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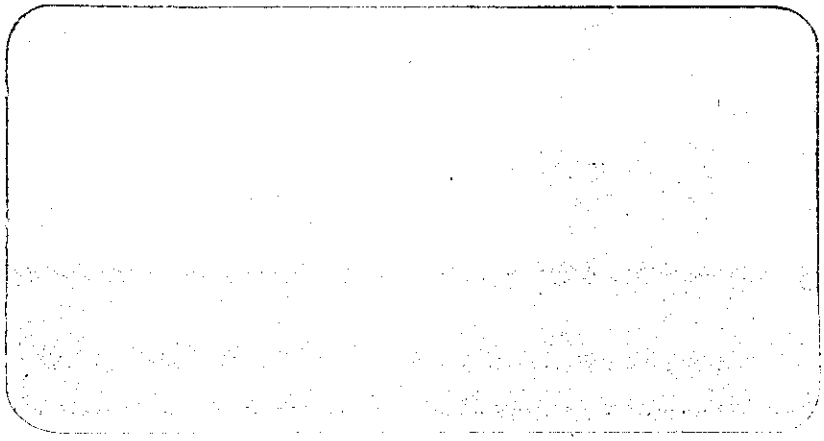

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(C.P.S.P.S.)

STUDY FOR THE MODERNISATION REORGANISATION AND EXTENSION OF THE PORT OF TRIPOLI

NOVEMBER 1982

STUDY FOR THE MODERNIZATION, REORGANIZATION, & EXTENSION OF

THE PORT OF TRIPOLI

CONTENTS:

INTRODUCTION

Messrs. Coode & Partners were invited by the Council for Development and Reconstruction to undertake a Study of the Port of Tripoli to review and up-date the recommendations contained in the Report prepared for the Commission d'Extension et de Promotion du Port de Beyrouth by Messrs. Peat, Marwick, Mitchell & Co. and Coode & Partners which was submitted in September 1974.

It was emphasized that this should be, in effect, an addendum to the 1974 report. It was not considered necessary to involve Management Consultants in lengthy and costly reviews of the economic and financial situations. Forecasts made in the 1974 report have been shown to be inaccurate due to the security situation which developed in Lebanon.

This situation still exists and, while some projections can be made, it was not felt advisable to be too precise in arriving at figures which could so easily turn out to be wrong again and on which large sums of money had been spent to obtain them.

This report presents to the Council the up-to-date situation at Tripoli as at the end of 1981. It is hoped that it will assist the Council in any application it may wish to make to the Funding Agencies for aid assistance.

Representatives from the firm visited Tripoli during the period 4th to the 10th November, 1981 and discussed the problems affecting the operations of the port with various officials, who included:

M. Joseph Karam -	President, Administrative Board
M. Ahmed Karameh -	Managing Director, Port of Tripoli
M. Victor Ghazi -	Capitaine du Port
M. Hilmi Abdul Wahab -	Pilotage
M. Jamil Adra -	Engineer in charge, assisting the Port

We wish to express our thanks to these gentlemen and to the officials of the Council for Development and Reconstruction in Beirut for their time and assistance that they gave to our representatives.

1. ORGANISATION

1.1 Overall organisation - areas of authority

A chart in Appendix I illustrates the various government ministries and administrations and private concerns involved in the operation and control of the Port of Tripoli. As at Beirut, there is a degree of organisational complexity and resulting difficulty of overall control in view of the number of different ministries involved. The total number of government administrations concerned with the port is less than that at Beirut and the degree of detailed involvement is much more limited. However, there is still the same division of overall control of key port operations between two ministries - "The Ministry of Hydraulic and Electric Resources" (MHER) and "The Ministry of Transport and Public Works (MTPW). To this is added the involvement of the Ministry of Finance in financial matters concerning the port.

The situation is described below.

(a) Ministry of Hydraulic and Electric Resources/Ministry of Transport and Public Works/Ministry of Finance

General management of basic port operations is undertaken by the "Service d'exploitation du port de Tripoli" (the port service), a semi autonomous government body established by legal decree on 1st April 1959. This body is subject to the overall jurisdiction of the Direction Generale de l'Exploitation (DGE) within the MHER. In practice, this appears to be mainly confined to basic matters of financing and general expenditure approved through the medium of annual budgets prepared by the port service.

Overall control of the functions undertaken by the harbour master, which include supervision of the water area within the port and the berthing of ships, is provided by the MTPW through the medium of the Direction Generale des Transports. The latter authority also has overall responsibility for the operation of the pilotage service.

The nature of port operations and cargoes handled at Tripoli is, of course, far less complex than that at Beirut. Tonnages are considerably smaller, the scope of activity of the port service is more limited and there is no problem of congestion at this port comparable with the larger port. Division of ultimate responsibility for port activities between the above two ministries at present does not therefore constitute a major problem of co-ordination. At the daily operational level a degree of effective co-operation is achieved and relations between the port service, the harbour master and the pilotage service appear to be satisfactory. Where necessary, a system of agreed berthing priorities is operated by the harbour master (e.g. passengers, mail, live animals, cargo to be discharged to lighters etc.), but final approval by the port service is required for all berthing arrangements.

On the other hand, the involvement of separate ministries in port affairs must be an important factor in the current imbalance between the duties performed by the harbour master and the staff available to him. Apart from his normal functions, he undertakes other duties such as the collection of consular fees and lighterage dues and their associated paperwork, the renewal of passports for various workmen associated with the port etc. Yet he has no administrative or clerical assistance whatsoever and is thus subject to a considerable degree of overload. This is one aspect of a situation which, although tolerable up to now, is likely to deteriorate with predicted increases in tonnage through the port.

The port operates reasonably well under the existing conditions, but given the anticipated development of traffic and the future importance of Tripoli in relation to the overall expansion of Lebanese trade, improvements in the organisation will be necessary and it is generally agreed that there will be a requirement for the port to be under the overall control of a single authority or ministry.

The urgency of this re-organisation will depend to some extent on the rate of development of port facilities, but it is considered that the sooner it is started the better, so that the new system is fully operational before all the new facilities are completed.

This should be the starting point for:-

- the development and implementation of unified policies and plans for port improvement,
- the introduction of realistic government control in a sector of the economy where private interests and influence are particularly strong.

The Ministry of Finance is also directly involved with port matters in that the approval of this ministry - as well as that of the MHER - has to be obtained for all proposed expenditure detailed within the annual budget. (Any failure to reach agreement between the two ministries would have to be resolved by the Council of Ministers). This is a weakness in current arrangements in that, amongst other things, considerable time is often involved in getting the approval of two different ministries for projects important to the effective development of the port.

The involvement of the above three ministries is a key issue in the context of overall control of port activities. Other government agencies are involved, and their effect on port organisation is discussed below.

(b) Central Inspection Service

Various aspects of the port service, particularly those concerned with financial and accounting procedures and records, are subject to the periodic inspection of the "Central Inspection Service". This is a body which is responsible for checking on the methods of operation within various ministries and public bodies. In the case of the Tripoli port service, it appears to act, amongst other things, as a kind of external auditor.

Given the fact that a locally based controller attached to the Ministry of Finance also conducts periodic inspections into similar matters as those reviewed by the above inspection service, there appears to be a case for eliminating one of these functions.

(c) The Customs Service

Overall responsibility for the customs service at Tripoli comes within the scope of a regional directorate. Day to day operation is supervised by "first controllers", who also have responsibility for cargo dealt with at Chekka and Selaata.

There are at present no significant delays in customs clearance of merchandise at Tripoli and good liaison is maintained between the port service and senior customs staff. In any case, given the high proportion of homogeneous bulk cargo, customs procedures are, in the main, fairly straightforward. There is, however, a potential problem of staffing which will increase as port throughput develops.

As regards accommodation, the customs service is based in the centre of town some distance from the port. Some consideration should be given to the provision of accommodation closer to, but not necessarily inside, the port.

(d) Port Police

The port police service is supervised by a senior police official based at the port who, in turn, is responsible to the regional directorate concerned with the northern area of Lebanon, including Tripoli. Police officers provide the port service, which is operated on a shift basis and covers the hours of 6.00 a.m. to 8.00 p.m. Additional men are provided, as required, at the free zones. Present staff is considered to be adequate, particularly as there are no problems related to passenger or tourist formalities. Difficulties do arise, however, in that the police service acts as a quite separate authority from the port service and delays are sometimes involved in obtaining police approval for each individual case amongst visitors engaged in port business. There would be some logic in the closer integration of the police function within general port management.

(e) Other government administrations

Two other government agencies have a connection with the port of Tripoli, but this is very indirect and has little effect on port organisation or operation.

One is the "Office des Cereales et de la Betterave Sucriere" which owns and controls the small grain silo (4,000 tons capacity) situated within the port area. Deliveries to the silo are not, however, seaborne.

The other is the "Caisse Nationale de la Securite Sociale" which is concerned with the welfare of the various port employees.

1.2 The Port Service

(a) Scope of Activity

The port service is responsible to the DGE within the MHER for the management of basic port activities. The scope of this management is, however, very restricted. As previously discussed, control of the water area, the berthing of ships, and the pilotage function are under separate jurisdiction. Added to this is the fact that, although responsible for all merchandise within the port area, the port service does not provide or normally control the operations of stevedoring, handling at the quay side, transport to warehouses or storage within the warehouses. It does provide and maintain the operating areas, buildings, and certain facilities and equipment; and also employs a minimal number of key personnel such as crane drivers and tallymen. Yet even within this area, resources in terms of equipment and staff are so inadequate that the scope of effective action by the port service is still further limited. There is no staff available for maintenance of buildings, roads, quays etc., and outside contractors have to be used.

The above limits to both the scope and the effectiveness of management and control by the port service have an important bearing on the discussion of the organisation of this service which follows.

(b) Organisation

The port service is a semi-autonomous body, free to conduct its affairs except in two basic areas. The first of these is the financial area. Although the port is completely self-financing, capital and revenue expenditure is controlled through the medium of a detailed

annual budget which has to be approved by the MHER and the Ministry of Finance. As mentioned previously, this can be a lengthy process, but after approval detailed expenditure can be undertaken without the additional scrutiny of individual items. However, the cumbersome tendering procedure requiring ministerial approval at various stages applies. Capital projects can also be unduly delayed pending the agreement of two ministries.

The other basic area where autonomy of the port service is restricted is that of management and staff. This is a more serious handicap to effective management and operation than the method of financial control described above in that the service has to obtain ministerial and presidential authority for increased staff and is not free independently to select its employees. Even after approval of additional staff, it can take literally years for this to be finally ratified. This has been a major factor restricting both operational efficiency and future development and should be a key issue in future reorganisation.

Certain aspects of port management are supervised by an "Administrative Board" which is a body composed of up to seven members including the President. Members are appointed for a three year term, should include government representation and are required to meet at least three times per month for which they are paid per attendance. The director of the port service attends meetings, but in a non-voting capacity. The Board concerns itself with current problems and future policy. It is particularly involved with the financial side where it approves the annual budget before presentation to the ministries and also has to agree any future additions to an existing budget. The Board is involved with adjudications in excess of L.L. 20,000 and also has to approve any changes made to port tariffs.

The director of the port service is responsible for the general management of this service and, apart from the various financial matters discussed above, his executive responsibility is direct to the DGE. In any case, he is authorised to make direct contact with the latter body on any issue. In practice, a good informal working relationship appears to exist between the director and the administrative board.

The scope of the director's authority now includes the administration and operation of both sections of the free zone and the former lighter basin.

No commercial department exists within the service and the administrative section is limited.

There is no administrative manager and the above staff therefore come within the direct supervision of the director.

The director is assisted by two executives, a chief engineer/technical manager (vacant due to the death of the last holder of this post) and a finance manager.

The chief engineer, apart from his technical duties related to the development and maintenance of roadways, railways, buildings, cranes and other equipment etc., also has commercial functions related to the import, export and storage of merchandise and has some of the elements of traffic management within his scope. He has no deputy or even senior assistant of the calibre required to give management support or to fulfil his function during possible absence. Added to this problem is the shortage of staff in other departments.

If the port service equipment is to be maintained in working order, the numbers of sailors, crane drivers, and mechanics should be considerably augmented, and allowance made for tractor and fork lift drivers. The number of tallymen and watchmen is also insufficient to give full coverage of all the areas and cargo involved. Moreover, there is no provision amongst the above staff for storekeepers or inspectors.

The finance manager is responsible to the director of the port service for providing advice and assistance on financial matters, and for the preparation of detailed financial and accounting statements and records. His duties include the initial preparation of the annual budget, which is completed in conjunction with the director prior to the approval of the administrative board. He also supervises the process of cash collection and deposit, and prepares the port service payroll in conjunction with an assistant.

(c) General Comment

In discussing the various weaknesses in current organisation of the port service, and particularly the shortages of management and staff personnel, it is important to bear in mind that in the context of the existing limitations in scope of activity undertaken by the port service, the importance of these issues is somewhat modified. However, given the need for planned development of the port of Tripoli as soon as possible, and the importance of shifting the balance of influence and control away from private companies and operators and towards a properly organised port service, the above organisational weakness and staff shortages will have to be corrected as part of the planned reorganisation of the port service.

1.3 Private Companies

Apart from the functions of the harbour master, there are other areas of port activity outside the control of the port service and these include pilotage, lighterage, quayside handling and porterage, and stevedoring.

(a) Pilotage

Pilotage at Tripoli is operated as a private, legal monopoly, with charges payable specified by Presidential Decree. Overall supervision of the function is provided by the Direction Generale des Transports, a department of the MTPW, which also issues pilot licences according to the local regulations of the port.

Pilots are responsible for bringing all ships over 100 tons into the harbour and also for the actual mooring.

Port entry presents a problem at Tripoli because of lack of natural protection against prevailing winds and relatively shallow water. On occasion the port can be closed for periods up to 36 hours and normal port entry and exit has to be very slow and cautious. Considerable manoeuvre is often required to make maximum use of quayside accommodation. During our investigation we got the general impression that the pilotage service copes well with the above difficulties and that there are no undue delays in berthing. Relations with the harbour master and the port service appear to be good.

(b) Lighterage

A significant tonnage of cargo is unloaded to lighters and subsequently discharged at the quayside or the new lighter quay. Apart from their use in relieving the shortage of quay space, discharge to lighters is a means of reducing the load of ships otherwise unable to enter the port because of draught problems. Lighterage services are provided by two companies, one of which is the result of a merger of four separate concerns. Landing charges on incoming goods are payable, irrespective of whether lighters are used or not.

Where discharge of cargo is straight to the quay, the lighterage companies "take the rope from the hook", but in some instances they undertake the hiring of quayside dock labour and where shore contractors complete the whole job, including stevedoring, pay a proportion of the wages involved.

Lighters at Tripoli tend to be unduly used as storage vessels as a result of consignee reluctance to progress customs clearance or unloading.

(c) Stevedores and Shore Contractors

Work aboard ship and the movement of merchandise until "taken off the hook" is the function of private stevedoring concerns of which there are two. Dock labour used is mostly casual and men are drawn from the pool of labour on a rotation basis. Loading and unloading is normally done by ship's gear but mobile cranes are sometimes used, for example in the unloading of iron and steel, because of the 3 tonne limit on most ship equipment. For heavy lifts, use is made of the floating crane also belonging to the port service.

Most cargo is normally transferred direct from ship to lorry or vice versa. On occasion it is placed on the quay and then transferred to lorries when there is imbalance between transport and ship's gear. Heavy cargo, such as iron and steel and tree trunks, is normally unloaded to the quay. These operations, together with delivery to warehouses, are grouped under the general heading of "shore handling" which is performed by private "shore contractors" of which there are two.

Transport by lorries is undertaken by local haulage contractors who are engaged by the agents or consignees involved.

(d) Shipping Agents

There are numerous shipping agents involved in the port of Tripoli. They vary considerably in the scope of their operations and the apparent degree of influence exerted.

As mentioned above, agents arrange for stevedoring and cargo handling and very often directly employ their tallymen, in some cases on a permanent basis. Warehouse space owned by the port service is hired to various agents and shippers on an annual basis.

1.4 General Comment

Private interests involved in key operations do exert a strong influence on the course of events within the port. This presents a marked contrast with the organisation of the port service - responsible to different ministries, limited in scope of authority and operations, significantly under-staffed and under-equipped, and apparently somewhat remote from the spheres of influence at Beirut.

It is not surprising, therefore, that development of port services and facilities has been somewhat restricted over the years. On the one hand, it is clearly not in the commercial interest of some of the private concerns to change a situation which gives them individual benefits such as cheap storage and warehouse facilities, restricted competition or control in various activities, little intrusion of outside interests etc. On the other hand, the port service, which does want to develop, has limited influence on the situation. Add to these factors the past tendency at higher levels to concentrate on the problems of Beirut and to look upon Tripoli, at most, as a safety valve to relieve pressure at the larger port, and it becomes clear that radical changes in the overall structure of Tripoli port organisation and in the detailed framework of the port service are necessary.

2. FINANCE

2.1 The Port Service - Source and Application of Funds Capital Structure

The port service is completely self-financing. All expenditure, whether capital or revenue, is financed out of receipts from the various charges levied by the service. Subject to overall ministerial control on specific use of funds through the medium of the annual budget, all surpluses are retained for the benefit of the Tripoli port service. No government subsidy or borrowing facilities are applicable.

The revenue from and expenses of the port operations included in the accounts of the port service for the eight years to 31st December 1981, are summarised below:

	Year to 31st December							
	1974	1975	1976	1977	1978	1979	1980	1981
	In '000's of L.L.							
Operating receipts	2,672	3,052	2,502	2,894	5,373	8,732	5,417	9,849
Operational expenses	1,251	1,785	1,908	1,605	2,187	2,777	16,564	9,354
Surplus (Deficit)	1,421	1,267	594	1,289	3,186	5,955	(11,147)	495

At the end of 1973 reserves totalled LL. 1,706,754, and at the end of 1981 LL. 4,768,892.

Capital projects are financed from reserves and from income, and it is of interest to note that repairs to the quay, damaged by an explosion in 1978, could not be put in hand until 1980, by when the reserves were sufficient to cover the estimated expenditure.

As can be seen from the preceding table, operating receipts, except for 1980, have more than matched the operating expenses and there is no reason why this should not be more marked in the future, particularly in view of the revised tariff structure, which it is understood is being approved and will be brought into force in January 1983.

2.2 The Port Service - Existing Financial Situation

Resulting from the limitations of the brief it has been possible only to provide such figures as are available from the Port's administration. To obtain more detailed information would require a lengthy and expensive exercise with financial experts and it is understood that this is not justified at this stage. Indeed, the recommendations on p. 49, para.7.3(c) , are made because of the problem in presenting suitable figures for consideration and this is explained further on p.18. For example, the Port's revenues are basically from storage charges, as it provides virtually no other services.

The balance sheet of the port service, as at 31st December 1980, may be summarised as follows:

Revenues		LL. '000
Lebanese Treasury		
- Current Account	4,286.3	
- Service Termination Indemnity Reserve	256.7	
- Maintenance Account	1,076.2	5,619.2
Cash		14.7
Advances & Allowances	80.0	
Pre- paid salaries & Allowances	39.8	119.8
Anchorage & Berthing dues	322.5	
Wharf dues	2.4	
Handling Charges	115.9	
Storage Charges	4,679.4	
Sundry items	173.8	5,294.0
		11,047.7

Liabilities		LL. '000
Service Termination Indemnity reserve	252.3	
Maintenance & Repairs	1,076.2	1,328.5
Lebanese Treasury		
- Income Tax	47.4	
- Stamps	50.2	97.6
Sundry Creditors		5,294.1
Deposits in Trust		
- Health Insurance	15.1	
- Office d'Execution de Tripoli	0.7	
- Retention from Contractor's Fees	6.8	
- "	9.7	
- "	21.9	54.2
Reserve Fund		4,273.3
		11,047.7

Most of the above items are more or less self-explanatory. Comment may be made on the following:

(i) "Pre-paid Salaries and Allowances" - refers to salaries of employees of the port service due for the month of January 1981, which were paid in December 1980.

(ii) "Income Tax" - represents the amounts deducted from employees in respect of income tax calculated on the monthly payroll to date, but not yet paid to the Government.

(iii) "Stamps" - in effect constitute a government tax.

(iv) "Office d'Execution de Tripoli" - this item refers to the impounding of debts/charges against port service employees.

2.3 Tripoli Tariff Structure

The Tripoli Port tariffs, in their present form, are much less complex than those at Beirut. However, a number of changes are in process

of being agreed, and it is hoped that they will be settled in time to come into effect on 1st January 1983. No figures are available at present.

An extract of the major items of the proposed port traffic are shown below:

Anchorage		
Outside the Port	PL1	per N.R.T. per day.
Inside the basin	PL2	"
Ship stationed in the basin		
Stevedoring equipment of all kinds including lighters, tankers, cranes, tugs		
At anchor	LL.2.50	per N.R.T. per month.
Alongside quay	LL.150	per vessel per month.
Berthing		
For first 3 days	PL 8	per N.R.T. per day.
For next 3 days	PL 12	"
Over 6 days	PL 20	"
Quay Dues		
Imports, General goods	7%0	ad valorem
Animals, cereals, seeds)		
Sugar, Flour, Edible)	5%0	ad valorem
Oil & Fertiliser)		
Wood & Iron	LL.3	per tonne
Exports	LL.4	per tonne
Transit	LL.4	per tonne
Passengers	LL.1	per passenger
Quay cleaning	PL15	per tonne
Handling Charges		
Floating crane inside basin	LL.20	per tonne or part thereof plus
	LL.200	per hour, with a minimum charge of LL.400.
Outside port	LL.40	per tonne or part thereof plus
	LL.200	per hour, with a minimum charge of LL.400
Imports & Exports	LL.3	per tonne

Storage

Imports Covered	1st 8 days	Free
	9-15 days PL50	per tonne or part thereof
	16-30 days PL75	"
	Over 30 days PL125	"
Open Areas	75%	of the covered storage charges
Exports covered	1st 2 days	Free
	3-30 days PL75	per tonne or part thereof
	Over 30 days PL125	"
Open Areas	1st 2 days	Free
	3-15 days PL50	per tonne or part thereof
	16-30 days PL56.25	"
	Over 30 days PL93.75	"
Wood & Iron	PL20 per m^2 or per tonne whichever is the greater.	

Rental of Storage Area

Covered	LL.40	per m^2 per annum
Open	LL.20	per m^2 per annum
Office accommodation	LL.60	per m^2 per annum

Pilotage Charges

It is understood that the scale of pilotage charges are currently under review and are expected to increase fourfold.

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3. ADMINISTRATION

3.1 Financial and Management Accounting

The whole financial and accounting function of the port service is undertaken by the finance manager, who has no deputy and whose staff is limited. The scope of operations is thus bound to be very restricted.

Statutory books of account are maintained including the 'livre d'inventaires' which contains the balance sheet and profit and loss accounts. Supporting records of assets, the most important of which are harbour and free zone land, buildings and facilities, are reasonably detailed and extensive. Stock records are supervised by the finance manager who is also responsible for the management of funds, including cash collection and deposit.

The main revenue is in the form of port dues and these are collected by the finance department. Operating and other costs, which are effectively on a cash basis, are recorded as incurred.

An annual budget is prepared by the finance manager and completed in conjunction with the director of the port service. This is a fairly comprehensive document containing a detailed analysis of budgeted receipts and payments and supporting argument and data where appropriate. Comparative tables are included for both receipts and expenditures which compare the situation for the current year and previous years with the future budget estimates.

The actual form of the budget, however, limits its potential usefulness. The present layout conforms with that used by other state administrations but is not entirely appropriate to the real needs of the port service. No guide is provided to the efficiency or profitability of various areas of activity. In effect, there is no management accounting in any real sense within the port service and no adequate information base at present for its future development.

Financial and accounting operations and records are subject to inspection by an official from the Central Inspection Service and another from the Ministry of Finance.

3.2 General Administration

There is no administration manager within the port service and the staff available for general administration is small.

Admittedly, apart from purely accounting and financial operations, there is little work load in terms of standard clerical or administrative routines which would demand additional staff. On the other hand, the lack of an administration manager and adequate clerical staff of reasonable calibre must place a considerable burden on an already restricted management team. Without real assistance on such matters as routine correspondence, tendering and purchasing procedures, personnel records and routines etc., existing managers will be unduly occupied with clerical detail to the detriment of their executive functions. Apart from this, the lack of administrative resources must also limit the statistical and management information available to the port service as a basis for future planning and operating efficiency.

Development of the administrative division should thus be an important part of future reorganisation. This requirement will be even more pronounced given the parallel need for the establishment of an active commercial section designed to promote the interests of the port service.

3.3 General Comment

Reference has been made in section 1 to the inadequacy of current staff in both the accounting and administrative sections. Added to this weakness is the total absence of any real office equipment or facilities. It could be argued that no significant accounting, financial or administrative problem resulting from this situation is currently in evidence and that the scope of operation of the port

service is, in any case, limited. However, as discussed previously, we consider it to be a basic objective to expand and develop the facilities on the basis of a properly organised port service with the scope, authority and measure of independence normally accorded to public institutions in the port industry. In these terms, existing accounting and administrative facilities are, in fact, inadequate.

A phased programme should thus be developed which includes staff increases in relation to the expected work load and as part of an administrative reorganisation and systems development plan. In due course, consideration should be given to the future use of at least unit accounting equipment and ultimately, a computer. The implementation of such a programme will, of course, be subject to substantial agreement being reached on the future role of the port, on the scope of operation and authority of the port service and on the prior implementation of basic organisational changes recommended in this report. It would clearly be pointless to undertake the hiring of additional management and staff for accounting, administration or any other function if the above matters are not settled or if the status quo is allowed to remain substantially unchanged.

4. OPERATION, HANDLING, WORK FORCE

4.1 Operations and handling within various work areas

(a) Introduction

Study of the various tables in section 5 of this report shows that the pattern of cargo handled in Tripoli differs greatly from that in Beirut. Over 60% of imports handled is accounted for by wood and steel.

In general, ships arriving at Tripoli carry one product in large quantities. Usually some return cargo is available for ships having discharged merchandise at the port.

The port is not a 'bulk' port in the sense of a port designed to handle 'bulk ships'. True 'bulk carriers' are essentially large ships and these would be unable to use the port because of the lack of depth of water.

Lighters are generally loaded from ships moored at buoys although the lighters may also be loaded from a ship berthed at the quay. From observation, the cargo handled is largely wood and sacks. The choice of using the port quays or the lighter quay appears to be in the hands of the shipping agent.

The other use of lighters is for unloading ships which draw too much water to enter the port. In this event, lighters are towed to the ship anchored about 2 kms. outside the port and unloading takes place until the ship is light enough to enter the port.

(b) Port entry

(i) Order of entry

The general ruling is that ships enter the port in the order in which they arrive in the roadstead. Certain other ships may be given priority because of special

circumstances and these include:-

- Ro-ro ships (stern or bow ramps) which take only 15m of quay
- Small ships which can be fitted in between other ships on the quay.
- Ships specifically requested priority by a government minister.

(ii) Berthing/unberthing - pilotage

Port entry presents a problem because of lack of natural protection against prevailing winds and relatively shallow water. The approach channel to the port is 150 m. wide and approximately 1750 m. long. Even moderate winds can prevent the entry of the larger vessels but, fortunately, winds do not persist for long periods and delays of more than 36 hours are rare.

Pilotage is available normally from 5.00 a.m. to one hour after sunset and is obtainable outside these hours by special request.

(c) Cargo handling

(i) Loading/Unloading

Various methods of loading/unloading ships include:-

- ships' derricks used singly
- ships' derricks used in pairs
- ships' cranes
- mobile cranes
- floating crane
- manual discharge of lighters

Loading and unloading is most commonly done by ships' derricks or cranes, but mobile cranes are sometimes used for unloading iron and steel and tree trunks because of the 3 tonne limit on most ships' gear. The floating crane is used for loads heavier than can be handled with mobiles. There are no quayside cranes.

(ii) Quayside working

The majority of cargo is discharged directly to lorries or trailers. Cargo is only landed on the quay if there is an imbalance between unloading rates and transport availability.

The loading of ships is also normally direct from lorries with occasional quayside temporary storage.

Because of the nature of the cargo there is no sorting to marks or palletisation on the quays. Quay workers are concerned solely with placing the cargo on to road transport.

(iii) Transport to warehouse or storage area

It was observed that cargo was normally moved to warehouses or storage areas by lorry. Draw bar trailers were used for transporting the heavier timber. Semi-trailers are not normally used.

Because warehouses are let to agents and consignees and are not used as transit sheds, movement of cargo is not usually to the shed nearest the ship.

On most occasions sufficient transport is provided to support the rate of working at the quayside. Holdups can occur due to lack of unloading facilities in the storage area.

(d) General comment on cargo handling

As the port service has no control over handling in the port, any delays would be ascribed to the shipping agents or the contractors used by them. In effect apart from isolated cases such as the shortage of cranes in the storage area described in the previous sub-section, there appears to be little congestion or delay. Although handling methods are somewhat primitive, high rates of work are achieved and in most cases the controlling factor appears to be the rate of working

in the hold. In general, a balance is obtained between stevedores, quay workers, transport operators and workers in the warehouse/storage areas.

(e) Tourist and passenger traffic

Tripoli is not used for tourists and the number of passengers using the port is negligible.

(f) RO/RO Traffic

In 1974 the "Tarros" class "Cheshire" container ships were calling at Tripoli on their regular UK-Mediterranean runs and a RO/RO ship could be expected to call every two weeks and 150 containers off-loaded per month.

As recently as 1978 enquiries were made on behalf of several shipping lines for the acceptance of 10-12 RO/RO vessels a month, which would off-load a minimum of 1,000 containers a month.

Tripoli has completely lost this form of traffic, which was well established, but now has been transferred to Lattakia.

4.2 Handling Equipment

With the exception of the floating crane, the Port Authority possesses virutally no handling equipment that is in working order, and all operating equipment is provided by the Agents or Consignees.

The floating crane, which has a capacity of 30/50 tonnes, is not self-propelled and is moved by the port tug. The tug has a capacity of 450 H.P., which is more than adequate for this requirement and it is also available for berthing purposes.

A list of existing handling equipment is given below, but none is operational and the majority are old and only suitable for scrap.

11	Cranes, various makes and sizes.	
2	Tractors - Trackma	
10	Trailers	
2	Cars with trailers - Morris	
16	Wheelbarrows	
1	Weighbridge	
3	Weighing machines - 500 Kg.	
11	Tractor trailers	
1	Bicycle	
1	Floating crane 50 Tonnes	(previously mentioned
1	Tug 450 H.P.	and operational)

4.3 Lighters

The total number of lighters, of various sizes, available for use in the port is 83. The lighterage services are provided by several private companies, who supply their own tugs, launches and labour.

Lighters tend to be used unnecessarily as storage vessels, due partly to the lack of unloading facilities and partly to the reluctance of the consignee to progress Customs clearance or unloading.

4.4 Warehouses and Storage

Warehouses and storage areas currently in use can be summarised as follows:-

Customs Zone	M^2
Warehouses with direct access to quay	13,600
Other warehouses	10,880
	24,480
Open storage areas	43,000
TOTAL	67,480

Free Zone A		
Warehouses		12,000
Open Storage Area		25,000
	TOTAL	37,000
Free Zone B		
Warehouses		18,000
Open storage areas		13,000
	TOTAL	31,000
Lighter Basin Area		30,000

Warehouses are let to agents and traders on an annual basis and the port service retains only one warehouse for general use.

With the present system at Tripoli, agents and traders control the level of warehouse utilisation and have little incentive to improve this because of the extremely low charges. If, however, the port is to attract general cargo, then each general cargo berth would require a transit shed. In this situation the port service would need greater control over the allocation of transit sheds, warehouses and open storage space.

4.5 Repair and Maintenance

The port service maintenance facilities are almost non-existent, and maintenance has to be carried out by outside contractors. This entails a lengthy procedure of obtaining permission, advertising, evaluating tenders etc. The same procedure applies to the supply of spares.

There is no staff available for the maintenance of buildings, roads, quays, etc., outside contractors again being used.

Two buildings are referred to as maintenance shops, but contain no equipment.

4.6 Work Force

The operational staff controlled by the port service is very small. The crew provided for manning the tug is adequate, but the remainder of the port is understaffed.

The number of staff available to maintain equipment is inadequate, and if the equipment was operational there would be insufficient drivers.

There are not enough tally clerks, and a large quantity of merchandise is not tallied at all. This does not conform with the responsibility of the port service for the cargo on its premises. Similarly the inadequacy of watchmen to cover 3 shifts does not provide a service adequate to match this responsibility.

As the port service supplies no other labour, agents and consignees have to hire their own men and equipment. A work force of 300 at any one time could be required, and the bulk of labour is recruited daily on a casual and partly rotational basis. A large proportion of stevedoring and shore handling work is paid on a straight tonnage basis, but a daily minimum applies to workers not on tonnage. The normal working hours are from 7.00 a.m. to 3.00 p.m. without a break.

5. ECONOMICS AND STATISTICS

5.1 Port Traffic

The Economic Report of 1974 forecast that the annual rate of growth of traffic through the Port of Tripoli would be 9% for imported goods and 12% for exports and indicated the actual and estimated tonnages, by major commodities, that had been and would be handled in the port for the years 1975 and 1980.

As will be seen from the comparative Table 1 below the forecasted total traffic throughput of the port did not materialise.

TABLE 1

'000 tonnes	Forecast		Actual	
	1975	1980	1975	1980
Fertilisers	200	308	22	93
Iron/Steel	350	846	120	112
Wood	230	354	323	202
Chalk & Cement	240	0	7	39
Other Commodities	211	342	371	236
Total	1,411	1,850	843	682

Table 2 below shows that, with the exception of 1979 when the port of Beirut was closed for several months and Beirut traffic was diverted to Tripoli, the total quantity of cargo handled in the port during the years 1975 to 1981 was either similar to or less than the 800,000 tonnes handled in 1973.

TABLE 2

'000 tonnes	1975	1976	1977	1978	1979	1980	1981 Based on 10 months
Fertilisers	22	9	3	23	84	93	49
Iron/Steel	120	28	232	232	208	112	148
Wood	323	176	298	277	247	202	212
Chalk & Cement	7	158	157	72	24	39	50
Others	371	135	137	283	447	236	329
Total	843	506	827	887	1010	682	788

(Source: Tripoli Port Statistics)

The Lebanon has been beset by problems of security for many years and is now hoping that a period of stability will return.

During recent years part of the traffic for Tripoli has gone to Beirut and it is hoped that this can return to Tripoli. However, other cargoes have also been lost to Syrian ports and it is not likely under present conditions, that these will return to Beirut.

The "Illegal ports" are expected to disappear with a return to stability and this traffic will probably have some need of Tripoli.

Both the 1974 report and the coastal study show that forecasts can be very inaccurate, mainly because of the uncertainty relating to Lebanon. With the statistics that are available from the port of Tripoli it is not possible to be precise, but it is possible to make another attempt at a forecast.

Any growth scenario must have a base, whether it be for the Lebanon as a whole or just Tripoli. The last year of uninterrupted working was 1974, but it is not considered that this should be taken as a base. On the other hand tonnages handled at Beirut or Tripoli in, say 1981, do not give a true picture of the total cargoes entering the Lebanon, as it is known that large quantities of goods were imported through "illegal ports".

A possible solution would be to accept 800,000 tonnes per annum through Tripoli as a base and apply, say, a 6% per annum growth rate from the beginning of 1984. This would give an estimated throughput of 1,135,000 tonnes by 1990 i.e. 42% increase.

However, sight must not be lost of the necessary reconstruction that will have to take place in the Lebanon over the next decade and the effect that this will have on the port of Tripoli. Historically the port of Tripoli has handled the majority of the iron and steel and timber imported into the Lebanon and the demand for these commodities will be very considerable during the reconstruction period and could increase the overall growth rate further, to possibly 8% per annum. Thus the throughput in 1990 could be as high as 1,270,000 tonnes or an increase of 59%.

It must be emphasised that it is not the intention of this report to go into too much detail with these figures and repeat the mass of information already given in the 1974 report.

5.2 Port Shipping

In 1972/73 the average tonnage of cargo carried by vessels calling at Tripoli was 1500 and it was forecast that larger ships would call in future years. However it will be seen from the comparative Table 3 below that this has not been the case and the trend has been in the opposite direction and smaller ships have used Tripoli. In 1980 the average tonnage carried per vessel was half that of 1972/73.

TABLE 3

	Forecast		Actual	
	1975	1980	1975	1980
Total cargo '000 tonnes	1,411	1,850	843	682
No. of vessels	882	974	814	947
Av. tonnes per vessel	1,600	1,900	1036	720

Table 4 shows the actual number of ships that called at Tripoli between the years 1972-80 and the average tonnage carried per ship.

TABLE 4

	1972	1973	1974	1975	1976	1977	1978	1979	1980
Total cargo '000 tonnes	756	800	836	843	506	827	887	1010	682
No. of vessels	478	555	668	814	606	740	879	1008	947
Av. tonnes	1582	1441	1251	1036	835	1118	1009	1002	720

(Source: Tripoli Port Statistics)

Whilst the troubles in the Lebanon from 1975 onwards could be an attributing factor, it should be noted that this trend commenced before the events and has continued afterwards.

Every vessel arriving has an individual card giving full details including length, width, draft and tonnage. An exercise to produce a summary on an annual basis from 1974 to 1981 showed that for the amount of work involved no practical purpose would be achieved. However a general summary indicates that
40-50% of ships are from 50-80m in length 500-2500 d.w.t.
and 50-40% of ships are from 80-135m in length 2500-5000 d.w.t.
and ships up to 175m have been to the Port but not inside.

Lighter traffic has fluctuated considerably. From 1974 to 1976 all lighters were fully employed. During 1976-77 virtually no lighter work took place. Conditions improved in 1977 but at the end of that year all rates went on to a daily basis due to disagreement over tariffs. This continued until 1979, since when lighter work has virtually come to a standstill.

5.3 General

As can be seen from the above tables the economic forecast of 1974 has been overtaken by the events in the Lebanon and bears no relation to the present situation. Further economic investigations were carried out in 1977, during the Lebanese Ports and Coastline study, and in 1978, in connection with the development of a Container Terminal at Beirut. In all these cases the forecasts were based on the assumption that the situation in the Lebanon was stable. This has not been the case and, therefore, the conclusions of these investigations are valueless.

6. ENGINEERING

6.1 Existing Situation

6.1.1 Port protection

The port is protected to the north by a breakwater 1400 metres long, and to the east by a wave wall on the mole, which runs south to north. In the other directions the port benefits from the natural protection of the land.

6.1.2 Entrance Channel

The port is approached from the north east by a channel which is dredged to -9.0 metres and is 150 metres wide.

6.1.3 Basin

The protected basin has an area of approximately 70 hectares, of which only two have been dredged to -8.0 metres. Little over half of the remaining area has more than 4 metres of water and due to the lack of water only ships having a length of 90 metres or less are permitted to anchor and discharge cargo in this latter area.

6.1.4 Berths

The berthing facilities consist of 824 metres of quays, with a further length of 110 metres currently under construction. The quay walls on the northern and western side of the mole are respectively 110 metres and 604 metres long and are of blockwork construction. At the root of the mole, running in westerly direction, is a further quay, also of blockwork construction, 110 metres long, which is currently being extended to 220 metres.

All quays theoretically have a depth of water of 8 metres, but due to siltation over the years this has been reduced, and only ships with a draft of less than 6.86 metres can be accepted alongside.

The northern 304 metres of the main quay on the western side of the mole has been designed for a depth of water of 10 metres.

In August 1978 one berth on the main quay was badly damaged by an explosion on a ship and was rendered inoperable until repairs were completed in April 1981.

A new lighter berth, 100 metres long, has recently been constructed at the west end of Free Zone A in a north-south direction.

6.1.5 Buildings

Covered Storage

Five twin span sheds, 34 metres x 80 metres, and eight single span sheds, 17 metres x 80 metres, having a total covered area of 24,480 square metres are located on the mole.

These sheds are of an old design and quite unsuitable for use with modern handling equipment.

One of the larger sheds is used as a bonded warehouse and another for the storage of general cargo. In all only 2,720 square metres are available for port operations, the remainder being leased to Agents. Thus, while there is more than sufficient covered area for the berths, there is insufficient available for port operations.

Administration Building

The administration building, which accommodates the staff of the port services and the local meteorological office is located close to the port entrance. This building is adequate for the existing staff but, should the numbers of staff be increased, additional accommodation would have to be provided.

Specialised Building

A grain silo of 4,000 tonnes capacity is sited on the mole. There are no facilities for handling grain from ships and the silo can

only be loaded or discharged by vehicles. It was reported that a private organisation has arranged to lease the silo for a period of 15 years and intends to extend it and provide ship off-loading facilities.

Workshops

Two workshops, having a total area in excess of 2,000 square metres, are sited adjacent to the administration building. These workshops contain very little maintenance equipment and are used mainly for the storage of unserviceable plant.

6.1.6 Open Storage

Port Area

The area available on the mole for open storage totals approximately 13,000 square metres, but the full benefit of these areas cannot be obtained due to the narrow and congested road access. At the root of the mole a further 30,000 square metres of land is available for open storage and most of this area is taken up with stacked timber.

Lighter Basin

The lighter basin, formerly the Railway Port area, is currently being filled in, and when this operation has been completed an additional 30,000 square metres of land will be available for storage.

6.1.7 Free Zones

Free Zone A

This area of 37,000 square metres, is situated in the south west corner of the port. It consists of 12,000 square metres of sheds and 15,000 square metres for open storage. At present 40% of the area is used for Free Trade and the remainder for the storage of general cargo. Here again there is the problem of facilities being used for the wrong purpose. The area of open and covered storage in Free Zone A should be sufficient for all Free Zone requirements if they were used only for those activities.

Free Zone B

Zone B is situated immediately to the south of the quay at the root of the mole and has an area of approximately 31,000 square metres, of which sheds occupy 18,000 square metres. At present the whole area, including the sheds, is used for the storage of timber, which is not a Free Zone activity. This whole area could be put to better use.

6.1.8 Road and Rail Access

Road Access

There are two entrances to the port from the dual carriageway road. The main entrance is at the south east corner of the port boundary, and the second is through Free Zone A. The general condition of the roads within the port is very poor, and, as was observed during heavy rains, become quagmires when wet. The position is further aggravated by the fact that vehicles are permitted to park on the roads when waiting to be loaded or off-loaded or for customs clearance, and vehicle movements become almost impossible.

Rail Access

Rail access has been provided from the Gare de Tripoli to the berths on the mole and to both Free Zones. As a result of the repairs to the berth on the mole, the line has been cut and access is no longer available to the northern half of the quays.

The railway system in the Lebanon has not been operating for several years, but, even prior to the events of 1975-76, it would appear that very little use was made of the port connections.

6.1.9 Port Layout.

The existing port layout is shown on Drawing A.

6.2 Existing Operations

6.2.1 Alongside Berthing

Although the port basin was dredged to -8 metres, siltation over the years has reduced the depth of available water, and only ships with a loaded draft of 6.86 metres or less are permitted to berth alongside the quays. Thus all vessels with a greater draft have to off-load part of or all their cargo to lighters in the anchorage area outside the port.

The total quay length available for berthing is 824 metres, with another 110 metres under construction. When the new section is operational the port will effectively have 4 berths each 150 metres long, and 3 berths each 110 metres long.

Due to lack of space, it is not uncommon for ships to double berth alongside the quays, the inner vessel off-loading on to the quay and the outer to lighters. During the study it was noticed that this procedure was in operation on three of the berths.

For the greater part of the year ships can offload to lighters in the anchorage area in comparative safety, but, from November through to February, such operations could be hampered by heavy winds and seas.

6.2.2 Basin Anchorage

Ships with a shallow draft may anchor in the basin and work to lighters but, due to the lack of water, this operation is restricted to ships having an overall length of 90 metres or less.

6.2.3 Lighter Berth

A new lighter berth for the loading and off-loading of lighters has been constructed at the north west corner of Free Zone A. Lighters can only berth on the eastern side of this structure and the space available is insufficient to meet the lighterage demand.

6.2.4 RO/RO Berth

The quay at the root of the mole was utilised for berthing RO/RO vessels and, although this facility still exists, it is not used as there is no space available for the storage of containers and trailers.

6.3 CONCLUSIONS

6.3.1 The events of the last six years have had a very considerable effect on Lebanese trade, and the anticipated increase of traffic through its ports has not materialised. However, it is surprising to note that the annual tonnage of goods passing through the Port of Tripoli, the second largest in Lebanon, has remained virtually static since 1972 despite the fact that the port is situated in an area which suffered less disturbance than most.

6.3.2 The causes of this appear to be twofold:

(a) The port has reached the point of saturation and cannot satisfactorily handle more than 850,000 tonnes per annum, or 1000 tonnes per metre of quay per annum.

(b) Trade has been lost to the Syrian ports of Tartous and Lattakia due to the lack of suitable facilities in the port.

6.3.3 Historically the main commodities handled in the port have been timber and iron and steel, which between them constitute some 60-70% of the total tonnage passing through the port. These items are difficult to handle and the majority of them must be off-loaded alongside the quays and not into lighters. The position is aggravated further by the lack of suitable handling facilities and equipment. Consequently the berth occupation by ships off-loading these cargoes is excessive, and limits the availability of berths for general cargo vessels.

6.3.4 Transit sheds as such do not exist in the port, thus general cargo cannot be transferred to an adjacent shed and has to be transferred by lorry to some other storage area.

6.3.5 The RO/RO trade has been lost to Lattakia due primarily to the fact that there is no area available adjacent to the quays for the storage of containers and trailers. All such areas are filled with timber. It was understood that recent enquiries have been made by Agents wishing to transfer their activities from Lattakia to Tripoli, which would require facilities for the acceptance of as many as 12 RO/RO vessels a month.

6.3.6 A major constraint to the improved handling of cargo in the port is the lack of water, which restricts the size of ship that can be accepted and berthed alongside. A vessel with a loaded draft of more than 6.86 metres must discharge part or all of its cargo to lighters in the anchorage area outside the port. This factor alone could account for the decrease in the average tonnage carried by a ship calling at Tripoli. Table 3 shows that twice as many vessels called at Tripoli in 1980 as did in 1972, but carried less cargo.

6.3.7 The loss of the lighter basin, which was used for working lighters, has hampered the lighterage operations. The new lighterage quay has not replaced the facilities that have been lost.

6.3.8 Port operations are severely hampered by the fact that most of the port area, including sheds, is used for the storage of timber, fertilisers, etc.

6.3.9 The sheds situated on the mole are of an old design and are unsuitable for modern handling equipment. They are sited very close together resulting in the access roads being narrow, which restricts the free movement of cargo through the port.

6.3.10. With improved facilities and a greater depth of water alongside the quays and in the turning basin, more trade will come to Tripoli, but no traffic increase can be expected whilst the facilities remain as they are.

6.3.11 Finally, it would not be out of place to quote an extract from the Lebanese Port and Coastline Study, which was carried out by Messrs. Peat, Marwick, Mitchell & Co., and Coode & Partners and submitted in February 1978. " ..... the existing facilities at Tripoli are inadequate to handle the forecast traffic by even 1980 .....".

7. RECOMMENDATIONS

7.1 ORGANISATION

7.1.1 Objectives

It is recommended that the organisation and development of the port of Tripoli should be based on the following prime objective:

- the port should be operated with a view to maximising the total benefit it brings to the Lebanon consistent with the conduct of its affairs as a commercially viable concern. Subject to the basic guidelines of Lebanese ports policy, it should be organised and operated in its own right and not as an appendage to the port of Beirut.

The above objective has a strong bearing on questions of overall organisation, including the decision framework for future investment.

It is considered that the port of Tripoli should ultimately be incorporated within an overall framework of a Lebanese Ports Authority, particularly where its activities and investment plans have a bearing on general ports policy. The port should, at the same time, retain a significant measure of independence within this framework.

The L.P.A. will probably be achieved by a government decree proposing its creation and this, in turn, will be considered by several authorities, who will give their alternative ideas on how it should operate. It is not considered that this report should influence this in any way nor, under the terms of reference, offer advice.

At this stage, therefore, it is considered that it would be imprudent to embark on another expensive Management Consultancy exercise to establish a detailed organisation structure which may prove to be unsuitable.

Therefore this report only outlines some brief short and long term organisational changes that could be made in the event of an L.P.A. being set up, but, eventually, it is considered that major changes will be warranted, whatever organisation results.

7.1.2 Overall Organisation - Short Term

However, it is recommended that interim arrangements should be made for Tripoli in view of:

- the possible delays in establishing the L.P.A.
- the need to develop the resources and improve the organisation of Tripoli in the immediate future, among other things, as an essential preliminary to port development on a national scale.

The time scale of these "short term" arrangements will depend on the timing of Tripoli port development, including engineering projects discussed in Section 7.6, and progress made with the L.P.A.

A chart in Appendix 2A illustrates the recommendations in relation to the short term re-organisation of the port of Tripoli and the overall aspects of this are listed as follows:

(a) The Tripoli Port Service should continue to come within the overall jurisdiction of the DGE within the MHER but contact with this latter body should be at a senior status level than that which currently applies. The director of the port service, in special circumstances, should have the right of direct contact with the Minister.

(b) Overall responsibility for the functions of the harbour master at Tripoli and the operation of the pilotage service, within the specified regulations, should be transferred from the MTPW to the MHER. Day to day control of the activities of the harbour master should come within the scope of the Tripoli port service.

(c) Income and expenditure budgets submitted by the Tripoli port service should be approved by a single ministry i.e. the MHER.

(d) Periodic inspection of the affairs of the port service by the "Service de l'Inspection Centrale' should be retained, but similar inspection undertaken by a representative of the Ministry of Finance should be eliminated. (Recommendations (b), (c) and (d) will ensure that central port activities come within the jurisdiction of a single high level body and would involve the final authority of only one minister).

(e) The existing Administrative Board should be retained, but membership should be increased to the full complement of seven by the addition of two individuals of appropriate status and experience and with the best interests of the port in mind, together with a representative from the Ministry of Finance. The port director should also participate with full voting rights.

(f) Income and expenditure budgets should cover a more extended period than one year. (Possibly two or three years on a rolling basis. In effect, after the first year, with the three year arrangement, the DGE would be sanctioning annually the third year of the current three-year plan). This proposal has a bearing on future financing.

(g) Subject to approval of the appropriate expenditure through the medium of budgets, the port service should be given the authority to select, remunerate and control its own personnel without interference from outside individuals or government agencies.

7.1.3 Detailed Organisation - Short Term

A number of developments within the organisation of the Tripoli port service are recommended for the short term. The timing of some of these will be influenced by the progress made with equipment deliveries, engineering development, expansion in scope and volume of port service operations etc. Other changes are in the nature of preparation for the future and should be effected as soon as possible.

These recommendations are as follows:

(a) A suitably experienced deputy engineer should be appointed to assist the chief engineer. Apart from being considerably overloaded now, the latter should become increasingly involved in new engineering developments. This appointment should be made as soon as possible.

(b) There is considerable scope for cost reduction and increased efficiency if maintenance of installations and equipment could be increasingly provided by the port service.

There is no civil engineering organisation, and outside contractors have to be used. This involves a lengthy procedure of first obtaining authority, and then advertising, preparing and obtaining tenders, adjudicating, and finally accepting and then supervising the work.

No preventive or routine maintenance of installations and equipment is possible. This results very often in no work being carried out until the position is reached when new and expensive replacements have to be made. The present state of the surfacing and drainage in the port is a good example of this. In addition, the poor conditions resulting from lack of maintenance create poor operating efficiency in the port.

If the Authority had its own services, not only would this result in such situations being prevented, but the system of delays inherent in using outside organisations would be reduced. Priorities could be fixed by the Authority which would then be able to deal with situations as they arose on a day to day basis.

As there has to be some sort of organisation to deal with the employment of outside contractors, and as the existing workshop facilities are not properly utilised, it would also mean that this overhead could be spread over the cost of carrying out its own maintenance and minor repairs. In the long term this must result in a cheaper and more satisfactory method of doing this work, though there would be a limit to the size of work possible, when this and major new works would have to go out to tender.

(c) In line with the developments referred to in (a) above, the nucleus of a "new works/projects" section should be established.

(d) To relieve pressure on the chief engineer but, more importantly, to organise and plan for the future, a new "commercial/operations" section should be established and a suitably experienced manager of the section appointed.

(e) The above manager should be responsible to the port director for:

- all matters relating to warehousing and storage. These would include the provision of advice to the port director on future policy relating to the system of annual hire of warehouse space and the possible need to modify this in the light of cargo handling considerations and the development of facilities for general cargo. He would also be expected to keep the profitability of warehousing and storage under continuous review and should advise the port director of appropriate changes to tariffs he considers necessary.
- the supervision of tallymen, weighmen and watchmen and the provision of advice to the port director on operational requirements for these functions.
- the planned expansion of operations undertaken by the port service. In particular, he should be concerned with initiating and expanding the direct participation of the service in shore handling, porterage and transport. At present the port service has no control over handling operations in the port and, since it is responsible for all merchandise within the port area, it must have control of quayside operations.
  This will be more important if the "transit shed" approach is adopted (see p.52, para. 7.4.1(i)).

(f) The port police force should integrate with the gardiennage service provided by the port service and to this end should be supervised on a day to day basis by the "manager - commercial/ operations". It should not constitute a separate port authority.

(g) The day to day activities of the harbour master should come within the scope of the Tripoli port service. In the short term he should be directly responsible to the director of the service. An administrative assistant to the harbour master should be appointed.

(h) In the short term within the financial or administrative sections provision should be made for adequate additional staff.

(i) It is not recommended that any attempt would be made to incorporate pilotage, lighterage or stevedoring within the

port service at this stage, but a review of agents fees should be undertaken.

Please note other recommendations on p. 51 , para. 7.4.1(b).

7.1.4 Overall Organisation - Long Term

The L.P.A. should be firmly established and be able to consider matters of Lebanese port policy in general. As a policy-making body this authority should clearly be concerned with all Lebanese seaborne traffic and its future distribution not only between Beirut and Tripoli but including other ports, private jetties and quays.

In relation to Tripoli, the L.P.A. should be chiefly concerned with establishing very broad guidelines of policy and with matters of relative investment between the ports. The Tripoli port service should otherwise retain a significant measure of independence in running its affairs. Up to a point, the L.P.A. could assist in the diversion of traffic to Tripoli, but more stress should be put on the development of Tripoli facilities and service to achieve this objective.

Specific recommendations relating to overall organisation in the longer term are as follows. (The chart in Appendix 2 illustrates these recommendations):-

(a) The Tripoli port service should come within the overall jurisdiction of the L.P.A., which, in turn, would be responsible to a single minister. This jurisdiction should relate to matters of general ports policy.

(b) Three representatives of Tripoli interests should be appointed to the Board of the L.P.A., to attend meetings concerning Tripoli port. For these meetings a reduced number of the originally recommended L.P.A. Board should attend, probably no more than five, including the Chairman and the representative from the Ministry of Finance. The director of the Tripoli port service would be expected to attend meetings of this special Board as required. The three Tripoli representatives should also have the right to participate in matters of general ports policy determined by the full L.P.A. Board.

(c) Income and expenditure budgets (covering a period of two or three years) submitted by the Tripoli port service should be approved by the L.P.A. (Any special request for government assistance in relation to capital development would be channelled via the L.P.A. to the Minister).

(d) The system of working committees recommended in conjunction with the L.P.A. should be applied to Tripoli where this is to the advantage of the port (e.g. committees dealing with investment plans and projects, methods of cargo handling etc. where benefit could be gained by Tripoli from the experience of the larger port).

(e) Subject to overall budget approval, the Tripoli port service should continue to have the authority to select, remunerate and control its own personnel without any outside interference.

(f) Where the Tripoli port service considers it important to port development to impose special conditions, licensing arrangements or restrictions on the operations of private concerns to Tripoli, such as shipping agents, stevedores etc., representation should be made to the L.P.A.

7.1.5 Detailed Organisation - Long Term

The chart in Appendix 2B illustrates the longer term organisation of the Tripoli port service. It represents the ultimate foreseeable development of this service assuming:-

- expansion of cargo takes place
- engineering and cargo handling recommendations are accepted and successfully implemented.
- extension of the scope and nature of operations of the port service during the short term is successful and continues to develop.

As there are so many imponderables it is not possible to forecast the likely timing of the changes involved or, indeed, whether the full extent of the re-organisation will be appropriate in a number of years' time (clearly establishment of an elaborate organisation structure which overprovides for actual needs and is overstaffed in relation to operations undertaken is a pitfall to be avoided). With the above in mind, basic recommendations are as follows:

(a) The existing Conseil d'Administration should be replaced by an executive board of directors established to determine the policy of Tripoli port service and to ensure it is carried out. Apart from the chairman, this board should consist of three non-executive directors and four executive directors comprising the senior management of the service.

(b) The existing post of director - port service should become that of director/general manager or chief executive of the service. The three senior executives responsible to him, who would have board responsibilities, would comprise:

- Chief Engineer
- Deputy General Manager (Exploitation)
- Financial Controller

(c) Within the overall responsibility of the chief engineer, the following additional departments should be established and a manager appointed to supervise activities in each case:

- Maintenance Department (Installations, Buildings, Equipment)
- Service des Etudes (developed from the "new works/projects" section initiated in the short term).
- Service Divers (water, electricity, cleaning etc.)

(d) The function of the harbour master should be incorporated within the division concerned with exploitation. This division would also comprise three other sections supervised by managers to be appointed:

- Planning
- Operations (warehousing, storage, quays etc.)
- Work Study

Managers of the above departments would be responsible to the deputy general manager (exploitation).

(e) The financial division should be divided into two sections, i.e. "financial accounting" and "management accounting" each supervised by an accountant to be appointed with responsibility to the financial controller.

(f) A commercial manager should be appointed with responsibility to the general manager for promoting the services of the

Tripoli port service. His functions should include publicity, public relations, and the continual review of port charges.

(g) An administration manager should be appointed to organise and control an administrative service which should include personnel, statistical services and purchasing.

7.2 FINANCE

7.2.1 Source and Application of Funds

A summarised cash flow projection covering the port capital expenditure for the years 1982 to 1984, during which period it is anticipated that the first stage development and the equipment procurement would be put in hand is shown below.

Year	Total funds available (required) at beginning of year	Annual Revenue set aside during year for capital expenditure	Total funds used during year	Total funds available (required) at end of year
		(in '000 L.L)		
1982	4,769	7,231	-	12,000
1983	12,000	9,000	5,000	16,000
1984	16,000	10,000	60,000	(34,000)
1985	(34,000)	11,000	33,500	(56,500)

As will be seen from these projections, there could be a shortfall in cash requirements over the next three years of some L.L. 56.5 million, or L.L. 18.8 million per annum. The shortfall could be even greater, if the development and procurement of equipment was delayed, as a result of the increase in costs due to inflation. The implementation of the second stage development would create an even greater shortfall.

There are, in effect, only three methods which could be utilised to finance such a shortfall.

(i) The raising of additional revenue by the Tripoli port service

(ii) State Subsidy

(iii) Borrowing

Ideally the first method should be used in order to preserve the situation whereby the service is completely self-financing. However this would require excessively high increases in the tariffs, which in turn would render the port of Tripoli less attractive to potential importers. The result could be, rather than attracting trade, a further substantial loss to the neighbouring ports.

Due to the present unsettled situation in the Lebanon, it is extremely unlikely that the government could finance the shortfall by a state subsidy. Thus the only alternative would be to finance the shortfall by means of loans from Funding Agencies.

It is considered that the revenue that would accrue from the additional traffic that could be attracted, as a result of modernising the port and providing new facilities, would contribute a large proportion of the additional finance required to repay and service the loans. Any shortfall could be met by modest tariff increases.

7.2.2 Tariffs

As indicated on p. 15, para. 2.3 a revised tariff structure is in process of being agreed. Figures are not available yet but it is hoped they will be in force by 1st January, 1983.

No further alterations should be considered until it has been possible to examine the effects of the new structure on the revenue of this port.

7.3 ADMINISTRATION

Comments were made in Section 3 on the current limitations of accounting and administrative staffing and facilities but also made the point that the scope of work involved was also limited. The recommendations in this section are thus mainly concerned with the development of facilities to support the general expansion and reorganisation of the port service and as such will depend on the progress made with these larger issues.

The recommendations are as follows:

(a) The initial appointment during the short term of an accounts assistant, an additional cashier, two clerks and an extra typist. The purpose of these appointments should be to give basic assistance to management in general, and the financial manager in particular, and to release them from some of the routine work currently undertaken.

(b) Further staff should be appointed during the short term if this is considered necessary by the director of the port service. It may be necessary, for example, to provide administrative assistance for the newly appointed "manager - commercial/operations" as his work develops.

(c) If reasonable progress is made with reorganisation and extension of port service facilities in the short term, consideration should then be given to future organisation. An administrative manager should be appointed whose primary task should be the development of an administrative plan and work programme in conjunction with the finance manager. Elements of this programme should include:

- a review of the financial accounting system with a view to reclassification to make it more informative and serve as a basis for management accounting information.
- the establishment of cost/profit centres and a review of the budgeting system in connection with the above.
- the development of a statistical and management information service to assist port service management in the profitable future development of their activities.

- a review of existing administrative procedures with a view to rationalisation, and the development of new procedures as determined by the expansion of port service activities.
- a review of current staffing arrangements for the purpose of developing and implementing a programme relating to the phased introduction of new staff based on current and anticipated requirements.
- the preparation of a list of requirements in the area of office equipment based on the nature and volume of the clerical work load.

(d) The above programme should be submitted for approval by the director of the port service who should consider it in conjunction with long-term organisational development.

7.4 OPERATION, HANDLING, WORK FORCE

In this section a number of recommendations are put forward for the improvement of operations in the port, and must also be considered in conjunction with the organisational and engineering recommendations of this report.

Attention has been given to the future potential of the port and to the expansion of the role of the port service.

Whilst accepting that the port of Tripoli has for a long time worked in a particular way of its own and that it is difficult to break old habits, it is considered that, in the long term such changes are preferable to continuing the system of private enterprise working, even with improved control through licencing.

7.4.1 Operations and handling within various work areas

(a) It is recommended that the activities of the harbour master should come within the control of the port service. This should permit better co-ordination of berthing arrangements with the planning of shore activities and warehouse occupation - a function likely to be of increasing importance within the port service in future. Statistical work currently undertaken by the harbour master should also be integrated with the future development of statistical information to be undertaken by the port service.

(b) The present arrangement whereby all handling operations are carried out by private enterprises, is satisfactory under the existing conditions, but, nevertheless, the port service is responsible for all merchandise in the port area (i.e. when off the hook) and this must not be overlooked. For the port service to be able to meet these responsibilities it must have control of the quayside operations and more so if the "transit shed" approach is adopted. At present it does not have such control.

Ideally, the port service should control all handling operations in the port, but to change the whole system at one time would meet with very considerable opposition from the private enterprises and for this reason the change should be implemented over a period of time. In the first instance, the port service should take over all shore handling

operations and, at a later date, the stevedoring and lighterage. The newly appointed manager - commercial/operations should liaise with the above companies with a view to:

- improving the safety of working
- reducing damage to cargo
- ensuring that handling gear for general cargo is available to match the increased flow of this merchandise
- to maintain co-ordination between stevedoring and quayside working as port service participation in the latter type of work increases
- to ensure that lighters are not unduly used for storage purposes

(c) For ships with unsafe or inefficient derricks, the use of mobile cranes for loading and unloading should be compulsory.

(d) More equipment should be provided such as mobile cranes, side loaders, tractors for Ro-Ro etc.

(e) Equipment operators should be provided to match the above requirements and should be sufficient in number to cover holiday periods, absence through sickness etc. All operators should be properly trained.

(f) Limits should be put on the use of lighters for storage purposes in order to ensure that they are available for emergency use.

(g) The port service should become increasingly involved in quayside working and the provision of transport. This development should be organised by the manager - commercial/operations who, amongst other things, would be responsible for building up a planning and control function.

(h) The above planning and control function should be developed with a view to providing overall supervision and co-ordination by the port service of berthing, stevedoring, the provision of equipment, shore handling, transport to warehouses or storage areas, and actual storage within these areas. This function will become increasingly important if the volume of general cargo expands.

(i) In connection with (h) above as a point of future principle, cargo should be moved from the ship to the nearest shed. In other words, the "transit shed" approach should be developed as far as possible.
See recommendations on p. 42, para. 7.1.3(c).

(j) Road and quay surfaces should be repaired and maintained to a high standard.

(k) More men and equipment should be provided for keeping the port area clean and tidy, and any rubbish or scrap collected should be removed from the area.

(l) A work study manager should be appointed as part of the longer term organisation of the port service. He would be responsible for the continual review of all working methods and related equipment, standards, payment and incentive schemes and manning scales.

(m) Customs clearance appears to present no real problem at present, but representation should be made to the appropriate authority to ensure that further staffing is adequate to match the increased throughput. In this context, there may ultimately be a need for afternoon working to expedite the collection of cargo by consignees.

(n) An automatic telephone exchange should be installed to connect the main offices, sheds and quays of the port, and a portable radio system established to link the key areas of activity.

7.4.2 Handling Equipment

On the assumption that the necessary legislation would be introduced and it was accepted that the port authority would provide cargo handling equipment, it is considered that the minimum items of equipment that would be required to handle the traffic in the existing port and stacking areas, after the short term improvements have been completed, would be as under:

1 Side loader, 30 tonnes capacity, for Containers
3 Side loaders, 10 tonnes capacity, for iron and steel and timber
2 Mobile Cranes, 10 tonnes capacity
3 Mobile Cranes, 7 tonnes capacity
4 Tractors, 25 tonnes pay load
12 Trailers, 25 tonnes per day load
4 Forklift trucks, electric, 2 tonnes capacity for use in sheds
6 Forklift trucks, diesel, 5 tonnes capacity

It is estimated that the cost of this equipment, at 1982 prices, would be L.L. 8,500,000.

7.4.3 Lighters

The lighter fleet could be reduced, but sufficient lighters should be retained for working vessels at anchor in the basin and for peak periods.

7.4.4 Warehouses and Storage

Detailed recommendations concerning future requirements relating to open storage areas, warehouses and transit sheds appear in Section 7.6. Recommendations regarding the need for increased control by the port service over the utilisation and allocation of shed and warehouse space appear in Section 7.1.3.

7.4.5 Repair and Maintenance

The existing repair and maintenance facilities for the port equipment are very limited. The organisation would have to be strengthened by the appointment of sufficient mechanics, tradesmen, operators and the provision of adequate maintenance equipment.

The maintenance facilities to cover buildings, warehouses, major structures and services are non-existent. Any such maintenance has to be contracted out, which entails a lengthy procedure of obtaining permission, advertising, evaluating of tenders etc. The condition of the structures, roads and surfaces in the port is an indication of this unsatisfactory procedure.

A maintenance organisation for all civil engineering repair works should be set up as a matter of urgency.

The repair and maintenance of all structures and equipment is under the control of the Chief Engineer/Technical Director. The last holder of this post died some years ago and has not been replaced. The supervision of these works is now undertaken by a private firm of architects.

7.4.6 The Work Force

Various recommendations have been made relating to future staffing of the port service. Other recommendations concerning the work force are as follows:

(a) All men undertaking key jobs on the quays and in the warehouses on behalf of the port service should be permanent employees of the service.

(b) To increase control and efficiency of casual dockers a register should be established of casual workers who have more than, say, 100 days' experience of port work. Once registered, a worker could be given basic training, would be given priority when casual workers are recruited and would be paid at a higher rate than a non-registered worker.

(c) Training plans should be developed for all supervisors, key workers, and subsequently equipment operators and manual workers.

(d) Additional tallymen, assistant storekeepers and watchmen should be recruited by the port service.

7.5 ECONOMICS AND STATISTICS

As has been indicated in Section 5, previous traffic forecasts bear no resemblance to the current position and it is considered, under the present unsettled conditions, that no useful information could be obtained from a new study.

7.6 ENGINEERING

7.6.1 General

There is no doubt, and this is confirmed by the port traffic statistics shown in Table 2, Section 5, that the port of Tripoli has become saturated with an annual capacity of approximately 850,000 tonnes per annum or a handling rate of just over 1,000 tonnes per metre. This position could have been eased if it had been possible to implement the short term recommendations of the 1974 Report. This was not possible and, as a result, Tripoli has been unable to attract further general traffic and has in fact lost to Lattakia the potentially expanding RO/RO trade.

Tripoli, the second largest port in the Lebanon and located in a comparatively undisturbed part of the Republic, has an important role to play in the recovery and future development of the Lebanese trade, but is unable to contribute its share in full due to the lack of suitable facilities. It is imperative, therefore, that improvements to these facilities are put in hand with the least possible delay. Any delay will result in the potential trade being lost permanently to the Syrian ports of Tartous and Lattakia, where it is known that considerable developments are in hand or are planned. The recommended improvements at Tripoli can be divided into two stages:

(a) Short Term improvements to existing facilities
(b) The provision of additional facilities

7.6.2 Short Term Improvements, Stage I

It would be several years before the additional berths and other facilities could become operational, but the port would be in a position to offer a better service and attract additional traffic during the intervening years if improvements could be made to the existing facilities. It is recommended that the following actions should be taken and these are also indicated on Drawing B.

(a) The entrance channel should be dredged to a depth of -10 metres.

(b) The existing basin should be widened to 300 metres and, where foundations permit, dredged alongside the quays to -10 metres.

The remaining areas should be dredged to ensure a depth of water of 8 metres.

It is not considered that maintenance dredging is a serious problem. For the greater part of the year the set of the current is in a northerly direction and only in the winter months does the set reverse to a southerly direction. The current is not impeded either to the east or the west of the port and there is no evidence of serious siltation.

This may appear to contradict the statement on p. 31, para. 6.1.4 that vessels permitted to berth alongside are restricted to a draft of less than 6.86 metres.

It is believed that this restriction is due to the fact that no serious dredging of any kind has been carried out for many years, probably not since the berths were constructed in the late 1950s and the accumulation of debris from loading and off-loading operations.

It is considered that if the port service had its own maintenance organisation (see p. 40 para.7.1.3 (b)) it would be in a position to deal with this problem satisfactorily and there would be no need for the construction of additional protective walls.

The northern 300 metres of the main quay was designed for a depth of water of 10 metres. Thus the available berths would be:

2 Berths, 150 metres long with 10 metres of water
2 Berths, 150 metres long with 8 metres of water
3 Berths, 110 metres long with 8 metres of water

(c) All berths should be refendered. Virtaully no fenders exist and the quay walls are being damaged by ships when berthing.

(d) All existing sheds on the mole should be demolished and replaced by four sheds of modern design. The new sheds should be of single span, 40 metres wide and set back 30 metres from the face of the quay wall. One shed should be 110 metres long and the other three each 130 metres long.

This will provide 20,000 square metres of covered storage, which is considered adequate for transit shed operations.

The remaining area of the mole should be surfaced and used for open storage.

(e) The quay aprons should be resurfaced and all necessary services such as drainage, water supplies, telephone lines, lighting and power supply lines rehabilitated.

(f) The existing shedding and open storage area in Free Zone A should be sufficient for all Free Zone activities, if properly used, as noted on p.33, para. 6.1.7.

RO/RO vessels used to berth alongside the berth at the root of the mole and it is recommended that this quay should continue to be used for this purpose. However, the existence of the Free Zone B limits the area available for the stacking of containers and it is recommended that the latter should be cleared and used for the storage of containers.

The provision of RO/RO facilities on an extension of the mole is not recommended. The mole is narrow, only 150 metres wide, and the storage and movement of containers on and along the mole would aggrevate further the already congested conditions in this area.

Any extension of the mole should be utilised for the provision of additional deepwater berths, with a depth of water of 10 metres, for which there is a great need.

(g) The new lighter berth should be extended by 100 metres.

There is a definite shortage of lighter berths and it would have been of greater advantage if the new lighter berth had been constructed in an east-west direction, along the face of the newly reclaimed area, instead of the north-south direction, as noted on page 32, para.6.1.4

The area previously known as the "Bassin des Mahonnes" has recently been filled in and, as a result, there is ample space for the storage of goods discharged from lighters.

An alternative development scheme, shown on Drawing No. C, provides for additional berths for lighters, but with the overall disadvantages of

the scheme, commented upon in para. 7.6.3 below. With the improved facilities it is considered that it should be possible to increase the annual throughput of the port from 800,000 to at least 1,000,000 tonnes.

It is estimated that the cost of these improvements would be approximately L.L. 90,000,000 of which the foreign exchange element would be L.L. 71,500,000 or $ U.S. 16,750,000.

An estimated saving of L.L. 20,000,000 could result if it was decided to limit the dredging of the channel and basin to 9.5 metres. Where there is a significant difference in the levels of high and low tides, such a decision would not be so important, as it could be arranged for ships, with drafts of 9.5 metres to be brought into the port and berthed on a high tide. However the maximum tidal difference along the Lebanese coast is only 0.6 metres, which is equivalent to the minimum under-keel clearance required for vessels negotiating the channel and berthing. Thus the times when such movements could take place would be severely limited and the benefit to the port of the existing quays, that have been designed for a depth of water of 10 metres, would be lost.

7.6.3 Provision for Additional Facilities, Stage II

In the 1974 Report two alternative development schemes were proposed:

(a) All new facilities to be provided to the east of the existing mole.

(b) Partial development within the existing basin and the remainder to the east of the mole.

It is not recommended that any new facilities in the way of new deepwater berths should be provided within the existing basin. The maximum number of such berths that could be constructed in this area would be limited, and the new structure would result in the virtual elimination of an area where smaller ships may usefully anchor for shelter or for the purpose of working to lighters. This amenity is of particular importance to Tripoli registered coasters. Also the construction works of any new facilities within the existing basin would seriously disrupt

the normal port operations and would result in a decrease, even though temporary, of the handling capacity of the port, which could lead to the loss of yet more trade.

It is recommended, therefore, that additional facilities should be established on the eastern side of the mole and the layout should conform with that indicated on Drawing No. B.

A new basin would be provided by extending the existing breakwater by 780 metres and by constructing a new breakwater, 1140 metres long to the east. Only part of the new basin would be dredged to -10 metres and the remaining area would only be dredged at a later date, as and when required. The latter area, which would have a minimum depth of water of 4 metres, could be utilised by coasters sheltering or discharging to lighters.

The mole would be widened to the east by 100 metres and three deepwater berths constructed on its eastern face, each 180 metres long and having a depth of water alongside of 10 metres.

Three single span transit sheds, each 150 metres long and 40 metres wide, would be constructed on the new quays. The sheds would be erected 30 metres back from the quay face. This would provide a further 18,000 square metres of modern transit sheds, sufficient for the new berths.

A retaining wall would be constructed from the southern end of the new quay to the eastern breakwater and the area between the retaining wall and the shore would be reclaimed. This area could be used for the stacking of timber and thus releasing areas in the port, now occupied by timber, for other uses.

These new facilities would be outside the existing port boundary and their construction could be put in hand without any interference or inconvenience to port operations within the existing basin.

It is considered that, with modern equipment, a handling rate of at least 1,150 tonnes per metre per annum should be possible on the new berths and the throughput of the port increased by 620,000 tonnes per annum.

The cost of providing these additional facilities is estimated to be L.L. 230,000,000, of which the foreign element would be approximately L.L. 137,500,000 or $ U.S. 32,000,000.

7.6.4 Alternative Proposal for Additional Facilities - Stage II

Notwithstanding the recommendations on p. 60, para. 7.6.3, the estimated costs of developing the port within the protection of the existing mole and breakwater, as shown on Drawing No. C, are given on p. 65.

The area available for development is limited, but a second mole, 180 metres wide, could be constructed 340 metres to the west of the existing mole. It is considered that the maximum berthing that could be provided, whilst still retaining a small area in which deepwater vessels, coasters and dhows could anchor in shelter and work to lighters, would be 780 metres for deepwater vessels and 370 metres for lighters. Any further lengthening of the mole would virtually eliminate coasters and dhows from the port.

The depth of water alongside the deepwater berths would be 10 metres, but the walls could be designed for a greater depth of water, if it should be required at a later date.

Four transit sheds, of single span design and 40 metres wide, would be erected alongside the deepwater berths. Open storage areas, 50 metres wide, would be provided behind the transit sheds.

Goods off-loaded from lighters would be removed for storage in the area recently reclaimed "Bassin des Mahonnes" area.

The berths to the south of and between the two moles could be used for the discharge of RO/RO ships and the mooring of the port's floating craft.

During the construction period the existing lighter berth would not be usable and lighters would have to discharge over the berth at the root of the existing mole.

With the exception of the additional facilities, Stage III, described in para. 7.6.5 of this report, no further development would be possible within the existing port area.

It is estimated that the cost of this development would be approximately L.L. 180,000,000, of which the foreign element would be L.L. 117,500,000 or $ U.S. 27,500,000.

Numerous discussions were held on the merits of developing within the existing port and this development is not recommended in that it would virtually eliminate any possibility of deep-sea vessels working to lighters within the port. A sizeable amount of cargo is off-loaded by vessels at anchor to lighters and, if this facility was not available, there would be a requirement for even more deepwater berths.

7.6.5 Additional Facilities, Stage III

Should they be considered necessary at a later date, additional facilities could be added by extending the mole in a northerly direction to the limit of the existing eastern breakwater, as indicated in dotted line on Drawing B. This would provide three additional berths with a depth of water of 10 metres and of lengths of 170, 270 and 270 metres.

It is recommended that the construction of these berths should not be commenced before the completion of the three new berths, so as not to interfere with the traffic on the already overcrowded old berths.

The cost of these additional facilities, at 1982 rates, is estimated at L.L. 75,000,000, of which the foreign exchange element would be L.L. 26,000,000 or $ U.S. 6,000,000.

7.6.5 Estimated Costs

	STAGE I Short Term Development L.L.	STAGE II First Stage Development L.L.	STAGE III Additional Facilities L.L.
Mobilisation		10,000,000	
Dredging - Soft	29,500,000	51,500,000	3,375,000
- Hard	30,750,000	42,000,000	5,000,000
Quay wall	-	28,000,000	29,820,000
North Breakwater	-	28,080,000	-
East Breakwater	-	17,670,000	-
Retaining Bank	-	4,750,000	-
Back fill to quay	-	11,200,000	15,400,000
Reclamation from dredging	-	7,500,000	-
Surfacing to quay	-	4,495,000	4,265,000
Resurfacing - Quay Apron	1,650,000	-	-
- Open Storage Areas	2,400,000	-	-
- Free Zone B	2,250,000	-	-
Bollards, fenders etc.	1,150,000	2,000,000	2,500,000
Transit Sheds - Provide & erect	10,000,000	9,000,000	5,600,000
- Demolish on mole	1,500,000	-	-
- Demolish in Free Zone B	1,375,000	-	-
Services	2,500,000	2,000,000	2,000,000
Demolish Existing Wave Wall	-	200,000	100,000
Extension of Lighter Berth	2,500,000	-	-
Miscellaneous & Contingencies	4,425,000	11,605,000	6,940,000
TOTAL	90,000,000	230,000,000	75,000,000

7.6.6 Estimated Costs

Alternative First Stage Development - Stage II

	L.L
Mobilisation	10,000,000
Dredging - soft	37,050,000
- hard	37,050,000
Quay Wall - 10m	40,320,000
- 5m	6,650,000
Reclamation from Dredging	4,500,000
Backfill to Quay	8,400,000
Surfacing to Quay	8,525,000
Bollards, Fenders etc.	4,000,000
Transit Sheds - Provide and Erect	9,600,000
Services	3,000,000
Miscellaneous and Contingences	10,905,000
TOTAL	180,000,000