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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION

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MALAYSIA'S DEVELOPMENT PROSPECTS AND PLANS  
(In four volumes)  
VOLUME III  
TRANSPORTATION SECTOR  
MALAYSIA

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CURRENCY EQUIVALENTS

Currency Unit		Malayan dollar
1 Malayan dollar	=	U.S. \$0.327
1 U.S. \$	=	M\$ 3.06
M\$ 1 million	=	U.S. \$327,000

## PREFATORY NOTE

This report was prepared by M. Palein, and based largely on a draft prepared - on an earlier mission in May 1965 - by A. J. Carmichael (of the Bank) and W. Hughes (Consultant).

The report deals only with the transportation sector of the States of Malaya, and makes no analysis of the Borneo States.

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## I - THE TRANSPORT SYSTEM

### Historical Background

1. Physical and climatic conditions constitute obstacles to the development of the transport system of Malaya. The central mountain range, reaching 7,000 feet in height, forms the backbone of the country and separates the east from the west coast. The generally east-west courses of the river systems and their ill-drained and boggy lower reaches with peat deposits and mangrove swamps inhibit transportation along the coasts, particularly in the east. In many areas of Malaya, the high incidence and heavy concentration of tropical rainfall combine with the broken topography and the weak subsoil structure of the lowland areas to make road construction and maintenance a difficult task. During the monsoon season, a large proportion of the roads, excluding the best all-weather ones, are rendered impassable for long periods of time.
2. In the pre-colonial era, when European attention was directed to trade rather than production, economic activity was concentrated in the areas adjacent to the Straits of Malacca which represented a strategic link in ocean communication between the Far East, South Asia, and Europe. At that time the transportation system was oriented to the service of specific ports and their hinterlands, particularly Penang in the north and Singapore in the south. Water transport was predominant, navigable rivers linking a port with its hinterland, and coastal shipping provided transport service between the ports.
3. Later, concentration on production, first in tin mining and then in rubber production, directed transportation and communication developments in Malaya to the opening up of rich tin ore areas, such as the Kinta Valley and the region near Kuala Lumpur in Selangor, and to the service of areas where extensive rubber estates were being established. Such developments occurred mainly along the west coast. The gradual growth of population on the west coast also necessitated a north-south linkage with the surplus padi producing areas of Kedah and Perlis. The pre-World War II era of rapid tin-mining and rubber development saw the completion of the railroad network in Malaya. At first, this began as a group of isolated systems ancillary to the various port and mining concentrations, but later it was linked up to form a unified system along the west coast, so that by 1918 rail communication from the Thai border to Johore Bahru was effective. A causeway was built in 1923 to link Johore Bahru and Singapore across the Johore Strait. A branch line running up to Kota Bahru through Pahang and Kelantan was completed in 1931, providing an alternative route to Thailand.
4. Last to be developed was the road system with a similar western concentration. This frequently followed old tracks and was therefore very circuitous, but with slight gradients. Surfacing was with laterite gravel, mud-stone and sandy clays. In Malaya, this system gradually coalesced into several major trunk roads: a main north-south highway along the west coast, a transversal highway across the central part of the country and a road following the northern part of the east coast.
5. In the field of aviation, the first international links were established around 1932, while domestic passenger air transportation was inaugurated in 1936.

## The Present System

### (a) Ports

6. The west coast of Malaya is well supplied with major deep-water ports, while the east coast has only minor ports with limited depths of water alongside and often a bar obstructing the approach channel. After the withdrawal of Singapore the two most important ports of the Federation are Penang and Port Swettenham. Although there has been a decline, Singapore still handles about 40% of external traffic to and from Malaya.

7. The port of Penang consists of two ocean-berths on the island, the "roads" between Penang and the mainland which are served by lighters, and port facilities at Prai and Butterworth. The authority responsible for the operation and development of the port is the Penang Port Commission. Penang is a major port of entry for north-western Malaya. It also conducts entrepot trade with Burma and Thailand. Before Indonesian confrontation, entrepot trade accounted for about one-quarter of the value of the port's commerce. Traffic through Penang has been seriously affected by the falling off of iron ore exports and by Indonesian confrontation. Thus, total cargo handled fell from 4.2 million tons in 1961 to 3.2 million tons in 1964. Sharply increasing in the recent past have been timber shipments, though these still only constitute a minor export item (50,000 tons in 1964). There is a noticeable evolution toward the gradual capturing of traffic by wharves on the mainland while the importance of lighterage is decreasing.

8. Port Swettenham is located about 27 miles from the Federal Capital of Kuala Lumpur, in an area of dense population and rapidly increasing industrial activity, near the intersection of the two major highways in Malaya, Route I and Route II. The port is served by railroad and until recently was operated by the Malayan Railway Administration. Since its separation from the Railway the port is operated by an independent body, Port Swettenham Authority. The port facilities include three ocean berths, two berths for coastal ships and one lighter wharf. In addition, four new deep-water berths have been constructed at the North Klang Straits, a few miles north of the existing port, during the 1961-65 five-year Plan, at a cost of nearly M\$50 million. The overall efficiency of the port's operations has also increased considerably. Total cargo handled in the port rose from 2 million tons in 1961 to 2.4 million tons in 1963 and 1964.

9. Including the activities of other lesser ports such as Malacca, Dungun and the river port of Teluk Anson which serve local industry and fishing vessels, total cargo handled in the ports of Malaya reached 16 million tons in 1964, a 16% annual increase since 1962. (See Table 1 in Annex for composition of traffic from 1962 to 1964).

10. Coastal shipping performs a significant part of the function of re-distributing consumer goods, foodstuffs and oil products in connection with Singapore's entrepot trade. Small ports are also outlets for local produce, such as logs, rubber and livestock. Increasing quantities of iron ore are being exported through some of the minor ports, notably those on the east coast, Dungun having particularly increased its share of the traffic.

(b) Highways

11. In 1963, the road system of the States of Malaya comprised 2,557 miles of Federal roads and 5,436 miles of roads under State jurisdiction. To this total of 7,993 miles should be added 450 miles of urban roads. By the end of 1965, it is estimated that total length of non-urban roads exceeded 9,200 miles.

12. The greatest part of the Malayan road network lies along the west coast where most agricultural, mining and rubber plantation activities have developed. The remainder serves the central part of the country and the east coast, where the highest population density is in Northern Kelantan.

13. Major trunk roads comprise the following three main arteries:

Route I, from Johore Bahru in the South to Kangar in the North, along the west coast, via Kuala Lumpur;

Route II, from Port Swettenham on the west coast to Kuantan on the east coast;

Route III, running along the east coast from Pekan, near Kuantan, north to Kota Bahru, and now prolonged by the new section Pekan-Mersing, completed in 1964.

Most other roads are of a feeder or rural development type, with lower standards.

14. A breakdown of non-urban roads by type of surfacing is shown below:

Malayan Road System, 1963

(Miles)

<u>Type of Road</u>	<u>Federal Roads</u>	<u>State Roads</u>
Concrete surface	11	15
Bituminous metalled surface	2,372	3,217
Waterbound metalled surface	2	144
Hard surface - bitumen sealed	81	671
Hard surface - waterbound	32	952
Earth surface	<u>59</u>	<u>437</u>
Total	2,557	5,436

15. A remarkable proportion of the total mileage is paved. By the end of 1965, it was estimated that over 80% of non-urban road mileage will have a bituminous surface. Though gradual improvement was noticeable since 1950, the whole system was brought into being with little or no planning at all. As a result, there is a great deal of black top in the wrong places.

16. The responsibility for the planning of Federal roads technically lies with the Minister of Transport in consultation with the Minister of Works, Posts and Telecommunications, and the Minister of Rural Development. In fact, however, it appears to be the Public Works Department that consults with the Ministry of Transport on road construction and not the other way around. Perhaps this arises because the funds for roads and bridges are included in the estimates of the Public Works Department which carries out all works, Federal and State. Broad investment plans are drawn up by the Economic Planning Unit of the Prime Minister's Department for both Federal and State roads. However, the major task of initiating road building projects and approving State projects practically lies with the Public Works Department. Notwithstanding the technical responsibility of the Ministry of Transport for planning highways, this body takes little active part in the process.

17. The initiative for most new State roads comes from the District Officer who confers with the District and State Engineers. However, this does not always follow a set pattern and as often as not new road programs are proposed by the Chief Minister rather than the State Engineer. Each State builds roads with its own funds. If the highway is approved by the Public Works Department, the State is reimbursed by a Federal grant, though it remains responsible for maintenance during the first two years. If the highway is not approved, the States must bear the cost from their own revenues, although this happens in only 10% of the cases. To qualify for reimbursement, rural road construction must meet certain prescribed standards. Since rural roads may be feeder roads connecting main highways as well as roads serving villages and carrying little traffic other than pedestrians and bicycles, desire to meet Federal standards to ensure reimbursement often leads to the construction of roads with much higher standards than needed and at a much higher cost than appropriate. A similar rigidity arises from a provision in the Constitution, allowing for a grant of M\$4,500 per mile for the maintenance of State roads. Since maintenance costs vary widely, the grant is frequently inadequate and may lead to either excessive or insufficient maintenance of the facilities.

18. Limited funds are also made available to the Rural Industrial Authority for construction of unclassified minor rural roads and to the Federal Land Development Authority for roads within its land settlement schemes.

19. It is highly regrettable that there should be little or no planning in the proper sense of the word and that little economic appraisal should take place, whether on a benefit-cost basis or by other means. There is also no attempt to rank projects by economic worth. The amount spent in the past, or the likelihood of finances being available are the main yardsticks by which schemes are measured. There is high pressure in Parliament toward the satisfaction of local demands, and little rational economic argumentation prepared to successfully oppose these claims.

(c) Railways

20. The Malayan Railway originated as a group of State Railways which were later unified. It now operates 1,028 miles of meter-gauge, mostly single track. The main line, 488 miles long, runs along the west coast from Singapore to Prai near Penang. From Bukit Mertajam, near Prai, the line extends to the Thai border at Padang Besar and connects with the State Railway of Thailand. Short branch lines serve the railway-operated ports at Port Dickson, Teluk Anson and Port Weld. The east coast line branches off at Gemas, extends for 327 miles through central Pahang and Kelantan, and terminates near Kota Bahru. From Pasir Mas, south of Tumpat, a branch line also connects with the State Railway of Thailand at Sungei Golok.

21. The Malayan Railway Administration is wholly owned by the Government of Malaysia, and comes within the purview of the Minister of Transport, so that Railway financial estimates must be approved by the Minister, the annual accounts laid before Parliament and the accounts subjected to the scrutiny of the Auditor-General. The management of the railway devolves upon the General Manager, who is appointed by the Yang-di-Pertuan Agong on the recommendation of the railway Service Commission.

22. The Manager is advised by a Railway Board, which consists of the Manager, who is the chairman, five Government representatives and not less than five other persons. The Manager must consult the Board on the following matters:

- (a) any substantial alteration in tariffs or charges;
- (b) draft estimates of revenue and expenditure, including capital expenditure;
- (c) extraordinary expenditures of any sums for special or emergency works;
- (d) substantial changes in the organization of the railway and the staff establishment;
- (e) schemes relative to the expansion and development of the railway;
- (f) any policy of construction of new works before its adoption as a settled plan;
- (g) major questions of policy in connection with the working or management of the railway.

23. The General Manager must not act in opposition to the opinion of the Board without the authority of the Minister of Transport. Moreover, the Minister has the power to direct the Manager on any matter, and while the railway is a legal entity empowered to sue, be sued and enter into contracts, it is controlled much like other government departments. The Port Swettenham Board advises the General Manager on similar matters relating to the administration and operation of the port.

24. The railway management is restricted in its freedom to operate as an autonomous corporation. Railway staff have always maintained that they are civil servants and should enjoy the same rights, privileges and advantages as others in the public service. The Railway Service Commission is independent and the railway management is not represented in its membership. Apart from recommending the appointment of the General Manager, the Commission, since 1957, has the responsibility for recruitment, appointment, promotion and discipline of railway personnel. Such matters were previously of management concern only and covered by the Railway Ordinance of 1948.

25. Good management practice dictates that authority and responsibility should be co-extensive and a situation where railway management cannot, by constitutional law, manage its employees, while being held accountable for their actions and financial performance is extremely unsatisfactory. There is little doubt that this situation of divided power and responsibility has led to many, if not most, of the staff troubles of the railway in the last few years. The situation is unparalleled in Malaya: the Central Electricity Board has freedom to manage and the responsibility for being commercially viable; the Civil Service proper has no power to manage but then it does not have to "make ends meet". The railway has had to do the best it can with a hybrid form of administration. Because the situation arises from constitutional provisions, little can be done without legislative changes.

26. Railway traffic development has been seriously affected by increasing competition arising mainly from road transport. Yet the Railway continues to play a significant role in the transport field. It is estimated that it handles 17% to 20% of total goods traffic, and up to 25% of the movement of certain important bulk commodities. The Railway also retains an important proportion of bulk exports through Penang and Port Swettenham (about 46% in 1962) and a smaller proportion of import traffic through the same ports (15%). The following table shows a breakdown of freight traffic for the years 1959 through 1964 (except for 1963, for which detailed figures are not available).

Malayan Railway

Net Ton-miles Transported (Million)

<u>Commodity</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1964</u>
Iron ore	80	119	148	106	47
Tin and tin ore	7	11	11	11	12
Other minerals	6	9	11	11	12
Rubber and latex	48	45	44	45	48
Timber and logs	17	22	17	24	39
Food	30	32	35	31	43
Rice and padi	24	38	39	43	31
Petroleum products	19	27	27	28	63
Building materials (incl. cement)	37	54	55	61	71
Others	70	75	77	72	74
Total goods traffic	338	432	464	432	442
Total excluding iron ore	258	313	316	326	393

27. Iron ore traffic, accounting for 24% of total freight between 1959 and 1964, had been increasing rapidly until 1962 when sharp declines in volume occurred. Further reduction in the volume of iron ore transported by the Railway can be expected in the coming period as iron ore production declines due to the exhaustion of known resources. The recent deterioration in iron ore shipments can be seen from the following data:

Iron Ore Traffic and Revenue

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>
Revenue (M\$ Million)	8.49	5.98	3.53	2.63
Tonnage (Tons 000s)	1,737	1,325	891	833
Average Haul (Miles)	85.3	80.1	65.2	56.1
Revenue Per Ton (M\$)	4.89	4.51	3.96	3.15

Excluding iron ore, traffic has been expanding steadily stimulated by reduced rates offered by the Railway in an effort to capture, as well as maintain, a larger share of the expanding market. Following the introduction of reduced rates, average revenue per net ton-mile declined from M\$9.5 in 1959 to M\$7.5 in 1964, although the decline in total revenue was less drastic partly as a result of an increase in average haul distance. The shift toward longer haul distance reflects the growing impact of road competition on the Railway and will be discussed in greater detail in connection with transport coordination.

28. The role played by the railway in the field of passenger transportation has tended to become more and more limited to long-distance travel. A record of passenger traffic for the years 1959 to 1964 is given below:

Malayan Railway

Passenger traffic

<u>Year</u>	<u>Passenger miles (million)</u>	<u>Passenger Journeys (000)</u>	<u>Average Passenger Journeys (miles)</u>	<u>Passenger Revenue (M\$ million)</u>	<u>Revenue per Passenger Miles (M\$)</u>
1955	367	7,687	48	16.7	4.6
1956	373	7,509	50	19.7	5.3
1957	388	7,643	51	20.5	5.3
1958	365	7,135	51	19.5	5.3
1959	370	7,314	51	19.6	5.3
1960	380	7,743	49	20.1	5.3
1961	379	7,532	50	19.9	5.3
1962	370	7,230	51	19.7	5.3
1963	323	5,336	60	18.2	5.6
1964	348	6,047	57	18.7	5.4

29. Traffic has been dwindling particularly since 1962. It is worth recalling that the Railway was paralyzed by a strike in December 1962-January 1963. It is remarkable, however, that passenger-miles have declined much less sharply than passenger-journeys (8.2% and 19.7% respectively between 1961 and 1964), indicating that losses were concentrated in the short-haul traffic.

30. Railway efficiency has shown definite improvement up to 1961, as will be seen in annexed Table 2, but on the basis of available information has deteriorated since. Much of the increase in operating efficiency during the period covered in Table 2 is due to the purchase of 26 mainline diesel locomotives in 1957. Table 3 in the Annex provides a comparison with the Burmese and Thai meter-gauge and the Nigerian standard-gauge railways. Except for net tons per train and miles per day per locomotive in traffic which should be increased, the Malayan Railway compares favorably.

31. Operating revenues and expenditures for the years 1959 to 1963 and provisional figures for 1964 are given in Table 4. There were annual operating surpluses until 1961, subsequently there have been increasing deficits.

32. After taking into account the results of operation of ferry services, collection and delivery services and minor ports, together with the rents from and upkeep of properties, there has been a surplus, before interest payments, for all years up to the end of 1963, with a provisional deficit in 1964; after taking into account interest payments, there was a net deficit of M\$738,000 in 1963, and a provisional deficit of M\$3,582,000 for 1964.

33. Government has made available capital funds each year and, due to a time lag between receiving funds and using them for capital expenditure, large sums have accumulated to the Railway's credit and appear in the balance sheets as deposits with the Accountant General, treasury bills, and deposits with the Chartered Bank. Interest earned on these deposits helps considerably to offset the interest payable on Government loans - in 1964 interest earned amounted to M\$1,450,000 against interest payable of M\$1,646,000. As the capital funds are used up, the impact of interest payable will become more apparent.

34. The results of the four years (1959 to 1962) may be summarized as follows:

	(M\$ million)		
	<u>Railway</u>	<u>Port</u>	<u>Combined</u>
Funds required	<u>28.2</u>	<u>34.6</u>	<u>62.8</u>
Funds available:			
From own resources	48.0	6.9	54.9
From Government loans	<u>5.1</u>	<u>28.8</u>	<u>33.9</u>
	<u>53.1</u>	<u>35.7</u>	<u>88.8</u>
From decrease in working capital	--	--	<u>1.6</u>
			<u>90.4</u>
Increase in cash holdings			<u>27.6</u>

(d) Airways

35. Malayan Airways, a public company since 1958, now operates scheduled flights throughout Malaysia, covering the country fairly adequately and providing linkages between its separate regions. Fares and scheduled flights have to be approved by the Minister of Transport. Passenger traffic has increased steadily and between 1960 and 1964, the number of passengers embarked and

disembarked nearly doubled. Distribution of traffic among various airports is shown below:

Passenger Traffic in Malayan Airports

(Number of terminal passengers embarking and/or disembarking)

<u>Airport</u>	(thousand)	
	<u>1960</u>	<u>1964</u>
Kuala Lumpur	83	190
Penang	47	76
Ipoh	15	27
Kota Bahru	12	24
Other Airports	<u>10</u>	<u>21</u>
Total	167	339

36. Kuala Lumpur airport saw the most spectacular increase. This airport is served by six international airlines. The International Airport was recently completed, with a new 11,000-foot runway, and major construction work has been carried out to extend and strengthen runways in Penang, Ipoh, Kota Bahru, Alor Star and Malacca following plans to replace Dakotas with Fokker Friendship aircraft on internal flights.

II - PROBLEMS IN THE TRANSPORT SECTOR

Railroad Competition <sup>1/</sup>

37. It seems that while considerable resources have been invested during the last decade on extension and improvement of the transport system, little thought has been given to the study of the relative merits of the various modes of transportation, in an attempt to determine the best allocation of these resources. Only during the 1966-70 Plan period will detailed studies of long-term traffic be undertaken and an integrated transport plan formulated, that is, when most of the basic infrastructure will already have been established. It has been clear for many years, though, that the Railway was suffering from competition originating in other modes of transportation, particularly road transport. This has raised problems of co-ordination which require top-level policy decisions. In the past, these have taken the form of zonal licensing restrictions or limitations on the freedom to haul traffic of a particular kind. Much of this has been done to protect the Railway, with little consideration of economic efficiency. Since the amount of investment in the sector ranks high among public development expenditures, and the sector is vital to the economy, there is a need to examine the nature of the competition by studying the causes of traffic diversion, determining whether these reflect an economic advantage of one mode of transportation over another or results from direct or indirect subsidies. This should lead to the formulation of measures to remedy the situation, ensuring that there is no duplication of efforts and that each mode of transportation is operating at maximum efficiency, so that maximum traffic is carried at lower cost to the economy.

(a) Analysis of Railway Traffic

38. Traffic analyses show that the Malayan Railway has been losing ground as a result of increasing competition from road transport. The impact has been particularly noticeable on the Railway's financial position, with rising deficits being registered since 1962 despite efforts to modernize the system. A major factor affecting the overall increase of 6.3% p.a. in railway traffic during 1954-62 has been rising shipments of iron ore. When iron ore is excluded, the annual growth rate of goods transported by the railway during the period declines to 0.5%. A reversed situation developed since 1962, with iron ore tonnage declining drastically while the traffic of other goods expanded rapidly largely on account of increased shipments of timber, petroleum products and building material (for details see Table 5 of the Annex). Revenues decreased nonetheless as average receipt per net ton-mile continued to decline in view of the rate reduction offered by the Railway. Although there was a slight improvement in the Railway's financial position during 1964, this does not necessarily indicate a change in the trend.

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<sup>1/</sup> This part of the report is mainly based on the findings and recommendations of the E.P.U. Study, "The Malayan Railway and Road Rail Competition in the States of Malaya", prepared by Mr. H. G. Brandreth (March 1964).

39. A comparison of bulk and non-bulk traffic reveals that the former increased in tons as well as ton-miles and revenue over the 1954-62 period, whereas non-bulk traffic declined by every measure. As a result, the share of bulk increased by 1962 to 70% of total traffic and 60% of revenues. In terms of ton-miles, bulk traffic experienced an increase of 107% in 1958-62 although revenue per ton-miles for the corresponding period declined as some rates were reduced to enable the Railway to compete more effectively with road transport. Despite the reduced rates, the Railway failed to recapture the shorter haul traffic previously lost. At the same time, the average length of haul rose from 95 miles to 151 miles, reflecting the competitive advantage of the railroad in long distance transportation. Deterioration in non-bulk traffic positions reflected the absence of a vigorous program to recapture losses to road transport with revenues and traffic volume declining throughout the period.

40. Similarly, railway passenger traffic has not kept pace with the traffic increases which accompanied economic expansion and population growth. After a rapid growth between 1947 and 1955, the number of passengers has been stagnant over the period 1956-1962, while the average length of journey increased slightly (see Table, page 7). During this latter period, the Railway increased rates by about 17½%, but additional revenues were largely offset by the cost of improved passenger service facilities. The consequences of the strike of December 1962 - January 1963 were extremely noticeable, partly because of the deliberate railway policy not to reinstate a number of short-haul third-class passenger services after the strike, and partly because the strike has impaired the position of the Railway passenger services in competition with other modes of transportation. On the average, from 1961 to 1964, passenger journeys dropped by 19.7% and passenger-miles by 8.2%. During the same period, the average passenger journey increased from 50 to 57 miles while average revenue per passenger-mile rose from M\$5.3 to M\$5.4. First-class traffic has been dwindling as more passengers have travelled by air. Second-class traffic has been seriously affected by diversion to public and private road services, as well as third-class traffic which lost about one-third of its passengers in the months immediately following the strike. In the latter case, however, this may work to the benefit of the Railway. For this type of traffic, which is largely of the short-distance commuter type, the decline in terms of passenger-miles and revenues has not been so sharp as the drop in the number of passengers, resulting from the closing of many short-distance haul services. Thus it may well be that savings realized from the cancellation of these services more than offset the loss of revenues.

(b) Incidence of Road Traffic and Road Transport Regulations

41. Most of the difficulties encountered by the Railway in its effort to expand its operations and keep abreast of general economic development originate from the competition of road transportation. The number of vehicles in use throughout the States of Malaya has been rising rapidly between 1954 and 1964, when the number of private cars registered increased by 183% and that of motorcycles expanded almost eight-fold. The exact details are as follows:

Motor Vehicles Registered in the States of Malaya

	<u>Number of Vehicles</u>		<u>% Increase</u>
	<u>1954</u>	<u>1964</u>	<u>per annum</u>
Private Motorcycles . . . . .	18,125	142,746	23
Private Cars . . . . .	49,159	139,049	11
Buses . . . . .	2,069	3,543	6
Taxis . . . . .	3,363	5,092	4
Lorries and Vans . . . . .	19,948	38,449	7

By the end of 1964, as a result of these increases, there was about one private vehicle (including motorcycles and scooters) for every 28 persons and about one private car for every 57 persons, a level reached or even approached by extremely few other Asian countries. Over the next five years, annual increases of about 10% and 8% are expected for private cars and trucks respectively. When one considers the not so striking, but still considerable development of buses and taxi fleets, it becomes clear that private transportation combined with public and private road passenger services constitute a permanent threat to the Railway. With about 90% of the Railway's passenger traffic being concentrated in third-class short distance transportation, a type of traffic particularly suitable for private vehicles, buses and taxis, the loss of much of this traffic by the Railway is inevitable. As a matter of fact, the expansion of buses in recent years has enabled bus carriers to carry a larger percent of the traffic on short-distance lines than the railroad. At the same time, competition from taxis has increased as taxis have taken advantage of extremely low road taxes, compared with other types of road transportation and low costs for diesel fuel. Illegal operations of taxis, etc. have become a serious cause of concern for both the Railway and bus operators. Taxis are also increasingly used as a means of inter-urban transportation and fares are sometimes lower than on the Railway or the bus. While few bus services are available at present for long-distance travel, private cars provide an ever-increasing competition to medium and long distance traffic. Air travel only affects the long-distance railway services. At present, the Railway is retaining enough traffic (roughly 50% of the total, after allowance for the other means of transportation) to play a significant role on inter-urban passenger services. By contrast the Railway seems unable to cope with competition from road transportation with respect to short-distance services. It thus seems highly advisable, as has been suggested in the E.P.U. study mentioned above, that the Railway administration should keep a close watch on passenger operations and, taking advantage of the experience gained in the post-strike period, should study the savings which might result from further curtailment of short-distance services.

42. Turning now to freight transport, it can be seen from the above table that, between 1954 and 1964, the number of vehicles engaged in goods transportation has almost doubled. This evidently accounts for the difficulties of the Railway in this field. Not all of the trucks in service compete with railway traffic. In fact, there are many limitations to

the use of commercial vehicles. These apply in particular to the granting of the licenses, to the entitlement to carrying goods other than the owner's own for reward, and to the zone of operation. The success of an application for a public carrier license, allowing its holder to carry for hire and reward, is conditional on evidence produced by the applicant that the existing facilities in the proposed area of operation are inadequate. The subsequent procedure, which allows for objections to be made by other carriers having interest in the area (including the Railway) makes it extremely difficult to obtain the license.

43. Among the limitations is the Road Traffic Ordinance of 1958 which directs the Licensing Board to give preference to Malays in the granting of a license, either for bus, taxi or truck operation. It cannot be said that the institution of a preference for Malays has been very successful in the field of trucking, as can be seen from the fact that while the increase in the total fleet was 80% between 1956 and 1963, the percentage owned by Malays, wholly or in part, rose only from 3.2% to 5.4%. One of the consequences of this policy, however, was to inflate the number of licenses for vehicles limited to the carrying of the owner's goods, for which there is no quota restriction. Over 80% of licenses are of this type. Allowing for other types of limited license, this would apparently leave about 12.5% vehicles available for public transportation. In fact, it is commonly reported that a very high proportion of limited licensees engage illegally in for-hire operations, and even if they do not, the carriage of owner's goods results in a substantial diversion of traffic from the railroad. The quantitative restrictions have therefore very little protective effects on the Railway and have produced a shortage of commercial carriers. Zonal restrictions, apart from the fact that they are questionable from the economic standpoint, have left enough vehicles engaged in inter-state operations to ensure keen competition.

44. Since these restrictions have not successfully fulfilled their purpose, which was to protect the Railway and to augment Malay participation in the transport industry, it might be desirable to amend them in order to remedy the distorted structure of the trucking industry. As a matter of fact, the shortage of commercial carriers fosters incidental traffic, which entailing no overhead cost, generates confused competition, where rates do not reflect true costs. One possibility of improving this situation, suggested in E.P.U.'s study, would be to limit licensing of vehicles carrying owner's goods to current load capacity, with certain exceptions. Or consideration might be given to requiring that the award of this type of license for vehicles of 5-ton capacity or larger be subject to public hearing.

(c) Prospects for Competition

45. However faulty and inadequate the road regulations may be, it has to be recognized that road transport offers definite advantages which explain the rapid development of trucking industries in most countries. Among these, door-to-door service and flexibility are the most important. For these reasons, there are many categories of traffic that the Railway will never recover. In addition, an elaborate road system already exists in the most developed part of Malaya running parallel to the railway and even extending beyond it. Road transport can thus fully take advantage of its

greater flexibility. Besides, there seems to be little future for a policy of transport coordination essentially based on geographical criteria to ensure that facilities do not compete harmfully, firstly because a railroad does not serve the same needs as roads, so that where a railway exists, a road may still be necessary; and secondly because it is believed that road facilities are more instrumental in opening up new areas.

46. Cost comparisons provided in E.P.U.'s study for 1962 seem to indicate that, where terminal trans-shipments are needed, road transport is competitive on distances up to 225 miles for non-bulk commodities, and up to 85 miles for bulk goods. These indications are based on estimated operating costs of the largely used 5-ton truck. When larger trucks are used, the danger will be still greater for the Railway. If no terminal handlings are required, this will work to the advantage of the Railway, but this will most likely happen in the case of bulk commodities. Cost estimates include truckers' contributions to the use of the roads, and according to the E.P.U. study estimates, these contributions should suffice to cover capital cost and maintenance of the road system. With future expansions of the road system likely to entail improved standards, we can expect to find heavier trucks being used throughout Malaya. Furthermore, the organization of truck operations, presently in a rudimentary stage, will also improve. As a result of these developments, the Railway can expect to meet increasing competition in bulk traffic, the exact type of service in which it has the highest potentials.

47. The increasing pressure on rates points out the necessity to reduce operating costs. Not much can be expected from wider use of the existing capacity through increases in traffic, given the prospects for the latter. Thus, operating expenses will have to be reduced. The Railway substantially improved its efficiency up to 1961, but it could achieve more. Considering that expenses are out of proportion in the handling of non-bulk commodities, as indicated in the E.P.U. report, it would appear beneficial for the Railway to eliminate the unremunerative non-bulk traffic and to study the closure of certain stations related to it. Other measures, such as the consolidation of less-than-carload into carload shipments and the development of complementary road transport services for collection and delivery of goods, should also be actively studied. If the railway favored such a specialization of its operations, similar in nature to the concentration on long-haul passenger traffic recommended elsewhere, it is believed that capital investments in locomotives, rolling stock, signalling equipment, etc., will have their maximum impact with respect to improvement of the competitive position of the railway. It will be so, of course, to the extent that cost reductions are reflected in tariff policies. A revision of rate structure will be aided if the accounting and cost systems of the Railway are revised with a view to provide an accurate assessment of the cost of carrying the various categories of traffic; otherwise the Railway's response to road challenge will only be defensive in nature.

48. The changes suggested above are not likely to suffice by themselves and, in fact, they will not be feasible in the absence of a transformation in the Government's views regarding the Railway. As has long been recommended, considerable long-run benefits would flow from a reorganization that would give greater autonomy to the Railway with regard to planning, financing, management, tariffs and recruitment. The proposed reorganization of the

Railway as an independent corporation, announced in the First Malaysia Plan, is expected to be implemented in 1966 in order to provide the Railway management with the authority as well as the responsibility to manage its day-to-day affairs on a commercial basis, is a welcome step in this direction.

#### Planning in the Sector

49. At the present time, little transportation planning takes place in Malaya, except on an ad hoc and piecemeal basis. Expenditure planning is done by at least five government agencies, though not by the Ministry of Transport. Two Ministries are involved in planning highway transportation, apart from planning done at the State level. There are also two government agencies engaged in the operation of buses. Planning co-ordination and central direction of efforts are needed in order to attain the desired balanced system and to prevent waste and misapplication of economic and human resources. Unfortunately, there is little attempt at present to screen most proposed projects in the various sub-sectors and in the various regions of Malaya with regard to their economic justification. Partly this is because there is a lack of data with which to undertake economic analyses. As a consequence, planners do not have adequate grounds on which to reject proposals made by local initiators, other than for arbitrary reasons.

50. However, the 1966-70 Plan notes steps to be taken to insure better co-ordination in the development of the transport system as well as better planning within each sub-sector. An overall transportation study will be undertaken to examine transport development in Malaya with a view to formulating long-term programs, and special consideration will be given to rail/road co-ordination. The Plan announces also the creation of a Highway Planning Unit in the Public Works Department with the responsibility of planning road maintenance and improvement and insuring that these activities are conducted economically. It will carry out a detailed road inventory and undertake traffic surveys. Urgently needed statistics would thus become available to support new projects as well as their appraisal and broader economic study.

III - INVESTMENT IN THE TRANSPORT SECTOR

51. Public investment in the transport field has ranked first among public capital expenditures during the last decade. The rise of transport in relation to total public investment can be seen from the following table which also indicates the targets of the First Malaysia Plan 1966-70:

<u>Malaya: Public Investment</u> (M\$ million)			
	<u>1956-60</u>	<u>1961-65</u>	<u>1966-70</u>
Transport	230.1	588.5	365.3
Roads	118.8	417.0	255.5
Railways	71.4	50.9	20.0
Ports	37.0	61.0	80.8
Civil Aviation	2.9	59.6	9.0
Other Sectors	733.9	1,755.9	2,609.3
TOTAL	964.0	2,344.4	2,974.6
Defense and Police	43.0	307.3	739.0
GRAND TOTAL	1,007.0	2,651.7	3,713.6

52. During the First Malaya Plan period 1956-60, M\$230.1 million were spent on transport, representing 24% of total non-security development expenditures. The emphasis was then laid on roads and railways. Public investment in transportation reached a peak during the Second Malaya Plan period 1961-65, with M\$588.5 million, or 25% of the total. Out of this, M\$417 million were spent on roads, between three and four times the amount spent in the previous Plan period. The rest was allocated rather evenly among railways, ports and civil aviation. These increased expenditures resulted in the completion of about 2,300 miles of new (mostly rural) roads, some major improvements on Routes I, II and III, the construction of 4 deep-water berths in the Klang area, near Port Swettenham, and the completion of the Kuala Lumpur International Airport and its runway. Some new equipment has also been acquired by the Railway.

53. The First Malaysia Plan 1966-70 includes a M\$365.3 million allocation for transport in Malaya, or 38% less than the previous one. After this reduction, the sector would only account for 12.3% of non-security capital expenditures, thus receding to third place, after expenditure in the Agricultural and Utilities sectors. Roads and bridges will account for M\$255.5 million, M\$80.8 million are allocated for ports. Railways and civil aviation are proposed to absorb only M\$20 million and M\$9 million respectively. The proposals reflect the fact that the basic land transport infrastructure is well established in the most developed regions, the stress now being laid on improvements of existing links and some extensions of the system to open up new areas of agricultural potential.

The program, however, includes one major road construction project which is not a mere extension of the road system: the Northern East-West Highway. The only sub-sector which, under the new Plan, receives an increased allocation, instead of a diminished one, is ports. The following is an attempt to evaluate and comment on the various sub-programs proposed under the First Malaysia Plan 1966-70.

Highways

54. The road investment program for Malaya amounting to 70% of public investment in transport, can be summarized as follows:

<u>Malaya: Road Development Expenditure</u>		
(M\$ million)		
	<u>1961-65</u> (estimate)	<u>1966-70</u> (target)
Federal roads		
Improvements to existing roads	104	64
New communication roads	15	48
New development roads	20	45
Other roads		
State and rural roads	204	63
Municipal roads <sup>1/</sup>	7	23
Road and traffic surveys	1	1
P.W.D. plant and equipment	64	10
All other expenditure	2	1
	—	—
TOTAL	417	255

<sup>1/</sup> Road improvements in the Federal Capital area are included under municipal roads.

Unfortunately, the Plan gives little explanation regarding the nature of the projects involved and their economic justification, except in very broad terms. The absence of sufficient statistics and detailed surveys adds to the difficulty of evaluating the road program in its specific aspects. It is hoped that the announced creation of a Highway Planning Unit will improve the current situation by filling the gaps in the information on state of roads and traffic projections, thus rendering it possible to undertake more thorough economic analyses. However, the general conclusion is that in the most densely populated areas, mainly on the west coast, the road system is well developed, and may be even over-developed in some parts. There, the need is now for improvement of the existing facilities. Other areas to be opened up for settlement require some extension of the system. It seems that the overall reduction in the road development program is adequate and that the present allocation would largely suffice to cover the needs of the country.

Improvements of Existing Federal Roads

55. About 25% of road development expenditures will be spent on improvement of Federal roads, mainly Routes I, II and III, including by-passes and throughways. Traffic data presently available do not lend themselves to accurate assessment of existing as well as future traffic volumes. It is only possible to gain a rough idea of traffic trends by using data relating to traffic passing through certain check-points on Routes II and III. These suggest that there has been an annual increase in the order of 15% on Route III over the 3-year period 1960-63, and an annual increase of about 23% over the period 1957-64 on Route II. The composition of traffic is not known. Comparing with the 12% and 7% yearly increases recorded over the country during the last five years for the fleets of private cars and trucks respectively, these indications suggest a very uneven distribution of traffic growth throughout the system, which is very likely, given the regional disparities in economic activity. If they were correct, and if the trends continued, they would imply that traffic volumes would triple and double on Routes II and III respectively over a five-year period. Though no traffic counts are available for Route I, there is no doubt that traffic is growing similarly or even faster on this main highway which runs across the most developed part of the country. Therefore, it appears likely that the burden of traffic growth will mostly be felt on the main trunk highways. However these considerations are not decisive, and a detailed economic appraisal of each specific project is necessary so that the results of the various investment proposals can be compared on a uniform basis throughout the sector.

56. Regarding the nature of the improvements to be made, the program includes three items, although it is not shown which proportion of the allocation should go to each of these items: general improvement of standards of the trunk network; construction of an alternative route with a more suitable alignment between Kuala Lumpur and Karak on Route II; and a construction of by-passes and throughways in the Federal Capital area.

57. There is constant pressure from operators to obtain permission to use larger vehicles on existing highways. Although this would weaken the Railway competitive position, as noted previously in the discussion of problems faced by the Railway from road competition, there is no point in opposing these requests indefinitely. At present, the maximum permissible weight of vehicles is 4 tons per axle, but it is intended to allow 5 tons in the very near future where road conditions permit. Limited approval of vehicles up to 8 tons is now possible. Furthermore, vehicle width is now limited to 7 ft. 6 ins., but when 16-ton vehicles are permitted, there will undoubtedly be pressures in favor of increasing the width to 8 feet. Traffic growth factors and pending changes in vehicle size and weight restrictions point to the necessity for continued widening and strengthening of the major trunk routes. The effect of these improvements should be studied in relation to economy of operation as well as safety.

58. According to the information available, minimum standards for improvements on Route I would include a surface width of 24 feet on a 26-foot base and a strength of 8 tons per single axle. Third lanes on steep gradients for slow-moving vehicles are also recommended. However, there is

little point in providing extra lanes and cycle tracks if driver and riders do not use them because of lack of police enforcement.

59. Minimum standards to be attained on Routes II and III are specified by the E.P.U. as a width of 22 feet on a 24-foot base and a strength of 6 tons per axle. These standards seem too high for Route III, where traffic can be accommodated at lesser cost. In relation with the continued development of Pahang, it is recommended that Route II be strengthened to 8 tons per axle between Bentong (Ketari) and Karak. The Jengka Triangle scheme is a major factor in this suggestion, as well as the increasing logging and agricultural activities in Pahang. Already the F.L.D.A. scheme at Bilut Valley is increasing traffic appreciably on this road and the Klan Valley scheme will put even further strain on it.

60. A preliminary study of road alternatives to a 14-odd-miles tortuous section of Route II, between Kuala Lumpur and Bentong, <sup>1/</sup> indicates that the route which would return the greatest benefits would be south of the existing Setapak-Karak highway, commencing at Klang Gates and thence to Karak. A short 4.5-mile cut-off could then connect this road to the existing one at about the Iron Bridge for traffic to and from Bentong. There would be considerable savings in time associated with appreciable reduction in operating costs. Computations based on available data indicate that the internal rate of return on the investment should exceed 15%. However, detailed topographical and engineering surveys are needed in order to better assess construction costs. The assumptions on development of traffic and its composition should also be reviewed in the light of a more accurate origin-destination survey and a further assessment of the transport needs of the areas served by the road. The standards of the road should be consistent with those adopted on the other sections of Route II. If the survey confirms the preliminary findings, this project should receive high priority.

#### New Federal Roads

61. The Plan proposes an expenditure of some M\$32 million during 1966-70 on engineering and construction work of the Northern East-West Highway connecting Kota Bahru and Butterworth via Grik. Completion of the project is expected to take place during the Second Malaysia Plan, 1971-75, at an estimated total cost of M\$73 million. The purpose of the road would be to link Kota Bahru, the principal population center on the north-east coast, with the nearest commercial center and deep water port on the west coast, i.e., Penang. Although a preliminary economic feasibility study prepared by E.P.U. in June 1965 concludes that the rate of return on the investment would approximate 9% on a 37-year service life of the proposed highway, the prospects for improving the development potential of the country by undertaking this project have not been adequately evaluated. It is recommended, therefore, that further economic investigations be carried out before any further expenditures are incurred.

#### New Development Roads

62. The Plan calls for an expenditure of M\$45 million for new development roads to provide access to development projects. These include F.L.D.A.,

<sup>1/</sup> Developed in unpublished papers by W. Hughes.

irrigation and privately sponsored land development projects as well as industrial projects. It is stated in the Plan that the allocation to each State is based "on the rural population of the state, land alienated for agriculture, total land area, the number of motor vehicles and the mileage of existing rural roads". These criteria do not include the most relevant one, namely the availability of projects likely to yield satisfactory economic returns and promote development. However, allocation is much lower than for 1961-65.

#### Other Roads

63. The total of State requests for Federal grants for rural roads amount to M\$63 million. Previous experience has shown that such rural roads are often built for political purposes and some have contributed little or nothing to economic development. The cut in expenditures (M\$204 million were spent under the last Plan) is a sound measure, provided the remaining allocation is granted for useful projects. It would be desirable that even in the case of rural roads some logical method of allocation should be developed. Rules of thumb which could be derived from more sophisticated methods of evaluation of economic benefits and, adapted for minor projects, might have to suffice. The screening of these projects might adequately be the responsibility of the new Highway Planning Unit.

64. The M\$23 million allocation for Municipal roads include M\$11 million for Routes I and II by-passes and throughways within the Federal Capital area, following upon the recommendations of a municipal transport survey completed in 1963. The question remains open whether improvements of this kind have the developmental effects which would confer them a priority.

65. In summary, it should be noted that no economic appraisal of projects can be expected to be undertaken and yield reliable results in the absence of a road inventory and traffic surveys. It is expected that the M\$1.4 million allocated to the Highway Planning Unit will be adequate to provide for the necessary survey equipment and staff requirements. Although the Unit is meant to deal primarily with maintenance and improvement, it seems highly desirable to include some staff with an economic background so as to enable it to perform economic analyses.

#### Railways

66. The Plan recommends the expenditure of M\$20 million over the next five years for railway development. This is a small amount, compared with the M\$51 million allocation under the previous Plan and with the M\$255.5 million target for roads. For the duration of the Plan period and for the foreseeable future, the pattern of traffic will require greater emphasis on roads than on rail transport. However, there seems to be a considerable imbalance between the expenditure allocation in the two sectors, particularly in view of the urgency of reorganizing the Railway. In view of the fact that the railway will continue for many years to play an important role in the transportation system of the country, the small allocation should be regarded as an interim measure until the results of the survey of long-term transport needs will be completed and provide a basis for the formulation of a long-term railway development program. The results of the survey are expected to be available early in this Plan period. In the

interim period, the allocation for railway development can be used for contingency items such as, for instance, acceleration of the process of dieselization, subject to the recommendations of the consultants.

67. Needless to say, most of the new investments in the Railway would be ineffective unless they are accompanied by measures to increase railway freedom of management, notably with regard to recruitment, finances, and operational efficiency. Steps in this direction are announced in the Plan which specifies that the Railway will be reorganized as an independent enterprise in 1966 so as to "provide the railway management with the authority as well as the responsibility to manage its day-to-day affairs as a commercial enterprise".

68. The Railway program contemplated in the Plan may be summarized as follows:

Malaya: Composition of the Railway Development Program 1966-70

<u>Purpose</u>	<u>Amount</u> (M\$ million)
Diesel locomotives and rolling stock	8
Completion of Prai/Butterworth extension	5
Right of way improvements and signalling	4
Other projects such as commercial sidings, yards and station	<u>3</u>
TOTAL	20

Indications are that 150 logging wagons might be needed to cope with the increasing log traffic at an estimated cost of M\$2.3 million. The Railway management is of the opinion that these wagons could be fully amortized within the life of the expected logging traffic of ten to fifteen years. However, further investigation of the value of this traffic is necessary before proceeding with the investment in view of the fact that average revenue per ton-mile of timber is only M\$4.8, as compared with the overall average of M\$8.0. Another tranche of M\$4.5 million is meant to cover the purchase of other rolling stock. The need for tank cars, which constitute the bulk of the expenditure, is apparent, but other requirements, including additional rolling stock being financed out of renewal funds and omitted in the Plan, may prove not to be entirely necessary given future freight traffic prospects, particularly if average wagons are replaced by stock of improved design and greater carrying capacity.

69. More emphasis should be laid on further dieselization to replace overage steam power, reduce operating expenses and haul additional traffic if required. The mission thinks that there is a need for an early order for 20 main-line diesel locomotives in addition to the current order for 15. The planned allocation falls short of this recommendation, even taking into account about M\$8 million available from Railway renewal reserves. Even this would still leave 11 steam locomotives over 30 years old and 51 over 25 years old in 1970. It seems that the matter of

determining the optimum rate of replacement of steam locomotives should be thoroughly analysed. Naturally, heavy investment in the Railway should be accompanied by steps to reorganize railway operation and administration.

70. Right-of-way improvements are needed above normal maintenance. Difficulties with signalling are apparent and the Railway is undecided which system it should adopt in view of the diversity of its operations. The expenditure should be contingent upon a study of communications by an expert consultant.

71. In the present situation, three essential conclusions regarding the Railway seem in order:

- (a) There is no assessment of future traffic and needs which might form the basis for a long-term railway investment program. This situation, hopefully, will be reviewed early in 1966-70;
- (b) There is an urgent need to reorganize the facility in order to improve its efficiency and allow it to respond successfully to the challenge of road transport;
- (c) Given the long-term needs of railway operation, higher expenditures may be justified.

#### Ports

72. The Plan provides for public expenditure of about M\$81 million for ports out of which M\$48 million are earmarked for the construction of three new berths at Butterworth. Since tonnage handled in Penang/Butterworth port facilities dropped from 4.2 million tons to 3.2 million tons between 1961 and 1964, due to the reduction in iron ore exports and to Indonesian confrontation, the decision to invest appears to have been premature. The Plan indicates the intention to construct two additional berths at Port Swettenham. This is believed to be premature and may be regarded as a contingency expenditure stimulated by Singapore's withdrawal from the Federation. The execution of the project could usefully be postponed until the results of the survey of transportation needs are available.

73. If the northern east-west highway is given a low priority, after appropriate studies, it is felt that the economic potential of Kelantan, Trengganu and eastern Pahang might be served by the construction of a new port, possibly in the region of Kuantan (this was proposed in fact by the Malayan Economic Commission in their 1961 report). Such a port would also serve some of the needs of the Jengka Triangle Development and could eventually provide a basis for the further development of eastern and southern Pahang. It is suggested that the feasibility of this alternative be included in the study of transport development in Malaya.

#### Airports

74. The sharp drop in the planned expenditures on Malayan airports (M\$9 million as against M\$59.6 in the 1961-65 Plan) reflects the completion of the new Kuala Lumpur International Airport. The allocation will for the main part cover the purchase of additional electronic equipment for Kuala Lumpur and testing equipment for the Department of Civil Aviation. The rapid expansion of traffic (a doubling over the four-year period 1960-64) seems to justify improvements at Penang and Kuala Trengganu airports.

Table 1TOTAL CARGO HANDLED AT ALL STATES OF MALAYA PORTS

(thousand freight tons)

A. <u>Unloaded</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>
Rice	295	399	414
Sugar	186	171	194
Flour	113	124	123
Milk (tinned)	59	59	54
Beer, wine and spirits	19	19	22
Petroleum products (in bulk)	1,288	1,753	3,263
Tiles	9	5	7
Iron and steel bars and sheets	193	149	231
Cement	127	129	131
Machinery and parts	33	29	25
Motor vehicles	216	245	227
Fertilizers	183	197	209
Copra	48	15	3
Tin ore	42	39	24
Coal	30	30	22
Other cargo	<u>1,387</u>	<u>1,443</u>	<u>1,312</u>
<u>Total unloaded:</u>	<u>4,228</u>	<u>4,806</u>	<u>6,261</u>

Table 1 (Cont'd)

TOTAL CARGO HANDLED AT ALL STATES OF MALAYA PORTS

(thousand freight tons)

B. <u>Loaded</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>
Rubber	601	629	613
Latex	128	131	157
Palm oil	88	86	88
Coconut oil	28	26	10
Copra	37	51	10
Tin and tin ore	90	94	78
Iron ore	6,197	5,898	6,463
Ilmenite	117	153	135
Scrap iron	13	18	49
Timber	195	257	311
Other cargo	<u>238</u>	<u>556</u>	<u>1,779</u>
<u>Total loaded:</u>	<u>7,732</u>	<u>7,899</u>	<u>9,693</u>
C. <u>Total handled</u>	<u>11,960</u>	<u>12,705</u>	<u>15,954</u>

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Source: Statistical Bulletin of the States of Malaya

Table 2

MALAYAN RAILWAY ADMINISTRATION: IMPROVEMENT  
OF RAILWAY EFFICIENCY

	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>% Change 1957-62</u>
Train miles per route mile	4,864	4,762	4,798	5,329	5,606	5,123	+ 5.3
Average number of locomotives in traffic	170	175	162	162	158	152	-10.6
in stock	n.a.	206	187	190	188	188	
Average mileage per day, per locomotive in traffic	103.18	97.03	104.09	114.00	122.70	117.20	+13.6
Miles per day per vehicle unit in traffic (goods)	29	26	31	37	39	35	+20.7
(passenger)	na	na	na	161	164	162	
Vehicle units per train	26.40	26.28	30.75	30.95	29.73	30.21	+14.4
Net tons per loaded vehicle	5.29	5.45	6.47	7.21	7.86	7.66	+44.8
Net ton-miles per engine hour	718	677	1,009	1,155	1,195	1,134	+57.9
Net ton-miles per route mile	263,658	231,492	328,907	420,180	451,558	420,592	+59.5
Net ton-miles per train mile	105	96	137	152	159	158	+50.5
Net ton-miles per day per vehicle	113	95	139	182	208	183	+61.9
Total Staff Employed	14,155	13,641	13,043	13,082	13,127	13,386	- 5.4

Table 3

MALAYAN RAILWAY ADMINISTRATION:COMPARATIVE STATISTICS FOR 1962

	<u>Malayan Railways</u>	<u>Burma Railways</u>	<u>State Railway of Thailand</u>	<u>Nigerian Railway</u>
Route mileage	1,028	1,902	2,190	1,989
Locomotives in stock:				
Steam	120	290	301	257
Diesel	56	6	92	49
Railcars	12	14	-	2
Average number of locomotives in traffic	152	244	-	172
Average % of locomotives under repair	13.6	21.6	-	20
Miles per engine failure	35,847	-	-	35,230
Train-miles (000):				
Steam	2,670	5,482	7,390	4,921
Diesel	2,049	963	4,290	2,950
Railcars	400	-	-	-
Total	5,119	6,445	11,680	7,871
Train-miles per route-mile	5,123	3,950	5,360	3,950
Coaching stock	382	1,001	800	562
% under repair	8.3	11.2	-	7.1
Wagon stock - Bogies	1,903			
4-wheel	4,311			
Total	6,214	9,050		5,850
Wagon-miles - loaded	56.8	-	102.0	86.3
(million) empty	25.7	-	40.4	19.8
Total	82.5	-	142.4	106.1
% loaded to total wagons	68.8	75.6	71.4	80.8
Average miles per day per vehicle in traffic:				
Passenger	162	-	184	159
Goods	35	19.4	55.4	53
Goods tonnage hauled (000 tons)	3,466	2,938	4,231	3,003
Goods net ton-miles (millions)	432	456	462	1,412
Average length of haul (miles)	125	155	109	470
Net ton-miles per route mile (000)	421	229	212	707
Net tons per train	159	-	-	264
Net tons per loaded vehicle	7.7	8.7	5.5	16.9
Number of staff	13,386	26,755	30,978	28,000
Net ton-miles per staff (p.a.)	32,300	17,000	15,400	50,430

Table 4

MALAYAN RAILWAY ADMINISTRATION  
RAILWAY OPERATING RESULTS 1959 - 1964

('000 Malay dollars)

	1959	1960	1961	1962	1963	1964 (Provisional)
<u>Operating Revenue</u>						
Goods traffic	32,270	36,588	37,188	34,435	30,661	33,170
Passenger traffic	23,409	24,130	24,017	23,706	21,833	22,566
Miscellaneous	1,043	1,263	1,385	1,636	2,004	1,790
<u>Total operating revenue</u>	<u>56,722</u>	<u>61,981</u>	<u>62,590</u>	<u>59,777</u>	<u>54,498</u>	<u>57,526</u>
<u>Operating Expenses</u>						
Maintenance of way & works	8,020	8,391	8,950	8,406	8,709	9,028
Maintenance of rolling stock	9,027	9,229	9,561	9,697	9,189	10,044
Locomotive operating	9,321	10,389	10,322	10,102	8,845	9,491
Traffic operating	11,301	11,639	11,888	12,609	12,448	13,600
General charges	3,343	3,402	3,575	3,734	3,836	4,170
Pensions & provident fund	6,975	7,200	7,375	7,117	6,351	6,191
	<u>47,987</u>	<u>50,250</u>	<u>51,672</u>	<u>51,665</u>	<u>49,378</u>	<u>52,524</u>
Special expenditure	129	472	519	376	94	224
Provision for renewals	7,511	7,215	7,351	7,821	7,477	7,985
<u>Total operating expenses</u>	<u>55,627</u>	<u>57,937</u>	<u>59,768</u>	<u>59,862</u>	<u>56,949</u>	<u>60,733</u>
Operating surplus (deficit)	<u>1,095</u>	<u>4,044</u>	<u>2,822</u>	<u>(85)</u>	<u>(2,451)</u>	<u>(3,207)</u>
<u>Other Activities</u>						
<u>Revenues:</u>						
Ferry services	513	678	615	551	258	287
Collection & Delivery services	878	1,059	1,144	1,172	1,109	980
Minor ports	44	32	28	23	18	21
Rents	1,777	1,786	1,992	2,021	2,108	2,164
<u>Total</u>	<u>3,212</u>	<u>3,555</u>	<u>3,779</u>	<u>3,767</u>	<u>3,493</u>	<u>3,452</u>

Table 4 (Cont'd)

MALAYAN RAILWAY ADMINISTRATION  
RAILWAY OPERATING RESULTS 1959 - 1964

('000 Malay dollars)

	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u> (Provisional)
<u>Expenditures:</u>						
Ferry services	558	773	620	663	392	224
Collection & delivery services	943	1,128	1,248	1,043	969	900
Minor ports	41	34	33	26	26	30
Upkeep of property etc.	1,356	1,634	1,877	1,739	1,741	1,892
	<u>2,898</u>	<u>3,569</u>	<u>3,778</u>	<u>3,471</u>	<u>3,128</u>	<u>3,046</u>
Provision for renewals	62	62	62	62	58	58
<u>Total</u>	<u>2,960</u>	<u>3,631</u>	<u>3,840</u>	<u>3,533</u>	<u>3,186</u>	<u>3,104</u>
Net revenue (deficit) from other activities	252	(76)	(61)	234	307	348
Railway operating surplus (deficit)	1,095	4,044	2,822	(85)	(2,451)	(3,207)
Interest received	194	430	1,022	1,275	1,371	1,450
Sundry revenues (expenses)	325	623	247	615	1,659	(527)
Net revenue before interest	<u>1,866</u>	<u>5,021</u>	<u>4,030</u>	<u>2,039</u>	<u>886</u>	<u>(1,936)</u>
Interest payable on loans	1,302	1,338	1,365	1,421	1,624	1,646
Net Revenue (deficit)	<u>564</u>	<u>3,683</u>	<u>2,665</u>	<u>618</u>	<u>(738)</u>	<u>(3,582)</u>
Operating Ratio	98	93	96	100	103	103
Times Interest Earned	1.4	3.8	3.0	1.5	0.6	-

Table 5

RAILWAY GOODS TRAFFIC AND REVENUE 1954-64A. TOTAL TRAFFIC

<u>Year</u>	<u>Tonnage</u> (000,000)	<u>Net</u> <u>Ton-Miles</u> (000,000)	<u>Revenue</u> M\$ million	<u>Average receipt</u> <u>per Net Ton-Mile</u> M¢	<u>Average</u> <u>Haul</u> (miles)
1954	2.123	231.9	29.4	12.69	109.2
1955	2.237	241.3	31.3	12.99	107.9
1956	2.457	273.8	36.4	13.28	111.4
1957	2.370	271.0	35.7	13.17	114.4
1958	2.236	238.0	30.0	12.61	106.4
1959	2.891	338.1	32.3	9.54	116.9
1960	3.559	431.9	36.6	8.47	121.4
1961	3.789	464.2	37.2	8.01	122.5
1962	3.466	432.4	34.4	7.96	124.7
1963	3.035	378.0	30.7	8.11	124.5
1964	3.325	440.0	33.2	7.53	132.5

B. TRAFFIC EXCLUDING IRON ORE

1954	2.047	223.9	28.8	12.88	109.2
1955	2.226	240.1	31.3	13.02	107.9
1956	2.272	254.6	35.0	13.73	112.1
1957	2.090	240.6	33.4	13.86	115.3
1958	1.695	201.0	27.1	13.40	119.2
1959	1.885	258.1	27.1	10.49	136.9
1960	2.088	313.1	29.4	9.40	149.9
1961	2.052	316.0	28.7	9.08	154.0
1962	2.141	326.2	28.5	8.72	152.3
1963	2.144	320.0	27.1	8.48	149.2
1964	2.492	393.0	30.5	7.76	157.9

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Source: "The Malayan Railway and Road/Rail Competition in the States of Malaya" - H. G. Brandreth. Economic Planning Unit. 1964, and Railway Board Memorandum No. 16/65 "Financial Results Railway", (1964).

