Study of Intersystem Railway Freight Rating Practices

Report

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BUREAU OF TRANSPORT ECONOMICS

A STUDY OF INTERSYSTEM RAILWAY FREIGHT RATING PRACTICES (WITH PARTICULAR REFERENCE TO THE RIVERINA AREA OF NEW SOUTH WALES)

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FOREWORD

Government railways in Australia operate in all mainland States and Territories. Interstate movement of freight over the rail network is a potentially important method of transportation within the nation. However, intersystem railway arrangements operate against a background of State railways providing predominantly intrastate freight services.

This report presents the results of a study of intersystem railway freight rating practices as they apply to a particular area of New South Wales.

The study was conducted by the Transport Costs Section of the Bureau.

The Bureau of Transport Economics acknowledges the assistance received from Regional Councils, road hauliers, freight originators and Local Government Authorities in the Riverina area of New South Wales and the Victorian Railways.

G.K.R. REID
Acting Director

Bureau of Transport Economics,
Canberra.
November 1976.

CONTENTS

SUMMARY

This report is the result of a study of intersystem railway rating practices with particular reference to the Riverina region of N.S.W. in the circumstances existing in 1973-74.

The scope of the study has been confined to surface transport of freight to and from the Riverina region of N.S.W. The study was hampered by lack of data particularly for commodity flows into and out of the Riverina. Although co-operation was sought from the Public Transport Commission of N.S.W. and the Victorian Railways, the bulk of the information on commodity flows and modal traffic split was supplied by freight originators.

In 1971-72 58 per cent of the estimated traffic for certain specified commodities was carried by rail - 7 per cent under inter-system arrangements. The overall freight task shows an imbalance of outward over inward traffic flows. This imbalance occurred mainly on intrastate railway operations.

The factors that affected the modal and directional split of freight flows were reviewed and it was found that institutional as well as price and quality relationships were important. Even if the institutional factors did not exist several important commodities such as wheat would be constrained from going to their nearest outlets by the operation of intersystem railway rating practices. Of the commodities examined the price of the transport service dominated modal choice only in the case of coarse grains, wool and fertiliser. For fresh fruit and vegetables quality aspects of service were also important.

It appears that the overall objective of each state railway system considered in this report is to try to balance total revenue and total costs. However, each system is responsive to Government directives which may not be related to the commercial considerations of the railways.

An analysis of intersystem and intrasystem rating practices reveals that the intrasystem rates as listed in published rate books, are based on an assessment of 'what the traffic will bear'. Considered in isolation for each State this approach is rational, however, the combined effects of the individual policies may lead to a sub-optimal use of resources in the national transport sector.

The Railways of Australia (R of A) intersystem rates are a result of agreements between systems. Certain key railways traffics have been excluded from intersystem arrangements or rated in such a way that they are in practice substantially excluded from intersystem movements. The R of A have an Intersystem Distance Rate Schedule in which the freight rates are lower than those of intrasystem schedules for comparable distances. The freight rates for the intersystem movement of items to which the R of A schedule does not apply are calculated basically by summing the intrasystem rates applying on each system over which the freight is transported. This results in rates which are higher than those applying to intrasystem movements over similar distances.

Against this background road hauliers have taken advantage of the judicial interpretation of Section 92 of the Constitution of the Commonwealth of Australia to provide an alternative means of reaching the nearest major outlet (in another State). To maintain their competitive edge against rail transport, road hauliers actively pursue backloading cargoes into the Riverina. The limited backloading opportunities have not only constrained the capacity of the road transport industry serving the region but have also resulted in road hauliers evolving several routing/pricing strategies. A break even revenue/cost model was developed to test these strategies, the results of which substantiated the basis of the carriers' approach.

A structure of 'through' intersystem rail freight rates was postulated for Riverina traffics. The maximum effect of such a rate structure on modal split and directional flow of traffic was

assessed within the constraint that an approximately balanced loading situation into and out of the Riverina was maintained for road haulage operations. The net result of these changes on the finances of the N.S.W. and Victorian railways would be an overall gain of nearly $3.5 million. The results of the study strongly indicate that the current intersystem rating practices constrain the efficient allocation of resources within the overall transport sector.

CHAPTER 1 - INTRODUCTION

TERMS OF REFERENCE

On 24 January 1973 the Australian Minister for Transport, the Honourable C.K. Jones, M.P. sent the following reference to the BTE.

'I refer to paragraphs 14.77 to 14.82 of the Report of the Board of Inquiry into the Victorian Land Transport System, 1971-72, and especially to paragraph 14.82 (and paragraphs 19.78 of the summary) in which Sir Henry Bland recommended that the Bureau of Transport Economics give its attention to the impact of intersystem rating practices.

'I wish the Bureau to investigate and report on the matters referred to in the above section of the Report.

'In particular I would like the Bureau to investigate and report upon:

(a) the effect of present intersystem charges on the manner in which goods are transported to and from the Riverina area;

(b) Whether the rates charged are influenced by competition from any other transport mode;

(c) Whether the rates are determined on a reasonable and equitable basis; and

(d) Whether an alteration from the present system of rail charges to a through mileage rate would be more equitable to transport users and its effect on railway finances.

'The Bureau is also free to investigate and report on any other matters relevant to the points raised in the Bland Committee Report on intersystem railway rating practices.'

The Bland Inquiry and Intersystem Rating Practices

In his report[1] Sir Henry Bland made the following statements regarding the intersystem rating practices prescribed by the Victorian and New South Wales Government Railways:

(1) 'The inter-system rating practice differs in its application to passenger fares and to goods rates, and the rules as to the latter are not uniform.' (Para. 14.77).

(2) 'Under the Railways of Australia freight tariff, with certain exceptions referred to below, uniform classifications apply, and a common schedule of rates is used for the total distance travelled over each system. The effect of this on traffic carried from Melbourne to points short of Sydney is a logical progression of rates, increasing with mileage, up to the Melbourne-Sydney rate which is not reached until a point within 10 miles of Sydney.' (Para. 14.79).

(3) 'The main commodities excluded from this method of rating are wagon-loads of grains, fertilizers, ores, coal, fresh fruit and vegetables which are charged at each system's classification and the sum of each system's rates for the distance hauled.' (Para. 14.80).

(4) 'These applications of railway inter-system rating have received some attention at other hands. That they lead to distortion of rational traffic flows from and to the Riverina needs no discussion. Clearly, through inter-system mileage rating applied to the commodities just mentioned would benefit considerably the Victorian Railways. What the nett cost to the NSWGR would be is unknown.' (Para.14.81).

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(1) Victoria, Report of the Board of Inquiry into the Victorian Land Transport System, Government Printer, Melbourne, 1972, hereafter referred to as the Bland Report.

OUTLINE OF STUDY

The content of the study falls into four main sections: the first is background material to the project; the second, railway and road rating practices; the third, a discussion of theoretical issues raised by the study; and in the fourth section consideration of the effects within the transport sector of postulating 'through' railway freight rates for intersystem traffic.

In Chapters 2 to 4 the background to the study is set. In Chapter 2 the scope of the study and the type and sources of data are explained. The boundaries of the Riverina for the purposes of the study are defined in Chapter 3 and the structure and development of the land transport system in the area outlined. In Chapter 4 the transport flow data for selected commodities and the modal splits and directional flows of these traffics are examined.

Chapters 5 to 7 cover rating practices and the actual freight rates charged. The rating practices employed by government railways in New South Wales and Victoria, the legislative background, the objectives of railways administrators and State government railway policy on setting freight rates are reviewed in Chapter 5. In Chapter 6 intersystem railway freight rates are analysed and comparisons are made between intersystem, intrasystem and intercity rates. The strategies and rating practices of the road haulage industry serving the Riverina region are examined in Chapter 7, in particular the costs of owner-drivers and fleet owners and the relationship between costs and freight rates. Factors influencing the modal split of traffic are analysed in Chapter 8.

The economic principles of pricing are discussed in Chapter 9. In Chapter 10 a hypothetical structure of 'through' intersystem railway freight rates is set up and the possible effects of these rates on the modal traffic task and directional freight flows are considered. In Chapter 11 the possible effects of the suggested

intersystem rail freight rates on transport resources are outlined. Chapter 12 contains the conclusions of the study.

CHAPTER 2 - BACKGROUND TO STUDY

It was apparent from an initial assessment of the availability of data that, because of the lack of information relating to inter-state flows of commodities, it would be impracticable in the short run to undertake this study on a nation wide basis. Thus the study has been confined to the hinterland region of the Riverina[1] because it is mentioned specifically in the terms of reference, and because a study of the freight movements into and out of the region illustrates the effect of the intersystem railway rating practices on traffic flows.

The Riverina is an area of major significance in terms of exports of primary produce, imports of manufactured goods and inputs to primary industry. The major traffic flows into and out of the region are confined mainly to New South Wales and Victoria. Intra- and interstate transportation services are supplied by the road transport industry and the railway systems of the Public Transport Commission of New South Wales and the Victorian Railways.

A further constraint on the scope of the study arises from the lack of data relating to commodity flows into and out of the Riverina over time. Consequently, it became necessary to restrict the time frame of the study, with regard to estimating commodity flows, to the year 1971-72. This year was the latest for which official statistics were available at the commencement of the study. Information on rail freight rates was obtained from official published rates applicable in 1973 and 1974, and data on road freight rates were supplied by Riverina trucking operators for 1973 and early 1974.

DATA INPUTS FOR STUDY

As the terms of reference require consideration of both road and rail transport, the basic statistical information sought by the BTE to undertake the study was as follows:

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(1) For a definition of the Riverina area refer to Chapter 3.

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- origin and destination data for commodities transported into and out of the Riverina by mode of transport; and

- details of the cost of operations of each mode of transport and freight rates applying on each mode.

To establish origin/destination flows and the intermodal split of traffic the BTE sought the co-operation of the Public Transport Commission of New South Wales, the Victorian Railways, road hauliers operating out of the Riverina, freight originators and local government authorities. Estimates of commodity flows and modal split of traffic for the year 1971-72 were principally based on information supplied by freight originators.

Neither rail authority supplied details of railway operations, costs, nor for obvious reasons, of contractual arrangements with clients. Queries regarding railway rating practices resulted in the following advice:

- neither the railway freight rates applying to the movement of traffic within New South Wales nor those applying to inter-system traffic are based directly on costs incurred;

- generally, the freight pricing policy has been aligned to what the traffic can bear.

To gain insight into the road transport industry and to verify freight rates applying in the Riverina, the BTE developed a break-even cost model to analyse the financial viability of trucking firms[1]. The model takes into account the costs of operations of the firm and the utilisation of vehicle capacity. The data inputs used in the model were provided by firms associated with the road haulage industry.

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(1) Refer to Annex B.

CHAPTER 3 - THE RIVERINA

There are no generally accepted boundaries defining the Riverina area. The discussion in this chapter relates, firstly, to the boundaries of the region as defined for use in this study. This is followed by a brief description of road and rail networks and transport services in the region.

DEFINITION OF THE RIVERINA

The Riverina is the term generally used to describe the riverine plains bounded by the Lachlan River in the north, the Murray River in the south and a general line from Condoblin to Wagga Wagga in the east, down to Albury in the south-east corner. This area contains some of the most productive mixed farming land in New South Wales and extensive use is made of irrigation.

For the purposes of this study two criteria were used to define the boundaries of the Riverina. Firstly, the region is defined in relation to the railway network servicing the area. Secondly, to enable the use of official production statistics as the basis for determining freight flows, the region is defined in terms of shire boundaries. Consequently, the Riverina is defined for the purposes of the study by the boundaries of the N.S.W. Statistical Division of the Murrumbidgee and the Subdivisions of the Central and Upper Murray of the N.S.W. Statistical Division of the Murray. These boundaries are coincident with N.S.W. Statistical Agricultural Areas of the Southern Plains and Southern Slopes (Refer to Figure 3.1.)

TRANSPORT SYSTEM

The history of rail and road developments in the region was markedly influenced by inter-colonial rivalries between New South Wales, Victoria and South Australia. Sydney, Melbourne and Adelaide interests engaged in strong competition for the trade of

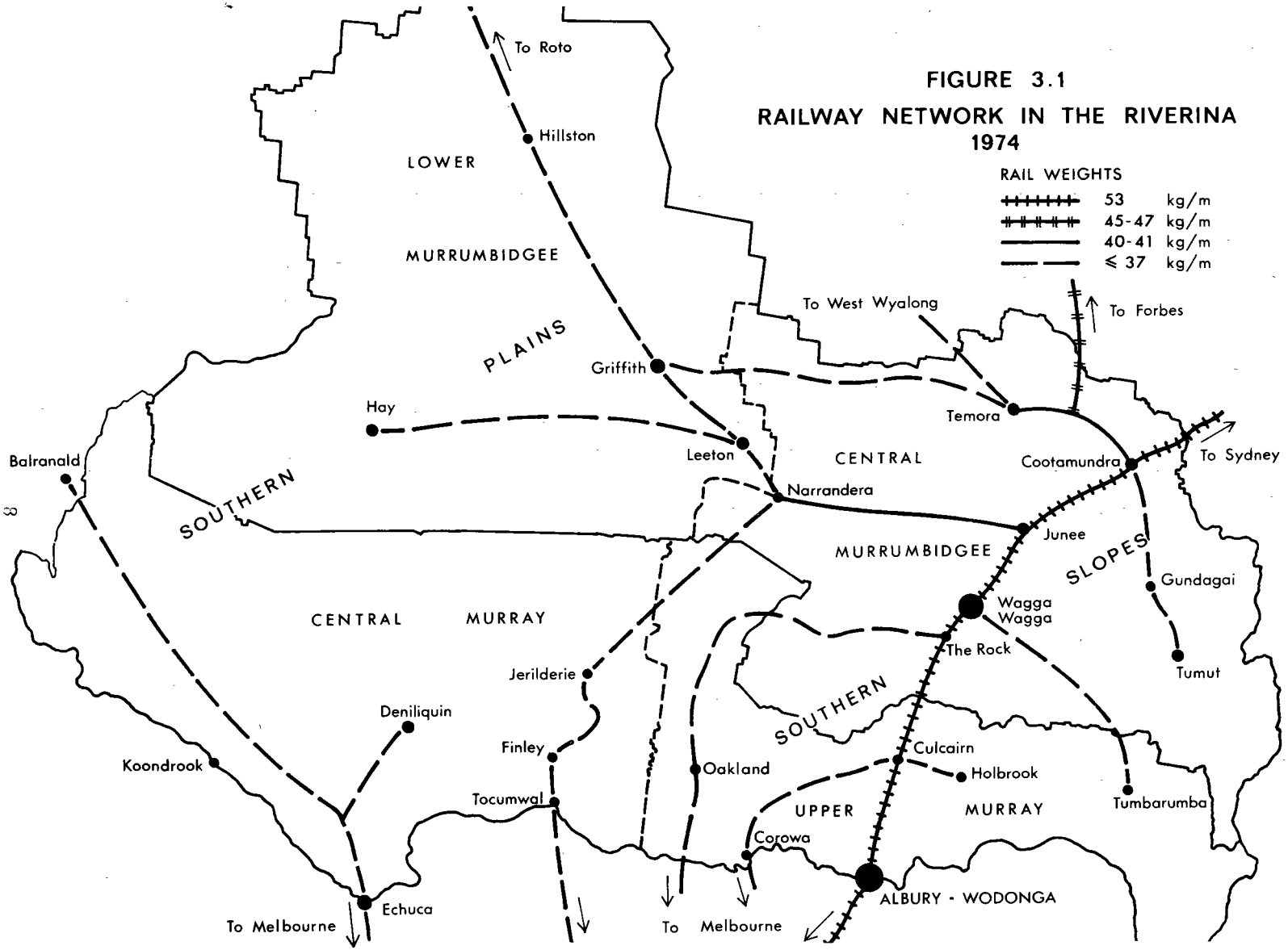
FIGURE 3.1
RAILWAY NETWORK IN THE RIVERINA
1974
RAIL WEIGHTS
53 kg/m
45-47 kg/m
40-41 kg/m
≤ 37 kg/m
To Roto
Hillston
LOWER
MURRUMBIDGEE
PLAINS
To West Wyalong
To Forbes
Griffith
Hay
Temora
Leeton
CENTRAL
Cootamundra
To Sydney
Balranald
SOUTHERN
Narrandera
Junee
MURRUMBIDGEE
SLOPES
Gundagai
CENTRAL
MURRAY
Wagga
Wagga
The Rock
Tumut
Jerilderie
Deniliquin
SOUTHERN
Finley
Culcairn
Koondrook
Oakland
Holbrook
Tocumwal
UPPER
MURRAY
Tumbarumba
Corowa
ALBURY - WODONGA
Echuca
To Melbourne
To Melbourne

the early settlers between the Lachlan and Murray River systems. This competition was reflected in the pressures on State governments to provide adequate rail and road facilities to service the region[1].

Railways

The construction of the rail network shown in Figure 3.1 commenced before the turn of the century. The network was extended on an ad hoc basis in the 1920's to provide transport for wool and wheat to the seaboard for export. Branch line development and extensions between 1905 and 1928 were designed mainly to bring wheat-producing land within ten to fifteen miles of rail services.[2] Roads in the area at the time performed only limited local functions and, in general, were poorly maintained[3].

Railway construction in the border areas came mainly from the initiative of Victorian interests, with extension of broad gauge links to Oaklands, Deniliquin, Balranald, Tocumwal (N.S.W.), Yarrawonga, Wahgunyah, Wodonga and Echuca-Moama designed specifically to tap the increasing output of the southern plains and border areas of New South Wales for export from southern ports[4].

An examination of the outline map of rail weights in the Riverina (Figure 3.1) shows the variable standards existing in the rail network serving the Riverina area. Table 3.1 indicates rail

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(1) Stanley Alexander, The Proposed Railways for Riverina, Government Printer, Melbourne, March 1891.

(2) R.H.T. Smith, Transport and Commodity Movements in Southern New South Wales, ANU 1961, p.108 and p. 124.

(3) For details of early development of these transport resources see R.H.T. Smith, 'The development and Function of Transport Routes in Southern New South Wales 1860-1930', Australian Geographical Studies, vol. II, No 1, April 1964, p 59 and Transport and Commodity Movements in Southern New South Wales, ANU, 1961, pp 85-94.

(4) Report of the Royal Commission on Border Railways...,1916. Votes and Proceedings of the Legislative Assembly of Victoria 1916, II, Paper No. 23.

TABLE 3.1 - RIVERINA RAIL NETWORK

(km)

Sections of Line	Weight of Rail[(a)]		
	≤ 37	40-41	53
Cootamundra - Albury			216
Temora - Cootamundra		104	
Narrandera - Junee		97	
Narrandera - Griffith	78		
Narrandera - Tocumwal	181		
Holbrook - Corowa	104		
The Rock - Oaklands	126		
Balranald - Echuca	205		
Deniliquin - Echuca	73		

(a) kilograms per metre.

Sources: Rail weights - Public Transport Commission of N.S.W., Rail Division.
Distances - Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973, Railways of Australia, Goods Rates Book, July 1973.

permanent way resources in the area. For example, in the Temora area the main southern line to Albury is 53 kilograms weight, the Junee-Narrandera and Temora-Cootamundra links are 40-41 kilograms and the remaining branch lines are 37 kilograms or under. Single track lines also restrict capacity; for example, although the weight of the main Junee-Albury line is 53 kilograms per metre it is only single track. Because of the light rail links speed and weight restrictions are placed on rolling stock working in the area.

Rail Services

Regular services are provided by the Rail Division of the Public Transport Commission of N.S.W. and the Victorian Railways into and out of the region.(1) Frequency of service, however, varies on different lines. For example, in N.S.W. the general goods freight service to and from Griffith and Narrandera via Junee runs daily, whereas scheduled services on branch lines are once or twice weekly. The regularity of special services for fruit, grain and livestock connecting the Griffith area via Cootamundra with fast intercapital services depends on freight volumes being offered and hence varies with the season. Services provided by the Victorian Railways range between a twice weekly frequency to Balranald and fortnightly to Peechelba East and Kooloonong.

Roads

There is a comprehensive road network throughout the region connecting to intra- and interstate centres. (Refer to Figure 3.2). Of the estimated freight traffic flows into and out of the region other than wheat(2) approximately two thirds moved by road transport in 1971-72(3).

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(1) Refer to Annex G.
(2) Carriage of wheat is the major traffic flow out of the region and, because of marketing and handling arrangements, is transported mainly on rail.
(3) Refer to Chapter 4, Tables 4.1 and 4.2.

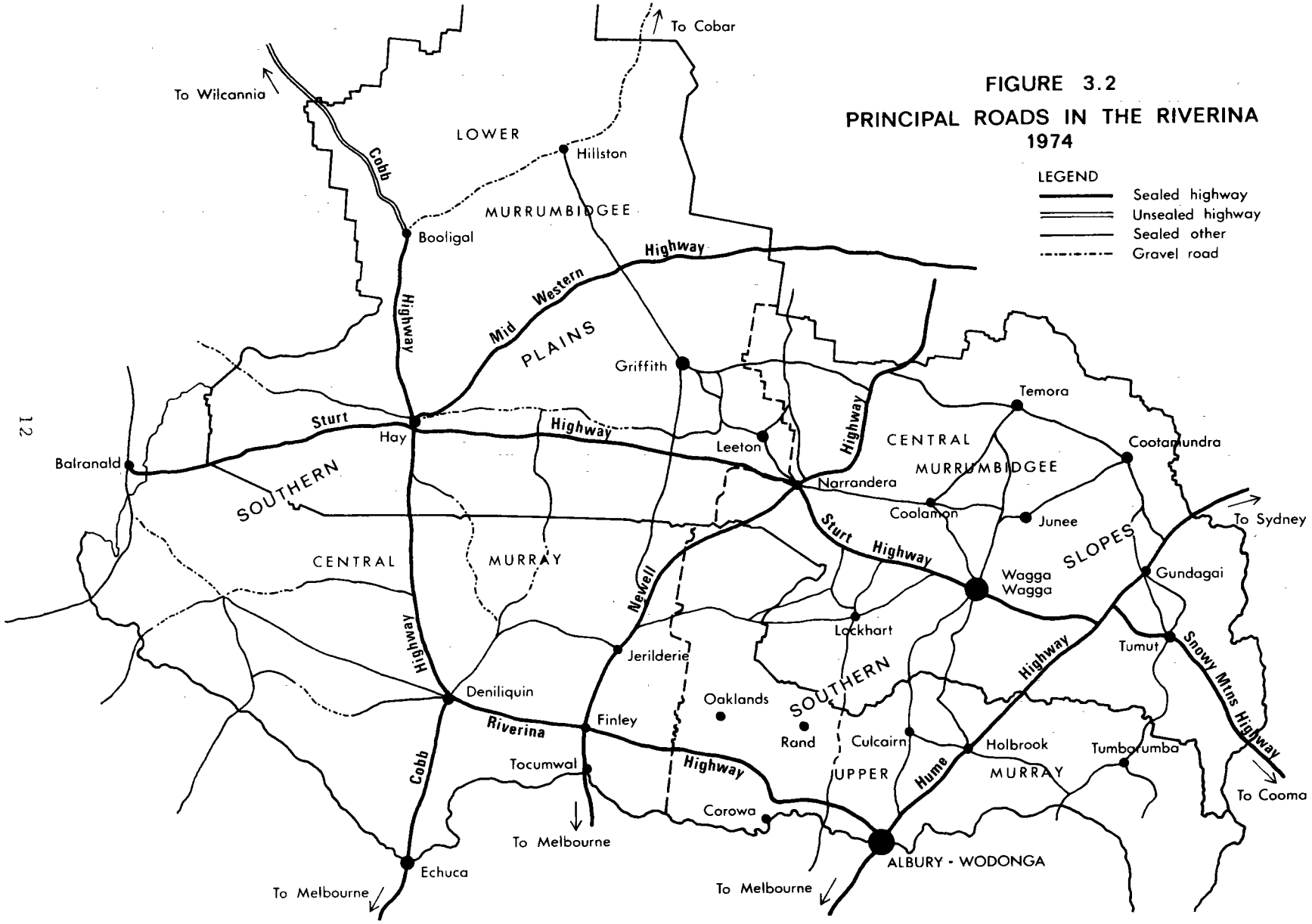

FIGURE 3.2

PRINCIPAL ROADS IN THE RIVERINA

1974

Major limiting factors on road capacity are pavement and bridge structures[1]. This has led to the imposition of weight and load restrictions by State Authorities on road transport operators. The Main Roads Act of N.S.W. provides for the issue of special permits for over-load journeys on certain roads including secondary roads.

Road Services

Road freight transport services in the Riverina are provided mainly by medium sized fleet owners. Several operators located in the region also provide warehousing and indenting facilities in association with their road haulage activities. Freight forwarding arrangements are conducted by road hauliers in the region in association with inter-city carriers. Owner-driver operators provide additional road transport capacity. In recent years ownership in the road haulage industry within the region appears to have become more concentrated and competition between operators has led to the introduction of road haulage units of greater capacity.

The imbalance of transport flows[2] to and from the region, the restrictions on intrastate trade imposed under the N.S.W. State Transport (Co-ordination) Act, and the effects of seasonal demand for transport services out of the region have led to some of the larger road haulage operators developing triangular routing strategies involving the cities of Sydney, Melbourne and Adelaide[3]. The regional demand for fertiliser produced close to these main transport corridors[4] is one of the major factors underlying these strategies. Intrastate carriage of fertiliser by road transport in competition with rail was not subject to the State Transport (Co-ordination) Act.

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(1) Bridge projects involve the Department of Main Roads for actual construction and local Councils for re-alignment of road approaches.
(2) Refer to Chapter 4.
(3) The financial viability of road transport operations is discussed in Annex B and Chapter 7.
(4) For example, at Yarraville (Melbourne), Wallaroo (Adelaide) and Port Kembla (Melbourne-Wollongong-Sydney route).

Because of these backloading operations road hauliers have been able to set rates for road transport out of the region which are, in general, lower than intersystem railway freight rates. Had no backloading strategies been available to road transport operators these rates for road haulage would have been significantly higher than for rail. The growth of capacity on the outward leg is thus limited by the availability of backloading into the region.

CHAPTER 4 - RIVERINA FREIGHT FLOWS

The Riverina is a major trading region, exporting most of its produce to market outlets located in New South Wales and Victoria. These States are also the major sources of imports into the region. In this chapter the principal commodity flows into and out of the region by mode of transport are discussed.

SELECTED COMMODITY FLOWS

The total transport task in 1971-72 for selected commodities was estimated at 3.13 million tonnes. Outward flows accounted for 2.3 million tonnes (Table 4.1) compared with 0.83 million tonnes moving in the opposite direction (Table 4.2). Consequently, there was a severe imbalance in the movement of freight into and out of the region.

Grain was the major commodity exported from the region totalling 1.5 million tonnes, approximately 65 per cent of total outflows. Petroleum products and fertiliser comprised approximately half of the estimated imports to the region.

MODAL SPLIT OF TRAFFIC

Flow data in Tables 4.1 and 4.2 indicate that approximately 58 per cent of the freight task was undertaken by the railways and the remainder by road transport. Rail transport accounted for 1.4 million tonnes (62.5 per cent) of the freight shipped out of the region compared with 0.4 million tonnes (45 per cent) of the inward flows.

Rail Transport

From a total rail freight task estimated at 1.82 million tonnes, approximately 1.59 million tonnes (88 per cent) were transported intrastate. Outward intrastate freight flows on rail were estimated at 1.24 million tonnes. On the other hand, it was estimated

TABLE 4.1 - ESTIMATES OF THE FLOW OF PRIMARY PRODUCTS OUT OF THE RIVERINA BY RAIL AND ROAD, 1971-72

('000 tonnes)

Commodity	Production	Quantity transported outwards	Rail						Road					
			Sydney	Other NSW	Melbourne	Other Vic	Other States	Total	Sydney	Other NSW	Melbourne	Other Vic	Other States	Total
Wheat	750(a)	1080(g)	885(g)	30	2	64	1	982	-	12	-	86(h)	-	98
Barley	220(b)	150	20	15	5	-	-	40	-	-	110	-	-	110
Oats	130(c)	10	-	-	-	-	-	-	-	-	-	10	-	10
Maize	35	-	-	-	-	-	-	-	-	-	-	-	-	-
Oilseeds	40	40	-	5	-	-	-	5	-	-	30	-	5	35
Rice	220(d)	220	95	-	25	50	10	180	-	-	40	-	-	40
Fodder	370(e)	80	10	10	-	-	-	20	20	10	20	-	10	60
Wool	70	70	5	5	-	-	-	10	-	-	60	-	-	60
Fruit & vegetables (including canned products)	240	210	90	15	5	-	30	140	20	-	40	-	10	70
Livestock (including carcass meat)	445	400	35	15	7	3	-	60	25	25	180	100	10	340
Milk	60(f)	40	-	-	-	-	-	-	-	10	-	30	-	40
TOTAL	2580	2300	1100	95	44	117	41	1437	65	57	480	226	35	863

(a) Peak production in 1968-69 of 1,500,000 tonnes (b) Peak production in 1970-71 of 280,000 tonnes
(c) Peak production in 1968-69 of 260,000 tonnes (d) Peak production in 1970-71 of 290,000 tonnes
(e) Peak production in 1968-69 of 660,000 tonnes (f) Peak production, 120,000 tonnes (g) Quantities transported include carryover stocks from previous seasons; also include wheat produced outside the Riverina but temporarily stored within the Riverina at the GEB subterminal at Temora. (h) Includes wheat transported out of the Riverina by road to GEB Victoria silos adjacent to the interstate border: 38,000 tonnes from GEB in the Riverina and 23,000 tonnes direct from farms. From these silos the wheat was rail-freighted to Geelong.

Source: BTE estimates from various road and rail sources.

TABLE 4.2 - ESTIMATES OF THE FLOW OF SELECTED MAJOR COMMODITY GROUPS INTO THE RIVERINA, 1971-72

('000 tonnes)

Commodity	Quantity transported inward	Rail						Road					
		Sydney	Other NSW	Melbourne	Other Vic	Other States	Total	Sydney	Other NSW	Melbourne	Other Vic	Other States	Total
Petroleum products	200	45	5	5	-	-	55	5	-	50	90	-	145
General goods & consumer durables	350	110	70	10	5	-	195	40	5	100	10	-	155
Building materials	80	5	30	-	-	-	35	5	-	-	20	-	45
Fertilisers	200	5	80	-	5	-	90	-	45	10	50	5	110
TOTAL	830	165	185	15	10	-	375	50	50	180	170	5	455

Source: BTE estimates from rail and road sources.

that only 0.23 million tonnes of freight, or about 7.3 per cent of the total transport task for the Riverina, were transported interstate under intersystem railway arrangements. The bulk of intersystem rail freight 0.2 million tonnes comprised exports, mainly grains, from the region. Hence, the major proportion of freight moving on rail is transported intrastate. There was also on both the intra-[1] and intersystem routes an imbalance between inward and outward flows of traffic.

Road Transport

Road haulage firms based in the Riverina have developed interstate routing strategies designed to utilise the capacity of their vehicles[2]. All the major commodities moving into and out of the region (with the exception of petroleum products, livestock and milk which require specialised vehicles) are suited to the type of freight operations which provide backloading opportunities.

The type of freight flow pattern that has been developed in the Riverina over the last decade by the road transport industry is illustrated in Figure 4.1. In 1971-72 the flow of goods handled by this type of balanced operation into the Riverina from Sydney and Port Kembla by road was about 95,000 tonnes, comprising:

fertilisers	45,000 tonnes
general goods & consumer goods	45,000 tonnes
building materials	5,000 tonnes

In the same year about 210,000 tonnes of goods flowed into the Riverina by road from Melbourne and Geelong, comprising:

general goods and consumer durables	110,000 tonnes
fertilisers	60,000 tonnes
building materials	40,000 tonnes

(1) Use of specialised rolling stock for wheat transportation inhibits backloading to the Riverina.
(2) For a more detailed discussion on road haulage operations refer to Chapter 7.

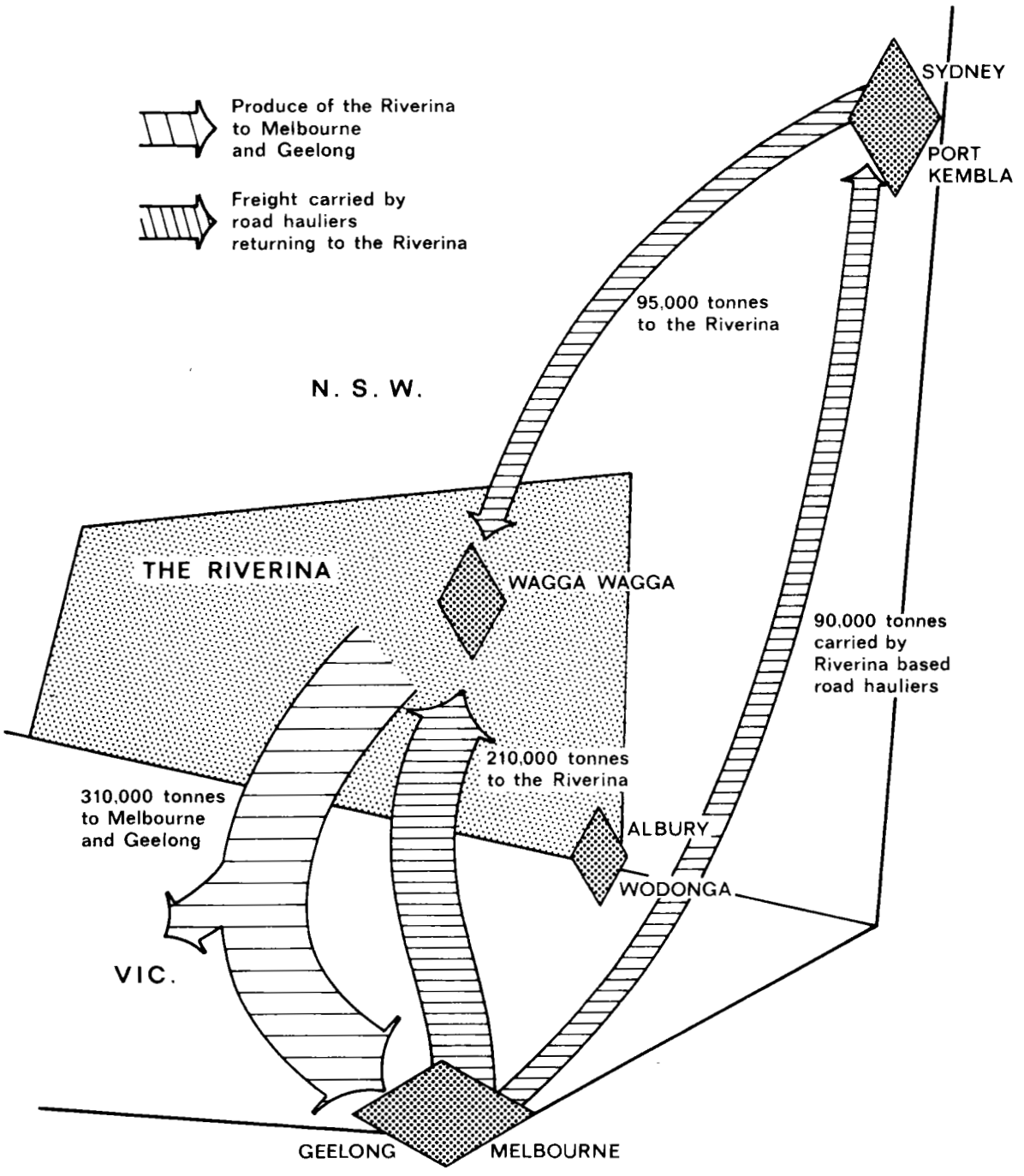

FIGURE 4.1

ESTIMATED ANNUAL BALANCED FREIGHT FLOWS TO AND FROM THE RIVERINA BY ROAD

About 310,000 tonnes of goods flowed out of the Riverina to Melbourne and other parts of Victoria by road in 1971-72. This flow comprised:

grains and oilseeds	190,000 tonnes
fodder	20,000 tonnes
wool	60,000 tonnes
fruit and vegetables	40,000 tonnes

When allowance is made for the quantity of wheat transported by road from the Riverina to Victorian silos close to the border, it is evident that a balanced loading situation has existed for many road hauliers serving the Riverina. The BTE estimates that, in 1971-72 about 95,000 tonnes of freight were hauled by Riverina-based road hauliers on each leg of the 'Wagga Triangle'[1] and about 210,000 tonnes of freight hauled by road transport in each direction on the Riverina-Melbourne-Geelong 'Ricochet'[2].

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(1) For the purpose of this study the 'Wagga Triangle' refers to interstate operations covering a triangular route which begins and ends at a large town in the Riverina, e.g. Wagga Wagga to Melbourne; Melbourne to Sydney; Sydney to Wagga Wagga. However, the apex of the triangle may be another town such as Leeton or Griffith.

(2) Refer to Figure 7.1 Chapter 7.

CHAPTER 5 - RAILWAY RATING PRACTICES

Traditionally, railway administrators have employed price discrimination to set rates for the various services provided by their systems[1]. Discriminatory pricing refers to the practice of charging different prices, or rates, for the provision of essentially similar services[2]. This practice can exist in railway operations in three basic forms - discrimination between localities, commodities or clients.

The objective of this chapter is to provide a general review of rating practices employed by government railway administrators in Australia. However, to understand the complex system of freight charges that has evolved it is first necessary to review the legislative framework in which railway systems operate in Australia.

LEGISLATIVE FRAMEWORK FOR AUSTRALIAN RAILWAY SYSTEMS

There are seven government railway systems in Australia, one operated by the Federal Government and six by the State governments.[3] Each system is constituted under legislation enacted by the respective parliaments[4]. Public railway systems in Australia are treated similarly to ministerial departments in that they operate within the framework of parliamentary appropriation budget accounting[5]. Because the railways are engaged in trading activities, funds to cover operating expenses are derived mainly

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(1) For a discussion on the evolution of the rationale of discriminatory pricing on railways refer to Annex A.
(2) For an example of discriminatory pricing refer to rail freight rates for crude ores, concentrates etc, Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol.1 , 1973 p. 200.
(3) In 1975 the financial responsibility of the railway system of South Australia, apart from urban passenger services, and of Tasmania were taken over by the Federal Government.
(4) The relevant Commonwealth and State Acts are listed in Annex D.
(5) Under the terms of the enabling acts, the management of each railway system is required to present an annual report of its activities.

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from revenue obtained by charging for the services provided. Railway capital expenditure is financed either from loan funds, grants or operating surpluses. Where deficits occur finance is appropriated from consolidated revenue.

The management of the various rail systems in Australia is usually vested by legislation[1] in either a Railways Board[2] or Railways Commission(er) which is responsible to a Minister of the Crown[3].

Discretionary power is conferred on the respective Commissioners or Board by State railway legislation to make and fix scales of charges for the movement of goods and to specify classifications and conditions for such movements. This discretionary power may be constrained to some extent by prescribed common carrier[4] and other statutory obligations relating to concessions, special rates and rebates. In some States these powers are also limited by legislative provisions designed to prevent management from discriminating between persons demanding the same service[5].

In spite of these constraints, the respective Commission or Board has under the enabling Acts, wide discretionary authority to set rates and to prescribe the terms and conditions under which traffic can be carried. Railway legislation also permits management to enter into contracts with clients. The terms of the

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(1) See Annex D.

(2) In 1972 the Victorian Government passed legislation to effect the change of management of the Victorian Railways from the Railways Commissioners to a Railways Board; refer to Railways (Amendment) Act 1972.

(3) In South Australia the management of the urban passenger railway system is vested in the State Transport Authority. As from 1 July 1975 country rail services ceased to be the responsibilit of the Authority.

(4) Common carriers are those transport operators whose services are available for hire and reward to serve all users. They are generally required to operate on fixed routes and fixed schedul under prescribed rates, charges and conditions. In common law, such a carrier is bound to serve for a reasonable reward and to carry all goods or passengers for which he has space. Liabilit for loss and damage to persons or property is limited by statut

(5) For example, refer to Government Railways Act, 1912 N.S.W., Section 24.

contracts, relating to special rates and conditions of carriage, are established at the discretion of the Commissioners or Board involved. In addition, the management of the various railway systems set, by agreement, the freight rates and conditions of carriage for the intersystem movement of goods traffic[1].

The respective State Railways Acts contain no provisions which give rail preference or advantages over any other mode. Nevertheless, with the exception of South Australia, legislation effectively secures a large volume of freight traffic for the State railway systems. This legislation[2] is designed to restrict the activities of intrastate commercial road transport operators by inhibiting or preventing the movement of specified commodities by road transport in competition with rail. States cannot impose similar restrictions on interstate road hauliers because of the judicial interpretation of Section 92 of the Constitution of the Commonwealth of Australia.[3]

RAILWAYS OBJECTIVES AND FREIGHT RATE POLICIES

Although it is difficult to determine precisely the overall objectives of railway administrators in Australia some statements have been made by the various railway organisations. For example, the stated objective of the Victorian Railways Board is to equate total revenue with the total cost of operating the system[4].

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(1) For discussion of intersystem freight charges, refer to Chapter 6.

(2) The relevant State legislation relating to road transport is set down in Annex D. In N.S.W. the restrictions placed on road transport under the State Transport (Co-ordination) Act, 1931-1956 were abolished progressively commencing in July 1972 and being completed in January 1974. Therefore the effects of lifting these restrictions on intrastate road transport in N.S.W. would not have been felt within the period of time considered in this study.

(3) Hughes and Vale Pty Ltd., v State of New South Wales, (1953), 87. C.L.R. 49.

(4) Victorian Railways, Annual Report, 1973-74, p. 2.

The Public Transport Commission of N.S.W. states that its objectives are to maximise efficiency (in terms of manpower and resources) and provide reliable, regular and reasonably priced inter- and intrastate transport services[1]. However, the PTC does not consider that its overall objective is to operate at a profit. Rather its stated responsibility is to minimize deficits.

The general approach used in determining whether financial objectives have been met has been to relate total revenue to total costs as calculated by the railway authorities and set out in their accounts. Total costs are allocated by the PTC of N.S.W. and the Victorian Railways only among major categories of traffic such as suburban passenger, country passenger and freight by means of a formula to give an indication of the financial result for each category[2].

The Public Transport Commission of N.S.W. has stated that its costing system is not designed to identify the cost of providing particular services[3]. Moreover, freight rates prescribed for particular services are not directly related to their cost.

The original structure of railway freight rates recognised the principle of charging what the market will bear,[4][5] subject to State political constraints. In the report of the land transport

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(1) Public Transport Commission of N.S.W., Looking Ahead, 1974, pp. 23-25.
(2) Ibid, pp. 6-7, and Bland Report, para. 7.26, p. 65.
(3) Ibid.
(4) For a discussion of this concept refer to Annex A, Appendix 1.
(5) A perusal of prescribed rates suggests that the value of the commodity being transported was used as an indicator of the freight rate which the market would bear. However, while in some cases the value of a commodity is a reasonable proxy for the elasticity of demand for the transport service it is erroneous to assume that all high valued commodities necessarily have a more inelastic demand for transport services than low valued ones. Refer to D.P. Locklin, Economics of Transportation, Irwin, Illinois, 1972, pp. 159-160.

inquiry conducted in Victoria in 1971, Sir Henry Bland commented on the extent of change in the Victorian Railways' approach to rate setting since an earlier inquiry in 1933 as follows:

'Fundamentally, there has been no change in the Railways goods rating system. Broadly speaking, the Railways have maintained their value for service concept, with tapering rates relating to total mileage, irrespective of costs of operation which obviously vary greatly from one section of line to another and particularly on branch lines. The current Rate Books show little variation in ratios between the rates for different classes of goods applying in 1933[1]'.

While there has been no fundamental change in approach, changing circumstances have resulted in some flexibility in rate setting. For example, the land transport enquiry of 1971 found that contract rates have been set for some traffics and more recently have been negotiated with freight forwarders mainly for interstate traffic. Also after the Hughes and Vale decision and the growth of interstate road haulage the railways published special rates to retain and attract traffic[2]. These applied mainly in State border areas where competition from road transport cannot be effectively controlled under State legislation, which, as discussed earlier, was designed to restrict intrastate road haulage so as to retain traffic on rail.

Where the comparison of total revenue and total costs as computed by the Railways has yielded an overall deficit it has not been uncommon for increases in prescribed rates for the various categories of traffic to be made across the board. These increases and in some cases specific decreases, are often made in response to Government directives.

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(1) Bland Report, para. 3.137, p. 35.
(2) Ibid, para. 3.138, p. 35.

The discretionary power of the State railways administrators conferred on them by legislation enables them to set the various rates and conditions under which railway transport services are sold, with the Government of the day supervising and approving changes in the level of rates. Within this framework of legislation and political constraints railways administrators can adopt discriminatory freight rating practices which are consistent with their overall objectives. However, while this approach may be rational from the viewpoint of each individual State, the overall result of the various State policies, each established without reference to the other States, may be an inefficient use of resources within the national transport sector.

CHAPTER 6 - INTERSYSTEM FREIGHT RATES

Intersystem rail freight movements are facilitated by an undertaking made by each railway Commission/Board of a freight originating system to act as agent for the Commission/Board of other systems on which the consignment moves.

Intersystem arrangements were developed over the years through a voluntary system of conferences of officers and Commissioners of the Australian railways systems[1]. Through these conferences, a secretariat[2] was established to form 'Railways of Australia'. Subsequently, a uniform classification and prescribed rates and conditions for intersystem traffic were developed and published in the Railways of Australia Goods Rates Book. These were made effective by prescribing the arrangements as by-laws in each rate book subsequently issued by the respective Commissioners, for example the rates books for the N.S.W. and Victorian systems[3] do so under the provisions of their respective legislation.

The purpose of this chapter is to describe the freight rates and charges levied on interstate traffic transported by seven Government railways in Australia.

RAILWAYS OF AUSTRALIA FREIGHT CHARGES

Intersystem rail freight in Australia is carried subject to the rates and conditions given in the R of A Goods Rates Book,[4]

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(1) The process of developing these arrangements began before Federation and encountered considerable difficulty because decisions taken at conferences were not binding (refer to the Report of Victorian Railways Commission, for the Year Ending 30 June, 1909, p. 12).

(2) The functions of the secretariat were taken over by a committee in November, 1974.

(3) See Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973, p. 231. Victorian Railways, Goods Rates Book, No. 28, vol. 1, 1 July 1973, p. 165.

(4) Examples of the complex nature of the structure of rates and the conditions of carriage which apply to intersystem movements of goods and livestock are provided in Annex E.

and to the Railway Acts and by-laws of each railway system to which the carriage applies. However, Intersystem Distance Rates do not apply in respect of the following:

- freight carried on certain specified sections, and to or from certain stations;
- freight consigned between system border stations and hauled over one system only;
- consignments of explosives and other dangerous goods (with exceptions), animals and birds in crates, boats, vehicles, caravans, trailers, fresh milk, wool, tank wagon traffic and wagon load consignments of wheat and wheaten flour, fodder, coarse grains, crude ores and ore concentrates, coal and coke, fertilisers, fresh fruit and vegetables, potatoes and onions;
- freight carried under contractual arrangements between the State railways systems and consignors.

Intersystem Distance Rates (I.D. Rates)

Rates prescribed in the R of A Goods Rates Book as I.D. rates are a basic and uniform set of rates, which vary and taper with distance and apply to prescribed consignments of intersystem rail freight.

The actual freight charge based on I.D. rates for a consignment of goods does not depend on the total distance of the journey alone. The charge also varies according to the number of railway systems through which the consignment passes. The basic freight rate per tonne for such a consignment is the sum of the I.D. rates calculated for the distance the consignment moves over each system via one of R of A's defined border stations[1].

(1) For defined border stations and charges see Railways of Australia Goods Rates Book, July 1973, p. 6.

This method of aggregation has the effect of blunting the impact of the tapered rate structure over the total distance of the journey. This result arises as the price levied by each railway system is determined as though the origin and destination of the consignment lies within that system. In the State in which the consignment is initiated the price charged is equivalent to the rate applicable to the distance between the originating town and border station of the adjoining State. The price levied for the carriage of the traffic within or through the adjoining State is equivalent to the rate that would apply as if the consignment originated at the border station. Thus, while the impact of the taper in the prescribed I.D. rates is applicable over the distance travelled within each State, the total effect of the distance taper on price is less than if a 'through' rate applied to the entire journey.

There are other conditions and incidental charges which apply to freight consignments carried at I.D. rates. Charges are levied on traffic passing through prescribed border or transfer stations. For example, either a standard gauge or a bogie exchange charge of 70 cents per tonne is levied on all intersystem traffic passing through Albury. At Tocumwal, the transfer of freight between the Victorian and New South Wales systems incurs a charge of 70 cents per tonne[1]. Each consignment is also subject to a terminal charge, a maximum of $2 per tonne, levied by both the originating and terminating systems. This charge includes the costs of loading, unloading, checking, covering and securing the consignment. The terminal charge does not apply to the originating or destination systems when other than the uniform rates are charged on the respective system. In the case of traffic originating or terminating at border stations the terminal charge is credited to the railway system which has performed the haul, except in the case of Albury or Broken Hill where the charge is credited to N.S.W.[2]

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(1) Ibid, p. 5
(2) Ibid.

Table 6.1 shows the method of calculating the actual freight charge for a consignment of 'B' class freight from Griffith (N.S.W.) to Melbourne, a distance of 510 km. Freight charges for consignments subject to I.D. rates apply to all movements except on designated intercity routes.

TABLE 6.1 - R OF A INTERSYSTEM FREIGHT CHARGE FOR CLASS B[a] FREIGHT FROM GRIFFITH (N.S.W.) TO MELBOURNE

($ per tonne)

Origin charge[b]	2.00
New South Wales system from Griffith to Tocumwal 259km: distance rate(b)	7.40
Transfer at Tocumwal[b]	0.70
Victorian system Tocumwal to Melbourne 251km: distance rate[c]	7.40
Destination charge[c]	2.00
TOTAL INTERSYSTEM FREIGHT CHARGE[d]	19.50

(a) Includes such goods as semi-manufactures, machinery, appliances, packing materials.
(b) Paid to the N.S.W. system.
(c) Paid to the Victorian system.
(d) Also applicable in reverse direction.

Source: Railways of Australia, Goods Rates Book, 1 July 1973, rates effective from 1.8.74.

For traffic carried over the total journey of the prescribed intercity routes (such as Sydney to Melbourne) R of A rail freight charges are based on Intercity Total Rates. These special rates are based on I.D. rates and include such incidentals as terminal and transfer charges. The cities between which these rates apply are Sydney, Melbourne, Brisbane, Adelaide, Perth, Newcastle and Geelong.

In Table 6.2 comparisons are made between the R of A intersystem freight rates and intrasystem freight rates applying in the New South Wales and Victorian railway systems.[1] The comparisons

(1) Further comparisons of prescribed distance rates applying on the Victorian and N.S.W. rail systems with R of A rates are provided in Annex F.

TABLE 6.2 - COMPARISON OF INTERSYSTEM AND INTRASYSTEM FREIGHT RATES BY CLASSIFICATION OF FREIGHT CONSIGNED OVER DISTANCES OF 510 AND 954 KILOMETRES[a]

($ per tonne)

Type of Freight Charge	Class of Freight				
	A	B	C	1	2
510 km					
R of A intersystem distance rate[b]	17.70	19.50	21.50	23.90	27.10
N.S.W. Railways rate	16.17	21.55	26.53	32.42	38.53
Victorian Railways rate	17.80	23.05	32.05	38.40	49.85
954 km					
R of A intersystem distance rate[c]	22.50	25.70	30.10	34.50	40.50
R of A intercity total rate	20.90	24.10	28.60	33.10	39.20
N.S.W. Railways rate	20.27	27.34	33.80	41.38	49.30
Victorian Railways rate	28.10	36.55	44.90	58.55	80.15

(a) These are the rail distances from Melbourne to Griffith and Sydney respectively.
(b) Based on the sum of the prescribed I.D. Rates applying to the distance travelled on each system - 259 km in N.S.W. and 251 km in Victoria, plus incidental charges.
(c) Based on the sum of the prescribed I.D. Rates applying to the distances travelled on each system - 647 km in N.S.W. and 307 km in Victoria, plus incidental charges.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973. Victorian Railways, Goods Rates Book, vol. 1, 1 July 1973. Railways of Australia, Goods Rates Book, 1 July 1973, rates effective as from 1.8.74.

are made by traffic classification over specified distances. Though the traffic classifications in each rate book are not identical the comparisons provide an indication of the differences in freight rates on the various types of railway journeys.

I.D. rates in the table are generally lower than comparable intrastate freight rates. For example, for 'B' class traffic intersystem rates are approximately $2.00 to $3.50 per tonne lower than comparable intrastate rates over a distance of 510 kilometres. Over 954 kilometres[1] the range extends from about $1.50 to $11.00 per tonne. This occurs despite the blunting influence on the distance taper caused by the R of A requirement that the distance rate be calculated from each border station through which the consignment passes.

A comparison of the two intersystem freight rates shows that the Intercity Total Rates are marginally lower, approximately $1.00 per tonne, than I.D. rates. In addition, the difference between both forms of intersystem rates and the Victorian and New South Wales intrasystem rates, over varying distances, appears to be more marked for higher valued commodities. This is illustrated by comparing the intersystem and intrasystem charges applying to traffic classifications 1 and 2, under which higher valued commodities are generally transported. The differential is between approximately $9 and $40 per tonne for class 2 traffic.

OTHER INTERSYSTEM RATING PRACTICES

Particular Routes

Freight carried between New South Wales and the Australian Capital Territory, and between South Australia and Central Australia is carried under conditions and at rates determined by the respective systems. The prescribed conditions require that while intersystem

(1) The rail distance between Sydney and Melbourne.

consignments are moving through the Australian Capital Territory or on the Central and Northern Australian systems such freight is carried at local distance rates. For other parts of such journeys R of A I.D. rates apply. Similar arrangements also apply for intersystem consignments moving through inland Queensland.[1]

Particular Commodities

Commodities such as grains and wool which have strong historical links with the development of the existing State rail networks and provide a high proportion of the total traffic on each network are subject to rating strategies which result, in practice, in the bulk of rail movements being confined to their State systems.

If consigned to interstate destinations wool and wagon load consignments[2] of grain, fodder, fresh fruit, fresh vegetables and fertilisers are carried at rates which represent the aggregate of the prescribed local distance rates for the distance travelled over each system, plus the prescribed incidental charges but excluding terminal fees.

Table 6.3 shows the method of calculating the intersystem freight rate per tonne for a wagon load consignment of bulk grain from Griffith to Melbourne. The rate of $15.37 is significantly greater than the intrasystem rate for a comparable distance of $11.01 and $8.45 on the New South Wales[3] and Victorian railway[4] systems respectively.

Other Special Rates

Special intersystem freight rates apply to the movement between selected cities of a few commodities not normally covered by R of A I.D. rates. These rates apply to wagon loads of fresh fruit,

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(1) Refer to example of method of application of intersystem distance rates, Annex E.
(2) Smaller consignments of these commodities travel at Intersystem Distance Rates. R of A, op. cit. p. 6.
(3) Refer to Public Transport Commission of N.S.W., op. cit., p. 148.
(4) Refer to Victorian Railways, op. cit., p. 104.

TABLE 6.3 - RAIL FREIGHT CHARGE FOR AN INTERSYSTEM CONSIGNMENT OF GRAIN FROM GRIFFITH TO MELBOURNE

($ per tonne)

New South Wales system Griffith to Tocumwal 259km: local distance rate	8.27[a]
Transfer charge at Tocumwal	0.70[a]
Victorian system Tocumwal to Melbourne 251km: local distance rate	6.40[b]
TOTAL	15.37[c]

(a) Paid to N.S.W. system.
(b) Paid to Victorian system.
(c) Other charges may also be raised for grain consigned through Tocumwal. These include shunting charges and charges for the use of the mechanical transfer equipment.

Sources: PTC of N.S.W. p. 143. Victorian Railways p. 104.

potatoes, onions and celery moved in other than refrigerated vans between specified stations in Victoria, New South Wales, Queensland, South Australia and Western Australia.[1]

A comparison of special intersystem rates, I.D. rates and intrasystem rates for fresh fruit transported over a distance of 954 km is provided in Table 6.4. The special rate for this journey is approximately $3.00 per tonne less than if the I.D. rate applied. However, the special rate is up to $5.00 per tonne higher than for intrastate hauls of a comparable distance.

Special intersystem rates also apply to wool sent from some parts of western New South Wales to Melbourne. These rates apply to wool consigned from 35 stations in New South Wales to the Melbourne metropolitan area via Tocumwal. In Table 6.5 a comparison is made between inter- and intrasystem freight rates for consignments of wool originating in either Griffith or Hillston. The special intersystem rates applying to the consignments moving from these centres, compared with the intersystem rates based on the aggregate of the local distance rates result in a charge approximately $4.50 and $6.50 per tonne lower from Griffith and Hillston respectively. However, the rates for a longer intrastate haul to Sydney from these centres are lower than the special rates by approximately $5.00 and $9.00 per tonne respectively.

Despite these special intersystem rates, the results of freight rate comparisons in Tables 6.4 and 6.5 suggest that interstate rail movements of commodities to which these rates apply are likely to be inhibited.

Contract Rates

Rail clientele who are prepared to consolidate regular consignments of freight are able to negotiate contractual arrangements with the Railways Commissions/Board for the line haul movement of

(1) Refer to Public Transport Commission of N.S.W., op. cit., pp. 236-243.

TABLE 6.4 - COMPARISON OF SPECIAL INTERSYSTEM RATES, INTERSYSTEM AND INTRASYSTEM FREIGHT RATES FOR FRESH FRUIT[a] CONSIGNED OVER A DISTANCE OF 954 KILOMETRES[b]

Special Intersystem Rate	Intersystem Rate(c)	Intrasystem Rate	
		NSW	Vic.
16.68	19.70	13.76	11.30

(a) In wagon loads other than refrigerated vans.
(b) Distance between Sydney and Melbourne.
(c) Based on the sum of the local distance rates plus transfer charges.

Sources: PTC of N.S.W., p. 180.
Victorian Railways, p. 104.

TABLE 6.5 - COMPARISON OF INTERSYSTEM AND INTRASYSTEM CHARGES FOR WOOL[a]

Destination and type of freight charge	Freight charge and distance			
	From Griffith		From Hillston	
	$ per tonne	km	$ per tonne	km
To Melbourne at special intersystem rates	34.95	510	38.69	617
To Melbourne at intersystem rates(b)	39.53	510	45.39	617
To Sydney at N.S.W. Railway rates(c)	29.90	641	29.90	748

(a) The charges have been calculated by raising the rate per bale by a factor of 6.66.
(b) Calculated by aggregating the intrasystem freight rates.
(c) The Public Transport Commission of N.S.W. sets a ceiling rate for wool at $4.49 per bale for journeys greater than 435 km.

Sources: PTC of N.S.W., p. 194. Victorian Railways, pp. 147 and 14

freight. Freight forwarding agents specialise in this form of transport for the interstate movement of freight.

The contractual arrangements between freight forwarders and the Railways are confidential.[1] However, the following door-to-door freight rates charged by a freight forwarder[2] give an indication of the arrangements negotiated with the Railways Commissions/Board for this type of intersystem traffic.[3] Contract rates for consignments greater than 8 tonnes railed between Melbourne and Sydney range from $15.00 to $17.50 per tonne[4]. The Railways of Australia Intercity Total Rates for the same freight consignment range from $20.90 per tonne for 'A' class freight to $39.20 per tonne for class 2 traffic.[5].

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(1) Freight forwarders provide door-to-door freight services at inclusive freight rates. In general, they arrange for the consolidation of freight consignments and employ one or more transport modes to undertake line haul movements.
(2) Information provided to BTE by a major freight forwarder in 1973.
(3) While railways are subject to common carrier obligations, freight forwarders in using rail line haul services do not act as common carriers.
(4) The comparable freight rates for door-to-door delivery by road quoted by the same freight forwarder range from $17.50 to $20 per tonne.
(5) Refer to Table 6.2.

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CHAPTER 7 - ROAD HAULAGE RATING PRACTICES

The objective in this chapter is to outline the rating strategies of the road haulage industry serving the Riverina, with particular emphasis on interstate operations. The study has been confined to those operators which are based in the Riverina. Following a discussion of the rates applying to the movement of freight into and out of the region, the financial costs of road haulage operations are considered. The relationship between freight rates and costs are then examined.

ROAD HAULAGE FREIGHT CHARGES

The freight rates set out in Table 7.1 were supplied to the BTE by Riverina trucking operators. The rates applied to the period 1973 and early 1974 and cover a variety of products moving into and out of the Riverina. The rates quoted for freight moving from Wagga Wagga to Melbourne ranged from $7.00 per tonne for grain to $13.00 per tonne for wool. For freight moving in the opposite direction the rates extended from $5.00 per tonne for cement to an equivalent of $50.00 per tonne for small parcels. Similar ranges of rates applied during the period to other commodities moving to and from other locations in the Riverina.

Indicative rates based on the recommendations of the Long Distance Road Transport Association in late 1973 are quoted in Table 7.2. A comparison of these rates with actual rates for general cargo quoted by road hauliers shown in Table 7.1 shows that on the Sydney-Albury route the actual quoted freight rate was $12.00 per tonne while the recommended rate was $14.00 per tonne. On the Sydney-Wagga route the actual quoted rates ranged from $15.00 to $20.00 per tonne compared with the recommended rate of $15.00 per tonne. Thus there is evidence of discrimination in rates charged by road hauliers operating in the region.

TABLE 7.1 - INDICATIVE ROAD FREIGHT RATES, RIVERINA, 1973

Origin-Destination	Commodities	Quoted Freight Rate ($ per tonne)
South		
Griffith to Melbourne	Vegetables, canned fruit, grain	$10 - $12
Wagga to Albury/Wodonga	Grain	$ 4 - $5
	Wool	$ 7 - $8
Wagga to Melbourne	Grain	$ 7 - $9
	Wool, office stationery	$12 - $13
Wagga to Geelong	Grain	$10 - $12
Henty to Melbourne	Grain	$ 7 (bulk) $ 8 (bagged)
Albury to Melbourne	Grain bagged	$ 7
	Wool	$ 7
Berrigan to Melbourne	Grain	$ 6
Tocumwal to Melbourne	Grain	$ 6
Tocumwal to Portland	Grain	$16
Narrandera to Melbourne	Grain	$ 9
North		
Griffith to Brisbane	Fruit and vegetables	$22 - $24 (a)
Melbourne to Griffith	Bricks, cement	$ 7 - $ 8
	General goods	$12 - $16
Melbourne to Wagga	General goods	$ 5 - $50
	Paper	$18
Melbourne to Albury/ Wodonga	Fertiliser, cement	$ 3 - $ 4
	General goods	$ 5 - $ 8
Melbourne to West Wyalong	General goods	$10 - $15
Melbourne to Deniliquin	General goods	$ 7
Geelong to Wagga	Fertiliser	$12
	General goods	$ 9 - $10
Melbourne to Henty	Fertiliser	$ 9 - $10 (b)
East		
Griffith to Sydney	Fruit, Vegetables	$14 - $16 (c) (d)
Wagga to Sydney via Wodonga	Office stationery	$23
Culcairn to Sydney	Grain	$18 (c)
West		
Sydney to Wagga	General goods	$15 - $20 (c)
Sydney to Albury	General goods	$12 (e)
Sydney to Shepparton (V)	General goods	$16 (f)
Sydney to Kerang (V)	General goods	$18 (f)
Port Kembla to Wagga/ Griffith	Fertiliser	$ 8
Sydney to Wodonga	Paper	$15

TABLE 7.1 - INDICATIVE ROAD FREIGHT RATES, RIVERINA, 1973

Continued

(a) Rail rate to Clapham Junction is $16 per tonne; road rate out of Clapham Junction to Brisbane is $3 per tonne plus rail unloading charges plus waiting time for road hauliers.
(b) Plus 5 cents per km for each km carted north past Henty/Holbrook.
(c) Includes co-ordination tax.
(d) Rail rate is $10.50 per tonne for fruit, $12.00 per tonne for vegetables.
(e) Port Kembla to Albury rate on rail for fertilisers $8.75 per tonne.
(f) Backloading rate for general goods based on a forward load of canned goods.

Source: Riverina trucking operators.

TABLE 7.2 - RECOMMENDED BASE ROAD FREIGHT RATES[(a)] FOR SUB-CONTRACT HAULAGE 1973

($ per tonne)

Route	
Sydney - Albury	14
Sydney - Wagga Wagga	15
Sydney - Culcairn	14
Sydney - Narrandera	14
Sydney - Hay	18
Sydney - Griffith	15
Sydney - Melbourne	21

(a) Calculated on the basis of cargo moved by a 12 tonne payload, single-axled vehicle and an 18 tonne payload vehicle with a bogie-axled prime mover and bogie-axled trailer.

Source: Long Distance Road Transport Association, Sydney.

Table 7.3 shows rates quoted to the Australian Wheat Board by road hauliers for the movement of wheat from various centres in the Riverina to the Victorian Grain Elevators Board terminal at Geelong. The rates ranged from $7.00 to $9.00 per tonne for consignments carried over distances varying between 278 and 486 kilometres.

A comparison is made in Table 7.4 between freight rates for the movement of wheat by road transport and a combination of road and rail transport from the Riverina to Geelong. A consignment of wheat by road transport from Jerilderie to Geelong was quoted at $7.50 per tonne. The comparable rate for the consignment when both modes of transport were used was $9.64 per tonne[1]. The saving by using road transport only would be about $2.00 per tonne[2].

ROAD HAULAGE OPERATING COSTS

In an effort to put into perspective the relationship between the actual freight rates charged and the costs of operations of Riverina based road hauliers, the BTE conducted detailed cost studies of the operations of owner-driver and fleet owner road haulage firms serving the Riverina area. In Table 7.5 the unit costs of these operations are shown. Each component of total break-even costs is expressed in cents per vehicle kilometre travelled per year. Total operating costs for owner-driver vehicles of 15-17 tonne capacity were about 25 cents per vehicle kilometre per annum, while total break-even costs (that is operating costs plus return to capital) were about 30 cents and 32

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(1) While consignments of this nature do take place from time to time at the direction of the AWB, in general wheat is moved by rail transport to Sydney at intrasystem rail rates.

(2) When both modes of transport are used the AWB provides some relief for the cost disability of these arrangements, but only to farmers delivering to silos located below an axis centred on North Yathong, a few kilometres north east of Jerilderie.

TABLE 7.3 - ROAD TRANSPORT FREIGHT RATE QUOTATIONS FOR WHEAT MOVEMENT FROM SELECTED RIVERINA SILOS TO GEELONG, 1973

Silo	Road distance from Geelong (km)	Line haul rate ($ per tonne)
Berrigan	290	7.30
Finley	278	7.00
Jerilderie	319	7.50
Corowa	286	7.00
Albury	309	7.50
Brocklesby	309	7.50
Burrumbuttock	341	8.00
Culcairn	362	8.00
Rand	338	8.00
Ferndale	354	8.00
Pleasant Hills	386	8.50
Henty	380	8.50
Wagga Wagga	442	8.50
Junee	483	8.50
Coleambally	386	8.50
Narrandera	426	9.00
Leeton	459	9.00
Griffith	459	9.00
Oaklands	349	7.00
Urana	365	8.00
Boree Creek	418	9.00
Lockhart	417	9.00
The Rock	410	9.00
Grong Grong	442	9.00
Ganmain	467	9.00
Coolamon	481	9.00
Old Junee	486	9.00

Source: AWB Representative, Tocumwal, September 1973.

TABLE 7.4 - COMPARISON OF WHEAT FREIGHT CHARGES BY TRANSPORT MODE(S) FROM SELECTED RIVERINA SILOS TO GEELONG, 1973

Station	Distance from Geelong (km)	Quoted road rate ($)	Combination road/rail charge(a) ($)	Difference ($)
Jerilderie	319	7.50	9.64	2.14
Mairjimmy	309	7.40	9.38	1.98
Green Swamp	314	7.30	9.12	1.82
Berrigan	290	7.30	8.60	1.30
Finley	278	7.00	8.15	1.15

(a) This charge comprises:
- road cartage to Tocumwal (e.g. $2.34 Jerilderie to Tocumwal)
- rail rate Tocumwal to Geelong of $6.80 per tonne
- double handling charge of 50 cents per tonne.

Source: AWB Representative, Tocumwal, September 1973.

TABLE 7.5 - COMPOSITION OF TOTAL COSTS OF OPERATIONS OF ROAD HAULIERS LOCATED IN THE RIVERINA: COST PER VEHICLE-KILOMETRE PER ANNUM

	Owner-Drivers				Fleet Owners			
TRUCK DATA								
Type of vehicle	4 axle[a]		4 axle[a]		4 axle[a]		5 axle[a]	
Capital value of unit(b)	$23,000		$30,000		$35,000		$48,000	
Gross carrying capacity	15 tonnes		17 tonnes		17 tonnes		20 tonnes	
Vehicle fuel	petrol		diesel		diesel		diesel	
Annual distance travelled	87,000km		94,000km		145,000km		159,500km	
COST ELEMENTS								
Variable costs	Cents	%	Cents	%	Cents	%	Cents	%
- fuel	5.0	16.4	5.3	16.5	4.7	11.6	5.7	13.2
- oil)	2.0	6.6	1.6	5.0	1.4	3.5	1.2	2.8
- maintenance)								
- tyres	1.3	4.3	1.3	4.0	1.3	3.2	1.7	3.9
- road maintenance tax	2.4	7.9	2.9	9.0	2.9	7.2	3.5	8.1
- living allowance	7.2	23.7	6.6	20.5	-	-	-	-
- wages	-	-	-	-	14.4	35.6	13.7	31.6
- payroll tax	-	-	-	-	0.6	1.5	0.6	1.4
- workers' compensation	-	-	-	-	1.0	2.5	1.1	2.5
Total variable costs	17.9	58.9	17.7	55.0	26.3	65.1	27.5	63.5
Fixed costs								
- depreciation	3.8	12.5	4.4	13.6	3.5	8.7	4.2	9.7
- reg. third party, stamp duty	0.6	2.0	0.6	1.9	0.5	1.2	0.6	1.4
- insurance	1.6	5.3	1.9	5.9	1.4	3.5	1.5	3.4
- administrative overheads	1.2	3.9	1.1	3.4	3.9	9.6	3.5	8.1
Total fixed costs	7.2	23.7	8.0	24.8	9.3	23.0	9.8	22.6
Total operating costs	25.1	82.6	25.7	79.8	35.6	88.1	37.3	86.1
Return to capital	5.3	17.4	6.5	20.2	4.8	11.9	6.0	13.9
Total break-even costs	30.4	100.0	32.2	100.0	40.4	100.0	43.3	100.0

(a) Articulated.
(b) For owner-drivers includes the value of vehicles and associated equipment only. Articulated units include one trailer and demountable rig to one prime mover. For fleet owners includes prime mover and 2 trailers plus trailer equipment, i.e. gates, tarpaulins, tools, etc.

cents per vehicle kilometre per annum for the 15 and 17 tonne payload vehicles respectively. Variable costs, fixed costs and return to capital represented 57 per cent, 24 per cent and 19 per cent respectively of total break-even costs.

Operating costs of fleet owners for 17-20 tonne payload vehicles were approximately 37 cents, while total break-even costs were about 40 cents and 43 cents for the 17 and 20 tonne vehicles respectively. Variable costs constituted approximately 64 per cent of total break-even costs compared with 23 per cent for fixed costs. The remaining 13 per cent of total break-even costs represented the required return to capital.

The relative importance of the cost components used in the analysis varied from one vehicle class to the next. The factors having the greatest influence on these variations are labour costs, annual return to capital and estimated annual distance travelled by each vehicle type.

ROAD HAULAGE FREIGHT RATE STRATEGIES

Information obtained by the BTE from road haulage firms operating out of the Riverina indicated that two basic routing strategies were involved. One involved journeys between the Riverina and southern destinations such as Melbourne, and the second route covered the 'Wagga Triangle'. The various routing strategies are illustrated in Figure 7.1.

It was further indicated to the BTE that during 1973 and early 1974 the traffic on the two routes would bear the following freight rates:

> $9.00 per tonne for the carriage of commodities from Melbourne to the Riverina; and
> $8.00 per tonne for transporting fertiliser from Port Kembla to the Riverina.

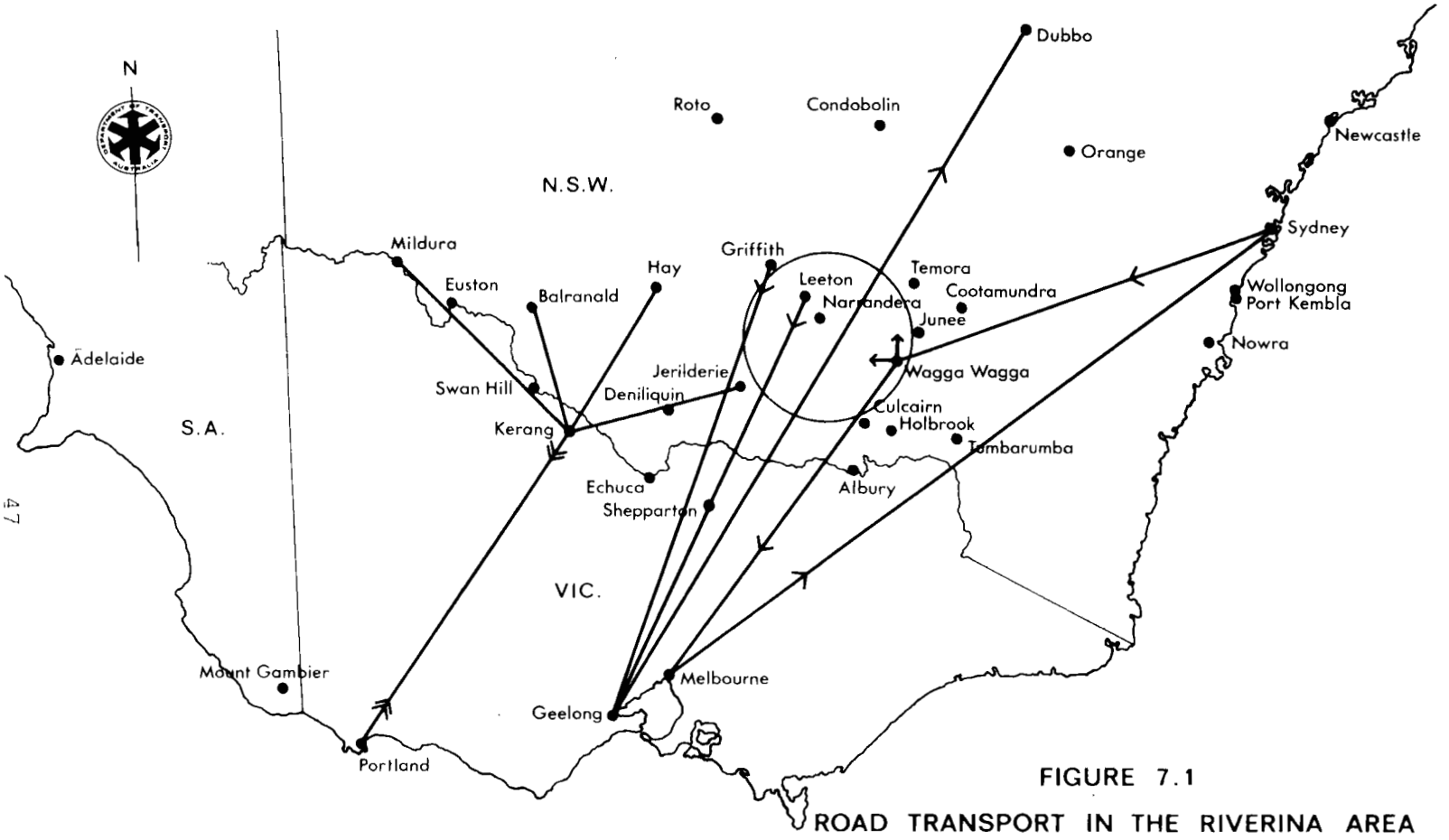

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FIGURE 7.1

ROAD TRANSPORT IN THE RIVERINA AREA OF NEW SOUTH WALES

- 'THE WAGGA TRIANGLE'
- 'THE GRIFFITH / LEETON RICOCHET'
- 'THE PORTLAND DROP'

Road hauliers indicated that they were using these rates as the basis of their rating strategies.

In an endeavour to check the logic of the rates and routes used the BTE developed a general break-even cost model[1] based on the above operating strategies and the costs of operations of road haulage firms illustrated in Table 7.5. The model relates the total costs confronting a firm operating a vehicle over a specified route to the range of freight rates which a firm might charge, on average, on any one leg of the route. The series of freight rates generated by the model depend on the degree to which vehicle capacity is utilised over the entire route.

To illustrate the results from the application of the model the following discussion is confined to an owner-driver operating a 17 tonne payload vehicle between Wagga Wagga and Melbourne[2], and a fleet owner operating 20 tonne payload rigs over the 'Wagga Triangle'[3].

Owner-driver Operations

The details in Table 7.6 relate to owner-driver operations. By charging $9.00 per tonne on the return trip to the Riverina with the vehicle fully laden, the owner-driver would cover on this leg of the journey, about two-thirds of the total break-even costs of the round trip[4]. Hence there would be an opportunity for the owner-driver to charge a relatively low freight rate on the Riverina-Melbourne leg of the journey in order to attract a full load over the entire trip. If the carrying capacity of the vehicle was fully utilised over the entire trip the owner-driver would only have to charge a rate of $6.00 per tonne on the outward leg to break-even.

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(1) Refer to Annex B.
(2) Assumed to be an 800 kilometres round trip.
(3) Assumed to be a 1790 Kilometres round trip.
(4) Total costs of the round trip would be $241 (32.2 cents/vehicle km/annum x 800 kilometres); the carriage of 17 tonnes at $9.00 per tonne would generate revenue of $153.

TABLE 7.6 - BREAK-EVEN FREIGHT RATES[(a)] FOR THE ARTICULATED 17 TONNE 4 AXLE TRUCK OPERATED BY AN OWNER-DRIVER ON THE RIVERINA - MELBOURNE ROUTE

Freight rate on inward Melbourne-Riverina leg fixed at $9.00 per tonne	Freight rates on Riverina-Melbourne leg ($ per tonne)		
Percentage of capacity utilised	Percentage of capacity utilised		
	100	75	50
100	6.00	8.00	12.50
75	8.50	11.00	17.00
50	10.50	14.00	21.50
0	15.00	20.00	30.50

(a) Freight rates rounded to nearest $0.50.

TABLE 7.7 - BREAK-EVEN FREIGHT RATES[(a)] FOR THE ARTICULATED 20 TONNE 5 AXLE TRUCK OPERATED BY A FLEET OWNER IN THE 'WAGGA TRIANGLE'

Freight rate on inward Sydney to Wagga Wagga leg fixed at $8.00 per tonne	Total freight rate on the Wagga Wagga to Sydney via Melbourne legs ($ per tonne)		
Percentage of capacity utilised	Percentage of capacity utilised		
	100	75	50
100	30.50	41.00	61.50
75	32.50	43.50	65.50
50	34.50	46.00	69.50
0	38.50	51.50	77.50

(a) Freight rates rounded to nearest $0.50.

This rate is comparable with the minimum freight rate of $7.00 per tonne for grain transported from Wagga Wagga to Melbourne (Table 7.1). However, a 25 per cent reduction in the average payload over the entire journey would necessitate an increase of at least $2.50 per tonne on the outward leg for the owner-driver to break even.

Fleet Owner Operations

The matrix of freight rates in Table 7.7 relates to fleet owner operations. By charging $8.00 per tonne from Sydney to Wagga Wagga, the final link of the round journey, the revenue generated, assuming vehicle capacity was fully used, would be insufficient to cover the average break-even cost of performing this leg of the journey. Consequently, to break even on the entire triangular route postulated, the firm would have had to charge some combination of freight rates on the first two links of the round journey which together yielded revenue of $30.50 per tonne. With a freight rate of $7.00 per tonne for high density cargo[1] on the Riverina to Melbourne link the break-even freight rate for the Melbourne to Sydney corridor would have had to be $23.50 per tonne[2]. With a 25 per cent reduction in the utilisation of vehicle carrying capacity on either one of the two Riverina legs (that is, Riverina to Melbourne or Sydney to the Riverina), the break-even freight rate on the inter-capital city route would have had to be increased by at least $2.00 per tonne.

RELATIONSHIP BETWEEN FREIGHT RATES AND COSTS

Hauliers aim to generate sufficient revenue to cover total costs of each round trip. Rating strategies on any particular leg of a journey are determined by a consideration of the demand for their services on all links of the route and hence the freight rates

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(1) Refer to Table 7.1.
(2) The published book rate for road transport ex Melbourne to Sydney for a 20 tonne consignment was $29.00. See Mayne Nickless published rates, December 1972.

that could be charged on those links. Thus total costs and total revenues associated with the whole trip will be important for rate setting rather than a cost-revenue comparison carried out for each leg of a route such as the 'Wagga Triangle'.

In the case of the fleet owner transporting fertiliser from Port Kembla to Wagga Wagga, data available to BTE showed that the freight rate of $8.00 per tonne failed to proportionately recoup[1] the average costs associated with that leg of the journey by $1.75 per tonne[2]. On the other hand, on the intercapital city route the revenue that could be earned from the carriage of goods at a rate of $23.50 per tonne would have been significantly greater than the costs on that link of the route[3]. In addition, the revenue from owner-driver operation between Melbourne and the Riverina covered the major proportion of the total costs of the round trip. Consequently, average costs of operating a vehicle over a particular link did not form the basis of the freight rates charged. Therefore, it is necessary to seek an alternative explanation of the relationship between freight rates and the costs of providing services.

Implicit in the analysis of the operation of road haulage firms is that once firms contract to move freight over a particular link of a route they are committed to the variable costs of operating the vehicle on a return journey, irrespective of whether or not backloading cargo is available. However, by backloading, the haulier incurs costs additional to the variable costs of operating

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(1) Costs (450km x 43.3cents) = $195 and revenue ($8.00 x 20 tonnes) = $160.

(2) In all probability such an increase would have excluded this traffic from road transport as the comparable rail freight rate was $7.26 per tonne. See Public Transport Commission of New South Wales, Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973.

(3) Revenue ($23.50 x 20 tonnes) = $470.00 compared with the average break-even costs (940km x 43.3 cents) = $407.00.

the vehicle on the round journey; for example extra loading and unloading costs associated with the backloaded freight. These additional costs are the avoidable costs of the service, that is, the costs that would not be incurred if the service was not provided.

Freight rates which generate revenue in excess of avoidable costs on subsequent links of the journey will add more to total revenue than to total cost. The variable costs[1] of the journey may or may not be covered. However, carriage of freight on return links provided that additional revenue exceeds avoidable costs of backloading, earns income which contributes to covering variable and/or fixed costs. The avoidable costs of providing these services are then the lower limit to the freight rate. In addition the greater the contribution to total revenue after meeting avoidable costs on this link, the greater the opportunity to set competitive freight rates on other links.

As indicated in the previous section, the freight rates applying on the inward legs to the Riverina formed the basis of the operating strategies of road haulage firms. The avoidable costs of providing these services would be mainly the costs associated with loading and unloading the vehicle[2], and therefore would only add marginally to the costs of the return trip. Consequently, at the rates that prevailed on these legs, hauliers were able to generate income in excess of avoidable costs. This then enabled firms to

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(1) See Table 7.5.

(2) It has been argued by D.C. Ferguson in 'Joint Products and Road Transport Rates in Transport Models', Journal of Transport Economics and Policy, volume VI, No. 1, January, 1972, that it is less costly to run a vehicle empty than fully laden. However, BTE discussions with road hauliers have indicated that empty running is as costly as with full loads. Unladen vehicles are driven faster resulting not only in fuel consumption being as high as when fully laden but also structural damage to the vehicle.

price themselves into other legs of the route at rates which, when the entire route was considered, generated income at least covering the total break-even costs of providing services. The overall result was the development of a system of rates which are applied discriminately between traffic moving into and out of the Riverina.

The costs considered above are the financial costs privately incurred by the road haulier. However, other social costs may be incurred. The relationship between payments by hauliers and the social costs of their use of roads is complex[1]. Social costs will include physical wear-and-tear[2] to road surfaces, congestion, cost of accidents, policing, pollution and costs of administration of providing roads.

In setting out the economic basis for rate setting on the inward legs of the road haulier's round journey as being the level of avoidable costs, the possible existence of social costs other than those taken into account by the haulier must be recognised. However, it has not been possible for BTE to quantify either the extent of road cost responsibilities of the various categories of road users or the extent to which these costs are covered by taxes such as State road maintenance charges.

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(1) There is no universally accepted method of allocation of the cost of road facilities among categories of road users. A recent study of this problem within an Australian context is H.M. Kolsen, D.C. Ferguson and G.E. Docwra, Road User Charges: Theories and Possibilities, Occasional Paper No. 3, A Report prepared for the Bureau of Transport Economics, Australian Government Publishing Service, Canberra, 1975.

(2) The extent of deterioration of roads (including bridges) will vary from area to area. Damage caused by use is related to speed travelled, vehicle weight and axle configuration, the volume of traffic, type of road construction and the traffic mix (for example refer to A.A. Walters, The Economics of Road User Charges, International Bank for Reconstruction and Development, International Development Association Report No. EC-158, 11 January 1968, Chapter VI).

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CONCLUSION

The financial viability of Riverina-based long distance road haulage firms over a period of time depends on total revenue being at least equal to the total costs of providing services. The availability of backloading and the avoidable costs of providing services on the return trip to the Riverina underlie the operating strategies of firms. Freight rates set on any particular link will depend on the relationship between revenue generated on other links and costs incurred over the round trip. In other words, in an attempt to cover the total costs of the entire route hauliers maximise the contribution to total revenue on each leg by setting rates with regard to the market conditions pertaining to that leg. Their modus operandi is therefore similar to the basic approach to rate setting followed by the State railway systems.

CHAPTER 8 - FACTORS INFLUENCING MODAL SPLIT IN RIVERINA TRAFFIC

Discussions between the BTE and freight originators revealed that several factors, such as price, quality of service and institutional arrangements could influence the choice of mode employed to move freight. The purpose of this chapter is to illustrate these influences by reference to the major commodities transported to and from the Riverina region.

COMPARISON OF FREIGHT RATES BY MODE OF TRANSPORT

Tables 8.1 and 8.2 show a comparison of road and prescribed rail freight rates applying to the transportation of major commodities to and from selected locations in the Riverina. Rates indicative of those applying in 1971-72 were used so that the rates could be combined with available physical flow data when considering the modal split.

It is evident from the tables that intersystem rail freight rates for each of the main export commodities, with the exception of livestock, are significantly higher than intrastate rail freight rates, even though the interstate journeys are considerably shorter. Again with the exception of livestock, it was more expensive to move traffic intrastate by rail than interstate by road.

FACTORS UNDERLYING MODAL CHOICE

If price were the sole criterion of modal selection then the evidence in the previous section suggests that the bulk of the Riverina traffic would have moved interstate by road transport. However, an examination of the modal split of traffic presented in Figures 8.1 and 8.2 and freight charges given in Tables 8.1 and 8.2 shows that price of the transport service was the dominant factor in modal choice only in the case of coarse grains, wool and fertiliser.

TABLE 8.1 - COMPARISON OF ROAD AND RAIL FREIGHT CHARGES FOR SELECTED COMMODITIES MOVING IN BULK TO OR FROM WAGGA WAGGA

($ per tonne)

Commodity	Between Wagga Wagga and Sydney by intrasystem rail transport 522 km	Between Wagga Wagga and Melbourne	
		by road 438 km	by intersystem rail 432 km
Wheat	9.10 (a)	8.00	13.16 (d)
Coarse grains & oilseeds	11.11	8.00	12.72
Fodder	13.78	11.00	13.90
Wool	25.35 (b)	12.00	31.08
Livestock	15.50	17.00	13.42
Fertilisers	7.26 (c)	7.00	11.65 (e)

(a) Excludes State Treasury subsidy of $2.00 per tonne.
(b) To Yennora.
(c) From Port Kembla (440 km). The comparable road freight rate was $8.00.
(d) To Geelong.
(e) From Geelong (505 km).

Sources: Rail freight - Department of Railways, New South Wales, Merchandise and Livestock Rates Book, February 1966 and amendments to 1971; Victorian Railways, Goods Rates Book, February 1966 and amendments to 1971. Road freights - rates for 1971-72 were approximated by reducing 1973-74 rates by 15%. This is consistent with the average change over the same period in rates published by Mayne Nickless

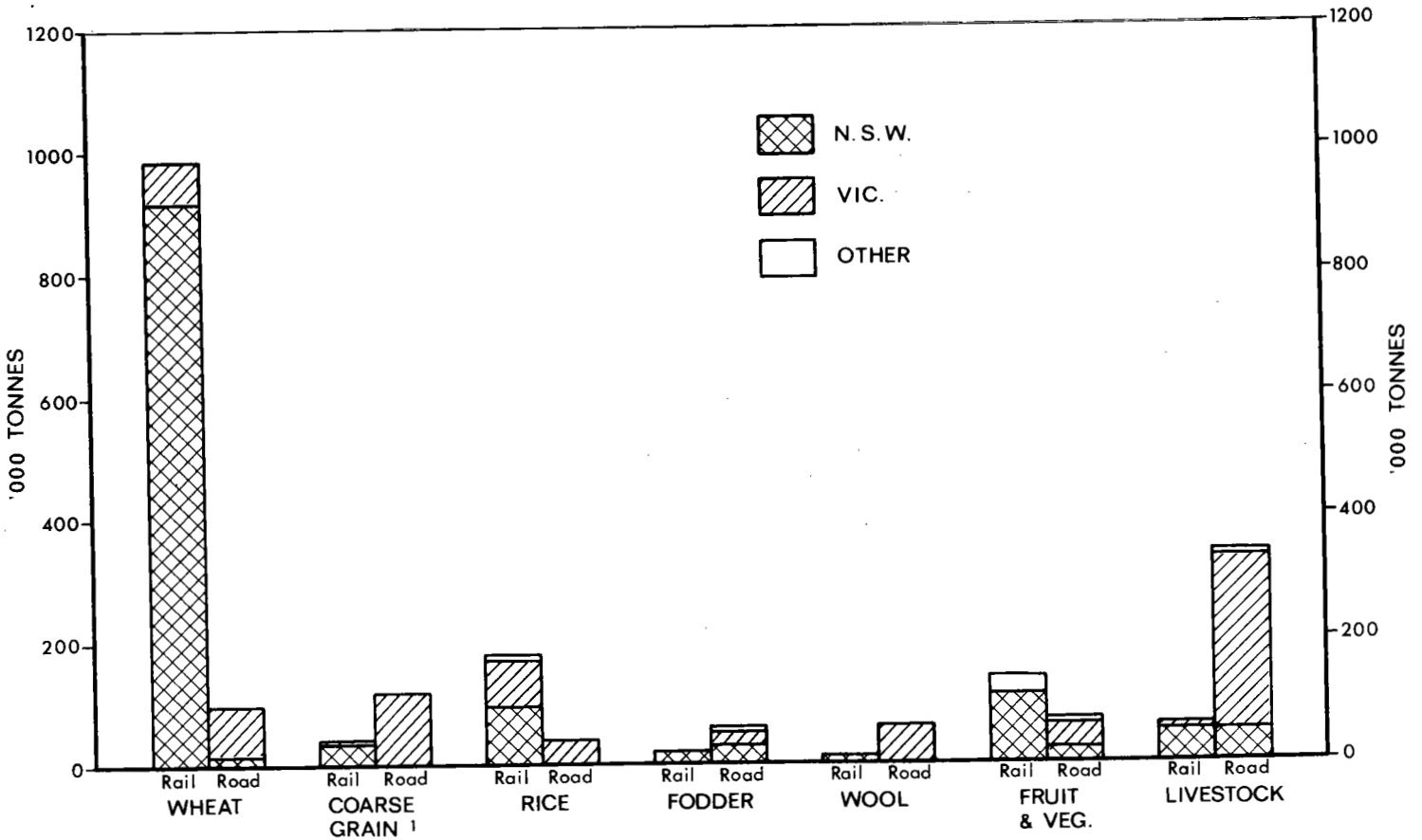
TABLE 8.2 - COMPARISON OF ROAD AND RAIL CHARGES FOR COMMODITIES MOVING IN BULK TO OR FROM GRIFFITH

($ per tonne)

Commodity	Between Griffith and Sydney by intrasystem rail 641 km	Between Griffith and Melbourne by road 453 km	Between Griffith and Melbourne by intersystem rail 510 km
Rice, milled, packed	13.17[(a)]	8.00	14.77
Fresh fruit & vegetables	12.14	9.50	15.80
Canned fruit & vegetables	10.76	9.50	13.50

(a) Special export rate is $10.54.

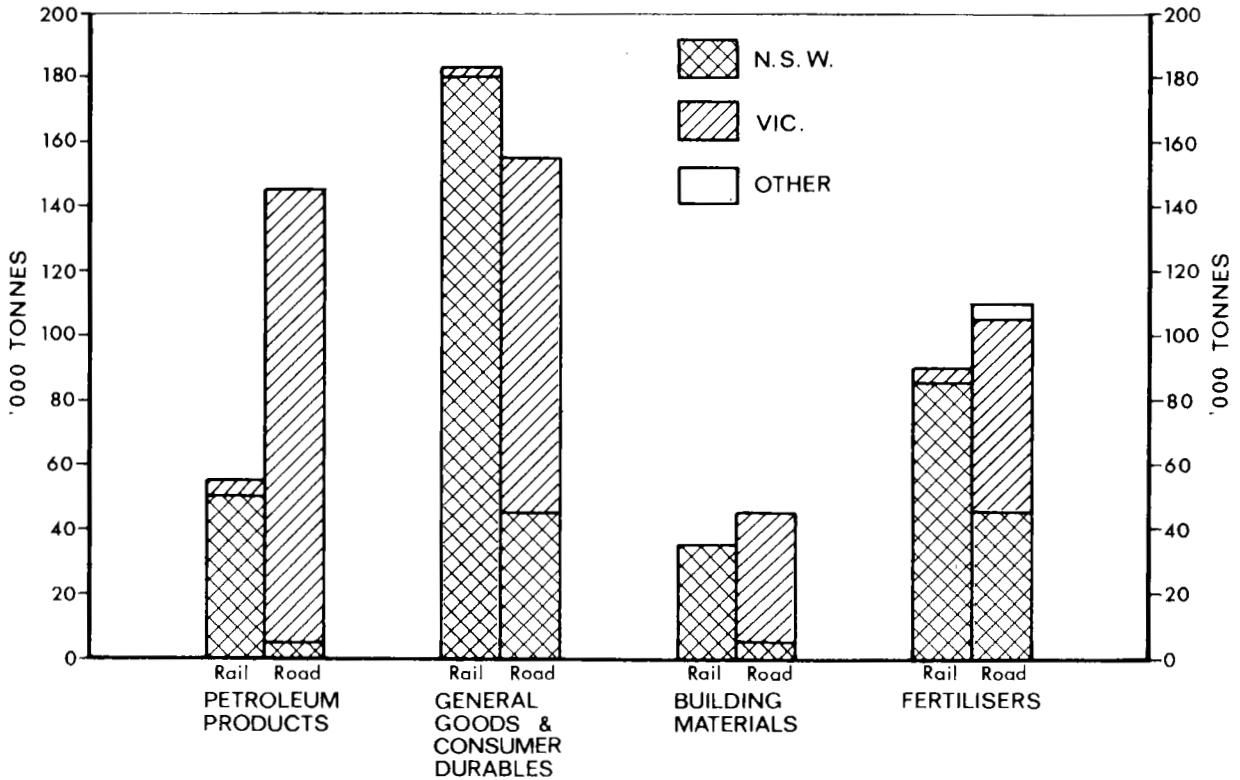
Sources: Rail Freights - Department of Railways, New South Wales, Merchandise and Livestock Rates Book, February 1966 and amendments to 1971; Victorian Railways, Goods Rates Book, February 1966 and amendments to 1971; Railways of Australia, Goods Rates Book, July 1968. Road freights - rates for 1971-72 were approximated by reducing 1973-74 rates by 15%. This is consistent with the average change over the same period in rates published by Mayne Nickless.



1 Barley, Oats & Maize
Source : Table 4.1

FIGURE 8.1

OUTWARD FLOW ESTIMATES OF THE RIVERINA BY MODE AND DESTINATION
SELECTED COMMODITIES 1971 – 1972



Source : Table 4.2

FIGURE 8.2

INWARD FLOW ESTIMATES OF THE RIVERINA BY MODE AND ORIGIN
SELECTED COMMODITIES 1971–1972

The greater proportion of coarse grains and wool traffic moved interstate on road transport. Interstate road freight rates for coarse grains transported to Melbourne were significantly lower than either comparable intersystem rail freight rates or intrasystem rail freight rates to Sydney. In 1971-72 intrastate consignments of bulk grain by road transport, in competition with the railways, would have incurred a co-ordination charge of 1.53 cents per tonne kilometre, resulting in higher intrastate road rates compared with intra-or intersystem rail freight rates. In accordance with the results of the appeal, in 1954, to the Privy Council in the Hughes and Vale case, interstate road transport cannot be subjected to the imposts or restrictions imposed on intrastate road transport by State Governments. In 1971-72 wool was an embargoed good under the terms of the State Transport (Co-ordination) Act 1931-1956, and was not permitted to move by road transport in competition with the State railways.

In the case of fertiliser, the traffic task was shared almost equally by each mode of transport. However, on the intrastate routes, while the road haulage freight rate[1] was competitive with the PTC of N.S.W. rail freight rate, rail was the dominant mode because of limited road haulage capacity on these routes. This limitation to road haulage capacity was governed by the demand for road transport services on other legs constituting the round trip of the road haulage operator. Road transport accounted for most interstate consignments of fertiliser because of the freight rate advantage over intersystem railway arrangements.

For the other commodities the dominance of price in determining modal choice was modified by other factors. This is illustrated in Tables 8.1 and 8.2. The following discussion attempts to place these factors in perspective.

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(1) As fertiliser was an exempt good under the State Transport (Co-ordination) Act, road transportation of fertiliser over intrastate routes in competition with the State railways was not subject to co-ordination charges.

Wheat

Marketing of the Australian wheat harvest is conducted by the Australian Wheat Board (AWB). In each mainland State a bulk handling authority is the principal authorised agent of the AWB to receive, store and handle the crop. The State railway systems are an integral part of the marketing arrangements for wheat in each State as most storage facilities operated by the bulk handling authorities are located on railway property.

The Riverina is served by two bulk handling authorities, the Grain Elevators Board of New South Wales and the Grain Elevators Board of Victoria. As these authorities handle most wheat in New South Wales intended for sale, rail, and in particular intrastate rail transport, is the dominant mode used in transporting the crop, as indicated in Figure 8.1.

Though portion of the Riverina wheat belt is closer by both road and rail to Geelong, factors other than institutional marketing arrangements also inhibit the southward flow of wheat. The intersystem rail freight rates for bulk grain consignments are higher than the intrasystem rates to Sydney (see Table 8.1) and therefore virtually prohibit the interstate movement of wheat by rail transport(1). The task of moving a major proportion of the wheat crop to a southern port by road would require considerable growth in road haulage capacity out of the Riverina. However, since backloading opportunities into the region are limited, this growth in capacity would only be feasible at increased road haulage rates on southbound routes. Thus the economic level of road haulage capacity in the southbound direction will also be a major limiting factor to changes in modal split.

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(1) The movement of wheat by rail transport out of the south-western region of the Riverina serviced by the Victorian Railways is classified for rating purposes as an intrasystem and not an intersystem rail consignment.

Rice, Fruit and Vegetables

As indicated in Figure 8.1, the N.S.W. railways transported the major share of the rice, fruit and vegetable traffic in 1971-72 even though the prescribed freight charges on intrastate rail were higher than on interstate road transport. However, freight originators for these commodities informed the BTE that contract rates, competitive with interstate road haulage rates, had been negotiated with the N.S.W. railways. Additional to the advantage of contract rates were quality aspects of the regular express train services from the region for fresh fruit and vegetables being hauled to the Sydney market.

Livestock

Although both prescribed inter- and intrastate rail freight rates were lower than interstate road haulage charges, interstate road transport predominated in livestock traffic, as indicated in Figure 8.1. Freight originators informed the BTE that road transport was preferable to rail in terms of speed, reliability and less damage to livestock en route. Hence, the major factor determining choice of interstate transport mode was the quality differences between the services. However, the use of road transport intrastate in N.S.W. was inhibited in 1971-72 by a co-ordination charge of 1.53¢ per tonne kilometre.(1)

Petroleum Products

The bulk of the deliveries of motor spirit, fuel oil and liquified petroleum gas were made to the Riverina by road transport from Victorian refineries (see Figure 8.2). The major proportion of supplies from New South Wales sources was brought into the region by rail transport.

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(1) For special conditions applying to intersystem movements of livestock refer to Annex F.

The supply price of petroleum products to the distributor includes freight costs from refinery to distribution area. Choice of supply source and mode of transport is at the discretion of the supplier.

Modal choice is influenced by distribution arrangements to particular areas, inventory costs and transport charges to the destination. Distribution arrangements involve contractual commitments with the railways and road hauliers, and capital devoted by the oil companies to rolling stock and bulk installations on rail. The cost to the oil companies of holding inventories of products outside the refinery and therefore the level of these stocks is significantly affected by excise charges payable at the refinery gate. The level of product inventories held outside the refinery and hence the excise payable is influenced by the transport time en route. Thus the transport time factor enters into decisions regarding selection of transport mode for petroleum products.

CHAPTER 9 - ECONOMIC PRINCIPLES OF PRICING

One of the terms of reference for this study required the BTE to evaluate the effects on railway finances of a change from the present system of intersystem rail charges to a through intersystem mileage rate. Before these effects can be considered it is necessary to establish an economically sound basis for determining the price that should be charged.

It is the objective of this chapter to outline the economic principles of price determination. While the discussion is concerned primarily with the determination of price in the short run, for example for an existing railway system, the same general principles apply in the longer term.

THE 'ECONOMIC' PRICE

Government railways in Australia, similar to most commercial enterprises, are in general multi-product firms. The carriage of each class of traffic or even each consignment by the railways over each origin destination link can be considered as separate services. The joint production of railway services is undertaken, as in all commercial enterprises where outputs are produced jointly, for one of two reasons. Either it is economically advantageous, in which case the services are competitive in the sense that increasing a particular service involves a reduction in one or more other services, or, it arises because of technical necessity when the services are complementary.

As in all cases of joint production where more than one product or service is marketed it is not possible, for the purpose of price determination, to unambiguously assign costs[1] which are common to the joint outputs without reference to market demand factors.

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(1) For a discussion of basic cost concepts refer to Annex A, Appendix 2. It is recommended that this appendix be read in conjunction with this chapter.

In the short term the 'economic' price for a transport service is determined by demand, subject to a lower limit set by the avoidable costs[1] of providing the service. Thus the price charged is set by managerial assessment of what the traffic will bear. Prices set on this basis provide the opportunity to maximise the contributions to common costs, including non-avoidable costs, from each class of traffic carried.

The avoidable costs for a transport service are defined as the costs that would not be incurred if the service were not provided, that is, the opportunity costs of offering the service. Consequently, the lower limit to price, in the short term, includes not only current avoidable expenditures but also the rate of return on the realisation values of non-specific assets. Insofar as revenue from traffic does not cover the avoidable costs then the operation would be clearly unprofitable, as the increase in total costs from carrying the traffic would exceed the increase in total revenue.

Non-avoidable costs towards which management attempts to make some contribution are the costs which do not vary with output. Such fixed costs can include interest on capital, contractual commitments and the replacement values of physical assets employed in producing the outputs.

In railway operations physical assets range from short lived renewable equipment, for example brake blocks on rolling stock, to assets which are both durable and specific, such as embankments. Rigidly specific assets have no financially viable alternative use and consequently have zero opportunity costs. Therefore, in

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(1) In this context avoidable costs are considered in a wider sense than in Chapter 7 where the term was used in connexion with backloading. That is, in the very short run avoidable costs will only include the extra costs involved in providing the additional unit of transport. Over a longer period of time the avoidable costs include the minimum rate of return required by the operator on capital represented by the realisation value of the non-specific assets used to provide the service, i.e. assets which have an opportunity cost greater than zero.

setting the lower limit to the short run price the rate of return on capital 'sunk' into non-renewable and specific assets should be ignored.[1]

Thus the 'economic' price is both cost and market oriented in that it should be related to relevant costs and to demand elasticities; in the former case to cover avoidable costs and in the latter to contribute towards recouping non-avoidable costs. Therefore the market should be the arbiter in determining the allocation of the common costs of production among the various outputs.

In the longer term, when investment is contemplated (that is, in an ex ante situation) in order to carry additional traffic, the lower limit to price ought to include all costs associated with the investment[2]. Unless the prospective income justifies the additional investment the extra outlays ought not to be made[3] Ex ante, all production costs are avoidable since the investment need not be undertaken.

However, in ex post situations (that is, once investment has been made) if expectations upon which investment is made are not subsequently realised then management is confronted with a vastly different set of circumstances. All costs will not then be avoidable. Moreover, if capital is sunk into specific assets, the existence of excess capacity may necessitate a pricing strategy which yields a low or even zero rate of return on capital invested in those assets, even in the long run. In other words, in the ex post situation, excess capacity coupled with durable and specific assets requires a pricing policy which not only encourages a more efficient utilisation of all existing assets, but also

(1) This is not inconsistent with the view expressed in the Bland Report, Appendix XX, p. 218.

(2) This approach to 'floor' prices forms the basis of the incremental cost theory expounded by W.J. Baumol et al, 'Costs and Rail Charges', in D. Munby (ed.) Transport, Penguin Modern Economics, 1968, pp. 117-129. For an outline of this theory refer to Annex A.

(3) The cost of evaluating an investment proposal would be considered part of the cost of the project if it is undertaken.

indicates whether replacement of renewable assets or expansion of capacity can be justified. The absence of a rule that the historical costs should necessarily be recouped underlies the difference between price structured according to economic criteria and according to the accounting principles discussed below.

FULLY DISTRIBUTED COSTS

The 'fully distributed' cost approach[1] to pricing is a method based on accounting principles. The assignable costs of joint production plus an arbitrary allocation of the non-assignable costs to each joint output forms the basis of price. The sum of the total assignments among the various outputs is designed to recoup the total historical costs of running the enterprise. The price for each joint product or service may also include a further amount based on managerial assessment of the demand for the service.

A pricing strategy based on this approach will, when demand for rail services is at least equal to the optimal output of the system, generate income at least sufficient to cover total costs. However, deficits may arise when demand is less than the optimal output.

By endeavouring to recoup total outlays by this method of pricing a situation may develop where capacity is underutilised, as marginal traffic may not be able to bear the artificially high price. The fallacy of this accounting approach to pricing is the failure to recognise that when capacity is underutilised additional traffic could be generated at prices lower than 'fully distributed' costs, and which could still make, albeit smaller, contributions to common costs. In addition, where capacity is underutilised this pricing policy will not provide an appropriate guide to replacement investment decisions.

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(1) W.J. Baumol, et al, op. cit.

CHAPTER 10 - 'THROUGH' INTERSYSTEM RAIL FREIGHT RATES

In this chapter a series of 'through' intersystem rail freight rates is hypothesised. The freight rates are based on the principles outlined in the previous chapter and information relating to freight rates applying to the carriage of bulk commodities on each mode of land transport servicing the Riverina in 1973 and 1974. The possible effects of a change to these 'through'rates on freight flows and railway revenues and costs are also considered.

'THROUGH' RAIL FREIGHT RATES

Road and rail freight rates for a range of commodities transported to and from selected centres in the Riverina are shown in Tables C.1 to C.4, Annex C. The postulated 'through' intersystem rail freight rates for these commodities are also presented in these tables.

As outlined previously interstate road freight rates, with the exception of rates applying to livestock, were lower than both intra-and intersystem rail freight rates for selected commodities transported to and from the Riverina. The intersystem rail freight rates postulated in Annex C are set so as to be competitive with interstate road haulage freight rates.

In the absence of evidence to the contrary, it has been assumed that in using road haulage rates as a basis for hypothesising the 'through' intersystem rail freight rates that the road rates are equal to or greater than the avoidable social costs of road haulage operations[1].

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(1) There is no conclusive evidence to indicate whether road haulage freight rates cover the social costs of providing road services. For a discussion of this issue refer to Bureau of Transport Economics, Transport and Handling of Australia's Wool Production, Dec. 1971, pp. 26-35.

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The present structure of the intersystem rating schedules indicates that the Railways of Australia when formulating these schedules took at least notional recognition of both the principle of charging what the traffic will bear and the costs of providing services. Higher valued commodities tend to be in freight classifications to which higher rates apply. For each category, rates taper with distance, are higher for smaller than for larger consignments and include incidental charges such as a levy for bogie exchanges.

The 'economic' prices for an existing railway network should be set by reference to the avoidable costs of providing services and demand elasticities for these services. The elasticity of demand depends on several factors including the extent of intermodal competition and, as demand for transport services is a derived demand, the market demand for and supply of the commodity being transported.

The 'through' rates for intersystem rail consignments have been postulated taking into account the above demand factors. In setting road haulage rates as a basis for the hypothetical railway 'through' rates, the demand characteristics for the goods being transported and the market conditions in the freight transport industry are reflected. In an attempt to determine the extent to which the 'through' railway freight rates cover the costs of operations estimates of the upper limits of the short run avoidable costs of railway operations were derived from another study being undertaken by the Bureau.

A further issue involving the postulated 'through' rates is the effect of distance on the structure of the rates. One factor underlying the present railway practice of tapering rates with distance is that as fixed costs remain constant with output, the cost per tonne kilometre decreases as the distance over which traffic is carried increases. If freight rates are set at the lowest possible limit, i.e. avoidable costs, then the need to

vary rates with distance only arises if avoidable costs also vary with distance. Conversely, if freight rates yield revenue which exceeds avoidable costs then the issue of a cost based distance taper does not arise. Nevertheless, basing rates on demand elasticities will commonly lead to situations where the rates per tonne kilometre will vary inversely with distance.[1]

Finally in a railway system where prices are based on economic principles and where excess capacity is present, a policy of generating additional traffic would involve structuring rates which yield revenue that at least covers the avoidable costs associated with the new traffic. The carriage of additional traffic will result in increased use of existing railway facilities and if the revenue from the generated traffic makes some contribution to overheads, then the opportunity exists to reduce freight rates for the commodities which are already contributing to the overheads.

POSTULATED CHANGES IN MODAL TRAFFIC TASK

In postulating changes in the structure of the traffic task[2] two aspects have been considered; firstly, the redirection of some traffic and secondly, a change in the modal split of the remaining traffic flows. In addition, the postulated changes in the modal traffic split have assumed a reasonably balanced loading situation for road hauliers, otherwise underutilised capacity on some links would necessitate higher road freight rates. The quantities of freight involved in the directional changes in traffic flows were determined by the use of equidistant freight

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(1) For example, the ceiling rate of $4.49 per bale for wool transported on the N.S.W. railway system over distances greater than 435 kilometres. Public Transport Commission of N.S.W. Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973, p. 194.

(2) The modal traffic task is based on the 1971-72 freight flow data. Refer to Tables 4.1 and 4.2.

rate lines[1]. These lines were based on the postulated 'through' intersystem rail freight rates.

With the suggested 'through' intersystem freight rates, it would be possible for the railways to generate additional traffic at the expense of the road transport industry if the price/quality combination of railway services, as viewed by transport users, was at least equal to that of the road transport industry. As indicated in a previous chapter the railways have been able to compete with the road haulage industry on a price/quality of service basis in the transportation of fruit and vegetables. On the other hand, if price of the service alone were to be varied, the quality of service offered by each mode being constant, then an assessment of the shift from road to rail transport could be derived from the cross price elasticity of demand for various categories of road freight traffic associated with a change in rail freight rates. These elasticities are not known and therefore, to illustrate the possible effects of the 'through' intersystem rates on railway finances, the upper limits of the additional traffic that could be generated by the railways have been used. If freight rates on rail were to be reduced to the level of road transport rates, then for this upper limit of additional traffic to be generated on rail the implicit assumption is that the quality of service would need to be higher for rail than for road transport.

Rail Traffic Task

The postulated rail freight traffic task is illustrated in Table 10.1.1. It is estimated that the two railway systems could have generated additional interstate traffic of about 360,000 tonnes. The total interstate rail traffic task could have increased to one million tonnes[2].

(1) A line east west through the Riverina about midway between Wag Wagga and Junee approximates an equidistant freight line between Melbourne/Geelong and Sydney. The precise location of the lines varies according to the commodity being considere

(2) This constitutes nearly 33% of the total traffic task, compared with approximately 7.5% of that actually moved in 1971-72. Refer to Chapter 4.

TABLE 10.1.1 - ESTIMATED RAIL FREIGHT FLOWS TO AND FROM THE RIVERINA RESULTING FROM A CHANGE TO 'THROUGH' INTERSYSTEM RATES

('000 tonnes)

Commodity	Intrasystem movements		Intersystem movements to/from Victoria	Total traffic on rail (b)	Increase in rail traffic (c)
	NSW	Vic (a)			
Wheat	275	66 (d)	701 (e)	1042	-
Coarse grains	35	5	120	160	120
Oilseeds	5	-	30	35	30
Fodder	20	-	-	20	-
Rice	95	75	40	210	40
Wool	10	-	-	10	-
Fruit & vegetables	105	5	-	110	-
Livestock	50	10	-	60	-
Milk	-	-	20	20	20
Petroleum products	50	5	100	155	100
Fertilisers	85	5	50	140	50
Building materials	35	-	-	35	-
General goods	180	15	-	195	-
TOTAL	945	247	1061	2192	360

(a) Broad gauge traffic to and from Victoria, classed for rating purposes as intrasystem.
(b) Includes traffic to and from N.S.W. and Vic only.
(c) Currently most of this traffic is carried interstate by Riverina based road hauliers.
(d) Excludes 61,000 tonnes whichwere transported by road to Victorian GEB silos. This wheat would travel as intersystem traffic under the postulated rates.
(e) Comprises 640,000 tonnes redirected from intrasystem rail plus 61,000 tonnes previously transported by road to Victorian GEB silos as in (d).

Source: Tables 4.1 and 4.2.

The increase in interstate rail freight flows would arise mainly from the carriage of bulk products associated with primary production. If, by agreement between the relevant authorities, the institutional arrangements which affect the directional flow of wheat could be altered to facilitate interstate flows, then wheat from the Riverina intended for export markets could be rail freighted at the suggested 'through' rates to the nearest southern port(1). As shown in Table 10.1.1, about 640,000 tonnes of wheat could have moved to Geelong rather than to Sydney. Further, the postulated intersystem rail freight rates for petroleum products(2) and milk(3) could increase the interstate flows of these bulk commodities by rail transport by as much as 100,000 tonnes and 20,000 tonnes respectively.

Road Traffic Task

The postulated intermodal changes in freight flows are estimated to result in a reduction in the freight available for road hauliers operating between the Riverina and Victorian destinations of 360,000 tonnes a year (Table 10.1.2). Of the total, 100,000 tonnes would have been petroleum products and 20,000 tonnes bulk milk, reduction in the movement of which would affect neither local road transport firms nor those firms engaged in the type of operation which seeks constant backloading. Nevertheless, the freight available for the latter firms to move from the Riverina to Victorian destinations would have decreased from 310,000 tonnes

(1) The effective intrastate rail freight rate from the Riverina to Sydney was approximately $2.00 per tonne less than the published book rate, due to State Treasury subsidies. Therefore the suggested 'through' intersystem rail rate to Geelong is virtually the same for growers as the effective intrastate rail freight rate.

(2) This figure must be regarded as a rough estimate, as it is uncertain how much bulk petroleum was railed to the interstate border from Melbourne and Geelong on broad gauge and then hauled into the region by road from border depots. Hence, the increase in intersystem rail traffic of petroleum products could be considerably less than the postulated 100,000 tonnes.

(3) This assumes that there is a market in Victoria for the quantity moving on intersystem rail.

TABLE 10.1.2 - ESTIMATED REDUCTION IN ROAD FREIGHT FLOWS BETWEEN THE RIVERINA AND VICTORIA AFTER CHANGES TO 'THROUGH' INTERSYSTEM RAIL FREIGHT RATES

('000 tonnes)

Commodity	Existing flows 1971-72	Estimated flows to Vic.	Estimated flows from Vic.	Decrease in road traffic
General purpose vehicles:				
Grains and oilseeds	190	-	-	190
Fodder	20	20	-	-
Wool	60	60	-	-
Fruit and vegetables	40	40	-	-
General goods	110	-	110	-
Fertiliser	60	-	10	50
Building materials	40	-	40	-
Sub total	520	120	160	240
Specialised vehicles:				
Milk	30	10	-	20
Petroleum products	140	-	40	100
TOTAL	690	130	200	360

Source: Tables 4.1 and 4.2.

to 120,000 tonnes.[1] At the same time, the freight available for backloading from Victorian ports to the Riverina would decrease from 210,000[2] tonnes to 160,000 tonnes a year. Thus, even with a change in the intermodal traffic task, a roughly balanced loading situation would still exist for those road transport firms which operate between the Riverina and Melbourne-Geelong. Under these circumstances the need for such firms to price themselves into the Melbourne-Sydney corridor and operate over a triangular route because of a lack of backloading to the region would be significantly reduced. Superphosphate from Port Kembla and general goods from Sydney would have to be brought into the region by road hauliers taking produce from the region to New South Wales coastal markets and ports or the traffic could return to rail if the road transport industry could not provide the capacity.

EFFECT OF 'THROUGH' RATES ON RAILWAY FINANCES

Gross Revenues

The estimated effect of competitive rail freight rates on railway finances is shown in Tables 10.2.1 to 10.2.3. The estimated annual net revenue for each railway system based on the 1971-72 Riverina freight flows at 1973-74 freight rates is as follows:

- New South Wales railways $15.00m
- Victorian railways $ 1.20m

Goods freighted by rail from the Riverina to Melbourne and Geelong would, on average, have to travel a longer distance on the Victorian

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(1) Comprises flows of all selected commodities excluding wheat, livestock and milk for which backloading opportunities are not available (refer to Chapter 4).
(2) Comprises inwards flows of selected commodities excluding petroleum products (refer to Chapter 4).

rail system than on the New South Wales rail system.[1] However, for the sake of the exercise it is postulated that revenue generated from each tonne of new intersystem bulk freight traffic to and from the Riverina would be shared equally by each system. Thus, for a tonne of barley consigned by rail from say Wagga Wagga to Geelong, $4.50 would go to the New South Wales railways and $4.50 to the Victorian Railways.

It has been estimated that the movement of approximately 900,000 tonnes of wheat out of the Riverina by intrastate rail at 1973-74 rates would have cost farmers nearly $8.7 million (Table 10.2.1). In revenue terms, the Public Transport Commission of New South Wales would have received about $10.5 million. This estimate includes $1.8 million paid by the New South Wales State Treasury as a subsidy to the Commission for wheat traffic. For the carriage of over 100,000 tonnes of wheat from the Riverina on broad gauge lines it is estimated that the Victorian Railways would have received about $1.0 million (Table 10.2.2). Thus, for the carriage of approximately 1 million tonnes of wheat out of the Riverina to domestic flour mills and exporting ports the two railway systems serving the region would have generated a gross income of over $11.5 million (Table 10.2.3).

The gross revenue from traffics other than wheat has been estimated at nearly $10 million (Table 10.2.3). This figure comprises the estimate of revenue from N.S.W. freight of over $9 million (Table 10.2.1) and an estimate of Victorian revenue of nearly $1 million.

(1) For selected Riverina locations the rail distances to Melbourne are as follows:

	RAIL DISTANCE TO MELBOURNE (km)		
Location	N.S.W. rail	Vic rail	Total
Narrandera	181	251	432
Griffith	259	251	510
Leeton	211	251	462
Junee	160	380	467
Wagga Wagga	125	380	432
Morundah	148	251	399
Urana	194	380	501

TABLE 10.2.1 - ESTIMATED EFFECT OF COMPETITIVE RAIL FREIGHT RATES ON RAILWAY FINANCES: NEW SOUTH WALES

($ million)

Freight revenue and costs	Wheat	Other commodities	Total
Existing traffics			
- Revenue[a]	8.69[c]	9.11	17.80[c]
- Subsidy	1.83	-	1.83
Gross revenue	10.52	9.11	19.63
- Less avoidable costs	2.67	1.96	4.63
Net revenue	7.85	7.15	15.00
Postulated traffics			
- Intrasystem	2.61[c]	8.84	11.45[d]
- Subsidy	0.55	-	0.55
- Intersystem[b]	3.16	2.02	5.18[e]
Gross revenue	6.32	10.86	17.18
- Less net avoidable costs	1.38	0.25	1.63
Net revenue	4.94	10.61	15.55

(a) At 1973-74 rates.
(b) At 'through' intersystem rates.
Sources: (c) Table C.5, Annex C.
(d) Table C.7, Annex C.
(e) Table C.8, Annex C.

TABLE 10.2.2 - ESTIMATED EFFECT OF COMPETITIVE RAIL FREIGHT RATES ON RAILWAY FINANCES: VICTORIA

($ million)

Freight revenue and costs	Wheat	Other commodities	Total
Existing traffics			
- Revenue[a]	1.02[c]	0.74	1.76[c]
- Less avoidable costs	0.30	0.26	0.56
Net revenue	0.72	0.48	1.20
Postulated traffics			
- Intrasystem	0.53	0.74	1.27
- Intersystem[b]	3.16[d]	2.02	5.18[d]
Gross revenue	3.69	2.76	6.45
- Less net avoidable costs	1.52	0.85	2.37
Net revenue	2.17	1.91	4.08

(a) At 1973-74 rates.
(b) At 'through' intersystem rates.

Sources: (c) Table C.6, Annex C.
(d) Table C.8, Annex C.

TABLE 10.2.3. - ESTIMATED TOTAL EFFECT OF COMPETITIVE RAIL FRIEGHT RATES ON RAILWAY FINANCES

($ million)

Freight revenue and costs	Wheat	Other commodities	Total
Existing traffics			
- Revenue[a]	9.71	9.85	19.56
- Subsidy (N.S.W.)	1.83	-	1.83
Gross revenue	11.54	9.85	21.39
- Less avoidable costs	2.97	2.22	5.19
Net revenue	8.57	7.63	16.20
Postulated traffics			
- Intrasystem	3.14	9.58	12.72
- Subsidy (N.S.W.)	0.55	-	0.55
- Intersystem[b]	6.32	4.04	10.36
Gross revenue	10.01	13.62	23.63
- Less net avoidable costs	2.90	1.10	4.00
Net revenue	7.11	12.52	19.63
Net Variation	-1.46	4.89	3.43

(a) At 1973-74 rates.
(b) At 'through'intersystem rates.

Therefore, for all traffics the estimated gross revenue for both systems is about $21.5 million (Table 10.2.3).

It has been estimated that for the postulated traffic flows resulting from a change to 'through' intersystem railway rates gross revenue for both railway systems would be $23.6 million (Table 10.2.3). This is made up of gross revenue for N.S.W. of $17.1 million (Table 10.2.1) and for Victoria $6.5 million (Table 10.2.2).

Railway Costs

To determine more precisely the effect of postulated traffic changes on State railway system finances, estimates of the avoidable costs of railway operations have been calculated. While a detailed assessment is not possible, since the necessary cost data are not available, the estimates used in this analysis are based on the short run avoidable costs[1] of transporting wheat on rail. The avoidable costs for a round trip (empty running one way) have been estimated at 0.56 cents and 0.63 cents per tonne kilometre for New South Wales and Victoria respectively. Since backloading has been excluded from the calculation it is considered that these estimates would constitute the upper limits to the short run avoidable train costs of moving freight . For simplicity, the distances used in calculating the total avoidable costs are 125 km from the Riverina to N.S.W. border, 522 km from the Riverina to Sydney and 376 km from N.S.W.-Vic border to Melbourne/Geelong. Further, it has been assumed that sufficient capacity exists in the Victorian railway system to cater adequately for the additional traffic.

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(1) These estimates have been derived from another study currently being undertaken by the Bureau. Avoidable cost items included the labour costs for train crews and marshalling and shunting, loco fuel and maintenance, wagon, brakevan and track maintenance. Labour costs include overtime and allowances, but exclude payroll tax. Fuel costs exclude excise charges.

The overall effect of transporting over 1 million tonnes of freight under the intersystem railway arrangements would be to reduce the costs of the two rail systems by about $1 million, comprising a reduction of $3 million in N.S.W. (Table 10.2.1) and an increase in costs in Victoria of nearly $2 million (Table 10.2.2).

Net Revenues

By transporting 701,000[1] tonnes of wheat to Victorian destinations there would be a reduction in combined New South Wales and Victorian railway net revenue from the carriage of Riverina wheat of approximately $1.5 million (Table 10.2.3). This reduction would comprise a saving in the New South Wales Treasury subsidy of nearly $1.3 million[2] and a saving to growers of approximately $0.25 million. From changes in the directional flow of wheat the estimated reduction in the New South Wales Railways' net revenue (including subsidy) would be nearly $3 million (Table 10.2.1). On the other hand, the estimated increase in the Victorian Railways' net revenue would be about $1.5 million (Table 10.2.2).

From the postulated changes in traffic flows, other than wheat, the estimated increase in the New South Wales railway's net revenue would be $3.5 million (Table 10.2.1), offsetting the loss in revenue on the wheat traffic. For the Victorian Railways the estimated increase in net revenue would be about $1.4 million (Table 10.2.2).

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(1) Comprising 640,000 tonnes of wheat redirected on to intersystem rail plus 61,000 tonnes moving by rail in Victoria which had previously been hauled by road to Victorian GEB silos adjacent to the Victorian border from the Riverina.

(2) Wheat produced in N.S.W. but transported on intersystem rail is excluded from N.S.W. Treasury subsidy.

The estimated net effect on railway revenues of the postulated changes in freight rates, directional freight flows and modal split of traffic would be to increase the revenue accruing to the Public Transport Commission of New South Wales by $0.5 million. On the other hand, there would be a gain in the net revenue to Victorian Railways of nearly $3 million.[1] Hence, the estimated overall net effect of the changes would be to increase total railway revenues by nearly $3.5 million.

(1) The actual effect of the 'through' intersystem rates on individual State railway revenues would also depend on the outcome of negotiations over the basis of distribution of revenues so generated.

CHAPTER 11 - FURTHER FACTORS NEEDING CONSIDERATION IN ASSESSING THE EFFECTS OF 'THROUGH' INTERSYSTEM RAIL FREIGHT RATES ON TRANSPORT RESOURCES

In this chapter the possible effects of the suggested intersystem rail freight rates on the efficient allocation of transport resources are considered.

USE OF TRANSPORT RESOURCES

It is generally accepted that there is no unique solution to the problem of determining an economically efficient distribution of scarce resources, either on a universal scale or within a particular sector of an economy. However, in the absence of subsidy for any enterprise, either public or private, a necessary condition for operations to continue in the long run is that the price at which outputs are sold is not less than long run marginal costs (LRMC), and also covers long run average costs[1]. Some economists, such as Professor Kolsen,[2] contend that in any particular broad sector of an economy, if price/LRMC ratios for closely competing industries within the sector are not equal, then those factors of production involved could be used more efficiently by a transfer of resources to the industry within that sector with the higher price/LRMC ratio.

However, in practice, where transport enterprises are multi-product firms these ratios are indeterminate. This indeterminancy arises because it is not possible, other than by an arbitrary fashion, to quantify the LRMC for each of the services produced jointly. Even in the case of the single product firm a problem associated with determining the LRMC is defining the relevant unit of output. Therefore, even if it were accepted that this approach was appropriate, the practical difficulties of quantifying the price/LRMC

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(1) However, where LRMC are decreasing and are always below long run average costs, setting P=LRMC will necessitate a subsidy if the enterprise is to continue operations indefinitely.

(2) H.M. Kolsen, The Economics and Control of Road-Rail Competition, Sydney University Press, 1968, Chapter 2, p. 34.

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relationships for competing transport modes prevents its use in the study to appraise the effects of pricing policy changes on the efficiency of resource allocation within the transport sector.

An alternative means of assessing the change in efficiency in resource use resulting from a postulated change in pricing policy is to estimate the change in the net social cost of providing transport services. In this context the effect of the postulated 'through' rail freight rates on the traffic task, and any additional investment necessary to effect these changes forms the basis of the discussion in the remainder of the chapter.

Rail Transport

It is uncertain whether the railway systems concerned, particularly the Victorian Railways, have available the excess capacity necessary to carry the additional 360,000 tonnes of freight which the BTE suggests could be generated by changes in intersystem freight rate setting strategies. If additional investments in rolling stock, intersystem transfer facilities and so on, are needed to carry this induced traffic, then some economic evaluation of this investment would be required.

The benefits initially accruing to the community would be the additional $3.4 million in revenue generated each year by the additional freight, less the additional costs incurred. These costs would include the extra capital required for investment and the cost of reallocation of resources presently in the road haulage industry.

It also seems likely that even though transport users in the Riverina would benefit by having 640,000 tonnes of wheat hauled by rail to Geelong instead of to Sydney, the saving of $0.25 million could not be achieved unless either or both the railway systems, together with the respective bulk grain handling authorities, embarked on some capital improvement program. An economic evaluation of additional investment would therefore be needed before

it could be conclusively established that a redirection of some grain traffic from the Riverina would promote a more efficient utilisation of national transport and distribution resources.

While local grain storage capacity in the Riverina seems adequate at present, no matter in which direction the grain is railed, a redirection of grain traffic to Geelong of the magnitude suggested in this study would probably require substantial investment in transfer and storage facilities at Albury and Tocumwal[1], new rolling stock for the Victorian Railways, faster and more efficient handling facilities at the Geelong terminal and perhaps upgrading the railway line between Narrandera and Tocumwal.[2]

Most of the wheat produced in the Riverina is presently rail freighted on the standard gauge main line between Junee and the Sydney grain terminal. Redirection of Riverina grain to Geelong may reduce costs incurred through strains on the capacity of the existing rail system in New South Wales and terminal grain storage capacity at Sydney.[3]

During the 1973-74 season wheat was held in the N.S.W. hinterland storages due to a series of industrial disputes which affected the handling and transportation of wheat.[4] If the much larger Geelong terminal were used for Riverina produced wheat such strains on capacity in New South Wales might be less serious.

(1) A precedent for this type of investment has been established in Western Australia where, because of the standard gauge project, transfer and storage facilities for about 220,000 tonnes of grain have been set up at both Avon Yard and Merredin. It appears that the cost savings in moving bulk grain in unit trains from these two sub-terminals has more than offset the capital costs of establishing them.

(2) Other alternatives would also need to be evaluated to determine the best operational strategy, e.g., evaluation of the standard gauge conversion of the Tocumwal-Mangalore line, and extension of the standard gauge track to North Geelong, and extension of the broad gauge track into the Riverina from Tocumwal.

(3) The Sydney grain terminal has a storage capacity of 280,000 tonnes and the Geelong terminal 820,000 tonnes.

(4) Australian Wheat Board, Annual Report, 1973-74, p. 14.

Road Transport

The impact of the postulated changes in the modal traffic task on the road transport industry serving the region could be substantial. Reduced demand for road transport would, at least temporarily, create excess capacity and perhaps some economic hardship in the local road transport industry. How long this situation would last would depend on the response of road transport operators serving the region.

Initially as all of the rail freight rates postulated in this exercise are competitive with road freight rates, transport users in the Riverina would gain only marginally from the changes in the freight rate structure and the hypothesised shift of freight from road on to rail. In the longer term, rationalisation of the road haulage industry and a possible consequent reduction in both rail and road freight rates could confer greater benefits on the users of transport services.

Despite the maintenance of an approximately balanced loading situation, road freight capacity in the Riverina would, in the long term, be reduced. In the short term existing suppliers of road transport services will experience increased costs while capacity adjustments in the industry are being made. The reduction in the number of heavy vehicles serving the Riverina may give rise to a net saving in road resources. The community may benefit from slight reductions in congestion, pollution and accidents on major interregional highways and in the city areas of Melbourne, Geelong, Port Kembla, Newcastle and Sydney.

CONCLUSION

It appears, on balance, that a system of 'through' intersystem rail freight rates for bulk traffic transported to and from the Riverina may achieve a more efficient allocation of national transport resources. But it is clear that alternative strategies

would have to be subjected to economic analysis and a study of their social impact undertaken before this assessment could be substantiated.

CHAPTER 12 - CONCLUSIONS

Estimates of freight flows to and from the Riverina in 1971-72 indicate that just over 7.0 per cent (made up of approximately 6.0 per cent exports and nearly 1.0 per cent imports) of the total is carried interstate under intersystem railway arrangements, 51 per cent intrastate rail and 42 per cent by road.

The relatively low percentage for intersystem rail movements can be partly explained by the operation of Railways of Australia intersystem rating practices. Prescribed Railways of Australia Intersystem Distance Rates are generally lower than intrasystem rates for comparable distances. However, these rates do not apply to interstate rail movements of most bulk commodities associated with the rural sector which form the major proportion of traffic flows into and out of the Riverina. Except where contract or special rates apply these commodities are charged the sum of the prescribed intrasystem rail freight rates applying to the distance travelled on each system plus a border charge. Except for livestock, such rates are higher than intrasystem rates for equivalent distances. Interstate road haulage rates, again with the exception of livestock rates, are also lower than intrasystem rail rates and the special intersystem rates set for some primary products, for example, fresh fruit.

Factors other than price affected not only modal choice but also the directional flow of traffic. The institutional arrangements associated with handling the wheat crop are the most important of these and ensure the carriage by intrastate rail of the bulk of the harvest. In the case of livestock, though the intersystem rail freight rate was significantly lower than road freight rates for comparable journeys, only 2.5 per cent of livestock shipments out of the Riverina appeared to be consigned on the intersystem rail network in 1971-72, while over 70 per cent were carried by interstate road transport. It appears that quality of service factors of road transport, such as the shorter time in transit and

reduced handling, were the major factors determining this choice. However, the information on which these estimates were based related to comparatively short hauls over flat terrain. In circumstances where these factors were different the choice of mode could vary and be more sensitive to the price of the service.

The extent of modal choice open to users of transport services was also affected by embargoes and charges on intrastate road transport imposed under the State Transport (Co-ordination) Act of N.S.W, and the fact that the N.S.W. Government could not regulate the activities of interstate road hauliers due to the judicial interpretation of Section 92 of the Constitution of the Commonwealth of Australia.

Thus, to the extent that the price of the transport service was the dominant factor influencing modal choice, the effect of present intersystem rail charges was to limit the volume of traffic to and from the Riverina carried under intersystem railway arrangements.

Under the terms of reference of the study, the BTE is also required to report on intermodal competitive influence, if any, on intersystem rates charged. For all major commodities considered in this study there is no evidence to suggest that prescribed intersystem rail freight rates are set with reference to competition from the road haulage industry. However, while there is no direct evidence available to the BTE that competition from road haulage has affected intersystem contract rates, rail charges for the Melbourne-Sydney haul negotiated by freight forwarders with the Railways Commissions/Board would probably have been arrived at after some consideration of rates on the competing mode.

The terms of reference for this study also refer to whether existing intersystem railway rates are determined on a reasonable and equitable basis. It is only possible for the BTE to comment on this question from a community viewpoint rather than from that

of particular users and suppliers of transport services. For the purpose of the study it is assumed that the application of economic principles to the setting of freight rates will result in the efficient allocation of resources in the transport sector, and thus in maximising net benefits to the community as a whole.

The final specific term of reference relates to the effects of 'through' mileage rates for intersystem railway traffic on transport users and railway finances. The postulated 'through' rates have been set for different commodities competitively with road haulage rates. Changes in modal split and a redirection of traffic from intra- to interstate railway services have been postulated on the basis of the assumptions that avoidable social costs of road haulage would be covered by freight charges, that a reasonably balanced backloading situation would need to be maintained by road hauliers and that the quality of service on rail was higher than on road.

It has been estimated that the shift of freight traffic away from interstate road haulage and intrastate railways to intersystem rail would have generated additional net revenues for the railways, taken over both systems, of $3.4 million.

Based on an average rate of $9.00 per tonne for intersystem rail movements of wheat to Geelong, the estimated savings to Riverina wheat growers have been calculated to be about $0.25 million. In addition, the lower level of the N.S.W. Treasury subsidy, if wheat was transported interstate, would benefit the community as a whole.

These estimates have been made on the assumption that road freight rates would remain unchanged. However, any rationalisation of the road haulage industry which may occur as a result of the 'through' intersystem rates for rail may also be accompanied by some downwards adjustment of interstate road and railway haulage rates. In that event the financial benefits to users of all transport services in the Riverina would be increased.

The implementation of 'through' intersystem railway freight rates would have implications in fields that have not been considered in detail in this report, such as investment in railway and wheat bulk handling facilities, and social and environmental effects. Nevertheless, the results of the study provide a strong indication that the current intersystem rating practices act as a constraint on the efficiency of resource allocation in the total transport sector.

ANNEX A
RAILWAY RATING

Although railway administrators have traditionally employed discriminatory rating practices[1], they are neither unique in applying the practice nor did they initiate it. Before the advent of the locomotive, such charges as tolls on roads, bridges and waterways were based on this principle.

Discriminatory pricing refers to the practice of charging different prices for the supply of essentially similar services. This practice exists in railway operations in three basic forms - in different rates applying between localities, between commodities or between clients.

The evolution of the rationale of discriminatory pricing forms the subject of this annex. Following a summary of the historical development of various theses put forward to explain discriminatory pricing, each thesis is outlined. A comparison is then made between the economic and the accounting approaches to railway rating practices.

OUTLINE OF THEORIES

A comprehensive explanation of a rational system of railway rating has evolved from a number of theses, each aimed at explaining the practices of discriminatory pricing. Each thesis embodies the principle of 'charging what the traffic will bear' in the structure of prices or rates. The first, classified as the overhead cost theory,[2] was principally evolved to explain the motive and rationale for discriminatory pricing by railway administrators.

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(1) For an example of discriminatory pricing refer to rail freight rates for crude ores, concentrates in Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates Book, vol. 1, 1973, Government Printer N.S.W., p. 200.

(2) D.P. Locklin, 'The Literature on Railway Rate Theory', Quarterly Journal of Economics, vol. 47, 1932-33, pp. 178-181.

This was followed by what is termed the joint cost theory[1]. This was the first attempt to reconcile economic theory and discriminatory railway rating practices. The implications of this theory was that because of the cost structure of railway operations and the nature of outputs, discriminatory pricing was inevitable in railway operations. This gave rise to the monopoly theory as the explanation of how discriminatory pricing is maintained over time.

Overhead Cost Theory

During the early development of the railways investment often outstripped demand, resulting in excess capacity in the systems[2]. In an endeavour to utilise the excess capacity railway administrators opted for a discriminatory pricing policy.

In Europe and North America public resentment developed towards this practice. The public reaction was based on the ethical grounds of 'unreasonableness' or 'unjustness' of such practices. Railway officials, predominantly engineers and accountants, countered this resentment by endeavouring to explain this practice in terms of both the financial operations of railways and the benefits that would accrue to clients. The explanation based on financial operation is embodied in what is termed the overhead cost theory.

This theory was based on the simplistic premise that the total outlays necessary to provide railway services could be divided into two classifications: costs which varied more or less directly with output and those costs, forming the larger proportion of total costs, which were relatively constant with output. Consequently, and given the existence of excess capacity in the system, railway administrators contended that it was financially advantageous to attempt to expand the volume of traffic in selected

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(1) Ibid, p. 182.
(2) Kent T. Healy, 'Discrimination and Cost Based Railroad Pricing', American Economic Review, vol. 47, No. 2, May 1975, p. 430.

markets by charging prices based on the variable expenses of providing services, rather than to set uniform prices across all markets based on average costs.

The ethical justification put forward by railway officials in support of discriminatory pricing was that if low rated traffic was excluded from carriage the remaining traffic would have to pay still higher prices because of the need to offset the loss of contributions to overheads from the excluded traffic.

Joint Cost Theory

Until the beginning of the twentieth century it was thought that the classical economic theory was inadequate to explain discriminatory pricing. The reason for this was that in the theory of value as expounded by the classical economists, costs in the short run were predominantly variable and changed in proportion to changes in output. In railway operations, however, where fixed costs were high in relation to variable costs, increases in the volume of traffic did not necessarily lead to a proportional increase in total costs.(1) While this cost structure was not unique to railways, for example a similar cost structure existed in canal operations, economists had paid little attention to these types of industries.(2)

Professor Taussig(3) in an attempt to reconcile economic theory and railway rating practices put forward a proposition based on the joint costs of providing railway services. A controversy among economists developed around this exposition involving the advocates of what D.P. Locklin categorised as the monopoly theory(4).

(1) In the current literature relating to railway operation there is dispute as to whether more or less than half of total costs of operations vary with output, e.g. refer to Bland Report, para. 7.28, p. 65, and K.T. Healy, op. cit., p. 432.
(2) The notable exception was Alfred Marshall. Refer to Principles of Economics, 9th ed., vol. 1, Ch V, Macmillan and Co. Ltd, 1961.
(3) F.W. Taussig, ' A Contribution to the Theory of Railway Rates', Quarterly Journal of Economics, vol. 5, Oct. 1890, pp. 438-465.
(4) D.P. Locklin, op. cit., p. 185.

Professor A.G. Pigou[1] was the most notable proponent of this idea and the major protagonist in the debate over the joint cost theory.

Taussig attempted to explain why railway officials discriminate between commodities. This theory was based on two premises. Firstly, that the greater proportion of the costs of providing railway services, including fixed costs, are incurred jointly for all traffic. He concluded therefore, that railway services are 'a case of the production at joint costs of different commodities'[2]. Secondly, the heterogeneous nature of the outputs of railways are 'subject to demand from different quarters with different degrees of intensity'[3]. In his explanation he concludes that 'as with all commodities produced at joint costs' these costs 'will be distributed among the different items of traffic according to the nature of demand'[4].

Two criticisms can be levelled at this theory. Firstly, it does not provide a satisfactory explanation of regional and personal discrimination. For example, the theory fails to explain rates that taper with distance, or rebates provided to various clientele moving similar types of traffic. Secondly, the theory implies that discriminatory rates can be maintained in the face of perfect competition.[5]

A debate that arose around this theory was whether fixed costs were a 'case of production at joint costs'. This was the central issue of the dispute between Pigou and Taussig[6]. Pigou contended

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(1) Ibid, p. 188.
(2) F.W. Taussig, op. cit., p. 453.
(3) Ibid, p. 443.
(4) Ibid, p. 454.
(5) Under perfectly competitive conditions, where joint production exists, and where the relationship between the joint outputs is technically fixed, differential prices can exist which would not be discriminatory as defined in this study.
(6) For a summary of this debate refer to D.P. Locklin, op. cit., pp. 194-196.

that fixed costs were a case of common costs, although he recognised the potential existence in railway operations of joint production where the proportions in which outputs were produced were technically invariant.(1) The reason underlying the debate centred around the problem that arises for price determination in the allocation of costs associated with the different forms of joint production and which cannot be unambiguously assigned to individual traffics.(2)

Monopoly Theory

The common criticism of the two theories enunciated above is the failure to explain how a system of discriminatory pricing can be maintained over time.

The theory of monopolistic behaviour suggests that maintenance of a discriminatory pricing structure requires some form of monopoly power in the market. Otherwise, competition would equate prices for similar services. The prequisites for sustaining discriminatory prices are firstly, that the number of suppliers of railway services are restricted enabling the railway authority to exercise some control over prices, and secondly, that there is a lack of or restriction on the availability of close substitutes. Thirdly, the railway authority must sell similar services in markets with different demand elasticities, and fourthly, trading in these services cannot take place between the different users of the services.

Subsequent Developments In Rate Determination

Two schools of thought have emerged on railway system pricing, one based on economic and the other on accounting principles. In both schools, rate determination is cost and market oriented. They differ in the manner in which non-assignable costs are allocated among traffic.

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(1) H.M. Kolsen, The Economics and Control of Road-Rail Competition, Sydney University Press, 1968, p. 46, footnote 8.
(2) For a discussion on this issue refer to Appendix 2 Annex A.

In the economic approach, prices or rates for any service are based on the principle of 'charging what the traffic will bear' subject to a lower limit set by the avoidable costs of providing services. In the short run, discriminatory prices are determined by reference to the price elasticity of demand for railway services for each class of traffic carried, subject to the following conditions. In the case where the service is provided for only one good, price is not less than those costs which can be directly assigned to that good. Where the service is provided for the carriage of several goods, the revenue from the service should be not less than the avoidable costs of the service. In addition, the revenue contributions made by each class of traffic towards expenditures which cannot be unambiguously assigned to the various traffics carried by a train will be determined by reference to the demand elasticities in each case. Consequently, the average financial cost of providing railway services is not specifically the basis of price determination.

Fixed or 'sunk' costs relate to past capital expenditure on renewable and non-renewable assets. Expenditure on the latter assets may be a large proportion of initial capital outlays. Where non-renewable assets exist which are also specific, the significant point for price determination is that the sunk capital involved has zero opportunity cost.(1) Then in a situation of underutilised capacity and specificity of some assets the rate of return on the capital sunk in those assets may be ignored when setting the price of the transport service, i.e., total financial outlays associated with providing the service may not necessarily form the basis of railway freight rates.

In relation to investment in railway operation Baumol's incremental cost approach(2) to specifying the lower limits to railway freight rates covers both the ex post situation just described and also

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(1) H.M. Kolsen, op. cit., pp. 40-41.
(2) W.J. Baumol, et. al., 'Costs and Rail Charges', in D. Munby (ed.), Transport, Penguin Modern Economics, 1968, pp. 117-129.

the ex ante case where the carriage of additional traffic necessitates further capital investment. Incremental costs are defined as 'the increase in total costs resulting from an expansion in the firm's volume of business'[1]. In the ex ante case the floor price should cover all costs associated with any extra investment required. However as Baumol points out[2] once the investment commitment is made and excess capacity subsequently develops in the system the additional investment is sunk, and the incremental costs for determining the floor price revert to the ex post avoidable costs of providing the service. The relevant incremental cost for determining the floor price therefore depends on whether excess capacity exists in the system to carry the additional traffic, and if not, the costs associated with the added investment expenditure and then whether the expectations on which the added investment was undertaken are realised. Consequently, there is no simple cost function which will always be uniquely appropriate.

The rationale of a pricing policy based on economic principles is twofold. Firstly, existing railway facilities are utilised efficiently and secondly, the policy provides signals for rational replacement decisions.

The accounting approach to setting the floor level to freight rates relies on the fully distributed cost principle[3]. The base price entails adding to variable costs a loading based on an allocation to recoup total overhead costs. The actual freight rate charged may then include an assessment by management of what the market will bear above the minimum set by fully distributed costs. Hence, total financial outlays underlie the price structure.

While a discriminatory pricing policy based on this approach will generate income sufficient to cover total costs when demand for rail services is at least equal to the optimal output of the

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(1) Ibid, p. 117.
(2) Ibid, p. 122.
(3) Ibid, p. 126.

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services, deficits may arise when provision of facilities exceeds that required to meet demand at existing prices. This pricing policy could lead to a situation where capacity is underutilised because traffic, available at a price which covers direct but not fully distributed costs, would be excluded from carriage. The fallacy of this approach is the failure to recognise that when capacity is underutilised additional traffic could be generated at a price lower than fully distributed costs and still make a contribution to overhead costs. In addition, with excess capacity in the system, this pricing policy may not yield an appropriate guide, in terms of the value the community places on scarce resources, to replacement investment decisions.

ANNEX A

Appendix 1

CHARGING WHAT THE TRAFFIC WILL BEAR

The purpose of this appendix is to illustrate the method of maximising the contribution to overhead costs from existing railway services according to the principle of charging what the traffic will bear. This can be explained by reference to Figure A.1.

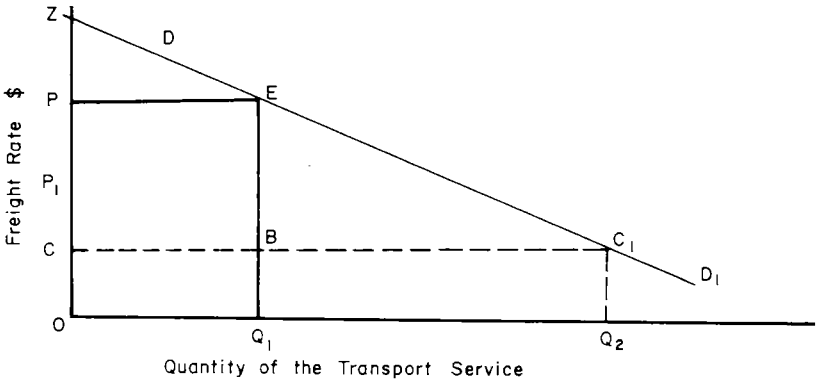

FIGURE A.1

Suppose that DD_1 is the demand curve for a particular service[1]; CC_1 the avoidable cost[2] of providing the service with existing facilities[3]. At price OP quantity OQ_1 will be demanded. Total revenue equals the rectangle PEQ_1O, total avoidable costs CBQ_1O and the contribution to overhead costs PEBC. At price OC quantity OQ_2 is demanded. Total revenue equals total avoidable costs CQ_2 and no contribution is made to overhead costs.

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(1) Linearity is assumed for the purpose of convenience.
(2) The avoidable cost is a real world proxy for the economist's concept of marginal cost.
(3) It is assumed that the avoidable cost per unit is constant over the range of output.

Accordingly, the lower limit to price with existing facilities is determined by the avoidable costs of providing the service. To charge a lower price would add more to total costs than to total revenue. Any price in excess of the lower limit yields revenue which constitutes the contribution to overhead costs.

At some price between OC and OZ, say OP_1, the contribution to overheads will be maximised. At a higher rate the contribution to overheads per unit of traffic would be increased, but since the quantity of traffic moving would fall more than proportionately to the increase in the rate, the total contribution to overhead costs would be reduced. At a lower rate, the contribution to overheads per unit of traffic is less, and the volume of traffic moving would increase less than proportionately to the reduction in the freight rate. Hence the total contribution to overheads would be reduced. The magnitude of the contribution then, is a function of both the avoidable costs and the price elasticity of demand within the relevant range of the demand curve.

Other factors underlying the demand for railway services also influence prices. The elasticity of demand for rail services depends on several factors: the extent of intermodal competition in the transport market and the market demand and market supply conditions for the commodity being carried. For example, the more competitive the transport market the lower the price that can be set by the railways subject to the lower limit of avoidable cost. On the other hand, the more inelastic the market demand and the market supply characteristics for the product being transported and the smaller the proportion transport costs are of final price the less elastic demand will tend to be for transport services.

ANNEX A

Appendix 2

NOTES ON BASIC COST CONCEPTS

Throughout this study it has been shown that the total outlays on the provision of transport services should not necessarily form the basis of price. The reason for this is that not all costs of production can be unambiguously identified with the provision of particular services. The objective of this appendix is to place in perspective the relevant cost concepts relating to pricing policies based on economic principles.

Cost Concepts

In the case of the firm producing only one product the costs of production can be identified with the output of the firm. The unit costs of production in terms of fixed or overhead costs which do not vary with output, and variable costs which do, are readily identifiable. However, in the case of the multi-product firm this simple dichotomy of costs is unsatisfactory for the purpose of unambiguously identifying unit costs.

While the broad classification of fixed and variable costs holds for the overall output of the multi-product firm, particular segments of each may be assigned to unit outputs depending on the circumstances under consideration. For example, in the case of unit trains the capital costs of specialised wagons, such as wheat hoppers, can be readily identified with the carriage of wheat. Similarly, the variable costs, for example fuel, can also be directly assigned to the carriage of wheat. However, if the wagons are also used to transport a mix of grains these costs cannot be unambiguously assigned to each class of grain. Where more than one class of service is provided, for example freight and passenger services, other non-assignable costs include capital outlays on track.

A broader classification of costs of production is to divide costs into avoidable and non-avoidable categories. The temporal and technical aspects of production under consideration will also influence the division of costs between the two categories.[1]

Avoidable costs are defined as those which would not be incurred if the service or output were not provided. For railway operations, in the short run, and assuming the equipment is not to be discarded, avoidable costs include such items as the cost of fuel and maintenance of rolling stock.[2] An example of non-avoidable costs is interest on capital. In the long run all costs are avoidable.

In the short term, avoidable costs can be either assignable or non-assignable, again depending on the circumstances under consideration. For example, in the provision of a rail service for the carriage of a variety of commodities, crew costs, though avoidable, cannot be unambiguously assigned among the various traffics. On the other hand, certain avoidable costs such as the costs of handling particular cargoes can be directly assigned to these commodities. In general non-avoidable costs of particular services are non-assignable.

A further method of classifying the non-assignable costs of production of the multi-product firm is to view these costs in terms of the technical relationships of joint production. Joint costs are said to exist when outputs are complementary, that is, produced in more or less fixed proportions, and the 'alternative to producing any one of them is either not to produce the joint bundle at all or to treat it as waste'[3]. An example of the existence of joint costs is where a transport service in two

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(1) K.M. Gwilliam, Transport and Public Policy, George Allen and Unwin Ltd., London, 1964, p. 35.

(2) If there was a market for excess equipment resulting from a reduction in services then the avoidable costs would include the opportunity costs of this equipment.

(3) H.M. Kolsen, The Economics and Control of Road-Rail Competitio Sydney University Press, 1968, p. 50.

directions is provided, that is, where providing a service from A to B results in the provision of a service in the opposite direction. Another example is the provision of peak and off-peak transport services where the absence of demand at certain times creates unused capacity which must be treated as waste. Joint costs are also said to exist where the size of plant is the minimum that must be constructed if any output is to be produced at all. On the other hand, common costs are said to exist when the outputs of joint production are competitive, that is, the outputs can be produced in varying proportions and 'the alternative to producing more or less of any one of them is producing less or more of the other(s)'[1]. The mutual characteristic of joint and common costs is that they cannot be unambiguously assigned among traffics[2].

The significance of the concepts of joint and common costs for price determination is difficult to perceive. Attempts to use these concepts separately to denote the different technical relationships in joint production can lead to confusion. Situations exist where the problems of cost allocation for price determination arise and where it can be said that both joint and common costs exist. For instance, in a round trip situation if more than one commodity is carried on the outward leg of the trip and backloading is available then both the joint and common cost problems occur.[3]

The economic importance of joint production, however, lies in the technical relationship between outputs. If outputs are produced jointly in technically fixed proportions then the additional, that is avoidable, costs of marketing by-products forms the lower limit to their price.[4] If demand considerations allow a higher price,

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(1) Ibid.
(2) Ibid, p. 45.
(3) Ibid. p. 45.
(4) This is the situation relating to backloading in the road haulage industry described in Chapter 7.

then the additional revenue above avoidable costs is the contribution to total costs of providing the joint outputs. The greater this contribution, the lower the price that can be set for complementary products which would at least enable total revenue to be equated with total costs.[1] Where outputs are produced jointly, but the proportions can be varied, the most advantageous combination of outputs is that which generates the greatest contribution of revenue to overheads taking demand and relevant cost considerations into account. On pragmatic grounds then, it is more meaningful to consider non-assignable costs associated with joint production as common costs and concentrate on the technical relationships of joint production for price determination.

(1) In recent times government railway systems in Australia have incurred deficits in their operations. One of the principal stated objectives of railway administrators is to equate total revenue with total costs.

ANNEX B

A BREAK-EVEN COST MODEL FOR THE FINANCIAL ANALYSIS OF ROAD HAULAGE OPERATIONS IN THE RIVERINA

This annex provides details of the cost model used in Chapter 7 which was developed to examine the pricing strategies of road hauliers in the Riverina. These details include:

- Physical features - vehicle specifications and distances travelled;
- The costs of operating vehicles by owner-drivers and fleet owners;
- The effect on break-even freight rates of varying break-even costs, utilisation of vehicle capacity and fixed freight rates on inward legs;
- Specification of the formulae used to determine break-even costs and break-even freight rates.

VEHICLE SPECIFICATIONS

Based on information provided by various heavy road haulage operators in the Riverina region, the following vehicle specifications were selected for the study.

Owner-driver Vehicles

- 15 tonne payload, 4 axle articulated vehicle; petrol engine, 177 bhp; closed bogie trailer;
- 17 tonne payload, 4 axle articulated vehicle; diesel engine, 205 bhp; closed bogie trailer.

Fleet Owner Vehicles

- 17 tonne payload, 4 axle articulated vehicle; diesel engine, 205 bhp; 2 closed bogie trailers for each prime mover.
- 20 tonne payload, 5 axle articulated vehicle; diesel engine, 255 bhp; 2 triaxle trailers for each prime mover.

DISTANCES TRAVELLED BY ROAD HAULIERS

Research undertaken by the Australian Road Research Board[1] reveals that the annual distances travelled by long distance road hauliers operating articulated vehicles range from 128,000 to 264,000 kilometres.

Based on the above information and other operating data it was assumed that owner-drivers based in the Riverina travel approximately 1,900 kilometres and 2,100 kilometres per week for the 15 and 17 tonne payload vehicles respectively; and that fleet owners' vehicles travel around 3,200 kilometres and 3,500 kilometres per week for the 17 and 20 tonne payload vehicles respectively. To estimate annual distances travelled it was assumed that both owner-drivers and fleet owners operate their vehicles for 50 weeks per year. It has been indicated to the BTE[2] that on average road hauliers operating commercial vehicles over 10 tonne carrying capacity lose 5 weeks operational time annually due to accidents and breakdowns. The estimated annual distance travelled by each type of vehicle (50 weeks x weekly distance) has therefore been reduced by 10 per cent (Table B.1) to allow for downtime.

TABLE B.1 - ESTIMATED DISTANCES TRAVELLED BY RIVERINA ROAD HAULIERS

Vehicle Type	Distance travelled			
	Owner-Driver		Fleet owner	
	km per week	km per annum	km per week	km per annum
15 tonne	1 900	87 000	-	-
17 tonne	2 100	94 000	3 200	145 000
20 tonne	-	-	3 500	159 500

(1) Australian Road Research Board, Road User Cost Manual, Special Report, no. 9, 1973, p. 7.
(2) Information supplied to the BTE by the Long Distance Road Transport Association of Australia, Sydney.

DEFINITION OF COSTS

Variable Costs

In this analysis, variable costs are defined as those costs which vary with the use of the vehicle. These include:

Fuel Based on information provided by the Long Distance Road Transport Association it has been postulated that fuel consumption ranges from 1.75 km per litre (5 miles per gallon) for 20 tonne carrying capacity vehicles to 2.48 km per litre (7 miles per gallon) for 15 tonne payload units. The cost element for fuel does not take account of any differential in fuel consumption arising from variations in load factors.(1)

The price of fuel varies with the place of purchase. From a range of retail prices supplied by the Shell Oil Company in Sydney, the following benchmark prices were used in the analysis:

Petrol - 13.1 cents per litre (59.7 cents per gallon)
Distillate - 12.1 cents per litre (54.9 cents per gallon)

It is assumed owner-drivers receive a 0.66 cents per litre (3 cents per gallon) discount on these prices for bulk purchases. Similarly, it is postulated that fleet owners obtain a 2.1 cents per litre (9.5 cents per gallon) discount on the above price for bulk purchases of distillate.

Maintenance The basic data underlying the assumption on which maintenance costs have been estimated were provided by the Long Distance Road Transport Association. The Association has indicated that the average cost per year for repairs and maintenance for 17 tonne to 20 tonne payload vehicles travelling 160,000 kilometres (100,000 miles) per annum is $2,000.

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(1) Lower fuel usage rates for unladen vehicles may be counterbalanced by increased fuel usage from higher speeds.

The imputed annual costs of maintenance for owner-driver operations based on the above estimate, range from $1,500 for a 17 tonne payload diesel unit, to $1,750 for a 15 tonne payload articulated petrol engine unit. The lower cost estimate for the diesel unit, compared with the 15 tonne payload petrol engine vehicle, is based on the proposition that there is a trade-off between the capital cost (purchase price) of the prime mover and repair and maintenance costs of the prime mover.

The cost of maintenance for the two larger vehicles used in fleet owner operations is assumed to be $2,000 per year.

Tyres The Long Distance Road Transport Association suggested that the average length of the life of a tyre, including two recaps is 240,000 kilometres. Irrespective of vehicle specifications, the price of a tyre and tube plus two recaps, is assumed to be $230. This assumption is based on information supplied by the above association.

Road Maintenance Tax This tax is levied at the rate of 0.17 cents per tonne kilometre. The load factor of each vehicle is based on the tare weight plus 40 per cent of load capacity. The tax applies on both intra- and interstate journeys and whether vehicles are laden or empty.

Living Allowance It has been arbitrarily assumed in the analysis that the owner-operator pays himself a wage of $120 per week.

Wages Based on information supplied by fleet owners in the Riverina, wages paid per driver have been based on the award rate[1] plus 4.35 cents per trip kilometre. The interstate award determination for drivers of 17 tonne rigs is $115.69 per week and for the 20 tonne rigs $119.95 per week. On this basis, the weekly

(1) Transport Industry (State) Award N.S.W. and Interstate Drivers' Award, 1963, effective from 15.12.72.

bill for each driver is estimated to be $190. The estimated annual wage bill for each class of vehicle takes into account that each driver has three weeks annual leave and is entitled to sick leave at the rate of one week per year. The company also has to cover the cost of long service leave at the rate of 1.2 weeks per year per driver. This has been included as a component of wages.

Payroll Tax[1] This tax is calculated at the rate of 3.5 per cent of the total actual wage (and salaries[2]) paid each week.

Workers' Compensation The method for determination of this cost component was obtained from the N.S.W. Government Insurance Office. Briefly, it is calculated at the rate of 0.065 per cent of total wages (and salaries[2]) paid each week.

Fixed Costs

These costs are those which do not vary with the use of the vehicle. They include:

Depreciation Based on information from trucking operators in the Riverina region, it has been assumed that prime movers are traded in every four years. Total depreciation has been calculated on the basis of the initial value of each type of truck minus the estimated trade-in value[3]. The rate of depreciation per year is based on the straight line method. The total cost of a new trailer has been written off on a straight line basis over eight years.

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(1) Payable where the total wages and salaries paid exceed $1,733 per month.
(2) Payroll tax on salaries has been included as a variable cost. Salaries, however, have been included as a fixed cost.
(3) Retail, trade-in and second hand market values for each class of vehicle used in the analysis have been provided by Bartholomews Truck and Machinery, Wagga Wagga and Yorkstar Motors, Sydney.

Based on information from Mayne Nickless, Sydney, the average length of life for tarpaulins for owner-driver operations has been taken as five years with no residual value; for fleet owners the period of depreciation write-off is three years. Accessory items such as tools have been written off over varying periods.

Details for owner-drivers and fleet owners are given in Tables B.2 to B.6.

TABLE B.2 - INITIAL CAPITAL COST OF VEHICLES AND EQUIPMENT: OWNER-DRIVER OPERATIONS

($)

Type of equipment	Vehicle Capacity	
	15 tonnes	17 tonnes
Prime mover	11 500	18 500
Trailer (including gates)		
- closed bogie	10 000	10 000
Tarpaulins	800	800
Ropes	35	35
Dogs and chains	140	140
Tools	250	250
TOTAL	22 725	29 725

TABLE B.3 - INITIAL CAPITAL COST OF VEHICLES AND EQUIPMENT: FLEET OWNER OPERATIONS

($)

Type of equipment	Vehicle Capacity	
	17 tonnes	20 tonnes
Prime mover	18 500	27 000
Trailer[a] (including gates)		
- closed bogie	14 600	-
- triaxle	-	18 600
Tarpaulins	1 600	1 600
Ropes	70	70
Dogs and chains	280	280
Tools	250	250
TOTAL	35 300	47 800

(a) Includes the purchase price of 2 trailers.

TABLE B.4 - TRADE-IN VALUES OF VEHICLES AFTER 4 YEARS SERVICE

($)

Type of equipment	Vehicle Capacity		
	15 tonnes	17 tonnes	20 tonnes
Prime mover	4 500	8 000	12 000

TABLE B.5 - ANNUAL AVERAGE DEPRECIATION OF VEHICLES AND EQUIPMENT: OWNER-DRIVER OPERATIONS

($)

Type of equipment	Vehicle Capacity	
	15 tonnes	17 tonnes
Prime mover	1 750	2 625
Trailer (including gates)		
- closed bogie	1 250	1 250
Tarpaulins	200	200
Ropes	35	35
Dogs and chains	20	20
Tools	25	25
TOTAL	3 280	4 155

TABLE B.6 - ANNUAL AVERAGE DEPRECIATION OF VEHICLES AND EQUIPMENT: FLEET OWNER OPERATIONS

($)

Type of equipment	Vehicle Capacity	
	17 tonnes	20 tonnes
Prime mover	2 625	3 750
Trailer (including gates)		
- closed bogie	1 825	-
- triaxle	-	2 325
Tarpaulins	550	550
Ropes	70	70
Dogs and chains	40	40
Tools	25	25
TOTAL	5 135	6 760

Registration, Third Party Insurance and Stamp Duty The annual cost of these items for each class of vehicle was supplied by the Department of Motor Transport, Sydney, and the N.S.W. Stamp Duty Office, Sydney. Details are shown in Table B.7.

Administrative Overheads Most owner-drivers operate from their own homes. In many cases unpaid family labour is used for administrative tasks. Strictly speaking, values should be imputed into the analysis to cover these contingencies. However, as the exercise has been restricted to a financial analysis, only actual cash expenditure has been included. The administrative costs assigned to owner-driver operations are $1000 per year to cover telephone charges, postage and stationery.

For fleet owners these costs include rental on base depot and two subsidiary depots, lease of loading equipment at each depot, wages and salaries at all depots and sundry items including stationery and telephone charges at all depots. A detailed breakdown of these costs is contained in Table B.8.

Accident Insurance Insurance premiums are based on the rates applicable to members of the L.D.R.T.A. who are resident in N.S.W. outside Newcastle/ Sydney/Wollongong area and operate their vehicles in excess of 500 kilometres from their registered base. In addition, for owner-drivers the premiums include a personal insurance cover to provide an income in case of loss of work due to an accident. Details of insurance costs by vehicle types are given in Table B.9.

Return To Capital In the context of the analysis, the return to capital is the minimum return investors will accept to keep capital employed in a particular enterprise. The minimum acceptable return is basically composed of two elements, the cost of capital and the premium required to cover the risk involved in the venture compared with alternative investment programmes.

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TABLE B.7 - NEW SOUTH WALES 'S' SERIES REGISTRATION: THIRD PARTY AND STAMP DUTY[a] CHARGES

($ per annum)

Vehicle capacity (tonnes)	15	17	20
Tare weight[b] (tonnes)	8	10	12
Weight tax	304	384	464
Tax levy	20	20	20
Fees	8	8	8
3rd party insurance	40	40	40
Stamp duty	105	135	187
Interchangeable trailer fee[c]	-	152	185
TOTAL - owner-driver	477	587	-
- fleet owner	-	739	904

(a) Levied on new issue of registration only.
(b) For articulated vehicles, includes the tare weight of trailer.
(c) Levied at the rate of 25 per cent of total registration charge.

TABLE B.8 - ADMINISTRATIVE OVERHEADS: FLEET OWNER OPERATIONS

($ per annum)

Item		Cost
Rental	- base depot	14 000
	- 2 subsidiary depots	12 000
Lease of loading equipment		
	- base depot[a]	2 000
	- 2 subsidiary depots[b]	4 000
Wages and Salaries		
	- manager: base depot	20 000
	- manager: 2 subsidiary depots	14 000
	- secretary: base depot	5 000
	- clerical staff: base depot	14 000
	- recp/tele: base depot	3 000
	- labourer: 2 subsidiary depots	11 000
Other	- stationery etc: base depot	8 000
	: 2 subsidiary depots	4 000
TOTAL		111 000

(a) Two forklifts.
(b) One forklift and one tray top truck per depot.

TABLE B.9.1 - ANNUAL AVERAGE ACCIDENT INSURANCE PREMIUMS BY VEHICLE CLASS: OWNER-DRIVER OPERATIONS[a]

($)

Type of equipment	Vehicle Capacity	
	15 tonnes	17 tonnes
Prime mover	1 028	1 458
Trailer (including equipment)	313	313
TOTAL	1 341	1 771

(a) Includes stamp duties, L.D.R.T.A. fees of $15 per annum and personal risk insurance premium of $90 per annum.

TABLE B.9.2 - ANNUAL AVERAGE ACCIDENT INSURANCE PREMIUMS BY VEHICLE CLASS: FLEET OWNER OPERATIONS[a]

($)

Type of equipment	Vehicle Capacity	
	17 tonnes	20 tonnes
Prime mover	1 453	1 705
Trailer (including equipment)	276	360
TOTAL	1 729	2 065

(a) Includes stamp duty and L.D.R.T.A. fees of $100 per annum.

The cost of capital is calculated as the weighted average of an alternative return on investors' equity and the cost of borrowed funds. For the purpose of the analysis, the alternative rate of return on investors' equity is set at 10 per cent per annum, equivalent to the rate of return on debenture stock. It is also postulated that trucking operators borrow two-thirds of the purchase price of equipment at the rate of 15 per cent per annum.[1] Consequently, the weighted average cost of capital[2] is 9 per cent.

As no reliable data are available on which to base estimates of premiums to cover the risks of investment in trucking enterprises, the required loading has been arbitrarily assumed in the analysis to be 11 per cent. Consequently, return to capital is set at 20 per cent per annum.

EFFECT ON FREIGHT RATES OF VARYING UTILISATION OF CAPACITY, BREAK-EVEN COSTS, AND FIXED FREIGHT RATES ON INWARD LEGS

Tables B.10 and B.11 show the sensitivity of break-even freight rates on the outward leg of routes to variation of the utilisation of capacity, break-even costs and fixed freight rates on inward legs, for owner-drivers and fleet owners respectively.

The tables indicate that for the routes examined in the analysis, freight rates are highly sensitive to under and overloading of the vehicles for any part or all of a round trip. With a 25 per cent reduction in the utilisation of the carrying capacity of a 20

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(1) The Australian Guarantee Corporation, Canberra, indicated that effective rates on borrowed funds ranged up to 15 per cent.

(2) The weighted average cost of capital = $(10 \times \frac{1}{3}) + (8.6 \times \frac{2}{3}) \doteq$ 9.0 per cent, where 8.6 per cent is the annual flat rate equivalent to 15 per cent effective rate of interest on borrowed funds, taken over the various types of road haulage operations of owner-drivers and fleet owners specified in the model.

TABLE B.10 - EFFECT ON BREAK-EVEN FREIGHT RATES OF VARYING BREAK-EVEN COSTS AND VEHICLE UTILISATION: OWNER-DRIVER VEHICLES

(per cent)

Change in capacity utilisation/break-even costs	Vehicle capacity in tonnes	
	15	17
Proportional effect on break-even freight rate for outward or Riverina - Melbourne leg of underutilising 25% of vehicle capacity on:		
. Riverina - Melbourne leg	+30	+33
. Melbourne - Riverina leg	+36	+42
. both legs	+79	+83
Proportional effect on break-even freight rate for outward or Riverina - Melbourne leg of overloading by 25% on:		
. Riverina - Melbourne leg	-14	-17
. Melbourne - Riverina leg	-29	-33
. both legs	-43	-50
Proportional effect on break-even freight rate for outward or Melbourne - Riverina leg when vehicle is fully laden on both legs of a variation in break-even costs of: (a)		
. +20%	+50	+50
. -20%	-43	-50
Proportional effect on break-even freight rate for outward or Melbourne - Riverina leg when vehicle is fully laden on both legs of a variation in fixed freight rate on inward leg of:		
. +20%	-29	-25
. -20%	+29	+33

(a) This is equivalent to a variation in variable costs of operation of approximately 33 per cent.

TABLE B.11 - EFFECT ON BREAK-EVEN FREIGHT RATES OF VARYING BREAK-EVEN COSTS AND VEHICLE UTILISATION: FLEET OWNER VEHICLES

(per cent)

Change in capacity utilisation/break-even costs	Vehicle capacity in tonnes 17	20
Proportional effect on break-even freight rate for Melbourne to Sydney leg(a) of underutilising 25% of vehicle capacity on:		
. Riverina - Melbourne leg	+ 9	+12
. Melbourne - Sydney leg	+33	+35
. Sydney - Riverina leg	+ 8	+10
. both Riverina - Melbourne and Sydney - Riverina legs	+17	+21
. all three legs	+56	+61
Proportional effect on break-even freight rate for Melbourne to Sydney leg(a) of overloading by 25% on:		
. Riverina - Melbourne leg	- 9	- 9
. Melbourne - Sydney leg	-20	-19
. Sydney - Riverina leg	- 8	- 8
. both Riverina - Melbourne and Sydney - Riverina legs	-17	-19
. all three legs	-33	-35
Proportional effect on break-even freight rate for outward or Riverina to Sydney via Melbourne legs when vehicle is fully laden over entire route of a variation in break-even costs of:		
. +20%	+25	+26
. -20%	-25	-25
Proportional effect on break-even freight rate for Melbourne to Sydney(a) leg when vehicle is fully laden over entire route of a variation in break-even costs of: (b)		
. +20%	+33	+37
. -20%	-33	-35
Proportional effect on break-even freight rate for outward or Riverina to Sydney via Melbourne legs when vehicle is fully laden over entire route of a variation in the fixed freight rate of:		
. +20%	- 4	- 5
. -20%	+ 4	+ 7

(a) Freight rate on first leg from Riverina to Melbourne fixed at $9.00 per tonne.

(b) This is equivalent to a variation in variable costs of operation of approximately 33 per cent.

tonne vehicle on one of the two Riverina legs (that is the Riverina to Melbourne or Sydney to the Riverina leg) the freight rate in the Melbourne to Sydney corridor would have to be increased by at least 10 per cent for the firm to break even on these triangular trips. A 25 per cent reduction in utilisation of carrying capacity on both of these legs would require an increase in the firm's break-even freight rate in the inter-capital corridor of 21 per cent.

In addition, overloading of vehicle capacity increases total trip revenue to such an extent that more competitive rates can be quoted on each leg of a round trip. For example, overloading by 25 per cent on a 20 tonne unit for the 'Wagga Triangle' reduces the required break-even freight rate on the Melbourne to Sydney corridor by 35 per cent. If the haulier overloads on each leg of the round trip and charges the postulated break-even rate on each leg, the trip will generate additional revenue of about $200.

The tables also indicate that changes in break-even costs per vehicle kilometre, that is a variation in the length of hauls, will require more than proportional increases in break-even freight rates. For example, an increase or decrease in break-even costs of 20 per cent will require a corresponding increase or decrease of 50 per cent in break-even freight rates.

The variation of the fixed freight rate on inward legs would have only a slightly greater than proportional effect on break-even freight rates for the owner-driver but a significantly less than proportional effect on the fleet owners' rates. For example, an increase or decrease of 20 per cent in the fixed freight rate for owner-drivers would require a corresponding increase or decrease in break-even freight rates of 33 per cent and 25 per cent respectively. However, such a change for a 17 tonne vehicle operated by a fleet owner would require only a 4 per cent increase or decrease in break-even rates.

FORMULATION FOR BREAK-EVEN COSTS AND FREIGHT RATES

In this attachment a formula is derived to calculate the long run break-even freight rates for a vehicle on any leg of a round trip given basic data on its operating costs. This arithmetic presentation formalises the model, and also provides a basis for freight rate setting strategies for road transport firms operating on a circuit of established routes.

(a) A generalised cost formula:

For any vehicle, the long run break-even cost C_t of undertaking a round trip of any number, n, of route legs can be calculated from the relationship:

$$\text{Total break-even cost for a round trip of n legs} = C_t = \frac{C_k + C_f + C_v}{M} \sum_{i=1}^{i=n} m_i \quad \ldots\ldots(A)$$

where C_f = annual fixed cost of vehicle operations

C_k = required annual return to capital invested in vehicle

M = annual distance travelled by vehicle

C_v = annual variable costs of vehicle operation

n = number of legs on round trip

m_i = number of kilometres on any leg of the trip

(b) Freight rate setting formula:

The freight revenue which has to be made up on any one leg of a round trip to allow the road transport operator to break even on the whole trip will be equal to the total break-even cost for the round trip C_t less the freight revenue on all other legs of the journey.

Thus, where R_i equals the freight revenue which can be earned on the ith leg of the trip it is possible to derive the revenue R which has to be made up on the particular leg n of a round trip, in order for the firm to break even:

$$R_n = C_t - \sum_{i=1}^{i=n-1} R_i \quad \ldots\ldots(B)$$

This residual revenue can also be derived from the relationship:

$$R_n = \alpha_n Q m_n r_n \quad .....(C)$$

where Q = carrying capacity of vehicle in tonnes
α_n = proportion of vehicle capacity used on leg n[1]
m_n = number of kilometres on leg n
r_n = freight rate per tonne kilometre on leg n

Therefore, expanding (B) above,

$$\alpha_n Q m_n R_n = \frac{C_k + C_f + C_v}{M} \sum_{i=1}^{i=n} m_i - \sum_{i=1}^{i=n-1} \alpha_i Q m_i r_i$$

The freight rate per tonne which the road haulier would have to charge on the leg n of this journey = $m_n r_n$. Therefore, for any commercial vehicle, the break-even freight rate per tonne to be charged on a particular leg of a round trip is given by:

$$m_n r_n = \frac{1}{\alpha_n Q} \left(\frac{C_k + C_f + C_v}{M} \sum_{i=1}^{i=n} m_i - \sum_{i=1}^{i=n-1} \alpha_i Q m_i r_i \right)$$

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(1) The freight rate strategies established in the analysis reflect the carriage of relatively dense cargoes and consequently are not necessarily indicative of the rates charged for the movement of volumetric cargoes.

ANNEX C
FREIGHT RATES AND RAILWAY REVENUES

This Annex provides further details of the postulated freight rates described in Chapter 10.

ROAD AND RAIL FREIGHT RATES

Tables C.1 to C.4 show road and rail freight rates for various commodities transported between selected locations. The tables compare 1973-74 road and rail freight rates and show the intersystem rail freight rates that would need to be charged if intersystem railway transport is to compete on a price basis with interstate road haulage and intrastate railways.

REVENUES

Tables C.5 and C.6 show the estimated revenue earned by the PTC of N.S.W., Rail Division and Victorian Railways respectively from Riverina freight haulage based on 1973-74 freight rates and 1971-72 flow data.

Table C.7 shows the estimated revenues from Riverina freight flowing to and from N.S.W. locations at the postulated intrasystem freight rates using hypothesised directional changes in freight flows and modal split. The estimated revenues earned by the N.S.W. and Victorian rail systems from freight flowing between the Riverina and Victoria at postulated 'through' rates are presented in Table C.8.

TABLE C.1 - ROAD AND RAIL FREIGHT RATES FOR WHEAT TRANSPORTED BETWEEN SELECTED LOCATIONS

($ per tonne)

Origin in Riverina	Rail Destination		Road Destination	A competitive inter-system rail rate to Geelong(a)
	Sydney	Geelong	Geelong	
Narrandera	11.55	14.69	10.00	10.00
Griffith	11.95	16.07	10.00	10.00
Leeton	11.74	15.23	10.00	10.00
Junee	10.91	14.47	9.50	9.50
Wagga Wagga	11.11	13.53	9.50	9.50
Morundah	11.75	13.97	9.50	9.50
Urana	11.97	15.14	9.00	9.00
Tocumwal	12.51	7.30	7.00	7.00
Albury	11.97	7.50	n.a.	7.50
Wodonga	15.08	7.50	n.a.	7.50
Echuca	18.47	7.05	n.a.	7.00

(a) BTE suggested rates.
n.a. - not applicable.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973; BTE break-even cost analysis, quoted road haulage rates for the Riverina and existing pattern of backloading availability; rail freight rates supplied by the Australian Wheat Board.

TABLE C.2.1 - RAIL FREIGHT RATES FOR COARSE GRAINS TRANSPORTED BETWEEN SELECTED LOCATIONS

($ per tonne)

Origin in Riverina	By rail to Sydney		
	Ordinary rate	Special export rates	
		Barley and Oats	Sorghum
Narrandera	11.55	10.11	9.82
Griffith	11.95	10.46	10.16
Leeton	11.75	10.28	9.99
Junee	10.91	9.55	9.27
Wagga Wagga	11.11	9.72	9.44
Morundah	11.75	10.28	9.99
Urana	11.97	10.47	10.17
Tocumwal	12.51	10.95	10.63
Albury	11.97	10.47	10.17
Wodonga	15.08	n.a.	n.a.
Echuca	18.47	n.a.	n.a.

n.a. - not applicable.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973.

TABLE C.2.2. - ROAD AND RAIL FREIGHT RATES FOR COARSE GRAINS TRANSPORTED BETWEEN SELECTED LOCATIONS

($ per tonne)

Origin in Riverina	Rail Destination			Road Destination			A competitive rail rate[(a)] to:		
	Melbourne	Geelong	Portland	Melbourne	Geelong	Portland	Melbourne	Geelong	Portland
Narrandera	13.90	14.80	16.60	9.00	10.00	20.50	9.00	10.00	17.00
Griffith	15.28	16.18	17.95	9.00	10.00	21.00	9.00	10.00	17.50
Leeton	14.44	15.34	17.14	9.00	10.00	21.00	9.00	9.50	17.50
Junee	14.13	14.58	16.68	9.50	9.50	21.50	9.00	10.50	18.00
Wagga Wagga	13.19	13.64	15.74	9.00	9.50	21.00	9.00	9.50	17.50
Morundah	13.18	14.08	15.88	8.50	9.50	20.50	8.50	9.00	17.00
Urana	14.80	15.25	17.35	8.00	9.00	20.50	8.00	9.00	17.00
Tocumwal	6.51	7.41	9.21	6.00	7.00	19.50	6.50	7.00	16.00
Albury	7.16	7.61	9.71	7.00	8.00	20.00	6.50	7.50	16.50
Wodonga	7.06	7.61	9.71	7.00	8.00	20.00	6.50	7.50	16.50
Echuca	6.51	7.16	8.11	6.00	7.00	19.00	6.00	7.00	15.50

(a) BTE suggested rates.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973; BTE break-even cost analysis, quoted road freight rates for the Riverina 1973 and the existing pattern of backloading availability.

TABLE C.3 - ROAD AND RAIL FREIGHT RATES FOR MILLED RICE TRANSPORTED BETWEEN SELECTED LOCATIONS

($ per tonne)

Origin in Riverina	Rail Destination				Road Destination		A competitive inter-system rail freight rate(a) to:	
	Sydney		Melbourne	Geelong	Melbourne	Geelong		
	Ordinary rate	Special export rate					Melbourne	Geelong
Yenda	19.10	15.28	14.90	15.70	9.00	10.00	9.00	10.00
Griffith	19.35	15.48	14.70	15.50	9.00	10.00	9.00	10.00
Leeton	19.10	15.28	14.30	15.10	9.00	10.00	9.00	10.00
Deniliquin	20.51	n.a.	23.71	27.91	8.00	9.00	8.00	9.00
Morundah	19.10	15.28	13.20	14.00	8.50	9.50	8.50	9.50
Echuca	19.51	n.a.	19.16	23.71	6.00	7.00	6.00	7.00

(a) BTE suggested rates.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973; Railways of Australia, Goods Rates Book, July 1973; BTE break-even cost analysis, quoted road haulage rates for the Riverina and existing pattern of backloading availability.

TABLE C.4 - ROAD AND RAIL FREIGHT RATES FOR SUPERPHOSPHATE TRANSPORTED BETWEEN SELECTED LOCATIONS

($ per tonne)

Destination in Riverina	from Newcastle by	from Port Kembla by		from Geelong by		from Portland (VIC) by		A competitive inter-system rail rate from Geelong (a)
	rail	rail	road	rail	road	rail	road	
Narrandera	8.56	7.69	8.00	11.67	8.00	13.98	8.00	8.00
Griffith	8.79	7.81	8.00	12.17	8.50	14.48	8.50	8.50
Leeton	8.67	7.81	8.00	11.78	8.00	14.09	8.00	8.00
Junee	8.20	7.22	8.00	12.06	9.00	14.08	9.00	9.00
Wagga Wagga	8.45	7.32	8.00	11.83	8.50	13.85	8.50	8.50
Morundah	8.67	7.81	8.00	11.52	7.00	13.83	7.00	7.00
Urana	8.79	8.03	9.00	12.32	8.50	14.34	8.50	8.50
Tocumwal	9.18	8.56	10.00	5.33	6.00	7.64	6.00	6.00
Albury	8.79	8.03	9.00	5.87	6.00	7.89	6.00	6.00
Wodonga	11.40	10.64	10.00	5.87	6.00	7.74	6.00	6.00
Echuca	13.42	12.57	11.00	5.18	5.00	6.90	5.00	5.00

(a) BTE suggested rates.

Sources: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973; Victorian Railways, Goods Rates Book, vol. 1, July 1973; BTE break-even cost analysis, quoted road haulage rates for the Riverina and existing pattern of backloading availability.

TABLE C.5 - MAJOR COMMODITY GROUPS: ESTIMATED REVENUE FROM RIVERINA FREIGHT AT 1973-74 FREIGHT RATES - PUBLIC TRANSPORT COMMISSION OF NSW, RAIL DIVISION

Commodity group	Quantity hauled(a) ('000 tonnes)	Representative freight rate ($ per tonne)	Estimated revenue ($'000)
Wheat	915	9.50(b)	8693(b)
Coarse grains	35	11.00	385
Oilseeds	5	11.00	55
Fodder	20	15.00	300
Rice	95	10.00	950
Wool	10	30.00	300
Fruit & vegetables	105	13.00	1365
Livestock	50	16.00	800
Petroleum products	50	15.00	750
Fertiliser	85	8.00	680
Building materials	35	15.00	525
General goods	180	15.00	3000
TOTAL	1585	n.a.	17803

(a) Based on 1971-72 flow data.
(b) Does not include New South Wales Treasury subsidy payment to the PTC of N.S.W.

n.a. - not applicable.

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TABLE C.6 - MAJOR COMMODITY GROUPS: ESTIMATED REVENUE FROM RIVERINA FREIGHT[a] AT 1973-74 FREIGHT RATES - VICTORIAN RAILWAYS

Commodity group	Quantity hauled(b) ('000 tonnes)	Representative freight rate ($ per tonne)	Estimated revenue ($'000)
Wheat	127[c]	8.00	1015
Coarse grains	5	8.00	40
Rice	75	5.00	375
Livestock	10	13.00	130
Petroleum products	5	10.00	50
General goods	15	10.00	150
TOTAL	237	n.a.	1760

(a) Includes freight to and from Echuca in Victoria, mainly polished rice and wool.
(b) 1971-72 flow data.
(c) Includes 61,000 tonnes transported by road to Victorian GEB silos.

n.a. - not applicable.

TABLE C.7 - MAJOR COMMODITY GROUPS: ESTIMATED REVENUE FROM RIVERINA FREIGHT FLOWING TO AND FROM NEW SOUTH WALES LOCATIONS, AT BTE SUGGESTED INTRASYSTEM RATES

Commodity group	Quantity hauled(a) ('000 tonnes)	Representative freight rate ($ per tonne)	Estimated revenue ($'000)
Wheat	275	9.50	2613
Coarse grains	35	9.50	333
Oilseeds	5	9.50	48
Fodder	20	13.50	270
Rice	95	9.00	855
Wool	10	16.00	160
Fruit and vegetables	105	13.00	1365
Livestock	50	16.00	800
Petroleum products	50	16.00	800
Fertiliser	85	8.00	680
Building materials	35	15.00	525
General goods	180	15.00	3000
TOTAL	945	n.a.	11449

(a) Based on hypothesised directional changes in freight flows and modal split.

n.a. - not applicable.

TABLE C.8 - MAJOR COMMODITY GROUPS: ESTIMATED REVENUE FROM RIVERINA FREIGHT FLOWING TO AND FROM VICTORIAN LOCATIONS, AT BTE SUGGESTED INTERSYSTEM FREIGHT RATES

Commodity group	Quantity hauled(a)	Representative freight rate	Estimated revenues	
			NSWPTC	Victorian Railways
	('000 tonnes)	($ per tonne)	($'000)	($'000)
Wheat	701 (b)	9.00	3155	3155
Coarse grains	120	9.00	540	540
Oilseeds	30	9.00	135	135
Rice	40	9.00	180	180
Milk	20	16.00	160	160
Petroleum products	100	16.00	800	800
Fertiliser	50	8.00	200	200
TOTAL	1061	n.a.	5170	5170

(a) Based on the hypothesised directional changes in freight flows and modal split.
(b) Includes 61,000 tonnes which was transported by road to Victorian GEB silos.

n.a. - not applicable.

ANNEX D

AUSTRALIAN RAILWAYS AND ROADS LEGISLATION

This Annex presents a list of relevant Commonwealth and State railway and road acts which provide the legislative framework discussed in Chapter 5.

COMMONWEALTH GOVERNMENT RAILWAYS ACTS

Commonwealth Railways Act 1917-1973

Railways (Tasmania) Act 1975

Railways Agreement (South Australia) Act 1975

Brachina to Leigh Creek North Coalfield Railway Act 1950-1952

Grafton to South Brisbane Railway Act 1924-1930

Kalgoorlie to Port Augusta Railway Act 1911-1950

Northern Territory Railway Extension Act 1923-1971

Oodnadatta to Alice Springs Railway Act 1926 and 1950

Pine Creek to Katherine River Railway Act 1913-1950

Port Augusta to Alice Springs Railway (Alteration of Route) Act 1950

Port Augusta to Port Pirie Railway Act 1935-1950

Port Augusta to Whyalla Railway Act 1970

Railway Agreement (New South Wales and South Australia) Act 1968

Railway Agreement (New South Wales) Act 1968

Railway Agreement (Tasmania) Act 1971

Railway Agreement (Western Australia) Act 1961-1971

Railway Equipment Agreement (South Australia) Act 1961

Railway Standardisation (New South Wales and Victoria) Agreement Act 1958

Railway Standardisation (South Australia) Agreement Act 1949

Railways (South Australia) Agreement Act 1956

Seat of Government Railway Act 1928

Sterling North to Brachina Railway Act 1952-1954

STATE GOVERNMENT RAILWAYS ACTS

Government of New South Wales

Government Railways Act 1912

Public Transport Commission Act 1972

Government of Victoria

Railways Act 1958-1972

Government of Queensland

The Railways Act 1914

Government of South Australia

South Australian Railways Commissioner's Act 1936

Railways (Transfer Agreement) Act 1975

Government of Western Australia

Government Railways Act 1904

Government of Tasmania

Railway Management Act 1935

Railways (Transfer to Commonwealth) Act 1975

ROAD LEGISLATION

New South Wales

New South Wales (Co-ordination) Act 1931-1956

Victoria

Victorian Commercial Goods Vehicle Act 1958-1968

Victorian Transport Regulation Act 1958-1968

Queensland

Queensland State Transport Act 1960-1965

Western Australia

Western Australia Administration of the Road and Air Transport Commission Act 1966

Western Australia Transport Co-ordination Act 1966

Tasmania

Tasmanian Traffic Act 1925-1971

ANNEX E

INTERSYSTEM RATING PRACTICES
SELECTED DEFINITIONS AND SUMMARY OF
GENERAL CONDITIONS FOR THE CARRIAGE OF GOODS

DEFINITIONS

CITY SPECIAL BORDER RATES	Rates applicable on goods carried between specified Queensland cities and their border stations.
CLASSIFICATION	The schedule in the rate book specifying the various kinds and descriptions of goods and the classes in which they are placed.
COMMISSIONERS	Includes each of the authorities created by any Commonwealth or State Act for the purpose of operating a railway system.
FREIGHT CHARGE	The amount due to the Commissioners for the carriage of goods or live-stock.
INTERSYSTEM DISTANCE RATES	Rates based on distance, irrespective of locality.
INTERSYSTEM TRAFFIC	All traffic accepted for carriage by a railway system for destinations beyond the limits of the lines operated by that system, and to be carried beyond those limits by one or more other railway systems and includes traffic carried on the line from the Queensland border to South Brisbane.
LOCAL DISTANCE, SPECIAL OR DISTRICT RATES	Rates other than those prescribed in the rate book applicable on any system.
RAILWAY ACTS AND BY-LAWS	Any act of Parliament of the Commonwealth or of a State which creates a statutory corporation for the purpose of operating a railway system or which in any way relates to any railway operated by such a corporation and any regulation by-law or resolution made pursuant to any such act.

RATE

The charge fixed by the Commissioners for the carriage of a specified mass, number, quantity, or measurement of specified kind of class of goods, or livestock for a specified distance, or between specified places, subject in every case to the Conditions of Carriage and the Classification.

SMALL QUANTITIES

Goods of a nature or quantity that do not require the sole use of the wagon (see also Condition 9 - Consignments Excepted).

SYSTEM

The lines of railway worked by the Queensland, New South Wales, Victorian, South Australian, Commonwealth, and Western Australian Railways Commissioner (The Tasmanian system operates between Tasmania and the mainland under the registered business name 'Rail Ferry Service').

TASMANIA DOOR

Tasmania Railway Stations to which pick up and delivery charges are included in the Rail Ferry Service Rates.

UNIFORM RATES

The whole of the rates prescribed in the Railways of Australia Goods Rates Book or in any authorised amendment thereof or addition thereto.

GENERAL CONDITIONS

1. CONDITIONS

All intersystem traffic is carried subject to the R of A Rates Book, and to the Railways Acts and by-laws in force on each system to which carriage will extend in respect of the carriage upon that system.

Each Commissioner contracts on its own behalf for carriage on the system which it operates, and in respect of carriage beyond the limits of that system, as agent for the Commissioners operating each other system to which the carriage will extend.

Each contract for intersystem carriage of goods, including any contract covered by special agreement to which the Railway Acts and by-laws apply, are deemed to have been entered into on the basis that each of the Commissioners, its servants and agents, has the benefit of the provisions of such contract for intersystem carriage, and is under no liability to any person claiming in respect of a consignment carried greater, or in addition to that which would attach to the Commissioner by which such consignment was accepted for carriage.

2. LIABILITY

All traffic for interstate destinations charged at R of A rates are carried at the risk of the Commissioners (except dangerous and certain valuable goods specified in the Rate Book).

Dangerous goods are carried at owners risk and subject to the conditions for such goods specified by each system.

The following are the increased charges to be paid upon specified valuable items:

Distance	Percentage on Declared Value (i.e. per $100)
Kilometres	$
1 to 200 km	0.50
201 to 400 km	1.00
401 to 800 km	1.50
801 to 1600 km	2.50
1601 to 2400 km	3.00
2401 to 3200 km	3.50
over 3200 km	4.00

The additional charges are imposed on goods valued in excess of fifty dollars ($50).

The charges are computed on the total through distance and apportioned on the basis of distance conveyed over each system concerned.

3. METHOD OF APPLICATION — The total distance rate for all traffic classified in the R of A Rates Book is the sum of the distance rates for the separate distances over each individual system. A number of important stations and routes are excepted under Condition 4 (see below).

Examples:

(a) One tonne of traffic classified at 'A' Class rate - Mount Isa (Q) to Meekatharra (WA) via Border Tunnel (Clapham) and Albury.

RAIL SYSTEM	KILOMETRES	PER TONNE
		$
Queensland		
(Mt. Isa - Townsville)	970	14.20
(Townsville - Border Tunnel)	1454	47.30
Origin - Destination charge		2.00
Transfer		1.50
New South Wales	1498	20.10
Transfer		0.47
Victoria	755	11.90
Transfer		0.23
South Australia	531	9.50
Transfer		0.35
Commonwealth	1782	23.20
Transfer		0.35
Western Australia	1364	18.80
Transfer		0.70
Origin - Destination charge		2.00
TOTAL	9354	152.60

(b) 30 kg of traffic classified at second class rate - Perth (WA) to South Brisbane (Q) via Broken Hill and Border Tunnel.

RAIL SYSTEM	KILOMETRES	PER TONNE	CHARGE (as for 50 kg minimum)
		$	$
West Australia	653	23.40	1.17
Origin - Destination Charge		1.20	0.75
Commonwealth	1782	57.40	2.87
South Australia	397	15.80	0.79
New South Wales	1977	63.30	3.17
Queensland	111	7.40	0.37
Origin - Destination Charge		1.20	0.75
TOTAL	4920	169.70	9.87

(c) Goods consigned between system border stations, i.e.:

- Wallangarra
- Albury
- Serviceton
- Tocumwal
- Broken Hill
- Port Pirie
- Kalgoorlie

and hauled over one system only are subject to local classification of goods and conditions of carriage and are charged local distance rates.

(d) Queanbeyan, New South Wales, is treated as a system border station for traffic to and from Canberra, ACT.

(e) Port Augusta, S.A., is treated as a system border station for traffic between Western Australian stations and Central Australian/ North Australian stations.

(f) Port Pirie is the system border station for traffic between all other States and Central Australian/North Australian stations.

(g) Melbourne (Dynon) is the system border station for traffic to and from Tasmania.

4. STATIONS EXCEPTED — The Intersystem Distance Rates do not apply to the following stations or sections:

(a) Between Queensland Railway Stations and their borders (excepted where otherwise shown)

- For traffic consigned to and from such stations, the sum of the Intersystem Distance Rate between the station and the city to which the station distances are published and the city special border rate is charged for the Queensland system.

(b) Canberra ACT.

(c) Central Australian and North Australian Railway Stations.
- For traffic consigned to and from such stations the Intersystem Distance Rates are charged to the nearest system border station ((b) Queanbeyan for Canberra; (c) Port Augusta for West Australia and Port Pirie for Victoria, New South Wales and Queensland) and Local Distance Rates, classifications and conditions apply for that portion of the journey excluded from the Intersystem Distance Rates.

(d) Between South Australian Railway Stations, Central Australian Railway Stations and Trans-Australian Railway Stations (other than Parkeston)

(e) Between New South Wales Stations and Canberra.
- For traffic consigned to and from such stations, the sum of each system's local distance special or district rates, classifications and conditions apply.

(f) Eyre Peninsula lines, South Australia
- No rail connections with the main line systems.

(g) Tasmania
- Special conditions and co-ordinated charges apply to and from Melbourne (Dynon).

(h) Between Tasmanian Stations and Victorian Railway Stations.
- For traffic consigned to and from such stations, the Victorian local distance, special or district rates, classifications and conditions apply, plus the special conditions and co-ordinated charges to and from Melbourne, assessed at the classification provided in the R of A Rate Book.

5.	MINIMUM	The minimum freight charge is set at 50 kg per consignment each system, except Tasmania (25 kg). However, the total freight charge for 'smalls' must not exceed the charge at parcels rates.
6.	ORIGIN/DESTINATION CHARGE	The amount of $2 per tonne additional (min 75 cents) is levied on both the originating system and the destination system (except Tasmania when O/D charge credited to Victoria) This charge includes the cost of handling (loading, unloading, checking, covering and securing) where normally performed by the Commissioners. The O/D charge does not apply when other than the uniform rates are charged on such system. On traffic originating or terminating at border stations, the origin and destination charge is credited to the System which performed the haul, except in the case of Albury or Broken Hill where the charge is credited to New South Wales in all instances.
7.	BOGIE EXCHANGE[1]	Additional charges are levied for

(1) For shunting charges at Tocumwal refer to Victorian Railways, Goods Rates Book, No. 28, vol. 1, July 1973, pp. 268-269, and PTC of N.S.W., Merchandise and Livestock Rates, vol. 2, July 1973, p. 176.

traffic passing through the following border or transfer stations:

STATION/SECTION	PER TONNE $	MINIMUM CHARGE $	SYSTEM APPORTIONMENTS
Clapham - Border Tunnel (except Standard Gauge Stations, South Brisbane Border Tunnel)	1.50	0.50	All Queensland
Wallangarra	1.50	0.50	Q 75¢, min 25¢; NSW 75¢ min 25¢
Albury, Wodonga and Dynon	0.70	0.30	NSW 47¢ min 20¢; Vic 23¢ min 10¢
Tocumwal	0.70	0.30	NSW 30¢ min 17¢; Vic 40¢ min 13¢
Gladstone/Peterborough (when transferred)	0.70	0.30	All South Aust.
Port Pirie - to and from broad/std gauge only. Except traffic to and from Central and North Australian Railways	0.70	0.30	SA 35¢ min 15¢; CR 35¢ min 15¢
Port Pirie - to and from broad/std gauge only. Traffic to and from Central and North Australian rail only.	0.35	0.15	All SA
West Kalgoorlie, Merredin, Avon Yards or Kewdale (except std gauge line stations West Kalgoorlie - North Fremantle	0.70	0.30	All WA

8. EXCEPTIONS

The Intersystem Distance Rates do not apply to:

- explosives and goods of a dangerous nature
- animals in crates
- boats, vehicles, caravans, trailers
- tank wagon traffic
- milk, fresh
- wool
- wagon load consignments of the following:

Agricultural seeds	Barley	Bran	Chaff
Coal and coke	Concentrates	Firewood	Fruit, fresh
Grain	Hay	Manure	Onions
Ores(crude)	Pollard	Potatoes	Sharps
Straw	Urea (for	Vegetables	Wheat
Wheaten flour	fertilizing)	(fresh)	

- Smaller quantity loadings are provided for under the R of A uniform classification, with the exception of concentrates.

- Wagon load consignments of the above listed commodities are charged at the sum of each system's local distance, **special** or district rates and are subject to local classifications of goods and conditions of carriage.

9. ADDRESSING — As required in the By-Laws.

10. ROUTING — Freight charges on all consignments are assessed via the system border station or stations through which the traffic is to be hauled, irrespective of the fact that a cheaper charge may be applicable by an alternative route.

Where there is doubt, the freight office of the originating system must be consulted.

Traffic consigned from stations on the Sydney metropolitan area to stations in the Balranald line in Victoria is to be routed and freight charges assessed via Albury and Dynon.

NOTE: Other specified conditions relate to the nature of the consignment and packing requirements.

Source: Railways of Australia, Goods Rates Book, 1 July 1973, pages 2 to 7.

ANNEX F

NEW SOUTH WALES, VICTORIAN AND RAILWAYS OF AUSTRALIA SELECTED PRESCRIBED DISTANCE RATES AND CONDITIONS FOR THE CARRIAGE OF GOODS AND LIVESTOCK

This annex provides a comparison of distance freight rates existing on the New South Wales and Victorian rail systems with the through rates set down in the Railways of Australia Goods Rates Book. The selected distances have been used to derive per tonne-kilometre rates for the three systems over the specified distances.

Freight (for which R of A rates are provided) and livestock (for which R of A ID rates do not apply) are discussed as illustrations of the complicated set of rates and conditions for interstate movements of commodities.

CLASSIFICATION

The classes in which the goods are placed in the Railways of Australia schedule coincide, in general, with the complementary classes used by each State in their goods rates books. Ther are however some exceptions to this arrangement. The consignments excepted from the intersystem distance rates are mainly classified by each State as Class 'A' traffic.

There are also concessional arrangements for some of these commodities to move over two or more rail systems which effectively mitigates the prescribed exception conditions. For instance, wagon-load consignments of potatoes, onions, celery and fresh fruit and vegetables, when moved in other than refrigerated vans between specified stations, attract intersystem concessional rates.

Fresh fruit consignments, for example moved from Melbourne and Shepparton to Darling Harbour via Albury attract a freight charge, including the standard gauge service charge, of $16.68 per tonne.

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This freight charge is apportioned between the two systems as follows- $4.23 to Victoria plus the standard gauge service charge of 17 cents per tonne, and $12.28 to New South Wales including 33 cents for the standard gauge service charge[1].

GOODS

Tables F.1.1 and F.1.2 show how the New South Wales distance rates taper with respect to distance for goods carried under prescribed conditions on intrastate journeys for distances beyond 20 kilometres. Table F.1.1 shows the rate per tonne for the seven classifications of goods ranging from $1.30 for 20 kilometres to $69.31 per tonne for journeys up to 2100 kilometres. Table F.1.2 presents these rates in tonne-kilometres for the selected distances for each of the special and numerical goods classifications.

These tables demonstrate that goods of differing densities, traffic volume prospects and end-use are placed into various classifications for rate making purposes. Short haul movement over 100 kilometres of a tonne of grain (in wagon load consignments) on the New South Wales system costs $4.89, compared with a charge of $12.65 per tonne for a consignment such as copper hot water tanks (numerical classification 2) carried over the same distance.

Table F.1.2 indicates the distance taper on the New South Wales system. For wagon load consignments of grain the rates fall from 6.5 cents per tonne kilometre for a 20 kilometre journey to 0.9 cents for a 1600 kilometres journey. For journeys greater than 1600 kilometres the grain rate is 0.34 cents per tonne for each additional kilometre so that for 2100 kilometres the average rate falls to 0.8 cents.

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(1) Public Transport Commission, Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973, p. 236. Details of these concessional rates are also prescribed on pages 169 to 179 in the Victorian Railways, Goods Rates Book, No. 28 vol. 1, 1 July 1973. These rates are not listed in the Railways of Australia Goods Rates Book.

TABLE F.1.1 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON THE NEW SOUTH WALES RAILWAY SYSTEM

($ per tonne)

Distance (km)	Special classes					Numerical classes	
	Grain wagon loads (a)	Manure wagon loads	A 2-tonne lots	B 1-tonne lots	C 1-tonne lots	1st	2nd
20	1.30	1.50	1.89	2.01	2.23	2.57	2.91
40	2.33	2.55	3.31	3.99	4.61	4.72	5.63
50	2.73	2.91	3.76	4.83	5.51	5.63	6.64
80	4.20	4.32	5.80	7.32	8.45	8.68	10.49
100	4.89	5.04	6.81	8.62	10.04	10.49	12.65
200	7.23	5.89	10.35	13.58	16.52	18.11	21.96
300	9.01	6.62	12.96	17.32	21.28	24.79	29.55
400	10.06	7.16	14.68	19.49	24.13	29.45	34.88
600	11.65	7.97	16.97	22.85	28.23	34.57	41.02
800	12.61	8.73	19.02	25.65	31.76	38.78	46.02
1000	13.25	9.46	20.50	27.79	34.48	42.06	50.10
1600 (b)	15.02	11.16	24.58	33.34	41.49	50.78	60.51
2100	16.72	12.76	28.28	37.89	47.44	57.83	69.31

(a) Wheat conveyed by rail to sub-terminals and thence to terminal silos is subject to a rebate under certain conditons. Refer to Merchandise and Livestock Rates ibid p. 37.

(b) For each additional kilometre in excess of 1600 km, the following charges are added to the total rate. For grain in wagon loads 0.34 cents, manure in wagons loads 0.32 cents, Class A 0.74 cents, Class B 0.91 cents, Class C 1.19 cents, 1st Class 1.41 cents and 2nd Class 1.76 cents per tonne.

Source: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973.

TABLE F.1.2 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON THE NEW SOUTH WALES RAILWAY SYSTEM

(cents per tonne-kilometre)

Distance (km)	Special classes					Numerical classes	
	Grain wagon loads	Manure wagon loads	A 2-tonne lots	B 1-tonne lots	C 1-tonne lots	1st	2nd
20	6.5	7.5	9.5	10.1	11.2	12.9	14.6
40	5.8	6.4	8.3	10.0	11.5	11.8	14.1
50	5.5	5.8	7.5	9.7	11.0	11.3	13.3
80	5.3	5.4	7.3	9.2	10.6	10.9	13.1
100	4.9	5.0	6.8	8.6	10.0	10.5	12.7
200	3.6	2.9	5.2	6.8	8.3	9.1	11.0
300	3.0	2.2	4.3	5.8	7.1	8.3	9.9
400	2.5	1.8	3.7	4.9	6.0	7.4	8.7
600	1.9	1.3	2.8	3.8	4.7	5.8	6.8
800	1.6	1.1	2.4	3.2	4.0	4.8	5.8
1000	1.3	0.9	2.1	2.8	3.4	4.2	5.0
1600	0.9	0.7	1.5	2.1	2.6	3.2	3.8
2100 (a)	0.8	0.6	1.3	1.8	2.3	2.8	3.3

(a) Distance calculations are governed by Condition No. 23, page 12 of the Rate Book, viz: 'Where alternative routes exist, freight charges will be assessed via the shorter route; unless consignors specially request that the traffic be forwarded via the longer route, in which case freight charges will be levied on the basis of the actual distance hauled'.

Source: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973.

Similarly, Class 2 book rates for general merchandise vary from 14.6 cents per tonne-kilometre for 20 kilometre journeys to 3.8 cents for 1600 kilometre journeys. The minimum rate for Class 2 goods on the New South Wales system carried over distances in excess of 1600 kilometres is 3.3 cents per tonne-kilometre.

Tables F.2.1 and F.2.2 set out tapering distance rates by classification of freight for the carriage of goods on the Victorian system over distance comparable with the N.S.W. railways system.

The freight rates range from $2.00 per tonne (4.0 cents per tonne kilometre) for wagon load consignments of fertiliser moved up to 50 kilometres to $83.35 per tonne (8.3 cents per tonne kilometre) for 1 tonne consignments transported 1000 kilometres.

Table F.3.1 and Table F.3.2 show selected distance rates for goods carried on intersystem journeys under the rates applied by the Railways of Australia Goods Rates Book classifications and conditions. There are no special classifications covering grain or manures. The lowest rates applying therefore refer to Class A goods.

At 20 kilometres the rate is $1.60 (8.0 cents per tonne kilometre) per tonne for Class A goods, ranging up to $66.60 per tonne (3.2 cents per tonne kilometre) for Class 2 items transported over 2,100 kilometres.

LIVESTOCK

Details of the rate for selected distances for livestock carriage on the New South Wales and Victorian systems are given in Tables F.4 and F.5.

The carriage of livestock on rail on the various systems is subject to supplementary conditions relating to risk, carriage on route, unloading, removal from railway premises, wagon capacity

TABLE F.2.1 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON THE VICTORIAN RAILWAY SYSTEM

($ per tonne)

Distance (km)	Special classes					Numerical classes	
	Grain wagon loads (b)	Manure wagon loads (b)	A 2-tonne lots	B (a) 1-tonne lots	C 1-tonne lots	1 Smalls	2 Smalls
20	2.50	2.00	2.50	2.50	2.50	8.00	10.00
40	2.50	2.00	2.55	3.05	4.00	8.00	10.00
50	2.50	2.00	3.15	3.70	4.70	8.00	10.00
80	3.55	2.26	4.70	5.55	7.05	8.00	10.00
100	4.00	2.56	5.65	6.80	8.80	9.65	11.80
200	6.05	3.99	9.45	12.15	16.50	18.65	23.20
300	6.95	5.07	12.70	16.50	23.25	26.35	33.30
400	7.60	5.91	15.15	19.80	28.90	33.30	42.50
600	9.00	7.33	19.90	25.70	34.85	42.45	55.95
800	10.15	8.32	24.55	31.80	40.20	51.45	69.70
1000 (c)	11.55	9.50	29.00	37.95	45.95	60.25	83.35

(a) A separate freight classification -BB- is used for dairy products. A concessional distance rate applies to this classification.

(b) Excludes a surcharge for use of 'GJF' and 'GJX' wagons of $6.00 per wagon per trip for the carriage of bulk freight. Refer to Victorian Railways, Goods Rates Book, No. 28, vol. 1, condition 38, p.24.

(c) The maximum prescribed distance on the Victorian system.

Source: Victorian Railways, Goods Rates Book, no. 28, vol. 1, 29 October, 1973.

TABLE F.2.2 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON THE VICTORIAN RAILWAY SYSTEM

(cents per tonne-kilometre)

Distance (km)	Special classes					Numerical classes	
	Grain wagon loads	Manure wagon loads	A 2-tonne lots	B 1-tonne lots	C 1-tonne lots	1 Smalls	2 Smalls
20	13.1	10.0	12.5	12.5	12.5	40.0	50.0
40	6.5	5.0	6.4	7.6	10.0	20.0	25.0
50	5.2	4.0	6.3	7.4	9.4	16.0	20.0
80	4.6	2.8	5.6	6.9	8.8	10.0	12.5
100	4.1	2.6	5.6	6.8	8.8	9.7	11.8
200	3.1	2.0	4.7	6.1	8.3	9.3	11.6
300	2.4	1.7	4.2	5.5	7.8	8.8	11.1
400	1.9	1.5	3.8	5.0	7.2	8.3	10.6
600	1.5	1.2	3.3	4.3	5.8	7.1	9.3
800	1.3	1.0	3.1	4.0	5.0	6.4	8.7
1000	1.2	1.0	2.9	3.8	4.6	6.0	8.3

Source: Victorian Railways, Goods Rates Book, no. 28, vol. 1, 29 October 1973.

TABLE F.3.1 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON INTERSYSTEM JOURNEYS UNDER THE RAILWAYS OF AUSTRALIA GOODS RATES CLASSIFICATION AND CONDITIONS

($ per tonne)

Distance (km)	Special classes			Numerical classes	
	A	B	C	1	2
20	1.60	1.70	2.00	2.10	2.30
40	2.30	2.40	2.70	2.90	3.30
50	2.60	2.70	3.00	3.30	3.60
80	3.60	3.80	4.10	4.50	5.10
100	4.10	4.20	4.70	5.20	5.80
200	5.80	6.50	7.20	8.20	9.50
300	6.90	8.00	9.20	10.60	12.40
400	8.10	9.50	11.20	13.10	15.80
600	10.20	12.20	14.90	17.80	21.50
800	12.40	15.00	18.60	22.50	27.50
1000	14.60	17.80	22.50	27.30	33.50
1600	21.00	26.30	33.90	41.60	51.80
2100 (b)	26.40	33.30	43.20	53.30	66.60

(a) There are no special classes in the Intersystem Distance Rates for Grains or Manures. Small quantities of these types of goods are carried at 'A' Class rates. Wagon - load consignments are carried at the local distance rates for each leg of an intersystem journey.

(b) Prescribed ceiling for intersystem distance rates. In addition, charges are levied according to the route travelled, irrespective if a cheaper charge is available by an alternative route.

Source: Railways of Australia, Goods Rates Book, 1 July, 1973; rates effective from 1 August 1974.

TABLE F.3.2 - SELECTED DISTANCE RATES FOR GOODS CARRIED ON INTERSYSTEM JOURNEYS UNDER THE RAILWAYS OF AUSTRALIA GOODS RATES, CLASSIFICATIONS AND CONDITIONS

(cents per tonne-kilometre)

Distance (km)	Special classes			Numerical classes	
	A	B	C	1	2
20	8.0	8.5	10.0	10.5	11.5
40	5.8	6.0	6.8	7.3	8.3
50	5.2	5.4	6.0	6.6	7.2
80	4.5	4.8	5.1	5.6	6.4
100	4.1	4.2	4.7	5.2	5.8
200	2.9	3.3	3.6	4.1	4.8
300	2.3	2.7	3.1	3.5	4.1
400	2.0	2.4	2.8	3.3	4.0
600	1.7	2.0	2.5	3.0	3.6
800	1.6	1.9	2.3	2.8	3.4
1000	1.5	1.8	2.3	2.7	3.4
1600	1.3	1.6	2.1	2.6	3.2
2100	1.3	1.6	2.1	2.5	3.2

Source: Railways of Australia, Goods Rates Book, 1 July 1973; rates effective from 1 August 1974.

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TABLE F.4 - SELECTED DISTANCE RATES FOR LIVESTOCK CARRIED ON THE NEW SOUTH WALES SYSTEM

Distance	Rate per van	Rate per head		Rate per head	
	4 - wheeled	Cattle (10 per van)		Sheep (100 per van)	
km	$	$	cents per head-km	$	cents per head-km
20	11.60	1.16	5.8	0.12	0.6
40	12.60	1.26	3.2	0.13	0.3
50	14.40	1.44	2.9	0.14	0.3
80	22.60	2.26	2.8	0.23	0.3
100	27.60	2.76	2.8	0.28	0.3
200 (a)	44.60	4.46	2.2	0.45	0.2
300	56.40	5.64	1.9	0.56	0.2
400	65.70	6.57	1.6	0.66	0.2
600	82.60	8.26	1.4	0.83	0.1
800	98.90	9.89	1.2	0.99	0.1
1000	106.90	10.69	1.1	1.07	0.1
1600 (b)	126.60	12.60	0.8	1.26	0.1
2100	146.60	14.66	0.7	1.47	0.1

(a) When stock is conveyed for distances not exceeding 160 kilometres and consigned to killing works, to or from a station for sale or having been sold at a recognised sale, the rates are reduced by approximately 18 per cent. Refer to N.S.W. Merchandise and Livestock Rates, vol. 1, p. 254.

(b) For each additional kilometre beyond 1600, add 4 cents per wagon, ibid, p. 250.

Source: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates vol. 1, 1 July 1973.

TABLE F.5 - SELECTED DISTANCE RATES FOR LIVESTOCK CARRIED ON THE VICTORIAN RAILWAY SYSTEM

Distance	Rate per van	Rate per head		Rate per head	
	4 - wheeled	Cattle (10 per van)		Sheep (110 per van)	
km	$	$	cents per head-km	$	cents per head-km
20	7.25	0.73	3.7	0.07	0.4
40	7.25	0.73	1.8	0.07	0.2
50	8.85	0.89	1.8	0.08	0.2
80	13.90	1.39	1.7	0.13	0.2
100	16.10	1.61	1.6	0.15	0.2
200	26.40	2.64	1.3	0.24	0.1
300	36.45	3.65	1.2	0.33	0.1
400	45.05	4.51	1.1	0.41	0.1
600	61.60	6.16	1.0	0.56	0.1
800	73.80	7.38	0.9	0.67	0.1
1000(a)	85.05	8.51	0.9	0.77	0.1

(a) The ceiling for which prescribed rates apply is 1,000 kilometres.

Source: Victorian Railways, Goods Rates Book, No. 28, vol. 1, 29 October, 1973, pp. 155-161.

restrictions, deposits for ordering out of wagons[1], failure to muster to meet a train scheduled departure, diseased livestock and drovers travelling on a livestock train.

On the New South Wales system a distinction is made in the application of the prescribed rates and conditions of carriage between stock consigned for re-stocking and stock consigned to a declared fat stock market. Rebates are applied to stock consigned for restocking on owner's holding, to a country re-stocking sale or for agistment, subject to certain conditions relating to the size of the consignment. For instance, a minimum train load of 25 wagons moved from one origin point to a specific destination is allowed a 20 per cent rebate on the prescribed distance rate. Rebates are also provided for consignments of starving stock (up to 50 per cent on N.S.W. rail for the forward journey and up to 30 per cent on Victorian rail), and fodder for starving stock (up to 40 per cent on N.S.W. rail and 20 per cent on Victorian rail).[2]

The distance rates apply to consignments of livestock when carried in not less than one full 4-wheeled cattle wagon or sheep van. The rates do not include loading and unloading. The number of animals loaded into each van is limited to the extent that the gross mass in one wagon must not exceed its mass-carrying capacity.

Livestock consigned from a New South Wales station to Wodonga is charged the ordinary New South Wales livestock book rates to Wodonga, that is, the distance of 6 kilometres from Albury to Wodonga is added to the distance for rating purposes from the originating station to Albury.[3]

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(1) The freight charge on all livestock consigned from N.S.W. stations to Wodonga (Vic. border station) must be prepaid. Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, July 1973, condition No. 13, p. 42.

(2) Refer to the prescribed 'good customer' conditions, which also apply to intersystem rail movements of stock, PTC of of N.S.W., ibid, Condition 1(g), p. 49.

(3) All other prescribed conditions for livestock carriage in New South Wales also apply. PTC of N.S.W. ibid, pp. 251-265.

Livestock traffic forwarded to or from Victorian or New South Wales stations via Albury or Tocumwal is charged the sum of the local distance rates applying on each system. Livestock consigned at Albury to stations in Victoria and vice versa, is charged the ordinary Victorian distance rates for the consignment, plus the terminal charge; the terminal charge however is paid to New South Wales. The standard gauge service charge does not apply to this traffic. Livestock consigned at Wodonga to stations in New South Wales or vice versa is charged the ordinary N.S.W. distance rates, plus terminal charges. The terminal charge is paid to Victoria.

Intersystem livestock consignments for stations other than Wodonga conveyed via the standard gauge link through Albury (for example Holbrook to Newmarket) are not subject to the above terminal charges. Local distance rates on the two systems are applied to such consignments, with the invoice showing distance to the final destination computed to and from Albury instead of Wodonga.

An indication of the effect of these arrangements on the cost of moving livestock between New South Wales and Victorian sales and killing centres can be seen in Table F.6. The table shows inter-system livestock freight charges for consignments to selected selling/killing centres. The rates are shown on the basis of 4-wheeled sheep vans and per head for the designated distances.

Intersystem rail freight charges for consignments of livestock are competitive with intrasystem rail freight charges for comparable distances. For example, for consignments of sheep from Junee to Flemington in N.S.W., a distance of 487 kilometres, the rate per head is 73 cents. This compares with 72 cents per head for sheep transported from Junee to Newmarket (Vic.) a total distance of 463 kilometres.

Livestock consignments which require transfer between broad gauge and standard gauge at Wodonga or Tocumwal however, are subject to a number of additional prescribed conditions by the Victorian rail

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TABLE F.6 - INTRASYSTEM AND INTERSYSTEM LIVESTOCK FREIGHT CHARGES[a] FOR SELECTED ORIGIN/DESTINATION STATIONS IN NEW SOUTH WALES AND VICTORIA: 4-WHEELED SHEEP VANS USED FOR CONSIGNMENTS TO FAT STOCK SALES[b]

Origin/Destination Station	Distance carried on NSW system	Distance charge per van	Freight per head	Distance carried on Vic. system	Distance charge per van	Freight per head	Total charge per van	Total charge per head
	km	$	cents	km	$	cents	$	cents
Junee-Flemington	487	73.40	73	-	-	-	73.40	73
Junee-Newmarket(Vic)	160	39.10	39	303	36.70	33	75.80	72
Wagga-Flemington	507	74.90	75	-	-	-	74.90	75
Wagga-Newmarket	125	33.00	33	303	36.70	33	69.70	66
Tumbarumba-Flemington	636	85.40	85	-	-	-	85.40	85
Tumbarumba-Wodonga	260	52.40	52	-	-	-	52.40	52
Tumbarumba-Newmarket	260	52.40	52	303	36.70	-	89.10	85
Holbrook-Flemington	609	83.20	83	-	-	-	83.20	83
Holbrook-Newmarket	75	21.20	21	303	36.70	33	57.90	54
Albury-Flemington	632	85.30	85	-	-	-	85.30	83
Albury-Newmarket	-	-	-	303	36.70	33	36.70	33
Wodonga-Flemington	638	85.50	85	-	-	-	85.50	85
Wodonga-Newmarket	-	-	-	301	36.45	33	36.70	33
Urana-Flemington	634	85.40	85	-	-	-	85.40	85
Urana-Wagga	127	33.30	33	-	-	-	33.30	33
Urana-Newmarket via Albury	194	44.00	44	303	36.70	33	80.70	77
Lockhart-Flemington	575	80.40	80	-	-	-	80.40	80
Lockhart-Wagga	68	19.10	19	-	-	-	19.10	19
	68	15.60	16	-	-	-	15.60	16
Lockhart-Newmarket via Albury	135	34.90	35	303	36.70	33	71.60	68
Euroa-Flemington	632	85.30	85	156	21.95	20	107.25	105
Euroa-Newmarket	-	-	-	151	21.45	20	21.45	20

authorities. Stock owners or their agents are required to book vans and at the same time arrange for stock agents at Wodonga or Tocumwal to accept delivery of and care for the consignment while at the border[1].

Consignments of livestock on standard gauge for stations other than Wodonga, conveyed via Albury, which are not spelled at Wodonga, do not attract terminal charges. Where such consignments are provided with a bogie-axled livestock van the freight rate applied is based on the rate for two 4-wheeled vans.

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(1) Victorian Railways, Goods Rates Book, No. 28, Addenda, 1 July 1973, p. 21.

ANNEX G

NEW SOUTH WALES AND VICTORIAN RAILWAY BULK LOADING AND DECENTRALISATION CONCESSIONS

BULK LOADING

The New South Wales railways offer a bulk loading rail express service to certain stations within the State at 'economy' rates. The service applies to regular traffic such as sugar, packed groceries and hardware, packs of building materials and aids to primary producers, vehicles and parts and household appliances. The service does not apply to movements of traffic in the opposite direction. The consignee must take delivery of the goods at the destination railhead. The rates and timetable schedules for stations located in the Riverina area of New South Wales are set out in Table G.1.

The freight for general goods range from 2.06 cents for consignments to Albury (647 kilometres) up to 4.89 cents per tonne-kilometre for consignments forwarded to Young (421 kilometres).

In addition, there are a number of organisations operating private bulk loading services to certain New South Wales country towns by arrangement with the Rail Division of the Public Transport Commission of New South Wales. In the Riverina the service is operated into both Wagga Wagga and Griffith daily from Darling Harbour (N.S.W.) and Dynon(Vic). A special amendment to the New South Wales Railways Act was made to facilitate this type of rail/road service[1].

The Victorian Railways provide services at concessional freight rates to certain stations under the terms and conditions of the prescribed District Rates. The rates cover general merchandise

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(1) Section 24 (4)(b) Government Railways Act, N.S.W., 1912.

TABLE G.1 - NEW SOUTH WALES RAILWAYS ECONOMY RAIL EXPRESS (BULK LOADING) SERVICE TO THE RIVERINA AREA: GENERAL GOODS

Station	Loading day at Darling Harbour	Distance from Darling Harbour (km)	Express freight rate for general goods(a)	
			per tonne ($)	per tonne-kilometre (cents)
Albury	Daily	647	13.31	2.06
Coolamon	Tuesday	524	18.66	3.56
Culcairn	Tue, Fri.	598	13.29	2.22
Ganmain	Tuesday	539	18.66	3.46
Goolgowie	Friday	689	19.54	2.84
Griffith	Daily	641	18.66	2.91
Hay	Mon, Tue, Friday	757	20.10	2.66
Hillston	Tuesday	748	20.10	2.69
Junee	Daily	487	21.78	4.47
Leeton	Daily	614	18.66	3.04
Narrandera	Daily	584	18.66	3.20
Temora	Daily	490	21.78	4.44
Tumbarumba	Mon, Wed.	651	22.93	3.52
Tumut	Mon, Tue, Thursday	535	21.78	4.07
Willbriggie	Wednesday	646	18.97	2.94
Young	Daily	421	20.62	4.89

(a) Loading charges do not apply to goods conveyed under this arrangement.

Source: Public Transport Commission of New South Wales, Rail Division, Rail Express Freight Schedule of Rates: Darling Harbour to specified stations, operative from 1 July 1973.

(there are some notable exceptions e.g. wool and vehicles) with separate rates for furniture, beer, sugar, and cement. Table G.2 provides details of the broad gauge services to selected stations in the Riverina area for general merchandise.

For general goods, the district rates range from 2.7 cents per tonne kilometre to Balranald (438 kilometres from Melbourne) to 6.9 cents per tonne kilometre to Tocumwal (251 kilometres).

DECENTRALISED INDUSTRIES

In order to mitigate the costs of locating industry in country areas the Governments of both New South Wales and Victoria provide a number of prescribed rail freight concessions.

Concessional rail freight rates in New South Wales apply to flour and provender mills, canneries, milk processing works, textile, clothing and footwear factories located in country areas or away from raw material sources. Freight reductions for products from factories in the decentralised areas of the State range from 40 per cent to 60 per cent of book rates. Details of these types of concessions applied to activities in the Riverina area are given in Table G.3.

Special assistance provided to Victorian country industries includes freight rate reductions up to 66 per cent for raw materials and 68 per cent for processed products moved on rail. Details of the type of concessions applied to approved decentralised secondary industries located at stations bordering the Riverina area of New South Wales are set out in Table G.4.

Some industrial activities such as meat processing, flour milling, and stock fodder production are located on the N.S.W./Vic border in order to take advantage of the close proximity of supply of raw materials. Intrastate rail freight concessions are available to these industries by the two rail systems serving the area.

TABLE G.2 - VICTORIAN RAILWAYS DISTRICT RATES FOR TRAFFIC TO RIVERINA AREA OF N.S.W.[a]

Station	Loading day at Dynon	Distance from Dynon (km)	District rates for general merchandise[b] per tonne ($)	per tonne-kilometre (cents)
Albury	Daily	309	19.90	6.4
Wodonga	Daily	301	19.73	6.6
Wahgunyah	Mon, Tue, Thur, Fri.	280	18.33	6.5
Oaklands	Thursday	321	20.42	6.4
Wongamong	Thursday	313	20.25	6.5
Sanger	Thursday	303	19.73	6.5
Rennie	Thursday	291	19.19	6.6
Warragoon	Thursday	282	18.68	6.6
Sloane	Thursday	272	18.33	6.7
Cobram	Tue, Wed, Friday	250	17.13	6.9
Tocumwal	Daily	251	17.30	6.9
Moira	Mon, Wed	258	17.62	6.8
Mathoura	Mon, Wed, Friday	272	9.84	3.6
Deniliquin	Mon, Wed, Friday	306	9.34	3.2
Balranald	Mon, Thurs.	438	11.81	2.7
Caldwell	Monday	297	11.81	3.9
Moulamein	Mon, Thurs.	372	11.81	3.2
Wakool	Mon, Thurs.	318	11.81	3.7

(a) These district rates only apply to 'good customers' i.e. those who 'use the railways solely for the transport of goods where in the opinion of the Board railway facilities might reasonably be used'. Victorian Railways, Goods Rates Book, July 1973, condition No. 1, p. 136.

(b) These rates include loading and unloading charges.

Source: Victorian Railways, Goods Rates Book, No. 28, Approved Decentralised Secondary Industries effective 1 July, 1973, for District 2.

TABLE G.3 - NEW SOUTH WALES RAIL SYSTEM LOCAL AND SPECIAL RATES APPLYING TO THE RIVERINA AREA

($ per tonne)

Commodity	Destination	From Darling Harbour		
		Book rates	Concessional rates	Saving
Airstrip steel for silos	Henty	22.63	16.85	6.75
Boxes and cartons	Griffith	23.47	17.59	5.88
Cannery products	Leeton	28.57	10.64	17.93
Cartons, meat	Wagga	21.78	9.80	11.98
Casks	Griffith	23.47	17.59	5.88
Corn flour	Wagga	26.99	11.11	15.88
Materials for grain silos	Berrigan	24.58	16.66	7.92
Pesticides for grasshoppers	Hillston	44.77	(Debit to Treasury)	44.77
Rice	Leeton	23.14	19.10	4.04
Rice starch	Leeton	28.57	16.00	12.57
Sugar	Leeton	23.14	17.36	5.78
Tin lids and bottoms	Leeton	17.36	16.49	0.87

Source: Public Transport Commission of N.S.W., Rail Division, Merchandise and Livestock Rates, vol. 1, 1 July 1973, pp. 217-230.

TABLE G.4 - VICTORIAN RAILWAYS BOOK RATES APPLIED TO APPROVED DECENTRALISED SECONDARY INDUSTRIES LOCATED ON THE N.S.W. BORDER

($ per tonne)

Commodity	Destination	From Dynon		
		Book rate	Decentralised industries rate	Saving
Footwear	Cobram	28.70	26.05	2.65
Milk products	Cobram	11.55	10.50	1.05
Cement	Cobram	11.10	9.20	2.00
Steel castings	Wodonga	18.80	17.12	1.68
Meat	Wodonga	21.00	(a)	-
Office stationery	Wodonga	33.80	30.65	3.15
Stockfood	Wodonga	8.30	7.55	0.75
Concrete pipes	Wodonga	12.95	11.75	1.20
Cement	Wodonga	12.95	7.63	5.32
Sugar (aerated waters)	Wodonga	21.00	9.76	11.24
Pet food	Wodonga	33.80	(a)	-
Sugar (aerated waters)	Yarrawonga	18.50	16.81	1.69
Footwear	Yarrawonga	29.40	26.85	2.55
Knitwear	Yarrawonga	20.90	19.05	1.85
Concrete products	Yarrawonga	11.40	10.45	0.95

(a) Special contract rates apply.

Source: Victorian Railways, Goods Rates Book, No. 28, Approved Decentralised Secondary Industries Rates, 29 October, 1973.

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