

EFFECTS ON REGIONAL DEVELOPMENT

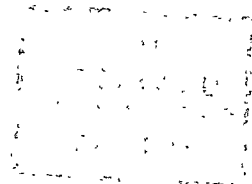
of the

CUSTOMER SERVICE and PERFORMANCE

of

ASEAN-AUSTRALIAN SHIPPING SERVICES

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This is to certify that the research carried out on this topic is entirely the work of the undersigned. The author has no knowledge of any similar work being undertaken by other parties in the course of the research.

This dissertation is submitted as partial fulfilment for admission to the Master of Transport Economics degree (coursework programme), University of Tasmania, Australia.

LAI, Ah Chek /

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PREFACE

The topic of this dissertation suggests and assesses the importance of the Asean-Australian shipping services in helping shape the regional economic development surrounding the ports that it serves along its routes. This study makes a special reference to the development of the new Kuantan Port in its defined role of acting as a catalyst in speeding up the economic development of the East Coast states of Peninsular Malaysia, i.e. Pahang, Trengganu and Kelantan.

This research paper investigates in particular the potential of this Kuantan Port in linking with the other neighbouring Asean ports in serving the import and export trade between the Asean region and Australian including New Zealand. Due to geographical and logistic reasons, Australia does not have much choice but to work very closely with her Asean neighbours in developing their respective economies.

Much of the written materials, analysis and the ideas generated and developed for this dissertation are results of my regular contacts with the people working in the transport industry and also through dialogues and seminars.

I would like to take this opportunity to express my sincere appreciation to Dr John Taplin and Dr Pedro Corro (formerly the

Professor of Transport Economics and Senior Lecturer of the University of Tasmania respectively) who, through their stimulating lectures, participation and comments on my various research papers have taught me the intricacies of transport management and its behaviour. And to a group of top Malaysian executives who are engaged in the management of transport and its related activities, having directly and indirectly assisted me in developing my thoughts being expressed in details in this dissertation which I hope will shed some light as to the benefits of the Kuantan Port and the Asean-Australia shipping services in meeting the future development of the hinterlands it serves. Without the exchange of ideas from both my friendly authoritative Australians and fellow Malaysians, this paper would not be completed on time. As a result of this study, the ideas developed here are of practical application to the shipping and related industries as a whole.

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1. INTRODUCTION

Transport is an integral part of production. It is not an end in itself but rather an intermediary service activity. The reduction in transport costs and time will result in greater production and even encourage new industrial ventures and a higher level of consumption. Towards this end, transport investment will have direct effects on the growth of employment, income growth as well as in a redistribution of national income. The indirect effects will be the removal of costs and capacity restraints to the development of economy.

The economic structure of a transport system also reflects many aspects of the country concerned, the degree of economic development, geographical and demographic features, the dispositions of scarce as well as abundant resources and so on. It is with this respect that this research paper is focusing on the transport sector, particularly, port development and its impact on the economic, social and industrial development of the adjacent areas or hinterlands it serves. A port is considered the interface between the maritime transport and the domestic transport sector, playing a key role in the development of any economy. Any inadequacy of

nations' ports will undoubtedly depress the level of cargoes throughput to a level where it fails to meet the targets set by the national economic planning schemes. The inability of the port to meet the demands imposed upon them will often manifest itself in serious bottlenecks, queues and congestions. The role the port plays should not be underestimated. In many ways, it is the survival of a nation like for instance, Singapore and Hong Kong which act as important gateways for overseas trade for many neighbouring countries which they serve. The benefits to their economies are enormous and there is a constant need for them to invest and make their respective ports more efficient to cope with the growing and changing traffic pattern and yet not affecting the total costs of shipping operations.

As noted by two prominent economists in their different but related discussions on the port, Goss¹ highlighted the choice of routes and ports-of-call in his analysis on the cost of ship's time. He argued that to determine the cost of ship's time one has to apply the concept of long-run opportunity costs which is defined as the lost

¹Goss P.O., "The Cost of Ship's Time." Government Economic Service Occasional Papers, H.M.S.O. 1974.

in earnings by the ship had it not been delayed at the port. However, the opportunity costs do not end here. It also includes the costs of delaying the the cargoes which could be needed urgently.

Laing² discussed on the importance of the distribution of benefits derived from port investment. The benefits to the shipping operators are translated as faster turnaround of their vessels and lower operating costs. These benefits are achievable because the investment aims at reducing the port services, costs and waiting time, improving the economies of scale and by lowering the handling costs at the terminal. Therefore, shippers should stand to benefit or be compensated through lower ocean freight rates.

The discussions by Goss and Laing are important in determining the routes and the ports-of-call to undertake by any shipping operators. The assessment and contributions from the port investment to either the existing or new port should be viewed as a total system rather than from the various sub-systems. To this end,

²Laing E.T., "The Distribution of Port Benefits from Port Investment." Maritime studies and Management 1977 Vol.4 PP 141-154.

it is the purpose of this dissertation that the proposed re-routing of the Asean-Australia shipping services will have positive effects on the regional development from its improved customer service and performance viewed in terms of costs and frequency of calls. Chapter 2 discusses on the extent of the overseas trade between Asean and Australia and how effectively they are being served by the assisting route structures. It also suggests reasons for re-routing to meet the changing regional economic development so that the customer service can be enhanced and the total costs to the final destination be reduced.

Chapter 3 analyses the present drift in employment opportunities to other more developed regions and to population centres. It also discusses on the government's policy to concentrate her development priority to the East Coasts states rather than the traditional West Coasts states of Peninsular Malaysia.

Chapter 4 identifies the current spending priorities and importance in the allocation of funds for the establishment of proper transport infrastructure to speed up the economic development of the area.

Chapter 5 outlines the ports-of-call which acts as the gateways for Malaysia's overseas trade and how the changing origin-destination of cargoes affect the choice of seaport gateways. The assisting methods of inland freight distribution is also analysed to justify the reasons for re-routing of shipping services.

Chapter 6 touches on the development, facilities and services offered by the new Kuantan Port which forms the main basis of our research on this dissertation.

Chapter 7 makes a detailed costs comparison of the existing and the proposed routes and to appraise whether or not the shippers stand to benefit as a whole.

Chapter 8 analyses the prospects and uncertainties are discussed at length and recommendations are set out to make the Kuantan Port more viable and to generate the impetus for accelerated growth of the East Coasts states.

2. REGIONAL PERSPECTIVES

As the topic suggests, the aim of this paper is to assess the role played by the shipping operators in capitalising the benefits generated by the increasing overseas trade between the Asean countries and Australia. References and analysis will be made as to HOW the Asean-Australia shipping services can assist in the economic development of the hinterlands in the ports it serves along the routes with special reference to the new deep-sea port of Kuantan.

Since the introduction of the ANRO³ consortium in October 1977 which plies along the Straits/Australian sector, it is important to establish whether or not the ANRO operators have reassessed their ports-of-call as there are already many new deep-sea ports being built together with the changing trends in the origin-destination of commodities shipped. These changes will alter the

³Members of the ANRO consortium are the Australian National Line (ANL), Australia/Straits Container Line (ASCL), Nedlloyd Line (NLL), Neptune Orient Lines (NOL) and The Malaysian International Shipping Corporation (MISC).

economics of the existing inland and sea transport operations which may have made the affected commodities less competitive in the domestic and world markets. The assessment the shipping operators have to undertake are to re-examine the existing route structures in order to establish their financial viability as a result of these pertinent changes.

2.1 Overseas Trade and Economic Growth

The expansion of overseas trade between the member Asean countries and Australia has increased tremendously. In terms of real money value (adjusted for Consumer Price Index) it has increased by 136% between 1978/79 and 1982/83 from A\$1969M to A\$2670M respectively as shown in Table 1. The average yearly value is about A\$2602.4M of which 43% are imports and 57% are exports. Thus, making the overseas trade balance in Australia's favour. A further analysis in this tabulation according to countries revealed that only Indonesia and Singapore have favourable trade balances with Australia. For Malaysia, the Philippines and Thailand it is 2.3, 2.1 and 2.2 times in favour of Australia respectively. These trends are likely to continue into the eighties and nineties. Singapore's favourable position is mainly due to her role in handling transshipment cargoes for many inbound and

OVERSEAS TRADE BETWEEN ASEAN & AUSTRALIA
1978 - 1983 (A\$million)

(Real Value Adjusted for Inflation)
Year 1980/81 = 100.0

YEAR	INDONESIA		MALAYSIA		PHILIPPINES		SINGAPORE		THAILAND		TOTAL ASEAN	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
1978/79	116	255	179	387	90	194	266	309	41	132	693	1277
1979/80	263	319	202	465	90	175	481	428	58	153	1093	1539
1980/81	417	359	169	442	92	170	507	513	65	129	1250	1613
1981/82	462	373	168	393	79	174	585	460	65	120	1359	1520
1982/83 ^P	432	289	165	349	65	144	461	561	69	136	1192	1479
TOTAL											\$13,012	
YEARLY AVERAGE	338	319	177	407	83	171	460	454	60	134	1117	1485
											\$ 2,602	

^P : Preliminary figures.

Notes : The above data interpreted as follows:
ASEAN countries imports are Australian exports and vice-versa.

Source : Year Book Australia No. 68, 1984, Australian Bureau of Statistics
Year Book Australia No. 70, 1986, Australian Bureau of Statistics

outbound trade between the Asean countries and Australia. Meanwhile, export tonnages transported by sea between 1978/79 to 1982/83 increased by 35% from Australia with an average of 4.6 million tonnes annually. This figure represents a 2.6% of the total sea freight movement of Australia's total export to the rest of the world. Furthermore, in Table 2, the export tonnage distribution among Asean are fairly equally distributed with the exception of Thailand⁴. For the past decade Asean has experienced a healthy real economic growth in their respective economies. The Asean averages around 6.3% per annum with Singapore recorded the highest growth rate of 8.1% on the one hand and the Philippines 3.2% on the other. The Malaysian economy is quite dynamic and her growth will be sustained around the 6.5 to 7.5% annually in the years ahead as shown in Table 3.

With these dynamic performance of the Asean economies over the years, a significant amount of structural changes in terms of economic development have taken place.

⁴No figures are made available for import cargoes from Asean countries to Australia. Given the nature and pattern of overseas trade for these two regions, the volume is expected to be a lot smaller than the export tonnages from Australia.

Various Master Plans have been drawn up to guide and push the economy to further industrialisation which in the past have been concentrating in the agricultural sectors. In Malaysia, successive Five-Year Master Plan is drawn up aimed at fulfilling the long-term goals of economic progress and ensuring national unity of the country⁵. These will undoubtedly lead to an increase in the level of income and the standard of living of the people which we can expect in the long term and more imports from industrialised countries like Australia will be required to meet this affluence.

Asean nations with their respective strong economic basis will be the most dynamic area for economic growth which will eventually be developed and transformed to a 'third force' after the United States and the European Economic Community (EEC). Other economies of the Pacific rim region may not be as aggressive as their Asean counterparts due largely to their scattered island location, small population and a weak industrial and manufacturing sector.

⁵Fourth Malaysia Plan 1981-1985.

TABLE 2

GROSS EXPORT TONNAGE CARRIED FROM AUSTRALIA TO RESPECTIVE ASEAN COUNTRIES
BY SEA ('000 TONNES)

YEAR	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND	TOTAL	% OF TOTAL AUST. BY SEA TO ASEAN
1976/77	918	825	773	770	206	3492	2.0%
1977/78	1082	964	961	1422	198	4627	2.7%
1978/79	992	928	1773	791	355	4839	2.8%
1979/80	1219	930	1401	1241	403	5194	2.7%
1980/81	1303	925	956	1229	288	4701	2.6%
YEARLY AVERAGE	1103	914	1173	1091	290	4571	2.6%
% BREAK- DOWN	24%	20%	26%	24%	6%	100%	

Source : Various Australian Bureau of Statistics Publication.
Catalogue No. 5415.0 - Exports by Mode of Transport, Australia

TABLE 3

ASEAN ECONOMIC GROWTH RATES AND POPULATION BREAKDOWN

YEAR	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND	AVERAGE
1977	NA	7.0%	6.3%	7.8%	6.2%	6.8%
1978	7.2	7.2%	5.8%	8.6%	8.7%	7.5%
1979	5.0%	8.5%	5.8%	9.3%	6.5%	7.0%
1980	9.6%	7.6%	5.4%	10.2%	6.4%	7.8%
1981	7.6%	6.5%	3.8%	9.7%	7.8%	7.1%
1982	6.5%	4.5%	4.0%	6.0%	6.9%	5.6%
1983	6.8%	6.7%	3.5%	7.5%	5.5%	6.0%
1984	4.5%	7.3%	-5.5%	8.2%	5.9%	4.1%
1985 ^P	4.5%	6.5%	0.1%	5.7%	5.8%	4.5%
YEARLY AVERAGE	6.5%	6.9%	3.2%	8.1%	6.6%	6.3%
POPULATION BREAKDOWN BY COUNTRY IN ASEAN 1982						
	150M	15M	49M	2.4M	50M	266.4M

P : Preliminary estimates.

Sources : Various issues of the Far Eastern Economics
Review 1977 - 1985. Published in Hong Kong.

2.2 Existing Route Structure

A small proportion of the import and export trades between the two Asean and Australian regions are shipped through regular liner services.

It is estimated that about 10 to 15% of the total inwards and outwards cargoes are shipped by liner operators, both conference and non-conference members. The bulk of it, at 85 to 90% are shipped by other services are highlighted in Table 4.

Currently, shipping services between these two regions are served by two liner routes whereby the Australian carrier, the Australian National Line (ANL) is a member of both the ANRO Straits/Australia consortium serving Indonesia, Singapore and Malaysia and the Australia Northbound Shipping Conference (Australia East Asia Section) serving the Philippines which is other Asean member⁶. Other shippers who are usually charterers carry

⁶The members are Asia-Australia Express (AAE), The Australian National Line (ANL), Australia West Pacific Line (AWPL), Orient Overseas Container Line (OOCL), Pegasus Container Service (PCS), Knutsen Line (KL) and Nedlloyd Lines (NLL).

TABLE 4

INWARD & OUTWARD OVERSEAS CARGO BY TYPE OF SHIP
BETWEEN SOUTH EAST ASIA & AUSTRALIA ('000 TONNES)

QUARTERLY PERIOD		LINER SERVICE OPERATORS			OTHER SERVICES OFFERED		TOTAL TONNAGE
		CONFERENCE	NON-CONFERENCE	% OF TOTAL	TONNAGE	% OF TOTAL	
JUNE '83	INWARD	56.8	16.3%	11%	585.2	89%	658.3
	OUTWARD	98.0	78.7%	15%	988.6	85%	1165.3
SEPT '83	INWARD	67.4	13.9%	11%	650.1	89%	731.4
	OUTWARD	150.7	41.8%	13%	1293.1	87%	1485.6

Note : Outward refers to Australian exports and vice-versa.

Source : Australian Bureau of Statistics - Shipping and Cargo Australia,
September Quarter 1983.
Catalogue No. 9211.0 PP 9-10

the bulk of these cargoes. The rationale behind the smaller market share of the liner service is due to its limited and stringent ports-of-call along its routes as defined under their respective rigid liner conference/non-conference agreements. Whereas the charterers are free to go to any port where there are cargoes sufficient to act as attractive inducement for the operators including their lower freight rates as compared with the liner operators which are higher. Perhaps a re-routing or restructuring of the existing conference routes may be beneficial for the liner operators. More analysis of this proposal will be presented at the later part of this paper. Figure 1 represents the existing arrangement of the Asean-Australian liner service.

2.3 Port Congestion

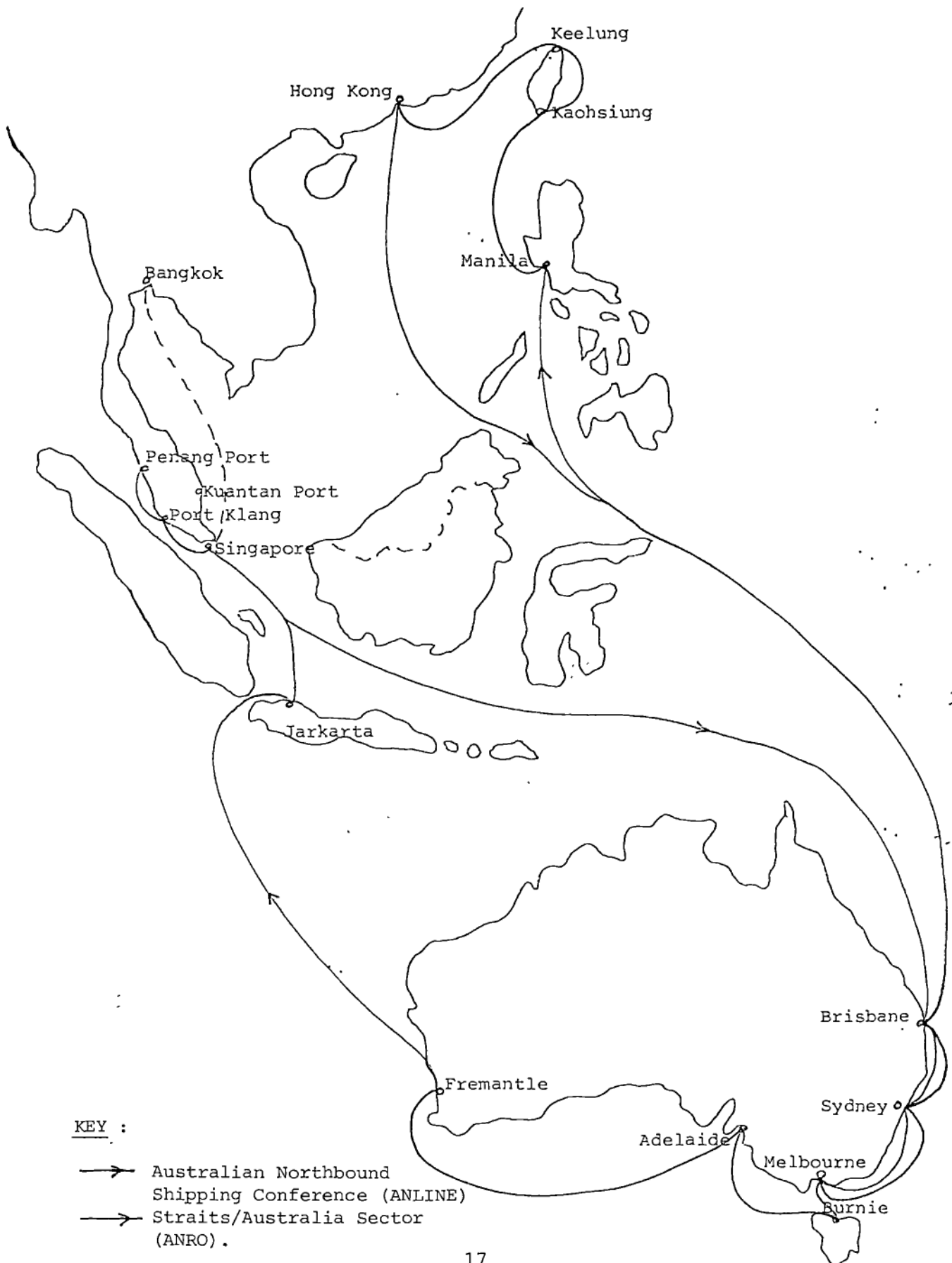
In many instances, the ports-of-call made by the operators of the ANRO consortium have to wait for a day or so longer before being allowed to berth for loading and discharging. The costs of waiting for the vessels could be high since they are not productive during this waiting period. It is, therefore, necessary to minimise such occurrences by constantly looking out for new and nearby deep-water ports to perform the loading and

discharging operations. It must be borne in mind that by doing so it must not affect greatly the costs structure of the land-based activities. The experience in Australia is that for some bulk commodity trades, the land handling costs constituted about 75% of the total transport costs⁷. This should not be the case as it will render the commodities less competitive in the world and domestic markets. To avoid this potentially damaging development which the developing countries could ill-afford, there should a concerted effort from all sectors who are directly or indirectly involved in the planning to coordinate among themselves in order to create a totally streamlined and integrated approach. This will definitely ensure the movement of goods between points of origins and destinations to be smooth and inexpensive. The European and North American inland and sea transport systems have been developed along the lines as suggested above which gave shippers wider choice of services that are both efficient and relatively cheap.

⁷Business Time (Malaysia), 18 September 1984 p.15.
Comments by The Australian Federal Transport Minister, Mr Peter Morris on the reasons for setting up a task force to examine ways of reducing shore-based shipping costs.

FIGURE 1

AUSTRALIAN LINER SERVICES TO ASEAN COUNTRIES



Port congestion in this region particularly along the Straits/Australia route was quite common from the mid-1960s to mid-1970s. This could be confirmed by the analysis shown in Table 5. Since Port Kelang is the premiere port of Malaysia and serving the industrialised Kelang Valley, most of the vessels preferred to use it as its main gateway. By late 1960s, the congestion was becoming more obvious with 286 vessels per berth per year implying that each vessel had to complete its discharging and loading operations within 1.25 days. From the operational point of view, some larger vessels would take much longer, thus creating longer queues.

This has been the case as the analysis revealed that smaller ships were calling at Port Kelang instead of larger ones (as indicated by the Gross Registered Tonnage per ship called). However, things began to improve when additional berths were completed. This earlier development has discouraged many shipping operators to call direct with their mother vessels because of their high waiting costs at the port and they have resorted to tranship from Singapore which were better equipped then.

TABLE 5

PATTERNS OF SHIP ARRIVAL IN PORT KELANG
1964 - 1982

YEAR	NUMBER OF SHIPS	GRT ^a ('000)	NO. OF BERTH	BERTH LENGTH ^b	SHIPS PER BERTH	GRT PER SHIP
1964	1489	10247	8	1094m	186	6882
1965	1743	12147	8	1094	217	7005
1966	1859	12877	8	1094	232	6927
1967	2060	13806	8	1094	258	6902
1968	2146	13824	8	1094	268	6441
1969	2279	13662	8	1094	285	5995
1970*	2288	13601	8	2654	286	5944
1971	2350	13840	8	2654	294	5889
1972	2617	16338	15	2654	174	6243
1973	2440	16604	15	2654	163	6805
1974	2495	19680	15	2654	166	7888
1975	2749	22386	15	2654	183	8143
1976	2794	24432	15	2654	186	8744
1977**	2851	26832	25	4952	114	9411
1978	2978	28416	25	4952	119	9542
1979	2794	27161	25	4952	112	9721
1980	2785	26220	25	4952	111	9415
1981	2899	27826	25	4952	116	9598
1982	3061	30763	25	4952	122	10050

^aGRT : Gross Registered Tonnage
(refers to the size of the vessels calling at the port)

^b : Estimated.

* : Construction of new North Port started in 1970 and operational by 1972.

** : The year when the Second Phase of the North Port Expansion Programme was completed and commissioned.

Source : Year Book of Transport Statistics, Malaysia 1982.

As for the current position, Port Kelang is operating at a reasonably comfortable capacity but additional throughput may begin to put strains to the operational systems. Unless the various port management upgrade their services, the time will come in the not too distant future where congestion will become a common feature in this region⁸.

2.4 'Look East' Policy

Malaysia has for many decades relied on her colonial masters for guidance, technology and expertise in the drawing up and implementation of Master Plans for economic and social development. However, things have changed since 1980 when the Malaysian Government adopted a policy to 'Look East' for trade and technology. This is referred to countries in the Far East like Japan, South Korea, Taiwan and Hong Kong and in a wider perspective it also includes Australia as a whole. With such emphasis one can reasonably expect faster and

⁸LAI Ah-Chek, et. al. eds., Proposal for the Privatisation of the Port Kelang Container Terminal, February 1985. Unpublished.

more overseas trade to and from the Far East countries and Australia.

When the Look East Policy is viewed domestically, it is also meant to be the Government's intention to develop the East Coasts of Peninsular Malaysia as well. Until recently, it remained undeveloped. This has come about because of historical reasons where the West Coast has always been the centre of economic activities with rich tin fields, agricultural land and proper transport systems and other infrastructure available to channel the goods to export outlets, that is Port Kelang and Penang Port.

2.5 Reasons for Re-Routing

The re-routing of the ANRO and the Australia Northbound Shipping (The Australia East Asia Section), possibly by merging them to serve ASEAN ports exclusively, will promise the ANL better times ahead. The implementation of this new route by providing a reasonable level of customer service and performance will undoubtedly have a bearing on the positive effects to the regional development of the East Coasts of Peninsular Malaysia. With ANL leading the way in this pioneering route, other liner operators will follow suit.

Among the reasons brought forward to support this concrete move are as follows:

2.5.1 Change in the origin-destination of overseas trade.

With more and more goods being produced and consumed as a result of the successful development of various large scale agricultural projects for growing oil palm and rubber, the sources have changed. The export outlet is now more in favour of the new Kuantan Port. Likewise, demand for imported goods have also shown considerable increase as the people in these developments are getting more and more affluent. Furthermore, imports of machinery and other equipment for the oilfields and refineries also contributed to the shift as shown in Figure 2 on page 26.

2.5.2 Shift of Industries and Population

The effects of the successive five-year Master Plans have contributed to the shift of industries and population from the West Coast to the underpopulated and undeveloped East Coast.

Incentives such as tax holidays and lower service charges are important contributing factors for these successes.

2.5.3 Strategic Location

Kuantan Port, being situated on the East Coast of Peninsular Malaysia, shares the same location of other major deep-sea Asean ports all of which are facing the South China Sea. It is, therefore, better poised to the ANL to exploit this position when compared to other shipping lines plying along these ports, none of them can serve the Asean-Australia region satisfactorily. These suggested routes are outlined in the appendices.

2.5.4 Efficient Land-Based Infrastructure

A significant amount of money have been spent in improving/upgrading the road network and other communication systems deemed necessary for an inexpensive land-based handling costs. The hinterlands are well-served with proper and quality roads for the transport of goods to and from the new port.

2.5.5 Faster Vessel Turnround and Utilisation

More importantly the shipping operators serving this suggested route can expect a faster turnround of their vessels due to faster loading and discharging of cargoes in these underutilised but well-managed ports. Furthermore, ANL in particular can re-deploy its vessels accordingly to suit the volume of traffic generated in these regions. Hence, there is no need for Asean to be served by two liner conference routes from Australia. One is sufficed to serve these ports.

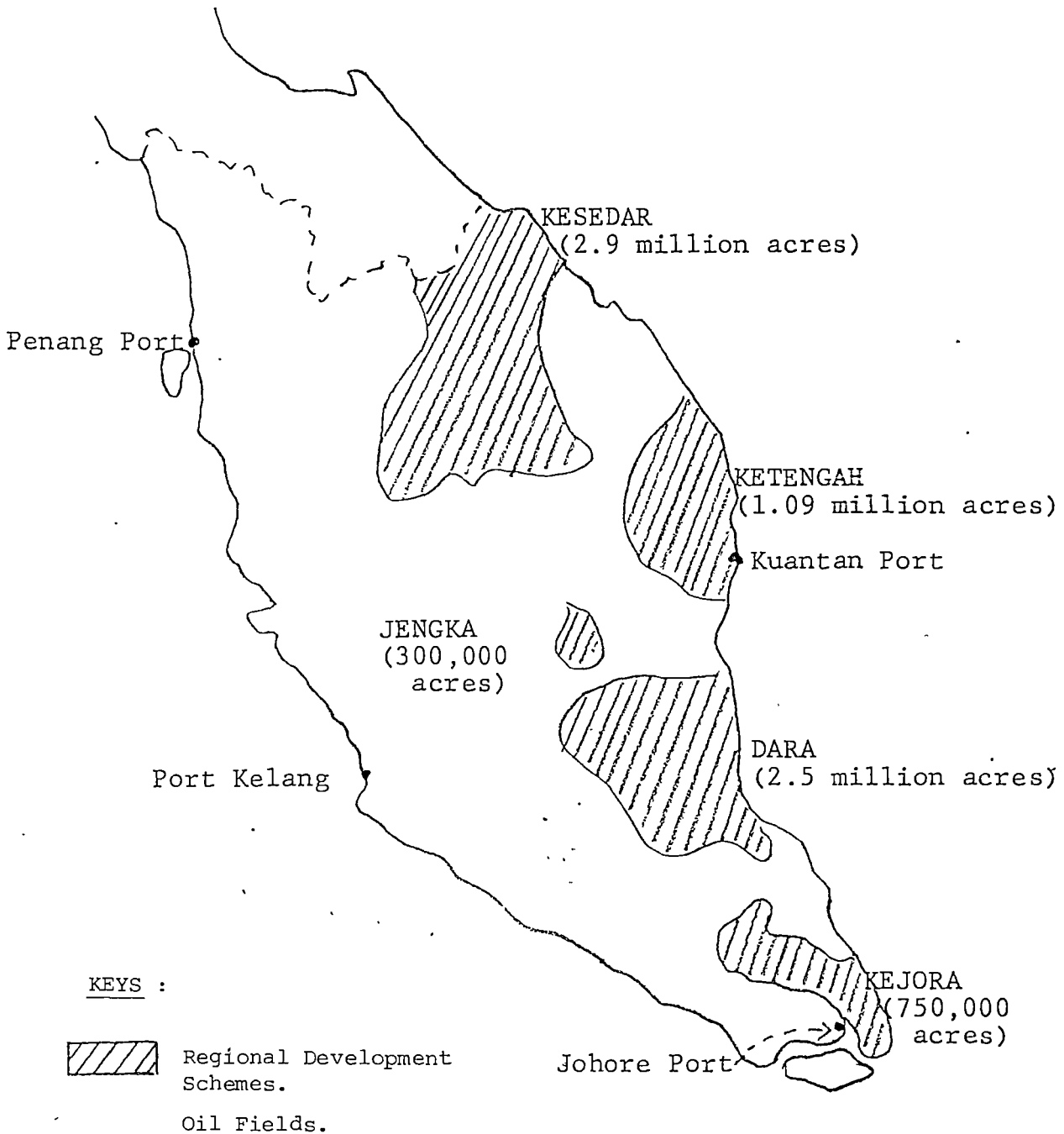
The question of establishing a shipping monopoly to serve these ports will not materialise because of the easy availability of non-conference operators. However, should there be any indications of a monopolistic situation, the high ocean freight rates and the availability of cargo volume will only attract more non-conference operators to come into this sector to meet the urgent needs of the shippers from both Asean and Australia. Furthermore, all Asean governments (with the exception of Singapore) are particularly concerned about the

extent of their foreign exchanges being spent on shipping services will carry out their own cabotage policy as a means of discouraging any form of monopolistic operations on the one hand and to develop their own maritime industry on the other.

When shipping monopoly arises, the implications are detrimental to the economic development of the developing nations. Shippers will have to pay higher costs for the goods consumed and at the same time making their exports less competitive in the world market. This will in turn dampen the rate of economic growth and putting more inflationary pressure on the economy.

FIGURE 2.

LOCATION OF REGIONAL DEVELOPMENT AUTHORITIES
AND OIL FIELDS IN PENINSULAR MALAYSIA.



Source : E.K. Fisk, H. Osman-Rani (Ed), "The Political Economy of Malaysia" Oxford University Press 1982 PP 162

3. DEMOGRAPHIC AND INDUSTRIAL CHANGES

Traditionally, the West Coast of Peninsular Malaysia is the most populous region together with a heavy concentration of industries served by well-coordinated transport network. The East Coast is still poor in these services thus discouraging the setting up of new industries there. A large number of labour force is being attracted to these industries which provided easy jobs and reasonably high wages compared to what the workers would get had they stayed back and worked on the fields and plantations.

3.1 Employment Opportunities

Such a drift of labour force from the East to the West Coast for employment was arrested when Government provided the incentives to new industries (pioneering status) to set up their factories there as a means of balancing the economic and industrial development of the East Coast states. The pace began to accelerate in the late seventies and early eighties when various government-sponsored projects were launched and set the country into an era of heavy industry. Projects like the steel and billets plants and petroleum refineries were built in the Trengganu state where offshore oil and

gas fields are available in abundance. Tens of thousands of jobs are created over this short period and more industrial estates are being developed for light to medium industries near the new Kuantan Port. Thus, providing an important outlet for manufactured goods and a convenient inlet for imports of raw materials.

3.2 Location of Population Centres

There is no doubt that the bulk of the population will be centred around the major town areas surrounded by industrial estates which make up the port's hinterland. Each deep-sea port has a clearly defined hinterland to serve. For Port Kelang, Penang Port, Pasir Gudang Port and Kuantan Port they served an estimated population of 2.68M, 1.95M, 1.6M and 1.28M respectively⁹. The economic activities generated from these centres are capable of keeping these four deep-sea ports busy throughout the year.

3.3 Trends in Industrial Development

Malaysia is not contented to be merely an exporter of raw commodities. Through the setting up of secondary processing

⁹Population and Housing Census of Malaysia,
Dept of Statistics, Malaysia 1980.

industries which are export-oriented, Malaysia would like to discard its traditional label as a producer and supplier of raw materials but instead acquire a new status and image as a producer and exporter of quality manufactured goods. With such commitments from the government, the East Coast states stand to gain from this shift of industries from the West Coast. Steps have already been undertaken to encourage the following types of industries to be located at the East Coast. Among them are high technology industries, heavy industries, export-oriented industries, resource-based industries, engineering, ancilliary and supporting industries. Many of these plants have already begun production like the steel and billets plants and a vehicle assembly plant. In order to make these new areas successful in the industrialisation programme of the East Coast states, attractive incentives are given to these pioneering investors. Among the incentives available are the labour utilisation relief, pioneer status, locational incentive, investment tax credit plus other more elaborate benefits as outlined in the government's investment handbook¹⁰.

¹⁰ Malaysian Industrial Development Authority (MIDA), "Investment Incentives" August 1984.

4. DEVELOPMENT PROGRAMMES FOR TRANSPORT INFRASTRUCTURE

In developing countries, most of the Government's public expenditure are spent on building the necessary infrastructure as a means of attracting foreign as well as domestic investment to boost their economic and industrial expansion and diversification programmes. Such infrastructure includes better telecommunication systems, transport and other public amenities. Expenditure on these infrastructure are the foundations for economic prosperity and to a large extent, survival especially when they have to compete for overseas markets for their exports which are based entirely on the costs factor. Other things being equal, one can expect to get a larger share of the market when one's goods are cheaper.

In Malaysia, the annual outlay on transport infrastructure development is about 15 to 20% of the total public expenditure as shown in Table 6. The basis for such allocation is the government's continuing effort to improve and expand the existing systems to meet the increasing demands from passenger and freight transport. This will in the end ensure the distribution of goods and services generated from the dynamic import

and export trade to be available at reasonable costs and not at exorbitant prices which are not within the reach of an average consumer.

4.1 Roads and Rails

Over the last few years, the allocation of funds for the building of roads and rails were around 55% and 9% of the total transport sector allocation respectively. This constitutes about MR\$700 million a year for road and MR\$112 million for rails as budgetted under the Fourth Malaysia Plan 1981-1985.

The importance of this high allocation is due to the physical size of the country where the origins and destinations of cargoes are better served by roads than rails. The economics of railway operations in Malaysia will only benefit the shippers when their cargoes are moved in the North-South direction and not in the East-west direction as the latter has a much shorter distance. The East-West rail link is currently under study but it will be a costly investment as the route will be crossing mountainous terrain.

At present, the import and export trade are now heavily relying on road (80%) and rail (20%) transport for

deliveries to and from the ports. Without such investment to build better road and rail links to the ports, the congestion costs to the national economy will be enormous. It is, therefore, justified for more expenditure on road and rail because goods can reach their destinations more efficiently and at a price every shipper can afford.

4.2 Ports

The amount of funds required in the development of new ports and upgrading of the existing ones made up about 22% of the total transport allocation. An annual average of MR\$66 million, MR\$165 million and MR\$289 million between 1971 to 1985 have been earmarked during the First, Second and Third Malaysia Plans respectively.

The need to upgrade the existing ports, especially Port Kelang is imminent. Signs of serious congestion at this port have surfaced since the late 1960s. This trend is indicated in Table 5 which revealed the increasing number of ships calling at the port using a limited number of available berths. It is during this trying period that changed the pattern of Malaysian overseas trade movement whereby Singapore Port handled about four million tonnes annually which could have been channelled

through the Malaysian ports. When translated into foreign exchange losses it is worth a staggering MR\$37.65 million (based on a minimum tonnage of two million tonnes converted to twenty equivalent units, TEUs, at MR\$320 per TEU terminal handling costs). If the other costs like the ship's waiting costs were also incorporated into the computation, the opportunity costs are even higher.

The most important step taken by the shipping industry to avoid this emerging congestion situation is to divert their main line or mother vessels to the neighbouring Singapore port as their main transshipment centre while serving Port Kelang with only feeder vessels. In order to avoid this damaging trend, large annual allocation is made to overcome this problems both infrastructure and manpower. Among the problems that led to the building up of pressure at the port are:

- (i) poor inland transport linkages which are monopolised by government agencies.
- (ii) frequent industrial disputes.
- (iii) poor terminal handling rates.

- (iv) lack of berthing and handling equipment, and
- (v) government red tape due to outdated documentation system.

However, the decisions to build certain deep-sea ports as gateways for overseas trade are based more on political consideration than on economic justifications. In Peninsular Malaysia alone, there are four deep-sea ports namely Penang Port, Port Kelang, Pasir Gudang Port (or Johore Port) and the Kuantan Port which is the latest addition. Each of these ports are located about 250 miles from one another. Such locations surely do not make good economic sense but decisions have to be made and carried out to make these ports viable especially the Kuantan Port. The existing shipping routes and origins and destinations of cargoes have to be evaluated in order to assess the possibility of attracting more main line vessels to call at the port frequently rather than on an ad hoc basis.

The rationale behind the Government's philosophy in building the Kuantan Port is to provide a convenient gateway for export cargoes produced from the three main East Coast states, namely Pahang, Trengganu and Kelantan. This port will also play a very functional

role in speeding up the economic and industrial development of these three areas which have been lying stagnant for a number of years.

4.3 Air Transport

The air transport industry in Malaysia has been growing rapidly. About 15% of the total transport expenditure is allocated for improving the existing air services. This country requires efficient air links both domestically and internationally in the hope of providing the back-up facilities for other modes of transport. Although the volume of cargo handled by air is relatively small compared to the other modes, it nevertheless provides an excellent and strong infrastructural base for future growth.

The level of investment within the various modes of transport in Malaysia seems to relate to the tonnage handled by the respective mode with the exception of air transport. The reason for this is that air transport in Malaysia is heavily dependent on passenger traffic rather than freight. There are strong indications for air cargo to grow and will contribute significantly to the revenue of air transport.

Table 8 shows the relationship of tonnage handled as compared to the investment as allocated by the government.

In summarising this section on transport investment which also includes materials handling equipment like gantry cranes for ports and conveyor belts for airports, it is important to elaborate in this instance the efficiency of the handling systems. These depend not only on the handling rates at the terminals but also on the extent to which the link-ups between these systems and all the subsequent ones to be properly matched. For example, an increase in the handling rates would result in little improvements in the overall productivity of the ports, unless it is matched by similar improvements of the incorporated systems, that is the road and rail linkages to and from the shippers.

TABLE 6

PUBLIC EXPENDITURE ON TRANSPORT INFRASTRUCTURE
1971-1985 (MR\$million)

TRANSPORT MODES		ACTUAL SMP EXPENDITURE		ESTIMATED TMP EXPENDITURE		ESTIMATED FMP EXPENDITURE	
		(1971-1975)	%	(1976-1980)	%	(1981-1985)	%
1.	Roads and Bridges	732	51%	2595	61%	3616	55%
2.	Railways	90	6%	350	8%	559	9%
3.	Ports	328	23%	827	19%	1447	22%
4.	Air Transport	282	20%	490	12%	922	14%
5.	TOTAL TRANSPORT	1432	100%	4262	100%	6544	100%
6.	TOTAL PUBLIC EXPENDITURE	11457		36722		42830	
7.	% OF TRANSPORT ALLOCATION		13%		12%		15.3%
8.	% GROWTH IN PORT ALLOCATION		+ 190%		+ 152%		+ 75%

Note : SMP - Second Malaysia Plan 1971-1975
: TMP - Third Malaysia Plan 1976-1980
: FMP - Fourth Malaysia Plan 1981-1985

Source : Fourth Malaysia Plan, Malaysia 1981-1985
Economic Reports, Malaysia - Various issues.

TABLE 7

MODAL SPLIT OF CARGO MOVEMENT TO & FROM PORTS
('000 Metric Tonnes)

YEAR	DEEP-SEA PORTS	ROAD (80%)	RAIL (20%)	TOTAL THROUGHPUT	% OF TOTAL THROUGHPUT
1980	Penang	4626	1157	5783	39%
	Port Kelang	5601	1400	7001	47%
	Pasir Gudang	1323	331	1654	11%
	Kuantan	427	-	427	3%
1981	Penang	4980	1245	6225	41%
	Port Kelang	5278	1319	6597	43%
	Pasir Gudang	1657	414	2071	14%
	Kuantan	366	-	366	2%
1982	Penang	7612	1903	9515	46%
	Port Kelang	5879	1470	7349	35%
	Pasir Gudang	2514	628	3142	15%
	Kuantan	705	-	705	4%
1983	Penang	6114	1529	7643	38%
	Port Kelang	6343	1609	8043	40%
	Pasir Gudang	2729	682	3411	17%
	Kuantan	782	-	782	5%

Source : Year Book of Transport Statistics, Malaysia 1983
Various Port Authorities Annual Reports 1980-1983.

TABLE 8

*FREIGHT TRAFFIC BY MODE OF TRANSPORT
IN PENINSULAR MALAYSIA 1979 - 1983
('000 Tonnes)*

	1979	1980	1981	1982	1983	<i>DISTRIBUTION OF TRANSPORT EXPENDITURE^b</i>
Railways	4,188	3,608	3,374	3,232	3,187	9%
Air	30	35	38	32	NA	14%
Sea (Major Ports)	12,393	14,865	15,259	20,711	19,879	22%
Roads ^a						
(80% of Sea Cargo Only)	9,914	11,892	12,207	16,569	15,903	55%

Source : Year Book of Transport Statistics, Malaysia 1983.

: ^a Conservative Estimates.

: ^b Data obtained from Table 6 under 1981-1985 column.

5. PATTERNS OF INLAND FREIGHT MOVEMENT.

Since 1980, Malaysia has enjoyed healthy economic growth which is well above the world standard. The exports growth between 1983 to 1985 period is at a steady 13.6% per annum while for the same period her imports have also steadily increased at 7.4% per annum. In value terms, the forecast figures for 1985 exports (f.o.b.) are MR\$41,143 million and imports at MR\$35,830 million¹¹.

5.1 Origins and Destinations of Cargoes

As outlined earlier in Chapter 3, the rapid pace at which the country is developing her industries, it will not be long before the patterns of origin and destination of cargoes change significantly as more and more production comes on-stream especially those in the East Coast. Currently, the bulk of the imports originated through Port Kelang, Penang Port and Singapore for further inland distribution. However, for

¹¹The foreign exchange in April 1985 is for every Australian dollar is equivalent to 1.8 Malaysian ringgit.

exports of bulk commodities like palm oil, rubber and timber, the majority originated from the three East Coast states namely Pahang, Trengganu and Kelantan. The volume for these products accounted for are as high as 60% of the total exports. Due to the different characteristics of the ports of Penang, Port Kelang and Singapore in terms of performance, frequency of sailings, location and to a large extent the unit costs of handling, the gateways for Malaysian imports and exports are too dispersed. In a study undertaken to determine the size, a staggering 25 to 30% or 4 million tonnes of total tonnage are estimated to handle through Singapore.

However, it is difficult to determine what percentage of this is "genuine" trade with Singapore and what percentage passes through Singapore. The Table 9 shows the breakdown of the three major ports that handled all the overseas traffic.

This trend is a cause of great concern as local shippers are not channelling their cargoes to their national ports but via a third country. However, efforts have been taken to overcome the cargoes that are diverted to Singapore. Among them are the proposed privatisation of the Port Kelang Terminal, the new Kuantan Port and the

other is the upgrading of the Pasir Gudang Port which is situated on the southern tip of the Peninsular (or near the northern tip of Singapore), including the imposition of a toll rate to discourage conventional lorries to carry their cargoes to and from Singapore. Steps that have been initiated will in many ways improve the handling performance with resultant lower port charges. These will induce shippers and shipowners to consider favourably by calling at these two ports more frequently. It must be noted here that the Pasir Gudang Port handles mainly bulk cargoes like timber, rubber and crude palm oil produced in the southern part of the Peninsular. Rubber and timber are usually channelled through to Singapore because the economics of inland transportation do not favour such cargoes to be shipped out of Port Kelang.

The 're-shuffle' of overseas cargoes to be handled by the ports after the privatisation, the addition and upgrading programmes of existing ports are expected to make Malaysian ports more conducive for more ships to call as tonnages will have increased to make direct and more frequent calls more attractive and profitable. The projected share of the traffic among the four ports are tabulated in Table 10 below.

TABLE 9

*DISTRIBUTION OF MALAYSIAN CARGOES
HANDLED IN 1983
(Estimated)*

<i>PORTS-OF-CALL</i>	<i>IMPORTS</i>	<i>EXPORTS</i>	<i>AVERAGE</i>
<i>Port Kelang</i>	52%	47%	49.5%
<i>Penang Port</i>	23%	25%	24.0%
<i>Port of Singapore</i>	15%	20%	17.5%
<i>Other Malaysian ports</i>	10%	8%	9.0%
	100%	100%	100.0%

TABLE 10

*REVISED DISTRIBUTION OF MALAYSIAN OVERSEAS CARGOES
HANDLED BY THE MAIN PORTS AFTER 1986*

<i>PORTS-OF-CALL</i>	<i>IMPORTS</i>	<i>EXPORTS</i>	<i>AVERAGE</i>
<i>Port Kelang</i>	60%	40%	50.0%
<i>Penang Port</i>	20%	25%	22.5%
<i>Kuantan Port</i>	5%	10%	7.5%
<i>Pasir Gudang Port</i>	5%	13%	9.0%
<i>Port of Singapore</i>	10%	12%	11.0%
	100%	100%	100.0%

*Source : Port Kelang Privatisation Study,
February 1985.*

5.2 Methods of Inland Distribution

The ships that called at Port Kelang, Penang Port and Kuantan Port are mainly feeder vessels with some direct calls from the main lines. Whatever ways these ports are being served, the inland haulage and distribution of cargoes to and from the ports are important criteria for the smooth operations of the port terminals. The ports only act as the interface between the landside and seaside operations. A poor inland haulage system will create bottlenecks at the ports as cargoes to and from the ports are not cleared and arrived fast enough, thus causing congestion and delays to the terminal operator and the shipping operators respectively.

5.2.1 Railways

The four deep-sea ports are very well served by roads and railways with the exception of Kuantan Port where there is no rail link. Railways handled a rather small percentage of all imports and exports estimated to be about 15-20% per annum. However, its share are higher for bulky domestic cargoes especially for longhaul between major town centres. Even with the knowledge that rail deliveries are far cheaper per unit

costs for long distances, shippers are still quite reluctant to use the service because of the poor state of the wagons, rolling stocks and unreliability in its scheduling. Plans are underway to upgrade its tracks, rolling stocks and other related facilities including the possible privatisation of its freight services in order to compete with the road haulage. As a record, containerised cargoes moving between Singapore, Penang Port and Port Kelang use rail very frequently. Re-positioning of containers by rail to these ports are common as it is cheaper than going by sea.

5.2.2 Road Haulage

Between 80 to 85% of the imports and exports are moved by road either through containerised haulage or using conventional lorries. Cargoes are usually delivered by containers if the sources and destinations are within the port's hinterland. At present, it does not limit up to there. More and more shippers are realising the benefits of containerisation and are therefore prepared to use container haulage even though their factories are further away from the port

and costs more when compared to the use of conventional lorries.

With the concept of containerisation catching up with Malaysian importers and exporters, the road haulage industry is set to capture a larger slice of the market, particularly, those to and from the East Coasts, The railways are unable to serve their needs effectively and efficiently because there is no rail link running between the West Coasts and the East Coasts. Only North-South links are available due to geographical reasons.

Imports and exports are handled either by full container loads (FCLs) or less than container loads (LCLs). There are some shippers who prefer to stuff and unstuff their cargoes at and within the port area while others prefer to do them at their own premises. Whatever the method of delivery being employed are, road transport in Malaysia will continue to play an important and increasing role in the distribution of cargoes to and from the port.

The nature of the Malaysian industrial development in the past has created a situation where the West Coasts are more developed than the East Coasts. As mentioned earlier in this research paper, more emphasis are now given to develop the East. This sort of lopsided economic development has created a situation of great traffic/cargo imbalances. There are many instances where return trips are empty. This contributes to higher inland distribution costs for consumers as the operators have to charge higher rates to cover the costs of their return trips. Had they managed to fill their lorries on return trips then the transport charges will definitely be lower.

5.3 Evidence of Changing Freight Movement

In 1984 when the three East Coast states produced one million tonnes of palm oil, 20% or 200,000 tonnes were exported through the new port. The amount in 1980 was only 9923 tonnes. Despite the recessionary conditions exports of timber were considered good at 109,529 tonnes compared to 154,991 tonnes in 1983. Other products showing positive increases were palm kernel expellers and completely-knocked down (CKD) packs for car assembly.

TABLE 11

**TONNAGE HANDLED AND VESSELS CALLED AT KUANTAN PORT
SINCE INCEPTION 1980 - 1984
(In Metric Tonnes)**

YEAR	EXPORTS	IMPORTS	TOTAL	VESSELS CALLED
1980	265048	162018	427066	374
1981	119819	266331	386150	439
1982	407425	374796	782221	635
1983	529856	306953	836809	844
1984	387157	228096	615253	427

Source : Kuantan Port Statistics, 1980-1984

Under Table 11, the drop in tonnage handled in 1984 has been a result of the worldwide recession. However, this setback is only a temporary one. Despite this, it is generally considered that the new port has managed to re-capture a sizeable volume from other ports and is working towards achieving more volume in the future.

In Table 12, the production of major export commodities for 1983-1985 are highlighted. The average growth rate per annum shows positive improvements except for tin production. What this means is that these products are produced in abundance from these three East Coast states. It is, therefore, expected

that rubber, petroleum crude, palm oil and sawn logs will be channelled through the new port as their convenient export outlet at an increasing rate.

The production of sawn logs has declined because of low overseas prices and the Government's effort to encourage downstream activities. The latter will have an impact in the value-added manufactured goods in the form of furniture and processed timber which is a good way of enhancing the prospects of greater foreign exchange earnings.

The change in the traffic pattern will even be more convincing when more and more goods destined for these three states are handled through Kuantan Port. The effect is not yet there. However, it will not be long before this cargo movement imbalance will be corrected when the East Coast states' economies become more dynamic.

PRODUCTION OF MAJOR EXPORT COMMODITIES
1983 - 1985

PRODUCTION	1983		1984 ^a		1985 ^b		AVERAGE CHANGE
	VOLUME	% CHANGE	VOLUME	% CHANGE	VOLUME	% CHANGE	
Rubber ('000 tonnes)	1562	+ 4.6%	1580	+ 1.2%	1596	+1.0%	+ 2.3%
Petroleum Crude ('000 bpd)	383	+26.3%	440	+14.9%	450	+2.3%	+14.5%
Tin ('000 tonnes)	42	-20.8%	41	- 1.0%	41	-	-10.9%
Palm Oil Crude ('000 tonnes)	3017	-14.1%	3350	+11.0%	3680	+9.8%	+ 2.2%
Sawnlog ('000 cu. metres)	32648	- 0.2%	31500	- 3.5%	30500	-3.2%	- 2.3%

Source : Economic Report 1984-1985
Ministry of Finance, Malaysia

: a Estimates

: b Forecast

VALUE OF IMPORTS OF MAJOR COMMODITIES
1983 - 1985
(in MR\$million)

PRODUCTION	1983		1984 ^a		1985 ^b		AVERAGE CHANGE
	VALUE	% CHANGE	VALUE	% CHANGE	VALUE	% CHANGE	
Food	3106	- 2.7%	3505	+12.8%	3762	+ 7.3%	+ 5.8%
Manufactures	4894	- 0.4%	5439	+11.1%	5810	+ 6.8%	+ 5.8%
Petroleum Crude	1639	+12.0%	1382	-15.7%	1265	- 8.0%	- 3.9%
Machinery etc.	13162	+14.0%	14926	+13.4%	16480	+10.4%	+12.6%
Others	7845		8106		7683		

Note : One Australlian Dollar is equivalent to
1.8 Malaysian Ringgit or Dollar - April 1985

: ^a Estimates

: ^b Forecast

Source : Economic Report 1984-1985
Ministry of Finance, Malaysia

6. THE KUANTAN PORT

As recognised and acknowledged by transport economists, ocean transport is the cheapest mode of transport. It is therefore not surprising that the development of seaports in Malaysia has been given top priority in the Third and Fourth Malaysia Plans. In the development process the much neglected East Coasts states are being given due recognition with the decision to construct a new deep-sea commercial port on the eastern seaboard of Peninsular Malaysia.

It cannot be denied that industrialisation is very dependent on the level of development of infrastructure and supporting facilities. The port and its hinterland will grow into commercial centres followed by the development of industries. Thus the common saying that "ports are catalyst to industrial growth." It must be remembered that this is a proven fact as the present advanced development of the West Coast of Peninsular Malaysia owe its affluence to Port Kelang and Penang Port which are well served by ocean going vessels loading and discharging of cargoes regularly. Other overseas ports like Rotterdam and Antwerp are important outlets, serving the vast hinterlands of the entire European continent.

6.1 Port Facilities

This new port is partially opened in 1980. But only in 1984 it became fully operational when certain cracks were rectified. The port is situated 27 km north of the commercial centre of Kuantan known as Tanjong Gelang. This site is chosen because it is just outside Kuantan, the commercial centre of the East Coast and centrally located on the eastern seaboard with sufficient deep water.

The Kuantan Port is one of the most modern ports in Malaysia and even in South East Asia. It offers a comprehensive range of facilities to its multifarious users. Among them are:

6.1.1 Berth Facilities

- a main quay wall of 725 metres capable of berthing four ships with 11.2 metres depth alongside. Each berth can accommodate ships of up to 35000 DWT. One of the berths can handle container and RORO ships.
- a palm oil dolphin berth of 200 metres capable of berthing two ships at the outer

and inner berth with 11.2 metres depth alongside. The outer berth can accommodate ships of up to 40000 DWT whilst the inner berth of up to 8000 DWT. The berths are linked to the tank farm via two pipelines which will be increased to five later on.

- a mineral oil dolphin berth of 120 metres with 10 metres depth alongside. The berth can accommodate ships of up to 8000 DWT.
- a service jetty of 120 metres for lighterage services.

6.1.2 Storage Facilities

- three transit sheds with a total covered area of 15,000 sq metres; two warehouses with an area of 10,000 sq metres; open yard storage of 48,000 sq metres and a container yard capable of holding 3000 TEUs.

6.1.3 Mechanical Equipment

- 44 units of forklift of 2 to 42 tonnes capacity.

- 5 units of crane of 5 to 90 tonnes capacity.
- 12 units of tractors with drawbar pull to handle loads of up to 40 tonnes.
- 31 units trailers of 40 tonnes capacity to handle 20 feet and 40 feet containers.

6.1.4 Marine Services

- a 24-hour pilotage and tug services for vessels.

6.1.5 Cargo Handling Services

- stevedoring services are provided by five licensed companies and shipowners are free to negotiate.

7. ECONOMIC APPRAISALS OF SHIPPING SERVICES

The prospects of proposing the use of the Kuantan Port as the gateway for imports and exports rest entirely on the total costs factor that the shippers are prepared to accept compared with the existing route of using the other ports. On a total system basis, the rationale is for the shippers to go for the most cost efficient route or port without affecting the current level of service that they have been accustomed to.

7.1 Current Routing Arrangement

7.1.1 Asean-Australian Liner Services

Asean member countries are now served by two liner conference services operated by the Australian National Line (ANL). One of them is the Australia Northbound Shipping Conference which serves Manila while the other one is the Straits/Australia Service calling at Jakarta, Singapore, Port Kelang and Penang Port. These routes are illustrated in Figure 1 in Chapter 2, Section 2.2.

The service to and from Malaysia is quite frequent with a sailing once every ten days. The services provided so far are good and have in many ways contributed to the positive growth of the Malaysian and Australian trade.

Most of the liner services preferred to call at Port Kelang and Penang as they are along the main round-the-world sea routes between the Far Eastern, European and Middle East countries. However, this is not the case for liner services operated between the Australian and Asean ports which has a North-South route. In view of this, the Asean-Australian shipping operators are in a good position to change their shipping routes to suit the growing trade served by ports bordering the South China Sea.

7.1.2 The Pendulum Service

This service is operated by coastal vessels feeding containers and other cargoes to and from Singapore which is the transshipment centre. As noted earlier, about 25 to 30% of Malaysian cargoes are handled through Singapore when no direct calls are made to Penang and Port

Kelang. Bangkok is another area where feeder services are prominent. The routes of the Pendulum operators are depicted below.

Ports-of-Call	Status
Penang Port	- feeder/mainline port
Port Kelang	- feeder/mainline port
Singapore	- mainline/transhipment centre
Kuantan	- feeder port
Bangkok	- feeder/mainline port

This service will be there as long as the operators of super-container vessels (fourth generation) continue to redefine their routes by avoiding smaller ports even though they have the capacity of handling them. The main reason for the super-container vessels to plan such routes is to minimise the number of calls to ports where there is no load centre for cargo to attract them as it is too costly to make additional stops at regional ports. The operators of the Pendulum service are Perkapalan

Kris, Malaysian International Shipping Corporation/Perdana (joint operations), Asiabroker, Maersk, Chung Chiao, Transpacific Services, Evergreen, Regional Container Lines and EAC Knutsen. The former two operators are operated by Malaysians while the rest are foreign operators.

7.1.3 Inland Transport

In appraising the economics of the liner's port-of-call, it is imperative that the inland transport system must be taken into account. It is meaningless, therefore, to serve a port with poor road networks linking the port even though there are sufficient cargoes available. A total cost approach is needed in this evaluation to determine the final costs to the shippers and consumers alike as the costs incurred do not stop when the cargoes are discharged at the port. Similarly, transport charges have to be incorporated for cargoes delivered to the port for loading.

7.2 Costing for Proposed Direct Service

The evaluation of these proposed routes will only start from Singapore as this change of route can present the greatest potential to the shipping operators as well as the shippers around this region, particularly, from Kuantan Port, Bangkok and Manila. The sector and the ports-of-call from Australia to Singapore will remain unchanged or may be perhaps with slight alteration if necessary in the future. For ease of computation, the round voyage time is assumed to start and end in Brisbane.

7.2.1 Existing Costs

The estimated costs for the sea-sector are derived by multiplying the number of days the vessel took to complete a round voyage with the average total daily costs of running the vessel. For the inland transport sector, only the rates for road haulage are required. Tables 13 and 14 show the existing freight rates from the various selected town centres and feeder sea routes. Port Kelang, being the premiere port of Malaysia, handles the bulk of the import and export trade destined for a larger hinterland

including the East Coast states of Malaysia. Penang Port only caters for the northern part of the Peninsular.

The inland haulage costs for cargoes to and from the East Coast states could be saved if shippers were prepared to use the new Kuantan Port. The computation will be carried out in the next section. At this point in time, statistics are not available to trace the origins and destinations of cargoes.

From Appendix 2A, it is estimated that the current costs of providing the ANRO and ANLINE services are at A\$740,000 and A\$640,000 per roundtrip voyage respectively. These voyage information are obtained by tracing the estimated time of arrivals (ETAs) of the ship calling at a particular port. For ANRO, it takes an average of 37 days to complete a round voyage which starts and ends in Brisbane. As for ANLINE, it takes about 32 days to complete a round trip.

7.2.2 Estimated Costs for Proposed Routes

In this study, six potential routes are identified and evaluated according to the voyage time taken to complete a round trip. These routes are a combination of the ANRO and ANLINE services. The latter can save two (2) days of voyage time for not calling at Manila. These two days are equivalent to A\$40,000 which are to be deducted from the costs of the respective proposed routes.

The analysis give due considerations to the existing tonnage available for shipment per call in relation to the existing fleet available for deployment from ANL. Should there be a shortage of such vessels to berth at this proposed ports-of-call, then, ANL and its consortium members must consider redeploying their other fleets from other non-profitable routes to meet this needs. Otherwise, they have to meet this expected strong demand from new acquisition.

7.2.2.1 Proposal I (Appendix 3)

- Ports-of-Call (Total 11)
 Brisbane, Sydney, Melbourne, Burnie,
 Adelaide, Fremantle, Jakarta,
 Singapore, Kuantan, Bangkok, Manila,
 Brisbane

	PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1.	Brisbane to Singapore	22.0	\$440,000
2.	Singapore to Kuantan	1.6	\$ 32,000
3.	Kuantan to Bangkok	5.0	\$100,000
4.	Bangkok to Manila	5.0	\$100,000
5.	Manila to Brisbane	10.0	\$200,000
6.	Total time taken	43.6	
7.	Estimated Voyage Costs		A\$872,000 =====

In this proposal, a total of eleven ports-of-call are made whereby the ship will call at every port of a member Asean country namely, Jakarta (Indonesia), Singapore, Kuantan (Malaysia), Bangkok (Thailand) and Manila (The Philippines). The total number of days are taken are estimated at 43.6 days or A\$872,000 per round trip voyage. The net effect will be A\$832,000 after deducting A\$40,000 saved on the ANLINE service.

7.2.2.2 Proposal II (Appendix 4)

- Ports-of-Call (Total 10)
Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta,
Singapore, Kuantan, Bangkok (by feeder
services to/from Singapore), Manila,
Brisbane

	PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1.	Brisbane to Singapore	22.0	\$440,000
2.	Singapore to Kuantan	1.6	\$ 32,000
3.	Kuantan to Manila	5.0	\$100,000
4.	Manila to Brisbane	10.0	\$200,000
5.	Total time taken	38.6	
6.	Estimated Voyage Costs		A\$772,000 =====

This second proposal recommends a feeder service to and from Bangkok while continuing to serve the other Asean ports. The number of days taken are 38.6 days costing A\$772,000 or A\$732,000 per round trip after taking into consideration the A\$40,000 savings. In this proposal, Bangkok is suggested to be served by feeder vessels because of the partial rationalisation of the routes which is slightly shorter than Proposal I.

7.2.2.3 Proposal III (Appendix 5)

- Ports-of-Call (Total 11)
Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta,
Singapore, Kuantan, Bangkok (by feeder
services to/from Singapore), Kota
Kinabalu, Manila, Brisbane

PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1. Brisbane to Singapore	22.0	\$440,000
2. Singapore to Kuantan	1.6	\$ 32,000
3. Kuantan to Kota Kinabalu	3.0	\$ 60,000
4. Kota Kinabalu to Manila	3.0	\$ 60,000
5. Manila to Brisbane	10.0	\$200,000
6. Total time taken	39.6	
7. Estimated Voyage Costs		A\$792,000 =====

This route is similar to Proposal II but incorporate an additional port, that is, Kota Kinabalu, situated in the East Malaysian state of Sabah. This port is added because of the vast potential she has to Australia particularly timber and timber products.

The estimated costs are A\$792,000 per round trip voyage or net A\$752,000.

7.2.2.4 Proposal IV (Appendix 6)

- Ports-of-Call (Total 11)

Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta,
Singapore, Kuantan, Bangkok, Kota
Kinabalu, Manila (by feeder to Kota
Kinabalu), Brisbane

	PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1.	Brisbane to Singapore	22.0	\$440,000
2.	Singapore to Kuantan	1.6	\$ 32,000
3.	Kuantan to Bangkok	5.0	\$100,000
4.	Bangkok to Kota Kinabalu	4.5	\$ 90,000
5.	Kota Kinabalu to Brisbane	7.0	\$140,000
6.	Total time taken	40.1	
7.	Estimated Voyage Costs		A\$802,000 =====

In this case, no direct calls are made to Manila but instead it is served by feeder vessels from Kota Kinabalu. Bangkok will be getting the direct service instead. The idea behind this choice on the ports-of-call is to save time on the voyage to and from Manila. The costs for this routing structure are A\$802,000 or A\$762,000 net after deducting the two days' savings from ANLINE services.

7.2.2.5 Proposal V (Appendix 7)

- Ports-of-Call (Total 10)
Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta,
Singapore, Kuantan, Bangkok (by feeder
service to/from Singapore), Kota
Kinabalu, Manila (by feeder to Kota
Kinabalu), Brisbane

	PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1.	Brisbane to Singapore	22.0	\$440,000
2.	Singapore to Kuantan	1.6	\$ 32,000
3.	Kuantan to Kota Kinabalu	3.0	\$ 60,000
4.	Kota Kinabalu to Brisbane	7.0	\$140,000
5.	Total time taken	33.6	
6.	Estimated Voyage Costs		A\$672,000 =====

Both Bangkok and Manila are not included in the direct service. Only feeder services are provided. This proposed service is even shorter than the original ANRO service which is 33.6 days compared with 37 days respectively.

The net costs are A\$632,000 which looks very cost effective and promising.

7.2.2.6 Proposal VI (Appendix 8)

- Ports-of-Call (Total 12)

Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta,
Singapore, Kuantan, Bangkok, Kota
Kinabalu, Manila, Brisbane

	PORT-TO-PORT	DAYS	AT A\$20,000 PER DAY
1.	Brisbane to Singapore	22.0	\$440,000
2.	Singapore to Kuantan	1.6	\$ 32,000
3.	Kuantan to Bangkok	5.0	\$100,000
4.	Bangkok to Kota Kinabalu	4.5	\$ 90,000
5.	Kota Kinabalu to Manila	3.0	\$ 60,000
6.	Manila to Brisbane	10.0	\$200,000
7.	Total time taken	46.1	
8.	Estimated Voyage Costs		A\$922,000 =====

The number of ports-of-call has increased to twelve in order to incorporate all the suitable ports around this Asean region. In order to satisfy such requirements and provide a better service, the voyage round trip costs are enormous. Even with the A\$40,000 deductions, it is still costing the operation A\$882,000, a 19% increase when compared with the ANRO service.

7.3 Economic Justifications

The choice of adding a port to a given itinerary depends on the trade-off between the increased marine and port sector costs and the reduced inland costs. The inland costs are tabulated in Table 14 and the marine sector costs are computed in Tables 15 and 16. In these rates comparison, it is found to be cheaper to send cargoes by road than by sea as the distance gets shorter. With these prevailing rates structure, it is, therefore, in the interests of the shippers from the Penang areas to despatch their cargoes by feeder services to and from Singapore. And for shippers in the Port Kelang areas, it is cheaper to send by road to Kuantan Port for further on-forwarding onto a vessel servicing the proposed route. Such arrangements would make Kuantan Port more attractive as there will be a greater load centre than before to act as regular inducements for more vessels to call frequently.

There is no available statistics as to how many tonnes of cargoes originated from and destined to the hinterlands of the Kuantan Port that are exported and imported to and from Australia respectively. However, the savings in inland road transport costs from the Kuantan Port and Port Kelang sector are enough to

justify the attractiveness the former has. This is further justified because the difference between the conventional road haulage costs (A\$382) and feeder service costs (A\$389) are negligible for the Kuantan Port to/from Port Kelang route and Singapore to/from Port Kelang route respectively.

It is reasonable to conservatively estimate that 10% of the total throughput tonnage handled by Kuantan Port are meant for and to Australia. From these estimates, we could establish from Table 11 the savings generated from the shorter inland haulage. The savings between 1980 to 1984 are about A\$1.2M, A\$1.1M, A\$2.1M, ~~A\$2.3M~~ and A\$1.7M respectively.

At this stage, it appears that it is worthwhile for a consortium to operate direct liner services to Kuantan Port. There is an attractive load centre to justify such sailings. Subsequently, it can serve the other Asean member ports from here onwards.

7.3.1 Evaluation and Selection of Proposed Routes

Proposals I and VI are rejected purely because of costs factor to serve all these main ports and it would take too long to complete a round

trip voyage. This would undoubtedly delay the deliveries of some urgent consignments to the shippers. Such delays are costly and should be avoided as much as possible.

Proposal IV is also not acceptable as it excludes Manila. Manila is considered an important trading nation among all the Asean countries. The high tonnage of exports and imports to and from Australia must not be down-graded to a feeder service but instead to have direct call at the port.

Proposal V is also not acceptable because it avoids direct calls to Bangkok and Manila. The reason for rejection is the same as Proposal IV above.

Proposal II is the next best proposal because it has a negative net effect of A\$64,000 per year of eight sailings per vessel. These computations can be found in Table 17. Although these savings are attractive to the liner operators, it does not mean that the services provided by them will deteriorate. In fact, through this routing arrangement, it is very

beneficial to all Asean member countries concerned.

Proposal III is equally attractive as it includes Kota Kinabalu in the East Malaysian state of Sabah in its itinerary. Kota Kinabalu is an important outlet for agricultural, timber and timber products for the Australian market. A number of Australian firms have already established their businesses there to capitalise on the cheap and abundant sources of timber for the manufacturing of furniture for exports to Australia. The additional costs incurred are A\$96,000 per vessel of eight sailings per year.

In concluding this part of the analysis, PROPOSAL II is the most attractive and Proposal III is the next best. The implementation of the proposed route should be viewed in total with the economic development of the Asean region in the next two years in mind. Ideally, Proposal II should be implemented before 1990 and Proposal III to be launched three years later because we can expect the Kota Kinabalu port to handle more cargoes to and from Australia.

The Malaysian shippers using the Kuantan Port as a gateway to and from Australia can expect their marine sector costs to be competitive and, at the same time, the inland transport costs are also relatively cheaper than the previous ANRO service.

TABLE 14

ROAD TRANSPORT RATES TO/FROM SELECTED TOWN CENTRES
(In Australian Currency)

ROUTES	CONVENTIONAL HAULAGE ^a	CONTAINER HAULAGE ^b
	(One Way) (\$)	(Round Trip) (\$)
1. Kota Baru to Kuantan	470	NA
2. Kuala Trengganu to Kuantan	265	NA
3. Kota Baru to Port Kelang	853	898
4. Kuala Trengganu to Port Kelang	647	733
5. Kuantan to Port Kelang	382	520
6. Port Kelang to Penang	547	650
7. Penang to Kuantan	896	1172

Notes

a : Based on MR\$0.25 (or A\$0.14) per tonne-mile
per 14-tonne trailer (regulated)

b : 20 footer container

NA : No service available

TABLE 15

*FREIGHT RATES FOR PENDULUM SERVICE
(TEU in Australian Currency)*

<i>VOYAGE</i>	<i>RATES (\$)</i>
<i>Singapore to Port Kelang</i>	<i>389</i>
<i>Singapore to Penang Port</i>	<i>486</i>
<i>Singapore to Bangkok</i>	<i>611</i>
<i>Port Kelang to Bangkok</i>	<i>694</i>

Source : Malaysian shipping agents.

TABLE 16

SUMMARY OF ROUNDTrip VOYAGE COSTS
FOR THE VARIOUS PROPOSED ROUTES
('000 Australian Dollars)

A	B	C	D	E	F	G	H	I	J
PROPOSALS	NO. OF PORTS	DAYS	ROUNDTrip VOYAGE COSTS (\$)	LESS 2 DAYS SAVED ^a (\$)	ESTIMATED TOTAL COSTS (D + E) (\$)	EXISTING ANRO COSTS (\$)	NET EFFECT (F + G) (\$)	PERCENTAGE CHANGE	RANKING
I	11	43.6	872	40	832	740	+ 92	+12.4%	5
II	10	38.6	772	40	732	740	- 8	- 1.1%	2
III	11	39.6	792	40	752	740	+ 12	+ 1.6%	3
IV	11	40.1	802	40	762	740	+ 22	+ 3.0%	4
V	10	33.6	672	40	632	740	-108	-14.6%	1
VI	12	46.1	922	40	882	740	+142	+19.2%	6

Notes :

^a : Two days saved as ANLINE is not stopping in Manila.
This is considered as savings to be passed on to the proposed routes.

SUMMARY OF ANNUAL COSTS DIFFERENCE BETWEEN
EXISTING ANRO AND PROPOSED ROUTES AND
AVERAGE EXPORT TONNAGE TO ASEAN PER SAILING

A	B	C	D	E	F	G	H	I	J
	NET EFFECT PER SAILING ¹ A\$'000	NO. OF SAILING PER YR. PER VESSEL ²	NET EFFECT PER YR. (B x C) A\$'000	EXPORTS TO ASEAN ³ ('000 tonnes)					
PROPOSALS				INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND	TOTAL
I	+ 92	7	+644	158	131	168	156	41	654
II	- 8	8	- 64	138	114	147	136	36	571
III	+ 12	8	+ 96	138	114	147	136	36	571
IV	+ 22	7	+154	154	131	168	156	41	654
V	-108	9	-972	123	102	130	121	32	476
VI	+142	77	+994	158	131	168	156	41	654

Notes:

¹ Table 16 Column H (difference between existing ANRO and proposed services).

² Based on 300 working days.

³ Data from Table 2 - Yearly average between 1976/77 to 1980/81 divided by the number of sailings per year. From Column J, we can then compute the frequency of sailings for various proposals.

8. PROSPECTS AND UNCERTAINTIES OF KUANTAN PORT

8.1 Prospects

The establishment of new seaport is easy to materialise but to get the ships calling at its berths is a difficult task. It is usually the chicken and egg question being raised by shippers as well as shipowners. Each side is trying to wait for the other to commit themselves first in using the facilities of the new port which in actual fact is very well equipped as described in Chapter 6.

The pessimism in the use of the port is due to the one very unfortunate development. The port developed hair pin cracks on its wharves just before the commissioning of its operations. However, immediate actions were taken to rectify these design faults which at the same time the port was partially opened for operation. The port is now in full operation since 1984.

If the tonnage currently passing through the port is of any indication, then we can expect to see the port achieving an even larger throughput in years to come. With the partial opening of the port in 1980, it managed

to handle 427,066 tonnes of cargoes and reached its peak with 836,809 tonnes in 1983 as shown in Table 11 on page 48. This is an increase of 96% over the three year period. The drop in 1984 tonnages was due entirely to the current recessionary trends in the world economy. The throughput will pick up when the world economy is expected to recover by late 1988. The tonnage handled by the port does express same degree of confidence the shippers have as they could benefit financially by having lower inland transport costs which amounted to A\$382 per fourteen tonne trailer load or A\$27.29 savings on a per tonne basis. These savings represent the shorter inland distance travelled which is the Kuantan to Port Kelang sector. In other words, the shippers would have incurred additional transport costs to deliver their cargoes from the East Coast states to Port Kelang had there not been another outlet/gateway for their exports.

From the tonnages handled by the Kuantan Port we could compute and translate these as savings to the shippers. For the first five years from 1980 to 1984 the estimated savings are A\$11.7M, A\$10.5M, A\$21.3M, A\$22.8M and A\$16.8M respectively. These mean that the domestic and overseas markets are paying less for their goods and are available on a more competitive price in the long run.

8.2 Uncertainties

Despite the magnitude of the inland transport cost savings by the shippers who use the port, there are still a large number of shippers who are watching cautiously and reluctant to cooperate in channelling their charges through the port. Such fears are unfounded. Nevertheless, their fears are based on the fact that most of the vessels currently calling at the port are tramp operators and are on charter basis. Very few, if any of the mainline conference liners are calling at the port at this stage. Therefore, due to the type of vessels calling at the port, the shippers fear that the services available will not be as frequent as they would like it to be. Shippers always dislike the idea of waiting for a lengthy period for the ship to berth because of the opportunity costs of not receiving their payments early.

From the shipping operators' point of view, their fear is not so much of the earlier construction failure of the port but of the lack of inducement cargoes. For tramp or other charter operations, their calls are quite frequent as there are sufficient volume to attract them. If this is not the case for liner operators, they fear that once they have agreed to call at the port

regularly, there will not be enough tonnages for them to load and unload.

These uncertainties faced by the Kuantan Port can be overcome by introducing measure to increase and develop load centres (that is, consolidation) with cargo origins and destinations from throughout the country including some transshipment cargoes from neighbouring countries not having proper shipping services.

8.3 Recommendations and Strategies for Implementation

To make Kuantan Port as one of the important gateways for overseas trade between Asean and Australia, some revolutionary ideas in shipping economics are required to provide the much needed boost to create the load centres required by liner operators. The following proposals are workable especially with the strong commitment from the government as well as the private sector. It will require some shake-up in the re-scheduling and re-routing of some of the existing liner services currently operating in this area. In other words, planners will have to re-think their route strategies in order to capitalise on the growing Asean economies as one of the leading economic groupings with a tremendous potential for more manufactured goods and services with respect to each member country.

8.3.1 Free Trade Zone (FTZ)

The Free Trade Zone concept provides a lot of operational flexibility to the port. The strict requirements on Customs formalities are minimal and the other advantages in terms of cost efficiency are basically the factors that have attracted the cargoes to use such port. Singapore is a classic example of adoption of the FTZ concept, and has transformed her ports to be in the top three in the world port league in terms of cargo throughput handled. Kuantan Port can achieve a sizeable volume by implementing this concept. She can expect a certain proportion of transshipment cargoes from regional ports, the Far East and increased cargo volume being generated locally.

8.3.2 Privatisation of the Port

Ports in Malaysia are managed by Government authorities which do not get the type of flexibility in the management and running of the ports. Changes that have to be made require approval by the relevant ministries which usually takes a long time, thus delaying the

fast decision making process which is vital to the survival of any port. When privatised, the shippers and liner services can expect better services from this private operator. Faster turnaround of vessels will also be improved and the port sector costs will be better controlled. These are the type of assurances shippers and operators want before they could commit themselves to use the new port in their itinerary.

8.3.3 Mini Landbridge Network

In simple terms, it means that cargoes (especially containers) are offloaded at Port A and are then being transported to Port B using surface transport to be further reloaded onto another vessel in order to continue the journey to Port C.

As an example, containers are offloaded from the vessels in Port Kelang which are meant for Australia. Then these containers will be transported by road hauliers to Kuantan Port to be reloaded later onto the vessel which is scheduled to sail to Australia. Such a

situation could happen when faster delivery by surface transport is possible compared with coastal shipping services in order to feed the vessel with cargoes. This coverage can be extended to cover cargoes coming from the Far East, using Kuantan Port as the port-of-call and then proceed to Port Kelang by land transport.

To make such landbridge network workable requires an organisation to have an up-to-date information system on the sailings at each port and an efficient coordination network. When this is possible, all partners associated with the shipping services will stand to benefit.

8.3.4 Promotional Freight Rates

Although the rates structure of the shipping operators are rigid for the liner operators and flexible for the tramp/charter operators, there are room for further improvement.

To assist in the development of the new port and its surrounding manufacturing and heavy industries, there should be some form of promotional freight rates given by the shipping

operators for a certain class of cargoes over a fixed period of time. This practice can help to attract cargoes to the port. For Malaysian shippers who are quite reluctant to use the new port, the promotional rate will be attractive and beneficial to them provided that the elasticity of demand for transport is greater than one.

8.3.5 Government Action

When other things fail, the Government will have to apply force to its agencies and other industries to use the port in order to generate the load centre. Steps may have to be taken to encourage all government import and export cargoes to and from the Kuantan Port hinterlands to be handled through this particular port.

8.3.6 Shipping and Forwarding Agents

The peculiar set-up of the Malaysian import and export trade relies heavily on the roles played by the shipping and forwarding agents. They can play a very important role in overcoming the uncertainties faced by the shippers as well as the shipping operators.

These agents should reassess their position and be responsive to the changing needs of the shippers who would like to use the port but are discouraged by them. The same thing can happen to liner operators who may be prepared to call at the port but with no agents prepared to represent them.

9. CONCLUSION

The analysis on the potential of Kuantan Port and the proposed route for the revised Asean-Australian shipping services appeared to be very feasible. The Kuantan Port has all the attributes and facilities to provide all the port services required to serve liner operators. There are already trends of increasing tonnage handled by the port and there will be more once the new industries are in full operation, thus generating enough cargoes to create attractive inducements for more liner services to call frequently.

In the proposed route to serve all the member Asean ports with direct sailings except for Bangkok which is provided by feeder vessels (due to small tonnage of Australian imports and exports), better shipping services will help to facilitate the growing importance of the Asean-Australian trade relationships.

We can expect the shipping services level to be improved and its performance in providing that service will contribute significantly to the positive effects on the regional development around the ports which it serves along the route.

COMPUTATION OF ESTIMATED VOYAGE TIME
FOR THE PROPOSED ASEAN-AUSTRALIAN LINER SERVICES
(Including Port Stay Time)

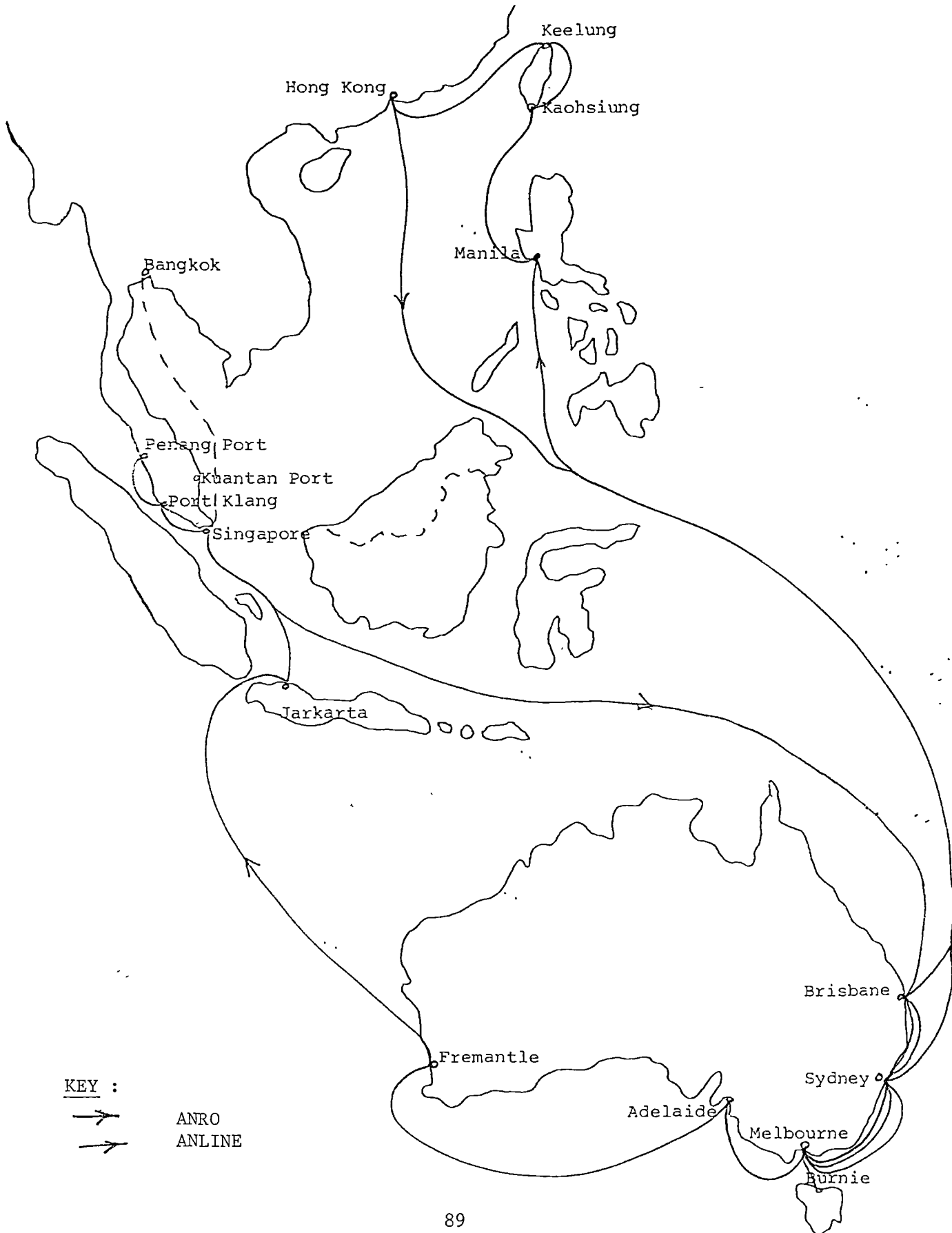
A FROM/TO	B BRISBANE DAYS	C JAKARTA DAYS	D K.KINABALU DAYS	E PT.KELANG DAYS	F PENANG DAYS	G KUANTAN DAYS	H BANGKOK DAYS	I MANILA DAYS
Singapore	22 (Northbound)	3	3	1.7	2.4	1.6	5	5
Bangkok	NA	NA	4.5	NA	NA	2.5	NA	4.5
Manila	10	NA	3	NA	NA	2.5	NA	NA
Kuantan	NA	NA	3.5					

- Estimated costs of operating a 25,000 DWT is A\$20,000 per day or \$833.00 per hour.
- It is assumed that vessels are operating at 15 nautical miles an hour under normal operation conditions.

NA - Not applicable

Source (i) Shipping agents from Australia and Malaysia.
(ii) Daily Commercial News, Australia, July 21, 1982.

MAP SHOWING THE EXISTING ROUTE
STRUCTURE OF THE
ASEAN-AUSTRALIAN LINER SERVICES.



ROUTE STRUCTURE AND THE COMPUTATION
OF ROUND VOYAGE TIME AND COSTS TAKEN

1. ANRO - Ports-of-Call (Total 10).
Brisbane, Sydney, Melbourne, Burnie,
Adelaide, Fremantle, Jakarta, Singapore,
Penang, Port Kelang, Bangkok (feeder),
Brisbane

* Total voyage time for round trip = 37 days

Total voyage cost = A\$20,000 x 37

= A\$740,000

2. ANLINE - Ports-of-Call (Total 7)
Sydney, Melbourne, Brisbane, Manila,
Kaohung, Keelung, Hong Kong, Sydney

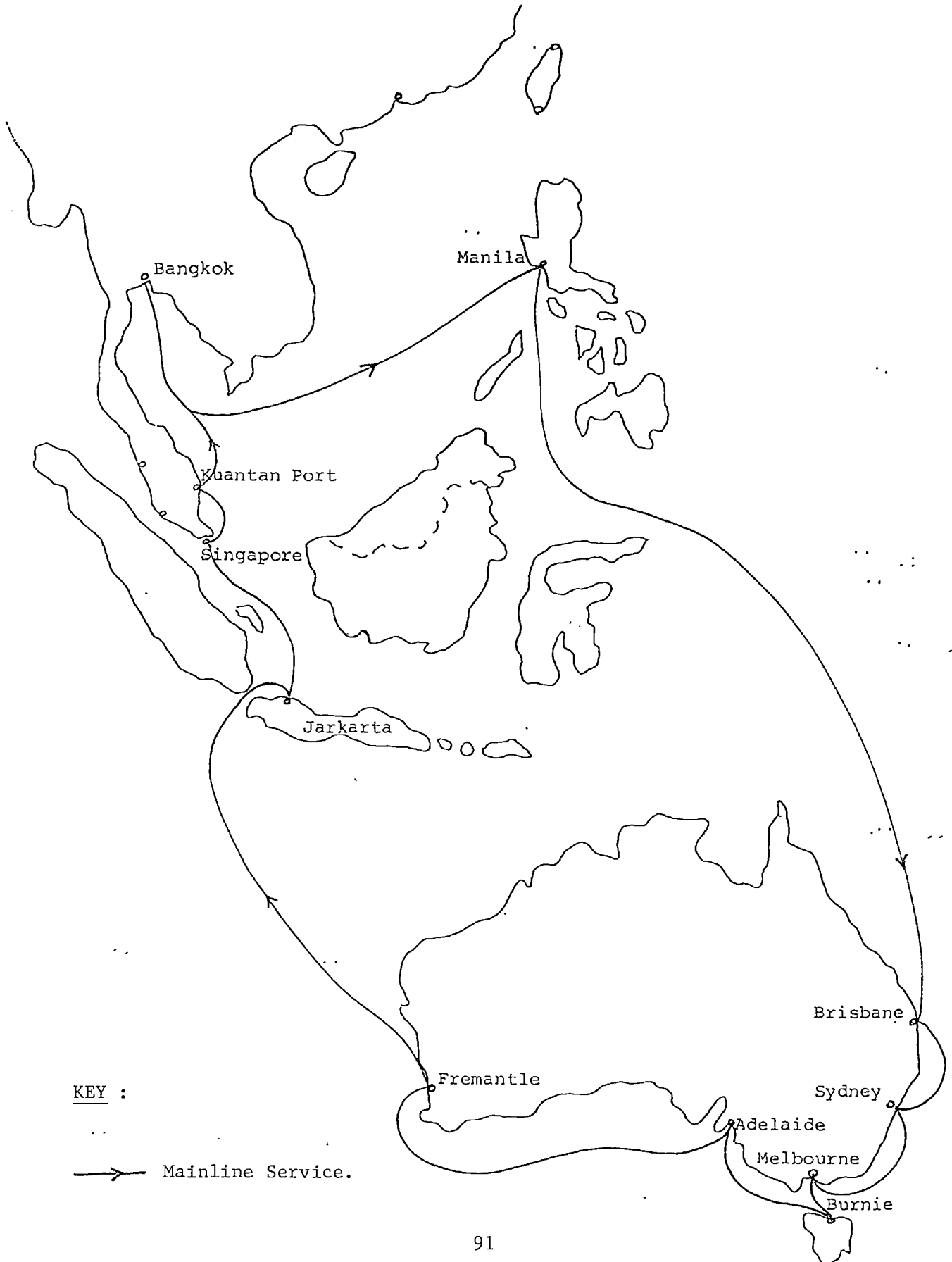
* Total voyage time for round trip = 32 days

Total voyage cost = A\$20,000 x 32

= A\$640,000

* These computations are obtained from analysis of sailing time
printed in the Daily Commercial News, July 21, 1982, PP 23 & 27.

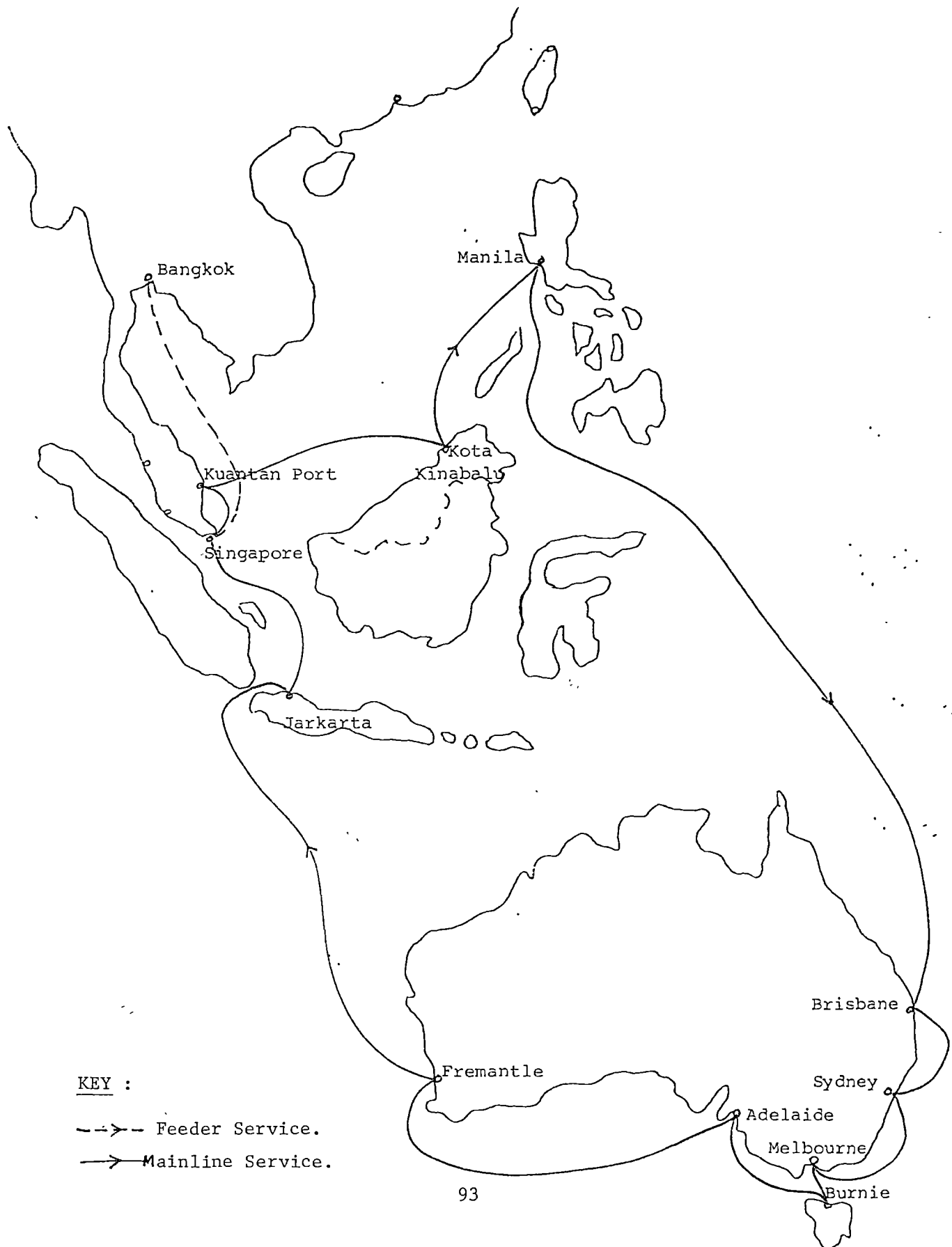
PROPOSAL I - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICE.



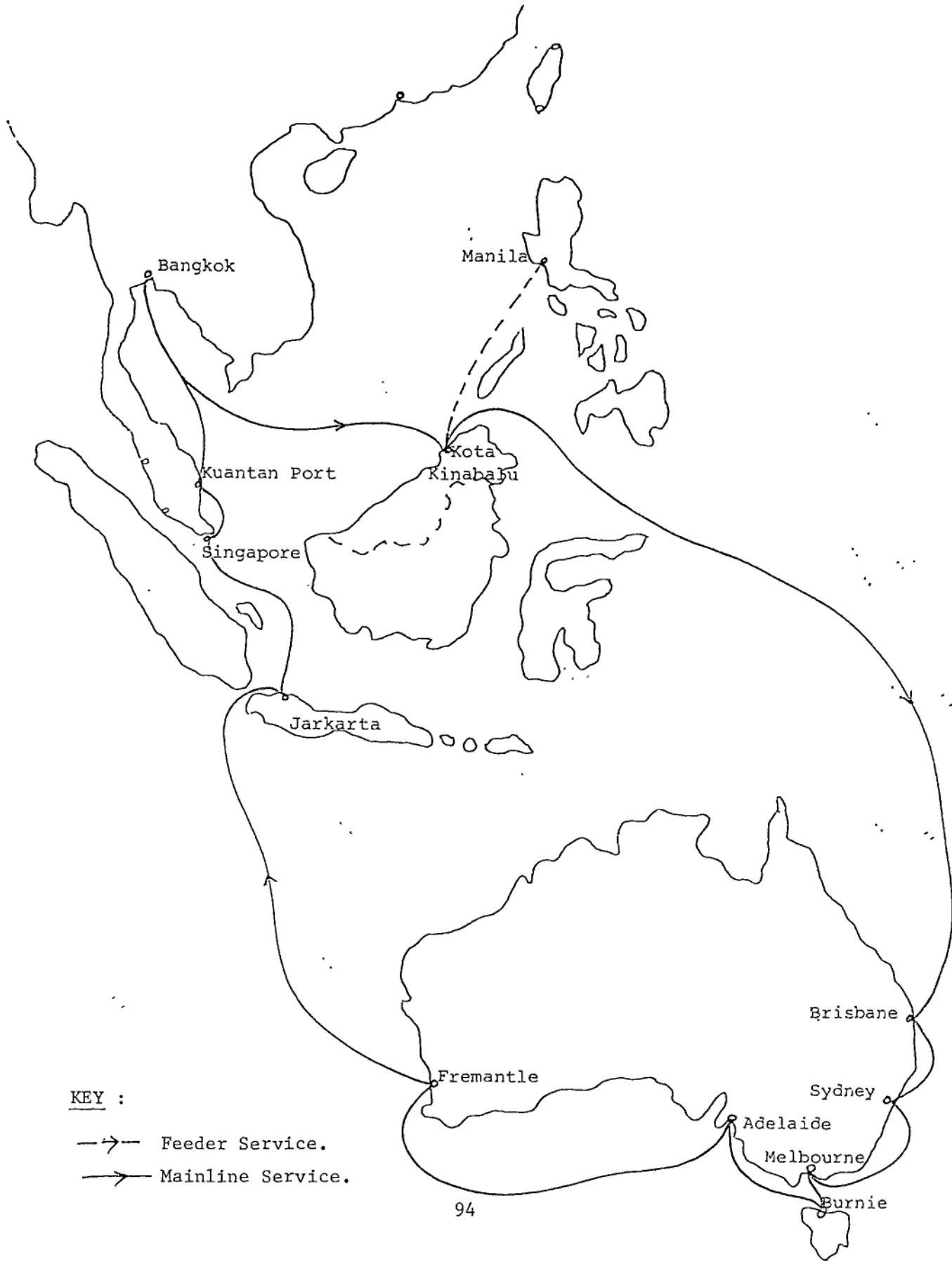
PROPOSAL II - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICE.



PROPOSAL III - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICES.



PROPOSAL IV - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICES.



PROPOSAL V - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICES.



PROPOSAL VI - REROUTING OF THE ASEAN
AUSTRALIAN LINER SERVICE.



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