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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL DEVELOPMENT ASSOCIATION

APPRAISAL OF

A SECOND RAILWAY PROJECT

NEW ZEALAND

February 10, 1971

Transportation Projects Department

Currency Equivalents

National Currency is the New Zealand Dollar (NZ$)
divided into 100 cents

US$ 1.00	=	NZ$ 0.893
US$ 1.12	=	NZ$ 1.00

Fiscal Year

April 1 - March 31

Abbreviations

EEC - European Economic Community
NRB - National Roads Board
NZR - New Zealand Railways

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This report has been prepared by Messrs. Bronfman and Mactaggart (economists), Karman (engineer), McCunniff and Nanjundiah (financial analysts) and has been edited by Miss V. Foster.

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SUMMARY

i. New Zealand Railways (NZR) is operated as a Government department, headed by the Minister of Railways who is also Minister of Transport. The Department operates railway systems on the two main islands totalling about 3,000 route miles, a large fleet of road vehicles and a road/rail ferry service connecting the islands. Management is capable, with adequate autonomy, and the staff is competent. Handling of traffic, operations and other technical matters is good.

ii. NZR has always been protected by law from unrestrained competition by commercial trucking. While Government policy during the past eight years has gradually liberalized restrictions, enough protection still remains to suggest that the transport system may not be satisfying overall needs at minimum cost. The Railways has become a competitive force in its own right and does not need to be sheltered in order to survive and operate efficiently. Indeed, there are trends apparent, notably containerization, which will enhance the comparative advantage of rail. As part of the proposed project, a study will be undertaken by the Ministry of Transport with the assistance of independent consultants. The purpose of the study will be to reassess the role of transport regulations and to develop the principles of a national transport policy. The foreign exchange costs of the study have been included in the proposed loan.

iii. The proposed project, costing an estimated US$88 million equivalent, consists of the first three years of the New Zealand Railways' US$160 million, 1970/71-1975/76 Investment Plan and the transport policy study. The proposed loan of US$16 million to New Zealand would finance about 33% of the foreign exchange costs of the project. No retroactive financing is involved. This would be the second World Bank loan to the Government for railway purposes: US$42 million was provided in 1965 (Loan 438-NZ) to help finance part of the Railways' 1965/66-1969/70 Investment Plan.

iv. The main items in the proposed project include motive power and rolling stock (45%), improvements to permanent way (12%), two additional ferries (15%), and workshop and track maintenance equipment (7%). The proposed loan would finance specific goods procured through international competitive bidding: 1,100 freight cars and 100 ballast cars plus components for the local manufacture of 610 freight cars, a small amount of workshop, track maintenance and signalling equipment and foreign exchange costs for consulting services required for a study of transport policy. The total foreign exchange component of the project amounts to US$48 million equivalent. This is to be financed by the proposed loan of US$16 million, specific bilateral agreements and the Government's own foreign exchange resources. US$15.5 million of the proposed Bank loan would be made available to NZR while the US$.5 million for the transport policy study would be used by the New Zealand Government, which will be responsible for its execution.

v. The project is economically sound. The proposed investments are not designed to change the relative size of NZR in the transport sector but rather to equip it to meet demands which are certain to arise and can be justified on grounds of comparative advantage. These demands have an insignificant probability of being altered by the findings of a transport sector study. The weighted average economic rate of return on the investments in the project is about 18%.

vi. Under Loan 438-NZ, it was agreed that measures would be taken to progressively improve the Railways' financial position and to achieve an operating ratio of 85% by 1970/71. The recession in 1967/68 and increases in wages and prices, however, adversely affected NZR. The increases in costs were partly absorbed by the Railways by modernization and improved operations -- it carried 19% more freight net ton-miles in 1970 than in 1965, with 12.5% less staff. Tariff increases were made in 1967 and December 1968, but the timing and the quantum thereof were affected by competitive and other considerations, with the result that the targets were not reached. However, the Railways met all its financial obligations, including debt service. Substantial additional wage increases are expected during 1971. A 12% freight tariff increase on a selective basis and a 10% increase in passenger fares will become effective on February 15, 1971, at the end of a price freeze imposed by the Government. A further tariff adjustment would be needed later in 1971 to maintain satisfactory finances and generate adequate funds for the Railways' needs. Agreement was reached during negotiations that the Government would cause the Railways to take all necessary measures (including but not limited to adjustment of the tariff structures and rates) as shall be required to meet, out of internally generated resources, debt service obligations and needs of working capital and to finance a reasonable proportion of its capital expenditures, including the replacement of assets. It was agreed, keeping in view the needs of the Railways, that the Railways should break even in fiscal 1972 and earn rates of return of 3.5% in fiscal 1973, 4% in fiscal 1974 and 1975 and 5% in subsequent fiscal years on the net fixed assets in operation.

vii. The proposed project provides a suitable basis for a Bank loan to the New Zealand Government of US$16 million equivalent for a term of 15 years, including a grace period of about 2-1/2 years; US$15.5 million would be made available to NZR on identical terms.

NEW ZEALAND

APPRAISAL OF A SECOND RAILWAY PROJECT

1. INTRODUCTION

1.01 The Government of New Zealand and the New Zealand Railways (NZR) have asked the Bank for a loan of US$16 million equivalent to finance part of the foreign exchange cost of NZR's investments during the first three years of its six-year plan 1970/71-1975/76 and the entire foreign exchange costs of a study of transport policy. NZR's investments during these three years are estimated at NZ$ 78 million (US$88 million equivalent) with a foreign exchange component of about US$48 million equivalent. The study of transport policy is estimated to cost about US$.7 million of which US$.5 million represents the foreign exchange cost.

1.02 The Bank helped finance a previous railway project in New Zealand under Loan 438-NZ for US$42 million equivalent in 1965. Performance on this project has generally been satisfactory. All procurements financed under this first loan have been received and the locomotives, freight wagons and the road/rail ferry are in service and performing well.

1.03 As in the previous Bank loan for NZR, the proposed loan would be made to the Government. The US$15.5 million for railway equipment would be made available to NZR to finance specific imported goods and US$.5 million would remain with the Government for the transportation study.

1.04 This appraisal is based on information supplied by the Government of New Zealand and the New Zealand Railways and on the findings of a Bank mission in June 1970, comprising Messrs. Bronfman (economist), Karman (engineer), McCunniff and Nanjundiah (financial analysts). This report was prepared by them and Mr. Mactaggart (economist) and has been edited by Miss V. Foster.

2. BACKGROUND

A. Economic Setting

2.01 New Zealand comprises two main islands about 1,200 miles southeast of Australia. It covers an area of 104,000 square miles, slightly larger than that of the United Kingdom. Its population is of very low density, totalling 2.8 million people, and is growing at 1.5% per annum.

2.02 New Zealand's Gross National Product (GNP) has grown at an average of 3.3% per annum in real terms since fiscal year 1965. In FY 1970 it reached NZ$ 4.8 billion or approximately US$1,890 on a per capita equivalent basis. This was achieved with limited physical resources by reliance on exports from highly developed, efficient agricultural industries buttressed by a preferred position in the UK market. Dependence on limited external

markets and lack of diversification leave the New Zealand trade balance vulnerable. A major economic uncertainty stems from the proposed British entry into the European Economic Community (EEC). While the percentage of total exports going to the UK declined from 58 in 1959 to 38 in 1970, it is likely that the economy will suffer if the entry takes place without safeguards for New Zealand produce. Several promising developments could help to offset an unfavorable outcome: (a) broadening of meat exports into other overseas markets, especially Japan and the United States; (b) export of new goods, particularly forest products; and (c) discovery of potentially significant deposits of natural gas, iron ore and other minerals.

B. The Transport Sector

2.03 New Zealand's transport system consists of an extensive road and rail network, a growing system of commercial aviation and a small but modern capacity for coastal shipping. Terrain is rugged, with mountain ranges bisecting the country in a north-south direction. As only 8% of New Zealand is plain, extensive bridging and tunneling have been necessary. The North and South Islands are separated by Cook Strait, a narrow, turbulent sea passage which creates the need for effective but costly transshipment. Heavy reliance on the export of agricultural products creates marked seasonal peaks and imbalances in domestic traffic. Much of the country's production calls for specialized haulage equipment, which inevitably leads to substantial amounts of one-way loading. Freight and passenger statistics by mode of transport for 1958-1969 are shown in Tables 1 and 2.

(i) Road Transport

2.04 The total number of vehicles in 1969 was about 1.1 million; 75% were automobiles, giving New Zealand one of the highest ratios of vehicles per capita in the world. During the same year there were 52,000 miles of engineered interurban roads supported by an annual expenditure of about NZ$ 93 million for maintenance and new construction. Roads are divided into three classes with different axle load restrictions related to design characteristics. A large proportion of total mileage is 20 to 30 years old and deficient in pavement strength, unduly constraining efficient usage of modern heavy transport equipment. In terms of output measured by net ton-miles, road transport is the dominant mode, followed by the railways. The scope of road transport is limited by axle load restrictions and by legal restrictions on haulage in competition with rail services.

2.05 Trucking performs two functions. It hauls specific commodities exempt from regulation, such as livestock, meat and fresh produce. With commodities protected by regulation, such as most industrial goods, it provides short-haul services under a 40-mile limit. Within the "for hire" segment, there has been a trend toward creation of large trucking organizations. For various reasons, including cost and convenience, private trucking "on own account", while subject to the same regulations, has increased rapidly.

(ii) Rail Transport

2.06 The railway is the prime carrier of freight over longer distances, including traffic between the islands. Some specialization has developed in freight, particularly with frozen meat and forest products. Although the relative status of rail transport has declined in the postwar years vis-a-vis roads, in absolute terms railway freight services have expanded and improved. From the peak route mileage of 3,577 attained in 1952, the network has declined by 514 miles or 14% to 3,063 miles as of March 1970 as a result of closing uneconomic branch lines. A vigorous sales drive, better services to the public, improvement of rolling stock, an almost complete change to dieselization and better traffic control methods have contributed significantly to the revival of rail transport as an effective competitor to commercial and "own account" trucking and coastal shipping. A greater integration of the rail networks on the North and South Islands by way of two railway-owned roll-on/roll-off vessels, which transport both railway wagons and road vehicles, has added to the success of railway operations in recent years.

(iii) Aviation

2.07 The major air transport service is undertaken by two Government-owned corporations, Air New Zealand and National Airways Corporation, with a small private firm under contract to NZR providing connecting air freight services between the main islands.

(iv) Ports, Overseas and Coastal Shipping Services and Containerization

2.08 New Zealand has many ports, 17 of which handle overseas trade. Coastal shipping has improved considerably during the past ten years; the trend is toward fewer vessels of larger capacity, faster turn-around time and concentration of traffic at fewer ports. New Zealand is about to introduce the unit load-containerization concept into her overseas trade. Container vessels will commence runs to and from the USA in 1971 and the UK and Western Europe in 1973. The need for a fast turn-around of container ships will demand the construction of specialized wharves, the development of adjacent assembly areas and the installation of container cranes and other peripheral equipment. This will likely involve the concentration of container ship operations at two (Wellington, Auckland) or possibly three ports. Considerable changes will also be made in the rolling stock and handling techniques of both the railway and trucking industries.

C. Transport Coordination

2.09 For many years NZR has been protected from competition by road transport, effected through strict regulation of the commodities carried and routes served by trucking firms. The basic regulatory system was established by the Transport Licensing Act of 1931 when slackened demand had created substantial excess capacity in the transport sector and chaotic competition conditions were a danger. The threat to the Railways was especially great

due to the "differential" structure of its rates which did not reflect operating costs and was not flexible enough to meet the challenges of the trucking industry that was beginning to develop. The system of protection as amended by the 1962 Transportation Act was fairly complete. In general, trucks were not permitted to carry traffic between points serviced by rail more than 40 miles apart regardless of the comparative costs of quality of service. Exemptions from mileage limits were granted for livestock, fresh meat and some agricultural produce.

2.10 The trend in recent years has been toward relaxing regulatory constraints. Mileage limits on the carriage of most perishable commodities have been extended or lifted entirely. This pattern has been impeded, however, by the underinvested and, therefore, vulnerable position of the Railways until the advent of a modernization program, aided by Bank financing, in the late 1960's. In addition, occasional balance of payments difficulties have constrained the Government from allowing trucking firms to increase their capacity from foreign suppliers.

2.11 The current regulatory framework, little more than a patched version of the original, does not lead to a least cost solution. While some improvements have been made by the 1968 Ministry of Transport Act (see Annex 1 for a current organization chart of agencies pertaining to transport), this progress should be supported by basic research on inter-relationships within the transport sector. The appropriateness of existing regulation should be reviewed in the light of prevailing economic and social conditions and trends, spelling out the objectives and the appropriate pricing and regulatory criteria for developing an efficient and economical national transport policy. A proposal made by the Bank for an in-depth study was welcomed by the Government. The study will be undertaken by the Ministry of Transport as part of a program of long-term research in transport with the help of consultants. The consultants will submit their own independent recommendations; their selection and terms of reference will be mutually agreed between the Government and the Bank. The findings and recommendations of the study will be submitted by the Government to the Bank for comments promptly after its completion. The study forms part of the project and the estimated foreign exchange costs have been provided in the proposed Bank loan.

3. THE RAILWAY SYSTEM

A. Organization, Management and Staff

3.01 New Zealand Railways is operated as a Government Department, headed by the Minister of Railways who is also the Minister of Transport; a General Manager is responsible for Railways management (see Organization Chart, Annex 2). The Department operates the railway system and a large fleet of road vehicles, and also provides rail and road ferry service. The Railways has adequate autonomy.

3.02 The Railways' management is capable and the handling of traffic, operations, and technical matters is good. The staff is competent. Legislation makes promotion other than on a seniority basis very difficult. Labor relations are good.

3.03 The average number of employees has decreased from 24,805 in 1963 to 21,113 in 1970. There is no general surplus of staff; actually, there is a shortage of skilled and semi-skilled men because of a loss of labor to private industry. NZR is taking remedial measures by training apprentices and by providing social services, such as housing.

B. Railway Property

(i) Railway Lines

3.04 There are two separate railway systems of 1,625 route-miles in the North Island and 1,438 route-miles in the South Island, a total of 3,063 route-miles linked by roll-on/roll-off rail ferry. The gauge is 3 ft. 6 in. compared with 4 ft. 8-1/2 in. in North America and most European countries. The entire network is single track except for 161 miles of double track. Mountainous terrain has required extensive civil engineering. The value of the fixed assets is, therefore, comparatively higher than on most railways. In recent years 33 uneconomic branch lines have been closed for a total length of 514 miles (Table 3). Closing of four more lines is currently being investigated.

3.05 The only new line construction in progress is the Kaimai deviation. It includes a 5.5-mile tunnel and will shorten the distance from Frankton to Tauranga by about 40 miles; it will also allow the closing of a 15-mile section with steep gradients, narrow curves and tunnels. The complete Kaimai tunnel and deviation is expected to be in service by March 1973.

3.06 Another line construction is under consideration, connecting Rotorua with Paengaroa. This new line would give the timber-producing Rotorua area a direct 40-mile rail connection to the log export wharves at Mt. Maunganui, in place of a tortuous 110-mile rail route over the Mamaku ranges. The Mamaku line could presumably be closed when the Paengaroa line is opened, possibly in December 1976.

3.07 Much of the track is laid with old, light rail, but since 1950 the main lines have been relaid with 91 lbs per yard rail. About 70 miles of track are completely renewed each year (Table 4).

3.08 A total of 68 route-miles is electrified, mostly for commuter services in the Christchurch and Wellington suburban areas. Further electrification is not contemplated. Signalling is generally adequate and well maintained. According to the density of traffic, Centralized Traffic Control (CTC), automatic signalling, token block instruments or "open section" procedure is used.

(ii) Motive Power and Rolling Stock

3.09 NZR has 299 main line and 270 shunting diesel locomotives and 20 electric locomotives; the last 18 steam locomotives are to be retired in 1970. Passenger stock decreased from 854 cars in 1965 to 722 in 1970. Details of freight wagon stock are given in Table 5. Freight wagons of over 40 years of service represented about 20% of the fleet in 1965 and 10% in 1970 and would almost disappear in 1975 under the present investment plan. A detailed costing study in progress may enable the economic life of standard rolling stock to be brought down to 35 years. Motive power and rolling stock are well maintained. There is a lack of adequate wagons for paper and steel products as well as a lack of flat wagons for container traffic, expected to grow significantly.

(iii) Other Property

3.10 Cook Strait Rail Ferry: Two ferries operate between Wellington and Picton. The Aramoana (4,160 tons) and the Aranui (4,542 tons, financed under Loan 438-NZ) are each designed to carry 34 railway wagons or about 85 automobiles on the vehicle deck and a further 30 automobiles in an upper-deck garage. There is all-weather accommodation in each vessel for about 500 passengers. A two-ship timetable of 21 round trips per week was introduced with the advent of the Aranui in 1966.

3.11 Road Services: A total of 1,154 vehicles are operated by the Railways over a 5,925-mile network, both for goods and for passenger transport. Ancillary services are also operated (a) to convey ordinary rail-consigned small lots of goods between stations; (b) to carry through-booked air freight between railway terminals and aerodromes; (c) to perform transship work at goods terminals; and (d) to operate licensed door-to-door road services. In 1969/70, a total of 24.18 million miles were run by the road services, of which 20.82 million were for passengers, .95 million for goods and 2.41 million for the ancillary goods service.

C. Traffic and Operations

(i) Freight Traffic 1965/66 to 1969/70

3.12 Commercial freight traffic rose from about 1.5 billion ton-miles in 1965/66 to about 1.7 billion ton-miles in 1969/70, a gross increase of 14%. Considerable fluctuations occurred on a year-to-year basis, as shown in Table 6, which also shows trends in various commodity groups and compares actual volumes carried with forecasts prepared by the Railways in 1965. The cumulative variance of actual from forecast over the five-year period was minor - a shortfall of some 2.4%. Variances are explained in detail in Annex 3. Table 6 shows trends for various commodity groups.

3.13 Important developments have materialized to improve operating efficiency. Some, such as dieselization, upgrading of rolling stock and acquisition of the Cook Strait ferries, were financed in large part by the first railway loan. Others have resulted from better management of railway resources. Increased reliance on bulk tonnage operations has enhanced the

comparative advantage of rail transport and improved customer service by promoting better wagon loading and cutting the expenses of local transport door to door. Encouragement of some unit train operations, particularly for timber products, has increased load factors. Further, the average haul has increased 21% from 119 miles in 1964/65 to 144 miles in 1969/70. This reflects the closing of uneconomic lines, increased truck competition, and more frequent rail ferry services. The average density of traffic has increased 21% over a four-year period but large imbalances still exist, as shown in the following tabulation:

Freight Ton-Miles per Route-Mile

Year	Total New Zealand	North Island	South Island
1965/66	453,000	645,000	259,000
1969/70	547,000	745,000	324,000

(ii) Freight Traffic Forecast 1970/71-1975/76

3.14 NZR estimates that commercial freight traffic will increase 37% between 1970/71 and 1975/76, from 1.7 billion net ton-miles to 2.3 billion net ton-miles (Table 7), an average annual increase of 6%. This primary forecast is based upon commodity-by-commodity projections assuming (a) opening of the Kaimai deviation in 1973; (b) introduction of two more Cook Strait ferries; (c) creation of new plant capacity for steel, pulp and meat processing; (d) developments in container traffic; and (e) no change in transport regulatory rules. Traffic in several commodities is expected to increase. Containerization will influence the carriage of meat, wool and dairy products. The Railways believes that net ton-miles (not tons) of these commodities will rise because of the transfer from conventional shipping to containers, reducing the number of ports handling traffic and changing flows to meet shipping demands. By 1975/76 an additional 135 million net-ton miles should be generated by containerization. Traffic in "other commodities" is expected to rise by 45%, reflecting growth of inter-island bulk tonnage operations with the addition of two new ferries. Anticipated trends in all major commodity groups can be seen in Table 7. The assumptions underlying the forecast are presented in Annex 4.

3.15 NZR also subjected the primary traffic forecast to sensitivity analysis assuming changes in regulations regarding commercial trucking. This analysis is considered reasonable. First, it was assumed that liberalization of policy would be gradual and would follow one of two paths: an extension of current mileage limits on trucking activity (Hypothesis A) or the removal of restrictions on particular commodities (Hypothesis B). Possible dates for implementation of the regulations were further assumed. An analysis was made of the likely effect of the measures on some 45 individual commodities over six mileage intervals. The results indicated that growth in total net ton-miles over the period would be limited to 20% under Hypothesis A and 26% under Hypothesis B compared to 37% from the primary forecast. The theoretical effects on NZR's traffic and revenue are shown in Table 8. A final test

estimated the impact of a complete removal of all legal restrictions on trucking. While it is considered unrealistic that such a shift would materialize immediately, it provides a useful exercise for examining the role of the Railways under extremely adverse conditions. A rigorous commodity-by-commodity analysis indicated that freight traffic could conceivably fall 15% below the primary forecast in 1971/72 in the unlikely case of NZR doing nothing to alter its marketing strategy to offset the policy (Annex 4). The actual reduction in 1971/72 would almost certainly be less than this "most pessimistic" estimate. In the longer term with increased investment in road transport, railway traffic may be more fundamentally affected, but it nevertheless can be concluded that the Railways would certainly retain an important role in the transport system.

(iii) Passenger Traffic 1965/66-1969/70 and Forecast 1970/71-1975/76

3.16 The Railways provides both rail and bus services on an intercity and suburban (commuting) basis; trends in passenger carriage are outlined in Table 9. Total passengers fell some 12% from 23.8 million to 21.0 million during the five-year period. The major changes have been the introduction of an efficient daylight railcar service between Wellington and Auckland in 1968 and the cancellation of some uneconomic routes. Total patronage of NZR buses remained constant at approximately 22 million passengers per year. Railway management forecasts a continuing decline in rail passenger traffic but at a lower rate than in the past and an absolute fall in bus traffic during the next five years (Table 9).

(iv) Operations

3.17 NZR is well operated. Operating efficiency in terms of net ton-miles per train-mile and of traffic units per employee is satisfactory and shows a steady improvement (Table 10) with only one drop in 1967/68 due to an unfavorable economic situation and a strike in May 1967.

3.18 Passenger traffic is concentrated in suburban areas and is operated with diesel and electric railcars. Less than 10% of the passengers travel long distances. Many passenger trains have been replaced by road services. Between Wellington and Auckland an express railcar provides three daylight trips per week each way and is operating at 70% of capacity, which is satisfactory. Because of the popularity and profitability of this service, three new express railcars have been ordered from Japan.

3.19 Average loading of freight cars is low at 53% of capacity. Several major commodities have poor load factors, e.g., frozen meat can never be loaded up to more than 40% of the weight capacity of the wagons because of the shape of the carcasses. The average length of haul is consistently increasing and was 144 miles in 1969/70 compared with 119 miles in 1964/65.

3.20 The turn-around time of the freight cars is good, between five and six days. However, this figure is arrived at by considering a 260-day year. Freight traffic is almost non-existent between Saturday noon and Monday noon.

Factories close and shipside activity halts during the weekend. This situation is traditional in New Zealand, as in many other countries, and there is little hope of improving utilization by increasing the number of working days in the year.

(v) Tariffs and Costs

3.21 The structure of freight tariffs is satisfactory. In addition to "class" rates which vary with distance, the Railways makes extensive use of "special" rates and contract rates. Special rates are usually applied to specific commodities between specified points and are available to all customers. Contract rates are designed to meet individual customer requirements; e.g., increasingly important is the "bulk tonnage" contract whereby the Railways leases flat cars and agrees to provide unlimited (limited if inter-island traffic) trips between two railway terminals for a fixed annual rate, with the shipper performing handling and documentation and accepting liability for loss and damage. This has resulted in an increase in freight forwarding by private enterprises, especially trucking firms providing door-to-door service. NZR makes frequent use of costing in the establishment and modification of freight rates, particularly special and contract rates. Costing procedures are satisfactory.

3.22 Suburban passenger fares, on the other hand, do not cover operating costs. Total annual losses amount to about NZ$ 2.1 million for rail services and NZ$ 0.5 million for road services, which NZR covers by cross subsidization from freight revenues. This practice will become progressively less feasible as competition in the transport sector increases. Consequently, a special committee recommended in February 1970 that financial responsibility for urban rail and bus services gradually be assumed by urban transport authorities, the Railways to continue to provide services where urban transit is deemed socially desirable but, at the end of an eight-year period, to be responsible for covering only 20% of the deficit generated. This proposal shows no signs of having been reached on the basis of sound economic criteria. The appropriate pricing policy for suburban rail services will be examined as part of the agreed transport policy study.

4. THE PLAN AND THE PROJECT

A. The Six-Year Investment Plan

4.01 For major investments, the Railways has to obtain the approval of the Government. The proposed six-year Investment Plan has been approved.

4.02 As shown in Table 11 and summarized on the following page, the Plan provides for capital investment of NZ$ 142.5 million (US$159.6 million equivalent) with a foreign exchange component of US$78.6 million. The Investment Plan is based on careful studies by the Railways of future traffic and capital requirements. Emphasis is given to modernization of rolling stock, especially for particular commodities and for container traffic. Other main items are diesel locomotives and two additional Cook Strait ferries.

1970/71-1975/76 Investment Plan (Summary)

	NZ$ million			US$ million		
	Local	Foreign	Total	Local	Foreign	Total
I. Rolling Stock and Ferries						
1. Freight Cars	19.0	22.1	41.1	21.3	24.8	46.1
2. Passenger Cars	0.6	7.5	8.1	0.6	8.3	8.9
3. Main Line Locomotives	0.6	15.0	15.6	0.7	16.9	17.6
4. Shunting Locomotives	0.2	0.2	0.4	0.2	0.2	0.4
5. Cook Strait Ferries	0.2	14.2	14.4	0.3	15.9	16.2
Sub-Total I	20.6	59.0	79.6	23.1	66.1	89.2
II. Facilities and Equipment						
1. Transtainer Cranes	1.9	1.0	2.9	2.1	1.1	3.2
2. Workshop Equipment	6.4	3.7	10.1	7.1	4.2	11.3
3. Permanent Way	19.7	1.4	21.1	22.1	1.6	23.7
4. Stations and Yards	4.5	0.2	4.7	5.1	0.2	5.3
5. Workshop Buildings	2.0	-	2.0	2.2	-	2.2
6. Tunnel Clearance	1.9	0.1	2.0	2.1	0.1	2.2
7. Signalling	3.4	0.7	4.1	3.8	0.8	4.6
8. Road Vehicles	7.4	-	7.4	8.3	-	8.3
Sub-Total II	47.2	7.1	54.3	52.8	8.0	60.8
III. Contingencies	4.5	4.1	8.6	5.1	4.5	9.6
Total	72.3	70.2	142.5	81.0	78.6	159.6

B. The Project and the Proposed Loan

4.03 The Project consists of the first three years of NZR's six-year Investment Plan 1970/71-1975/76 and a study of transportation policy (Tables 12 and 13 and Annexes 5 and 6). The total cost of railway investments during these three years is estimated at NZ$ 78.4 million (US$87.8 million equivalent) with a foreign exchange component of about US$47.8 million, of which US$15.5 million would be provided by the proposed US$16 million loan, which also includes US$.5 million for the foreign exchange costs of the transport policy study. No retroactive financing is involved. A breakdown of the Project and of the proposed loan follows.

	Foreign Cost	Total Cost	% of Total Cost	Loan Items	% of Loan
I. Rolling Stock and Ferry	(US$ million)			(US$ million)	
1. Imported Freight Cars	10.01	11.31	12.8	10.01	62.6
2. Imported Ballast Cars	1.25	1.68	1.9	1.25	7.8
3. NZ built Freight Cars and Parts	3.19	9.82	11.1	2.60	16.3
4. Miscellaneous Vehicle Parts	3.57	5.87	6.6	-	-
5. Passenger Cars	4.90	5.32	6.0	-	-
6. Main Line Locomotives	4.68	5.11	5.8	-	-
7. Shunting Locomotives	0.23	0.43	0.5	-	-
8. Cook Strait Ferries	12.55	12.78	14.4	-	-
Sub-Total I	40.38	52.32	59.1	13.86	86.7
II. Facilities and Equipment					
1. Transtainer Cranes	1.12	3.23	3.7	-	-
2. Workshop Equipment	2.01	6.23	7.0	0.53	3.3
3. Permanent Way	0.92	10.44	11.8	-	-
4. Stations and Yards	0.18	3.08	3.5	-	-
5. Workshop Buildings	-	1.29	1.5	-	-
6. Tunnel Clearance	-	0.22	0.2	-	-
7. Signalling	0.29	1.56	1.8	0.08	0.5
8. Road Vehicles	-	3.92	4.4	-	-
Sub-Total II	4.52	29.97	33.9	0.61	3.8
Contingencies	2.91	5.51	6.2	1.03	6.4
Total NZR	47.81	87.80	99.2	15.50	96.9
Consulting Services	0.50	0.70	0.8	0.50	3.1
Total Project	48.31	88.50	100.0	16.00	100.0

4.04 Investments included in the Project but not selected for the proposed loan will either be financed by other sources or are unsuitable for international competitive bidding. Annex 5 gives a complete description of the Project items.

4.05 As shown in detail in Table 13, about 86% of the US$16 million proposed loan would finance the procurement of 1,100 freight cars and 100 ballast cars to be imported in knocked down condition and of parts for the manufacture of 610 freight cars in the railway workshops. With the balance of the loan, two wheel lathes and one ballast cleaning machine would be procured and CTC equipment provided for two lines totalling 48 miles. Provision has also been made for financing the foreign cost of the transport sector study. A complete description of the Bank-financed items is given in Annex 6.

C. Execution, Procurement and Disbursement

4.06 New Zealand Railways is able to carry out the Project without technical assistance. All items to be financed by the proposed loan would be acquired through international competitive bidding. It is considered that no local firm would be in a position to bid for any of the Bank-financed items.

4.07 The New Zealand Government is anxious to save foreign exchange and to make full use of existing NZR workshop capacity by manufacturing part of the freight car requirements in New Zealand. Among other equipment, the last Bank loan to New Zealand Railways helped finance a hydraulic press, mainly intended for the local manufacture of freight car components. A study was made by NZR to compare the cost of flat cars built in the Railways workshops and using about one-third of imported components with the cost of the same cars imported in knocked down condition. The study showed that locally manufactured cars would be, at the most, 5% more expensive than imported cars. It is therefore suggested to agree to NZR's request and include in the proposed loan the financing of imported parts for local manufacture of 610 flat cars, which is consistent with full utilization of existing workshop facilities.

4.08 The cost estimates are based on recent quotations obtained for similar goods under international competitive bidding. If any savings in foreign expenditure result from favorable prices in competitive bidding, the corresponding savings in the loan account would be used to finance the foreign exchange cost of additional but similar Project items subject to review and agreement with the Bank.

4.09 For all items to be covered by the proposed Bank loan, price contingencies have been added and amount to an average of 7% of the total (Table 13), which seems reasonable in relation to world market trends and the probable dates of commitment and delivery of the goods in question. Contingencies have been included on the other freight cars and on the road vehicles according to New Zealand practice, the actual number of vehicles purchased being related to a fixed amount. Contingencies for items not financed by the Bank are shown in Tables 11 and 12.

4.10 The estimated quarterly rate of disbursement (Table 14) is based on the assumption that the Bank loan would become effective by April 1971.

5. ECONOMIC EVALUATION

A. The Plan and the Project

5.01 While the survival of the Railways is not doubted, several uncertainties regarding future transport policy and the economic impact of the UK-EEC negotiations suggest a prudent investment policy for NZR. This is reflected in the modest size of the Railways' investment program.

5.02 The Plan and the Project involve a number of investments which, when taken together, are designed to meet three common objectives. First, NZR intends to continue its modernization program by upgrading rolling stock, road vehicles, workshop and track maintenance equipment, and permanent way. Second, it wishes to prepare for containerization in external trade during the early 1970's by purchasing bogie flatcars, installing transtainer cranes in Auckland and Wellington, and increasing ferry capacity. Finally, it proposes, by acquiring specialized rolling stock, to strengthen its position in individual markets such as steel, timber, logs and paper where the comparative advantage of rail over other modes has been clearly established.

B. Evaluation of the Project

5.03 Major investments proposed in the Project are evaluated in the following paragraphs.

(i) Items Required for Containerization

5.04 The Project calls for the purchase of 670 bogie flatcars and three transtainer cranes totalling NZ$ 11.8 million to equip NZR to handle container traffic by 1972. The importance of containerization in buttressing the position of New Zealand exports by reducing shipping costs, most of which take the form of outflows of foreign exchange, is well understood and accepted by the Government. A major study, commissioned by the Minister of Transport, undertaken by the Metra Consulting Group, and reviewed and considered acceptable by the Bank, indicated that conversion of the majority of the UK and 50% of the European traffic to the lowest cost container system would yield annually savings in transport costs of NZ$ 23 million over conventional shipping and NZ$ 14 million over palletized shipping on an investment base of about NZ$ 80 million. When an increase in the cost of internal transportation due to the aggregation of traffic at the major container ports of Auckland and Wellington is built into the analysis, rates of return attributable directly to containerization and therefore to the equipment necessary for its application, including that contained in the Project, range from 14% to 23%. While the issues have not been studied separately, it is reasonable to assume that similar returns will accrue to future container trade with North America and Japan. It is interesting to note also the findings of the consultants regarding the least cost modal split for handling the movement of containers within New Zealand. On a district-by-district basis, using various factor load assumptions, they determined that allocating traffic to road or rail on the basis of the 40-mile restriction on road haulage would capture the relative economies of the two modes, i.e., that rail was cheaper than road transport in almost every case on hauls of over 40 miles.

(ii) Permanent Way

5.05 NZ$ 9.5 million is for improvements to permanent way consisting mainly of routine renewal of bridges and tracks over the three-year period. These expenditures are modest components of the total Project and very necessary to ensure the safe, efficient operation of the Railways. Benefits will accrue from increased utilization of equipment and from reduced track maintenance costs. The rate of return on these investments is estimated at 12%.

(iii) Other Freight Wagons for Specialized Traffic

5.06 The desire to exploit the comparative advantage of the rail mode in specialized markets is reflected in the provision of 600 four-wheeled cars and 200 bogie flats for pulp and paper traffic, 400 flat cars for steel traffic, and 40 cars for timber and bulk tonnage. The total cost of these 1,240 freight cars is NZ$ 10.6 million. Economic benefits are savings in transportation costs attached to decreased maintenance, improved turn-around time, and better utilization of capacity and are estimated at approximately NZ$ 1.5 million in the early years rising to NZ$ 2.2 million in the fifth year when the cars will be fully utilized. The rate of return is estimated at 18%.

(iv) Cook Strait Ferries

5.07 Outlays on two additional roll-on/roll-off ferries are scheduled during the Project period. The third ferry, costing NZ$ 7.6 million, is scheduled for delivery in late 1971. Oriented toward both freight and passenger traffic, it will assist in clearing the traffic bottleneck across the Cook Strait and will absorb increases in freight due to containerization up to 1973. The fourth ferry, costing about NZ$ 8.0 million, will carry only freight and is scheduled for delivery in mid-1973. The rate of return, estimated conservatively on a financial cash flow basis, is 14%.

(v) Workshop and Track Maintenance Equipment

5.08 NZR has budgeted NZ$ 6.7 million for workshop and track maintenance equipment and 100 hopper cars to add to and replace current obsolete stock. Benefits on the Bank-financed portion have been attributed to cost savings in maintenance and decreased labor requirements. The rate of return is high, about 40%, reflecting the higher capital intensity of the work with this new equipment.

(vi) Diesel Locomotives

5.09 NZ$ 4.9 million has been allocated for the purchase of 15 main line locomotives and nine shunters. The new 2500 HP main line locomotives will be used on heavy trains for which two 1425 HP locomotives are presently needed, thereby greatly reducing operating cost. The rate of return is 30%.

(vii) Passenger Cars

5.10 NZR plans to upgrade its passenger fleet by spending some NZ$ 4.8 million for passenger cars including three new railcar sets plus 27 cars and four power vans for use on the profitable day liner and overnight runs between Auckland and Wellington. The service will produce quantifiable benefits in the form of cost savings in repairs and fuel, better utilization, and increased patronage. The rate of return is conservatively estimated at 11%.

(viii) Road Vehicles

5.11 The Project calls for annual expenditure of NZ$ 1.0 million to NZ$ 1.3 million for routine replacement of road vehicles. This corresponds to approximately 70 vehicles per year and is comparable to the replacement program over the past four years.

(ix) Conclusion

5.12 The rationale underlying the investments included in the Plan and the Project is sound, fitting well with New Zealand's development strategy. It is not geared toward changing the relative size of NZR in the transport sector, but rather toward equipping it to meet demands which are certain to arise. This cautionary stance is well conceived at this time until the conclusions of the proposed transport policy study have been formulated and the uncertainty surrounding the UK-EEC negotiations is clarified. The weighted average rate of return on the investments subject to quantification (72% of the Project) is about 18%. The Project is economically well justified.

6. FINANCIAL EVALUATION

A. Background

6.01 The Railways had operating losses for several years, but the position improved after 1963 when the Government and the Railways adopted a continuing financial plan to improve the Railways' earnings and financial position. The Government lifted the burden of paying fixed interest on Government capital by converting it into non-interest bearing capital with effect from April 1, 1965. Dividends may now be paid by the Railways to the Government only after meeting the Railways' needs including those of investment. The Government and the Railways also agreed under Bank Loan 438-NZ to improve the Railways' financial position; an operating ratio of 85% by the end of 1970/71 was the objective.

B. Present Position

(i) Actual Operating Results

6.02 The actual operating results for the last five years are summarized below (Table 15 gives the details).

	For Fiscal Year Ending March 31 (NZ$ million)				
	1966	1967	1968	1969	1970
Operating Revenues	87.8	88.4	86.0	89.6	99.3
Operating Expenses	83.9	87.5	84.2	86.1	93.7
Net Operating Revenue	3.9	0.9	1.8	3.5	5.6
Interest	-	0.5	1.1	1.5	1.9
Net Income	3.9	0.4	0.7	2.0	3.7
Operating Ratio %					
Actual	95.5	98.9	97.9	96.1	94.4
Forecast by Last Appraisal (TO 504 (b))	94.4	91.6	89.3	88.4	86.9

6.03 The Railways came close to the objective in fiscal year 1966. The deterioration in 1967 and 1968 reflects the adverse economic conditions in New Zealand, when the forecast traffic increases did not materialize and there were increased costs to the Railways. It was agreed, under Loan 438-NZ, that to achieve the financial target referred to, the Railways would increase rates and fares to the extent necessary to offset rises in costs resulting from increases in wages and prices of materials, taking into account compensating increases in traffic and operating efficiency. There were significant increases in wages and prices of materials - about 32% in wages and about 25% in prices of materials - between 1965 and 1970. A part of these was absorbed by the Railways by modernization and improvements in operation, which enabled it to carry 19% more freight net ton-miles in 1970 than in 1965, with 12.5% less staff. Tariff increases were effected in 1967 and December 1968, but the timing and the extent thereof were also affected by competitive and other conditions, with the result that the targets were not reached. However, the Railways met all its financial obligations, including debt service.

(ii) Summary Balance Sheets

6.04 Actual balance sheet data for the last five years are summarized below:

	As of March 31 (NZ$ million)				
	1966	1967	1968	1969	1970
Assets					
Current assets	40.3	38.4	30.6	35.8	40.6
Net fixed assets	298.4	305.0	317.8	323.3	325.4
Other	0.1	0.1	2.9	0.1	0.1
Total assets	338.8	343.5	351.3	359.2	366.1
Liabilities					
Current liabilities	6.0	6.3	5.1	5.1	9.3
Long-term debt	4.5	10.9	20.6	27.9	33.6
Other	0.1	0.1	0.1	0.1	0.1
Equity	328.2	326.2	325.5	326.1	323.1
Total liabilities and equity	338.8	343.5	351.3	359.2	366.1

Finances, as reflected by these balance sheets, have been satisfactory; lowest current and liquid ratios were 4.4 and 3.1, respectively, in 1970. The debt equity ratio was 9/91 in 1970; the only long-term debt was the first Bank loan.

C. Future Prospects

6.05 A continuing problem has been frequent increases in wages. The wage increases in 1969/70 added NZ$ 4 million to the total wage bill despite a reduction in the staff of 1,072 or 4.8% in that year. A new law regulating service conditions of employees in State services requires periodical review of wage scales and their adjustment as necessary to maintain parity with industry. The Railways states that wage adjustments already approved and expected to be approved in 1970/71 will add another NZ$ 9.7 million to the 1970/71 wage bill. These increases, on a full year basis, will increase the 1971/72 wage bill by NZ$ 13.4 million and by NZ$ 15.2 million in 1975/76. The Railways and the Government realize that the financial prospects are poor unless appropriate tariff adjustments are made very soon. This matter was discussed during negotiations. NZR and the Government stated that a 12% freight tariff increase on a selective basis and a 10% increase in passenger rates will become effective on February 15, 1971, at the end of a price freeze imposed by the Government. A further tariff adjustment would be needed later in 1971, and NZR's financial forecasts take into account these two tariff adjustments which are essential to offset the increases in costs referred to, maintain satisfactory finances and support the investment program. The principal assumptions on which the financial forecasts are made are outlined in Annex 7.

6.06 The forecast income accounts are in Table 15, balance sheet data in Table 16, and cash flow data in Table 17. These are summarized in (i), (ii) and (iii) following:

NZ$ Million

	For the years ending March 31						Totals 1971-73 Project Period	Totals 1971-76 Plan Period
	1971	1972	1973	1974	1975	1976		
(i) Summary Income Account:								
Operating Revenue	104.5	120.1	136.8	142.1	149.2	152.6		
Working Expenses	100.3	106.9	112.3	114.9	118.2	119.1		
Depreciation	8.9	10.3	11.7	12.6	13.4	14.1		
Operating expenses	109.2	117.2	124.0	127.5	131.6	133.2		
Net Operating Revenue	(4.7)	2.9	12.8	14.6	17.6	19.4		
Interest	2.1	2.7	2.8	3.1	3.0	2.7		
Net Income (loss)	(6.8)	0.2	10.0	11.5	14.6	16.7		
Operating Ratio %	104.5	97.6	90.6	89.7	88.2	87.3		
Rate of Return on Net Fixed Assets %	-	0.9	3.6	4.0	4.6	5.0		
(ii) Summary Cash Flow								
(A) Funds required for Investments								
Local Funds	9.3	14.4	12.0	11.4	11.3	13.9	35.7	72.3
Foreign Exchange	7.3	16.6	18.8	10.8	5.7	11.0	42.7	70.2
Total	16.6	31.0	30.8	22.2	17.0	24.9	78.4	142.5
(B) Funds Available for Investment								
Internally Generated Funds	4.2	13.2	24.5	27.2	31.0	33.5	41.9	133.6
Less Debt Service	4.6	5.6	6.7	8.0	8.5	8.4	16.9	41.8
Less Increase (Plus Decrease) in Working Capital	0.5	(1.1)	1.6	0.4	0.5	0.3	1.0	2.2
Balance of Internally Generated Funds	(0.9)	8.7	16.2	18.8	22.0	24.8	24.0	89.6
Use of Cash (Increase of Cash) on Hand	12.5	4.1	0.1	0.3	(5.0)	0.1	16.7	12.1
Borrowing - IBRD	2.4	0.9	12.9	-	-	-	16.2	16.2
Other	2.6	10.2	-	-	-	-	12.8	12.8
Total	5.0	11.1	12.9	-	-	-	29.0	29.0
Funds Provided by Government	-	7.1	1.6	3.1	-	-	8.7	11.8
Total Funds Available	16.6	31.0	30.8	22.2	17.0	24.9	78.4	142.5
(iii) Summary Balance Sheets								
Assets:								
Current Assets	28.2	23.3	23.6	23.5	28.8	29.0		
Investments	0.1	0.1	0.1	0.1	0.1	0.1		
Net Fixed Assets (including Work in Progress)	332.9	353.3	372.7	382.3	385.9	396.8		
Total Assets	361.2	377.0	396.4	405.9	414.8	425.9		
Liabilities:								
Current Liabilities	8.7	8.9	7.6	7.3	7.1	7.2		
Long Term Debt	36.2	44.3	53.3	48.4	42.9	37.2		
Other Liabilities	0.1	0.1	0.1	0.1	0.1	0.1		
Equity	316.2	323.7	335.4	350.1	364.7	381.4		
Total Liabilities & Equity	361.2	377.0	396.4	405.9	414.8	425.9		
Current Ratio	3.3	2.6	3.1	3.2	4.0	4.0		
Debt/Equity Ratio	10/90	12/88	14/86	12/88	11/89	9/91		

6.07 The forecast above indicates that the operating ratio would progressively improve from 104.5% in fiscal 1971 to 87.3% in fiscal 1976. While the Railways would fail to earn interest charges in 1970/71, the times interest earned ratio would be 1.1 in fiscal 1972 and no less than 4.6 during the rest of the period. Debt service coverage ratio would be only 0.9 in fiscal 1971, but this would improve to 2.3 in fiscal 1972 and vary from 3.3 to 4.0 in the rest of the period. The rate of return would gradually improve to 3.6% in fiscal 1973, 4% in fiscal 1974 and 5% in 1976. The current, liquid and debt equity ratios would also be good.

6.08 The summary cash flow data in paragraph 6.06 preceding indicates that of NZ$ 78.4 million investment during the project period, NZ$ 8.7 million (or 11.1%) would be met from Government funds, NZ$ 29.0 million (or 37%) from borrowings including the proposed loan, and the balance (51.9%) from the Railway's resources including use of cash funds available at the beginning of the period.

6.09 The foreign exchange needs of the Railways for investment during the project period would be only partly met by foreign loans. These, other than the Bank loans (438-NZ and the proposed loan), include suppliers' credits already arranged to the extent of NZ$ 12.8 million. The balance amount of approximately NZ$ 13.7 million would have to be made available by the Government, with the Railways reimbursing the Government in local currency.

6.10 In the preceding forecast, it has also been assumed that increases in costs to the Railways (by increases in wages and prices of materials) beyond the increases referred to in paragraph 6.05 would be compensated by appropriate measures, including tariff adjustments, so that the Railways does not have to absorb the impact of rising costs to the detriment of its financial position. Agreement was reached during negotiations that the Government would cause the Railways to take from time to time all necessary measures (including, but not limited to, adjustments of the tariff structures and rates of the Railways) as shall be required to enable the Railways, out of internally generated resources, to meet debt service requirements and requirements of working capital and to finance a reasonable proportion of its capital expenditure, including the replacement of assets. In order to achieve this objective, it was agreed during the negotiations that the Railways should break even in fiscal 1972, and earn rates of return of 3.5% in 1973, 4% in 1974 and 1975 and 5% in subsequent fiscal years.

6.11 The forecasts for the period 1971-76 referred to are, as indicated in Annex 7, based on the primary freight traffic forecast. A gradual relaxation of restrictions on highway transport would have the effect of reducing the Railways' revenues during 1975/76 by 1.8% under Hypothesis A and 2.6% under Hypothesis B (Table 8). Under Hypothesis B, which is the more unfavorable for the Railways, this would mean a reduction in revenues to the extent of NZ$ 3.2 million per annum (including the effect of revision of tariff in 1971 referred to) during the period 1974-76 and even less in the earlier

years. There would, however, be some compensating savings in operating expenses; thus, the reduction in net revenue could be expected to be about NZ$ 1.5 million per annum (1.1% of gross operating revenues) during 1974-76. In effect, therefore, there would be no significant change in the overall financial forecasts. It may also be added that the forecasts assume that the Railways would continue to bear the losses on suburban rail and road services, which amount to about NZ$ 2.6 million per annum. The economic need for marginal cost pricing of these services and the mechanism by which the finances of NZR can be compensated will be reviewed in the transport policy study, included in the project.

D. Budget, Accounting and Auditing

6.12 The Railways prepares separate budgets for operations and capital investments. Like all Government budgets, that of the Railways requires the approval of Parliament. Budget procedures are satisfactory.

6.13 The accounting system has all the aspects of commercial accounts. Property accounts are recorded on the basis of cost. The Government is the Railways' banker. All revenues are paid into the Works and Trading account of the Treasury and all working expenses are paid therefrom. Accounting procedures are good, except that, with regard to depreciation, a slight change is necessary.

6.14 As of April 1, 1965, the Railways shortened the depreciation life of certain assets, i.e., wagons from 40 to 35 years, ferry boats from 20 years to 16 years. At the same time, the Railways stopped charging depreciation on some assets which it had originally intended to write off, even though such writeoff was not actually effected. This means that the assets will reach full life without being fully depreciated. The rectification of this was discussed during negotiations and NZR and the Government agreed that the position would be reviewed in detail and depreciation on such assets charged no later than 1974 (for the back period, depreciation chargeable would be adjusted to capital reserve). It has also been agreed that for the purposes of the financial targets, the Railways would continue the present method of calculating the depreciation of all rolling stock acquired after April 1, 1969 using the "sum of the years digits" method (which would result in a higher charge in the initial years, when the repairs etc. are minimal, although the amount of depreciation written off over the life of the asset is not increased), and of all other depreciable assets using the straight-line method.

6.15 Internal audit procedures are satisfactory and the work is efficiently performed. External audit is performed by the staff of the Controller and Auditor General to the New Zealand Government who also provides a report to the Parliament.

7. RECOMMENDATIONS

7.01 During negotiations agreement was reached with the Government of New Zealand and NZR on the following principal items:

(i) an in-depth transport study to be undertaken by the Ministry of Transport with the help of consultants (para. 2.11);

(ii) revision of tariffs and rates to offset cost increases (para. 6.05); and

(iii) financial targets for fiscal years commencing in 1972 (para. 6.10).

7.02 The Project provides a suitable basis for a Bank loan of US$16 million equivalent. The proposed loan would be made to the New Zealand Government for a term of 15 years, including a grace period of about 2-1/2 years; US$15.5 million would be made available to NZR on identical terms.

February 10, 1971

TABLE 1

NEW ZEALAND RAILWAYS

Freight Traffic, by Mode of Transport, 1958-1969
(in billion ton/miles)

Year	Railways	Highway 1/	Coastal Shipping	Total
1958	1.2	1.3	0.8	3.3
1959	1.2	1.3	0.8	3.3
1960	1.2	1.5	0.9	3.6
1961	1.2	1.6	0.9	3.7
1962	1.2	1.7	0.9	3.8
1963	1.3	1.8	1.1	4.2
1964	1.4	1.9	1.0	4.3
1965	1.5	2.1	1.3	4.9
1966	1.5	2.5	1.4	5.4
1967	1.4	2.8	1.4	5.6
1968	1.5	2.9	1.5	5.9
1969	1.7	3.1	n.a.	n.a.

1/ Highway data include private "on own account" trucking.

Source: Ministry of Transport.
The figures include both inter- and intra-city traffic since no reliable breakdown is available; it has been estimated that in recent years inter-city traffic accounted for about 70% of the total.

October 1970

TABLE 2

NEW ZEALAND RAILWAYS

Passenger Traffic, by Mode of Transport, 1958-1969
(in billion passenger/miles)

Year	Railways	Highway[1/]	Airlines (Domestic only)	Total
1958	0.4	6.0	0.1	6.5
1959	0.4	6.2	0.1	6.7
1960	0.4	6.6	0.2	7.2
1961	0.4	6.9	0.2	7.5
1962	0.4	7.2	0.2	7.8
1963	0.5	7.6	0.2	8.3
1964	0.4	8.3	0.2	8.9
1965	0.4	9.9	0.3	10.6
1966	0.4	11.3	0.3	12.0
1967	0.4	11.9	0.3	12.6
1968	0.4	12.2	0.3	12.9
1969	0.3	13.1	0.3	13.7

1/ Highway data include private automobile passenger mile.

Source: Department of Transport
The figures include both inter and intra-city traffic since no reliable breakdown is available; it has been estimated that about one-half of the highway traffic is inter-city traffic.

September 1970

TABLE 3

NEW ZEALAND RAILWAYS

Lines Closed since 1950 (miles)

Date Closed	Railway Line	North Island	South Island	Total New Zealand
12/5/53	Outram Branch (Mosgiel to Outram)	-	9.00	
12/11/53	Waimate Gorge Branch (Waimate to Waihoa Downs)	-	8.27	
12/24/53	Part of Hedgehope Branch (Browns to Hedgehope)	-	7.43	
12/25/53	Greytown Branch (Woodside to Greytown)	3.08	-	
5/26/54	Eyreton Branch	-	17.32	
9/3/55	Nelson Section	-	60.23	
3/29/57	Mt. Somers-Springburn	-	4.10	
5/1/57	Geddes-Walton Park	-	1.50	
3/15/59	Moutohora	47.51	-	
4/19/59	Oxford	-	22.03	
5/16/59	Riversdale-Waikaia	-	13.78	
7/12/59	Part Ngapara	-	12.56	
7/19/59	Dargaville-Donnellys Crossing	22.31	-	
7/19/59	Foxton	19.38	-	
7/27/59	Milson Industrial Line	2.06	-	
3/31/62	Darfield - Whitecliffs	-	11.57	
6/30/62	Lincoln-Little River	-	22.60	
6/30/62	Lincoln-South Bridge	-	17.68	
9/9/62	McNab-Waikaka	-	12.93	
9/9/62	Edendale-Wyndham	-	4.03	
	Sub-Total A	94.34	225.03	319.37
3/1/66	Blackball (Ngahere-Blackball)	-	3.38	
4/1/66	Waimate	-	4.61	
4/1/66	Seaward Bush (Invercargill-Tokanui)	-	33.81	
8/16/67	Conns Creek Branch (Part)	-	1.73	
12/1/67	Hornby Industrial Line - beyond Prebbleton	-	6.53	
1/1/68	Glenbrook-Waiuku Section of Waiuku	4.83	-	
1/1/68	Raetihi	8.47	-	
1/1/68	Mt. Somers (Tinwalt-Mt. Somers)	-	23.53	
1/1/68	Inch Valley-Dunback Section of Dunback	-	2.38	
1/1/68	Heriot-Edievale Section of Tapanui	-	6.23	
1/1/68	Browns (Winton-Browns)	-	5.38	
3/2/68	Fairlie (Washdyke-Fairlie)	-	35.35	
6/1/68	Roxburgh	-	58.85	
	Sub-Total B	13.30	181.78	195.08
	Total A + B	107.64	406.81	514.45

September 1970

NEW ZEALAND RAILWAYS

Expenditure on Track Renewals During the Past Six Years

1964/1965 to 1969/1970 inclusive

Year ended March 31	From Working Expenses		From Capital			Mileage Relayed		Total
	North Island	South Island	North Island	South Island	Total Expenses	North Island	South Island	Mileage Relayed
	$	$	$	$	$			
1965	1,933,862	967,940	260,200	166,200	3,328,202	48.43	26.35	74.78
1966	1,814,386	958,640	172,000	178,000	3,123,026	38.60	28.03	66.63
1967	2,011,258	881,988	190,000	96,000	3,179,246	46.72	24.28	71.00
1968	1,591,419	850,798	151,320	101,125	2,694,662	34.60	22.63	57.23
1969	1,699,130	477,755	112,990	100,062	2,389,937	41.56	15.57	57.13
1970	1,940,245	405,578	37,086	122,320	2,505,229	46.38	18.60	64.98
					Average/year	42.72	22.57	65.29

June 1970

TABLE 4

NEW ZEALAND RAILWAYS

Composition of Freight Wagon Stock

Type of wagon (a)	Actuals end of 1969/70					Changes up to 1974/75			Forecast end of 1974/75				
	Number in stock	40 years and over nos.	%	Capacity tot. 000	av'ge tons	To be scrapped	New nos.	Increase or decrease	Number in stock	40 years and over nos.	%	Capacity tot. 000	av'ge tons
Open 2 axle	16,301	1,433	8.8	215	13.2	1,669	600	- 1,069	15,232	310	2.0	199	13.1
Open bogie	119	36	30.2	3	25.2	36	200	+ 164	283	-	-	8	28.3
Open Total	16,420	1,469	9.0	218	-	1,705	800	- 905	15,515	310	2.0	207	-
Flat 2 axle	862	-	-	13	15.1	-	-		862	-	-	13	15.1
Flat bogie	1,147	263	22.9	33	28.8	279	1,109	+ 830	1,977	60	2.6	68	34.4
Flat Total	2,009	263	13.1	46	-	279	1,109	+ 830	2,839	60	2.1	81	-
Box 2 axle	4,122	83	2.0	54	13.1	198	1,513	+ 1,315	5,437	-	-	73	13.4
Box bogie	857	18	2.1	18	21.0	29	30	+ 1	858	-	-	17	20.0
Box Total	4,979	101	2.0	72	-	227	1,543	+ 1,316	6,295	-	-	90	-
Unspecified 2 axle (b)							500	+ 500	500	-	-	7	14.0
Sub-Total general purpose	23,408	1,833	7.8	336	14.4	2,211	3,952	+ 1,741	25,149	370	1.5	385	15.5
Insul. 2 axle	596	20	3.4	6	10.1	93	-	- 93	503	-	-	5	9.9
Insul. bogie	794	121	15.2	17	21.4	169	-	- 169	625	20	3.2	14	19.0
Insul. Total	1,390	141	10.1	23	-	262	-	- 262	1,128	20	1.8	19	-
Special purpose	1,541	661	42.9	22	14.3	623	29	- 594	947	20	2.1	18	19.0
TOTAL STOCK	26,339	2,635	10.0	381	14.5	3,096	3,981	+ 885	27,224	410	1.5	422	15.7

Notes (a) Livestock and service wagons are not included
(b) Type of wagon not yet decided

September 1970

TABLE 5

NEW ZEALAND RAILWAYS

Traffic by Major Commodities
(in millions of ton miles)

Actual vs. Forecast 1965/66-1969/70

Commodity Group	1965/66			1966/67			1967/68			1968/69			1969/70			Cumulative:1965/66-1969/70			Comparative:1969/70 to 1965/66			
																			Forecast		Actual	
	Forecast	Actual	% Above (below) forecast	Forecast	Actual	% Above (below) forecast	Forecast	Actual	% Above (below) forecast	Forecast	Actual	% Above (below) forecast	Forecast	Actual	% Above (below) forecast	Forecast	Actual	% Above (below) forecast	Increase (decrease)	% Change	Increase (decrease)	% Change
Coal	190	187	(1.6)	190	182	(4.2)	190	168	(11.6)	189	164	(13.2)	186	160	(14.0)	945	861	(8.9)	(30)	(15.8)	(27)	(14.4)
Timber, logs	185	201	8.6	193	181	(6.2)	199	159	(20.0)	203	168	(17.3)	210	188	(10.5)	990	897	(9.4)	25	13.5	(13)	(6.5)
Fertilizer, lime	135	141	4.4	146	138	(5.5)	154	107	(30.5)	145	112	(22.8)	172	122	(29.0)	752	620	(17.6)	37	27.4	(19)	(13.5)
Pulp products	90	90	-	97	96	(1.1)	104	105	1.0	116	113	(2.6)	119	128	7.6	526	532	1.1	29	32.2	38	42.2
Cattle, sheep, meat	75	65	(13.3)	75	60	(20.0)	78	58	(25.7)	79	61	(22.8)	81	57	(30.0)	388	301	22.4	6	8.0	(8)	(12.3)
Cement	64	61	(4.7)	68	61	(10.3)	73	53	(27.4)	73	53	(27.4)	74	58	(22.0)	352	286	18.8	10	15.6	(3)	(4.9)
Petroleum	44	51	15.9	46	55	19.6	49	54	10.2	51	56	9.0	54	60	11.1	244	276	13.1	10	22.7	9	17.6
Butter, Cheese	39	38	(2.6)	40	42	5.0	42	42	-	42	37	(12.0)	43	36	(16.3)	206	195	(5.3)	4	10.2	(2)	(5.3)
Grain, wool	57	57	-	61	59	(3.3)	61	71	16.4	62	84	35.6	63	79	25.4	304	350	15.1	6	10.5	22	38.6
Other Commodities	567	582	2.6	583	610	4.6	592	588	(0.7)	625	655	4.9	652	788	21.0	3,019	3,223	6.8	85	15.0	206	35.4
Totals	1,446	1,473	1.9	1,499	1,484	(1.0)	1,542	1,405	(8.9)	1,585	1,503	(5.2)	1,654	1,676	1.3	7,726	7,541	(2.4)	208	14.4	203	13.8
Increase (decrease) in actual total as % of previous year		4.7			0.7			(5.3)			7.0			11.5								

August 26, 1970

TABLE 6

NEW ZEALAND RAILWAYS

Forecasts of Freight Traffic by Major Commodities: 1970/71-1975/76
(in millions of net ton-miles)

	Base Year 1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	Cumulative 1970/71-1975/76	Comparative: Actual Base Year 1969/70 to Forecast 1975/76	
									increase (decrease)	% change
Primary Forecast										
Coal	160	164	158	155	149	144	140	910	(20)	(12.5)
Timber, logs	188	189	191	197	186	190	194	1,147	6	3.2
Fertilizer, lime	122	117	118	121	122	124	125	727	3	2.4
Pulp products	128	135	142	153	168	172	177	947	49	38.3
Cattle, sheep meat	57	57	61	75	86	107	109	495	52	91.2
Cement	58	59	61	61	64	66	68	379	10	17.2
Petroleum	60	62	65	71	74	76	79	427	19	31.7
Butter, cheese	36	42	42	48	54	62	63	311	27	75.0
Grain, wool	79	82	88	100	108	120	122	620	43	54.4
Other commodities	788	816	874	1,033	1,097	1,183	1,217	6,220	429	54.4
Totals	1,676	1,723	1,800	2,014	2,108	2,244	2,294	12,183	618	36.9
Increase (decrease) in total as % of previous year		2.9	4.5	11.9	4.6	6.4	2.2			
Average length of haul (miles)		144	147	156	158					
Supplementary Forecasts										
(a) Hypothesis A: 1/										
Totals		1,724	1,779	1,991	2,070	2,204	2,253	12,021	577	34.4
Increase (decrease) in total as % of previous year		2.9	3.2	11.9	4.0	6.5	2.2			
(b) Hypothesis B: 2/										
Totals		1,724	1,787	2,000	2,031	2,164	2,238	11,944	552	32.9
Increase (decrease) in total as % of previous year		2.9	3.6	12.0	1.6	6.5	3.4			

1/ Hypothesis A is the traffic forecast prepared under the assumption that mileage limits are altered (see Annex 3, part 2).

2/ Hypothesis B is the traffic forecast prepared under the assumption that commodity limits are altered (see Annex 3, part 2).

September 25, 1970

TABLE 7

NEW ZEALAND RAILWAYS

Comparison of Primary and Supplementary Freight Traffic Forecasts
1970/71-1975/76

Year	Tonnage: Tons (in 000's) Hypothesis A	Hypothesis B	Primary Forecasts	Tonnage: Deviations from Primary Forecast Hypothesis A Tons	%	Hypothesis B Tons	%	Net Ton Miles: NTM's (in millions) Hypothesis A	Hypothesis B	Primary Forecasts	Deviations from Primary Forecast Hypothesis A NTM's	%	Hypothesis B NTM's	%
	(tons)													
1970/71	11,990	11,990	11,990	-	-	-	-	1,724	1,724	1,724	-	-	-	-
1971/72	11,904	12,056	12,261	(357)	(2.9)	(205)	(1.6)	1,784	1,787	1,801	(17)	(0.9)	(14)	(0.8)
1972/73	12,508	12,664	12,873	(365)	(2.8)	(209)	(1.6)	1,998	2,000	2,015	(17)	(0.8)	(15)	(0.7)
1973/74	12,646	12,553	13,390	(744)	(5.6)	(837)	(6.5)	2,071	2,031	2,109	(38)	(1.8)	(78)	(3.7)
1974/75	12,937	12,842	13,696	(759)	(5.5)	(854)	(6.2)	2,204	2,164	2,244	(40)	(1.8)	(80)	(3.6)
1975/76	13,104	13,007	13,878	(774)	(5.6)	(871)	(6.3)	2,164	2,211	2,293	(129)	(5.6)	(82)	(3.6)

Year	Revenues: Revenues (in N.Z.$ 000's) Hypothesis A	Hypothesis B	Primary Forecasts	Revenues: Deviations from Primary Forecast Hypothesis A N.Z.$	%	Hypothesis B N.Z.$	%	Rates per Ton/Mile: Rates per Ton/mile (N.Z. ¢) Hypothesis A	Hypothesis B	Primary Forecasts	Deviations from Primary Forecast Hypothesis A N.Z.¢	%	Hypothesis B N.Z. ¢	%
	N.Z.$							N.Z.¢						
1970/71	78,648	78,648	78,648	-	-	-	-	4.64	4.64	4.64	-	-	-	-
1971/72	80,965	81,233	81,014	(49)	(0.1)	219	0.2	4.54	4.54	4.55	-	-	(.01)	(0.1)
1972/73	87,442	87,715	87,924	(482)	(0.5)	(209)	(2.4)	4.39	4.39	4.39	-	-	-	-
1973/74	89,859	89,172	91,543	(1,684)	(1.8)	(2,371)	(2.6)	4.34	4.39	4.37	(.03)	(0.6)	.02	0.4
1974/75	93,247	92,546	94,976	(1,729)	(1.8)	(2,430)	(2.6)	4.23	4.28	4.26	(.03)	(0.7)	.02	0.4
1975/76	94,885	94,165	96,655	(1,770)	(1.8)	(2,490)	(2.6)	4.21	4.26	4.24	(.03)	(0.7)	.02	0.5

September 3, 1970

TABLE 8

NEW ZEALAND RAILWAYS

Passenger Traffic: Past and Future
(in millions of passengers)

YEAR	RAIL				ROAD		
	Intercity Traffic	Suburban Traffic	Total Passengers	Passenger/Miles (Millions)	Intercity Traffic	Suburban Traffic	Total Passengers
1965/66	2.6	21.2	23.8	421	9.2	13.0	22.2
1966/67	2.5	21.2	23.7	420	7.0	15.2	22.2
1967/68	2.1	20.1	22.2	364	7.1	14.3	21.4
1968/69	1.9	20.3	22.2	357	7.6	15.0	22.6
1969/70	1.8	19.2	21.0	346	7.0	15.2	22.2
Percentage increase (decrease) 1965/66 - 1969/70	(30.8)	(9.5)	(11.8)	(18.3)	(8.8)	(16.9)	-
				FORECAST			
1970/71	1.8	19.1	20.9	346	7.1	14.9	22.0
1971/72	1.7	19.0	20.7	348	7.2	14.8	22.0
1972/73	1.7	18.9	20.6	349	7.3	14.6	21.9
1973/74	1.7	18.9	20.6	348	7.5	14.4	21.9
1974/75	1.7	18.8	20.5	348	7.6	14.2	21.8
Percentage increase (decrease) 1970/71 - 1974/75	(5.6)	(1.6)	(1.9)	0.6	7.0	(4.7)	(8.2)

September 1970

TABLE 9

TABLE 10

NEW ZEALAND RAILWAYS

Summary of Selected Operating Statistics 1965/66 - 1969/70

	1965/1966			1966/1967			1967/1968			1968/1969			1969/1970		
	N(a)	S(a)	Total	N	S	Total	N	S	Total	N	S	Total	N	S	Total
I SYSTEM															
Route miles, end of the year	1636	1615	3251	1636	1576	3212	1623	1495	3118	1625	1438	3063	1625	1438	3063
II TRAFFIC															
Passengers carried suburban (Million)	19.2	2.0	21.2	19.3	1.9	21.2	18.5	1.7	20.2	18.8	1.5	20.3	17.9	1.3	19.2
" " Other journeys "	1.6	1.1	2.7	1.5	1.0	2.5	1.3	.8	2.1	1.2	.8	2.0	1.1	.7	1.8
" " Total "	20.8	3.1	23.9	20.8	2.9	23.7	19.8	2.5	22.3	20.0	2.3	22.3	19.0	2.0	21.0
Passenger miles (Million)	322	99	421	323	97	420	282	82	364	278	79	357	271	76	347
Average distance of trip, miles	15.5	31.6	17.6	15.5	33.1	17.7	14.3	33.1	16.4	13.9	34.4	16.1	14.2	37.2	16.5
Freight tons carried (Million)	8.0	3.9	11.9	7.8	3.7	11.5	7.4	3.2	10.6	7.7	3.1	10.8	8.4	3.2	11.6
Freight net ton miles (Million)	1055	419	1474	1069	415	1484	1016	389	1405	1109	394	1503	1211	466	1677
Average distance of haul, miles	131	107	123	136	112	128	138	120	132	144	126	139	144	144	144
Traffic units (b) (Million)	1377	518	1895	1392	512	1904	1298	471	1769	1387	473	1860	1482	541	2023
III TRAFFIC DENSITY															
Passenger miles per route mile (000)	197	61	129	197	62	131	174	55	117	171	55	117	167	53	113
Freight net ton miles per route mile (000)	645	259	453	653	263	462	626	260	451	682	274	491	745	324	547
IV OPERATIONS															
Train miles suburban passenger trains (000)	1899	200	2099	1895	200	2095	1757	161	1918	1768	133	1901	1565	106	1671
Train miles, other passenger trains (000)	2384	1296	3680	2369	1281	3650	2067	1119	3186	2002	1080	3082	1917	1072	2989
Train miles, total passenger trains (000)	4283	1496	5779	4264	1481	5745	3823	1280	5103	3769	1214	4983	3482	1178	4660
Train miles, mixed trains (00)	-	47	47	-	42	42	-	19	19	-	13	13	-	5	5
Train miles, freight trains (c) (000)	6480	3267	9747	6407	3291	9698	5799	3044	8843	5834	2778	8612	6101	2654	8755
Total train miles (000)	10763	4810	15573	10671	4814	15485	9622	4343	13965	9603	4005	13608	9583	3837	13420
Train miles by mode of traction:															
" " steam locomotives (000)	1168	2804	3972	477	2754	3231	106	2371	2477	-	1152	1152	-	252	252
" " diesel locomotives (000)	6259	894	7153	6859	958	7817	6591	1036	7627	6784	2002	8786	7050	2740	9790
" " electric locomotives (000)	286	145	431	286	143	429	184	133	317	112	112	224	98	102	200
" " diesel railcars (000)	1645	967	2612	1649	959	2608	1391	803	2193	1315	739	2054	1235	743	1978
" " electric railcars (000)	1406	-	1406	1399	-	1399	1350	-	1350	1392	-	1392	1200	-	1200
Gross ton miles:															
Steam locomotives (Million)	344	912	1256	161	884	1045	45	772	817	-	390	390	-	60	60
Diesel locomotives (Million)	2633	359	2992	2828	401	3229	2839	438	3277	3088	827	3915	3346	1224	4570
Electric locomotives (Million)	103	30	133	105	30	135	61	26	87	28	23	51	25	23	48
Diesel railcars (Million)	112	63	175	112	62	174	90	50	140	82	43	125	79	44	123
Electric railcars (Million)	195	-	195	195	-	195	188	-	188	190	-	190	179	-	179
Total gross ton miles (Million)	3389	1365	4754	3401	1377	4778	3223	1286	4509	3388	1283	4671	3630	1350	4980
Locomotive miles (c) steam (000)	1573	3657	5230	639	3506	4145	143	2857	3000	-	1405	1405	-	284	284
" " diesel (000)	9539	2133	11672	10268	2330	12598	9978	2551	12529	10417	3800	14217	10922	4963	15885
" " electric (000)	419	281	700	424	275	699	258	254	512	151	212	363	132	199	331
Railcar miles, diesel (000)	1985	1112	3097	1970	1112	3082	1568	908	2476	1469	812	2281	1424	821	2245
" " electric (000)	2089	-	2089	2057	-	2057	1966	-	1966	2004	-	2004	1926	-	1926
Total motive power unit miles (000)	15605	7183	22788	15358	7223	22581	13913	6570	20483	14041	6229	20270	14404	6267	20671
V OPERATING EFFICIENCY															
Passenger trains:															
Passenger miles per train mile	75	66	73	76	65	73	74	64	71	74	65	72	78	65	74
Freight trains:															
Net ton miles per train mile	175	147	-	179	150	-	188	150	-	196	166	-	208	192	-
Gross ton miles per train mile	432	362	-	438	364	-	463	373	-	489	411	-	510	458	-
Average speed, miles ph	14.5	14.4	-	14.9	14.3	-	15.3	14.5	-	15.0	14.7	-	15.2	15.4	-
Freight ton miles per freight car in fleet (d) (000)	60	31	48	59	32	47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Turn-around, freight cars (days)	4.4	6.5	5.2	4.8	6.8	5.5	4.9	7.6	5.7	4.9	7.3	5.6	4.6	6.6	5.2
VI STAFF EFFICIENCY															
Number of employees, average	NA	NA	23672	NA	NA	23381	NA	NA	22910	NA	NA	22154	NA	NA	21113
Employees per route mile	NA	NA	7.3	NA	NA	7.3	NA	NA	7.3	NA	NA	7.2	NA	NA	6.9
Traffic units per employee (000)	NA	NA	80	NA	NA	81	NA	NA	77	NA	NA	84	NA	NA	96
Gross ton miles per employee (000)	NA	NA	200	NA	NA	204	NA	NA	196	NA	NA	210	NA	NA	236

Notes: (a) N = North Island S = South Island

(b) Traffic units are made up by adding passenger miles to net ton miles

(c) Including departmental trains

(d) Freight ton miles per freight car in fleet not recorded after 31 March 1967

NEW ZEALAND RAILWAYS

Six-Year Investment Plan 1970/71 - 1975/76

	PROJECT PERIOD 1970/73			1973/74			1974/75			1975/76			TOTAL INVESTMENT PLAN 1970/76						
	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local US$(000)	Foreign US$(000)	Total US$(000)	%
I. Rolling Stock and Ferries																			
1. 3,230 Freight wagons (CKD and NZ-built)	9,514	16,091	25,605	2,653	681	3,334	2,300	1,700	4,000	4,539	3,664	8,203	19,006	22,136	41,142	21,287	24,793	46,080	28.9
2. Passenger cars, rail cars and multiple units	381	4,374	4,755	-	1,900	1,900	-	475	475	190	665	855	571	7,414	7,985	639	8,304	8,943	5.6
3. 15 main-line diesels, 2000-2500 HP and others	380	4,180	4,560	-	2,850	2,850	-	2,850	2,850	238	5,177	5,415	618	15,057	15,675	692	16,864	17,556	11.0
4. 9 diesel shunting locomotives	177	209	386	-	-	-	-	-	-	-	-	-	177	209	386	198	234	432	0.3
5. 3rd and 4th Cook Strait ferries	212	11,198	11,410	-	3,010	3,010	-	-	-	-	-	-	212	14,208	14,420	237	15,913	16,150	10.1
Sub-Total I	10,664	36,052	46,716	2,653	8,441	11,094	2,300	5,025	7,325	4,967	9,506	14,473	20,584	59,024	79,608	23,053	66,108	89,161	55.9
II. Facilities and Equipment																			
1. 3 Transtainer cranes, Wellington and Auckland	1,883	997	2,880	-	-	-	-	-	-	-	-	-	1,883	997	2,880	2,109	1,116	3,225	2.0
2. Workshop, track maintenance and handling-equipment	3,773	1,790	5,563	1,312	1,158	2,470	713	47	760	570	760	1,330	6,368	3,755	10,123	7,132	4,206	11,338	7.1
3. Ways, structures and facilities	8,498	826	9,324	2,570	108	2,678	3,822	140	3,962	4,849	328	5,177	19,739	1,402	21,141	22,108	1,571	23,679	14.8
4. Station and yard track improvements	2,597	156	2,753	812	36	848	594	36	630	540	-	540	4,543	228	4,771	5,088	255	5,343	3.3
5. Diesel workshops and w.w. plant	1,152	-	1,152	510	-	510	153	-	153	165	-	165	1,980	-	1,980	2,218	-	2,218	1.4
6. Tunnel clearance and new tracks	196	-	196	450	-	450	630	45	675	630	-	630	1,906	45	1,951	2,135	50	2,185	1.4
7. Signalling, new and improvements	1,128	263	1,391	1,068	216	1,284	1,038	202	1,240	135	32	167	3,369	713	4,082	3,773	799	4,572	2.9
8. Vehicles for the road services	3,500	-	3,500	1,300	-	1,300	1,300	-	1,300	1,300	-	1,300	7,400	-	7,400	8,288	-	8,288	5.2
Sub-Total II	22,727	4,032	26,759	8,022	1,518	9,540	8,250	470	8,720	8,189	1,120	9,309	47,188	7,140	54,328	52,851	7,997	60,848	38.1
III. Contingencies	2,312	2,603	4,915	731	842	1,573	730	225	955	753	388	1,141	4,526	4,058	8,584	5,069	4,545	9,614	6.0
TOTAL	35,703	42,687	78,390	11,406	10,801	22,207	11,280	5,720	17,000	13,909	11,014	24,923	72,298	70,222	142,520	80,973	78,650	159,623	100.0

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TABLE 11

NEW ZEALAND RAILWAYS

The Project: First Three Years of the Six-Year Investment Plan

	1970/71			1971/72			1972/73			TOTAL PROJECT PERIOD 1970/73						
	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local NZ$(000)	Foreign NZ$(000)	Total NZ$(000)	Local US$(000)	Foreign US$(000)	Total US$(000)	%
I. Rolling Stock and Ferries																
1. 2,010 Freight wagons (CKD and NZ-built)	2,220	1,893	4,113	4,065	1,490	5,555	3,229	12,708	15,937	9,514	16,091	25,605	10,655	18,022	28,677	32.7
2. Passenger cars, rail cars and multiple units	-	-	-	229	4,374	4,603	152	-	152	381	4,374	4,755	427	4,899	5,326	6.0
3. 15 main-line diesels, 2000-2500 HP	-	475	475	380	3,705	4,085	-	-	-	380	4,180	4,560	426	4,682	5,108	5.8
4. 9 diesel shunting locomotives	-	143	143	177	66	243	-	-	-	177	209	386	198	234	432	0.5
5. 3rd and 4th Cook Strait ferries	-	3,168	3,168	212	5,020	5,232	-	3,010	3,010	212	11,198	11,410	237	12,542	12,779	14.6
Sub-Total I	2,220	5,679	7,899	5,063	14,655	19,718	3,381	15,718	19,099	10,664	36,052	46,716	11,943	40,379	52,322	59.6
II. Facilities and Equipment																
1. 3 Transtainer cranes, Wellington and Auckland	459	-	459	728	427	1,155	696	570	1,266	1,883	997	2,880	2,109	1,116	3,225	3.7
2. Workshop, track maintenance and handling-equipment	890	950	1,840	2,036	332	2,368	847	508	1,355	3,773	1,790	5,563	4,226	2,005	6,231	7.1
3. Ways, structures & facilities	3,672	375	4,047	2,902	252	3,154	1,924	199	2,123	8,498	826	9,324	9,518	925	10,443	11.9
4. Stations and yard track improvements	295	39	334	1,013	90	1,103	1,289	27	1,316	2,597	156	2,753	2,909	175	3,084	3.5
5. Diesel workshops and w.w. plant	85	-	85	450	-	450	617	-	617	1,152	-	1,152	1,290	-	1,290	1.5
6. Tunnel clearance and new tracks	34	-	34	36	-	36	126	-	126	196	-	196	220	-	220	0.2
7. Signalling, new and improvements	18	18	36	54	18	72	1,056	227	1,283	1,128	263	1,391	1,263	295	1,558	1.8
8. Vehicles for the road services	1,000	-	1,000	1,300	-	1,300	1,200	-	1,200	3,500	-	3,500	3,920	-	3,920	4.4
Sub-Total II	6,453	1,382	7,835	8,519	1,119	9,638	7,755	1,531	9,286	22,727	4,032	26,759	25,455	4,516	29,971	34.1
III. Contingencies	664	222	886	843	819	1,662	805	1,562	2,367	2,312	2,603	4,915	2,595	2,915	5,510	6.3
TOTAL	9,337	7,283	16,620	14,425	16,593	31,018	11,941	18,811	30,752	35,703	42,687	78,390	39,993	47,810	87,803	100.0

January 1971

TABLE 12

NEW ZEALAND RAILWAYS

Bank-Financed Items

	NZ$ (000)			US$ (000)			
	Local	Foreign	Total	Local	Foreign	Total	%
CKD imported wagons							
600 Lpa (4-wheel high sides, paper traffic)	500	3,000	3,500	560	3,360	3,920	16.2
200 Rp (bogie high sides, paper traffic)	400	2,000	2,400	448	2,240	2,688	11.1
300 Uk (bogie flat top, container traffic)	260	3,940	4,200	291	4,413	4,704	19.4
100 Yf (4-wheel ballast wagons)	380	1,120	1,500	426	1,254	1,680	7.0
Total imported wagons	1,540	10,060	11,600	1,725	11,267	12,992	53.7
Parts for NZ-built wagons							
20 Usk (bogie flat steel top, container traffic)	140	70	210	157	78	235	1.0
20 Usl (bogie flat steel top, log traffic)	150	70	220	168	78	246	1.0
400 Us (bogie flat steel top, general traffic)	2,830	1,440	4,270	3,170	1,613	4,783	19.8
170 Uk (bogie flat top, container traffic)	1,580	740	2,320	1,770	828	2,598	10.7
Total parts for NZ-built wagons	4,700	2,320	7,020	5,264	2,597	7,861	32.5
Total freight cars	6,240	12,380	18,620	6,989	13,864	20,853	86.2
Plant equipment							
2 wheel lathes	30	230	260	34	258	292	1.2
1 ballast cleaner	-	240	240	-	269	269	1.1
Total plant equipment	30	470	500	34	527	561	2.3
Signalling							
C.T.C. Murupara branch	270	50	320	302	56	358	1.5
C.T.C. Waiku branch	80	25	105	90	28	118	0.5
Total Signalling	350	75	425	392	84	476	2.0
Contingencies	500	915	1,415	560	1,025	1,585	6.6
Total NZR	7,120	13,840	20,960	7,975	15,500	23,475	97.1
Consulting Services	179	446	625	200	500	700	2.9
Grand Total	7,299	14,286	21,585	8,175	16,000	24,175	100.0

January 1971

TABLE 13

TABLE 14

NEW ZEALAND RAILWAYS

Estimated Schedule of Disbursements

IBRD Fiscal Year and Quarter	Cumulative Disbursement at End of Quarter	
	NZ$ 000	US$ 000
1970/71		
March 31, 1971	-	-
June 30, 1971	-	-
1971/72		
September 30, 1971	180	202
December 31, 1971	1,000	1,120
March 31, 1972	1,030	1,154
June 30, 1972	1,960	2,195
1972/73		
September 30, 1972	9,500	10,640
December 31, 1972	9,800	10,976
March 31, 1973	14,080	15,770
June 30, 1973	14,130	15,826
1973/74		
September 30, 1973	14,170	15,870
December 31, 1973	14,210	15,915
March 31, 1974	14,250	15,960
June 30, 1974	14,286	16,000

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TABLE 15

NEW ZEALAND RAILWAYS

Revenue, Expenses and Net Income
Actual 1966-1970; Estimated 1971-1976
(NZ$ 000)

	Actual For the Year Ending March 31					Estimated For the Year Ending March 31					
	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
I. OPERATING REVENUE											
Rail											
Freight	67,808	67,448	65,235	67,476	75,709	78,648	81,014	87,924	91,543	94,976	96,655
Passenger	5,929	5,928	5,294	5,419	5,672	5,700	5,990	6,262	6,262	6,262	6,262
Miscellaneous	1,757	1,879	1,806	1,942	2,086	2,251	2,327	2,388	2,453	2,521	2,595
Total Rail	75,494	75,255	72,335	74,837	83,467	86,599	89,331	96,574	100,258	103,759	105,512
Cook Strait Ferry	3,813	4,180	4,676	5,323	5,891	6,000	7,150	9,350	10,050	12,150	12,150
Road Services	6,385	6,716	6,830	7,208	7,760	8,300	8,395	8,507	8,642	8,800	8,982
Dwellings	869	929	1,029	976	953	920	922	944	946	948	950
Other Revenue	1,278	1,308	1,110	1,215	1,204	1,724	1,168	1,331	1,406	1,462	1,611
Total Revenue	87,839	88,388	85,980	89,559	99,275	103,543	106,966	116,706	121,302	127,119	129,205
Additional Revenue - Rate Adjustments											
(a) Freights and Fares 15 Feb. 71	-	-	-	-	-	992	8,088	8,868	9,184	9,674	10,024
(b) Freights and Fares 1 Oct. 71	-	-	-	-	-	-	5,080	11,187	11,624	12,191	12,373
(c) Freights1 Apr. 75	-	-	-	-							1,000
Total Operating Revenue	87,839	88,388	85,980	89,559	99,275	104,535	120,134	136,761	142,110	149,184	152,602
II. OPERATING EXPENSES (See Note 1)											
Rail											
Maintenance of Way and Works	16,848	17,855	16,064	15,902	17,824	21,537	22,219	22,588	22,733	22,943	23,020
Maintenance of Rolling Stock	13,724	14,035	13,151	13,579	15,237	18,548	19,950	21,820	22,747	23,650	23,858
Locomotive Transportation	12,125	12,018	11,441	11,415	11,729	13,499	14,704	15,758	16,232	16,863	17,100
Traffic Transportation	21,937	22,207	21,527	21,547	23,359	27,568	28,895	29,586	30,007	30,370	30,555
Superannuation Subsidy	1,087	1,124	1,297	1,265	1,495	1,550	2,402	2,496	2,548	2,605	2,628
General Charges	1,045	1,106	1,120	1,191	1,320	1,531	1,603	1,603	1,603	1,603	1,603
Refreshment and Advertising	1,859	1,945	1,854	2,002	2,111	2,420	2,504	2,543	2,585	2,628	2,674
Total (excluding Depreciation)	68,625	70,290	66,454	66,901	73,075	86,653	92,277	96,394	98,455	100,662	101,438
Depreciation	4,796	5,058	5,560	6,150	6,937	7,288	8,397	9,452	10,203	10,619	11,323
Total Rail	73,421	75,348	72,014	73,051	80,012	93,941	100,674	105,846	108,658	111,281	112,761
Cook Strait Ferry											
Expenses	1,604	2,512	3,028	3,448	3,720	4,004	4,513	5,677	6,137	7,097	7,097
Depreciation	264	481	529	538	540	551	740	1,040	1,170	1,540	1,540
Total	1,868	2,993	3,557	3,986	4,260	4,555	5,253	6,717	7,307	8,637	8,637
Road Services											
Expenses	5,688	5,961	6,002	6,336	6,760	7,839	8,207	8,291	8,394	8,520	8,661
Depreciation	561	580	696	703	754	739	765	774	785	798	814
Total	6,249	6,541	6,698	7,039	7,514	8,578	8,972	9,065	9,179	9,318	9,475
Dwellings											
Expenses	1,843	2,029	1,481	1,524	1,504	1,818	1,911	1,911	1,911	1,911	1,911
Depreciation	275	289	372	371	378	382	390	397	403	409	414
Total	2,118	2,318	1,853	1,895	1,882	2,200	2,301	2,308	2,314	2,320	2,325
Other Expenses	259	249	82	68	-						
Total Operating Expenses	83,915	87,449	84,204	86,039	93,668	109,274	117,200	123,936	127,458	131,556	133,198
III. NET OPERATING REVENUE (LOSS)											
Rail	2,073	(93)	321	1,786	3,455	(6,450)	(459)	7,140	8,581	10,212	11,787
Cook Strait Ferry	1,945	1,187	1,119	1,337	1,631	1,507	3,110	4,736	5,016	6,252	6,252
Road Services	136	175	132	169	246	(240)	494	982	1,017	1,074	1,129
Dwellings	(1,249)	(1,389)	(824)	(919)	(929)	(1,280)	(1,379)	(1,364)	(1,368)	(1,372)	(1,375)
Other	1,019	1,059	1,028	1,147	1,204	1,724	1,168	1,331	1,406	1,462	1,611
Total Net Operating Revenues	3,924	939	1,776	3,520	5,607	(4,739)	2,934	12,825	14,652	17,628	19,404
IV. INTEREST	23	562	1,067	1,494	1,880	2,091	2,682	2,785	3,159	3,043	2,677
V. NET INCOME	3,901	377	709	2,026	3,727	(6,830)	252	10,040	11,493	14,585	16,727
VI. RATIOS											
Operating	95.5	98.9	97.9	96.1	94.4	104.5	97.6	90.6	89.7	88.2	87.3
Interest Earned	170.6	1.7	1.7	2.4	3.0	-	1.1	4.6	4.6	5.8	7.2
Return on Net Fixed Assets Percent (%)	1.3	0.3	0.6	1.1	1.7	-	0.9	3.6	4.0	4.6	5.0
Note 1: Additional Expenses included because of increases in wage levels in 1970/71	-	-	-	-	-	9,700	13,400	14,200	14,600	15,000	15,200

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TABLE 16

NEW ZEALAND RAILWAYS

Balance Sheet Data
Actual 1970: Estimated 1971-1976
(NZ$ 000)

	Actual As of March 31	Estimated As of March 31					
	1970	1971	1972	1973	1974	1975	1976
ASSETS							
CURRENT ASSETS							
Cash	21,475	4,983	4,836	4,756	4,451	4,418	4,321
Temporary Cash Investment	-	4,000	-			5,000	5,000
Stores	11,989	11,700	11,700	11,700	11,700	11,700	11,700
Accounts Receivable and Other Current Assets	7,163	7,500	6,800	7,150	7,300	7,650	8,000
Total Current Assets	40,627	28,183	23,336	23,606	23,451	28,768	29,021
INVESTMENTS - WELFARE SOCIETY	117	117	117	117	117	117	117
FIXED ASSETS							
Railways							
Rolling Stock	134,737	138,131	152,554	166,499	174,118	182,746	194,004
Way and Structures	234,509	241,430	248,568	256,518	264,707	270,569	279,166
Total Railways	369,246	379,561	401,122	423,017	438,825	453,315	473,170
Cook Strait Ferries	7,992	7,992	15,914	15,914	23,914	23,914	23,914
Road Services	8,165	8,518	9,206	9,624	10,275	11,004	11,909
Dwellings	18,990	19,043	19,126	19,198	19,298	19,393	19,530
Gross Fixed Assets in Use	404,393	415,114	445,368	467,753	492,312	507,626	528,523
Less Accumulated Depreciation	81,645	88,100	96,628	106,024	115,737	126,217	138,082
Net Fixed Assets in Use	322,748	327,014	348,740	361,729	376,575	381,409	390,441
Works and Equipment in Progress	2,647	5,850	4,850	10,950	5,750	4,550	6,350
Total Fixed Assets	325,395	332,864	353,590	372,679	382,325	385,959	396,791
TOTAL ASSETS	366,139	361,164	377,043	396,402	405,893	414,844	425,929
LIABILITIES							
CURRENT LIABILITIES	9,301	8,657	8,871	7,557	7,266	7,096	7,166
IBRD LOANS	33,644	33,553	31,921	42,001	38,684	34,774	30,614
OTHER FOREIGN LOANS	-	2,637	12,447	11,278	9,723	8,169	6,615
WELFARE SOCIETY FUNDS	114	114	114	114	114	114	114
TOTAL LIABILITIES	43,059	44,961	53,353	60,950	55,787	50,153	44,511
EQUITY							
CAPITAL GOVERNMENT FUNDS	179,265	179,265	186,350	187,976	191,087	191,087	191,087
SURPLUS	-	(6,830)	(6,578)	3,462	14,955	29,540	46,267
INSURANCE RESERVES	1,734	1,814	1,894	1,950	2,000	2,000	2,000
RENEWALS RESERVE	439	439	439	439	439	439	439
FERRY REPAIR RESERVE	627	690	760	800	800	800	800
GENERAL RESERVES	9,313	9,313	9,313	9,313	9,313	9,313	9,313
CAPITAL RESERVE	131,702	131,512	131,512	131,512	131,512	131,512	131,512
TOTAL EQUITY	323,080	316,203	323,690	335,452	350,106	364,691	381,418
TOTAL LIABILITIES AND EQUITY	366,139	361,164	377,043	396,402	405,893	414,844	425,929
RATIOS							
Current Assets to Current Liabilities	4.4	3.3	2.6	3.1	3.2	4.0	4.0
Current Assets less Stores to Current Liabilities	3.1	1.9	1.3	1.6	1.6	2.4	2.4
Debt/Equity	9/91	10/90	12/88	14/86	12/88	11/89	9/91

February 1971

NEW ZEALAND RAILWAYS

Cash Flow Statement: Actual 1970; Estimated 1971-1976
(NZ$ 000)

	Actual For Year Ending March 31	Estimated For the Year Ending March 31						Total	
	1970	1971	1972	1973	1974	1975	1976	1971-73	1971-76
A. CASH REQUIRED									
1. Capital Investments									
Local Funds	-	9,337	14,425	11,941	11,406	11,280	13,909	35,703	72,298
Foreign Exchange	-	7,283	16,593	18,811	10,801	5,720	11,014	42,687	70,222
Total	14,890	16,620	31,018	30,752	22,207	17,000	24,923	78,390	142,520
2. Debt Service									
Interest									
IBRD	1,732	2,007	2,090	2,048	2,564	2,474	2,201	6,145	13,384
Other	-	84	592	737	595	569	476	1,413	3,053
Repayment									
IBRD	-	2,460	2,612	2,780	3,317	3,910	4,160	7,852	19,239
Other	-	-	355	1,169	1,555	1,554	1,554	1,524	6,187
Total	1,732	4,551	5,649	6,734	8,031	8,507	8,391	16,934	41,863
3. Total Cash Required	16,622	21,171	36,667	37,486	30,238	25,507	33,314	95,324	184,383
B. CASH AVAILABLE									
1. Internally Generated									
Net Operating Revenue (Before Interest)	5,607	(4,739)	2,934	12,825	14,652	17,628	19,404	11,020	62,704
Depreciation	8,780	8,960	10,292	11,663	12,561	13,366	14,091	30,915	70,933
Total	14,387	4,221	13,226	24,488	27,213	30,994	33,495	41,935	133,637
2. Decrease (Increase) in Working Capital - Other than Cash	1,727	(548)	1,064	(1,568)	(391)	(520)	(278)	(1,052)	(2,241)
3. Foreign Loans									
Existing									
IBRD	5,441	2,369	-	-	-	-	-	2,369	2,369
Other	-	2,637	10,165	-	-	-	-	12,802	12,802
Proposed									
IBRD	-	-	980	12,860	-	-	-	13,840	13,840
Total Loans	5,441	5,006	11,145	12,860		12,154		29,011	29,011
4. Cash Available at Beginning of Year	16,542	21,475	8,983	4,836	4,756	4,451	9,418	-	-
5. Funds Provided by State	-	-	7,085	1,626	3,111	-	-	8,711	11,822
6. Total Cash Available	38,097	30,154	41,503	42,242	34,689	34,925	42,635	78,605	172,229
7. Cash Position at End of Year	21,475	8,983	4,836	4,756	4,451	9,418	9,321		
8. Decrease in Cash During Period								16,719	12,154

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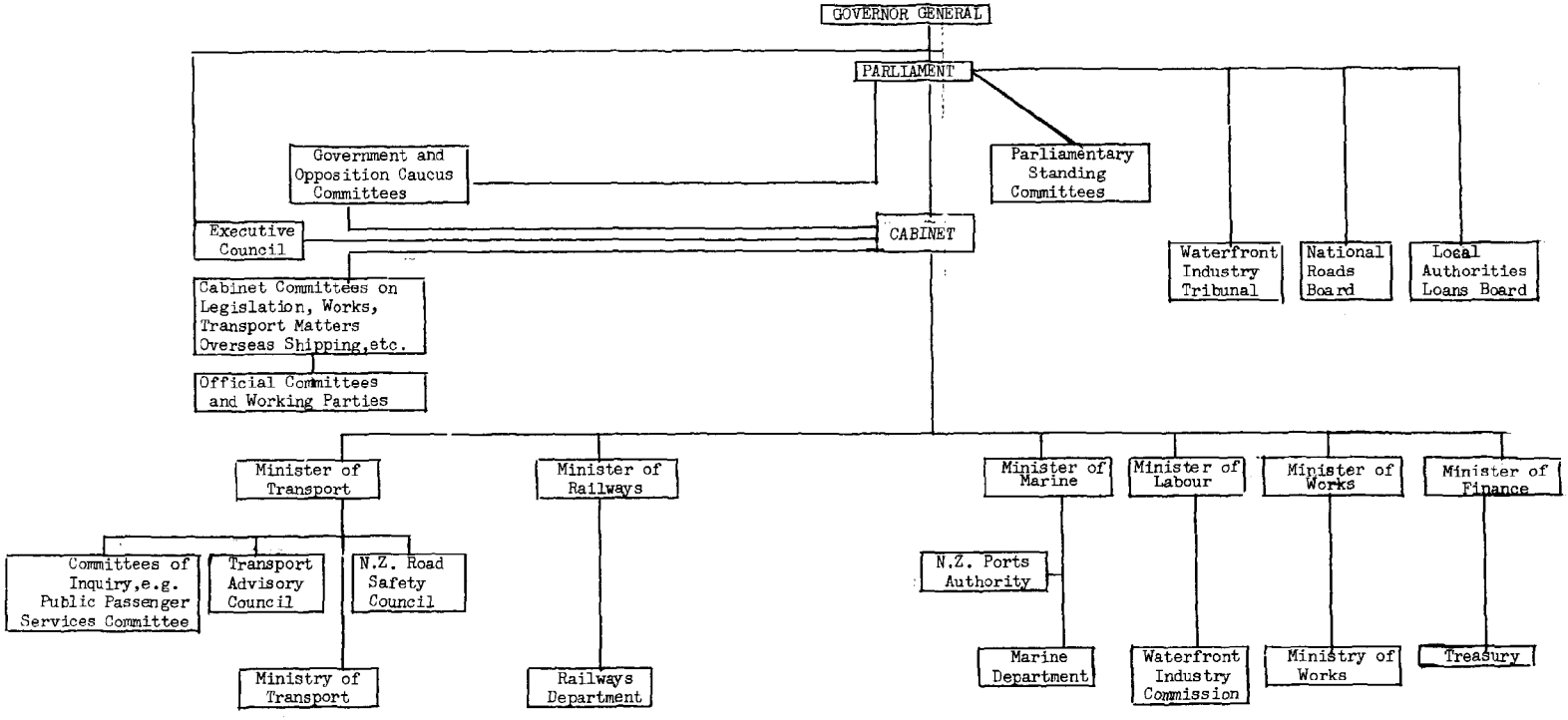
TABLE 17

GOVERNMENT INSTITUTIONS INVOLVED IN TRANSPORT ADMINISTRATION



Independent Licensing & Charges Authorities

Transport Licensing Appeal Authority

Transport Charges Appeal Authority

Air Services Licensing Appeal Authority

Transport Licensing Authorities (16)

Air Services Licensing Authority

Auckland Harbour Ferry Services Licensing Authority

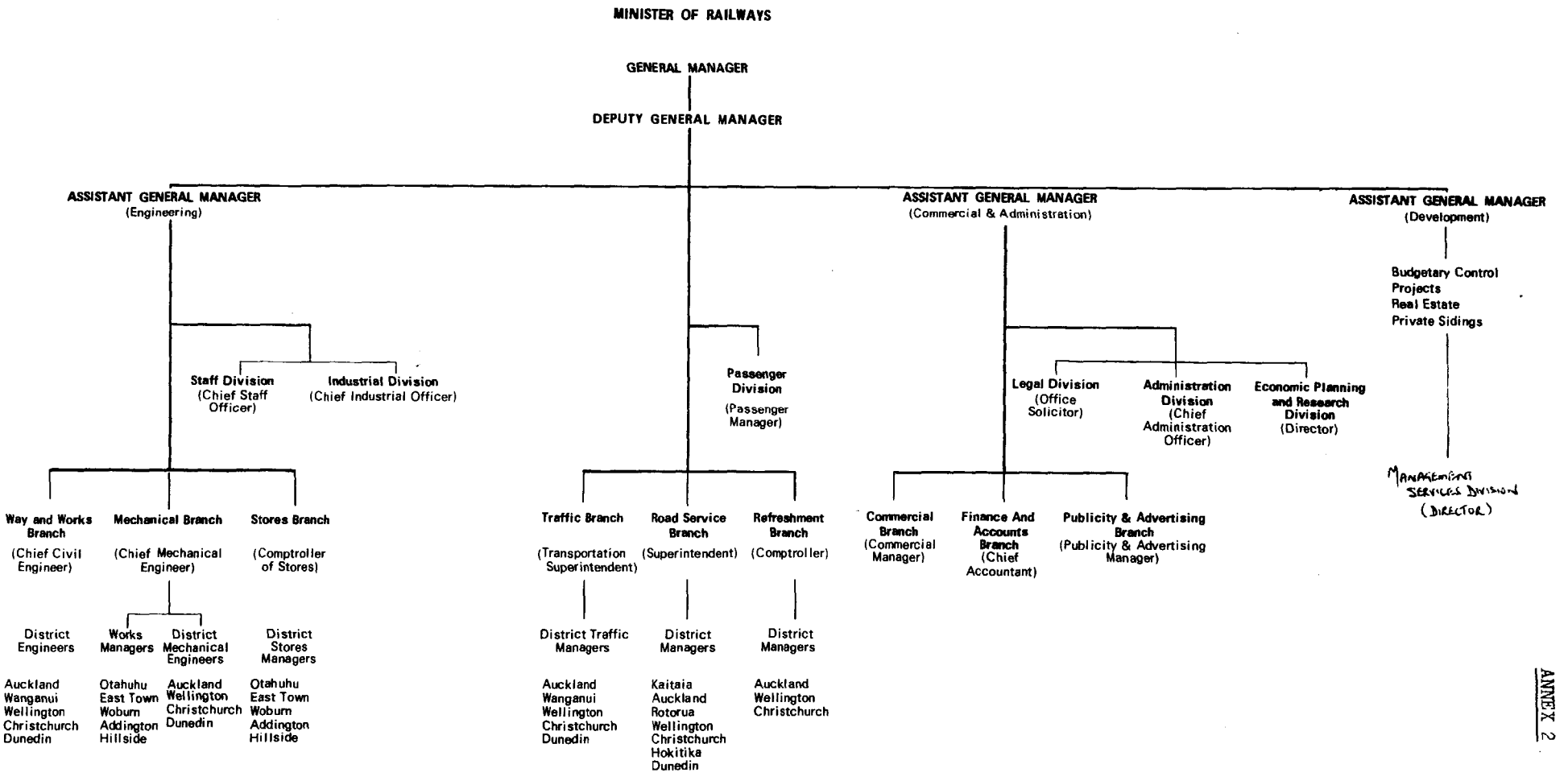
Parliamentary Control Agencies: The Auditor-General and the Ombudsman exercise jurisdiction over all departments on behalf of Parliament. The Parliamentary Law Draftsman prepares legislation for all departments.

Public Service Control Agencies: The State Services Commission exercises supervision over all departments except that the State Services Commission does not control staffing in the Railways Department.

ANNEX 1

NEW ZEALAND GOVERNMENT RAILWAYS

ORGANISATION CHART



ANNEX 2

NEW ZEALAND RAILWAYS

Explanation of Variances Between Traffic Forecasts and Actual Traffic by Commodity: 1965/66-1969/70

This annex explains in some detail the cumulative variances between actual and forecast freight carriage which are outlined in Table 6.

1. Coal: The greater-than-forecast rapid decline resulted from two factors:

(a) A quicker-than-anticipated transfer from coal to other fuels for industrial and domestic use;

(b) A drop in the demand for thermal power at Meremere in 1968.

2. Timber, Logs: The failure to attain forecast was caused by three factors:

(a) The forecast assumed that the Bay of Plenty area would not be able to support both internal and external demands, a condition that would have forced timber to move North from the South Island. This assumption did not materialize; the Bay of Plenty has been able to produce for both markets - overseas and internal - and has restricted other areas to supplying largely for local demand. Ton-miles have been reduced as a result.

(b) In overseas markets, concentration has been on the export of processed timber products rather than "raw" timber, reducing both tonnage and miles hauled.

(c) A depression in the building industry has reduced the demand for timber in internal markets.

3. Fertilizer, Lime: Actual ton-miles of lime and fertilizer carried was below forecast for three reasons:

(a) The depression of 1967/68 struck hard at the farmer with little spare cash for land development and improvement. Neither lime nor fertilizer traffic has recovered from this slump.

(b) A new fertilizer works, planned in 1965 for Wellington, has not been built. The demand is at present being satisfied from a depot in Wairarapa of the Hawke Bay works. This accounts for an unexpected sluggishness in the growth of the "raw materials for manure" component of fertilizer.

(c) The anticipated additional Government subsidy on fertilizer was not granted.

4. Pulp Products: Forecasts and actual ton-miles carried are closely matched. This occurrence in depression years suggests that there was a greater transfer from sawn lumber to finished product than anticipated.

5. Cattle, Sheep Meat: The negative variance of actual from forecast was caused largely by a greater than expected reduction in livestock carriage. Livestock net ton-miles fell from 56.3 million in 1965/66 to 23.8 million in 1969/70 because of increased road competition as restrictions on trucking were relaxed. The Railways also gave low priority to the repair of livestock wagons in a deliberate attempt to reduce the tonnage carried. Frozen meat traffic, on the other hand, followed forecasts, increasing in tonnage and average length of haul.

6. Cement: The depression of actual from forecast stemmed from three main causes:

(a) Government restriction on building and construction which was instituted in 1967, lifted in 1969 and reintroduced on a limited basis in 1970.

(b) Delay in the approval of new projects following the completion of major hydroelectric schemes in 1967.

(c) Takeover of the Te Kuiti cement works by Portland, which reduced rail forwardings by rationalizing flows and transferring most Auckland traffic to coastal shipping from Whangarei.

7. Petroleum: Actual increases were greater than forecast because of two factors:

(a) A reclassification of commodities which brought "oil, cases and drums" out of the "other commodities" category and into petroleum;

(b) Aggressive marketing efforts which developed larger-than-expected contract volumes.

8. Butter, Cheese, and Dairy Byproducts: The negative variance was due to:

(a) A drought in 1969/70 which reduced tonnage;

(b) Government incentives to change from dairying to beef production because of problems with the UK market, also to change from butter and cheese into other dairy products aimed at the Japanese and South-East Asia markets.

9. Grain, Wool: Performance of both products resulted in positive variances in actual carriage over forecast. Both tons of grain and wool carried increased modestly during the period while average length of haul increased substantially.

In the case of grain, all increase in traffic was on the North Island:

(a) Maize grown in the Gisborne area - and considered for local consumption only in 1965 - has been more in demand as a stock food. Long hauls on the North Island to Taranaki, Hawke Bay and Auckland have resulted.

(b) Government policy aimed at making New Zealand self-sufficient in wheat has encouraged more cultivation in the North Island.

10. Other Commodities: A larger-than-forecast increase materialized for three reasons:

(a) The impact of the Cook Strait ferry service, particularly on bulk tonnage and consumer goods. Much of this traffic transferred from coastal shipping more quickly than anticipated.

(b) The growth of bulk tonnage and contract rate traffic.

(c) The increasing average length of haul conveyed.

These developments are illustrated in the following table:

Changes in Selected Categories of Traffic 1965/66-1969/70
(Tons in thousands, net ton-miles in millions)

Year	Ferry Services	Bulk Tonnage		Contract Rates	
	Tons	Tons	NTM's	Tons	NTM's
1965/66	181	297	70.3	299	60.9
1967/68	344	486	129.6	394	89.1
1968/69	421	579	191.6	422	103.2
1969/70	520	707	205.2	531	135.3
% increase:					
1969/70 compared to 1965/66	187.5	137.1	191.9	77.6	122.0

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NEW ZEALAND RAILWAYS

Major Assumptions Underlying and Tests of Freight Traffic Forecasts: 1970/71 - 1975/76

A. Primary Freight Traffic Forecast:

1. General Assumptions:

(a) Ferry Services: Two additional ferries will be acquired, one in December 1971, the other in mid-1973. Each will displace 420,000 dead-weight tons and be oriented toward freight. Resultant traffic will develop as follows:

- for ferry No. 3 - traffic growth of 189,000 tons; new traffic of 231,000 tons.

- for ferry No. 4 - traffic growth of 225,000 tons; new traffic of 195,000 tons.

The estimates in both cases include additional container traffic between the islands.

(b) Containerization: Container traffic: (i) between New Zealand and the east coast ports of North America will commence in October 1972; (ii) between New Zealand and the United Kingdom will commence in October 1973.

(c) New Plant Capacity: Additional pulp processing capacity installed at Kawerau and Kinleith in 1973 will generate a 20% increase in traffic, i.e., 110,000 tons and 18 million NTM's.

(d) Network Improvement: The Kaimai tunnel will be completed by March 1973, reducing the rail distance from Frankton to Tauranga by 40 miles. The deviation will result in a net decrease of 10 million NTM's after 1972, composed of traffic presently carried on a longer route in anticipation of the tunnel's completion, offset to some extent by traffic gained from trucking.

2. Specific Assumptions Regarding Commodities

(a) Meat, Wool, Dairy Products, Fats and Tallow

(i) Effects of Containerization: Carriage of each of these commodities will increase in terms of net ton-miles (not tons) given a reduction in the number of ports handling traffic and a change in traffic flows. The following table presents estimates of additional ton-miles generated for the year ending 1976 taking into account the impact of both the North American and United Kingdom container trade:

Effects of Containerization: Year Ending May 1976

Type of Container/Commodity	Millions of NTM's
Import Container	52.7
Export Container	82.6
Total	135.3
Export Traffic includes:	
Meat	43.5
Wool	19.1
Butter, Cheese	7.2
Dairy Byproducts	8.3
Fat, Tallow	2.1
Other Commodities	2.4

Source: New Zealand Railways

(ii) Other Effects: Abstracting from the influence of containerization, traffic in all of the above goods except meat will experience either decline or very slow growth.

In the case of meat, apart from 1970/71 when a decrease is forecast because of drought conditions, an annual increase of 4% is expected. This estimate conforms to the growth forecast of the National Development Council. It is also based upon the following assumptions:

- maintenance of Government incentives to change from dairying to dairy/beef and beef production.
- growth in present Japanese and USA markets.
- future development of markets in South East Asia.

(b) Coal. The coal commodity group has been divided into five segments for forecasting purposes:

(i) Coal, West Coast South Island -- coal on short haul to port for shipment which will continue to decline;

(ii) Coal, East Otira -- long haul coal from the West coast of the South Island which will continue to decline as industry converts to other fuels;

(iii) Coal, Not Otherwise Specified -- coal traffic from other mines such as Wairio, Kaitangata, Huntly, Ohura for domestic and industrial use within a radius of 150 miles which will continue to fall for the reasons outlined in (ii) above;

(iv) Coal, Mission Bush -- coal shipments from the Huntly area to the New Zealand steel mill at Mission Bush are expected to increase as the mill, opened in 1969, approaches capacity in 1971; and

(v) Coal, Meremere -- The power station at Meremere will continue to be a source of demand for coal from Huntly whenever there is a shortage of energy from hydroelectric sources. The forecast considers that Meremere coal will be increasingly required until the New Plymouth Power Station is completed.

The aggregate forecast for coal calls for a slight increase in NTM's for 1971 due to reduced capacity at Mission Bush -- then a steady decline, some 15% over the six-year period, as the other factors outlined above come into play.

(c) Timber, Logs: Ton-mile forecasts are largely based upon probable developments in the Bay of Plenty area. A near zero rate of growth is anticipated mainly because of the trend toward carriage of timber products rather than raw timber. Estimates shown allow for completion of the Kaimai Tunnel in 1973. An assumption has been made that timber and log traffic in the rest of the country will follow National Development Council forecasts.

(d) Pulp Products: Carriage of pulp products is forecast up 31% over the six-year period for two major reasons:

(i) A 20% increase in pulp capacity as new equipment is brought into operation at Kinleith and Kawerau during 1973. Production at these locations will be aimed

at export markets, particularly Australia. The average length of haul of this traffic will decrease upon the opening of the Kaimai Tunnel.

(ii) The continuance of a general trend away from logs and timber towards pulp and finished wood products for export.

(e) Petroleum: An increase of 27% is anticipated as national demand for petroleum products continues to rise. This rate of growth in rail carriage is somewhat below national oil consumption forecasts because the major growth centers are, and will continue to be, served by company-owned coasters emanating from the refinery at Whangarei. Further discoveries of natural gas could reduce the annual rate of growth for petroleum slightly. Increasing overall demand for clean fuels, however, will minimize this impact.

(f) Other Goods

(i) Bulk tonnage. The forecasts show increases in both tonnage and average length of haul. Three major influences will continue to buttress this growth:

- the overall attractiveness and flexibility of the service to the user will increase demand as the economy expands.

- increase in ferry capacity for inter-island transport will cause internal movement to increase at an increasing rate as plant locations are rationalized.

- the major segment of traffic growth will occur on routes between major centers serviced by bulk tonnage operators which are some distance apart, i.e., on routes between:

Auckland - Wellington	(426 miles)
Auckland - Christchurch	(644 miles)
Wellington - Christchurch	(218 miles)
Wellington - Dunedin	(448 miles)

B. Supplementary Freight Traffic Forecasts Based Upon Sensitivity Analysis:

The sensitivity of the primary traffic forecast to changes in major assumptions has been tested in some detail by Railways officials. The following supplementary forecasts outline possible developments should restrictions on road transport be eased or removed entirely. The analysis is divided into two actions: (1) forecasts which do not assume total relaxation of restrictions and (2) forecasts which do assume total relaxation.

1. Forecasts which do not Assume Total Relaxation of Restrictions on Road Transport

The Railways believe that it is unlikely that all restrictions on road transport would be relaxed simultaneously. Further liberalization would probably be implemented via one of two possible strategies, either through:

Hypothesis A: relaxation by mileage limits on an across-the-board commodity basis.

or

Hypothesis B: removal of restrictions of specific commodities.

(a) Assumptions underlying Hypotheses A and B: The following assumptions underlie the strategies and the forecasts developed from them.

(i) Hypothesis A - Alteration in mileage limits:

- institution of 50-mile limit by April 1971.
- institution of 60-mile limit by April 1973.

(ii) Hypothesis B - Alteration of commodity limits:

- complete removal of restrictions on grain, root crops, fruit and vegetables by April 1971.
- complete removal of restrictions on wool, artificial manures and agricultural lime by April 1973.

(b) Forecasts Developed from Liberalization of Hypotheses A and B
Table 8 compares the forecasts derived from Hypotheses A and B with the primary forecast in terms of tonnage, net ton-miles, revenues and rates per ton-mile.

The losses, should Hypothesis B be implemented, are initially less than the losses under Hypothesis A but become more severe as restrictions on other farm traffic, particularly artificial fertilizers, are lifted.

The impact on revenue and tonnage of Hypothesis A would be to reduce total freight revenue by NZ$2,336,000 in 1975/76 and the tonnage by 774,000 tons. This is less of an impact than Hypothesis B which would reduce revenues by NZ$ 3,056,000 and tonnage by 871,000 tons in the same year.

These losses could be reduced by better marketing aimed at a selective approach to traffic retention. Efforts could be made to retain flows which are profitable and to discard those which are more efficiently conveyed by other modes of transport. Savings would also accrue from a reduction in the stock of wagons as much of the tonnage removed is highly seasonal in nature.

The effects of deregulation as embodied in these strategies would be more severe in the South Island than the North Island as 70% of the grain traffic, 33% of the wool traffic and 30% of the artificial fertilizer traffic originate in the south.

2. Forecasts which do Assume Total Relaxation of Restrictions on Road Transport

The Railways have also undertaken a complete analysis of the vulnerability of their traffic to road competition should all restrictions on the latter mode be dropped. The sensitivity of each main category of traffic weighted for tonnage was tested separately over six discrete mileage intervals: from 1-40 miles, 41-60 miles, 61-80 miles, 81-100 miles, 101-210 and over 210 miles. The following estimates of potential traffic losses to road by commodity were calculated for the years 1970/71 and 1971/72.

Potential Traffic Lost

Commodity:	% of primary forecast representing potential traffic lost to road
1. Coal	
Not otherwise specified	33
ex West Coast, South Island	8
East Otira	8
Mission Bush	-
Meremere	-
2. Timber, logs	25-27
3. Agricultural lime	24
4. Artificial fertilizers	38
5. Raw material for manures	10
6. Pulp products	8
7. Cattle, sheep meat	8
8. Cement	20
9. Petroleum	4
10. Butter, cheese, dairy byproducts	-
11. Grain, meals	25
12. Wool	24
13. Other commodities:	
fat, tallow	18
road materials	10
machinery, motor vehicles	20
scale rates	2-33
bulk tonnage	20
local rates	20

This analysis, when aggregated for total freight traffic, yielded the following results:

For 1970/71:

total tonnage loss:	14% or 1,680,000 tons
total NTM loss:	17% or 293,000,000 NTM's
total revenue loss:	17% or NZ$ 13,300,000

For 1971/72:

total tonnage loss:	15% or 1,840,000 tons
total NTM loss:	17% or 306,170,000 NTM's
total revenue loss:	17% or NZ$ 13,900,000

These results represent most pessimistic estimates. They take into account volumes of traffic that would probably shift to road if the Railways did nothing to offset the total relaxation of regulatory constraints.

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NEW ZEALAND RAILWAYS

Items Included in the Project

1. The total foreign exchange cost of the Project is estimated at US$47.8 million. Table 12 gives a complete breakdown of the costs of individual investments as well as the proportion represented by each in the total Project. The following paragraphs describe the nature of these investments more fully.

2. Freight and Passenger Cars. The largest item in the Project, amounting to about 33% of the total cost, is the procurement of 2,010 freight cars of various types, mainly as a replacement of outdated stock, uneconomical to keep in service. The new cars will be of greater loading capacity and will include 670 bogie flats for the growing container traffic. About half of the freight cars as well as the ballast cars would be imported knocked down, but complete and ready to erect. The other half, consisting of wagons simpler to build, would be manufactured in the Railways' workshop, with imported components amounting to about one-third of the total cost. The passenger cars to be procured consist mainly of a new set of railcars for the express service between Wellington and Auckland. No expenditure is envisaged for suburban traffic.

3. Locomotives. With the complete elimination of steam, nine diesel shunters are needed for operation in stations, yards and private sidings. Of the present fleet five 1425 HP locomotives are to be modified for low-speed operation in a new marshalling yard and 10 old light-weight locomotives, expensive to maintain, are to be scrapped in 1973 after the opening of the Kaimai deviation. The 15 new 2500 HP locomotives (already ordered) could handle the heaviest trains, now operated with two 1425 HP locomotives, thereby reducing operating costs.

4. Cook Strait Ferry. A third and a fourth ferry have been ordered to supplement the Aramoana and the Aranui presently in service and whose capacity is not sufficient to meet the traffic demand. They will have much greater capacity than the present ships for the conveyance of rail and road vehicles. The third ferry will carry only a limited number of passengers while the fourth will be exclusively for freight.

5. Mechanical Handling and Workshop Equipment. Three transtainer cranes will be installed, two in Wellington and one in Auckland, the two ports where most of the container traffic is to be concentrated. Other cranes, gantries and lift-trucks will be procured to deal with containers at various locations in the network. The workshop equipment consists of wheel lathes to replace outdated machines and plant equipment for the diesel workshops. Mechanical track maintenance machinery is also included under this heading to replace manual work and help solve the labor shortage problem.

6. Permanent Way. As in all railways, this item is important, and represents about 12% of the Project. It comprises the capitalized portion of main line track improvements and realignments, bridge renewal and strengthening as well as some construction and housing improvement for permanent way personnel in remote areas.

7. Stations and Yards. In connection with a second berth for the additional rail ferries, to be built in Picton, a yard rearrangement is scheduled which shall provide additional operating sidings in order to increase the wagon reservoir and to allow the closing of some nearby stations. Facilities for inspection, cleaning and servicing for express trains as well as passenger terminals are to be provided in Wellington and Auckland. In Auckland, a new yard development is to replace several small yards in the metropolitan area and make valuable land available for sale.

8. Workshop Buildings. Civil work for the workshops consists of new sheds and improvements of existing buildings, following the change from steam to diesel traction. About NZ$ 1.2 million with no foreign exchange is required during the project period for this purpose.

9. Tunnel Clearance and New Tracks. A program of tunnel clearance improvement is under way and most of the tunnels on the North Island are already prepared for container traffic. Also provided under this heading are small amounts for studies for the proposed Rotorua-Paengaroa line.

10. Signalling. Improvements in the existing signalling system are to be provided related to increasing traffic, and CTC is to be installed on some lines where the savings justify the initial cost.

11. Road Vehicles. Regular replacement of vehicles for the road services amounts to NZ$ 1.0 to 1.3 million annually. No foreign exchange is involved in this continuing program.

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NEW ZEALAND RAILWAYS

Items to be Financed by the Proposed Loan

1. As shown in Table 12, the total foreign exchange cost of the Project is estimated at US$47.8 million, of which US$16 million or about 33% would be financed by the proposed loan. The individual costs of the Bank financed items are shown in Table 13. About 86% of the loan would be used for the procurement of 1,100 freight cars and 100 ballest cars imported in knocked down condition and of imported parts for 610 freight cars to be manufactured in the Railways workshops. For the latter wagons, the imported parts (castings, roller bearings, brake equipment, etc.) represent about one-third of the final cost. Other items to be financed by the proposed loan are two wheel lathes, one ballast cleaner and signalling equipment for two lines totalling 48 miles.

2. Freight Cars for Pulp Paper and Newsprint. The load factor of the existing wagons used for transporting these products is not satisfactory. The present average loading is slightly over 9 tons (maximum load 15 tons). The major obstacle to higher average loadings is the width of the wagons and the height of the sides. By increasing the width from 7 ft. 7-1/2 in. to 8 ft. and the height of the sides from 3 ft. 8 in. to 4 ft. 6 in., the average payload would increase to about 12.5 tons for the 4-wheelers and 25 tons for the bogie wagons. In determining the number of 4-wheeled and bogie wagons required, it must be noted that about 60% of consignees receiving pulp products order in 12-ton lots and the requirement must continue to be catered for in this form.

3. The proposed procurement is thus for 600 Lpa 4-wheelers and for 200 Rpa bogie wagons of respectively 12.5- and 25-ton capacity, actual loading. The total capacity would then be 12,500 tons and, with an average turn-around of 7 days, a total of 460,000 tons could be transported. The 1970 tonnage of "Products of NZ Pulp Mills" was 586,551 tons and a 42% increase in production is scheduled for 1974 which means that the new wagons alone would not be enough to carry the load and that a portion of the present wagons shall remain in use for this traffic.

4. Freight Cars for Import/Export Containers. Very close collaboration has been maintained by the Railways with the various shipping lines, and latest figures indicate a total of 135.3 million net ton-miles. With an average length of haul of 135 miles and a turn-around time of 7 days, the corresponding fleet capacity needed is about 26,900 tons or 670 wagons of 40-ton capacity. As the traffic is already scheduled to start in 1971 it is proposed to import 300 wagons completely knocked down while the other 370 would be built in the Railways workshops with some imported parts. The proposed loan would finance the 300 imported wagons and imported components for 170 locally-built wagons. Construction of the remaining 200 locally-built wagons is already under way.

5. The wagons would have a maximum load of 42.5 tons and would be capable of carrying one 40 ft. or two 20 ft. containers, 8 ft. or 8 ft. 6 in. high, some fitted with clip-on refrigerator units. The provision of a central deck 12 ft. long will permit the 20 ft. containers to be loaded without removal from the wagon, thus eliminating the need for expensive transfer equipment. All this loading represents new traffic for flat top wagons and is beyond the capacity of the present fleet which is fully employed in the conveyance of timber, pulp, steel and other commodities.

6. Additional Wagons for Steel Products. In May, 1968, the construction of 150 Us wagons to meet, in the main, requirements of NZ Steel Company was approved. However as construction commenced, unforeseen demands for additional transport of export logs and containers for bulk tonnage operators necessitated the conversion of 133 of these wagons. Authority for 50 further Us wagons was then obtained and 13 of these have already been converted to Usk for bulk tonnage operators container traffic. Thus out of a total of 200 wagons ordered, 146 have been diverted to special classes and there is an urgent need for additional Us wagons to cater for NZ Steel Company's traffic which is increasing with forecast demand. Consequently it is proposed to start a program of 400 Us wagons, to be built in the railways workshops with foreign components to be financed by the proposed loan.

7. Additional Bogie Flats. Smaller amounts have been included for the procurement of imported parts for the manufacture of 40 bogie flats. Twenty will be of the Usl type and are required to supplement the 188 log wagons of various classes already in service to cope with forecasts of timber trade expansion. The other 20 will be of the Usk type in addition to the present 58 similar wagons and are required when the third Cook Strait ferry enters service for bulk tonnage operators.

8. Ballast Cars. The present stock of NZR's specialized ballast cars consists of only 26 units, which is insufficient for a network of this size. Ballast is frequently transported on ordinary freight cars needed for general traffic and unnecessary manpower is required for regulating unevenly spread ballast. Spreading ballast evenly on the track is achieved only with hopper cars provided with adequate discharge doors in the center and on the side. The 100 hopper cars to be procured would be imported complete, but in knocked down condition and assembled in NZR's workshops.

9. Wheel Lathes. Two wheel lathes are to be procured, one for Hillside (Dunedin) and one for Christchurch. The Hillside lathe is to replace an obsolete "London" machine purchased in 1926 for the steam depot and not economical for turning diesel locomotives tires while the other is to be an underfloor wheel lathe, for the re-profiling of tires and thus avoiding the unnecessary stopping of locomotives, freight cars, railcars and electric multiple units for bogie changes. Experience with a similar machine at the Wellington depot has shown that the tires on a diesel locomotive can be skimmed and the locomotive returned to service after about 40 manhours of work, compared with approximately 600 manhours of

work involved in a normal bogie exchange. The Wellington lathe can capably handle the skimming for all North Island vehicles and the new one to be installed at Christchurch will perform the same job on all South Island vehicles.

10. One Ballast Cleaner. This machine is intended to work on Sundays only, when full track occupation can be provided during 10 hours. The savings in manhours are such that, even with this limited use, they represent about 150% of the total annual cost of the machine, assumed to be depreciated in only five years.

11. Signalling. The last item proposed for Bank financing consists of providing CTC on two branches, Waiuku (12 miles) and Murupara (36 miles), where there is no signalling of any kind at present. The traffic on the Waiuku branch consists of heavy loads to and from NZ Steel Company in Mission Bush and it is essential that the trains pass through Paerata as quickly as possible to minimize delays to main line trains in this increasingly busy area. Traffic forecasts by Tasman Pulp and Paper Company show an increasing consumption of logs from Murupara and an increasing trade in export logs through Mount Maunganui, at a level where signalling has to be provided.

12. Tablet machines are no longer manufactured and the modern trend gives option of CTC at a cost of about NZ$ 8,500 per mile or of single line automatic signalling at a cost of about NZ$ 6,800 per mile or 20% cheaper. Due to the savings in manpower, housing and intermediate stations inherent to the CTC operation, the additional initial investment is justified under New Zealand conditions.

January 1971

ANNEX 7

NEW ZEALAND RAILWAYS

Principal Assumptions - Financial Forecasts

The financial forecasts are based on the following principal assumptions:

1. The primary freight traffic forecast (para. 3.14);

2. The passenger traffic forecast (para. 3.16);

3. Freight rate adjustment of 12% on a selective basis and increase of 10% in passenger fares as of February 15, 1971;

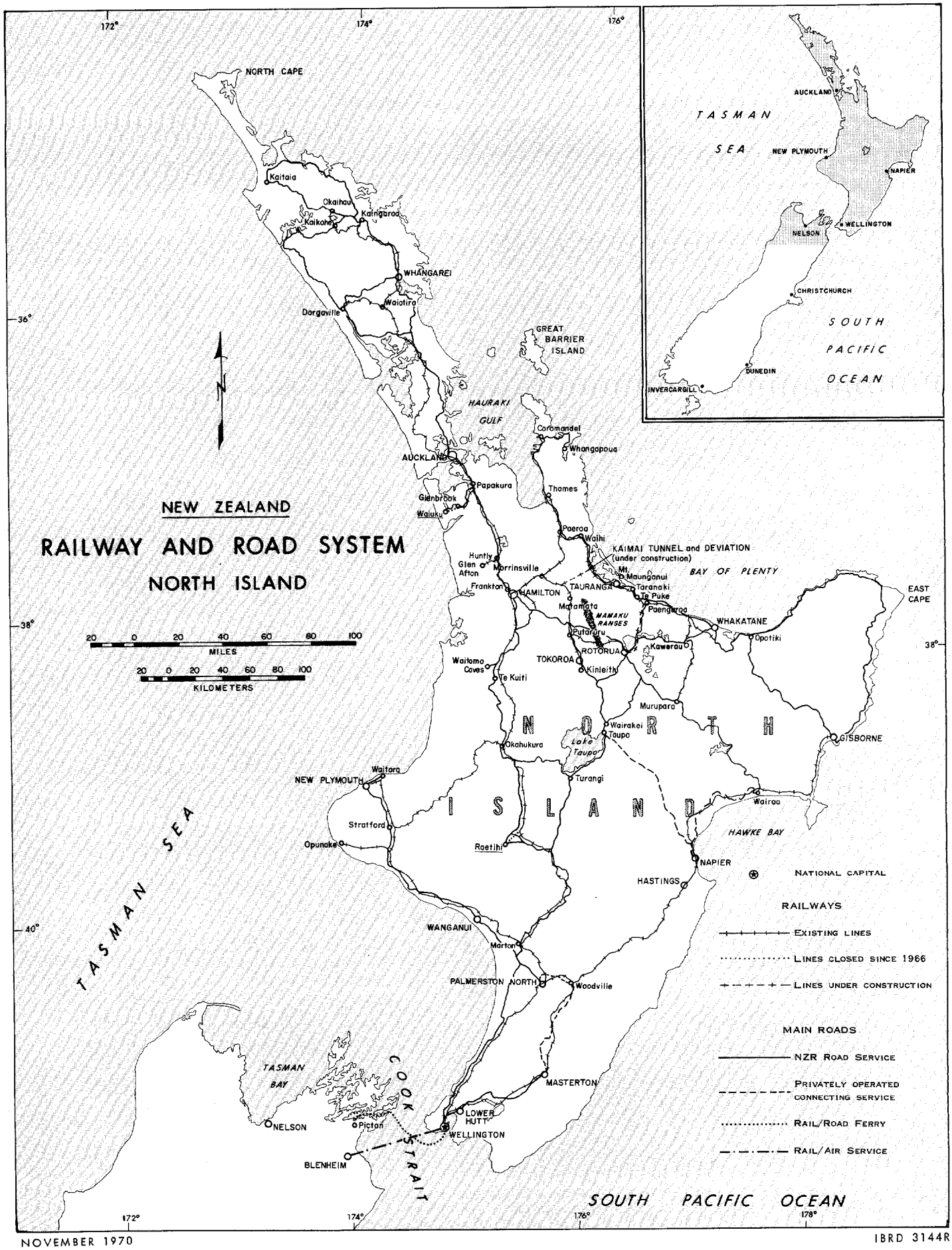
4. Increase of 10% in freight rates and fares as of October 1, 1971; selective increases in freight rates as of April 1, 1975;

5. Increases in wages and salaries in 1970/71 in addition to those already granted in this year amounting to a total of NZ$ 9.7 million in 1970/71 and in 1971/72 on a full year basis, to NZ$ 13.4 million;

6. Otherwise, constant 1970/71 rates and prices of railway goods and services, and that to the extent such prices rise in excess of those referred to in item 5 preceding, rates and fares, to compensate, will be adjusted upward, to the extent the higher costs cannot be offset by lower expenses or greater traffic, than included in the forecasts; and

7. Government to provide the foreign exchange needed in excess of that to be provided by the proposed Bank loan.

February 1971



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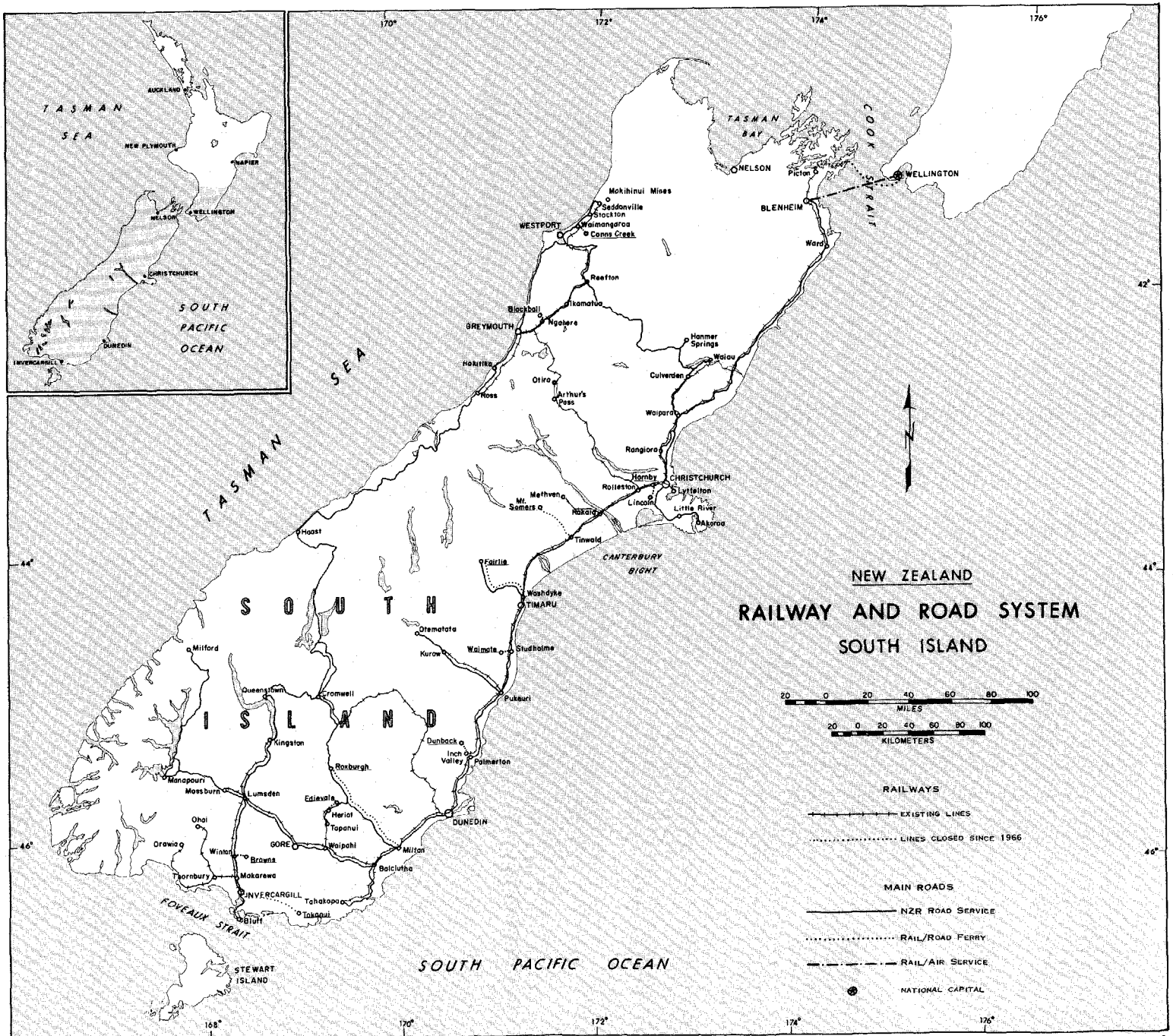

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