investment in public transport can affect the subsidy in three ways; first, it may reduce the subsidy per trip by reducing the operating costs. Secondly, the investment may extend the subsidy to larger groups of passengers through either increased capacity or extended services. Finally, an investment may increase the subsidy per trip through improvements to existing services. Investment that results in travel time savings or enhanced passenger amenity fall into the latter category.

If an investment reduces the operating deficit then the share of taxes allocated to public transport can be reduced. In this event, taxpayers benefit.

If investment extends transport services to more people then the resultant subsidy can favour one group to the relative disadvantage of others who share the costs but not the benefits of the extended system.

An investment designed to improve the quality of existing services will also have an effect on the distribution of benefits to users. In this case, the relative allocation of subsidies can be assessed by considering the income distribution of tripmakers, which for Sydney, is shown in Figure 1.3. Urban road users have mean and median incomes higher than those of the population as a whole. Users of rail and buses are on the average less affluent than the population as a whole; the average income of bus users is lowest of all.

The relationships between the incomes of road, rail and bus users is also shown by Table 1.3.1. Here, the ratios of train trips to bus trips and road to bus trips is shown for each income group. The ratios increase with increasing income indicating that the high income groups have a high propensity to use cars. Also they have a higher propensity to use train than buses; this may reflect the forms of public transport available.

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HOUSEHOLD INCOME DISTRIBUTION OF TRIPMAKERS BY TRANSPORT MODE SYDNEY 1971

FIGURE 1.3

TABLE 1.3.1 - RATIOS OF ROAD AND TRAIN TRIPS TO BUS TRIPS -BY INCOME GROUPS

Income group (\$ per year)	<u>Road trips</u> Bus trips	<u>Rail trips</u> Bus trips
Less than 4000	3.071	0.682
4000 – 5000	4.893	0.857
50 00 - 6000	5.495	0.766
6000 - 7000	6.402	0.928
7000 - 8000	5.549	0.761
8000 - 9000	6.882	0.946
9000 - 10000	7.086	1.022
10000 - 11000	7.122	1.089
11000 - 12000	7.174	1.054
12000 plus	8.900	1.013
Income not known	5.550	0.927
Total	5.477	0.862

(Sydney 1971)

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CHAPTER 2

MODE CHARACTERISTICS

2.1 SUBURBAN RAILWAYS

At present all the State capital cities except Hobart operate a suburban railway system. In both Sydney and Melbourne the major portion of the system is electrified using a 1500 volt DC system. Electrification of the Brisbane system has begun although no electric trains are yet in operation. The system being developed is based on a power supply of 25000 volt AC. Planning is under way for the electrification of the Adelaide system, but no decision as to the power supply characteristics has yet been taken. In Perth the future of the suburban railway system has been debated at length since a study by a consultant in 1974 indicated that replacement of the railway by a busway system was warranted on economic grounds⁽¹⁾.

As may be observed from Table 1.2.1 the proportions of public transport trips which take place on the suburban railway system are:

Sydney	46%
Melbourne	51%
Brisbane	30%
Adelaide	24%
Perth	16%

In both Sydney and Melbourne some sections of line operate at full capacity during peak period operations. In these areas, in order to increase passenger capacity, it is necessary either to lay additional track or, as has been done over recent years in Sydney, to increase passenger loads by the use of double-deck carriages.

Wilbur Smith and Associates, <u>Perth Central City Railway</u> <u>Feasibility Study</u>, 1974.

Decentralisation of the work areas of Sydney and Melbourne may tend to reduce the capacity problem, but appears unlikely to have a significant effect in the forseeable future. By and large the railway systems were set up to serve the central business district of each capital city and decentralisation, except in such special cases as Parramatta, will tend to load other forms of transport rather than the railways. The high capital cost of railway extensions and new routes makes it certain that, in most cases, new development areas will be served by bus. Thus emphasis is likely to be on passenger interchanges to make best use of the existing railway infrastructure by way of bus feeder systems.

The age of much of the rolling stock (particularly in Sydney, Melbourne, Brisbane and Perth) is a source of concern to the state authorities. Table 2.1.1 gives an age distribution for Sydney and Melbourne fleets.

Age Group (Years)	Number of Vehicle Victoria	s in Group NSW
0 - 10	179	273
11 - 20	315	40
21 - 30	39	140
31 - 40		102
41 - 50	93	593
50 +	441	32

TABLE 2.1.1 - RAILWAY ROLLING STOCK AGE PROFILES (1974) (a)

(a) Based on communications from NSWPTC and Victorian Railways.

With the aim of reduced maintenance costs and improving public acceptance it is desirable that vehicles over thirty years old be removed from the fleet. Both systems have started replacement programs aimed at achieving this goal over the next ten years.

No similar age profiles are to hand for the other systems, but some two thirds of the Brisbane fleet is made up of old, wooden sided cars. Similarly Perth rolling stock is generally old. Adelaide has fairly good rolling stock, with a majority of comparatively modern diesel vehicles. These three systems will change to modern rolling stock if the planned electrification programs are carried out.

2.2 TRAMS

Of the State Capital cities, only Melbourne retains a significant tramway system. In 1971 some 40 percent of suburban public transport journeys were undertaken by tram. In Adelaide the Glenelg tram line remains operational, but carries only a small part of the public transport load.

In 1972 BTE reported $\binom{1}{1}$ that the Melbourne and Metropolitan Tramways Board rolling stock consisted of 696 trams, varying in age from 16 to almost 50 years, with approximately half the fleet over 40 years old. The Board continues to stress the high cost of maintaining old rolling stock and their aim is to replace at least 100 vehicles as soon as possible.

Some plans for extension of the tramway system are under consideration, but constraints affecting railway development tend to apply also to tramways. There are high capital cost of new routes and a lack of flexibility to respond to changed land use patterns.

The Glenelg tramway in Adelaide operates as a light railway (that is it runs in a separate right-of-way for much of its route) and development plans are mainly concerned with improving at-grade crossings and providing some limited passenger interchange facilities.

⁽¹⁾ Economic Evaluation of Capital Investment in Urban Public Transport, BTE, 1972, Annex F, Project 24.

2.3 SUBURBAN BUSES

As may be observed from Table 1.2.1 buses are the main form of public transport in the smaller State capital cities (Brisbane, Adelaide, Perth, Hobart). Capital expenditure in these systems is mainly for bus replacement and fleet expansion. The age profiles of the various fleets are shown in Table 2.3.1.

TABLE 2.3.1 - BUS FLEET ROLLING STOCK AGE PROFILES (1974)

Age Group (Years)	Sydney	Melbourne	Brisbane	Adelaide	Perth	Hob a rt
0 - 5	708	-	150	377	235	45
6 - 10	117	100	311	57	216	81
11 - 15	382	-	47	101	165	68
16 - 20	339	58	32	5 3	6 3	8
21 - 25	248	100	-,	-	98	-
26 - 30	25	-	- -	-	4	-

(Number of Buses in the Age Group)

Sources: From information supplied by operating authorities.

The table shows that Sydney, Melbourne and Perth all have significant numbers of buses over 20 years old and all fleets contain buses over 15 years old. The aim of authorities is to eliminate buses over 15 years old to reduce maintenance costs. Modern bus design tends to be based on a 15 year working life and spare parts production is based on this. In addition, old buses tend to use more fuel and to fall below acceptable environmental standards in terms of noise and chemical pollution. Also, old buses were not designed for one man operation and are slow to load and discharge passengers.

Bus patronage in all State capitals except Perth decline fairly steadily through the period 1960/61 to

1971/72, but has shown a recovery since then. In Perth, however, patronage has tended to increase over the whole period.

Major capital expenditure on busways has been planned only in Perth where they have been incorporated in freeway design. Authorities in most other cities have been content so far with investigating bus priority systems on existing roads.

Capital expenditure on facilities affecting user comfort and convenience (e.g. interchanges, simple ticketing systems) are the other major items in bus system development planning.

CHAPTER 3 DERIVATION OF URBAN PUBLIC TRANSPORT CAPITAL EXPENDITURE PROGRAM

3.1 OBJECTIVE

The objective of the study was to derive a program of expenditure on urban public transport for each State capital city which would be economically justified and which would be within the physical resources of each State. It was necessary that the program take cognisance of work already in hand, both that undertaken entirely from State financial resources and that being supported by Australian Government financial assistance.

3.2 EVALUATION PROCESS

In previous evaluations by $BTE^{(1)}$ the procedure adopted has been to take a list of projects formally proposed by the various State Governments and to evaluate each project in detail to determine benefits and costs. This approach requires that projects be completely defined and that they have reached a planning stage where detailed cost estimates can be provided. In most instances State planning authorities have not developed detailed plans for projects intended to be undertaken near the end of the present planning period (i.e. in the years 1977/78, 1978/79 and 1979/80) and so a different approach was developed.

The procedure adopted consisted of five stages:

Examination of State capital urban public transport systems to identify weaknesses and problem areas and to define projects to overcome these problems,

(1)	a.	Economic Evaluation of Capital Investment in Urban
. ,		Public Transport, Bureau of Transport Economics,
		Canberra, June 1972.

- b. <u>A Review of Public Transport Investment Proposals</u> <u>for Australian Capital Cities, 1973/4</u>, Bureau of Transport Economics, Canberra, August 1973.
- c. <u>A Review of Public Transport Investment Proposals</u> for Australian Capital Cities, 1974/5, Bureau of Transport Economics, Canberra, April 1975.

- . Production of order-of-cost estimates for the projects,
- Estimation of the economic merits of each project based upon the results of previous BTE evaluations of a wide range of similar projects,
- . Combination of warranted projects into a coherent program of expenditure for each State,
- . Adjustment of the timing of projects to give a reasonable profile of needs for funds and to allow for limitations to the physical resources available within each State.

The starting point for identification of public transport improvement projects was to examine, firstly, the programs submitted by the States for Australian Government support in 1972, 1973 and 1974, and, secondly, the projects being undertaken by the States without Australian Government support. From this base it was possible to identify many projects which follow logically from those already under way or planned in detail. Extension of railway electrification, provision of additional services, provision of busways, replacement and addition of rolling stock, provision of passenger interchanges, etc. can be foreshadowed with some degree of confidence from existing projects.

In addition, much of the current transportation planning being undertaken by State authorities is based upon the results and recommendations of major transport studies (1).

(1)	a.	Sydney Area Transportation Study, May 1974.
	b.	Melbourne Transportation Study, Volume 3: The Transportation Plan, the Metropolitan Transportation Committee, December 1969.
	с.	South-East Queensland Brisbane Region Public Transport Study, Wilbur Smith and Associates, April 1970.
	d.	Report on Metropolitan Adelaide Transportation Study, de Leuw Cather & Co., Rankine & Hill, Alan M. Voorhees and Associates Inc., June 1968.
	e.	Perth Regional Transport Study 1970, January 1971.
	f.	<u>Perth Central City Railway Feasibility Study</u> , Wilbur Smith & Associates, 1974.

Using these studies and the known line of development adopted by State planning authorities, it was possible to identify a series of projects likely to be undertaken towards the end of the present decade.

Once a list of likely projects had been drawn up the next step was to make estimates of the costs involved. The usual process of establishing preliminary engineering designs as a basis for estimation was not possible because of time constraints and so order-of-cost estimates were made on the basis of cost estimates for previous similar projects.

At this stage the list of projects and cost estimates were discussed informally with State authorities.

In order to estimate the economic merit of the projects listed, a review was made of previous evaluations of public transport projects. The results of previous evaluations are summarised in Tables 3.2.1 and 3.2.2.

The benefit-cost ratios shown in these tables do not alone represent a good basis for ranking projects in any order of priority. There are several reasons for this. Firstly, it may be seen from some of the data presented in the tables that individual projects within a given type of project may display marked differences in benefit-cost ratio. For example, in Table 3.2.1, it may be observed that additional track projects for Victorian railways have produced benefitcost ratios varying from 0.8 to 3.5. Secondly, there is the problem of fundamental differences between types of project. Where a series of projects are tested which provide mutually exclusive solutions to one particular problem the benefit-cost ratios do provide a good basis for ranking since the assumptions are common to all and, usually, changes in assumptions will not affect the ranking of projects. Where projects are aimed at solving different problems, however, the basic assumptions are likely to be different and to have different relative effects on the project evaluations. Thirdly, different projects generate different types of benefits. Fourthly, even within a single category of project, the use of different base cases for

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	BENEFIT-COST RATIO RANGES ⁽¹⁾					
	NSW	QLD	SA	TAS	VIC	WA
RAILWAY						
Additional tracks	0.7 - 2.9	2.5	3.4	na	0.8 - 3.5	0.3
Electrification	0.8 - 2.9	1.7 - 3.7	2.4	na	0.8 - 1.0	0.3 - 1.4
Signalling	0.9 - 1.3	na	na	na	0.9 - 3.0	na
New Routes	1.2	1.7	3.4	na	0.9	na
Rolling Stock	1.0 - 1.5 ⁽²⁾	na	na	na	1.5 ⁽³⁾	na
BUS						
Busways	na	na	na	na	na (J)	2.6 - 6.0
Rolling Stock	1.3	1.1 ⁽⁴⁾	0.7 - 0.9 ⁽⁵	0.8 - 1.	$1^{(4)}$ 1.1 - 1.2 ⁽⁴⁾	1,3 ⁽⁴⁾
TRAM						
Route Upgrading	na	na	0.6 - 1.7	na	1.1 - 2.3	na
Rolling Stock	na	na	na	na	1.1 - 1.2 ⁽²⁾	na
FERRY						
Vessels	3.6	na	na	na	na	na
PASSENGER INTERCHANGES						
Rail	na	1.1 - 4.4	1.1 - 2.6	na	na	na
Buș	na	na	na	na	1.0 - 4.3	1.0 - 6.6
Tram	na	na	na	na	na	na
Ferry	na	na	na	na	na	na

TABLE 3.2.1 - ECONOMIC MERIT OF URBAN PUBLIC TRANSPORT PROJECTS - 10 PERCENT DISCOUNT RATE

na - results not available or not applicable.

 Where a range of benefit-cost ratios are not available the most recent single value has been inserted in table.

- (2) Generally replacing 45 year old stock
- (3) Generally replacing 60 year old stock
- (4) Generally replacing 20 year old stock
- (5) Generally replacing 16 year old stock

	BENEFIT-COST RATIO RANGES ⁽¹⁾					
	NSW	QLD	SA	TAS	VIC	WA
RAILWAY						
Additional Track	0.7 - 4.2	3.4	4.7	na -	1.2 - 4.9	0.4
Electrification	1.0 - 3.7	2.4 - 5.3	3.1	na	1.0	0.5 - 2.1
Signalling	1.2 - 1.6	na	, na	na	1.1 - 4.7	na
New Routes .	1.7	2.4	4.7	na	1.1 - 1.4	na
Rolling Stock	1.2 - 1.7 ⁽²⁾	na	na	na	1.7 ⁽³⁾	na
BUS						
Busways	na	na	na (-)	na	na	4.0 - 8.1
Rolling Stock	1.4 ⁽⁴⁾	1.2 ⁽⁴⁾	0.8 - 1.1 ⁽⁵⁾	0.9 - 1.2 ⁽⁴⁾	1.2 - 1.3 ⁽⁴⁾	1.4(4)
TRAM						
Route Upgrading	na	na	0.8 - 2.3	na	1.6 - 2.7	na
Rolling Stock	na	na	na	na	1.3 - 1.4 ⁽²⁾	na
FERRY						
Vessels	4.9	na	na	na	na.	na
PASSENGER INTERCHANGES						
Rail	na	1.6 - 5.3	1.2 - 3.3	na	na	ña
Bus	na	na	na	na	1.2 - 5.2	1.2 - 8.5
Tram	na	na	na .	na	na	na
Ferry	na	na	na	na	na	na

TABLE 3.2.2 - ECONOMIC MERIT OF URBAN PUBLIC TRANSPORT PROJECTS - 7 PERCENT DISCOUNT RATE

na - results not available or not applicable.

(1) Where a range of benefit-cost ratios are not available the most recent single value has been inserted in table.

- (2) Generally replacing 45 year old stock
- (3) Generally replacing 60 year old stock
- (4) Generally replacing 20 year old stock
- (5) Generally replacing 16 year old stock

different projects can invalidate ranking on the basis of benefit-cost ratio.

These problems in ranking by benefit-cost ratio can be illustrated by reference to the results of previous BTE evaluations.

Some sensitivity testing was done by BTE in its assessment of rail electrification schemes in 1975. It was observed that there were significant differences in the distribution of benefits between operator and users for the two Brisbane lines under consideration - the Northern and the Western. For the Northern line some two thirds of the benefits go to users while for the Western line benefits are divided fairly evenly between users and operators. This means that the results for the Western line are more robust in response to variations in parameters such as travel time value, comfort value, passenger conversion and generation rate, etc. Thus there is a difference in the evaluation of two similar projects in the same transport system.

The same type of difference is even more marked in the case of projects to provide additional track at various places in the Victorian railway system. For example, comparison of the evaluations for provision of a third track between Caufield and Mordialloc and duplication of the track between McLeod and Greensborough is instructive⁽¹⁾. The results are summarised in Table 3.2.3.

In the table social benefits are those going to travellers in reduced travel time, reduced road congestion, etc. and financial benefits are those going to the Victorian authorities in the form of reduced operating costs, reduced or deferred vehicle inventory and deferred road construction costs. The high benefit-cost ratio for the Caufield-Mordialloc project is dependent upon a comparatively large

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^{(1) &}lt;u>A Review of Public Transport Investment Proposals for</u> <u>Australian Capital Cities, 1973-74</u>, Bureau of Transport Economics, August 1973, Annex C, Projects V2 and V4.

conversion of passengers from other transport modes and savings in travel time whereas the major benefits for the McLeod-Greensborough projects are in the form of reduced operating cost and more effective use of vehicles. Thus, not only does the latter project have a benefit-cost ratio very nearly as high as the former, but it is likely to produce an improvement in the financial results of the railway and is less affected by assumptions concerning patronage levels, etc.

Item	Caufield- Mordialloc	McLeod- Greensborough	
Cost (\$m)	8.40	1.10	
% Benefit (Social)	79	17	
% Benefit (Financial)	21	83	
B-C Ratio	1.7	1.6	
Financial Net Present Value (\$m)	- 6.00	+ 0.10	

TABLE 3.2.3 - SUMMARY OF EVALUATIONS FOR TWO ADDITIONAL TRACK PROJECTS FOR VICTORIAN RAILWAYS

Evaluation of vehicle replacement projects is based largely upon benefits to operators in terms of reduced maintenance and other operating costs. High benefit-cost ratios are associated generally with old vehicle fleets and large reduction in maintenance costs. There are, however, other factors which should be considered when evaluating bus replacement projects. When replacement buses are obtained the old buses are not always scrapped or sold off. Many old buses are kept in service to provide additional capacity at peak periods. As mentioned previously, this complicates the problem of determining the equitable relationship between fares for peak and off-peak journeys. A fact which is, perhaps, of more immediate importance arising from this practise is that the vehicle fleet is being expanded by this process and so the project concerned should be regarded partly as an "additional bus" project and not entirely as a "bus replacement" project.

Accepting the fact that historical benefit-cost ratios may not be used directly to filter or rank projects, BTE identified the economically significant characteristics of each project and developed a series of minimum warrants which must be met before a project could be regarded as even marginally justified on economic grounds. These minimum warrants are summarised in Table 3.2.4.

These warrants represent necessary, but not sufficient, conditions to justify expenditure on any particular project of the type under discussion. It is assumed that civil engineering works are straightforward, uncomplicated and in accordance with prevailing practices, skills and machinery. Rolling stock designs are assumed to be in accordance with current standards. In every case it is assumed that the most economical of available technical alternatives is selected and that there is effective and efficient project management.

Finally, these warrants, if met, do not ensure that the transport problem being addressed by each project is being solved in the most effective manner and that all possible alternative solutions have been examined. They merely indicate that the proposal is a reasonable way of solving the problem.

This table of warrants in conjunction with Tables 3.2.1 and 3.2.2 formed the basis for acceptance or rejection of projects.
TABLE 3.2.4 - MINIMUM WARRANTS FOR URBAN PUBLIC TRANSPORT PROJECTS

Project Category	Rail	Bus	Tram	Ferry
Additional Track/Upgrading	(a) Present and/or near future predicted patronage exceeds 50,000 pass/day on existing line.	n/a	Upgrading to improve tram/street system interaction generally warranted.	n/a
Electrification/extension of electrification	Generally warranted for total diesel systems in Australian capital cities.	n/a	n/a	n/a
Signalling/Traffic management measures	Based on maintenance and labour cost and frequency of failure	Heavily trafficked road with ^(c) at least 5% buses.	As for upgrading.	n/a
New routes/Busways	Initial predicted patronage ^(a) exceeding 15,000 pass/day	 (i) 7,000 passengers/day^(c) (ii) Replace railway if^(a) patronage less than 10,000 pass/day (iii) On new urban freeway always warranted 	(a) Extension if predicted patronage exceeds 4,000 new routes generally not warranted.	n/a Koo I
Rolling Stock	 (i) Replacement of 30 year old(b) vehicles (ii) Additional vehicles if new traffic patronage equievalent to old. 	Replace 15 year old stock, additional ^(b) vehicles as for 'railways.	As for railways. (b)	Replace when hull will no longer pass survey, additional vehicles as for railways.
Interchanges	 (i) Space capacity on railway (iia) Edge of CBD: street vehicle operating speed in CBD is low (iib) Outer area: large time savings to patrons 	: Si milar to rail ' .	Similar to rail	Similar to rail

** For notes see next page.

TABLE 3.2.4 (Continued)

- <u>General Note</u>: Warrant for each category improvement relates to improvement over a "do nothing" case and does not indicate that it is the best of possible alternative improvements. Table gives necessary, but not sufficient conditions.
 - (a) Assumes at grade facility with minor land acquisition costs and no unusual civil engineering problems.
 - (b) Based on maintenance factors only: rolling stock and vessel assumed to conform to prevailing designs and manufacturing practices.
 - (c) Also depends upon (i) number of lanes (ii) intersection characteristics (iii) parking regulations (iv) bus stop frequency (v) bus load factor.

CHAPTER 4 THE PROPOSED 1977-78 TO 1979-80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM

4.1 STRUCTURE OF THE PROGRAM

The proposed National Urban Public Transport expenditure program was developed from expenditure programs for each State (detailed in Annex A). In order to assist the reader in understanding its relationship to existing programs expenditure has been recorded for three separate types of project:

- Projects already approved⁽¹⁾ for Australian Government support under existing legislation,
- . New projects which warrant support on economic grounds,
- . Some special major projects to which State authorities have a commitment, but for which no Australian Government funds have been provided,
 - The Melbourne Underground Loop,
 - The East Doncaster Railway,
 - The Frankston-Lyndhurst Railway,
 - The Sydney Eastern Suburbs Railway,
 - The Gosford to Newcastle Electrification Project.

These projects are expected to go ahead with or without Australian Government support and, hence, must be included in the overall expenditure program as representing a load on resources. The Melbourne Underground and the Eastern Suburbs Railway are both well under way. They are large projects which will have a significant effects on land use patterns and patronage patterns. Consequently,

Including the implied commitment beyond 1975/76 of funds required to complete these projects.

they are not amenable to evaluation along the lines indicated in Chapter 3 of this report. The Frankston-Lyndhurst Railway will also have a major effect on land use and so cannot be evaluated without a major study. The evaluation of the Gosford-Newcastle electrification project mode by the NSW Public Transport Commission was reviewed by the BTE and the project was assessed as being economically marginal. In the 1972 BTE report⁽¹⁾ a preliminary evaluation was made of the East-Doncaster Railway project. On the basis of the very limited data available the project was judged marginally viable. Subsequent increases in estimated costs suggest that Australian Government support for the project would not be justified.

The new projects include both those submitted by the States in the period 1973-76 which were deferred and those which the BTE expects the States to submit for Australian Government support in the period 1976-80.

In order to produce a coherent urban public transport expenditure program which was both economically warranted and within the financial and physical capacity of the States the BTE examined the new projects to identify those which were of immediate importance and those which could be deferred. Both economic merit and relationships with other projects were taken into account.

The proposed program of expenditure for the period 1977-78 to 1979-80 cannot be considered in isolation, but must be viewed in the context of the program which began in 1973. Thus the profile of expenditure proposed for the period 1977-78 to 1979-80 is indicated in figure 4.1 as part of the overall expenditure program on urban public transport. Each bar of the chart is divided into zones indicating expenditure on 'major' projects, 'approved' projects,

^{(1) &}lt;u>Economic Evaluation of Capital Investment in Urban</u> <u>Public Transport</u>, Bureau of Transport Economics, June 1972, Annex F, Project 12.



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recommended 'new' projects and rejected or deferred 'new' projects. Figure 4.2 indicates the breakdown of expenditure among the States. Actual expenditures to 1975 are included together with approved expenditure for 1975-76. The values for 1976-77 are warranted expenditures which are likely to be requested by the States under the existing Act. In all discussions of the expenditure program the values referred to are the total capital costs of the projects not just that portion which would be funded by the Australian Government.

The sharp rise in expenditure in 1976-77 reflects the backlog of projects awaiting funds and the culmination of the process of preparing to spend the available funds begun in 1972. The ability of the States to spend funds made available under the Urban Public Transport Act was initially poor, the difference between funds allocated and spent in 1973-74 being some \$24 million. The main reasons for the shortfall were, firstly, that the State planning capability took some time to develop. Secondly, there were administrative difficulties associated with the assistance program which represented a new initiative in Federal-State relations and, thirdly, there were long lead times associated with some procurements. These difficulties are now being overcome and there is no reason to suppose that State governments could not use the funds at the rate indicated in the proposed expenditure program.

Tables 4.1.1 to 4.1.3 present a summary of the expenditure program. Table 4.1.1 presents the data given in figure 4.1 in numerical form. Tables 4.1.2 and 4.1.3 present the program broken down by State and mode respectively. It should be noted that the values given in these tables for approved projects differ from the planned expenditures contained in State submissions and previous BTE reports. The differences are due to the fact that cost increases have occurred in nearly all projects, actual expenditure by the States has been below expectations and delays have occurred in the construction and delivery of



FIGURE 4.2 TOTAL 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE BY STATE

	ESTIMATED EXPENDITURE								Total	Cubaran	Intal
	73 - 74	74 - 75	75 - 76	76 - 77	77-78	78 - 79	79 - 80	to 79-80	to 79-80	Subsequent Years	Iotal
States*	53.3	47.3	54.8	75.7	74.0	51.4	42.5	167.9	399.0	17.0	416.0
Projects approved by the Australian Government	32.9	50.6	75.9	66.1	43.2	20.7	13.9	77.8	303.3	8.9	312.2
New projects (economically justified)	-			148.8	227.2	245.9	220.7	693.8	842.6	430,3	1272.9
TOTAL	86.2	97.9	130.7	290.6	344.4	318.0	277.1	939.5	1544.9	456.2	2001.1
New projects not included in above (deferred or not economically justified)	-	0.1	0.1	40.3	51.9	65.1	59.1	176.1	216.6	148.7	365.3

TABLE 4.1.1 - 1973-74 10 1979-80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM - NATIONAL SUMMARY

* Includes Melbourne Underground Rail Loop, East Doncaster and Frankston to Lyndhurst railways in Victoria; and Eastern Suburbs Railway and Gosford to Newcastle electrification in New South Wales. Also includes \$11.0m in 1973-74 for some railway rolling stock purchases and minor bus and rail projects.

													(1)
TABLE 4.1.2	-	1973-74	TO	1979-80	URBAN	PUBL IC	TRANSPORT	EXPENDITURE	PROGRAM	- NATIONAL	SUMMARY	ΒY	STATE

				ES	FIMATED &	EXPENDIT	URE (\$m)			Total	Total		Total
			73-74	74-75	75-76	76 - 77	77-78	78-79	79-80	17-78 to 79-80	13-14 to 79-80	Subsequent Years	lotal
NEW SOUTH WALES	-	Total Percent of Total	28.3 (32.8)	26.0 (26.6)	22.3 (17.1)	102.8 (35.4)	137.5 (39.9)	125.9 (39.6)	93.9 (33.9)	357.3 (38.0)	536.7 (34.8)	102.3 (22.4)	639.0 (31.9)
QUEENSLAND	-	Total Percent of Total	0.7 (0.8)	3.2 (3.3)	16.6 (12.7)	37.8 (13.0)	41.0 (11.9)	41.8 (13.2)	46.4 (16.7)	129.2 (13.7)	187.5 (12.2)	84.2 (18.5)	271.7 (13.7)
SOUTH AUSTRALIA	-	Total Pe rce nt of Total	3.2 (3.7)	8.6 (8.8)	17.0 (13.0)	24.9 (8.6)	26.2 (7.6)	28.1 (8.8)	18.9 (6.8)	73.2 (7.8)	126.9 (8.2)	52.3 (11.4)	179.2 (9.0)
TASMANIA	-	Total Pe rce nt of Total	1.2 (1.4)	0.6 (0.6)	4. 3. (3.2)	3.0 (1.0)	3.0 (0.9)	6.9 (2.2)	4.7 (1.7)	14.6 (1.6)	23.7 (1.5)	3.6 (0.8)	27.3 (1.4)
VICTORIA	-	Total Percent of Total	38.6 (44.8)	57.6 (58.8)	68.5 (52.4)	111.9 (38.5)	122.0 (35.4)	108.2 (34.0)	102.9 (37.1)	333.1 (35.5)	609.7 (39 . 4)	169.5 (37.2)	779.2 (38.9)
WESTERN AUSTRALIA	-	Total Percent of Total	3.2 (3.7)	1.9 (1.9)	2.0 (1.6)	10.2 (3.5)	14.7 (4.3)	7.1 (2.2)	10.3 (3.8)	32.1 (3.4)	49.4 (3.3)	44.3 (9.7)	93.7 (4.7)
ALL STATES**	-	Total Percent of Total	86.2 (100)	97.9 (100)	130.7 (100)	290.6 (100)	344.4 (100)	318.0 (100)	277 . 1 (100)	939.5 (100)	1544.9 (100)	456.2 (100)	2001 .1 (100)

** Includes \$11.0m in 1973-74 for some railway rolling stock purchases and minor bus and rail projects.

(1) Table does not include new projects which were deferred or not economically justified.

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		ESTIMATED EXPENDITURE (\$m)							Total	Total	Subacquant	T. .]
		73-74	. 74-75	75-76	76-77	77-78	78-79	79-80	to 79-80	73-74 to 79-80	Years	Iotal
RAILWAY	- Total	69.2	81.6	110.2	218.2	236.5	211.4	182.4	630.3	1109.5	264.2	1373.7
	Percent of Total	(80.3)	(83.3)	(84.3)	(75.1)	(68.7)	(66.5)	(65.8)	(67.1)	(71.7)	(57.9)	(68.6)
BUS	- Total	5.0	8.6	18.8	40.3	66.8	65.1	58.3	190.2	262.9	94.4	357.3
	Percent of Total	(5.8)	(8.8)	(14.4)	(13.9)	(19.4)	(20.5)	(21.1)	(20.2)	(17.1)	(20.7)	(17.9)
TRAM	- Total	0.2	5. 1	0.6	12.0	14.2	12.8	13.3	40.3	58.2	19.5	77.7
	Percent of Total	(0.3)	(5.2)	(0.5)	(4.1)	(4.1)	(4.0)	(4.8)	(4.3)	(3.8)	(4.3)	(3.9)
FERRY	- Total	0.1	1.9	0.3	2.7	2.7	4.0	1.7	8,4	13.4	1.0	14.4
	Percent of Total	(0.1)	(1.9)	(0.2)	(0.9)	(0.8)	(1.3)	(0.6)	(0,9)	(0.9)	(0.2)	(0.7)
PASSENGER INTERCHANGE	- Total	0.6	0.7	0.8	13.9	19.8	17.0	12.8	49.6	65.6	64.7	130.3
	Percent of Total	(0.7)	(0.8)	(0.6)	(4.8)	(5.7)	(5.3)	(4.6)	(5.3)	(4.3)	(14.2)	(6.6)
MISCELLANEOUS	- Total	11.0*	-	_	3,5	4.4	7.7	8,6	20.7	35.2	12.4	47.6
	Percent of Total	(12.8)	(-)	(-)	(1,2)	(1.3)	(2.4)	(3,1)	(2.2)	(2.2)	(2.7)	(2.3)
ALL MODES	- Total	86.2	97.9	130.7	290.6	344.4	318.0	277.1	939.5	1544.9	456.2	2001 .1
	Percent of Total	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

TABLE 4.1.3 - 1973-74 TO 1979-80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM - NATIONAL SUMMARY BY MODE⁽¹⁾

* Includes some railway rolling stock and minor bus and rail projects in 1973-74.

(1) Table does not include new projects which were deferred or not economically justified.

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TABLE	4.2.	. 1	-	RELATIVE	EXPENDITURE	\mathbf{OF}	FUNDS	BETWEEN	CITIES

0:4	Relati	ve Expenditure (%)	Theoretically
City	Approved and major projects	Proposed new projects	Total Program	desirable
Sydney	34	40	37	46
Melbourne	46	30	37	32
Brisbane	9	15	12	8
Adelaide	7	10	8	7
Perth	1	5	3	6
Hobart	2	· 1	2	1

Note: Includes projects not in Federal assisted program.

 rolling stock. The costs and timing of expenditure on projects has been adjusted to reflect these factors.

This report is concerned primarily with the three years from 1977-78 to 1979-80. Over this period economically warranted new expenditure, eligible for Australian Government assistance, would amount to \$693.8 million. Over the same period Australian Government support has been approved for an expenditure of \$77.8 million. Thus, over the three year period, a total expenditure on capital works for capital city public transport of \$771.6 million would be under consideration for Australian Government assistance.

The new expenditure of \$148.8 million proposed for 1976-77 would be considered under the existing legislation.

4.2 APPLICATION OF BUDGETARY CONSTRAINTS

Table 4.2.1 summarises the relative expenditure pattern by State capital cities and the desirable distribution based on the population-trip length analysis discussed in Chapter 1 of this report.

The data in Table 4.2.1 suggests that the proposed expenditure program including State funded projects, would result in less investment in Sydney and Perth, and rather more in Melbourne, Brisbane, Adelaide and Hobart than would be justified purely in terms of the public transport task. However, since the theoretical transport task is only one of the factors to be taken into account in allocating resources, the tabulated figures should be used only as a general guide to the validity of the proposed expenditure program.

It is important to note that the major projects and approved projects together account for nearly half of the proposed total capital expenditure on urban public transport to 1980. This means that the minimum expenditure on public transport capital works between 1973-74 and 1979-80 would be of the order of \$700 million. Thus any budgetary constraints, or any other variation in the provision of funds, can be applied only to the additional (new) program of approximately \$843 million. This factor also places a limit on the scope available for adjusting the program to obtain a distribution between capital cities more closely aligned to that regarded as theoretically desirable.

The projects considered in developing the various State programs are listed in Annex B. As indicated previously, however, this list does not represent a formal application by State Governments for support for these particular projects, nor are precise cost estimates available for the individual projects. Thus this list represents only a guide to the type of projects which BTE anticipates will be put forward by the States in future.

In Chapter 3 of this report it was explained why the tables of benefit-cost ratios for various types of project should not be used directly as a means of ranking projects for the application of budget constraints.

With these problems in mind, BTE has examined the program for each State capital city and offers the following comments as to how constraints could be applied in each case.

New South Wales

As indicated previously, Sydney suburban rail and bus fleets contain many old vehicles, so that planned replacements should not be reduced. It is suggested that, should a reduction below the proposed allocation be necessary, this could best be achieved by deferring some railway additional track projects and also by deferring the provision of additional workshops, administrative buildings, amenities buildings and similar miscellaneous projects. The deferment of the North Sydney-Gordon and Cabramatta-Campbelltown additional track projects and the abovementioned civil projects would reduce expenditure by \$28.7 million.

If necessary, a further \$3.0 million could be saved by deferring busway construction in Sydney. Although such busways are regarded as essential for the future, their construction could be delayed for two or three years with reliance being placed on less costly bus priority measures in the interim period.

Victoria

If the Victorian allocation is to be reduced then it is suggested that the reduction be mainly in the additional railway track and electrification projects. Deferring of additional track projects for the sections Little River-Corio, Kensington-Essendon, Caufield-Oakleigh, Victoria Park-Jolimont and some minor projects would reduce expenditure by about \$26.6 million. Deferment of the Upfield line signalling improvements and the electrification of the Newport-Werribee, Frankston-Mornington, St Albans-Sunbury and Broadmeadows-Craigburn sections would give an additional saving of about \$9.1 million. These deferments would mean that additional rolling stock purchases could be reduced by some \$6.0 million if absolutely necessary. It appears likely that the existing system assisted by bus operations could cope with traffic in these areas for the next three or four years.

A saving of about \$5.0 million should be possible among the miscellaneous projects without disrupting the general development of the public transport system.

The East Burwood tramway extension and some other minor extensions could be deferred without serious consequences

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and this, along with the deferment of the installation of two way radios in trams, would allow a reduction of \$9.5 million in the Melbourne allocation.

Queens1and

The Southside and Kingston-Beenleigh electrification projects provide the least public benefit from this type of project and so could be deferred if reduction of the Brisbane allocation is essential. This combined with associated reductions in signalling and electrical equipment projects would give a saving of about \$17.3 million. Sufficient diesel rolling stock from the rest of the system should be available to keep these lines operating until beyond 1980.

The deferment of bus depots and workshop projects is another possibility and this would save about \$9.7 million in the period to 1980.

South Australia

The deferral of electrification of the Gawler and Tonsley Branch line together with delayed construction of the West Lakes line would not cause major problems in the Adelaide suburban railway system and, together with the associated reduction in rolling stock purchases, would lead to a saving of \$15.2 million.

The Adelaide bus fleet has less old vehicles than elsewhere and so procurement of new vehicles could reasonably be extended over a longer period than is planned in the proposed program. This could reduce expenditure between 1976 and 1980 by about \$3.3 million.

Western Australia

The proposed allocation for Western Australia appears to be the absolute minimum for system development and could not be reduced without serious disruption of the development plans and levels of service.

Tasmania

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The Hobart program consists almost entirely of bus replacement projects and some necessary miscellaneous items and any significant reduction does not appear feasible.

CONCLUSION

It appears from BTE examination of the State development proposals for the period 1976-1980 that, if budget constraints are such that the proposed total allocation cannot be met, a reduction of about \$133 million could be made without serious disruption of plans or services. This represents about 16 percent of the proposed expenditure on new projects.

It is emphasised, however, that all the projects included in the program are regarded as desirable and warranted on economic grounds and so reductions should be made only if they are unavoidable. Any reduction will reduce the overall effectiveness of development plans and the level of service by public transport in the State capital cities. - 44 -

ANNEX A

<u>1973-74 TO 1979-80 PROPOSED URBAN</u> PUBLIC TRANSPORT EXPENDITURE PROGRAM



FIGURE A.1 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM NEW SOUTH WALES

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FIGURE A.2 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM QUEENSLAND

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FIGURE A.3 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM SOUTH AUSTRALIA

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FIGURE A.4 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM TASMANIA

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FIGURE A.5 1973/74 TO 1979/80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM VICTORIA



WESTERN AUSTRALIA

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		ES	FIMATED	EXPENDIT	JRE (\$m)			Total	Cuba	
	73 - 74	74-75	75 - 76	76-77	77-78	78-79	79-80	73-74 to 79-80	Subs Years	Total
PROJECTS WHOLLY FUND	ED BY ST/	ATES*								
New South Wales	16.7	12.2	12.3	14.2	20.3	20.2	15.0	110.9	-	110.9
Queensland	- ·	-	-	-	-	-	-	-	-	-
South Australia	-	-	-	-		-	-	-	-	-
Tasmania	-	-	-	-	-	-	-	-	-	-
Victoria Western Australia	25 . 5 -	35 . 1 -	42 . p	51.0 -	53.7 -	31.2	27.5	277.C -	17.0 -	294.0
ALL STATES**	53.2	47.3	54.8	75.7	74.0	51.4	42,5	398,9	17.0	415.9
PROJECTS APPROVED BY	THE AUST	ERALLAN (NOVE RMM EI	ЧT						
New South Wales	11 5	13.8	10 Y CINIA CI	12.5	21 1	10.4	57	91 N	87	997
Queensland	0.7	3.2	16.6	23.9	9.6	3.3	3.4	60.7	-	60.7
South Australia	3.1	8,6	17.0	12.3	3.6	0.1	0.1	44.8	-	44.8
Tasmania	1 2	0.6	4.3	1.4	1.4	4.5	2.3	15.7	-	15.7
Victoria	13.1	22.5	26.0	9.7	5.5	2.4	2.4	81.6	0.2	81.8
Western Australia	3.1	1.9	2.0	0.3	2.0	-	-	9.3	-	9,3
ALL STATES	32.9	50,6	75 , 9	66 . 1	43.2	20.7	13.9	303.3	8,9	312.2
NEW PROJECTS (ECONOM	ICALLY JU	JSTIFIED)							
New South Wales	-	-	-	70.1	96.1	95.3	73.2	334.7	93.6	428.3
Queensland	-	-	-	13,9	31.4	38.5	43.0	126.8	84.2	211.0
South Australia	-	-	-	12.6	22.6	28.0	18.8	82.0	52.3	134.3
Tasmania	-	-	-	í.ő	1.6	2.4	2.4	8.0	3.6	11.6
Victoria	-	-	-	40.7	62.8	74.6	73.0	251.1	152.3	403.4
Western Australia	-	-	-	9,9	12.7	7.1	10.3	40.0	44.3	84.3
ALL STATES	-	-	-	143.8	227.2	245.9	-220:7	842.6	430.3	1272.9
TOTAL	86.2	97.9	130.7	292 . 5	344.4	318,0	277.1	1544.9	456,2	2001.1
PERCENT OF TOTAL	4.4	4,9.	6.5	14.5	17.2	15_9	13.8	772	22.8	100
									·····	
NEW FREJECIS NUT ING	-	ADUVE (1	JEFENNES -	- 54 A	39 N	4LLI JUS - 52 8	37 5	163-3	34-3	197 G
Dugoneland	_	<u>ຄ</u> _1		0 A	64	- 52.0 4.6	4 S	16.6	54.5 54.4	71 0
South Australia	-	•••		-	-		1.0	10.0	59.0	60.0
izemania	-	-	-	-	-	_	-	-		
Victoria	-	-	-	5.1	6.1	7.6	15.7	34.5	1.Ó	35.5
Western Australia	-	-	-	0.6	0.4	0.1	0.1	1.2	-	1.2
ALL STATES		0.1	J . 1	40.3	51.9	65,1	59,1	216.6	148.7	365.3

TABLE A.1 - 1973-74 TO 1979-80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM -NATIONAL SUMMARY BY STATE

* Includes Welbourne Underground Rail Loop, East Doncaster and Frankston to Lyndhurst railways in Victoria; and Eastern Suburbs Railway and Gosford to Newcastle electrification in New South Wales.

** Includes \$11.0m in 1973-74 for some railway rolling stock and minor bus and rail projects.

		ES	TIMATED	EXPENDIT	URE (\$m)			Total	-	
	73-74	74-75	75-76	76-77	77-78	78 - 79	79-80	73-74 to 79-80	Subs Years	Tota1
PROJECTS WHOLLY FUNDED	BY STAT	TES*								
Railway	42.2	47.3	54.8	75.7	74.0	51.4	42.5	387.9	17.0	404,5
Bus	-	-	-	-	-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	-	-	-	-	-	-
Passenger Interchanges	s - ₍₁₎	-	-	· –	_	-	-	-	-	-
Miscellaneous	11.0 ⁽¹⁾	-	-		-	-	-	11.0	-	11.0
	53,2	47.3	54.8	75.7	74.0	51.4	42.5	38 9 ,9	17.0	415,9
PROJECTS APPROVED BY T	HE AUSTE	RALIAN	GOVERNME	NT						
Railway	26,9	34.3	55.4	54.1	37.7	15.7	11.1	352.2	8.6	243.8
Bus	5,0	8.6	18.8	10.9	5.2	5.0	2.8	56,3	0.3	56,6
Tram	0.2	5.1	0.6	-	-	-	-	5.9	-	5.9
Ferry	0.1	1.9	0.3	-	-		-	2.3	-	2.3
Passenger Interchanges	0.6	0.7	0.8	. 1.1	0.3	-		3.5	-	3.5
Miscellaneous	-	-	- ·	-	-	-	-	-	-	-
	32,9	50.6	75.9	66.1	43.2	20.7	13.9	303.3	8.9	312.2
NEW PROJECTS (ECONOMIC	ALLY JUS	STIFIED)							
Railway	-	-	-	88.4	124.8	144.3	128.8	486.3	238.6	724.9
Bus	-	-	-	29.4	61.6	60.1	55.5	206.6	94.1	300.7
Tram	-	-	-	12.0	14.2	12.8	13.3	52.3	19.5	71.8
Ferry	-	-	-	2.7	2.7	4.0	1.7	11.1	1.0	12.1
Passenger Interchanges	3 -	-	-	12.8	19.5	17.0	12.8	62.1	64.7	126.8
Miscellaneous	-	-		3.5	4.4	7.7	8,6	24.2	12.4	36.6
	-	-	-	148.8	227.2	245.9	220.7	842.6	430.3	1272.9
TOTAL	86,2	97.9	130.7	290.6	344.4	318.0	227.1	154 4, 9	456.2	2001.1
NEW PROJECTS NOT INCLU	DED IN A	BOVE (1	DEFERRED	OR NOT I	ECONOMIC/	ALLY JUST	FIFIED)			
Railway	-	0.1	0.1	. 6,3	8.6	21.7	19.5	56.3	41.0	97.3
Bus	-	-	-	34.0	43.3	43.4	39.6	160.3	107.7	268.0
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	-	-	-	-	-	-
Passenger Interchanges	-	-	-	-	-	-	-	-		-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	-	0.1	0.1	40.3	51.9	65.1	59.1	216.6	148.7	365.3

TABLE A.2 - 1973-74 TO 1979-80 URBAN PUBLIC TRANSPORT EXPENDITURE PROGRAM -NATIONAL SUMMARY BY MODE

 The \$11.0m in 1973-74 is for some railway rolling stock purchases and minor bus and rail projects.

 Includes Melbourne Underground Rail Loop, East Doncaster and Frankston to Lyndhurst railways in Victoria; and Eastern Suburbs Railway and Gosford to Newcastle electrification in New South Wales.

		EST	IMATED E	XPENDITU.	RE (\$m)			Total 73-74	Subs	
	73-74	74-75	75-76	76-77	77-78	78-79	79 - 80	to 79-80	Years	Tota]
NEW SOUTH WALES										
Gosford-Newcastle electrification		-	-	2.0	8.0	8.0	15.0	33.0	-	33.0
Eastern Suburbs Railway	16.7	12.2	12.3	12.2	12.3	12.2	-	77.9	-	77.9
	16,7	12.2	12.3	14.2	20.3	20.2	15.0	110.9	-	110,9
VICTORIA										
Melbourne Underground Rail Loop	25,5	35.1	39.5	40.0	35.2	12.7	7.0	195.0	-	195.0
East Doncaster Railway	-	-	-	18,5	18.5	18.5	18.5	74.0	-	74.0
Frankston-Lyndhurst Railway	-	-	3.0	3.0	-	-	2.0	8.0	17.0	25.0
	25,5	35.1	42.5	61_5	53.7	31.2	27.5	277.0	17.0	294.0
MISCELLANEOUS*	11.0	-	-	-	-	-	-	11.0	-	11.0
TOTAL	53,2	47,3	54.8	75.7	74.0	51.4	42.5	398.9	17.0	415.9

TABLE A.3 - EXPENDITURE PROGRAM FOR PROJECTS WHELLY FUNDED BY STATES

The \$11.0m 1973-74 is for some railway rolling stock purchases and minor bus and rail projects.

TABLE A.4

EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - NEW SOUTH WALES

Project Type			Estima	ted Expenditu	re (\$m)			Total	Subsequent	Total	
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73 - 74 to 79-60	Years		_
RAILWAY											
Additional Track	-	-	0.1	: 10 . 5	13.5	6.3	3.0	33.4	6.0	39,4	
Electrification	-	-	0.5	1.6	1.3	-	-	3.4	-	3.4	
Signalling	-	-	1.5	1.5	2.6	2.6	1.2	9.4	2.4	11.8	
Rolling Stock	10.8	9.3	2.2		-	-		22.3	-	22,3	
New Rout es	-	-	-		-	-	-	-	-	-	1 \
Miscellaneous	0.7	2.1	4.5	3.8	3.1	1.1	1.1	16.4		16.4	4
	11,5	11.4	8.8	17.4	20.5	10.0	5.3	84.9	8.4	93.3	- 1
BUS					<u>.</u>						-
Busway	-	-	0.4	-	-		-	0.4		0.4	
Rolling Stock	-	-	-	-	-	-	-	-	-	-	
Miscellaneous	-	0.5	0,7	1 .1	0.6	0.4	0.4	3.7	0.3	4.0	
	-	0.5	1.1	1.1	0.6	0.4	0.4	4.1	0.3	4.4	
TRAM	•						-				
Route Upgrading	-	-	-	-	-	-	- ,			-	
Rolling Stock	-	-	-	-	-	-	-	-	-	-	
Miscellaneou s	-	-	-	-	-	-	-	-	-	-	
	-	-		-	-	-	_	-		-	

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Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent	Total	
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	to 79-80			
FERRY											
Vessels	_	1.5	-	-	-	-	-	1,5	-	1.5	
Miscellaneous	~	0.4	0.1	-	-	-	-	0.5	-	0.5	
		1.9	0.1		-			2.0	-	2.0	_
PASSENGER INTERCHANGES											ו ש ש
Rail	-	-	-		-	-	-	-	6	-	I
Bus	-	-	-	-	-	-	-	-	-	-	
Tram	-	-	-	-	-	-	-	-	-	-	
Ferry	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-		
MISCELLANEOUS	-			-	-	-	-	-	-	-	
TOTAL	11.5	13.8	10.0	18,5	21.1	10,4	5.7	91,0	8.7	99,7	
PERCENTAGE OF TOTAL	11.5	13.8	10,0	18.5	21.1	10,6	5.7	91,2	8,8	100.0	

TABLE A. 4. EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - NEW SOUTH WALES (Cont.)

Project Type			Estimat	ad Expenditu	re (om)			Total	Subsequent	Total	
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80	Years	· 	
RAILWAY									-		
Additional Track	0.2	0.1	1.1	3.3	2.6	-	-	7.3	-	7.3	
Electrification	0.4	0.5	6.2	13.8	4.3	3.3	3.4	31,9	-	31.9	
Signalling	-	-	-	-	-	-	-	-	-	-	
Rolling Stock	-	-	-	-	-	-	-	-	-	-	
New Routes	0.1	1.1	6.1	5.3	2.4	· _	-	15.0	-	-	1
Miscellaneous	-	0.7	1.2	0.3	-	-	-	2.2	-	2.2	ა
	0.7	2.4	14.6	22.7	9.3	3.3	3.4	56.4		56.4	0 1
BUS											
Busway	-	-	-	-	-	-		-	-	-	
Rolling Stock	-	0.3	1.3	0.1	-	~	-	1.7	-	1.7	
Miscellaneous	-	-	-	-	-	-	-	-	-	-	
	-	0.3	1.3	0.1	-	-	-	1.7	-	1.7	
TRAM		,			1	i.	• >				
Route Upgrading	-	-	-	-		-	-	-	-	-	
Rolling Stock	-	-	-	-	-	-	-	-	-	-	
Miscellaneous	-	-	' -	-	-	-	-	-	-	· _	
	-	-			<u> </u>	-	-	-	-	-	

TABLE A.5 - EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - QUEENSLAND

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Project Type			Estimat	sd Expenditur	re (\$m)			Total	Subsequent Years	Total
	73-74	74-75	75-76	76-77	77-78	78- 7 9	79-80	to 79-80		
FERRY								,		
Vess els	-	-	· -	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
PASSENGER INTERCHANGES										
Rail	-	0.5	0.7	1.1	0.3	-	ينو ا	2.6	-	2.6
Bus	-	-	-	-	-	-	-	-	-	-
Tram		-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	-	-	-		-	-
	-	0.5	0.7	1.1	0.3	•	-	2.6	-	2.6
MISCELLANEOUS	-	-	-	-	-	-	-	-		-
TOTAL	0.7	3.2	16.6	23,9	9,6	3.3	3.4	60.7		60,7
PERCENTAGE OF TOTAL	1.0	5.3	27.4	39.4	15.8	5.4	5.7	100.0	-	100,0

TABLE A. 5 EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - QUEENSLAND (Cont.)

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			Estimat	ed Expendi	ture (\$m)			Total	Subsequent Years	Total
Project Type	73-74	74-75	75- 76	76-77	77-78	78-79	79-80	to 79-80		
RAILWAY										
Additional Tracks	3.1	2.7	2.0	-	-	-	-	7.8	-	7.8
Electrification	-	0.2	4.0	4.3	2.4	-	-	10.9	-	10.9
Signalling	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
New Routes		· -	-	-	-	-	-	-	•	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	3.1	2,9	6.0	4.3	2.4	-	· •	18.7	-	18.7
BUS									. ,	
Busway	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	0.1	1.2	-	-	-	-	1.3	-	1.3
Miscellaneous	-	5.3	9.2	8.0	1.2	0.1	0.1	23.9	-	23.9
	-	5.4	10,4	8.0	1.2	0.1	0.1	25.2	-	25.2
TRAM	,									
Route Upgrading	-	0.3	0.6	-	-	-	-	0.9	-	0.9
Rolling Stock	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
		0.3	0.6	-	-	-	-	0.9	-	0.9

TABLE A.6 - EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - SOUTH AUSTRALIA

			Estimat	ed Expendi	ture (\$m)			Total	Subsequent [.] Years	
Project Type	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80		Total
FERRY										
Vessels	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
		-	-	-		~	-	-	-	-
PASSENGER INTERCHANGES										<u></u>
Rail	-	-	-	-	-	-	-	-	-	-
Bus	-	-	-		-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Ferry		-	-	-	-		-	-	-	
	-	-	-	-	-	-	-	-	-	-
MISCELLANEOUS	-	-	-	-	-	-	-	-		-
TOTAL	3,1	8,6	17.0	12.3	3.6	0.1	0.1	44.8	-	44.8
PERCENT OF TOTAL	5.9	19,4	38.4	27.8	. 8.1	0,2	0.2	100.0	-	100,0

EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - SOUTH AUSTRALIA (continued) TABLE A.6

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Project Type			Estimate	ed Expenditu	re (\$m)			Total	Subsequent	Tota1	
	73-74	74-75	75-76	76-77	77 <u>-</u> 78	78-79	79-80	73-74 to 79-80	iears		
RAILWAY											
Additional Track	-	, -	-	-	-	-	-	-	-	-	
Electrification	-	-	-	-	-	-	-	-	-	-	
Signalling	-	-	-	-	-	-	-	-	-	-	
Rolling Stock	-	-	-	-	-	-	-	-	-	-	
New Routes	-	-	-	-	-	-	-	-	-	-	
Miscellaneous	-		-	-	-	-	-		-	-	I
. •	-	-	-	-		-	-	-	-	-	- 60 - 1
BUS											
Busway	-	-	-	-	-	-	-	-	-	-	
Rolling Stock	1.2	0.3	3.9	-	-	-	-	5.4	-	5.4	
Miscellaneous	-	0.3	0.4	1.4	1.4	4.5	2.3	10.3	-	10.3	
	1.2	0,6	4.3	1,4	1.4	4,5	2.3	15.7	-	15.7	
TRAM			1. A.								
Route Upgrading	-	-	-	-		-	-	-	-	-	
Rolling Stock		-	-	-		-	· -	-	-	-	
Miscellaneou s	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-		-	-		-	-

TABLE A.7 EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - TASMANIA

Project Type			Estimato	ed Expenditu	re (\$m)			Total 73-74	Subsequent Years	Total
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	to 79 -8 0		
FERRY										
Vessels	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	*	-
PASSENGER INTERCHANGES										
Rail	-	-	-	-	-	-	-	-	-	-
Bus	-	-	-	-	-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-		-	<u> </u>		-	-	-	-
	-	-	-	<u>-</u>	-	-	-	-	-	-
MISCELLANEOUS	-	-	-	-	-	-	<u>.</u>		-	-
TOTAL	1.2	0.6	4.3	1.4	1.4	4.5	2.3	15.7	-	15.7
PERCENTAGE OF TOTAL	6.5	3.9	27.8	9.0	9.0	29.0	14.8	100	-	100

TABLE A.7 EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - TASMANIA (continued)

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	D 1	-		•
- 1.8	RL	F	Λ	x
		. –	~ ~	2

EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - VICTORIA

Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent Yea rs	Total
έχ	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80		
RAILNAY										
Additional Track	3.3	7.6	7.9	3,8	0,6	-	-	23.2	-	23.2
Electrification	-	-	-	-	-	-	-	-	-	-
Signalling	0.5	1.1	2.7	2.9	3.0	2.4	2_4	15.0	0.2	15.2
Rolling Stock	7.8	8.7	14.4	-	-	-	-	30.9	-	30_9
New Routes	-	-	-	-	-	-	-	-	-	
Miscellaneous	-	0.1	1.0	3.0	1.9	-	-	6.0	-	6.0
	11.5	17.5	26.0	9.7	5.5	2.4	2.4	75.0	. 0.2	
BUS										
Busway	-	-	-	-	-	-	-	-	-	-
Rolling Stock	0.7	0.2	-	-	-	-	-	0.9	-	0.9
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	0.7	0.2	-	-	-	-	-	0,9	-	0.9
TRAM										
Route Upgrading	-	-	-	-	-	-	-	-	-	-
Rolling Stock	0.2	4.8	-		-	-	-	5.0	-	5.0
Miscellaneous	•	-	-	-	-	-	-	-	-	-
	0.2	4.8	-	-	-	-		5.0		5.0

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Project Type			Estimate	d Expenditu	re (\$m)			Total	Subsequent Years	Total
	73-74	74-75	75-76	76-77	77-78	78 -7 9	79-80	to 79 -8 0		
FERRY										
Vasse] s	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-		-	-	-	-	-	-
		-	_	-	-	-	-	-	-	-
PASSENGER INTERCHANGES										, ,
Rail	0.6	-	-	-	-	-	-	0.6	-	0.6
Bus	-	-	-	-	-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Forry	-	-	-	-	-	-	-	-		-
	0,6	-		-	-	-	-	0.6	-	0.6
MISCELLANEOUS	-	-	-	•	-	-	-		-	-
TOTAL	13,1	22.5	26.0	9.7	5.5	2.4	2.4	81_6	0.2	81,8
PERCENTAGE OF TOTAL	16.0	27.5	31.8	11.8	6.7	3.0	3.0.	99.8 •	0.2	100.0

TABLE A.8 - EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - VICTORIA (Cont.)
TABLE A.9

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EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - WESTERN AUSTRALIA

Project Type			Estimate	d Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73 - 74 to 79-80	Tears	
RAILWAY										
Additional Track	-	-	-	-	•	-	-	-	-	
Electrification	-	-		-	-	-	-	-	-	-
Signalling	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
Nev Routes	-	-	-	-	-	-	-	-	-	0.1
Miscellaneous	-	0.1	-	-	-	-	-	0.1	-	-
ter an le construction de la constru		0.1	-	-	-	-		0.1	· · ·	0.1
BUS										
Busway	-	-	0.4	0_3	2.0	-	-	2.7	-	2.7
Rolling Stock	1.6	1.3	1.3	-	-	-	-	4.2	-	4.2
Misc ell aneous	1.4	0.3	-	-	-	-	-	1.7	-	1.7
	3.0	1.6	1.7	0.3	2.0	-	-	8.6	•	8.6
TRAM										
Route Upgrading	-		-	-		-	-		-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
Miscellaneous	1 - 1 - 1	-	-	-	-	-	-	-	-	-
	-	-	-	-		-		-		-

TABLE A. 9 EX	(PENDITURE PRO	IGRAM ON PRO.	IECTS APPROVE	<u>D BY THE AUS</u>	TRALIAN GOVE	<u>RNMENT - WES</u>	TERN AUSTRALI	<u>A</u> (continued)		
Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77-78	78- 7 9	79-80	to 79-80		
FERRY										
Vassels	0.1	-	-	-	-	-	-	0.1	-	0.1
Miscellaneous	-	-	0.2		-	-	-	0.2	-	0.2
	0.1	-	0.2	-	-	-	-	0.3	-	0.3
PASSENGER INTERCHANGES										
Rati	-	-	-	-	-	~	-	-	-	-
Bus	-	0.2	0.1	-	-	-	-	0.3	-	0.3
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-		-	-	-	-	-	-	-	-
	-	0.2	0.1	-	-	-	-	0.3	-	0.3
MISCELLANEOUS	-	-	-	-	-	-	-	-	-	-
TOTAL	3.2	1.9	2.0	0.3	2.0	-	-	9.4	-	9.4
PERCENTAGE OF TOTAL	34.0	20.2	21.3	3.2	21.3	-	-	100.0	•	100.0

EXPENDITURE PROGRAM ON PROJECTS APPROVED BY THE AUSTRALIAN GOVERNMENT - WESTERN AUSTRALIA (continued)

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Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	73-74 to 79-80	Years	
RAILWAY	•									
Additional Track	-	-	-	5.2	5.2	5.2	5,2	20.8	5.2	26.0
Electrification	-	-	-	0.1	0.1	0.1	0.1	0.4	-	0.4
Signalling	-	-	-	0.7	0.7	0.7	0.6	2.7	-	2.7
Rolling Stock	-	-	-	33.9	34.9	33.4	25.0	127.2	48.0	175.2
New Routes	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-		10.4	20.9	23.7	23.4	78.4	23.4	101.8
	-	-	-	50.3	61.8	63.1	54.3	229.5	76.6	306.1
BUS										
Busway		-	-	7.5	10.5	11.5	10.5	40.0	10.0	50.0
Rolling Stock	-	-	-	4.6	13.8	10.0	0.6	29.0	-	29.0
Miscellaneous	-	-	-	0.3	-	-	-	0.3	-	0.3
		-	-	12.4	24.3	21,5	11.1	69.3	10.0	79.3
TRAM										
Route Upgrading	-	-		_	-	-	-		-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	· _	•	-	0.1	· _	-	0.1	-	0.1
		-	-	-	0.1	-	-	0.1		ብ 1

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TABLE A. 10 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - NEW SOUTH WALES

Project Type			Estimat	cd Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	to 79-80		<u></u>
FERRY										
Vessel s		-	-	2.7	2.4	3.6	1.3	10.0	-	10.0
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	-	-	-	2.7	2.4	3.6	1.3	10.0	-	10.0
PASSENGER INTERCHANGES										
Rail	-	-	-	1.6	1.6	1.6	1,5	6.3	-	6,3
Bus	-	-	-	-	-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	2.0	2.0	2.0	6.0	2.0	8.0
	-		-	1.6	3.6	3.6	3.5	12.3	2.0	14.3
MISCELLANEOUS	-	-	-	3,1	3.9	3.5	3.0	13.5	5.0	18.5
TOTAL	-	-	-	70.1	96.1	95,3	73.2	334.7	93.6	428.3
PERCENTAGE OF TOTAL		-	•	16.4	2 2.3	22.3	17:1	78.1	21.9	100.0

TABLE-A.10 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - NEW SOUTH WALES (Cont.)

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TABLE A. 11 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - QUEENSLAND

Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	73-74 to 79-60	Years	1
RAILWAY								·· ·		
Additional Track	• •	-	-	-	-	-	-	-	-	-
Electrification	-	-	-	0.4	2.2	5.8	7.8	16.2	8.8	25,0
Signalling	-	-	-	5.3	5.0	3.0	3.0	16 .3	7.2	23.5
Rolling Stock	-	-	-	-	6.0	6.0	6.0	18.0	36,0	54.0
New Routes	-	-	-	-	-	0.3	0.5	0.8	0,8	1.6
Miscellaneous	-	-	-	-	1.0	1.1	1.2	3.3	-	3.3
		· -	-	5.7	14.2	16.2	18.5	54.6	52,8	107.4
BUS	-									
Busway_	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	-	-	1.8	5.2	4.9	5.1	17.0	0.2	17.2
Miscellaneous	-	-	-	1.8	6.6	9.8	12.9	31.1	17.5	4 8.6
	-	-	-	3.6	11.8	14.7	18.0	48.1	17.7	65.8
TRAM		14								
Route Upgrading	-	-	-		-	-	-	· _	-	-
Rol lin g St ock	-	-	-	-	-	-	-	-	-	-
Miscellaneous	·	<u>'-</u>			-	•	-	-	-	-
		-	-		-	-	-	-	-	-

Project Type			Estimate	ed Expenditu	re (\$m)			lotal	Subsequent	Total	-
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	10 79-80	16415		-
FERRY											
Vess els	-	-	-	-	-	0 , 1	0.1	0.2	0.1	0.3	
Miscollancous	-	- ·	-	-	0.3	0.3	0.3	0,9	0.9	1.8	
	-			-	0.3	0.4	0.4	1.1	1.0	2.1	_ 1
PASSENGER INTERCHANGES											69
Rail	-	-	-	4.2	4,3	2,5	1.0	11.7	9.0	20.7	1
Bu s	-	-	-	0.2	0,8	1.0	-	2.0	-	2.0	
Tram	-	-	-	-	-	-	-	-	-	-	
Ferry	-		-			-	-	-	-	-	_
		-		4.4	4.8	3.5	1.0	13.7	9,0	22,7	-
MISCELLANEOUS	-	-		0.2	0.3	3.7	5.1	9.3	3.7	13.0	
TOTAL	-	-	-	13.9	31.4	38.5	43.0	126.8	84.2	211.0	
PERCENTAGE OF TOTAL	-	-	-	6,6	14.9	18.2	20.4	60,1	39.9	100.0	

TAPLE A.1.1 PROPOSED EXPENDITURE PROGR.M ON NEW PROJECTS - QUEENSLAND (Cont.)

TABLE A. 1 2 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - SOUTH AUSTRALIA

			Estimat	ed Expendi	ture (\$m)			Total	Subacquent	
Project Type	73 - 74	74 - 75	75 - 76	76 - 77	77-78	78 - 79	79-80	to 79-80	Years '	Total
RAILWAY										
Additional Tracks	-	-	-	-	-	-	-	-	-	-
Electrification	-	-	-	-	-	4.1	4.5	8,6	7.0	15.6
Signalling	-	-	-	1.0	1.0	1,5	1.3	4.8	-	4.8
Rolling Stock	-	-	-	5,0	9.0	11.0	4.0	29.0	18.0	47.0
New Routes	-	-	-	-	0.5	1.1	1.0	2.6	-	2.6
Miscellaneous	-	-	-	0.5	0.2	-	-	0.7	-	0.7
		-	-	6,5	10.7	17.7	10.8	45.7	25.0	70.7
BUS									······································	
Busway	-	-	-	-	-		-	-	-	-
Rolling Stock	-	-	-	1.7	8.0	7.1	6.2	23.0	0.2	23.2
M isce llaneous	-	-	-	1.5	1.5	1.8	1.0	5.8	10.1	15.9
	-	-	-	3.2	9,5	8.9	7.2	28.8	10.3	39.1
TRAM										
Route Upgrading	-	-	-	-	-	-	-	-	- ·	-
Rolling Stock	-	-	· _	-	-	-	-	-	-	-
Miscellaneous	-	-	-	0.3		-	-	0.3	-	0.3
		-		0.3	-	-	-	0.3	<u></u>	0.3

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Project Type			Estimat	cd Expenditu	re (\$m)			Total	Subsequent	Total	-
	7374	74 - 75	75-76	76-77	77-78	78-79	79-80	to 79-80	10015		
FERRY											
Vessels	-	-	-	-	-	-	-	-	-	-	
Miscellancous	-	-	-	-	-	-	-	-	-	-	
	-	-	-		-	-	-	-	-	-	
PASSENGER INTERCHANGES											
Rajl	-	-	-	2.1	2,2	0.9	0.3	5.5	13.3	18.8	I
Bus	-	-	-	0.3	-	~	-	0,3	-	0.3	
Tram	-	-	.	-	-	-	-	-	-	-	
Ferry	-	-	-	-		-	-	-	-	-	
	-	-	-	2.4	2.2	0.9	0,3	5.8	13.3	19.1	
MISCELLANEOUS	-		-	0.2	0.2	0.5	0.5	1.4	3.7	5.1	
TOTAL	-	-	-	12,6	22.6	28.0	18.8	82.0	52.3	134.3	_
PERCENTAGE OF TOTAL	-	_	-	9.4	16,8	20.8	14.1	61.1	38,9	100.0	

TABLE A.12 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - SOUTH AUSTRALIA (continued)

TABLE A.13 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - TASMANIA

Project Type			Estimate	ed Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75 - 76	76-77	77-78	78-79	79-80	73 -74 to 79-80	Years	
RAILWAY			· .							····
Additional Track	-	-	-	-	-	-	-	-	-	-
Electrification	-	-	-	-	-	-	-	-	-	-
Signalling	-	-	-	-	-	-	-	•	-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
New Routes	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
		-	-	-		-	•	-	-	-
BUS)							· · · · · · · · · · · · · · · · · · ·	
Busway	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	-	-	1.6	1.6	. 2.4	2.4	8.0	3.6	11.6
Miscellaneous	-	-	-	-	-	-	-	-	-	-
	-		-	1.6	1.6	2.4	2.4	8.0	3.6	11.6
TRAM										
Route Upgrading	-	-		-	-	-	-	-	-	-
Rolling Stock	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	-
		-	-				•			-

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TABLE A. 13 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - TASMANIA (continued)

Project Type			Estimat	ed Expenditu	re (\$m)			Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80	16415	
FERRY										
Vassels	-	-	-	-	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-	-	-	-	<u>-</u>
	-	-	-	-	-	-	-	-	-	-
PASSENGER INTERCHANGES										
Rail	-	-	-	-	-	-	-	-	-	-
Bus	-	-	-	-	-	-	-	-	-	-
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
NISCELLANEOUS		_	_	-	-	-	-	-	-	-
TOTAL			-	1.6	` 1 ₊6	2.4	2.4	8.0	3.6	11,6
PERCENTAGE OF TOTAL		-	-	13.8	13.8	20,7	20.7	69.0	31.0	100

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TABLE A.14 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - VICTORIA

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Project Type			Estimate	ed Expenditur	re (\$m)			Total	Subsequent	Total
· · ·	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80	Years	
RAILWAY										
Additional Track	-	-	-	4.1	11.2	22.0	15.1	52.4	7.5	59,9
Electrification	-	-	-	-	2.0	4.4	4.6	11.0	7.0	18.0
Signalling	-	-	-	1.5	3.4	2.4	1.5	8.8	-	8.8
Rolling Stock	-		-	14.4	14.4	14.3	20.4	63.5	48.0	111.5
New Routes	-	-	-	0.1	0.4		-	0,5	-	0,5
Miscellaneous		-	-	1.7	4.3	4.2	3.6	13.8	17.7	31.5
		-	-	21.8	35.7	47.3	45.2	150.0	80.2	230,2
BUS										
Busway	-	-	-	-	-	-	-	-	-	-
Rolling Stock	-	-	-	3.5	6.2	6.2	6.6	22,5	12.6	35.1
Miscellaneous	-	-	-	0.9	1.0	0.5	0.1	2.5	-	2.5
÷ .		-	-	4.4	7.2	6.7	6.7	25.0	12.6	37.6
TRAM										
Route Upgrading	-		-	2.9	4.4	3.0	4.0	14.3	-	.14.3
Rolling Stock	-	- 1	-	7.5	7,5	7.5	7.5	30.0	16,5	46.5
Miscellaneou s	· · · -	-	-	1.3	2.2	2.3	1.8	7.6	3.0	10.6
	-	-	_	11.7	14.1	12.8	13.3	51,9	19.5	71.4

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TABLE A.1.4 PR POSED EXPENDITURE PROGRAM ON NEW PROJECTS - VICTORIA (continued)

Project Type			Estimat	sd Expenditu	re (\$m)			Tota1	Subsequent	Total
	73-74	74-75	75 - 76	76-77	77-78	78 -7 9	79-80	to 79 -8 0	Tears	
FERRY					· · · · · · · · · · · · · · · · · · ·					·····
Vəss els	-	-	• -	-	-	-	-	-		_
Miscellaneous	-	-	-	• -	-	-	-	-	-	-
	-		-	-	-	-	-	-	-	-
PASSENGER INTERCHANGES										
Rail	-	-	~	2.0	5.0	7.0	7.0	21.0	40.0	61.0
Bus	-	-	-	-	-	-	-	-	-	-
] r am	-	-	-	0.8	0.8	0.8	0.8	3.2	-	3,2
Ferry	-	-	-	-	-	-	-	-	-	-
		-	-	2.8	5.8	7.8	7.8	24.2	40.0	64.2
MISCELLANEOUS	-	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	40.7	62.8	74.6	73.0	251.1	152.3	403.4
PERCENTAGE OF TOTAL	_	-	-	10.1	15.6	18,5	1'8.1	62.3	37.7	100

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PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - WESTERN AUSTRALIA TABLE A.15

Project Type		Estimated Expenditure (\$m)							Subsequent	Total	
	73-74	74-75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80	Years	· · · ·	
RÀILWAY			,							· · · · · · · · · · · · · · · · · · ·	
Additional Track	-	-	-	-	-	-	-	-	-	-	
Electrification	-	•	-	-	-	-	-	-	-	-	
Signalling	-	-	-	-	-	-	-	-	-	-	
Rolling Stock		-	-	-	-	-	-	-	-		
New Routes	-	-	-	2.3	1.7	-		4.0	. 4.0	8.0	
Miscellaneous	-	-	-	1.8	0.7		-	2.5	-	2.5	
		-	-	4.1	2.4	-		6,5	4.0	10.5	
BUS				· • • • • • • • • • • • • • • • • • • •			· · · · · · · · · · · · · · · · · · ·	·····	- <u></u>	<u> </u>	
Busway	-	-	-	0.2	0.6	2.2	6.1	9.1	29.5	38.6	
Rolling Stock	-	-	-	3.2	3.9	2.7	3.0	12.8	8.4	21.2	
Miscellaneous	-	-	-	0.8	2.7	1.0	1.0	5.5	2.0	7.5	
			-	4.2	7.2	5.9	10_1	27.4	39,9	67.3	
TRAM								· .			
-Route Upgrading		-	-	-	· · -	-	- .	· . · -	-	-	
Relling Stock		-	-	-	-	-	-	-	-	-	
Miscellaneous	-	· -	-	-	-	-	-	-	-	-	
		-		-	-	<u></u>	-				

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Project Type	Estimated Expenditure (\$m)							Total	Subsequent	Total
	73-74	74-75	75-76	76-77	77 - 78	78-79	79-80	73-74 to 79 -8 0	Years	
FERRY	,									
Vessels Miscellaneous		-	•	-	-	-	-	-	-	-
	-	-	-	-	-	-	-		····	-
PASSENGER INTERCHANGES										
Rail	-	-	-	-	-		-	-	-	-
Bus	-	-	-	1.6	3.1	1.2	0.2	6.1	0.4	6,5
Tram	-	-	-	-	-	-	-	-	-	-
Ferry	-	-	-	-	-	-	-	-	-	-
	-	-	-	1.6	3.1	1.2	0.2	6.1	0,4	6,5
MISCELLANEOUS	-	-	-	-	-	-	-	-	-	
TOTAL		-	-	9,9	12.7	7.1	10.3	40.0	44.3	84.3
PERCENTAGE OF TOTAL	-	-	-	11.7	15.1	8.4	12.2	47.4	52,6	100

TABLE A. 15 PROPOSED EXPENDITURE PROGRAM ON NEW PROJECTS - WESTERN AUSTRALIA (continued)

1

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		ES	TIMATED	EXPENDIT	URE (\$m)			Total		Total
	73 -74	74~75	75-76	76-77	77-78	78-79	79-80	73-74 to 79-80	Subs Years	
		NE	W SOUTH	WALES						
RAILWAY										
Additional Tracks	-	-	-	-	-	3.5	3.5	7.0	10.3	17.3
Rolling Stock		-	-	_	-	10.3	-	10.3	-	10.3
	-	-	-	-	-	13.8	3.5	17.3	10.3	27.6
BUS										
Rolling Stock	-	-	-	24.0	24.0	24.0	24.0	96.0	24.0	120.0
Mis ce llaneous	-	-	-	10.0	15.0	15.0	10.0	50.0	-	50.0
	-	-	-	34.0	39.0	39.0	34.0	146.0	24.0	170.0
TOTAL NSW	-	-	-	34.0	39.0	52.8	37.5	163.3	34.3	197.6
		QU	EENSLAND							
RAILWAY									•	
Electrification	-	-	-	-	-	0.1	0.2	0.3	3.7	4.0
New Routes	-	-	-	0.5	2.0	-	-	2,5 -	26.0	28,5
Miscellaneous	-	0.1	0.1	0,1	0.1	0.1	-	0.5		0.5
	-	0.1	0.1	0.6	2.1	0.2	Û.2	3.3	29.7	33.0
8US									-	
Rolling Stock	-	-		-	4.3	4.3	4.4	13.0	-	13.0
Miscellaneous		-	-	-	-	0.1	0,2	0.3	24.7	25.0
	-	-	-	-	4.3	4.4	4.6	13.3	24.7	38.0
TOTAL QLD		0.1	0.1	0.6	6.4	4.6	4.8	16.6	54.4	71.0
		S0	UTH AUST	RALIA					- '	
BUS										
Rolling Stock		-	- 	-	-	_	1.0	1.0	59.0	60.0
	-	-	_ `	-	-	-	1.0	1.0	59.0	60,0
TOTAL SA	-	-	-	-		-	1.0	1.0	59.0	60,0

TABLE A.16 - EXPENDITURE PROGRAM FOR NEW PROJECTS NOT ECONOMICALLY JUSTIFIED

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		ESTIMATED EXPENDITURE (\$m)							0	
	73-74	74-75	75-76	76-77	7 7- 78	78-79	79-80	73-74 to 79-80	Years	Total
		VI	CTORIA							
RAILWAY						-				
Additional Tracks	-	-	-	0,1	1.1	1.1	1.1	3.4	-	3.4
Electrification	-	-	-	-	-	1.5	5,6	7.1	1.0	8.1
Rolling Stock	-	-	-	-	-	-	4.0	4.0	-	4.0
Miscellaneous	-	-	-	5.0	5,0	5.0	5.0	20.0	-	20.0
	-	-	-	5,1	6.1	7.6	15.7	34.5	1.0	35.5
TOTAL VIC	-	-	-	5.1	6.1	7.6	15.7	34.5	1.0	35.5
		WE:	STERN AU	STRALIA						
RAILWAY										
Rolling Stock	-	-	-	0.3	0.3	-	-	0,6	-	0.6
Miscellaneous	-	-	-	0.3	0.1	0.1	0.1	0.6	-	0.6
	-	-	-	0.6	0.4	0.1	0.1	1.2	-	1,2
TOTAL WA	-	-	-	9.5	0.4	0.1	0.1	1.2	-	1.2
TOTAL ALL STATES	-	0.1	0.1	40.3	51.9	65.1	59.1	216.6	148.7	365.3

TABLE A.16 -	EXPENDITURE PROGRA	M FOR NEW PROJECTS NO	OT ECONOMICALLY JUSTIFIED	(continued)
				· · · · · · · · · · · · · · · · · · ·

ANNEX B

LIST OF PROJECTS USED TO DEVELOP PROPOSED EXPENDITURE PROGRAMS

- B.1 NEW SOUTH WALES
- B.2 QUEENSLAND
- B.3 SOUTH AUSTRALIA
- B.4 TASMANIA
- B.5 VICTORIA
- B.6 WESTERN AUSTRALIA

(Note: Projects marked (*) have been approved by the Australian Government).

B.1

NEW SOUTH WALES

RAILWAY

Additional Tracks : Redfern-Tempe (*), Tempe-East Hills (*), Riverwood-Glenfield (*), Paramatta-Penrith (*), North Sydney-Gordon, Cabramatta-Campbelltown.

.1 Electrification: Sutherland-Waterfall (*), Gosford-Newcastle (planning).

. Signalling: Sydney Station Area (*), Strathfield area (*), Broadmeadow- Newcastle area.

. Rolling Stock: Suburban DD cars (54 motor, 42 trailer, 10 driving trailer)(*), Suburban DD cars (202 motor, 67 trailer, 100 driving trailer), Suburban DD cars (conversion of 33 trailer), Interurban DD cars (25 motor, 24 trailer).

. New Routes: Nil

Miscellaneous:

Glenbrook tunnel widening (*), Sydney City Circle information improvements (*), Electricity sub-station modernisation (*), Meadowbank bridge replacement (*), Sydney rail depots (*), Remodelling of railway stations (*), Central City station at Campbelltown (*), Train cleaning equipment (*), Ticket machines (*), Upgrading of power supply (*), Car parks at stations (*), Provision of electric

trailer car controls (*), Rebuilding old stations (*), Public address at City Circle (*), Improved interiors of suburban trains (*), Public address at metropolitan stations, Central City sub-station, Improved station facilities at Macquarie, Sectioning hut modernisation, Flemington workshop improvements, Microwave radio (Sydney-Newcastle), Car parks at stations, Canterbury footbridge renewal, Escalators at Central, Concrete sleepers, Exterior painting of trains, Digital train signs, Provision of wheel slip controls on railway cars, Modernisation of substations, Workshop buildings, Plant and equipment, Stores and buildings, Amenities, Lewisham sub-station upgrading, Sefton sub-station upgrading, Caringbah substation upgrading.

. Busway:

Rolling Stock:

Miscellaneous:

Randwick-Darlinghurst (*), Bus priority lanes, Exclusive bus lanes.

New buses (600)

Provision of Autofare equipment (*), Bus cleaning equipment (*), Bus recovery trucks (*), Two way radios in buses (*), Passenger shelters (*), Workshop equipment (*), Increased fuel storage at depots (*), Bus improvements (*), Wheel and tyre shop modifications (*), Belmont bus depot bus parking. Twin ram hydraulic hoists, Terminal facilities, Passenger shelters (Newcastle), Hamilton washing unit, Additional fuel storage (Newcastle). - 83 -

B.1 NEW SOUTH WALES (cont.)

TRAM

- Tramway: Nil
 Rolling Stock: Nil
 Miscellaneous: Pitt Street tramway (planning).
 FERRY
 Vessels: Ferry purchases and improvements (Manly)(*), Hydrofoils for Manly (4)(*), Replacement ferries (3), Additional ferries (3), Borragoola and North Head ferry replacement,
- . Miscellaneous: Ferry wharf improvements (*), Spare parts for Manly ferrys (*).

Hydrofoils for Manly (2).

PASSENGER INTERCHANGES

- . Rail: Rail/bus interchanges
- . Bus: Nil
- . Tram: Nil
- . Ferry: Ferry/bus interchanges

MISCELLANEOUS: Bus/Rail/Ferry transfer terminals, New Uniforms NSWPTC, Newcastle-Wollongong minor projects.

B.2

QUEENSLAND

RAILWAY

Additional Tracks: Brunswick Street-Northgate (*)

- Electrification:
- Ferny Grove-Darra (*), Northgate-Shorncliffe (*), Ipswich-Darra (*), Mayne-Petrie, Roma Street-Lota, Park Road-Kingston, Yerongpilly-Corinda, Kingston-Beenleigh, Electrical facilities (*).
- Signalling:

Signals and communication (for electrification).

Electric vehicles

- . Rolling Stock:
- New Routes:

Cross river rail link (*), Brisbane-Gold Coast, Extension of rail to Samford, Darra-Coopers Plains.

. Miscellaneous:

Fixed system design (*), Refurbishing stations, Brisbane-Gold Coast rail link feasibility study.

BUS

- . Busways:
- . Rolling Stock:

Nil

Replacement buses (30)(*), Replacement buses (75), Replacement buses (99), Replacement buses (75) for private companies, Special purpose buses (10), Special purpose electric buses (20).

Central city depot, Private bus company facilities, Bus priority measures, Car/bus parking facilities, Passenger shelters, Workshops and Admin buildings,

• Miscellaneous:

В.2

QUEENSLAND (Cont.)

Two way radios in buses, Acquisition of land for depots, Terminus toilet facilities, Modernisation of cash receiving depots, Passenger shelters, Bus Washing and cleaning equipment, Support facilities, Bus depots in CBD, Bus depots (2), Reconstruction of Light Street depot, Bus Central Control Centre, Miscellaneous garage equipment.

TRAM

- . Route upgrading: Nil
- . Rolling Stock: Nil
- . Miscellaneous: Nil

FERRY

. Vessels: Replacement ferries (3)

• Miscellaneous: Construction of new ferry wharves (6).

PASSENGER INTERCHANGES

,	Rail:	Minor Car/rail interchanges (*), Major Car/Rail interchanges, Major multi- storey Car/rail, bus/rail interchanges (6).
•	Bus:	Car/bus and bus/bus interchanges.
	Tram:	Nil
•	Ferry:	Nil
MI	SCELLANEOUS:	Master ticketing system (rail/bus), moving walkways in CBD, Demand responsive

passenger system.

B.3 SOUTH AUSTRALIA

- RAILWAY
- Christie Downs extension (*). Additional Tracks: ChristiesDowns (*), North Gawler, Electrification: Tonsley Branch. Modernisation of Adelaide yard. Signalling: Christie Downs trains, North Gawler Rolling Stock: trains. West Lakes line. New Routes: Continuous track welding (Christie Miscellaneous: Downs), Curve Improvement (Christie Downs), North Gawler preliminary design.

BUS

Busways: NilAdditional bus (1)(*), Replacement buses Rolling Stock: (71)(*), Replacement buses (310), Electric buses (7). Miscellaneous: Purchase of private bus companies (*), Depots and buildings (*), Passenger Shelters (*), Capital works (unspecified) (*), Bus washing and cleaning equipment (*), Automation of timetable procedures (*), Bus priority measures and route improvements, Ticket machines, Improvements to buildings, Service vehicles, Purchase of computer, Purchase of maintenance vehicles.

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B.3 SOUTH AUSTRALIA (Cont.)

TRAM

- . Route Upgrading: Glenelg tramway upgrading (*)
- . Rolling Stock: Nil
- . Miscellaneous: Refurbishing trams.

FERRY

- . Vessels: Nil
- . Miscellaneous Nil

PASSENGER INTERCHANGES

•	Rail:	Interchanges at Christie Downs (Stage I
		& II), Elizabeth, Salisbury, Glanville,
		Others.
÷	Bus:	Nil
	Train:	Interchanges at Plympton Park, Glenelg.
•	Ferry:	Nil
MI	SCELLANEOUS:	Marketing facilities.

B.4 <u>TA</u>	SMANIA
RAILWAY	
. Additional Tracks	: Nil
. Electrification:	Ni1
. Signalling:	Ni1
. Rolling Stock:	Nil
• New Routes:	Nil
. Miscellaneous:	Nil
BUS	
. Busways:	Nil
. Rolling Stock:	Replacement buses (*), Replacement buses (other), Additional buses.
. Miscellaneous:	Ticket machines (*), Passenger shelters (*) Construction of new depots and workshops (*), Ticket machines, Depots and Workshops, Passenger shelters.
TRAM	
. Route Upgrading:	Ni1

. Rolling Stock: Nil . Miscellaneous: Nil

FERRY

- . Vessels: Nil
- . Miscellaneous: Nil

B.4 TASMANIA

PASSENGER INTERCHANGES

ł

•	Rail:	Nil
•	Bus:	Nil
•	Tram:	Ni1
	Ferry:	Ni1
мі	SCELLANEOUS:	Ni1

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VICTORIA

RAILWAY

Additional Track:

South Kensington-Footscray (*), Caulfield-Mordialloc (*), Ringwood-Croydon/Bayswater (*), McLeod-Greensborough (*), Glen Waverley model line (*), Box Hill-Ringwood, Caulfield-Oakleigh, Victoria Park-Jolimont, Clifton Hill-Westgarth, Model lines (other), Little River-Corio, Footscray-Newport, Kensington-Essendon, South side of Viaduct.

. Electrification:

Newport-Werribee, Frankston-Mornington, St Albans-Sunbury, Broadmeadows-Craigburn, Sunshine-Melton.

Signalling: Melbourne area (*), Melbourne signal box amalgamation (*), Improvements to Clifton Hill-Epping line, Improvements to Hurstbridge line, Improvements to Upfield line.

. Rolling Stock: Train replacement, additional trains for specific routes.

. New Routes: Altona-Westona (construction only).

Miscellaneous: Station redevelopment (*), Communications, upgrading (*), Car parks at stations, End door communication (Harris trains) Modification of Tait trains, New station construction, Refurbishing of Geelong line carriages, Jolimont workshop extension, Workshop extensions and improvements.

B.5

B. 5	VICTORIA	(Cont.)
J.)	VIOIORIA	(00110.)

BUS

- . Busway: Nil
- Rolling Stock: Bus replacement (*), Bus purchases for fleet expansion, Private bus replacement.
 Miscellaneous: Depots and workshops, Two way radios in buses, Automatic ticketing machines.

TRAM

 Route upgrading: East Burwood tramway extension, East Preston tramway upgrading (stages I & II), Other tramway upgrading.
 Rolling stock: Tram replacement ^(*), Tram replacement
 Miscellaneous: Two way radios for trams, Automatic ticketing, Depots and workshops, Replacement of sub-station equipment, Passenger shelters, Construction of new track.work.

FERRY

- . Vessels: Nil
- . Miscellaneous: Nil

PASSENGER INTERCHANGES

. Rail: Minor interchanges (*), Major interchanges at Frankston, Box Hill, Ringwood, Dandenong.

- . Bus: Nil
- . Tram: Minor passenger terminals.
- . Ferry: Nil.
- MISCELLANEOUS: Nil

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B.6

WESTERN AUSTRALIA

RAILWAY

•	Addition of T_{racks} :	Nil
•	Electrification:	Nil
•	Signalling:	Nil
•	Rolling Stock:	Nil
•	New Routes:	Freight diversion railway
•.	Miscellaneous:	Relocation of railway facilities, Rail terminal east of Barrack Street, Car parks at stations (*).

- BUS
- . Busways:

Mitchell busway Stage I (*), Mitchell busway(stage II subsequent stages), Armadale busway, Fremantle busway, Midland busway.

. Rolling Stock: Bus repla cements (*), Buses for busways

Miscellaneous: Central bus station, Pedestrian access (*), Central bus station, Access road (*), Bus priority measures (*), Gosnells bus depot (*), Adelaide Terrace buslane (*), Central bus station extensions, Miscellaneous transport improvements, CBD passenger distribution service, Radio telephones in buses, Passenger shelters, Ticket machines, Fare collection boxes, Carparks at bus stations. B.6 WESTERN AUSTRALIA (Cont.)

TRAM

•	Route Upgrading:	Nil
	Rolling stock:	Nil

. Miscellaneous: Nil

FERRY

- Vessels: Ferrys and terminals (*)
- . Miscellaneous: South Perth ferry jetties (*), Coode Street ferry service.

PASSENGER INTERCHANGES

- . Rail: Nil
- Bus: Innaloo bus terminal (*), Rockingham bus terminal (*), Kwinana bus terminal (*), East City bus station, South City bus station, Miscellaneous bus stations, Riley Road bus terminal, Booragoon bus terminal, Mirrabooka bus terminal, Beach Road bus terminal, Fremantle bus terminal.
 Tram: Nil
- . Ferry: Nil

MISCELLANEOUS: Nil