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PORT - PLANNING - AND
REGIONAL - DEVELOPMENT.

Howard Ashton, B.Sc., Ph.D.

A dissertation submitted for
the degree of M. Phil.,
Department of Town & Regional Plan-
ning, University of Glasgow.

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"....he was bold in his plans, and right....
great things are not done by those who sit
and count the cost of every deed and act".

Isambard Kingdom Brunel

ACKNOWLEDGEMENTS.

The misplaced finger types, and having struck the wrong key, moves back and tries again! Unlike Edward Fitzgerald's immortal finger mine had to make regressions as well as progressions. Still, all things come to an end, bad as well as good, and at last we reach the final page, the one everybody reads upon opening a work like this, in the hope of finding out how it ever came to be put together - the answer to that, of course, is neatly hidden within the bibliography!

Here, space is reserved in order to give mention to those to whom my thanks are due for their contributions of time, ideas, material and moral support;

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And now - back to the Scottish Hills!

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INTRODUCTION.

A seaport is best defined in terms of its function as a place where each-way exchanges between land and sea transport regularly take place. This function cannot usually be achieved in exposed water sites and so it is generally axiomatic that a successful commercial seaport is equipped with harbour facilities that may be natural but more usually artificially enhanced. It has been common to find the virtues of many places proposed for port development or programs of major expansion summed up in descriptions of 'fine natural harbours' such as may be provided by drowned deep valleys or flooded glaciated valleys. Attractive as such places might appear on maps, it is only recently that their deep and sheltered waters have been looked upon as forming a principle factor in the decisions about where to locate major multi-functional ports, or even 'simple' terminal facilities for certain bulk commodities.

The reason for the change in emphasis to include a consideration of such locations has its origins in the rapid change that has taken place in overseas transport technology, particularly during the 1960's which, in the maritime sphere, saw the introduction of container ships, bulk carriers of increasing dimension, principally for crude oil and iron ore (and even for combinations thereof in the oil/bulk/ore, OBO, vessels) and the lighter-aboard-ship, LASH, development. Integrating with these on the landward side came the 'Freightliners' and special 'company trains' for the movement of large quantities of homogenous materials by rail; and in Britain, but increasingly in Western Europe, a network of crude oil and refined product pipelines was beginning to take shape.

The commercial importance of a given port is essentially proportional to the amount of import and export cargo in the port's hinterland, minus the amount of cargo that could pass through the port but which is attracted to a rival port or ports. The type and volume of this diverted cargo is proportional to the superiority of the number and type of sailings, the superiority of land transportation facilities, the superiority of institutional factors, under which head might be included trading and financial practices, including special rates and governmental intervention in the way of subsidies. Such a qualitative description, including as it does, certain quantifiable parameters, is applicable to the trading position of many ports,

certainly in the past, and indeed of many today. But it fails to take into account the impact of transport technology and the value of physical assets like the availability of deep sheltered water and flat estuarial land. The importance of harbour facilities has, until recently, been overlooked, though it might be worth adding that a British Committee on port terminology found that "the words port and harbour have become interchangeable" ! Bearing in mind that the type and method of shipment of certain materials places greater emphasis on the need for good harbour as opposed to port facilities, i.e. conventional quays and back-up facilities such as transit sheds and warehouses, the transport of break-bulk cargoes by modern methods has necessitated major alterations to the physical shape of ports (a good illustration of this is provided by a comparison of the layout of port facilities at Marseilles with those of Fos; see map accompanying Appendix 1). Break-bulk cargo used to be described as general cargo, not a very satisfactory term since it referred specifically to heterogeneous dry cargo packed in small lots such as food, or high value per unit weight raw materials or manufactured products and all generally bound for many consignees. Many of these cargoes pass right through the port since their high value to weight ratio makes it economic to transport them relatively long distances by road or rail. The conventional ways of handling these cargoes have been revolutionised by the use of various 'through' transit unit cargo methods, principally by container but also as palletised cargo, as unit loads in vehicles, road or rail, travelling as roll-on/roll-off traffic and even as unit loads in barges or barge carrying (LASH) vessels.

On a wide view and in economic terms the port is an interface between two modes of transport linking producer and consumer. As such it is an economic barrier, but economies of scale in one of the modes of transport or in the manufacturing process make the jumping of this barrier a relatively minor cost. This happens when bulk cargoes are processed at large water front factories. Break-bulk cargoes have, however, always encountered both a physical and economic barrier at ports because of handling and storage difficulties which usually increase ship turn-round time - and a shipper will tell you that his vessel is only making money when his vessel is on the high seas! Unit transport has ensured that the stay-in-port time is reduced to a minimum, but it has also required both the ports and shipping lines

to undertake large scale capital investment to achieve what is technically possible. Overseas Containers Ltd. and Associated Container Transportation, the U.K.-Australian Container Shipping Consortium have spent £80m on ships, depots and containers; a single container berth costs over £2m and a 300,000 ton oil tanker £9m.

By and large there has been no lack of finance in recent years for the development and implementation of technological advances in ship design, both for bulk cargoes and unitised traffic in one form or another. Road hauliers and the railways have matched this investment and these agencies began to call the tune with respect to port development. If a port wanted to attract this new and lucrative business it had to dance accordingly, necessitating the taking of large and expensive steps.

The most obvious impact of shipping developments upon ports has been the increasing size of vessels, but new types of ship with different methods of cargo handling can have profound repercussions, not only upon port layouts, but also upon the ability of a port to retain or advance its relative position in a national (or international) league table. The increasing size of vessels, notably the bulk carrier, has been a feature of shipping since the Second World War and ports have struggled to berth these ever larger ships, creating an effective master-servant relationship. One brake factor on the economies of scale that encourage naval architects to build bigger and yet bigger vessels is the reduction in the flexibility of operation as fewer ports become capable of handling them. Furthermore, it has been demonstrated that designers of bulk terminal facilities base their calculations on the assumption that no control can be exercised by the ports on the rate at which vessels are presented for discharge, nor over the time of arrival, making it necessary to plan for efficiency of utilisation of facilities of about 50%. This is a master-servant relationship with vengeance for it implies that half the cost of such port undertakings are beyond the control of port managements. To compound this situation, the shipping companies, consortia and bulk fleet operators control resources far in excess of the individual port authorities, or which are likely to be allotted to any one of them. While the port may have a monopoly of location, which is fixed, the ship can, in essence, be tethered anywhere that its operator regards as suitable for meeting requirements.

In door to door deep sea transport, ocean freight charges (transport, loading and discharging and port expenses paid by the carrier) are the largest single item (calculated as 62% of the total transport cost on the North Atlantic trade in 1968) and explain why ocean carriers have been the innovators of through-transit systems. Port charges, on the other hand, are a relatively minor item (estimated at about 10%). Thus ports cannot compete with each other simply by adjusting their charges. Competition is based upon service rather than price (i.e. variation in port dues); more frequent sailings to given destinations; faster turn-round of vessels; good labour relations; freedom from fog; no lock system etc. Therefore ports compete with each other to achieve this 'product differentiation' vis-a-vis other ports, i.e. competition for investment or for the approval of investment plans. But underlying this competition, it is the management decisions of the world shipping fleets which provide the foundations upon which port planners have to build.

The existing pattern of British ports is one of diversity; diversity in size, function, method of operation and of ownership, a situation which is the product both of geography and of history. There are some 360 harbour authorities in Great Britain, although the ten largest plus the British Transport Docks Board control 90% of the volume of overseas trade and about 75% of total traffic. A long coastline, with no town much more than 100 km from the sea have combined to see ports developing to satisfy mainly local needs, many localities requiring a port to ensure their economic prosperity. The reason for the dispersed pattern of port location lay in the relatively high costs of inland transport and the smallness of ships. Even today the inland component forms a large proportion of door to door distribution costs and this has tended to give ports an unlimited local monopoly with cargoes tending to travel via the port closest to the shipper.

However, in recent years, as alluded to earlier, this situation has changed in some notable respects. Inland transport is becoming relatively cheaper and more efficient. With the creation of the motorway network and the advent of containerised loads, road haulage firms have mushroomed; British Rail's freightliner concept for moving unitised loads at high speed has enabled the linking of the regions with the national ports through Inland Clearance Depots at which customs facilities are available. Inevitably, shipping lines have begun to concern themselves with the complete door to door

movement of consignments. Furthermore, the advent of such systems allows the exporter to operate just as easily and cheaply through relatively distant ports as through a local one. The ones likely to suffer, of course, are those ports which have invested large sums of money to cater for this traffic. Because inland transport costs and time are so much lower, the effective hinterland of such ports is now much larger than it used to be. Against this, however, has to be weighed the fact that individual ports can now have the technical capacity to handle in one year a large proportion of British cargo of a given type and on a given trade route. The shipper then, in his effort to achieve the best (lowest) rate for handling a unit of cargo through one of these ports can conduct business in such a fashion that intensive price cutting is liable to develop between those ports eager to secure the traffic that will earn for them the revenue which their major investments in modern facilities were intended. A 'price war' between say, Greenock and Tilbury, for a share of the North America container trade can establish ludicrous rates which allow for only the barest return on capital invested in the necessary port facilities. A similar situation could develop should a shipping concern decide to cut out one of perhaps four ports-of-call in Britain and Western Europe in order to gain another one or two round trips per vessel per annum on a particular route, thereby increasing his return on capital at the expense of public or private investment, but in either case national resources, locked up in modern port facilities.

The following is an attempt to investigate these structural factors originating in the field of international transportation and to see how they impinge upon the port industry of this country and the maritime nations of Western Europe; to look at the way individual port authorities attempt to accommodate these structural changes, with particular reference to bulk raw materials traffic and to show how this might lead to the large scale industrialisation of port locations. It is this change in the role of a port - from that of simply a node at a transport interface to that of being a location for primary processing and manufacturing activities - which has important implications for regional and national economies; what has happened along these lines in Britain and how do events here compare with those on the Continent - and have ports been viewed as agencies of regional economic development?

Before considering such questions as these the scene must first be set and that means examining government attitudes and policy towards the ports, restricting ourselves to the past decade. The

curtain rises, in the next section, in 1962 with the publication of an important document in the history of British port development - the Rochdale Report.

PART 1

1.1 THE ROCSDALE REPORT, 1962¹.

In 1961 the Government decided that the time had come to take a comprehensive look at our major ports in terms of their adequacy to meet present and future national needs. The fact that such a review was not undertaken until the early 1960's, some fifteen years after the end of the war, illustrates one point of contrast between the British port situation postwar and that of the ports of North-west Europe. Comparison between the lack of developments in the U.K. ports and the major port developments completed or proceeding on the Continent underlined the fact that there had been an unwillingness to give them any priority in the allocation of resources. Since World War II capital expenditure had been confined to minor projects with only negligible additions to deep water berthage (with the notable exception of bulk ore terminals). Except for bulk cargoes, such as iron ore and grain, particularly the former, the position was very unsatisfactory since the trend towards ever larger bulk carriers had already been clearly established. There were valid explanations for this situation. The continental ports had to make a fresh start at the end of the war by comprehensive reconstruction, with favourable financial treatment, at a time when Britain was fully extended in re-opening her world markets with severely attenuated financial resources. But the hard fact was that the physical state of the British ports was little different from that which was in existence at the beginning of the First World War.

Governmental concern about port investment was one of the major reasons for setting up in 1961 a 'Committee of Inquiry into the Major Ports of Great Britain' under the chairmanship of Lord Rochdale. Its terms of reference were announced in the House of Commons in March of that year. Mr. Ernest Marples, the then Minister of Transport in a Conservative Government, instructed the Committee "to consider to what extent the major docks and harbours of Great Britain are adequate to meet present and future national needs; whether the methods of working can be improved; and to make recommendations". Many aspects of the port industry have been the subject of official inquiries both before and since World War II. For example, Royal Commissions were appointed in 1853 and 1902 to advise on the complex problems of

the great ports of Liverpool and London. In 1945 the Cooper Committee reported on the Clyde Estuary and in 1951 the British Transport Commission produced its 'Review of Trade Harbours' under powers given to it by the 1947 Transport Act. There have been numerous others, but the Rochdale Committee was the first official body to carry out a truly comprehensive survey in this field. The terms of reference given to the Committee were certainly widely drawn. Indeed the Minister of Transport had made it clear in reply to questions in the House of Commons that no subject affecting the major ports of Britain should be excluded. Some idea of the scope of the inquiry may be had from the following list of conclusions taken from the Report (para. 629), to which the Committee attached special importance:

- a. the need for a properly planned program of port development, which should be supervised by a non-operational National Ports Authority equipped with statutory powers;
- b. the need to concentrate development (with the exception of developments to meet the special requirements of the oil and ore trades) at selected existing major ports on the main estuaries which already dominate the country's foreign trade.
- c. the need for an early start on suitable schemes to provide additional deep water dry cargo berths.
- d. the need for revision of port statutes and the concentration of ownership of port and related undertakings.
- e. the need for the creation of new estuarial port authorities incorporating the main British Transport docks and other ports.
- f. the need to regard ports as commercial undertakings and for a comprehensive overhaul of their financial and accounting arrangements.
- g. the need for more statistical information about the port industry.
- h. the need for a major advance towards decasualisation of dock labour.
- i. the need for increased efficiency and productivity.
- j. the need to ensure good access to the ports.
- k. the need for a wide ranging program of research.

In noting that in post-war years the ports had been relying on the major investments undertaken at the turn of the century, the Committee added that they had nevertheless coped with a considerable increase in many traffics. However, attempts to present some forecasts illustrated the hazards involved in such exercises by over-estimating dry cargo but under-estimating petroleum tonnages for the year 1966. Nevertheless, the important conclusion from its forecasting was that port capacity would have to be increased substantially; capacity both to berth bigger ships and to cater for the increased tonnages of cargo they would be carrying, not only bulk commodities, but also containerised loads, which would require space adjacent to berths on a scale not previously available at most British ports.

To bring the physical condition of the major ports up to a standard commensurate with the advances being made in transport technology meant the spending of large sums of money and so it would have been short-sighted of the Committee not to have given any consideration to the evaluation of investment proposals. In reviewing the then existing system for the control of investment expenditure, it felt it to be deficient in the following respects as far as the major ports were concerned:

- a. it was a purely negative form of control; no attempt was being made to encourage a port to undertake investment which might be considered to be in the national interest;
- b. it did not apply any independent economic test of the need for a proposed development scheme; so long as the port's finances were sound, the scheme technically unobjectionable and the cost reasonable, there would be no case for withholding approval;
- c. it did not attempt to relate the proposals of one port with those of another; so long as similar schemes at two or more ports are sound technically and financially, approval would not be withheld on the grounds of possible duplication of resources;
- d. it did not provide a framework within which a program of major development could be evolved on the basis of national as distinct from local requirements;
- e. it did not apply to new works financed out of reserves.

From this it is obvious that the Committee saw not only that economic control was lacking, but also that the ports had in fact commonly embarked upon investment expenditure that yielded a poor economic return, the financial well being of a port being supported, i. in the earlier years of a new development by its existing assets, and ii. in later years by increases in the price level which had reduced the effective burden of the debt. The Committee had also expressed its disquiet concerning the influence of port users. They saw the value of local users showing a direct interest in the efficient daily running of the port but stated that "divided loyalties must sometimes make it difficult for them to take a dispassionate long term view of financial problems". Whilst this remark refers to a likely problem over interest in port charges, it is conceivable that a similar conflict could easily arise in the case of proposals to invest in what users would regard as improved facilities.

The physical state and financial structure of the major British ports as revealed by the Rochdale Committee lead to the major recommendation contained in their Report, for the establishment of a National Ports Authority (paras. 140-153);

"We have devoted a good deal of thought to this matter and we are firmly of the opinion that there is a need for some central machinery which, while still seeking to take the fullest possible advantage of local initiative and responsibility, will make it possible for a national policy for the ports to be formulated on the basis of the recommendations made in this Report, and for the execution of this policy to be kept under continuous supervision".

This expressed a desire to combine the advantages of a national authority with those accruing to port trusts, autonomous except in the field of national policy making. Some of the Authority's most important functions would be to deal with port development and capital investment, as well as with related matters such as pricing policies;

The Authority "should be empowered and required to grant or withhold all items of capital development above a minimum figure at all ports, whether financed out of borrowing or out of reserves",

and, "the Authority should seek to encourage investment in suitable cases as well as to discourage it in others. It should have the power to veto schemes in the last resort and direct ports to undertake schemes which it regards as essential. Ports should be able to appeal to the Minister of Transport against such vetoes or directives, but we hope and expect that recourse to this provision would seldom be necessary".

In paragraph 143 the Committee decided against the idea of vesting the role and the power of the proposed National Ports Authority in the Ministry of Transport itself. Among the reasons given was the following;

"...in the case of certain functions which we regard as vital, e.g. control of capital investment, machinery for hearing of appeals may be needed and we would not think it desirable for the Minister of Transport to consider appeals against decisions made by his own staff".

It is of interest to note also that the Committee rejected the idea of ports as a "public service", entitled on occasion to subsidy;

"There are, in our view, no social or other reasons why the ports should have to be supported by the tax-payer; it is not in this way that an efficient and economic port system can be achieved".

It wanted the National Ports Authority to evaluate any investment proposals by looking at the economic benefit accruing and comparing this with economic cost. Perhaps not surprisingly the operational details were not spelt out! Any scheme which was sanctioned should be financed by the port concerned by raising a loan on the open market (to supplement internal financing, if any). If this was impractical, the Government might assist by making a loan as "the lender of last resort" and "the loan should be at the prevailing rate of interest, since an artificially low rate would amount to a subsidy". Exceptionally, a subsidy by way of a capital grant might be justified, e.g. if the port development was desirable "in the context of a Government backed development plan" for a particular region or area.

Rochdale then, did not simply point a finger at under-investment in British ports. But, despite wide terms of reference, neither was the Committee in a position to consider exactly where and how much should be spent to bring Britain's port facilities up to an acceptable standard. Instead they considered it to be one of the duties of the proposed National Ports Authority to stimulate the required investment, as well as to tackle the exceedingly difficult problem of assessing the relative merits of the investment proposals which might then be forthcoming. This aspect of port planning will be discussed later and an attempt will be made to relate it to something which the Report makes but brief mention - the role of ports in regional development programs.

But first, what of events post-Rochdale?

1.2 THE NATIONAL PORTS COUNCIL and the HARBOURS ACT, 1964.

The Government accepted many of the recommendations contained in the Rochdale Report, published in September 1962. In July 1963 it created the National Ports Council (hereafter referred to as the NPC) as a non-statutory body with Lord Rochdale as its first chairman, in order that it might undertake preparatory work prior to its establishment as an independent body when the Harbours Act 1964² received the Royal Assent. This was " an Act to establish a National Ports Council for the control of harbour development and for giving financial assistance for the improvement of harbours; to make other provisions respecting the construction, improvement, maintenance and management of harbours...".

Section 1(1) of the Act states "there shall be a Council to be called the National Ports Council, which shall be charged with the following duties;

- a. formulating comprehensive plans for the improvement of existing and provision of new harbours in Great Britain and of services and facilities provided at such harbours;
- b. promoting the execution of such plans (so far as they are approved by the Minister);

and,

- d. tendering to the Minister advice with respect to the taking of action calculated to secure the improvement, maintenance and management of harbours in Great Britain in an efficient and economical manner and the adequate means of access to such harbours by road and rail.

In one important respect the role of the Council differed from the proposals made by the Rochdale Committee. Instead of being an Authority with executive powers, the Council was to act merely as an advisor to the Minister of Transport, although it did have powers to collect statistics and other information, and to initiate research.

Section 9 of the Act makes important reference to the control of harbour development;

"...the Minister, with a view to securing the proper control in the national interest of schemes of harbour development that appear to him to involve expenditure of a capital nature, may by order, prohibit, in such cases as may be defined in the order by reference to size, cost, relation to other projects, purpose or any other criterion occurring to him to be appropriate, all persons from undertaking, or securing the undertaking of any of the following projects" - the most important for our purposes being - "the execution of works for the

construction, reconstruction, improvement or repair of a harbour".

In accordance with this section, the Control of Harbour Developments Order, 1964, was issued in September that year.* This prohibited the undertaking of harbour developments (as defined) where the cost of the project exceeded £500,000, except under an authorisation granted by the Minister under section 9 of the 1964 Act. Thus, contrary to the Rochdale proposals, it is the Minister of Transport who takes the decisions rather than the NPC, although the Minister is obliged to consult with the Council before giving a decision. With the Council in an advisory role, there is no scope for the appeal procedure envisaged by the Rochdale Committee.

The Government, in accepting that there was a pressing need for injection of capital into the ports, was at the same time obviously concerned lest resources be wasted by unnecessary development. One supposes that the basic fear was that development would occur at too many ports resulting in extravagant over-provision of facilities if money were made freely available or, alternatively, no really worthwhile development anywhere if limited resources had to be divided amongst too many ports. Hence the concept of a national body to prepare a national plan. But the body so created, by being purely advisory in nature, was devoid of the authority to take firm decisions on the best locations for port development and to initiate those schemes considered desirable. With the cost of any substantial new works or improvement almost certain to top the £500,000 limit set by the Government for projects not needing Ministerial approval, it was making sure of being able to take an active part in assessing their value. This, then, was the political setting in which the NPC had to try to evolve principles by which to guide the ports in making their own plans and proposals for development, and against which their ideas had to be judged.

* Article 3a of the Control of Harbour Development Order 1964, Statutory Instrument 1386 of 1964 (published September 15, 1964), implemented Section 9 of the Harbours Act 1964.

However, the figure of £500,000 was raised subsequent to the publication of the White Paper, 'Financial Policy for the Ports' in September 1971, to £1m and this was implemented by the Control of Harbour Development (Amendment) Order 1971, Statutory Instrument 1874 of 1971, which came into operation on December 6 that year.

1.3 THE NATIONAL PORT COUNCIL'S INTERIM PLAN, 1965.

The National Ports Council was born in a hurry, probably partly due to the serious ills found in the ports by the investigations of Rochdale and which the Government were eager to cure; but perhaps also because British ports were beginning to come forward with major investment proposals after a long period of relative inactivity. From its creation until the end of 1964 the Council received details of investment schemes estimated at about £53m. Other schemes were being prepared by port authorities but were not yet ready for submission to the Minister in accordance with section 9 of the Harbours Act. In this situation the NPC was more than likely feeling a little rushed; it had not yet acquired the statistical data or the analytical framework needed to enable it to devise a 'definite' national plan and so give a fully considered opinion on the individual proposals. But neither did it want to wait until this situation had been rectified for fear of either losing the opportunity to comment on schemes or of causing unreasonably delay. As the Council's Annual Report for 1965 commented; "it became clear at an early stage that substantial improvements to the ports of Great Britain would be required before a full plan of development for the ports could be drawn up" ³.

Thus, in July 1965 the NPC published an 'Interim Plan' ⁴ in which it backed most of the investment proposals which had been devised by a number of individual port authorities. Specifically it recommended development schemes at 14 ports involving the construction of about 70 new berths and the renovation of about another 46, involving capital expenditure in the region of £150m. The Council was satisfied that "there was no danger of over-investment in these proposals. The arrears are serious and the prospective growth of traffic considerable". In effect, the Council was stating that there was a prima facie case for development at the 14 ports; nevertheless,

"for each project coming within the scope of the Harbours Act, the port authority concerned will be expected to prepare a fully documented assessment and submit it to the Minister for examination and advice by the Council...After detailed reviews of this nature it may well be that modifications would have to be made to the projects which are set out in the Interim Plan but the Council are satisfied that the broad pattern of development which is put forward here is sound".

The first of the following two tables describes the nature of the investment proposals for eight of the fourteen ports covered by the Interim Plan. The ports selected are in no sense the eight largest in Great Britain but are representative of locations where schemes were in hand to deal principally with traffic other than bulk commodities. It is worth noting the quantitative importance of London and Liverpool and the inclusion of the Portbury scheme, which will be considered in more detail in the following section; how insignificant too appears the £500,000 'limit'. The second table serves to summarise the history of the selected investment schemes, the content of which will be illuminated by the following brief comments.

Southampton: a proposal to spend £16m (rather than the £12m estimated in the Interim Plan) appears to have met opposition in the NPC and/or the Ministry of Transport. As the scheme allowed for the piecemeal construction of additional facilities, the British Transport Docks Board was authorised to spend £2.5m on a single container berth. In 1969 an application was lodged for section 9 authorisation to spend £11.4m on a further three container berths.

Liverpool: by 1965, when formal application was lodged for the construction of 14 (largely 'conventional') berths, the cost of the new dock at Seaforth had risen £10m to £45m. Presumably the NPC liked neither the cost of the scheme nor its emphasis on conventional cargo handling. The NPC study of the scheme and consultation with the Mersey Docks and Harbour Board led to a revision of the proposal, to provide ten berths at a cost of about £33m but better adapted to modern handling techniques.

Clyde: the Annual Report of the NPC for 1966 refers to the newly formed Clyde Port Authority having put forward a scheme for a container berth at Greenock rather than a scheme for major development up-river. The Interim Plan, however, gave backing to both these proposals and it is not clear whether the idea of a new dock in Glasgow was dropped on the CPA's own initiative or because it was told informally that section 9 authorisation would not be granted.

Grangemouth: progress on the new entrance lock here has had a chequered history, firstly under the auspices of the British Transport Docks Board and then under the control of the new Forth Ports Authority who, in 1968, made a new application under section 9. Revisions followed consultations and at last construction got under way; when completed in late 1973 it will allow vessels up to

Description of selected investment proposals as envisaged in
the Interim Plan.

Port.	Proposed investment.	Estimated cost, £m.
London (Tilbury).	Extend new branch dock in Tilbury (enclosed) in two stages yielding respectively 7 and 3 new deep water berths, most of them for container handling.	15
Southampton (Western Docks).	Extension of (tidal) docks to provide 6 new berths. (Envisaged by BTDB as part of a long term plan to provide 30 berths costing about £60m.)	12
Bristol (Portbury).	Construct a new enclosed dock comprising large entrance lock and 9 deep water berths.	27
Liverpool (Seaforth).	First stage of a new dock providing 14 berths using the existing lock to Gladstone Dock. (Envisaged as part of a long term plan to provide a total of 32 new berths and new lock).	35
Clyde.	Glasgow: new (tidal) dock at Shieldhall with 6 berths (or new dock downstream at Erskine, if preferred by CPA). Greenock: provision of tidal container berth.	7 1.5
Grangemouth.	Construct new entrance lock and dredge approach channel, giving deeper water.	6.9
Leith.	Construct new entrance lock, giving increased depth of water at existing (enclosed) docks, and enclosing the existing outer tidal harbour. (Work begun in May 1965, just before publication of Interim Plan).	5-6
Hull.	Extension of (enclosed) King George Dock to provide 7 new conventional berths. (Envisaged by the BTDB as the first stage of a scheme which would eventually provide a further 12 berths and a new entrance lock).	9

Source: National Ports Council, 'Port Development - An Interim Plan'⁴.

A History of selected port investment proposals.

Scheme	Application under Section 9		Ministry of Transport decision		Revised est.cost		Year in which construction	
	Date	Estimated cost £m	Date	Authorised	£m	Started	Finished	
Tilbury:								
Stage 2	1965	9.5	1965	Yes	14.1	1965	1968	
Stage 3	1966	5.5	1966	Yes	5.7	1967	1968	
Southampton:								
West Docks ext.phase 1	1966	16.0						
			(scheme greatly reduced in size after discussion with NPC-- see next entry)					
West Docks Container berth	1966		Jan.1967	Yes	2.5	1967	1968	
West Docks	1968	1						
			("additional facilities for container berth)					
Bristol:								
Portbury	May 1964	27	July 1966	No				
West Dock	Apr.1967	15	July 1968	No				
Liverpool:								
Seaforth	1965	45						
Seaforth (revised)	1966	33	Mar.1967	Yes	33.1	1967	1972	
			(scheme modified after discussion with NPC -- see next entry)					
Clyde:								
Greenock	1966	2.4	Mar.1967	Yes	2.4	1967	1969	
Grangemouth:								
Entrance lock	1965	7.835	1965/66?	Yes				
second revised appln.	1969	8.01						
			("estimated cost")					
Leith:								
Entrance lock	1964	5			6.0	1965	1970	

Source: Data on section 9 applications and Ministry decisions mainly from NPC Annual Reports; other data from 'Port Progress Report' 1969.

24,000 dwt to enter the port.

The changing picture since the appearance of the Rochdale Report may now be summarised. The Committee was anxious to stimulate investment in the ports. Table 18 on p.76 of the Report gives the figures for investment expenditure by port undertakings from 1949 to 1961 and shows that the figure of £7.7m for the first year of that period had steadily risen to a peak of £23.6m by 1961. But this figure still represents 0.6% of the total national expenditure of £4,100m. Although direct comparisons are difficult to make, the 1960 total is still a low figure when it is considered that £162m was spent on shipping, £168m on the railway system and £83m on roads and lighting. By comparison, there has been a steady if not spectacular increase in port investment 1962-70;

Capital Expenditure by the Ports of Great Britain, 1962-70.

'62	'63	'64	'65	'66	'67	'68	'69	'70	
22	19	20	24	35	46	45	48*	40*	£m.

Source: Digest of Port Statistics 1969⁵.

*NPC Annual Reports, 1969, 1970.

The slow start was probably due to the length of time taken to make plans; whether the increase after 1964 can be attributed to any stimulatory effect of the newly created NPC is left to conjecture. Certainly it was willing to embrace most but not all of the schemes then being put forward by the port authorities in its Interim Plan. Subsequently both the NPC and the Ministry of Transport became more selective and a number of schemes have been rejected or reduced in size. Of the eight selected ports, the cost of the schemes other than those at Leith and Grangemouth was estimated at £107m in the Interim Plan; but the value of schemes authorised amounted to only £66m of which £54m was accounted for by Tilbury and Seaforth! The schemes included here do not take account of investment in specialised facilities such as the construction of a deep water iron ore terminal at Port Talbot. Tables 2 and 3 of 'Port Progress Report'⁶ give a comprehensive list of port development schemes in recent years.

It is noteworthy that schemes referred to the NPC under section 9 of the Harbours Act come from statutory and non-statutory bodies, as well as established port authorities of one type or another. The following examples are taken from a list of submissions to the Council in 1971:-

<u>Applicant.</u>	<u>Description of Scheme.</u>	<u>Estimated cost.</u> £
Blue Star Line and West Coast Stevedoring Ltd., Liverpool.	Construction of a cold store transit shed and handling equipment at Berth S1, Seaforth.	780,000
Dover Harbour Board.	Construction of roll-on/roll-off berth and related works in Eastern Docks.	2,500,000
Falmouth Container Terminal Ltd.	Construction of deep water trans-shipment terminal for containers.	10,500,000
British Railways Board.	Provision of an end loading ramp and associated facilities at Fishguard Harbour.	624,000
Earlpar Development Company Ltd.	Reclamation of Bathside Bay, Harwich, and development of container and Ro-Ro berths.	12,378,000
South of Scotland Electricity Board.	Construction of an oil jetty at Inverkip, Firth of Clyde, to supply new power station.	1,782,000

Thus, with the advent of the NPC, there was created for the first time in the history of the British ports, a system to allow for the external examination, and in some cases pruning of the ambitions of the various port authorities to expand or improve their facilities, though it must be added that an indirect check had existed and continues to exist via the money market when port authorities seek to borrow. The examples above also demonstrate that maritime orientated projects of essentially non-maritime undertakings are not beyond scrutiny by the Council.

Considering primarily port development projects, this examination might be regarded as a successful and long overdue deployment of economic rationality. Before reaching any conclusions on this score

it is necessary to examine not only the result and decisions arising out of the vetting procedure, but also the steps of that procedure. This would have been impossible, however, but for the exceptional existence of published information on the calculations and evaluations of a major scheme which was submitted for section 9 authorisation by the Port of Bristol Authority ⁷.

1.4 THE PORT OF BRISTOL AUTHORITY'S PORTBURY PROJECT.

Garnett⁸ has commented that although port investments increased substantially post-Rochdale, the optimum system would not be achieved by stimulating investment per se, for it is necessary to ensure that, i. investment is profitable wherever applied, and ii. the investment makes the most profitable possible use of national resources. The second does not necessarily follow from the first and Garnett finds that in the case of port development it has not, in practice, done so. This conclusion is based on the fact that ports have been able to convince the authorities that their investments will earn the necessary return on capital, but the national system which has been established does not maximise discounted benefits over costs from a national point of view.

An example of the problem facing those charged with the task of attempting to appraise investment proposals is the question of providing for the growth of container traffic generally, as well as on specific routes. Future development at over half a dozen U.K. ports has been formulated with the object of capturing a significant amount of the trans-Atlantic container trade, resulting in possibly ten specialised berths when it has been calculated that as few as four would have the technical capacity to handle the 1970 volume of trade which could be containerised on the basis of physical characteristics. Liverpool and the Clyde both attempted to justify their claims on the assumption that each alone would attract the North of England traffic. Both ports now have container terminals; but attempts to provide Bristol with similar facilities met with Government opposition. The case of Portbury is important in the history of port planning for it gives a unique insight into the application of investment appraisal methods and the problems encountered in attempting to apply them in this sphere.

A Description of the Portbury Scheme.

Increasing trade through the port of Bristol had led to intensive development of the constricted sites constituting the city's principle dock system, the Avonmouth docks on the north-east side of the Avon, not only for conventional port working, but also for the processing of bulk cargoes (for details of the type and development of these activities see F. Walker, 'Economic Growth on Severnside'⁹). Additional traffic and a growing concern for the inability of the existing facilities to

cope with further expansion, particularly with regard to the increasing dimensions of bulk carriers (the lock built in 1908 had a length of only 875' and a width of 100') had, by 1963, led the port authority to acquire 2000 acre site at Portbury on the Somerset bank of the Avon as an initial step towards the realisation of a scheme to construct a new dock which had first been considered as early as 1958. The Rochdale Committee had emphasised - indeed over-emphasised! - the further growth to be expected in Britain's maritime trade and consequently the Port of Bristol Authority felt that it was now opportune to begin work on the new dock. Accordingly, a scheme was formally submitted to the Minister in May 1964, in anticipation of the coming into effect of the provisions of section 9 of the Harbours Act which did not, of course, receive the Royal Assent until June of that year.

Stage I of the scheme involved the construction of an entrance lock 1200' in length, 140' wide with a depth of 47'. The intention was to develop 1000 acres of the site initially to provide 9 deep water berths. The planned utilisation of these berths set one aside for petroleum imports, one for the import of zinc ores and concentrates, three for container traffic and four berths for general cargo. The Portbury project was included by the NPC in their Interim Plan but two features distinguished it from the other port developments recommended by the Council in that publication. First, it involved exceptionally heavy capital expenditure in relation to the amount of new port capacity to be provided - £27m for 9 berths. This high cost was accounted for by the fact that construction would take place on a greenfield site, providing a large lock on an estuary of very high tidal range; and the scale of the project was such as to allow for an ultimate expansion up to 40 berths. Stage II in fact was planned to provide a further 16 berths at the relatively modest cost of about £23m. The second feature of the whole project was that its economic justification postulated a higher rate of increase of general cargo tonnage passing through the Port of Bristol than that required in support of the developments proposed at the other major port dealt with in the Interim Plan.

The Portbury scheme was undoubtedly one of the most ambitious port development projects ever proposed for this country and envisaged nothing less than the creation of a third major international port for Britain. In view of its exceptional features the Government thought it right to order an intensive examination of the proposals, a process which resulted in the passage of more than

two years before the Minister announced his decision on the application. The 1964 Annual Report of the NPC noted that "major schemes require lengthy examination" and in its Report a year later it indicated that it had tendered its advice to the Minister in May 1965 and went on to state the nature of that advice, namely that "the scheme should proceed". The disclosure of a Council recommendation prior to Ministerial decision had not occurred with any other submission to the Ministry. It was, according to a statement made in the White Paper on Portbury⁷, based on two primary considerations; firstly the desirability of developing a third major deep sea liner terminal, and secondly, the general case for providing first class new capacity at such a major port as that of Bristol.

In that twelve month period before expressing favourable views regarding the project the NPC had sought further information from the Port of Bristol Authority. Specifically the NPC wanted to compute discounted cash flow rates of return on the investment and discovered that the figure on an expenditure of £27m ranged from zero to 7.7%!, depending on the traffic forecasts employed. It is noteworthy that the dcf rate of return over two selected periods of 50 and 80 years, based on Port of Bristol Authority data, was of the order of 7.5% compared with consultant's figures of nil and 0.9%. Yet at the same time the PBA registered a strongly held view that this method of assessment was inappropriate to major port projects such as this!

The NPC saw the principle advantages of development at Portbury as being:-

- i. the creation of really deep water berths the national need for which appeared to be self evident and which would cater for the largest foreseeable bulk carriers of commodities other than petroleum and iron ore. The provision of new general cargo berths for export traffic would rectify an imbalance in the trade through Bristol.
- ii. an opportunity to relieve the inevitable pressure on the ports of London and Liverpool which would be likely to arise in the late 1970's given a steady growth in the national economy. Additionally the Council thought it right to bear in mind the part which planned location of port facilities could play in making possible a shift of emphasis away from South East England.

- iii. completion of the M4,M5 and Severn Bridge would provide Portbury with first class road communications which no other port would have.

But the Council added;

"There is very little experience to go on in assessing the merits of a port investment scheme of this nature. In the Council's view the problem is one which calls more for an exercise of judgement than the application of an accounting formula".

This was rather a strange statement for them to make in view of the fact that they had insisted that a dcf exercise be conducted - perhaps that was merely intended to prove the truth of their first conclusion! But they went on to illuminate;

"Nevertheless it is right to make as judicious appreciation as possible of traffic forecasts (on which revenue expectations necessarily depend)..."

"...the Council consider that the dcf return will be near the 7.5% based on the Port of Bristol Authority forecasts. While we should have liked to a higher indicated rate of return emerging from the discounted cash flow exercise we feel bound to observe, first, that the whole traffic forecasting exercise is, for a scheme like this, highly speculative, and second, that we are not satisfied that in the current situation dcf or any other purely financial analysis should be the overriding criterion for reaching decisions on port projects for long term investment".

and,

"...the Council have concluded that on balance the advantages of the Portbury scheme outweigh its disadvantages. They feel that special importance should be attached to the matters of communications and labour relations and also wish to lay emphasis on the fact that their conclusions have been reached on the assumption that the Government has a firm intention to further the industrial development of the South West and in particular of the immediate hinterland of Bristol, as a means of reducing the pressures of all kinds...in the South East".

After receiving all of this advice from the NPC the Ministry of Transport deliberated for a further fourteen months. Towards the end of this period material became available which cast an entirely new light on the subject of the destination of imports and the origin of exports, port planning in the past having been conducted with little help from statistical or factual information of this kind. The information arose from a study done by Martech Consultants Ltd., who

carried out a major survey on behalf of the Port of London Authority in respect of dry cargo traffic flows except iron ore and coal in 1964. The NPC had the opportunity to study this data. They conceded that the 'wrench' of established traffic flow patterns through existing ports would have to be considerable for Portbury (or any other 'third' terminal) to be successful. This principally meant the securing of traffic handled by London and Liverpool. The Council were of the opinion that such a change "in the environment" to be desirable from a planning point of view, but recognised that "the extent to which this alteration in the environment would be possible, even over the long term, is a matter of judgement. It is a fact which would have to be accepted that the success of Portbury as a counter-magnet to London and Liverpool depends to an important extent on the Government's determination to change the existing pattern of industry".

These views were expressed by the Council in a memorandum to the Ministry dated June 30, 1966, in which it also reiterated its support for Portbury for reasons essentially similar to those it had expressed in May 1965. In July 1966 the Ministry published a White Paper on Transport Policy¹⁰ which recorded the Government's first reactions to the NPC's Interim Plan of which Portbury was a part. It accepted the overall plan in principle and declared its intentions to "press ahead with an expanded program of port development". But the White Paper also went on to reject the Portbury scheme in the following manner;

After studying both "recently completed analyses of port traffics and their relationship to port hinterlands", and also trends in containerisation which suggested that fewer berths are required than had previously been thought, "the Government believes that the case for allocating a substantial part of the resources available for port investment to the creation of a new liner terminal, whether at Portbury or elsewhere, has not yet been made out... The Government is therefore inviting the National Ports Council... to consider alternative proposals for the development of the port of Bristol.."

As already indicated, the stated reasons for the Minister's decision were set out in detail in the Portbury Paper, an unusual document in so far as it made public both the Government's reasons behind a negative decision and included a memorandum from the NPC disagreeing with the Government's views, whose main arguments can be summarised thus:-

- 20-
1. the data collected on behalf of the Port of London Authority had demonstrated that two thirds of Britain's exports travel less than 75 miles to the port of export and that some 80% of the inward flow of goods travels less than 75 miles from the port of import, from which it may be concluded that "Britain's ports have concentrated and clearly defined hinterlands". It was then apparent "that there is relatively little export traffic within a radius of 75 miles of Bristol which had not already been forecast as using that port". In other words Bristol's hinterland was regarded as having insufficient economic activity to generate the export traffic envisaged by the PBA (see 2 below).
 2. the Ministry had analysed the data using a gravity model, "not only to describe the existing situation but also as an attempt at forecasting future potential flows based on existing trends". This suggested a level of 0.26m tons of dry cargo - a figure well below the 2.7m used in support of the scheme by the PBA. There was, however, fair agreement on the future level of Portbury's imports. (it is well to remember, however, that this model under-estimated by one third the actual exports through Bristol in 1964, see Table 6 p.55 of reference 10, while giving totals slightly in excess of actual for London and Liverpool both for exports and imports. A more important point is that the model merely assumed the continuance of existing trends, an assumption which may well be invalidated when a large new investment project is introduced).
 3. even if Portbury could attract more exports than predicted, this would only be achieved at the expense of diverting traffic from other ports and which originated in areas 75-125 miles away. But this could account for no more than a 25% increase and would be unlikely to happen due to the incurring of additional inland transport costs. Summarising these factors, paragraph 26 of the Report states;

"...if Bristol attracted the whole of the increase of deep sea and medium sea exports of the Midland region (say 500,000 tons) and was successful in attracting one third of that region's existing exports of that type (say 330,000 tons), and if these tonnages were entirely additional to the

gravity model's estimate of 260,000 tons for Bristol in 1980, which, strictly speaking, they are not, it will be evident that a further 1.5m tons of exports would still be required to be diverted from ports to which they would otherwise flow in order to reach the Port of Bristol's figure of 2.7m tons".

Alternatively, the generation of the necessary volume of exports might be achieved by the exercise of a Government policy with regard to population distribution and location of industry, one which would specifically increase the population of Bristol and its hinterland by 3m by 1980, a figure based on the observation that on average, one million people tend to generate something of the order of 500,000 tons of exports, but one inevitably open to wide variation.

4. with respect to the 'container revolution', the trend towards containerisation "weighs heavily against the scheme...casting considerable doubt on the desirability of investing a very large sum of money in a very large number of berths (a total of 3 in Stage I!) especially in the light of arguments...about the extreme unlikelihood of Portbury attracting sufficient cargo to make it viable". More important, "it almost destroys the argument in favour of Portbury as a third major liner terminal as insurance against the risk of congestion and dislocation at London and Liverpool".

Subsequent events:

The 1966 Annual Report of the NPC noted the Minister's rejection of the Portbury scheme while adding that "the Council continue to hold the view that the scheme was one which it would have been in the country's long term interests to put in hand without delay".

The Council had been requested to consider possible alternative schemes of development to meet the need for more capacity in the Port of Bristol and in April 1966 the port authority put in a new application to the Minister for permission to construct a smaller dock. This new 'West Dock' was to be located on a part of the Portbury site closer to the existing Avonmouth docks. Estimated to cost in the region of £15m it would again be provided with a large lock and deep water but would create only 5 berths initially, though capable of subsequent expansion.

Notwithstanding the legislative changes of the 1964 Harbours Act, many large port investment schemes still require a Private Act

to give the port authority appropriate legal powers (e.g. with respect to the purchase and use of land and the control of navigation), and to this end Bristol Corporation, the owners of the port, lodged a Parliamentary Bill with regard to the West Dock proposal.

Significantly, the drafting of this Bill had the effect of exempting the scheme from control by the Ministry of Transport under section 9 of the Harbours Act. Nevertheless it had a stormy passage through Parliament, escaping an attempt to insert a saving clause making it subject to section 9 control, and being strongly objected to by the British Transport Docks Board who were concerned at the possible diversion of traffic away from their already under-utilised South Wales port facilities. After an initial refusal by the Minister of Transport to make known the advice received from the NPC to a Select Committee of the House of Lords, who considered the Bill in May 1968, he finally made copies available, doing so because a precedent had been created in respect of a preceding proposal for the same area, i.e. Portbury. Apparently the NPC had stated that it could not recommend the scheme if the sole test was to be that of an early and substantial return on the investment, but could do so only on the basis of certain assumptions and considerations. Perhaps the most important of these was that "Bristol must continue as a port and should be able to hold its own within the developing national pattern". The expression of support by the NPC was, if anything, more equivocal than in the case of the Portbury scheme. This is perhaps understandable since, in addition to any sincerely held doubts about the desirability of West Dock, the Council had received a severe and public rebuff when the Minister had rejected their advice on Portbury.

During a meeting with Clyde Port Authority's Finance Manager the view was expressed that the NPC had lost a great deal of respect from the ports as a direct consequence of the Portbury affair. Furthermore, at this point in time the Council's future was at stake in view of the discussions taking place about the possibility of nationalising the major ports.

On July 5, 1968 the Minister announced his decision not to approve the West Dock scheme and after a debate in the House of Commons three days later the Bill was refused a second reading. In its Annual Report for 1968 the NPC summarised its position with regard to the whole issue in the following manner:

"Although recognising that the direct economic and financial case for the scheme appeared weak, the Council's consensus of opinion was to support approval on wider considerations, in particular because it was clear that only through the West Dock scheme could the Port of Bristol achieve a significant measure of further development".

Undeterred the PBA made a third application for a new dock development on the Somerset bank of the Avon in March 1970. Following pre-election statements by Conservative spokesmen, the new Government granted section 9 approval in November the same year. Again the NPC recommended this scheme for approval, as they had done for the earlier ones, on the basis that without such development the Port of Bristol would decline. The estimated cost of this scheme, known as West Dock 2, at £12m, was less than that of its ill fated predecessors thanks to reconsiderations of the layout.

At the time when protracted deliberations over the future of Portbury were still some months from being concluded, there appeared an article devoted to a consideration of its potential impact, as well as that of the Severn Bridge, which was then nearing completion, on the economic geography of Severnside and South Wales¹¹. Asking questions such as "Does Bristol or Cardiff stand to gain most?", it pointed to the polarisation of issues into essentially a battle between the English and the Welsh, while emphasising the need for a ports policy for the Bristol Channel! While Bristol had become a congested port, a situation which prompted the submission of the Portbury project, the South Wales ports were suffering an overall decline in traffic despite growing imports of iron ore and oil; too little cargo and too many ports! Faced with this situation the NPC recommended improvements at Swansea and Newport for the handling of general cargo, to the neglect of Cardiff, Barry, Port Talbot and Milford Haven. For bulk cargoes the oil industry found its own solution for crude oil imports at Milford Haven, while the Government gave approval for the construction of an iron ore import terminal at Port Talbot to serve the steel centres of South Wales, a function which Cardiff had aspired to fulfilling. The idea that Cardiff had no role to play in the regional need for port facilities had prompted the city to produce its own plan in November 1965 in which it claimed to be capable of providing facilities equal to those proposed for Portbury, all for a mere £7m and on a site of about 340 acres! The scheme, needless to say, was

not taken seriously by the Government, but at the same time it would appear that commentators were equally sure the the Minister of Transport could do no other than concur with the NPC over the case for Portbury!

This short illustration is intended to show just one aspect of the kinds of difficulties facing any body charged with the task of formulating a 'National Ports Policy' for the U.K. Looked at from the national standpoint, a few large new ports incorporating efficient transport technology, if strategically located, could handle much of our general cargo trade. But the economy of many port locations and their immediate hinterlands is dependent to some extent on having some share, even if it constitutes only a small percentage, of the total traffic flow. The closure of ports cannot be justified on the basis that cargo can be handled more efficiently (if not more cheaply) elsewhere but in view of the number of ports overall there will probably continue to be some manner of firm financial control on the improvement of many of the smaller port facilities where even a modest increase in traffic could not justify even modest expenditure.

1.5 A NATIONAL PLAN FOR THE PORTS.

The insular nature of the United Kingdom has an obvious implication for its method of trading. Whatever this country requires from abroad or wishes to send abroad must pass through its ports, which might be taken to include airports though the percentage of the total traffic flow shipped as air cargo is insignificant in terms of volume. Relative to its land area the coastline is long resulting in a high proportion of the country being within easy reach of the sea. Historical and geographical factors, coupled with the extremely low cost of sea transport, have combined to endow this country with a large and diverse collection of ports, created initially to serve local needs and often to cater for specific commodities, the best example being the shipment of coal. But the development of improved forms of land transport and the progressive increase in ship size have eroded the *raison d'etre* of many of the smaller ports and the concentration of population has tended to the same result. There has, in consequence, been a natural tendency for the major ports to become individually more important while many of the smaller ones, rather than closing, have changed their characters quite radically to accommodate a narrow range of specialist services or the handling of commodities for local industries. Such a situation has arisen because of the continuing effect of the high ratio of coastline to land area, the influence of which has been greatly enhanced by the developing motorway system and rail freight innovations, the low cost per ton-mile of sea transport and the high degree of locational inertia affecting industry and population.

Demands and Pressures on the Ports.

Ten years have now elapsed since the Rochdale Committee published its findings. The principle concern of the Government in 1962 was the general low level of investment in British ports compared with their continental counterparts; the problem now being faced is one of potential over-investment that follows from the rapid technical advances that have been made in the last decade in the field of transportation.

Each port is subject to a series of various pressures depending on the permutation of industrial and transport activity it serves.

The important point to note is that the influences governing the decisions from which these pressures and demands on the ports themselves result often extend well outside the port's sphere to the degree that the ports may be able to influence such decisions only marginally. A simple example is the siting of aluminium smelters in this country. Of the three sites, Holyhead Outer Harbour, Invergordon and Blyth - decided upon primarily by negotiation between the Government and the aluminium companies - only the latter location is one that can be described as an established port. A more important example, and one far more reaching in its consequences, has been the rapid movement towards unitisation and containerisation of general cargo. This has largely emanated from the decisions made by international transport interests, an increasingly important source of influence on transportation methodology and especially so in Britain, distinguishing as it does, ports from road and rail. Here the initiative for change has invariably come from the 'shipping development planner' rather than the port operator, with the result that ports become essentially the servants of shippers. At one extreme such interests may conceivably declare that unless they can have the facilities they want at the port of their choice, they do not want facilities in the country at all! But most of the major ports, and even those lower down the 'league table', want this new kind of business and competition to get it has been strong. Yet the cost of keeping up with recent advances in transportation technology is high. By forming themselves into consortia, the international shipping and transportation companies have been able to pool capital resources to meet these costs and in the classic case of containerisation they have sought to involve themselves fully in the 'through' concept of international 'door to door' traffic movement. Fully, that is, except at the land-sea interface. Here it has been up to the ports to equip themselves to cater for the new innovations. The situation immediately raises important issues; competition between the ports; the possible duplication of facilities and their creation in excess of demand; the financing of improvement schemes; the provision of a communications infrastructure to serve the ports of a standard commensurate with the type and cost of new facilities e.g. sections of urban motorway to link the docks with the national network.

The need for some kind of national plan is immediately obvious. Yet the pressures of various kinds, all generated by the service character of the port industry, limits the extent to which positive port planning is practicable. Flexibility must be a prime consideration. In taking an overall view of the problems facing the nation's system of ports, the kinds of questions to be answered are;

what will be the type and volume of future traffic for which provision must be made?

what kind of facilities will be required to cater for this traffic?

and where ought these facilities be located?

When considering the attempts which have been made to formulate a national plan it is well to remember the contradictory flavour of the Government's desire to have the major ports remain competitive whilst showing genuine concern over the possibility of over-investment in new port facilities.

Towards A National Plan.

Rochdale had described the lack of any central planning as a fundamental defect of the port industry in Britain and recommended the establishment of a National Ports Authority to rectify this situation. However, the National Ports Council created under the 1964 Harbours Act, which implemented many of the Rochdale Committee's recommendations, fell short of what the suggested Authority would be capable of achieving. It was devoid of executive power to take control of the task of reshaping the existing system of British ports, i.e. it could not build or operate harbours or operate particular development projects; its planning function was to be purely indicative. Nevertheless, section 1 of the 1964 Act charged the Council with the difficult task of formulating and keeping under review a national plan for the development of harbours in Great Britain. The fact that over eight years have now elapsed without the appearance of such a plan might be taken as some indication of the problems inherent in any attempt to fulfill such a remit. The appearance of

the NPC has, however, made the present system of planning for the ports of Britain a tripartite affair with the Council occupying a central (advisory) position; the port authorities themselves and the Government complete the dramatis personae.

Some consideration has already been given to the role of the ports. Many of the changes that have occurred at the docks could not have been brought about by the ports themselves. They came in response to the appearance of new transport techniques coupled with the desire of the ports to establish themselves in a competitive position within an international transport network; or else they have been stimulated by changes in industrial patterns and infrastructure provision. But ports should not, and indeed have not played purely passive roles with developments being undertaken only in response to external agencies of change. The competitive element in the industry has ensured that ports have made known, both to the shipping lines and the Government, the kinds of facility that it is feasible to provide in their locality. Provision of the facilities demanded by port users requires a detailed knowledge of the economics of their operation, as well as of their physical requirements. Apart from being expensive, port facilities for new methods of cargo handling and increasing size of ship also take a considerable time to build. Decisions relating to investment in such facilities must, therefore, be taken in advance of certain knowledge about the pattern of future development, otherwise they may not be available in time. More important from the ports' rather than the national point of view is the fact that failure to provide such facilities at the right time may easily result in loss of traffic to better equipped competitors. An illustration of the rivalry that can develop between ports is provided by the speed with which roll-on, roll-off berths were provided at many ports on the East and South coasts within a relatively short period after the potential of this method of shipment became apparent. There are also, of course, important implications for these ports in the accession of Britain to the European Economic Community, being geographically well placed to take advantage of any increase in traffic, though how this increase might be shared amongst the ports remains to be seen. The multiplicity of ownership of these ports can only serve to enhance the competition. The Humber ports, Southampton Docks and Millbay

Facing page: Ownership classification of the principle ports.

Trust Ports *

1. Forth Ports Authority;
2. Port of Tyne Authority;
3. Tees and Hartlepool Port Authority;
4. Port of London Authority;
5. Medway Ports Authority;
6. Milford Haven Conservancy Board;
7. Clyde Port Authority.

Municipal Ports ☆

8. Preston;
9. Bristol.

Companies ◆

10. Mersey Docks and Harbour Board;
11. Manchester Ship Canal Company;
12. Felixstowe Dock and Railway Company.

British Transport Docks Board ○

13. Humber Ports (Hull, Immingham, Grimsby, Goole);
14. Southampton;
15. South Wales Ports (Newport, Cardiff, Barry, Penarth, Port Talbot).

British Railways Board ▲

16. Heysham;
17. Fishguard;
18. Newhaven;
19. Harwich.

The above list is intended to be representative only and gives no detail concerning other operators of port facilities at any given location. For example, at the port of Immingham, which is controlled by the British Transport Docks Board, Texaco Ltd., Shell-Mex and B.P. Ltd., and Crude Oil Terminals (Humber) Ltd. all operate installations in connection with the adjacent refinery.

Ownership classification of the principle ports



(Plymouth) are controlled by the British Transport Docks Board. On January 1, 1973 it was planned to inaugurate a Ro-Ro ferry service between Millbay and the port of Roscoff in Brittany, designed to coincide with Britain's entry into the EEC. During the past two years British Rail has been adding Ro-Ro capacity to the passenger services it operates at Folkstone, Parkeston Quay and Newhaven in recognition of the fact of the rapid growth in this type of traffic between Britain and the EEC countries. Portsmouth is owned by the local authority while Felixstowe is both owned and operated by the Felixstowe Dock and Railway Company, a private concern that has succeeded in encouraging a significant volume of traffic to use the port and where confidence in the future has resulted in a plan to double cargo handling capacity to 5m tons per annum by 1975. At Hull, where £17m have been spent on improvements to the port since it was taken over by the BTDB in 1963, a further £3.5m passenger/ferry complex is to be built in conjunction with two new Ro-Ro ferry vessels, adding to the thirty or so regular sailings each week to the Continent catering specifically for this type of traffic.

Maintaining a watching brief over these and other developments affecting British ports is the NPC whose job it is to advise the now Minister for Transport Industries in the Department of the Environment on aspects like loans and grants for expansion and improvement programs including the provision of facilities such as those described above, of which Mr. Ronald Baxter, Chief Economist of the NPC has been quoted as saying; "Roll-on Roll-off and lift-on lift-off container facilities are a very efficient use of resources. There has been big investment in facilities over the past few years and much of these theoretically have a capacity much greater than that at which they are now working". The situation could well be symptomatic of overprovision through competition to cater for an as yet unknown level of demand for such facilities.

In their first Annual Report the NPC said:

"In order to formulate a long term plan covering the ports of the country, it will be necessary to assemble a great deal of information. In the statistical sphere it will be essential to put together a detailed picture of the existing physical facilities for at least the more important ports of the country...information is needed about the inland flow of goods and about overseas origins and destinations of the imports and exports of each port...the assembly of these statistics is fundamental to the Council's planning work".

The underlying assumption of these statements, as indeed of section 1 of the Harbours Act itself, is that given all the necessary information it would be practicable to evolve an overall national plan of physical development for the ports. Although this process of data collection has been underway for most of the Council's relatively short life "it has not been possible to assemble the range and quantity of material on which a detailed plan could sensibly be based". Even in 1966 the Council had concluded that the immense variety in the variables affecting the planning of ports "makes it unrealistic to attempt to plan to cover every contingency; the need to deal with unforeseeable demands in an ad hoc fashion requires a flexible approach". It was felt that the planning effort should be concentrated at each stage on the most critical elements of the problem. The first stage in this process was the production of the Interim Plan, a program of first-aid to remedy the most obvious short term deficiencies of the major ports, particularly in the general cargo field. The plan has been criticised for failing to establish a firm list of priorities. By recommending so many schemes (14) and rejecting so few, it remained for the Minister of Transport to decide where this first shot of capital investment should go. Implementation of the Interim Plan was no sooner under way, with its bias towards the construction of new berths to handle conventional cargo, when the first of many and far reaching changes in transport technology began to make their appearance, in particular the so-called 'container revolution'. Whilst the situation emphasised the need for any national plan to be capable of, and indeed subject to, constant revision in order to take account of such changes, the Council remained satisfied with the broad pattern of developments it proposed should be undertaken.

After the appearance of the Interim Plan the ports began to make the 'running', spurred on by the demands being made upon them and the pressures exerted by port users; there was no lack of enthusiasm on the part of the port authorities to submit development projects. Yet the NPC, whose job it has been to advise the Government of the relative merits of the schemes proposed, still lacks a useful framework for their assessment. While the individual ports are very aware that their continued existence

Demand for modern maritime facilities at the land/sea interface.

'Shipping Development Planner'

1. International transportation consortia.

2. specific industries having a strong maritime influence on their location decisions e.g. oil refining/petrochemicals, iron and steel production, alumina smelting.

Submission of port development projects - a reaction to the external demands and pressures of port users and stimulated by the desire to remain competitive.

PORTS

- a. encourage harbour authorities to perform their functions as efficiently as possible, s.1(1)(c)4;
- b. seek the cooperation of harbour authorities in the formulation of a National Plan, principally in the sphere of data collection on traffic flows;
- c. secure the efficient operation of a group of harbours by encouraging reorganisation into a single authority, s.18(1);
- d. levy a charge on port authorities to meet part of the expense of the Council's activities, s.4(1).

Dialogue between port and local planning authority concerning the physical planning aspects of the proposed port development.

Make available to the ports grants and loans not to exceed an aggregate value of £20m for the following purposes, s.11(1) and s.13(1); Section 4(1) of the Harbours (Loans) Act 1972 raises this limit to £200m; a. the improvement of ports, maintenance and management, s.11(1)(a)(1); b. the acquiring of plant for the carrying out of port operations, s.11(1); c. acquiring land for a harbour or extensions thereof, s.11(1).

Control, in the national interest, of harbour developments in excess of £1m (formerly £200,000), by reference to cost, size, relation to other projects, purposes, and any other criteria, appearing in the order to be appropriate, sections 9(1) and 9(7) were implemented by the Control of Harbour Development Order, 1964; Control of Harbour Development (Amendment) Order increased the limit to £1m.

NATIONAL PORTS COUNCIL

- i. formulating comprehensive plans for the improvement of existing harbours and the provision of new harbours in Great Britain, s.1(1)(a);
- ii. promoting such plans, s.1(1)(b).

tendering advice to the Government with respect to taking action calculated to secure the improvement, maintenance and management of harbours in an efficient and economic manner, and the provision of adequate means of access to harbours by road and rail, s.1(1)(a).

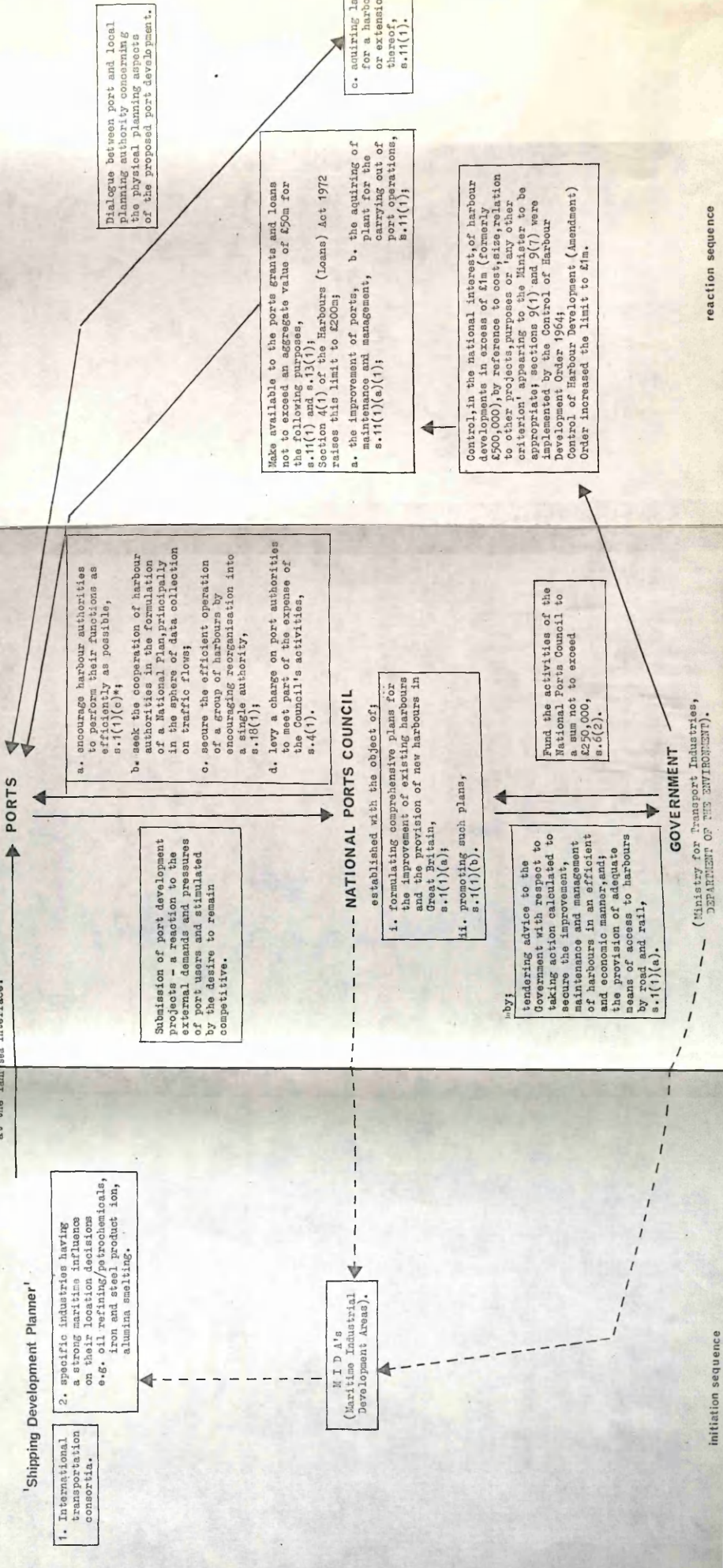
Fund the activities of the National Ports Council to a sum not to exceed £250,000, s.6(2).

GOVERNMENT

(Ministry for Transport Industries, DEPARTMENT OF THE ENVIRONMENT).

initiation sequence

reaction sequence



and competitiveness is strongly dependent upon completion of their development projects, the NPC has to attempt to dissociate itself from a concern for their individual fortunes and consider the provision of port facilities on a national basis and seek to advise against over-investment in excess capacity.

The tripartite nature of the present system of port planning in Great Britain is illustrated in the accompanying diagram. Consideration has been given to the role of the ports and of the NPC in this scheme and it remains to look briefly at the part played by the Government. The right hand half of the figure has been labelled 'reaction sequence' because in essence it traces events following a demand for improved maritime facilities arising principally external to the ports. Operation of section 9 of the Harbours Act is the prime agency of the Government for exercising control over such development proposals as are recommended by the NPC. But even if approval is given, the conversion of a port's plans into reality may still be very much dependent on the securing of finances, either via the money market or in the form of Government grants and loans dispensed at the discretion of the Treasury.

In contrast to this reaction sequence there exists an opportunity for the Government to influence changes in a more positive manner. This is illustrated by the 'initiation sequence' of the diagram and which hinges on the Maritime Industrial Development Area (MIDA) concept put forward by the NPC in 1966. Basically it involves the identification of sites where long term new port and associated industrial development could most advantageously take place. It is the intention to discuss the MIDA concept in more detail elsewhere. For the moment it is sufficient to point to its implications for regional development programs and in this context to the Feasibility Studies that have been published for Humberside and Severnside; we shall return to these later when the problems of port planning will be integrated with the opportunities presented for regional development programs.

1.6 AN ATTEMPT TO NATIONALISE THE MAJOR PORTS.

"The Government's intention to reorganise the ports on the basis of public ownership was stated in the White Paper on Transport Policy (Cmd 3057) presented to the then Minister of Transport in July 1966 following the report of the Labour Party Study Group on the Port Transport Industry".

This statement opens a preface to the White Paper 'The Reorganisation of the Ports'¹² published in January 1969, which sets out the conclusions reached as a result of discussions held with a variety of organisations having strong interests in the ports and which outlines the policy which it was intended to pursue. According to the introductory paragraphs, experience had shown that the Rochdale Committee had been right to conclude that "a Council with purely advisory functions would not be sufficiently effective or influential to secure that essential changes are brought about". In order to control and promote these changes it was now decided to establish a National Ports Authority with the power to determine the nature and shape of the British ports industry. Paragraph 2 of the White Paper concluded with; "such a power can only be entrusted to a body which has the discipline of knowing that it is fully responsible for the success or failure of its policies: this must mean national ownership". Not, one might feel, a particularly convincing argument for nationalisation, a word that appears to have been carefully avoided in the opening statements of the White Paper! As Lord Drumalbyn had pointed out during the second reading of the subsequent Ports Bill;

"The task which lies before a Government when they present a Bill to Parliament is to show that something is amiss and then to show that what is amiss can be remedied by the Bill they are proposing...the only real argument for taking over ownership of the ports lay in a recommendation to strengthen the NPC".

In the same debate Viscount Rochdale emphasised that the National Ports Authority envisaged in his Report was to have been independent but non-operational, having no influence on day to day management and authorising investment in schemes only within the total investment program approved by the Government; it would not have owned any of the ports.

The Ports Bill had virtually completed its passage through Parliament when the 1970 General Election brought a Conservative Government to power. Although it never reached the Statute Book

it is of value in tracing the port planning policy of this country to devote some space to both a consideration of its major proposals and of the arguments to which they gave rise.

Acting through subsidiary port authorities (based essentially on the principle estuaries, in keeping with the kind of reorganisation recommended by Rochdale) the NPA would have replaced the BTDB, together with the authorities for all those harbours handling cargo in excess of 5m tons per annum. Statistics produced by the NPC for traffic passing through certain harbours in 1967¹³ had suggested that a figure of 5m tons provided a convenient dividing line between the major ports and the rest: after the Forth, with a total of 7.3m tons, the next most important port on a tonnage basis was Blyth, with only 2.9m tons. The following harbour undertakings were to be transferred to the NPA on vesting day:-

The Port of London Authority,
The Medway Conservancy Board,
The Port of Bristol Authority,
The Milford Haven Conservancy Board,
The Mersey Docks and Harbour Board,
The Manchester Ship Canal Company,
The Clyde Port Authority,
The Forth Ports Authority,
The Port of Tyne Authority,
The Tees and Hartlepoons Port Authority.

Although it was not proposed to transfer initially to the NPA any undertaking of the British Railways Board (e.g. Parkeston Quay or Newhaven), provision was made along the general lines of sections 7 and 8 of the Transport Act 1968 for their possible subsequent transfer. The undertakings of private harbour authorities, basically those providing facilities for receiving goods to be used by the authority or associated body "in the manufacture of goods, substances or electric power" were liable to be transferred to the NPA. But the Authority could, in the interests of efficient and economical management and operation of a national ports system, submit schemes to the Minister in order to take over harbour undertakings of other statutory harbour authorities. This provision was to be supplemented by a continuation of the Minister's powers under section 9 of the 1964 Act to provide a means of ensuring "that investment in non-nationalised harbours does not conflict with the national interest".

Parliamentary debate of the Ports Bill had focussed primarily on two issues: the future of those ports handling less than 5m tons and the virtue of retaining a competitive element in the port industry. Those ports to be owned and operated by the NPA would handle in the region of 90% of the country's maritime traffic and employ 95% of the registered dock labour force, a situation which would not only mean the virtual end of competition in the industry, but would also perhaps compel the smaller ports to go out of their way to seek business that avoided their competing directly with the nationalised sector; "the raison d'etre of ports is to enable goods coming in by sea to be handled as speedily and cheaply as possible". Yet the proposed creation of a virtual monopoly within the industry would, it was felt, remove any compulsion to hold down costs, to the detriment of both the port user and the public, despite the statement by Fred Mulley, introducing the Bill for its second reading in the Commons on December 18, 1969, when he confirmed "that the policy of the Government is to encourage competition on service and on price between individual ports in the public sector". Lord Geddes was of the opinion that the continued existence of individual ports "will, and indeed should, provide the necessary competitive element in the industry", but added a note of warning; "if they prosper they stand to be nationalised". The Bill left a definite air of uncertainty over the smaller ports, many of which were proving highly successful, the favourite example being that of Felixstowe. What would happen if they achieved a throughput of 5m tons? Would the Government see this kind of achievement as being against the public interest and so take steps to curb or ameliorate this competition? Such a situation inevitably destroys the confidence which must be the basis of future investment in the industry and this process had, no doubt, been operating since the appearance of proposals to nationalise the ports in the Labour Government manifesto of 1966.

According to the Government, reorganisation on the basis of public ownership also spelt efficiency. Not only was there value in having a single employer, but this employer must also be the State. Why then had Manchester been so successful in the hands of a private company? Equally efficient, though operated differently, are the ports of Rotterdam and Antwerp, where the port authorities have a policy of renting berths and sheds to private enterprise to ensure the maximum amount of competition. Lord Cottesloe expressed his views thus; "will the nationalisation of these port authorities, all of which are already in greater or lesser degree owned and managed by public authorities of one kind or another...make them more efficient?"

Surprise was also shown at the proposal to nationalise the Medway Ports and Milford Haven - of, as one speaker put it, "the Government's intention to milk the oil ports", especially when paragraph 7 of the White Paper stated that it would be neither practicable nor desirable to take over port facilities which are controlled by manufacturers wholly or mainly for the transport of their own goods or raw materials.

Criticism of the prevailing structure of the industry had been directed at:-

- i. the diffuse character of the industry's resources being an inevitable result of geography. Paragraph 5 of the White Paper wanted "the impetus of change...directed to ensure that new investment and the rationalisation of facilities produced the best service at the right places". Are not the right places those that can provide the right services at the lowest cost in terms of time and money for the users?; and is this not achieved by encouraging competition within an industry?
- ii. the inability of the industry to face major changes. Yet the ports had begun to cater for new transport innovations, particularly the smaller ones who had been pioneers in the movement towards containerisation and other unit load techniques; and the existing competitive atmosphere had undoubtedly stimulated the response to such changes.
- iii. unified control of the operation of the major ports. But this can be achieved without recourse to central ownership and port regrouping, as had taken place on the Forth and the Clyde, had been carried out under the existing legislation.

The task of the NPA was to have been the planning of future development and the rationalisation of physical facilities whilst adapting the organisation of work in the ports to modern needs. But does it matter all that much if such tasks fall to a body constituted like the NPA or like that of the NPC, when central to the successful achievement of objectives such as these is the role played by the Treasury and the power vested in the Ministry of Transport?

PART 2

2.1 THE PATTERN OF PORT DEVELOPMENT POST ROCHDALE.

So far the discussion has been concerned with the background of events culminating in the present legislation controlling the activities of the port industry; the role played by the NPC and the problems associated with attempts to formulate a policy to guide port planning at the national level. As we have seen, as yet there is no positive development strategy for the major ports and it is very much an open question whether one will ever emerge. Meanwhile, decisions as to where and when large scale investment in the industry takes place will continue to have important implications for national planning policy as a whole. It is the intention in the sections that follow to concentrate attention on the word 'where' and so introduce a spatial element into the planning of developments at the ports.

Transport can be thought of not merely as the movement of an item from one place to another, but also as a synthesis of space and time. The space is that occupied by the routes and nodes of a transport network; the temporal element enters as the scheduling of movements through the network over short, intermediate and long periods of time ahead. Port planning may be viewed at two levels and depending upon which attention is focussed, the spatial or temporal element becomes the more important. For an individual port authority it is time which is of greater significance for it is within this dimension that it conducts its day to day operations and formulates a program of development; it is upon its efficiency in the former and the type and scale of the latter that its competitive position as a node in an international transport network depends. It is the translation of ideas for future development into reality that introduces the spatial component into port planning and five types of spatial sphere may be distinguished having a progressive areal increase in the field of interest;

- i. the location of new berthage and cargo handling facilities - the operational approach;
- ii. within the perimeter of the port and its seaward approaches - the port management approach;
- iii. the port with its hinterland - the regional approach;
- iv. the port as part of a national body of ports - the regional approach;
- v. the port as one of many serving an economic association of states - the international approach.

It is with iii. and iv. that the following sections will be mainly concerned.

Two factors in particular have influenced the outcome of decisions about which ports should receive Ministerial approval of their development programs. The first of these is economic, aimed at ensuring that investment is profitable wherever applied and that it makes the most profitable use possible of national resources. The problems posed are complex and considerable demanding the establishing of investment criteria and of calculating the returns on capital invested in specific projects. A consideration of this aspect of port planning has been left to Appendix 3. At this stage we will concentrate attention on the physical elements that have guided the pattern of port development in the U.K. in recent years and begin by making the following comment.

Looking ahead, it is not easy to write in 1973 about which factors are likely to influence the pattern of port development in the future; and to look at what has been happening, even in the recent past, provides only some of the answers. Basically, the reasons are these. Presently we are seeing the concluding stages of an investment program the major part of which was formalised as the NPC's Interim Plan of 1965. This encouraged the major port authorities to submit ambitious expansion and modernisation plans which were generally justified by the need for vast improvements to be made in the infrastructure of the industry. The form of this infrastructure, by and large, was dictated by innovations in transport technology - increases in the size of vessels and new methods of cargo handling - resulting in the need for new specialised deepwater berths and allied facilities. Provision of these proceeded apace encouraged, if not by the Government, certainly by the competitive nature of the industry, to the point where the rate of change is beginning to slacken off (this is perhaps not so true of the smaller ports, especially those whose trading position is likely to be enhanced by Britain's entry into the EEC). The port planner is left facing the future in something of a transition period, knowing that although the unitisation of cargo will continue to influence the way many ports will develop, a new generation of ships has already begun to 'steam over the horizon'. The trend towards bigger vessels for the transport of bulk cargoes, specialised carriers for chemicals, liquified natural gas, wood pulp and timber products etc., and the lighter aboard ship (LASH) concept, all have important consequences for the future of the port industry. If the consequences of transport innovations through

the 1960's are still being assessed, what hope have we of making anything more than qualitative judgements about the impact of the next stage in the evolution (revolution!) in maritime transportation. Even the Rochdale Committee expressed reservations on this subject, stating that;

"...in attempting to consider the various changes which are likely to influence the British ports over the next twenty years or so, we are conscious of our inability to do more than suggest possible lines of development".

They also hoped that the establishment of the National Economic Development Council would help mitigate the complexity of the factors involved by producing a forward view of the national economy!

The remainder of this section will be rather retrospective, looking at the way geographical factors have influenced the pattern of port development and any implications this might have for planning strategies at both the regional and national level.

The decision not to proceed with Portbury, together with the associated arguments, have implications at both levels. As far as national port planning is concerned, the most fundamental is that these arguments were based on the existing economic geography of Britain. The distribution of population and industry and their projected trends to 1980 were taken as given, as if they were inevitable and there would be no other new factors to be taken into account. The a priori assumption was that a major port, to be viable, requires a large and immediate hinterland. Although it was demonstrated that the bulk of exports and imports had their origins and destinations close to the port through which they pass, a critical question is whether this would always be so. Distance was put forward as a crucial factor. Yet one important influence of the developing motorway network will more than likely be to make time a more significant factor in accessibility, especially when distances are so small that, relative to many other countries, the main industrial centres of this island are close to all the ports. On the question of accessibility, the Rochdale Report recognised that the efficiency of a port is very dependent on the efficiency of the inland transport system that serves it. "We cannot", they said, "overstate the importance of good landward access to ports". The provision of better roads is of crucial importance, for all available evidence points to the continuing dominance of road transport in serving the ports. The pattern of port development envisaged in the Rochdale Report led to a recommendation that the following be given priority in forthcoming road construction programs:-

- i. an extension of the M5 beyond Birmingham to Hull, providing a through route between the Bristol Channel and the Humber;
- ii. a continuation of the Lancashire-Yorkshire motorway to Hull to link the Mersey with the Humber Estuary;
- iii. a bridge over the Humber;
- iv. motorway linkage of the Clyde and Forth valleys and the North East ports with the Midlands.

At the present time ii is entering its final stages of construction while preliminary work has only recently commenced to make the Humber Bridge a reality; under heading iv. only the Clyde-Forth link is in existence. More recently, the subject of road access to the ports was included in the Report of the British Road Federation, published in January 1973, when a special program was requested for the provision of new roads to Tilbury, Felixstowe, Hull, Immingham, Teesside/Tyneside and Southampton. Although particularly concerned by the fact that none of the major ports serving Europe have direct motorway links with the main centres of industrial activity, where communications infrastructure of this type does exist, nowhere does it extend to the dock gates. Schemes to provide such connections with the inter-city sections of the network will, of course, involve costly urban upheaval and the current climate of public opinion on the provision of urban motorways might result in this plea from the Federation going unheard for some time to come. Oddly enough, the Minister acknowledged the excellent motorway connections to be enjoyed by the Portbury site but discounted the importance of this advantage, arguing that road access to other ports would be improved where there was a need and thereby begging all the arguments about the overall system cost of providing new port facilities. (Additions to the motorway network in recent years have reduced journey times from industrial areas to Portbury by between 30-50%, areas which, at the time of the inquiry, were considered not to be within the hinterland of the Port of Bristol).

Throughout the post war period the view has been taken that large scale investment in transport facilities should wait upon economic growth creating a demand for them. Rochdale, for example, was of the opinion that new port investment was not, in general, necessary, stressing that "selected existing major ports can and must be developed to make them fully capable of handling traffic in the foreseeable future". Although not ruling out new port construction completely, it was considered unrealistic to expect such "immensely expensive undertakings... to attract a sizeable proportion of the general cargo trade of the major ports... without some measure of direction of traffic". In the light of this statement the justification for Portbury already had a big question mark hanging over it!

An important feature of major transport investment has been the tendency to concentrate it in the heavily urbanised 'axial belt' linking the Greater London and Merseyside/West Yorkshire conurbations. The trunk rail network of the post-Beeching era has been largely duplicated by the motorway system. The priority given to the M1 and M6 and to British Rails London-Midland electrification scheme re-emphasises the north-south 'transport corridor' linking London and Lancashire, with the northward extension to Glasgow currently being electrified; the M6 now reaches the Border and its continuation as the A74 is virtually of motorway standard. Construction of the Channel Tunnel will serve to project the corridor south east into Europe. This corridor emphasis has had important bearings on port planning and Government policy to encourage not only industrial expansion in the regions outside the south east of England, but also the dispersal of population and industry from the congested conurbations. An important additional influence on events has been the advent of containerisation by making possible the concentration of traffic on fewer berths than would have been required to handle an equivalent amount of cargo by conventional methods. This, coupled with one feature of the Portbury findings, viz, that major new port investment would be permitted only at sites with a large immediate hinterland in terms of population and industry, led to a policy of allocating container berths to existing major ports at either end of the 'transport corridor'. Specifically, such developments were authorised for Tilbury, Southampton, Liverpool (Seaforth) and the Clyde (Greenock).

It might be that in short term economics the 'great ports policy' was the right approach to adopt. But it has undoubtedly had great significance for long term policy with implications over the whole field of land use and economic planning. The very nature of the end product of major investment in transport facilities means that decisions taken now about their physical characteristics will continue to influence events into the twenty-first century. The concentration of port investment in London and Liverpool runs counter to the long established Government measures directed towards the prevention of further concentration of industrial and urban growth in the 'axial belt'. If the Government is intent on encouraging growth outside this congested zone, then the claims of other British ports will need to be considered, not just in terms of port economics,

but in relation to the broader aims of a national planning strategy. It may be, as the the Town Planning Institute argued back in 1964, that the national interest would be better served by a port investment policy designed to counterbalance the undue prominence of the London-Liverpool axis by the alternative development of that corridor between the Bristol Channel and the Humber. Such a policy would aim at the more balanced development of all four deep water estuaries whose industrial hinterlands meet in the West Midlands¹⁵.

2.2 IMPLICATIONS OF STRUCTURAL CHANGES FOR REGIONAL ECONOMIES.

Structural changes in the pattern of international trade, in the field of maritime transport and hinterland communications have made their impact on the traditional functions of ports as well as the regions they serve, necessitating a review of policies affecting port investment. The most important of the regional implications are probably;

- a. the increasing importance of the industrial function of seaports versus the hitherto dominating traffic or transfer function;
- b. a new partitioning of activities between ports and their hinterlands;
- c. the growing competition between the ports accompanied by a growth stimulated trend of concentration.

If ports wish to retain their attractions as 'growth poles', a flexible investment policy is essential to make the accommodation of growth linked structural changes feasible. This introduces the ports to a particular dilemma; that the investment decisions of today determine the structures of tomorrow (and the day after tomorrow!), while information about the kinds and potential impact of structural changes are exceedingly vague and incomplete. Misplaced and mis-timed investments can only be revised at high cost, if at all. When formulating an investment program, a port must therefore consider;

- i. the likely speed and direction of relevant structural changes;
- ii. appraising alternative ways and means of coping efficiently with the requirements of such changes; to ensure that the economically useful life of a project comes as close as possible to the duration of its physical life, the possibilities (though usually limited) of using a certain facility for alternative purposes must be understood. Even if the present costs are higher it might be better to choose that project with the greater degree of flexibility;
- iii. the port and the activities associated with its immediate hinterland in the context not only of the region, but with respect to a nationally orientated economic policy.

The following is an attempt to outline some of the regional and spatial aspects of port investment policy. Spatial implications constitute the basic data from which the appraisal of port investments has to start. The measure of adaptation made by a port may, to some degree, influence economic growth so that net social benefits from an investment in ports amount to the economic difference between the situations which will exist with the investment and those that might reasonably be expected to exist without it.

Restructuring of hinterland communications: maritime transport technology has influenced to a large degree the transportation system of port hinterlands. Movement of goods 'door to door' demands quality from the system regards speed and adaptability to individual requirements and this has resulted in a considerable substitution of rail traffic by road haulage. Price competition has been replaced by quality competition because the exploitation of the advantages of containerisation is largely dependent upon efficient and expeditious inland transport of the capital intensive containers. It is only over distances in excess of about 150 miles that rail has a significant cost advantage over road. This is not so true of bulk commodities where raiing from port terminal to place of processing in 'block trainloads' is practical and economic even over relatively short distances. For example, Margam Works is supplied by rail from the nearby Port Talbot ore terminal while BSC's 'Anchor Project' steelmaking expansion plans for Scunthorpe will be dependent upon iron ore imported via Immingham and railed 20 miles in 1000 ton trainloads. The physical characteristics of the materials used and synthesised in the oil refining and petrochemicals industries makes the use of pipelines a viable alternative to rail haulage though in Britain at least the products of these activities are generally dispatched to markets in 'company trains', supplemented by shipment in coastal tankers.

Regional implications of Containerisation: the major European seaports have now largely executed extensive investment projects to attract as much as possible of the existing and potential flow of containerised traffic. This has, amongst other things, necessitated the reconstruction of quays and/or the provision of new berths, installation of gantry cranes, preparation of a dock site for the storage and marshalling of containers and the dredging of approach channels to accomodate the specialised vessels employed. The rate at which the provision of container facilities has proceded suggest that the opportunities for an individual port to attract a significant share of the total volume have perhaps been overrated; everyone wants a slice of a cake whose ultimate size is still uncertain. For the individual port the value of the traffic secured probably justifies the capital outlay. Yet the uncoordinated development of all ports suitable for this type of traffic will more than likely lead to underutilisation of facilities and consequent economic losses to society. The consequences in regional terms of containerisation

may be summarised thus;

- the reduction of value added by handling general cargo;
- the transferring of functions between ports and hinterlands;
- the intensification of the trend to concentrate traffic on fewer main ports;
- the contribution of containerisation to the industrialisation of port regions.

Handling of containerised traffic is capital rather than labour intensive and so the value added per unit is much lower if the 'through' concept is realised. By removal of the collection and distribution functions of ports to inland locations, the becomes merely the point of intermodal interface in the transportation chain. Inland Clearance Depots (ICD's) represent direct gains in function by the hinterland and are intended to make the advantage of low cost transportation available to small consignments also, by grouping them into full container loads. With studies revealing that the biggest proportion of containerised traffic in the future will have its origin and destination at such inland depots, perhaps only those ports will survive, with respect to this traffic, which actively support such developments and which are, essentially, contrary to their own immediate interests. Individual ports will, no doubt, attempt to compensate any loss of function by acquiring a financial interest in these depots; for example, the ICD at Coatbridge, Lanarkshire, is a joint venture by ACT Ltd., and the Clyde Port Authority who undoubtedly see it as an important adjunct to the operation of their container terminal at Greenock.

With containerisation comes advantages arising from the concentration of traffic on a few major ports of call. Economies of scale in port operation can then be enjoyed and these in turn might invite shippers to give preference to these few ports so long as concentration does not imply congestion and hence increased vessel turn round times; it also leads to better utilisation of capital equipment. One disadvantage of concentration could lie in the increased distances from hinterland to specified ports and the competitiveness of some regions might be adversely affected. The geography of Britain does not make this a serious consideration and it has been suggested that for the major ports of north west Europe the volume of containerised goods will be sufficient to justify the provision of terminals, each of optimal size for profitable operation. There are indirect implications for the region consequent upon the containerisation of traffic. Local enterprise may benefit

by exploiting the advantages of container transport for their trade and this might help their competitive position. More general is the advantage accruing to all enterprises if, in the course of providing container terminal facilities, improvements in the road and rail links with the hinterland are carried out. Attempts to attract new industry to a port region may be dependent upon there being locational advantages with respect to transportation costs. For a port not willing or unable to adapt itself to the requirements of container transport, the following consequences are possible;

- decrease in the attractiveness to certain activities wishing to locate in or near the port;
- increasing cost disadvantages for activities already located there;
- reduced growth opportunities for port region and hinterland (perhaps through the continuing poor standard of communications infrastructure).

The deepening of ports: with increasing size of ships comes the problem of providing sufficient depth of water. If physical or financial limitations make the deepening of approaches not possible then ports so affected will be unable to maintain their trading position, particularly with respect to bulk cargo traffic. These ports could perhaps adopt other alternatives to derive as much benefit as possible from the technological developments within shipping. For example, they may provide an outer harbour at existing deep water anchorages; utilise single point mooring terminals for handling bulk liquids; use transshipment ports and feeder services or, probably the least acceptable, rely on inland transport to and from a neighbouring deep water port. The implications of each of these will differ according to the type of harbour having to rely upon them. Their provision will also make differing demands on financial resources, which then limits the amount available for investment in other infrastructure works.

The regional impact of this state of affairs will differ according to whether the port in question handles general as well as both kinds of bulk cargo ('Universal' port), or whether it specialises in one particular category. If the port acts merely as a terminal, with no processing in the port region itself, then the implications will be different again. Universal ports will be affected primarily in their bulk traffic account and it is unlikely that facilities to handle larger quantities will be provided if the cost outweighs the benefits

of the investment (both directly to the port and indirectly through value added during processing within the region though it is doubtful if this latter factor has ever been evaluated in any detail). It is fairly certain that capital will not be committed to dredging schemes if a higher profitability can be achieved by investing in alternative facilities. For ports dealing specifically or principally with bulk cargoes, total activity is very much dependent upon their ability to provide deep water facilities. If the terminal is essentially an interface between two modes of transport, with the raw material being processed some distance from the coast, then the consequences of non-adaptation will not be too serious for the port because the limiting factor is likely to be the capacity of the transport system (be it pipeline or rail) to the processing centre and the storage facilities thereat. However, if concern is not so much with the economic fortunes of the port as with those of the region (or industry) which it serves then the case for improvement in cargo handling facilities is much stronger. To import in bulk means to import cheaply and industrial plants capable of doing this are likely to be in a more competitive trading position than those which cannot take advantage of this economic feature of maritime transportation. The U.K. steel industry provides an excellent example of a case where a program of rationalisation is being coordinated with plans to increase capacity at selected plants, chosen because of their capability of being supplied by deep water terminal sources of cheap iron ore and possibly coking coal.

With much of European steelmaking capacity being state owned, investment decisions on infrastructure provision involves public money. This is not the case with the oil industry. The desire to maximise the locational advantages of any particular refinery implies exploiting its physical assets to the full. If the provision of deeper terminal berths is technically feasible their actual provision may be dependent upon whether it is the oil company itself, or the port authority who make the capital available. It is unlikely that either would hesitate, for both have strong interests in such a scheme, the port authority looking forward to increasing its revenue and enjoying the financial rewards of any subsequent refinery and related activity expansion taking place on port owned land. For a region which is

already host to the oil industry and, presumably, its ancillary activities, it is possible to point to likely consequences of non-adaptation to the requirements of deep draught tankers. The nature of the industry leads one to suggest that the constraints would be physical rather than financial. The latter may well be critical where the provision of the facility would be the responsibility of the port authority though in view of the differing attitudes of European maritime nations to their ports industries this is perhaps too much of a generalisation. Amongst the consequences might be a decrease in the competitiveness of local industries due to a relative increase in the costs of energetic and non-energetic raw materials, which might result in a lower propensity to invest; the possibility of decreasing local employment; a decrease in external (localisation and urbanisation) economies. The overall effect depends on the share the oil industry and associated activities have in the industrial mix of the region, the proportion of the total costs of production of the regions industry which is attributable to energy generation and which may increase due to supply being from another terminal. Efficient pipeline connections can make the cost disadvantage of the latter of no great account to the region involved. Such a link from a more favourably located port may in fact provide a cheaper supply of oil than direct shipping to the port in question could do, e.g. Rotterdam to Amsterdam and Wilhelmshaven to Hamburg.

2.3 THE TERMINAL CONCEPT and the INDUSTRIALISATION OF PORT ZONES.

The principle ingredients of the discussion which follows are; the evolution of bulk carriers for the transport of large quantities of homogenous commodities; the provision of deep water and terminal facilities at ports wishing to receive these vessels; and the industrialisation of such ports according to the location theory of industrial activity.

Ship size: technological advances in shipping, occasioned by the first closure of the Suez Canal in 1956, were accelerated by its closure a second time in 1967; physically and politically it remains a non-viable seaway to this day. The basic reason for the increasing size of vessel has been the law of increasing returns applied to maritime transportation; increases in the size of a ship do not result in proportional increases in the capital invested, in operating, repair and maintenance costs. Although most classes of ship are getting bigger, the pace-setter is still the crude oil tanker, the volumes to be transported as well as its physical characteristics justifying the use of the largest size of ship possible. Only ten years ago the biggest tankers afloat were of the order of 60,000 dwt (a limit partly imposed by the Panama Canal); today the record weight of 477,000 tons dwt for a vessel of this type has been set by the recently delivered 'Globtik Tokyo'. Although plans have been drawn up for a 'megaton' tanker, the possible future re-opening of the Suez Canal has led some oil companies, notably Shell, to keep their tanker fleet in the 200-250,000 ton category, in order to take advantage of reduced costs per ton/mile on voyages in ballast from Europe to the Persian Gulf.

The depth of water over much of the continental shelf limits the use of fully laden tankers of the 300,000 plus tons class and the lightening of these vessels before they can enter many of the major ports of Western Europe has become a feature of their use on these routes. Off-loading takes place either at a deep water terminal such as Bantry Bay, Milford Haven or Finnart on the Clyde, or while 'at sea', Lyme Regis Bay, Dorset having been used for this purpose. Advances have not been so dramatic with vessels designed for the carriage of bulk commodities other than oil, ore carriers for example being of the order of 150,000 tons, but still ten times the size of their counterparts of a decade ago. The trend towards larger vessels is

also found in the break-bulk trade, stimulated by the growth of containerisation of this type of cargo.

One important ancillary feature of the increasing size of bulk carriers has been to make new and distant sources of raw materials economically accessible to the industrialised countries of Western Europe. A prime example is the emergence of Australia as one of the world's leading mineral exporters. Presently her principle customers are the United States and Japan though it is only a question of time before European steelmaking, for example, becomes much more dependent on such distant sources of iron ore. A change over from European to non-European supplies of raw materials has the effect of making the ports of import essentially the 'source' of these particular factors of production, a situation which has important implications for the location of the consuming industries.

Although the deposition of large quantities of cargo on the waterfront for processing is due in large part to the specialised bulk carrier and her increasing size, several writers have ascribed this trend, not to the activities of the shipping companies or the shipyards, but to the rapid increase in world trade and the requirements of shippers and customers. H. Shinto expressed his views on the subject in 1968

"The increasing volume of production of raw materials to meet a growing market and the increasing distances over which they have to be transported have brought about a growth in the unit size of carrier which in turn has brought about the renovation and extension of shipbuilding facilities. The next evolution to be expected is the renovation and modernisation of port and harbour facilities".

Deep water terminals: the increasing size of ships makes demands that the port engineer struggles to fulfill. The reason for this is that a new type of vessel can be sailing within two years of being conceived on the drawing board. Major port developments take substantially longer to complete yet they ought to be ready before the coming into service of the generation of ships for which they are designed. For example, the construction of a tidal harbour at Port Talbot to handle ore carriers of up to 150,000 tons was recommended in a White Paper, 'Iron Ore Imports to South Wales', published in July 1965; yet over 7 years elapsed before the installations were ready for use. There has been a tendency for ports to a 'wait and see' attitude to maritime developments, though by now the specialised facilities required by these new types of vessel

are well recognised.

A port must have or create one obvious asset before being able to enjoy the benefits accruing from being able to accommodate these large vessels. On the seaward side there must be an adequate depth of water. Deep water estuaries are seldom deep enough and many major port authorities have had to dredge channels suitable for navigation by bulk carriers. Costly though such an operation is, it would appear that the advantages to the port are considered to be of sufficient magnitude to warrant the expense. Quantification of both sides of the equation is, one would suspect, seldom attempted. The BTDB have calculated the cost of dredging a $10\frac{1}{2}$ mile channel to a depth of 66' at the entrance to the Humber to be about £2m. This, they say, would allow fully laden vessels of 250,000 tons to enter the estuary, thereby allowing better use to be made of the oil terminal at Immingham as well as improving the opportunities to establish a maritime based industrial zone on the north bank. Very few port localities in Western Europe enjoy natural deep water, notably the Clyde Estuary and Bantry Bay. The latter, however, occupies a finistere position with respect to the continent, making it unlikely that this site will be able to maximise this asset by encouraging the establishment of maritime orientated industry.

If crude oil is the only bulk commodity import of interest to a port then the need to provide deep water close inshore may be circumvented by securing vessels at a deep water buoy, oil being delivered to shore installations by pipeline. This method is already in operation for large tankers visiting the Humber and the prospect of supplying Stanlow Refinery, Cheshire, from such a terminal 12 miles out in Liverpool Bay is under consideration.

The specialised berths used for the loading or discharge of bulk cargoes are often referred to as terminals. But this word has come to mean more than just a point which fulfills these simple functions. As terminal ports they are places to which bulk materials are delivered for use by industries enjoying the locational advantages of being situated within the operational sphere of a port authority providing the specialised facilities which make the handling of these materials possible.

Port located activities: the large-scale implantation of industries at ports, complete with their own terminals, has accelerated since the Second World War, although tidewater public utilities, especially electricity generation, have long been a feature of port cities situated far from the coalfields; shiprepair if not shipbuilding, has always been associated with large ports. One characteristic of the growth of industrial activity in the nineteenth century was its concentration around dock areas and any associated canals. Port based industries have, therefore, a long history. Although the nature of these activities has undergone radical changes, factors which contributed to the decision to locate at a port still influence similar decisions made today.

The location of a port, almost by definition of its function, is generally eccentric to the land area in which it is situated, though this eccentricity may be diminished where a port is sited at the head of an inland navigation. The fact that seaports often sustain flourishing industries even though they may be sited mid-way between raw material and fuel supplies, or between centres of primary production and major consumer markets, has been described as the 'Cleveland effect'. The term derives from the observation that the Lakeside steelmaking town of Cleveland, Ohio, occupies such a mid-point location between Superior iron ore and Pennsylvania coal; this phenomenon has been underlined by the discovery of iron ore in the Cleveland Hills of Yorkshire in 1850 which pulled the iron industry to the port site of Middlesbrough and away from the coking coal of West Durham. At this point we are in danger of being diverted into a discussion of classical industrial location theory as applied to ports. Valid as that might be in the context of this section we must avoid the temptation and instead enunciate one particular factor which has always conferred a locational advantage on port sites.

Because sea transport is relatively inexpensive, and because cargoes can be delivered in bulk, the port has become characterised as a source of cheap raw material inputs for manufacturing industry. This is especially so when the low value to weight ratio of the commodity in question, or the fact that the process to which it will be subjected involves a significant reduction in weight, makes its haulage to an inland centre uneconomic. It is well to remember, however, that the physical characteristics of crude oil and refined

products makes their distribution to inland locations relatively simple and inexpensive despite the high initial capital outlay involved in establishing the necessary pipeline networks. The port of Wilhelmshaven serves its hinterland as headstation of a pipeline without having a refinery or petrochemical industry located within the port area. Similarly B.P's Grangemouth refinery on the Forth is serviced by a 30 mile pipeline from its deep water terminal at Finnart on Loch Long. Nevertheless, large flat expanses of reclaimed land on the seaboard remain an attractive site for such industries, especially if the site carries an inbuilt industrial planning permission. On the supply side, the primary processing industries located at ports may be sources of inputs for secondary processing and manufacturing activities. In other words, seaport industries may have backward and/or forward linkages and if these activities are technically linked or occupy the same prepared site then they will enjoy certain external economies which would not be possible if they chose to establish their plants at some distance apart; if these plants are exporters then a seaport location is an obvious additional advantage. (see section 2.5 for a further discussion of these points).

Specialised deep water terminals which serve adjacent industrial complexes consist of infrastructure works - reclamation, dredging, quays, back-up area consolidation and main services to sites, and also of superstructure works - cargo handling facilities, factories and any ancillary plants. These two categories of works are usually the responsibility of different bodies. Generally speaking, infrastructure provision falls to the port authority (which may be public or private), while individual private firms are responsible for the factories and often the associated terminals. Some form of site preparation will almost certainly be required. If the project depends on reclamation, until considerable fill and consolidation work has been accomplished, the site, for all industrial intents and port purposes, does not exist. Modern reclamation activity often goes hand in hand with channel excavation, with the result that deep water is brought close to flat land to give that combination of physical assets necessary for inducing the establishment of a port/industry complex. Furthermore, reclamation is only economic in larger units of land than those required for individual plants, consequently site infrastructures are

more usefully planned and constructed by public bodies, for leasing as national assets. That infrastructure must precede superstructure is obvious, and the time lag between the two, the 'infrastructure-superstructure construction time differential', inevitable. With infrastructure works occupying a time scale much in excess of that necessary for the completion of port superstructures, it is often the case that they must be started before the superstructure is planned, and frequently before the immediate need for the superstructure has even arisen. It is precisely this state of affairs which has a significant bearing on a particular chicken and egg situation. The question to be answered is whether ports generate large scale industry, or whether location plans and trade, independently considered and determined by other factors, give rise to a demand for new port facilities? It is reasonable to suppose that the latter case is nearer the truth, but account must also be taken of another important factor which has been labelled 'industrial latency'. A demand for sites may exist but the locational opportunities may not because these coastal assets may have to be created. It is the sequence of events outlined above which give port projects the superficial appearance of being industrial stimuli. In other words, the hen (the industrial decision maker) wants to lay an egg (industrial port superstructure) but cannot do so unless conditions are favourable, i.e. until the necessary infrastructure of a seaboard site has been constructed. Egg laying - the creation of an industrial complex - can then proceed and, by comparison with the time scale of the whole project, does so at relatively short notice. But the hen must have the latent ability to lay the egg in the first place!

2.4 MARITIME INDUSTRIAL DEVELOPMENT AREAS.

Despite the type of port infrastructure inherited from the past and the object of much comment in the Rochdale Report, it is interesting to note the foresight shown by certain dock developers earlier this century. The new schemes at both Tilbury and Seaforth make use of existing locks and it is true of many ports now gearing themselves to modern shipping methods that they are still able to benefit from investment decisions made over half a century ago. Adaptation of existing facilities has been concerned essentially with the clearly foreseeable short term demands and events so far have shown that it has been possible to provide the depth of water and area of land required by general cargo traffic in established port areas, even when much of this traffic has been containerised.

The same is ^{true} not of bulk cargoes where the economics of transportation have led to the appearance of ships of increasing dimensions which cannot easily be accommodated in established port areas because of restrictions imposed by the depth of water in the port approaches and the physical dimensions of the dock system. Britain's dependence on bulk raw material imports has important implications for the relationship between the provision of adequate port facilities and the location of primary processing industries. There are, of course, numerous factors influencing the latter. Purely economic considerations are complicated by the effect of Government policies, particularly those relevant to the location of population and industry. Essentially, the characteristics of an industrial process dictate whether it locates in such a way as to be basically market or supply orientated. For an industry dependent on overseas raw materials delivered in bulk, a port with the right kind of assets is virtually synonymous with a supply source, while if its market is an international one, a port location is an obvious advantage. It is the function of a port as a component in an industrial siting policy of this kind, to enable the largest usable type of ship to get as close as possible to the production site and so minimise expensive inland transport. The ultimate expression of such a policy is, of course, to make the port and production site one and the same place. But the development of separate facilities for individual bulk importers is not an efficient use of resources, particularly if the industry is sensitive to the size of the immediately adjacent market.

Despite the length of the U.K. coastline, there are relatively few places where deep water (or potential deep water) frontage coincides with undeveloped land near to the major centres of population. Major port installations for single users in such areas, apart from being unjustifiably expensive, may well pre-empt unduly large portions of these scarce resources. Certainly the competition for such land could become intense, if only from the purely urban demands for more housing and amenity areas. Conversely, this type of asset could become the *raison d'etre* of new urban growth as suggested by the Government at the initiation of the feasibility studies on Humberside and Severnside (qv). Indeed, the NPC's Port Progress Report of 1969 related the expected population increase and program of urban reconstruction to a need for "continued growth of industry, including the primary industries, whether on virgin sites or by expansion of existing areas" and in this context cited, not the aforementioned studies which were being undertaken at this time, but the interest being shown in the Solway Firth and Dee Estuary.

Recognising that this combination of factors constituted a scarce national resource, the NPC decided that the identification of sites where the potential for long term port and associated industrial development was greatest should become a primary concern of their port planning duties. The concept of Maritime Industrial Development Areas (MIDAs), first expressed in the 1966 Annual Report of the Council, was based upon the kind of reasoning outlined above. The rapid growth in the size of bulk carriers helped to intensify the urgency of a study of this nature, with the object of ensuring that the maximum benefit would be reaped from the economies of scale possible by the use of very large vessels supplying raw materials to industries located at, or very close to, the necessary port facilities. The competitive advantages of industries so sited ought to be considerable and it was considered significant that a number of major European ports were constructing, or were already in possession of, facilities that diversified their roles as merely points of interchange between land and sea transportation to centres of large scale manufacturing activity.

Whereas the Interim Plan had detailed a program of essentially short term development to bring the ports industry infrastructure to an acceptable standard, while retaining a conventional view of the function of a port, the MIDAs idea, coming out of the offices of the

Council about a year later, represented a totally new dimension for port planning in the U.K. The scale of the projects envisaged and their possible future role in national and regional economic planning, implicated central government far more directly. Instead of playing an essentially regulatory role, as it had done when assessing those schemes referred to it by the NPC, the government was now presented with an opportunity to initiate port development of a type which demanded detailed land use and economic planning of the long term variety. To this end it was proposed that the Minister of Transport should put in hand studies "to examine places at which deep water facilities could be made available adjacent to areas of land suitable for industrial development; to assess the costs and the prospects that such sites might attract industries requiring facilities of this kind; and to assess the extent to which the national economy might benefit". In 1967 the Council, in co-operation with the Ministry of Transport, who undertook financial responsibility, commissioned a survey of the technical feasibility of locating MIDAs in Great Britain. In April 1968 a report on this survey was received from the consulting engineers, Sir William Halcrow and Partners. The report identified those sites which would be suitable for such development on the basis of meeting the following criteria:-

- i. nearness to deep water - 50' to 60' without dredging;
- ii. availability of at least 5000 acres of flat land reasonably near the deep water, suitable for heavy industrial development, with or without reclamation, together with substantial further contiguous and backland areas;
- iii. favourable broad economic geography of the location, including such factors as population, industry, inland communication; relation to markets and other overseas ports.

It was demonstrated that development on the scale anticipated would be physically feasible at the following locations;

Cromarty Firth,	Humberside,
Outer Firth of Tay,	The Wash,
Upper Firth of Forth,	Cardiff/Newport,
Tees Estuary,	Thames/Medway,
Lune Estuary,	Weston super Mare/Clevedon.

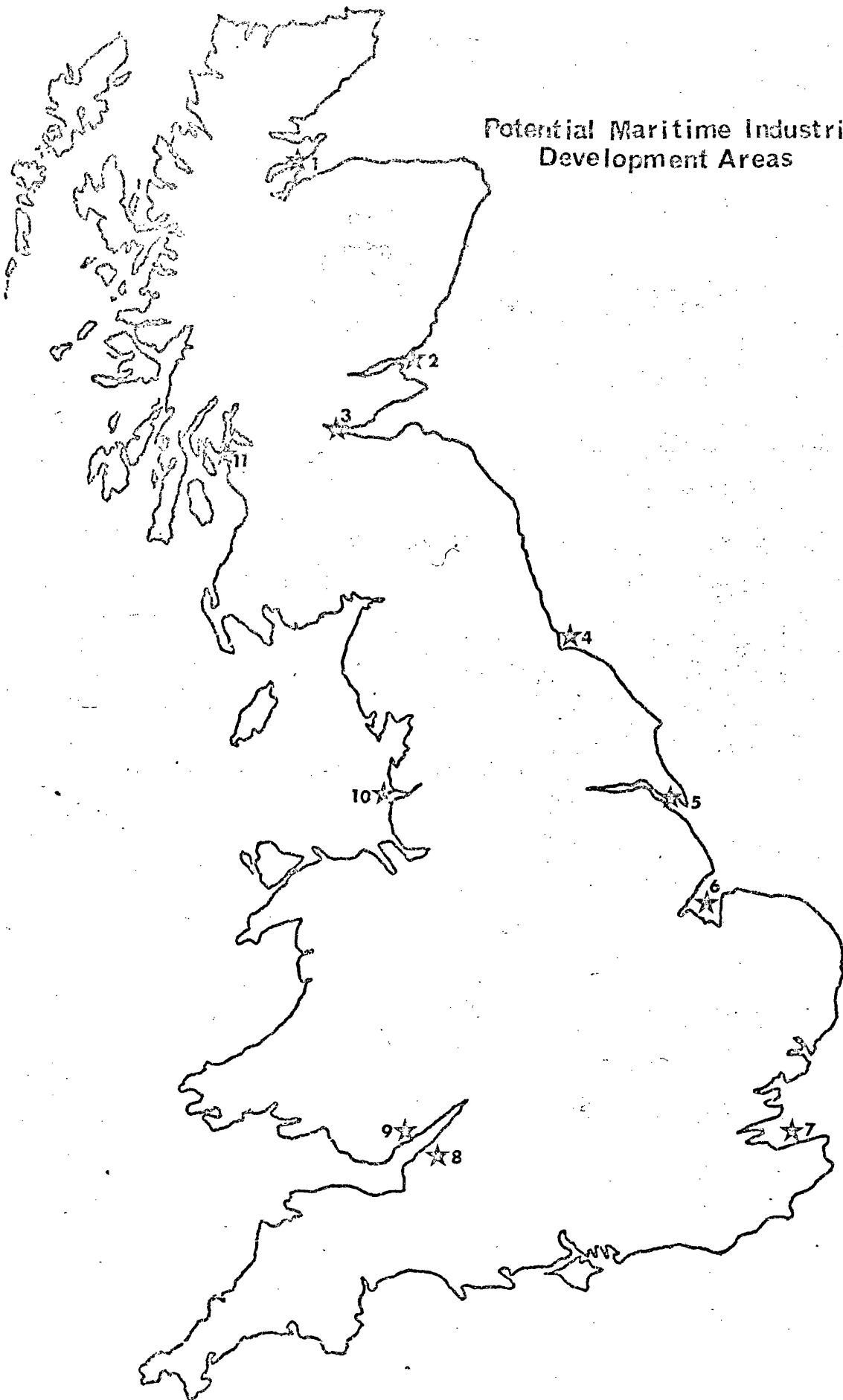
The Clyde had been adjudged suitable in a separate survey..

The sites meeting all three criteria were placed in class I; class II were deficient in one or more respects yet still retained sufficient merits for MIDA purposes. Other areas might be suitable

Facing page: Potential Maritime Industrial Development Areas.

1. Cromarty Firth;
2. Outer Firth of Tay;
3. Upper Firth of Forth;
4. Tees Estuary;
5. Humberside;
6. The Wash;
7. Thames/Medway;
8. Weston-super-Mare/Clevedon;
9. Cardiff/Newport;
10. Lune Estuary;
11. Clyde Estuary.

Potential Maritime Industrial
Development Areas



for the establishment of a single enterprise dependent on a deep water access. The Cromarty Firth provides an illustration, currently the site of an aluminium smelter and oil rig fabrication yards yet not (yet) meeting criterion iii. Given the physical requirements of flat land and deep water, how dependent is a MIDA upon the existence of this 'favourable broad economic geography'? Conversely, how successful could a MIDA be in generating within a region (or nation) such a spin-off? These aspects are considered in more detail elsewhere; suffice it to say at this stage that the feasibility studies of both Humberside and Severnside took very little note of the physical potential for linking anticipated growth in population with maritime/ industrial activities.

The aim of a MIDA was seen as providing a means of providing optimum as opposed to ad hoc solutions both for those industries that ought to be able to support the necessary port developments themselves, but also, and more importantly, for those which cannot separately do so. While the primary option in choice of site must go to users who depend on really deep water, the services infrastructure must be available from the start to support associated industries, while a pool of labour must also be established. It is the creation of this kind of industrial community that could well have occupied more of the attention of the Humberside and Severnside study groups. It should be admitted that in view of the stage which had been reached in the consideration of the whole MIDA concept, their attempts could have done little more than outline the possibilities. The need for an economic appraisal to accompany the Halcrow Report was recognised in a speech made in the House of Commons by the Secretary of State for Economic Affairs on July 17, 1969, when he had this to say;

"The Government have now initiated a further series of studies with the object of assessing the industrial implications and the economic costs and benefits of undertaking such development...It is obviously important that we should consider most carefully the possible contribution that MIDAs might make to the greater efficiency and competitive power of the British economy".

The outcome was the commissioning by the NPC of an initial feasibility study to provide guidance as to whether it would be advisable and practical to carry out a full scale cost-benefit analysis as the next step in assessing the viability of a MIDA in the U.K. The subsequent report divided the problem into two broad categories. The first concerned itself with the definition of a MIDA in terms of 'optimum'

size and industrial 'mix'; the second focussed on the conceptual and practical problems of cost-benefit evaluations as such.

Without wishing to reiterate points that will be made in the next section, it might be worthwhile noting here a few important aspects which the cost-benefit study appeared to omit. The first has been alluded to already and that is that the port site becomes an attractive location where there is a strong and increasing dependence on overseas raw materials, provided there is elasticity of demand in the export market. These locational advantages are unique to coastal or inland waterway sites for low value per unit weight raw materials cannot be carried as cheaply by land transport as by bulk water carrier. It appears likely that new MIDAs sites will be on reclaimed land so that the cost of providing them will probably be an engineering sum rather than a result of bidding between competitive land uses. Reclamation on a grand scale has been the method employed by the Dutch to obtain land for the siting of industrial activities adjacent to Europort and one which they are currently pursuing with vigour, this time to build artificial islands for similar purposes, but this time a few miles off-shore in the approaches to that port. In this country the Tees provides the best example of what is essentially a MIDA created by large scale reclamation of tidal estuarial land. Such areas of land, zoned by definition for industrial use, offer an additional attraction to industrial developers because of their freedom of the restraints imposed by existing services and land use and because they provide an opportunity for avoiding the delays so often caused by protracted planning procedures (see the section dealing with the attempts to establish maritime based activities on the Clyde where this aspect has been particularly dominant). However, it also seems likely that a MIDA built as a logical extension to an existing port would be economically more attractive than one built on a 'bluecoast' site (a term analogous to that of 'greenfield' site for industry). The former case could benefit from existing investment in communications infrastructure, availability of labour and services and the proximity of a market and possible industrial linkages within the extant port itself.

The NPC were encouraged by the view expressed in the preliminary study, that the case for MIDAs appeared sufficiently strong to warrant a cost-benefit study in depth and urged that such a task be undertaken

without delay. Shortly afterwards the Government announced their intention of proceeding with a further and more detailed appraisal of the concept along the lines suggested. This exercise, however, was quickly halted by the formation of a new Government in mid-1970 and the re-structuring of the Government Departments which followed. But early in 1971 the Conservative administration revived the idea in a revised form by announcing a decision to carry out modified demand studies in respect of coastal sites for heavy industry consuming bulk raw materials. The study was conducted during 1971 by a Government Working Party with the participation of NPC staff; the industries examined were oil, petrochemicals, iron and steel, aluminium, unmilled cereals, timber, paper and pulp, and electricity.

Despite this survey, the outcome of which has not been revealed, the MIDA concept appears to have lain dormant for the last two years; those magic letters are not to be found in the index to Hansard since their last appearance relating to an entry for February 17, 1971! It is obvious that the concept has had a fairly low priority with the Government even in the face of continued promotional efforts by the NPC. Recently, however, there have been the signs of a revival. The first indication came in a press report on February 1 this year, which stated that Mr. Keith Speed, Parliamentary Under Secretary of State at the Department of the Environment, had advised the BTDB that the Government was showing fresh interest in various MIDA proposals including one for South Wales between Barry and Chepstow. This change of attitude was affirmed a few days later when, on February 5, Peter Thomas, Secretary of State for Wales said in reply to a series of questions tabled by Sir Brandon Rhys Williams concerning industrial development on Severnside, and in particular the use for such purposes of estuarial land that, "my right honourable Friend, the Secretary of State for Trade and Industry and I would be ready to consider any specific proposals".

This renewed interest in the MIDA concept has prompted the BTDB to look again at a £40m port development scheme at Uskmouth. It also comes at a time when the South Wales ports are having to search for new trade as a result of being caught yet again in the backwash of someone else's rationalisation plans. The first blow was dealt by the massive reduction in coal exports after the war; the current one will follow from the impending closure of the East Moors steelworks in Cardiff and those in Ebbw Vale, coupled with the concentration of

future iron ore imports on the £20m terminal at Port Talbot.

The Uskmouth project, which is for an impounded basin containing 8 berths for handling bulk liquids and dry cargoes, represents an investment worth £5m more than the total spent by the Board on all of its South Wales installations since 1963. One is left wondering whether this kind of investment can be justified in any context - local, regional or national? What kind of trade will it attract? Iron ore facilities are problematical in view of the British Steel Corporation's decision to base all of its import requirements on Port Talbot from 1974, and even the director of the South Wales ports is convinced that container traffic is out now that most of the major routes have been containerised and the major shipping lines have settled in other ports. Optimism in the future for these ports is built around their undeniable success, as specialists in bulk traffics. Indeed a 'mini-MIDA' has sprung up spontaneously in the Swansea-Port Talbot area. Port and secondary industries have developed around B.P's Llandarcy refinery and Baglan Bay petrochemical plant and steelmaking is represented by the Margam and Abbey Works. In view of the BTDB's plans, the question to be answered is, of course, "is there scope for more of this kind of activity on the Severn Estuary?". The completion of the M4 some 14 months ago has improved communications between South Wales and the rest of the country, encouraging the BTDB to promote their 'landbridge' idea; deep water port facilities allow the import of raw materials in bulk for processing in an port/industrial complex, the resultant manufactured products being exported to continental markets via south and east coast ports. So far industry has shown few signs of being eager to translate the potential of the idea into an economic reality. The attraction of such new industry as will be able to utilise the type of port facility which it is possible to create in South Wales for the kind of activities which the BTDB are hoping to see arrive, will depend very much on general economic trends. Meanwhile there is always the hope that oil exploration in the Celtic Sea will be a stimulus to those ports whose future is in doubt and be as effective as it has been for certain ports on the Scottish east coast.

2.5 THE MACROECONOMICS OF THE MIDA CONCEPT.

The physical characteristics of a MIDA are essentially deep water and terminal facilities, equipment and methods of operation geared to the rapid handling of bulk cargoes, a large area of land suitable for siting industrial installations and suitable transport and other communications facilities both within the area and with the rest of the country. One advantage inherent in this package of facilities is the opportunity to exploit the economic of large scale sea transport, rapid and efficient cargo handling methods, rapid turn round of ships, i.e. all the advantages of a modern port designed to take large vessels carrying bulk cargoes including containerised break bulk loads. These advantages are not unique to a MIDA; it is not essential that industry be located at the port for these advantages to be enjoyed provided that inland transport facilities are adequate. Savings in transport costs are possible when those production facilities which import raw materials and/or export finished products are in proximity to a port, added to which is the long recognised advantage of locating at a transshipment point. Even if certain industries are likely to benefit from such transport cost savings, this does not necessarily imply the need for a MIDA. The essence of such a development is that it is a large multi-industry complex whereas the need of individual industries to be located at a port may be met by separate and autonomous sites at existing ports where the necessary facilities exist or are capable of being provided. Even if it is assumed that the location of a given MIDA would fit the overall locational requirements of firms just as well as existing port facilities, it remains necessary to show that the unique feature of a MIDA - deliberate provision of a large multi-industry complex - confers advantages over separate developments at existing ports. Such a demonstration would be necessary to justify an investment which might lead to excess capacity at other ports, or frustrate expansion plans which they might wish to carry through.

The concentration of capital resources, 'investment polarisation', at specific port sites to establish the infrastructure which will influence favourably the supply costs of raw materials, is the first step in the process of port industrialisation. The next stage in the development constitutes 'technical polarisation' of those activities most capable of benefitting from the locational advantages

to be enjoyed at such a site. In determining the set of industries which would be the source of demand for a MIDA, two types may be distinguished, the 'primary' set and the 'secondary' set. The former are those industries attracted by the locational advantages of flat land and deep water; into this category fall iron and steel manufacture, oil refining and petrochemicals, aluminium smelting and other non-ferrous ore treatment plants, grain milling and fertiliser manufacture, soap/detergent production, sugar refining, timber processing and paper manufacture, all of which use large tonnages of imported raw materials. The secondary set are those industries which have strong linkages with some of the primary set and although they may or may not derive advantage from the port facilities of the MIDA, they would not locate there if the related primary industry was not there also. Thus the attractiveness of a MIDA to the secondary set of industries is a conditional attractiveness, dependent upon the presence of primary activities.

In 1969 a survey of continental seaports from Hamburg to Le Havre and Genoa to Trieste was carried out to gain insight into the maritime orientation of industrial, port dependent, enterprises;¹⁶ out of 250 questionnaires only 79 replies were received and of these 25 indicated a non-port link or facilities still under construction. The following summarises some of the data relating to the remaining 54;

Total import tonnage in the year preceding the survey;	66.2m
Approximate increase in the above over the next 2-5 years, (an under-estimate because some important enterprises reported only the next annual increase);	43.1m
Number of enterprises supplied by sea;	44
Number of enterprises exporting by sea;	42
Number of enterprises purchasing one or more raw materials within the port area. (13 of these 24 were integrally supplied with requirements);	24

27 enterprises sold one or several products partly or entirely in the port area and 10 added that one or more firms had settled in the port zone because of their presence.

Although the response to the enquiry was poor, the data does reveal a marked maritime orientation of industry located at these ports, together with an indication that linkages are being established, details of which may be found in an Appendix to the paper from which the above information was taken. However, in deciding which industries would be likely to comprise a secondary set of activities it would be necessary to take each industry of the primary set in turn and examine

in detail those linkages which exist and would be expected to continue to exist. A linkage is defined as a relationship between firms or plants, producing different goods, which makes it advantageous for them to locate close together. Several types of linkage can be identified but probably the most important in the present context is the input-output, or buyer-seller, relationship. This does not, however, provide a prima facie need for physical proximity and the best location is often determined by the interplay of several forces. Not least of these is transport costs, the structure of which might make the activity market or raw material orientated. Technological factors might make particular locations overwhelmingly advantageous, the best examples being iron and steel making and oil refining-petrochemicals, where proximity of allied activities is encouraged by the characteristics of the materials involved.

The listing of industries which would constitute the primary and secondary sets gives nothing more than a description of the potential sources of demand for a MIDA location. It is necessary to go further and to examine the factors which will determine the rate at which firms will want to move to such a site. Of importance here is the expected growth of the primary industries and the extent to which this growth creates a need for new locations. A high proportion of new enterprises settling in continental port locations have been shown to belong to growth sector industries; furthermore, they tend to have a very capital intensive character, with relatively low site quotients and a high value added per employed person. The determination of future growth rests within a macro-economic framework, both for assessing likely initial demand and the long term viability of a MIDA project; the problems inherent in such an exercise are enormous.

Requirements for new locations generally hinges on the overall growth in particular industrial sectors and specifically on the extent to which individual plants can be expanded at existing sites (subject to land being available and planning controls). The replacement of obsolescent plant, perhaps coupled with a program of rationalisation within an industry, may provide sufficient impetus to search for a more optimal location. The British Steel Corporation's recent restructuring of the industry was based on a policy which favoured the modernisation and expansion of existing coastal plants rather than the construction of totally new steel making capacity on maritime orientated greenfield sites.

The location of a MIDA may be strongly influenced by the locational constraints which face firms in the given industries. The attractiveness of a maritime development depends on how much it can accommodate all of the various factors influencing location decisions. Proximity to deep water and to plants of particular kinds may be a strong attraction and therefore exert a pull wherever the MIDA is located, but these attractions are not unique in kind, only in degree. The unique advantages stem from the possibilities of economies of scale and the fact that we have in a MIDA a multi-industry complex of plants benefitting from proximity to each other. This suggests that the development must have some minimum scale and must have some particular composition of activities in the complex if it is to reap the hypothetical advantages. If the viability of a MIDA is a function of its size and composition, the participation of certain types of activity may be crucial to its success. It might be that without the presence of an oil refinery a MIDA would never have advantages over a more scattered pattern of location, no matter what other types of activity were present. This notion of some industries being essential may derive from their scale and expected growth, their importance as a source of supply and demand or the strength of other external economies which they confer on the complex.

Influences on Port Industrialisation in Europe: if the demand for fixed port facilities increases to the point of full capacity there are three ways of meeting the situation. Investment may be made to allow a further development in demand without increase in costs. Alternatively the capacity of the port could be extended by improving the technical installations to allow the more efficient handling of cargo, while a third possibility would be to rationalise the operations of the port and improve its organisational structure. In practice all three methods are used to varying degrees in the renewal and/or extension of port facilities.

The competition between ports arising out of the need to make major technical adjustments to cater for new transport innovations is not just a competition within the transportation field. For those ports most capable of accommodating these changes, by becoming the sources of raw materials they also become favourable locations for the industries using these inputs. Therefore, decisions about the type and location of such new port developments have an obvious influence on the way in which regional and national economies may develop. Although there is,

as yet, no common policy of port development in the EEC, there can be expected to emerge such a policy of regional development. As far as it can be shown that regional (and national) prosperities may be influenced by certain types of port development, or vice-versa, decision made in the regional planning sphere could have a strong, if indirect, influence on the port planning of member countries.

It is the competition between ports which enables the shipping companies to take decisions about the size and type of ships that will be built knowing that the ports will respond with the provision of the appropriate infrastructure. Developments born of such autonomous decision making can easily lead to the irrational subsidisation of ports because of the fear that otherwise other ports will profit more from technological developments. Since, however, all port authorities tend to reason like this, and since governments will be afraid that industries connected with appropriate port developments will move to neighbouring countries if conditions for the import of raw materials in bulk are more favourable there, all ports with the right kind of development potential will be trying to get a maximum subsidy to stand the competition of their neighbours who are doing the same thing as they do! Acknowledging the process only serves to underline the difficulty of devising a common European ports policy designed to ensure the optimum allocation of investment in port facilities.

In practice the tariff system of a port has been used to try and make one port more attractive to a shipper than another. The argument used to defend this policy states that low rates attract ships and hence goods flows and the latter then attracts industry. The larger and more varied a port becomes, the more attractive it will be as a location for industries which, in turn, will create other activities. In other words, other ports are subsidised and thus get a bigger share of the industrial cake; and the indirect benefits are so large that subsidies are always justified. The first argument is circular; the second false. If ports create secondary activities so too does any other economic activity. This is a completely general multiplier effect which might be larger for some sectors than for others. To use it as an argument for subsidisation would imply that any economic activity should be treated likewise. But the problem of establishing fair competition between the ports will not be solved simply by agreement over port rates and levels of subsidisation. Port competition goes outside

the sphere of influence of the ports. The availability of land for industry and the provision of (subsidised) infrastructure in the hinterland are but two features which could influence the competitiveness of ports and are items that cannot be 'normalised' by international agreement.

2.6 PORT DEVELOPMENTS - SOME BRITISH ECONOMIC AND REGIONAL VIEWPOINTS.

Introducing that section of the 1966 White Paper on Transport Policy¹⁰ entitled 'Regional Transport Planning', the following summarises some of the key elements;

"...thus main transport systems - railways, inter-urban road network, ports and airports - must be planned centrally and investment must be coordinated. Central Government must therefore draw up a broad framework for development of the system in the light of the total need of the economy and determine the main priorities within it. It is equally important that an overall transport plan should reflect the needs of the individual regions. Decisions about road, rail and airport investment need to be taken in the light of comprehensive studies of the transport needs of each region... These studies in turn are dependent on, and must relate to, the overall planning objectives of the region and must take into account not only the existing transport requirements but also future population growth, changes in the structure of industry and employment and the importance of safeguarding and improving environmental standards".

Implicit here is the need to undertake macroeconomic studies to assess the important implications for the regions of decisions to invest in communications infrastructure. But the fact of the matter is that infrastructure investments of this type have been justified, almost without exception, on the basis of a qualitative assessment of their viability. Thorburn, referring specifically to ports, expressed the situation thus; "Large investments in harbours throughout the world appear to be made to a large extent intuitively and not on the basis of rational economic calculations".¹⁷ The complexity of a quantitative financial exercise applied to port investment schemes has ensured that this statement remains true over a decade later though it is worth recording that development of the port of Zeebrugge within the framework of the 'Zeestad Project' was justified by a cost-benefit analysis study. The applicability of this technique to the assessment of the feasibility of a MIDA project in the U.K. has been discussed at length by Peston and Rees¹⁸. By attempting to take account of all the factors inherent in any such exercise they effectively underline its seemingly intractable complexity. For example they stress that not only should the viability of MIDA's be compared one with another but also with similar developments elsewhere (e.g. inland and around airports!); ab initio port development should be compared with the expansion of existing ports, and there ought to be some quantification of the situation both 'before and after' as well as 'with and without' a MIDA development.

The Peston-Rees comments on the use of the cost-benefit technique sum up the present situation very well;

"A cost-benefit analysis may rule out certain possibilities on objective grounds, but may also leave sufficient possibilities on which subjective judgements will have to be made";

and,

"In sum, the relevant alternatives are specified, the relevant flows of costs and benefits itemised and the form in which they will be relevant to the decision making is laid out. Equally, the multi-dimensional nature of the problem is indicated so that it will always be apparent to the decision maker which costs and benefits have been quantified and evaluated and which have not".

Whatever the method used to justify port development in economic terms, it remains the task of the decision maker to act on such advice as is given. Regional planning in the U.K. is, however, greatly influenced by central government policies and what actually happens on the ground depends very largely on the degree of financial support from the Treasury. An investment in new port facilities, especially where there is the potential for large scale industrialisation, could possibly create the kind of growth pole essential to a region intent on revitalising its economy so long as it possessed the correct structural features. Yet a prerequisite of such a concentration of economic activity is a similar concentration of investment in port and related infrastructure at the selected location by central government. With or without the 'benefit' of economic calculations, such investment decisions are bound to have a strong political content. The difficulty of letting economic rationality dictate the type, scale and location of development such as this is well illustrated by the strong political influences on the attempts being made to restructure the British steel industry, itself an important component primary activity of any potential port-industrial complex. Attempts to establish such a centre on the Clyde Estuary, and which are described later, illustrate these influences in action as well as providing a good example of a vision of economic revitalisation based on maritime orientated industrial development.

The success of ports as primers of regional development has, however, been questioned by at least one writer in this field of interest. Developing ports either on a regional basis or in isolation may be likened to 'robbing Peter to pay Paul'. Drawing rings of incremental radius around a port location can show how much population or cargo

generating power is within the range of any projected development - a rather semi-quantitative approach of the kind which featured in the case of Portbury. It is essentially a method of predicting the clearly foreseeable short term demand, taking little account of the potential of the hinterland to support the port development e.g. by the provision of new or improved communications or by a policy designed to encourage the growth of population and industry therein. From what little evidence there is available it might be argued that this is what the Ministry has done to date, i.e. forecasting aggregate needs of various types of capacity and on that basis deciding where new port capacity is to be located, its pose of neutrality coupled with efforts of forecasting being little more than politically necessary window dressing! It may be that the outer rings we have drawn around a particular port location, if turned the other way, would make them of shorter radius to a rival port. It is such a situation which calls for the kind of overall view which can be taken only by a national body. Preservation of a balance between potential over and under-investment in port facilities is the object of the exercise, a difficult feat as we have seen when attempted in a context of continuing structural changes affecting all aspects of the port industry.

In the U.K. the 'ring-master' guiding the development of ports at the national level is the NPC who regarded their Interim Plan as "the first attempt ever made to coordinate measures for port improvements on a national basis". But the opening pages of that document also reveal some interesting views, if few in number, on the role of ports at the regional level. The proposals aimed at bringing about major improvements in the Bristol Channel (Portbury) and Southampton, as well as in Scotland and the North East, were intended to "minimise any risk that regional development would be hampered by inadequacies in the ports" and also to ensure what was called "an appropriate balance between the regions". Traffic flow volumes appeared to be the principle criterion by which port development could be justified, making the provision of efficient facilities at these transport nodes the selling point of a region in search of industry, rather than seeing the port as a manufacturing location in its own right. Nevertheless the Council felt that the development of port facilities could not of itself radically affect the major flows of traffic; to attempt to channel traffic

to other ports by refusing to allow the provision of adequate and efficient facilities would, they said, be a negative approach. They apparently did not wish to imply by this that port investment could not or should not take its place as an essential element in the development of a region noting that improved port facilities might be an important contribution to the total infrastructure. The Council's recommendation that Leith should receive modern facilities was based on the desire to develop the "basic capital structure of the Central Belt of Scotland". But the successful expansion of a regional economy, they observed, was dependent on government activity in other sectors - "if undertaken in isolation, port works seem generally unlikely to exercise a big promotional influence". Ports as local and regional multipliers, if allowed to become more than just nodal points at a transport interface, were obviously not considered at the time of the Interim Plan yet it was only a year later that the NPC made public its ideas for the creation of Maritime Industrial Development Areas.

A principle factor in the rejection of the Portbury scheme had been the analysis of port traffic flows and their relationship to port hinterlands which had demonstrated that (at that time) the greater part of imports and exports to be related to an area quite close to the ports through which the traffic passed. The conclusion drawn from this in the White Paper on Transport Policy was that a major new port, to be viable, requires, like London and Liverpool, a very large hinterland in terms of industry and population. In other words, the planning of large scale port facilities should be related to plans for the redistribution of population and industry. However, there appeared to be much reluctance to undertake regional development policy exercises related to the provision of new maritime infrastructure because "it would be many years before the capital committed... could begin to earn an economic return". The NPC on the other hand had suggested in their Interim Plan that in the context of a regional development policy which aimed at substantially modifying existing regional economic activity, it might be necessary to employ methods for assessing the need for port investment which differed from those then in use. They saw that the difficulties in calculating changes in existing flows and of estimating the type and volume of future traffic would make it "quite impossible to demonstrate the likelihood of any particular

rate of return on port investment" - a conclusion they had probably arrived at as a result of their experiences in attempting to justify the Portbury scheme purely on the basis of financial criteria. Yet there has continued to be a failure, at the national level at least, to recognise that port projects seldom give an acceptable return on investment, especially in the short term, and especially when considered from the microeconomic point of view. This is in contrast to the attitude of most maritime European governments who consider port development schemes within a macroeconomic framework and on a time scale commensurate with the nature of such undertakings.

The 1966 White Paper on Transport Policy provided an illustration of the desire for capital invested in these schemes to reap early benefits. While not wishing to imply that progress in modernising the ports should wait upon the formulation of long term regional development plans, it did stress an urgent need for new port facilities which, "while earning an economic return in the short term", could form the nucleus of further port expansion where this might be justified by large scale industrial and housing development. At that time the Government had just commissioned studies of the potential for development of Humberside, Severnside and Tayside and it was expected that these would provide the information from which would flow "major decisions on the redistribution of population and regional development". The next section examines the content of two of the subsequent reports to determine to what extent the physical characteristics of the study areas were recognised for their potential to support a concentration of population based upon the creation of centres of maritime based economic activity.

2.7 THE HUMBERSIDE¹⁹ AND SEVERNSIDE²⁰ FEASIBILITY STUDIES.

For over a decade there has persisted the idea that large scale urban growth around selected major estuaries should be encouraged as a means of counterbalancing the continuing development along the 'axial belt' linking the London conurbation with that of Merseyside. One of the earliest contributors to this idea was Derek Rigby-Childs who advocated the siting of a new city near the head of the Humber, at the focal point of an important network of communications²¹. Indeed the Humber, together with the estuary of the Severn have been selected on a number of occasions as the obvious candidates, perhaps because their disposition at the extremities of a NE-SW axis makes them potential counterbalances in the true physical sense. The choice of estuarial areas for this type of development appears to have been largely intuitive and Rigby-Childs, for example, does not seek to justify his choice, assuming it to be so logical as to need no arguing! Others have emphasised the attractions of such areas as being the location of unexploited resources, particularly will respect to the provision of water and energy; the possibility of constructing a barrage across the Solway for power generation and fresh water storage has given rise to ideas about new urban development around this estuary, perhaps as a new city based on Carlisle.

New urban development on the scale which such proposals as these envisage implies large scale increases in population. Turning this around to say that population increases necessitate the construction of new urban areas expresses the reasoning behind the Government's decision to focus attention on the estuaries and to designate studies of the Humber and the Severn in 1966. (Tayside was also examined in the same period but under the guidance of the Scottish Development Department).

After the publication of the National Plan in 1965, an inter-departmental study group of officials was set up to;

"review population trends, the patterns of settlement etc., up to the year 2000 as a basis for long term planning of public investment and the selection of areas suitable for large scale development".²²

Up to this time projections of expected population expansion to the end of the century were being amended almost yearly (1960, +9m, '64, +20m, '66, +15m); the Long Term Population Distribution Report (LTPD) putting the figure at about +10m.

The reasoning behind the selection of Humberside, Severnside and Tayside as possible locations for new national growth areas was not fully explained in the LTPD Report but some of it can be inferred from evidence given by the Ministry of Housing and Local Government during the 1970 to the Parliamentary Select Committee on Science and Technology, sub-Committee on Population²³. It would appear that considerations relating to economic development played a major role in the choice of these sites;

"During the course of the (LTPD) study the possibility of initiating large scale development at selected locations (Humberside, Severnside and Tayside) affording unique or particularly favourable conditions from the national economic development point of view was suggested... These locations have been investigated as possible reception areas for part of the increased population expected and for industrial/maritime purposes". (ref.23, para.23, p.87).

(When considering the findings of the estuarine studies it is important to remember that they were commissioned after the LTPD study had begun, but that they all reported before this study was completed.

Furthermore, according to a press report in October 1972, yet another official revision of the 'end of century estimate of population' had yielded a figure 2.5m lower (66.5m as opposed to 69m) than that which had stimulated the setting up of the Feasibility Studies. In view of the new forecast it was felt that the Government would rethink its ideas about the kinds of needs which it was expected the chosen localities would fulfill and it seemed likely that neither of those discussed here would get the kind of growth suggested in the Reports).

It is a feature of both the Humberside and the Severnside study that the physical development questions were treated with much greater assurance than those concerning economic development, with population estimates taking precedence over those of employment. For example, the former report stated that "Humberside has considerable physical resources available for major expansion. But there are also shortcomings in its existing infrastructure which raise doubts about its ability to cater for the needs of its own growing population". This is, in some measure, a reflection of the state of the art between physical and economic planning. The lack of assurance in the economic analysis is most apparent in those sections of both studies which deal with port facilities and the possible

consequences of the development of MIDAs. Although suggested MIDA sites are included in both study areas, the consequences of their development are not considered. In the Humberside Report it is argued that "in view of the uncertainties at present surrounding the whole MIDA project it would be wrong to assume a major contribution to employment growth in the Area arising from this particular possibility"; similarly in the Severside Study, "an assessment of the possible economic impact of a MIDA would thus be largely speculative at present".

If the statement by the MoHLG quoted above regarding the choice of location for growth area studies is taken at face value, the maritime/industrial element is missing from both reports. Although the MIDA question must be seen as largely speculative in political as well as economic terms, it is surprising to find that no attempt was made to estimate the consequences of action of this kind in either area, even though the Hunt Committee painted a picture of developments of this kind on Humberside which is in complete contrast to the vision of the future expressed in the Humberside Study;

"Some of us believe that Humberside is potentially one of the best sites in the country for major economic growth. With ample land for industrial development, access to deep water, and accessibility to the main European markets, the estuary is in an extremely good location for industry, particularly capital intensive industry, (e.g. chemicals, petrochemicals and oil refining). The developments that have taken place so far, are only the beginning... on the face of it the area seemed suited to the kind of major maritime industrial development that has taken place since the war in Holland at Europoort and in France at Fos, and is planned at Le Havre and Dunkirk".²⁴ (p.63).

While the Hunt Committee also expressed optimism over the future of Severnside by virtue of its substantial and diversified industrial base, access to deep water and good communications - recently improved by heavy infrastructure investment -, the Severnside Study virtually turns its back on the estuary and discounts any linking function it might appear to have. The ports of Severnside were not seen as contributing significantly to the future of the area in terms of job provision;

"...increased productivity will tend to reduce employment in the ports generally and so far as the area as a whole is concerned this tendency is not likely to be counterbalanced by the expected increase in throughput. Generally we do not see the Severnside ports as being major stimulants to the economy of Severnside".

Although both studies recognised the existence of sites suitable for really large scale industrial growth based on the MIDA concept, their exclusion from serious examination is probably due to the long term nature of this type of development. In fact the approach used in the studies was to concentrate exclusively on projecting current economic prospects of the areas into the future and then demonstrating that there would be ample land available for future large scale urban growth. This is illustrated in the Humberside Report when it discounts those physical assets suitable for a port/industry complex and instead emphasises that "for major growth, financial benefits would have to be offered to attract the necessary industry and...such inducements might have to continue for a considerable time before the Area could reach the point of self sustaining growth". The implication here, as well as in the Severnside Report, is that growth would necessarily depend upon securing mobile industry rather than exploiting natural assets for the creation of indigenous industrial activity. It adds that a build up of population should not be considered before 1980 on the grounds that this would give time to improve the existing infrastructure and suggests that, in any case, this would be the earliest date at which a re-examination of the existing distribution of industries policy could take place. Despite statements extolling the physical assets of these areas for large scale industrial/maritime developments, the Hunt Committee also appear to share this view of dependence upon mobile industry. Recognising the limited supply of this type of activity, the Committee added that "estuarial development after 1980 is only feasible if mobile industry is allowed to go there and every Industrial Development Certificate granted would be at the expense either of the Development Areas or the high activity regions. If, by then, DA's have been transformed from bottomless pits for growth industries into a state of self sustaining growth, and if national prosperity and demands for internal reorganisation allow the South East and West Midlands to forgo the activities they spawn, then we can afford estuarial development"(!).

The essentially divisive nature of estuaries makes them difficult to plan, especially where there has been a tradition of separate and individual development of each bank. A prerequisite for effective planning is the provision of a physical link to bridge a conceptual gap. When viewed in economic terms, as, for example, a focus for industrial development which requires deep water facilities, the position is reversed and the estuary itself becomes a unifying rather than a dividing feature. But to exploit the integrating potential of estuaries requires massive capital investment in infrastructure projects such as a bridge, barrage, power stations, port/industry complex or perhaps an airport, which utilise their physical assets. Both of the studies considered here, in making least cost assumptions, implied that the areas were capable of massive expansion without massive investment of this type, thereby studiously ignoring the possible integrating effects of the estuaries and instead reflecting their divisive character.

Apart from the favourable physical factors inherent in each of the study areas, their proximity to the axial belt places them in a strong position for large scale growth given a sufficient level of central government investment. The problem of planning the assets of such areas comprehensively is illustrated particularly well by the Severnside Study. Here the estuary divides two countries, being two economic planning regions one of which is mostly a Development Area, and it is perhaps not surprising that the Report focussed attention on the English side for growth. Humberside offers more hope for successful planning, lying, as it does presently, wholly within the realm of the Yorkshire and Humberside Economic Development Council. Furthermore, the Humberside Region as defined by the Local Government Reform Bill, will create a single major planning unit. Taking in both banks of the estuary, it could provide the right kind of administrative framework to give a sound basis for more comprehensive planning of a new estuarial city-region. This would mean planning the land area around the estuary with due regard to the potential of the estuary itself and the activities it is likely to support.

Even with a better planning framework, developing the full potential of estuaries is still very much dependent on regional implementation of national economic policies. The scale of development will involve the input of vast capital resources and the allocation of these to specified projects will continue to rest with the political

power at the national level. Regional planning, then, will continue to be essentially physical in nature, primarily concerned with defining and safeguarding the natural assets until such time as policy or economic conditions allow or demand their development, and the accomodation of the growth stemming from the eventual exploitation of the economic potential of these physical resources.

PART 3

3.1 ATTEMPTS TO EXPLOIT THE MARITIME-INDUSTRIAL POTENTIAL OF THE CLYDE ESTUARY.

Serious interest in the Clyde Estuary as a location suitable for maritime related industrial development may be traced back to the creation of the Clyde Port Authority in 1966. Since then the subject has stimulated a great deal of both public and political debate. The pros, if not the cons, have been expressed in a number of reports and published papers, while both sides of the coin have been revealed at public inquiries arising out of applications for planning permission to exploit the natural assets of specific locations on the estuary. The principle reasons for the continuing controversy may be identified as;

- a. the growth of tidewater industrial complexes, notably on Teesside, South Wales (Port Talbot/Swansea) and to a limited extent on the Medway, has been a gradual process over many years at locations which are both established ports and traditional centres of primary processing activities (iron and steel making and oil refining). That part of the Clyde Estuary identified as being ideally suited for this kind of development is not only a 'bluecoast' site, but also one situated on a coastline noted for its high amenity value. Furthermore, it was envisaged that realisation of its potential by massive capital investment would occur over a relatively short time period, introducing a variety of social, environment as well as physical planning problems.
- b. the exploitation of the flat land, deep water features of the estuary became synonymous with an opportunity to revitalise the economy of the Central Belt of Scotland, which had long been suffering from its dependence on traditional heavy industries now in decline.
- c. in this context the Clyde became seemingly inextricably bound up with the future of steel making in Scotland. A program of rationalisation and modernisation for the industry being devised by the British Steel Corporation indicated a need to site new or improved and expanded steel making capacity at locations that could benefit from the economies of scale offered by the import of ore in bulk. This was interpreted by many to mean the provision of a new integrated steel plant on a deep water site - a site of the kind with which the Clyde could easily furnish the industry.
- d. together with Marseilles-Fos and Le Havre, the Clyde, because of its navigational advantages for the new generation of bulk carriers, was identified as an important gateway to Western Europe for bulk raw material imports and hence having the potential to become a major centre for a port-industrial complex.

At a time when it was becoming increasingly evident that regional policies, evolved slowly and at mounting expense over 40 years had all but failed, Scotland was suddenly presented with three opportunities having the potential to reduce, if not eliminate, economic disparity between itself and the more prosperous regions. Of these, the discovery of North Sea Oil and the entry of Britain into the EEC are fairly recent. It was the Clyde Estuary as the location of a large scale maritime based industrial complex that was first to capture the imagination as a means of curing a variety of economic ills. However, while its potential in this respect has still to be realised, North Sea Oil at least is now an economic reality and events of the past 18 months have held much of the public attention which previously had been focussed on the Clyde.

The first step towards the realisation of the west coast's deep water asset came with the formation of the Clyde Estuary Development Group in the Spring of 1968, described by its Chairman, A.G. MacCrae, as "a new departure in the planning of the economic development of Scotland". Created under the auspices of the Scottish Development Department, the Group was representative of the Clyde Port Authority and the local planning authorities bordering the Lower Clyde Estuary, viz. the County Councils of Argyll, Ayr, Bute, Dunbarton, Renfrew and the Town Councils of Dumbarton, Greenock and Port Glasgow. The Group's task was to determine the type of industry likely to arrive in the estuary on account of its flat land, deep water assets and, what was to become a major issue, to assess how such a development could best be accommodated in an area of outstanding landscape and recreational value. To this end they commissioned a report on possible industrial development of the estuary from separate industrial and planning consultants and the findings of the study were made public as the Metra-Weddle Report²⁵ early in 1969.

The Report revealed that only steel making, petroleum refining and power generation had, at that time, any claims on deep water estuarial sites. This was perhaps fortunate in view of the shortage of immediately available flat land adjacent to the Clyde's deep water; although very deep water is its principle asset, any associated development would necessitate the creation of additional flat land by reclamation. The consultants agreed that the Hunterston Peninsula

offered the best site for an oil terminal and future steelworks and also that one of the two oil companies showing interest in the Clyde as a result of promotional activity by the Clyde Port Authority, the Marco Petroleum Company, should site their refinery up river at Longhaugh Point with an associated oil jetty at Wemyss Bay. There was disagreement over the most suitable site for a refinery belonging to the second of the oil companies, Chevron, and a proposed power station, but several feasible alternatives were suggested. Apart from the inevitable loss of amenity resulting from the realisation of any of these developments, the other cause for concern was the need for a regional plan to cater for the effects of these new industries within the broader framework of West Central Scotland. A most obvious omission in this respect was that of Lanarkshire and the City of Glasgow from the Clyde Estuary Development Group. If the proposed steelworks was to take shape on the coast then the traditional steelmaking centres of Lanarkshire would be greatly affected.

Meanwhile, the rapid progress of events in 1969 was made inevitable early in the year by the application of Chevron Oil (UK) Ltd., to Ayr County Council for permission in principle to build a marine terminal and oil refinery, with provision for associated industry, on the southern portion of the Hunterston promontory. It was at once apparent that there would be widespread objections; loss of amenity and good agricultural land, restrictions on recreation facilities, damage to tourism, atmospheric and coastal pollution, absence of an unemployed population in the locality, doubts about the net gain to the Scottish economy and the supposed superior endowments of other sites - all were advanced as good reasons for abandoning this and any other projects affecting Hunterston.

Nevertheless Ayr County Council decided to proceed and in June 1969 submitted their application for an amendment to the County Development Plan to the Secretary of State for Scotland, so that Hunterston could be re-zoned for industrial development. Their submission was based on the representations of:-

- i. the Clyde Port Authority, "that there is likely to be an emerging and increasing need for a general user deep water port with bulk discharging and transshipment facilities, in the Clyde Estuary, capable of taking vessels up to 200,000 tons in the first instance and capable of being developed to provide facilities for substantially larger vessels up to 500,000 tons".

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ii. the Scottish and North West Group of the British Steel Corporation, "that the use of large ore carriers would enable the Scottish steel industry to take advantage of distant, low-cost, high grade ores" and "that if a deep water marine terminal for iron ore should be established in the Hunterston area, there will thereafter be the possibility of considerable savings and other advantages...if new investment required to provide adequate capacity in the industry is concentrated... in the immediate vicinity of the terminal".

iii. Chevron Oil (UK) Ltd.

The Secretary of State ordered the inevitable public inquiry. The proceedings opened in Ayr on November 17, 1969 and closed on February 13, 1970 - the most costly and longest example known in Scotland of this ineffectual if necessary phase in the workings of the British 'planning machine' ! Since the form of such proceedings encourage controversial rather than lucid analysis, the wisdom gained was certainly not in proportion to the 7,000 pages transcribed; but some interesting facts did emerge.

First, the Managing Director of BSC's Scottish and North West Group confirmed that there was no possibility of Scotland sharing the expected expansion of the British steel industry without the Hunterston terminal. Other evidence from the Corporation indicated that 1,300 acres of the total site available after reclamation of 8,000 acres could accommodate a steel plant of 8-10m tons annual capacity - a notable prospect for the Scottish economy if it could be realised out of demand stimulated by raw material costs at the Hunterston site.

While the inquiry was still in progress an announcement was made on January 21, 1970, that steelmaking capacity at Ravenscraig, Lanarkshire, would be increased from 1.0 to 2.5m tons per year, thus enabling the associated strip mill to work to capacity, doubling its annual output to 2m tons by 1973. From this decision an ore terminal followed almost inevitably and on December 10, 1970 the Government gave approval for such a terminal as well as the construction of a general user deep water port at Hunterston as part of an overall decision to re-zone the site for industrial purposes. The recommendations of the public inquiry had, however, favoured the ore terminal and stockyard, while asking that a steelworks, general user port and refinery developments be refused. The decision was interpreted as still leaving the Hunterston site as one option for an integrated coastal steelworks amongst a list of other possible locations, namely Teesside, Shotton, Port Talbot, Immingham and Foulness. Even so, the

BSC had already started work on a £200m investment program to increase steelmaking capacity at Scunthorpe by 1.8m to 5.4m tons annually.; this project was to be dependent on the railing of ore some 20 miles from an import terminal at Immingham.

The Secretary of State's suspension of judgement on the oil refinery proposals for Hunterston "until new evidence could be evaluated" caused disquiet not only to the industrialists who backed the proposals but also the objectors, who saw a delayed decision as likely to have harmful effects on tourism; they were anxious to know quickly and to what extent local amenity would be affected.

One of the parties supporting development was, of course, the Clyde Port Authority, which was quick to point out that iron ore and oil were the only commodities being transported in bulk carriers of a size that could be accepted at no other U.K. port but the Clyde. Reviving the topic yet again in a recent letter to the press, A.G. MacCrae, Chairman of the CPA, saw that only by properly planned exploitation of the Hunterston area could there be any benefit to the Scottish economy;

"A refinery with a large export potential and the ability to supply energy economically to industry in the area, is an obvious part of such a development and from our point of view is an excellent use of the deep water so readily available to us there".

Indeed, the fact that the CPA is a commercial concern into which private money has been invested means that it cannot afford to be altruistic in the development field. For the Port Authority the first vexed question following on the findings of the public inquiry was to resolve just what kind of port would be established at Hunterston. Although never expressed publicly, it seems likely that the BSC were keen to construct a mineral terminal for which they could claim sole management in the same way that British Petroleum operate their Finnart Terminal on Loch Long. Such a solution would not meet with the approval of the CPA, who would much prefer a general user port as authorised by the Secretary of State. Otherwise it would be done out of the commercial usufruct of one of the finest stretches of deep water in Europe and have nothing to set against giving up General Terminus Quay, Glasgow. That good earning asset, which cost very little to convert to an iron import facility in 1957, would become redundant immediately a similar terminal at Hunterston was in operation. Another

problem arises over which body would be in overall charge of designing and building the terminal. The BSC and CPA may well have quite different ideas about what is wanted. Moreover, the two have quite a different call on grants, loans and other sources of finance, as well as different liabilities with regard to local rates. With ample room for a clash of interests it is not surprising that negotiations have stretched over a considerable period of time.

Despite this, recurring interest in the potential of Hunterston may eventually fulfill Clydeport's more general wishes that its unique potential for working the largest of vessels, with all that might follow from that, will be utilised to the full. Recently Chevron Oil reminded the Secretary of State that its application to build a refinery had still to be decided. Although in practice the application lapsed in 1971, they pointed out that after the public inquiry it was stated that the planning considerations resulting in the rejection of a refinery on the site "should not be taken as being valid for all time".

The resuscitation of this application has thrown the whole question of large scale industrial development on the estuary back into the melting pot as well as posing something of a planning nightmare. Currently the Secretary of State has before him one large development in the shape of the £160m Oil Refining and Services International (ORSI)/Eurosider refinery and steel mill complex and part of the site they require overlaps with part of that wanted by Chevron. To add a further complication, there is, as yet, a lack of a definite plan from the BSC on their land requirements for the ore terminal and stockyard, partly as a result of the protracted negotiations with the CPA over the financing of the £26m project; on top of these is a recent demonstration of interest in the Hunterston Peninsula by the German steelmaker, Korf Stahl. While two refining companies seek to establish themselves on the coast, another public inquiry has recently been held into a proposal by Ayr County Council to re-zone 2000 acres inland at Stewarton for "industry with special site requirements", refusing steadfastly to acknowledge that this meant the oil industry! With a decision still awaited on this, there has yet to appear the long overdue planning and development report of the Hunterston Development Company which has been financed by the Scottish Office. Whether its content will aid decision making on such a complex collection of contentious and frustrating issues remains to be seen.

What is apparent from all of this is that comprehensive planning of this natural and national asset is made exceedingly complicated by the number of planning authorities involved. This has been and continues to be a major concern of the CPA whose landward interests are effectively controlled by no fewer than ten such bodies.

The formation of the Clyde Port Authority on January 1, 1966, the first estuarial regrouping of port interests following the recommendations of the Rochdale Committee, brought 300 sq. miles of water within its jurisdiction. This was subsequently increased to 450 sq. miles with the expressed intention of bringing within the port area all of the most likely sites for industrial development on the Firth. The Authority derives its powers from the Clyde Port Authority Confirmation Acts, 1965-72. Section 15 of the 1965 Act permits the acquisition of land for the purposes of the undertaking and provides for the Minister to authorise the Port Authority;

"to compulsorily purchase any land which they require...and the Acquisition of Land (Authorisation Procedure)(Scotland) Act 1947 shall apply as if the Port Authority were a local authority within the meaning of that Act..."

This, however, excepts land belonging to any local authority, or any operational land of any gas or electricity undertakings, or of the British Railways Board. Although powers to develop land are broad, no development can take place without the granting of planning permission by the relevant local authority and presently the CPA's financial resources preclude any large scale enterprises, as problems over the ore terminal exemplify.

Much criticism has been levelled at the operation of the planning process for the way in which specific proposals for development at Hunterston and elsewhere on the estuary were handled. In particular the public inquiry procedure has been condemned for its inability to represent all interested parties and to establish 'the truth'. It is not a means of evaluating possible alternative schemes, only a mechanism of acceptance or rejection. By the time it is held it is too late for creative thinking; the proposals are fully formulated and opinions are already polarised 'for and against'.

If we really want to know how best to utilise our natural assets, the argument goes, we must demonstrate that intention in a manner much more positive in outlook than that which the present planning machinery allows. The experiences of Chevron and Murco in the hands

of that machinery were considered to have acted as a serious deterrent to those wanting to invest in similar projects. Recent interest shown in the advantages of the Clyde would suggest that this view has, perhaps, been too pessimistic - or maybe the eventual rewards, economically, upon gaining a foothold make all the trials and tribulations worth while! Nevertheless there is room for improvement, for a demonstration of real interest in a subject which is, or should be, high on the list of regional and national priorities. The potential for port related industrial development on the Clyde, in physical terms, has been shown to be as good, in degree if not scale, of those of Continental competitors like Marseilles-Fos. But, as we shall see in Appendix 1, their additional asset is unequivocal government backing of such projects, especially in the sphere of infrastructure provision.

One solution to this problem has advocated the preparation of a strategic plan, a Green Paper, on the pattern of future development in the West of Scotland, in which the Scottish Office could indicate the broad lines of population growth, urban expansion, transport networks, power requirements and the type and distribution of industrial development. Such a generalised picture could be pieced together by the Scottish Office with the assistance of the Local Authorities. Doubtless it would be strongly biased towards a physical planning solution and in this respect would probably parallel in style, if not content, the 1963 White Paper on the Central Belt of Scotland²⁶. The plan for the West of Scotland currently being evolved by the West Central Scotland Plan Steering Committee with the cooperation of the Scottish Office will, one hopes, include a substantial socio-economic input such that it will help answer questions about things like the need for oil refining capacity, both within the region and the country, rather than simply identify suitable locations for this type of development based purely on physical criteria.

Another solution calls for the creation of a 'land bank' of sites which have already been processed by the basic planning machinery as suitable for the kind of industry anticipated at a deep water port. This idea, which parallels the advance factory component of regional policy incentives, has its origins in the Industry Bill (later Act) of 1971. The Scottish Council (Development and Industry), who have done a great deal to promote the Clyde Estuary through their publication of the two 'Oceanspan' Reports (qv), gave evidence to the Select Committee on Scottish Affairs to the

effect that it would be a mistake to delay the 'advance sites' innovation until the arrival of Local Government Reform in 1974, on the basis that the new authorities could not be expected to launch out immediately into so complex an activity. By replacing the present large number of local planning authorities with just one, that for the West Region, reform opens up the way for a more comprehensive planning of the Clyde Estuary. That ought to help the CPA, intent on making maximum use of its assets, in its promotional activities. It might also help offset the embarrassment it experienced when, after being instrumental in introducing Chevron and Murco to the Clyde, it then had to sit back and watch as these two companies went through the British planning machine at great expense, both in time and money, only to find their proposals still undecided after almost 4 years.

The 'Oceanspan' Reports:

Apart from illustrating some of the problems associated with planning for port related industrial activities, of all the locations in the U.K. suitable for such developments on a large scale, the Clyde is undoubtedly the only one to have been studied, if not in great depth, then certainly at great length. To date it has formed the subject of 3 major reports while a fourth, that of the Hunterston Development Company, is due to be published very shortly; the first of these reports to appear was the Metra-Weddle Study.

During the period when the first industrial interest in the Firth were being vigorously debated, the Scottish Council (Development and Industry) were preparing their own views on the subject. The first of their two reports - 'Oceanspan' - a maritime based development strategy for a European Scotland, 1970-2000²⁷ was published "for information and discussion" in February 1970. A qualitative account of a future for Central Scotland which highlighted the Scottish ports as the "focal points for a new industrial prosperity", the word Oceanspan subsequently became synonymous with 'economic growth in Scotland'. Its theme was simple enough, if not naïve, and hinged on five 'key' elements - ships, ports, industry, transport and people!

With a progressive increase, both in the demand for raw materials by Western Europe, and in the vessels carrying them, it suggested that

the physical limitations imposed on the passage of these vessels through the English Channel plus the eventual volume of traffic so carried, would place a premium on European deepwater ports to the south and west of that congested seaway. The Clyde, with its natural deep water, is one such location, having the additional advantage of a certain quantity of existing and potential flat land for any associated primary processing activities, served by a suitable infrastructure and in proximity to a large population; the implication was that flat land and deep water would emerge as economic assets as significant to the location of manufacturing industry in the future as were the indigenous coal fields and iron ore deposits at the beginning of the Industrial Revolution. The basic strategy took an ocean terminal on the west coast and coupled it to the export orientated central belt economy. The supply of cheap raw materials would, it was envisaged, stimulate and diversify this economy and the products of manufacture could be shipped to European markets via the ports of the Forth. In other words, there was created a 'landbridge' between the Continent and North America based on a conversion economy whose competitiveness would be enhanced by the ready supply of cheap raw materials.

The importance of both the Clyde and the Forth in this concept was translated into the need for a Scottish Ports Authority, which, it was hoped, would play "an entrepreneurs role in future development". By linking Hunterston-Greenock with Grangemouth and Leith with a "corridor of growth", the traditional north-south market route of Scottish industry would be replaced by one east-west and one "more appropriate to tomorrow's economy". This, however, would require additional investment in communications infrastructure.

Yet on just this point, the White Paper outlining the Scottish roads program for the 1970's, although stretching a decade hence, provided no contingency loopholes for such possibilities as major estuarial development on the Clyde²⁸. This is rather surprising in view of the Scottish Office and CPA promotion of Hunterston as a deep water port and exemplifies the incredibly restricted briefs by which such important assets are planned. Although ports, airports, road and rail transport are all part of the overall communications network, the road planners appear to have paid scant attention either to the other forms or to the link up of the Clyde and Forth Estuaries. Theoretical provision for such 'global' thinking is present in the

Scottish Office in the shape of the Scottish Economic Planning Council which has a Transport Committee the remit of which is "to promote, under the general direction of the Scottish Economic Planning Council, the coordination of transport facilities serving Scotlands needs". The White Paper, then, demonstrated that this Committee had failed to appreciate the impact which any future development on the Clyde might make on other forms of transport. Perhaps the basic problem here lies in the fact that at least five other U.K. Ministries have a hand in deciding what kind of development should take place in, say, the instance of the Clyde Estuary, while the Scottish Office is responsible only for the roads component of the communications jigsaw.

In developing its 'landbridge' strategy for Central Scotland, Oceanspan 1 took account of the elements of structural change affecting maritime transportation, the necessity for ports to respond accordingly and the opportunities presented for the industrialisation of port locations. 'Oceanspan 2'²⁹, published in October 1971, pursued these items in greater detail and set them in the context of European port development. It explored the factors influencing the creation of maritime-industrial complexes on the Continent with specific reference to the location of iron and steel making, oil refining and petrochemicals, aluminium smelting and vehicle production. Identifying deep water, land, labour supply, water, power and good hinterland communications as the key factors for port growth, it considered them all to be met in Central Scotland. But because of the likely constraints imposed by the English Channel on the passage of bulk carriers, the natural deep water of the Clyde was regarded as the most vital element and on this basis selected the Clyde, together with Marseilles and Le Havre, as those European ports possessing the greatest development potential - a fact which the French had already begun to exploit.

The analysis contained in 'Oceanspan 2' was supported by a wealth of factual material on communications, specific port development plans etc., etc., together with some attempts to quantify the future primary processing requirements of Western Europe. For example, with respect to those industries whose location decisions were considered likely to be significantly influenced by the provision of suitable port facilities, viz, iron and steel and oil refining/petrochemicals, eight new steel plants were foreseen as necessary by 1980 while in the same period the demand for petroleum products would call for

24 to 37 refineries, increasing to 39 to 65 by 1985! Investment in the Clyde in both port facilities and industrial plant of the order of £1,250m by 1980 and £1,900m by 1985 was seen as "entirely realistic". Injection of capital on this scale was translated into numbers employed, permanent jobs resulting from the port complex directly being estimated at 15-20,000 while the multiplier effect could raise this figure to 60,000 over a 15 year period.

Whatever one might feel about the worth of such statistics, the message they spelt out undoubtedly appealed to the imagination of a people whose economy was in obvious need of this kind of stimulation. Over the past four or five years the name Hunterston has acquired a new significance. In the words of Sir Fitzroy Maclean, Conservative M.P. for the Constituency in which it lay, North Ayrshire and Bute, "it has become a slogan, a kind of magic symbol. In a lot of peoples minds it has become synonymous with Scotland's future prosperity". If the economy was in deep water metaphorically, weighted down by a legacy of declining heavy industry, then, paradoxically, it was the reality of deep water in the Clyde Estuary which would restructure and revive that economy, albeit still based on primary activities, though now born of a modern technology. With the proving of North Sea Oil reserves during the period when interest was being shown in the potential of the Clyde, attention has now swung to the deep water of the east coast of Scotland with similar expectations. Forecasts of 'employment return' on the capital invested in the sequences of events and activities surrounding oil exploration are now being eagerly interpreted in terms of total economic benefit; certain east coast ports have found themselves with a new and important role to play and it is this context that the Department of the Environment has recently opened a Port Development Office in Edinburgh.

Whereas the assets of the east coast waters of Scotland are beginning to make their contribution to the economy, the entire question of maritime-industrial development on the Clyde remains unresolved. Partly, perhaps, because the issues are more equivocal - what type and scale of activities should be allowed - and central to this dilemma has been the whole question of the future of steel making in Scotland.

Rightly or wrongly, steel became accepted in the Scottish mind as the acid test of the Government's attitude towards developing the deep water potential of the Clyde Estuary at Hunterston and, unlike the oil industry, the investment program of the British Steel Corporation has been inevitably subject to strong political influences. The deep water of the Clyde, ideally suited to the new generation of ore carrier, has been the principle selling point in the constant round of debate as to how Hunterston would fit into BSC's plans to 1980. The crucial decision was whether to build new steel making capacity on existing sites (the 'brownfield' solution) or whether to start from scratch (the 'greenfield' approach). It was perhaps significant that much of the capital already committed to modernisation and expansion had gone to 'heritage' (brownfield) sites - Port Talbot and Scunthorpe - both supplied with ore by rail from recently constructed deep water terminals. In the final analysis, the short list of contenders for the major portion of the remaining investment (out of a total of £3000m) comprised Hunterston and Teesside. Important as the decision was in the national context of creating a viable, efficient, modern and therefore competitive steel industry, there resulted the inevitable attempts by regional political pressure groups to influence the outcome. The choice favouring Teesside, for £1000m worth of investment to give it one of the most modern steel making complexes in Europe, with a capacity of 12m tons by 1980 and the provision of 7500 new jobs, was not unexpected. In formulating its investment program, the BSC had been asked by the Government to consider social and employment implications, environmental suitability and infrastructure provision. It concluded that, if anything, the balance of these reinforced the commercial case favouring Teesside and especially so when the North East of England had suffered most from the fall in employment in the industry that had already taken place.


Hunterston was finally rejected because the BSC judged that siting a new plant of this scale outside of Teesside would cost them an extra £20m per annum. This was revealed in a White Paper on the ten year development strategy of the Corporation published in February 1973³⁰ which emphasised the possibility of capital saving through joint development with the existing Lackenby Works and the better utilisation of plant, including the new ore import terminal at Redcar.

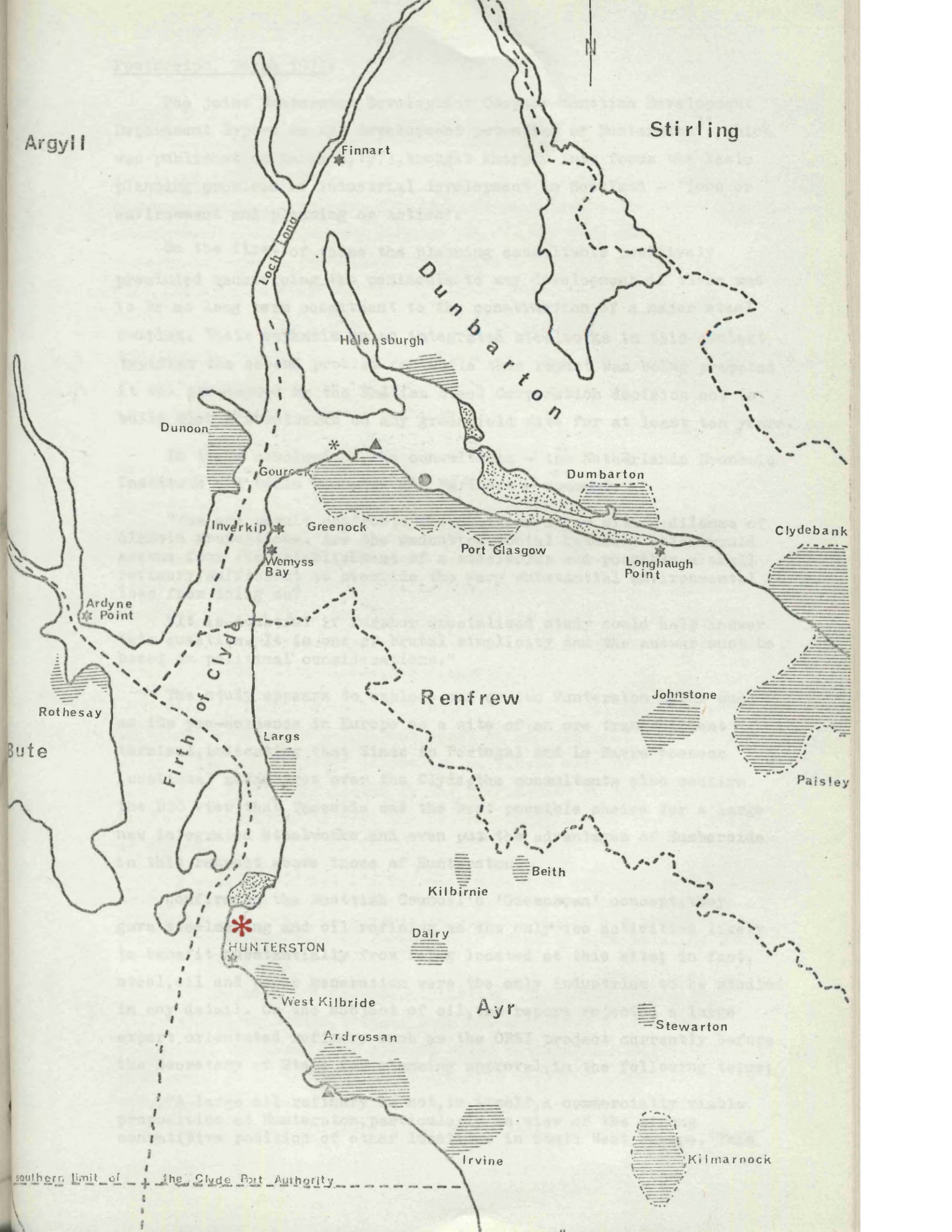
The Scottish steel industry was not exactly starved of capital for the spending of some £400m was authorised in the same breath which said 'no' to a £1000m greenfield plant at Hunterston. Rationalisation and modernisation of existing works will occur to raise by 50% the output of the Scottish sector of the industry whose umbilical cord will be a rail link with the new ore terminal to be constructed at Hunterston. This is a method which the BSC appears to favour, presumably on the basis that, if such an arrangement does introduce any economic penalties these are more than offset by the importation of ore in increasing bulk, thereby reducing its delivered price at the steelworks. Steelmaking can then remain at selected traditional centres where labour practiced in the art is readily available and eliminating the need for massive expenditure on new site preparation works. Furthermore, distances from the coast to the established steel centres are not so great as to make railing of ore totally impracticable.

Meanwhile, the exploitation of Hunterston appears to be being left to foreign industrial interests, presently Italian, German and American, who not only stand to benefit from the physical resources of the location but will also be entitled to public money in the form of investment incentives currently available as part of the British regional policy package - it is from this standpoint that current public debate appears to launching a new attack on the development potential of Hunterston.

Facing page: THE CLYDE ESTUARY

Legend:

- County Boundaries
- Other Local Planning Authorities
-  Land suitable for reclamation
- * location of certain facilities related to the physical assets of the estuary;
 - Finnart: British Petroleum's crude oil terminal;
 - Inverkip: South of Scotland Electricity Board's oil fired power station (under construction);
 - Wemyss Bay/Longhaugh Point: oil terminal and associated refinery for Murco Petroleum Company (planned);
 - Ardyne Point: oil rig fabrication yard (approved);
 - Hunterston: South of Scotland Electricity Board's nuclear power station;
- * Greenock Container Terminal;
- ▲ Port Facilities (Greenock, Ardrossan);
- Shipbuilding and ship repair facilities.



Postscript, March 1973:

The joint Hunterston Development Company-Scottish Development Department Report on the development potential of Hunterston³¹, which was published on March 5, 1973, brought sharply into focus the basic planning problems of industrial development in Scotland - 'jobs or environment and planning or action'.

On the first of these the planning consultants positively precluded sacrificing the peninsula to any development if there was to be no long term commitment to the construction of a major steel complex. Their emphasis on an integrated steelworks in this context typifies the second problem for while this report was being prepared it was pre-empted by the British Steel Corporation decision not to build such a steelworks on any greenfield site for at least ten years.

In their conclusions, the consultants - the Netherlands Economic Institute and Colin Buchanan and Partners - comment;

"The end result confronts the decision maker with a dilemma of classic proportions. Are the undoubted social benefits which would accrue from the establishment of a steelworks and possibly a small refinery, sufficient to override the very substantial environmental loss from doing so?

"It is doubtful if further specialised study could help answer this question. It is one of brutal simplicity and the answer must be based on political considerations."

The study appears to explode one or two Hunterston myths such as its pre-eminence in Europe as a site of an ore transshipment terminal, indicating that Sines in Portugal and Le Havre possess locational advantages over the Clyde; the consultants also confirm the BSC view that Teesside was the best possible choice for a large new integrated steelworks and even put the advantages of Humberside in this respect above those of Hunterston.

Confirming the Scottish Council's 'Oceanspan' concept, they gave steelmaking and oil refining as the only two activities likely to benefit substantially from being located at this site; in fact, steel, oil and power generation were the only industries to be studied in any detail. On the subject of oil, the report rejected a large export orientated refinery such as the ORSI project currently before the Secretary of State for planning approval, in the following terms;

"A large oil refinery is not, in itself, a commercially viable proposition at Hunterston, particularly in view of the strong competitive position of other locations in South West Europe. This

form of development would result in severe environmental impact with only marginal socio-economic benefit to the Scottish economy".

adding that,

"...public funds should not be used to support such development".

Admitting, however, of the possibility of a small refinery - which means an optimum capacity of 10m tons a year (double the size of the Chevron project) - the maximum benefit was seen as being derived from Hunterston as the site of just such a refinery as well as a fully integrated steelworks.

In a statement issued in response to the publication of the £120,000 Report, the Secretary of State welcomed its appearance and the support therein for the criteria he had laid down for industrial development at Hunterston, but added;

"It is a matter of judgement what forms of development could meet the tests I have outlined".

In postulating that the only worthwhile development would be an integrated steel complex he felt the consultants were being too restrictive and that the "report itself demonstrates that other forms of development could confer substantial benefit. A number of planning applications are before me now and these will be considered in the light of the use they can make of this exceptional site and their economic and environmental impact".

Disappointment over the findings regarding oil refining were expressed by several people, not least of all the head of ORSI. An interesting and indirect expression of dismay came in an attack on the use of Dutch consultants in the preparation of the report by Mr. David Lambie, Labour M.P. for Central Ayrshire, who was reported as saying;

"I wonder if these are the best people to investigate the potential of the Clyde for an oil refinery and petrochemicals. If the case of the Hunterston lobby is correct and the Clyde has the potential to become the finest port in Europe, it is bound to harm existing ports and especially Rotterdam". (!)

In line with the recommendations of their consultants, the Hunterston Development Company have now initiated a detailed commercial appraisal of a private steel complex at Hunterston. This plan presents an interesting dilemma for Scottish Labour M.P's and T.U.C., who have seen the nationalised steel industry effectively turn its back on the site for the next decade, and for the Government

it presents problems in justifying the 25-36m ton per annum limit imposed on the BSC if they allow a significant private indigenous bulk steelmaker into the market. At the time of writing, the German firm of Korf Stahl were showing interest in the site. According to information in the press, the financial backing for a viable steel project would be forthcoming, with Scottish Merchant bankers apparently willing and able to raise between £10m and £20m of the total investment capital, estimated to be in excess of £100m. The Hunterston Development Company has itself a large source of capital available in the representation on their board of Mr. Gavin Boyd of the Stenhouse Group, one of the world's largest insurance companies. In addition, the Company has recently secured options on 1600 acres at Hunterston. If these are the first tentative steps in the realisation of Hunterston's industrial development potential, the fact that the Secretary of State still has before him a handful of major development proposals awaiting his decision can only mean that the final chapters in the Hunterston story still await writing.

IN CONCLUSION...

Port Planning and Regional Development are essentially affairs of National Government. That is to say, the decisions attaching to regional development programs are taken at the national level; the stimuli for development, however, seldom originate there. Public investment in infrastructure provision as a means of encouraging economic growth in the regions has had a somewhat equivocal reception throughout the history of British regional policy and by and large the attitude adopted has been one of 'wait and see', i.e. until demand justifies supply, the 1963 White Papers on the Central Belt of Scotland and North East England being somewhat exceptional in their advocacy of infrastructure works as a pre-requisite for economic rejuvenation. One important consequence of this 'wait and see' approach has been to make the pressures for development originate essentially external to the whole planning process which has then to respond accordingly.

If planning is about the future, an important corollary must be an awareness of the structural changes affecting those activities which planning must accommodate. The devotion of much of Part 2 to a consideration of those physical factors influencing port development was intended to demonstrate how these can lead to a change in the role played by a port; how the right combination of physical assets, coupled with events in the transportation sphere, can alter the economic status of a port location from that of interface between different transport modes to that of processing and manufacturing centre.

These are the agencies of change which make planning, whether it be port planning or statutory planning, appear, more often than not, to be reactionary rather than stimulatory. It is the inherent economic content of these structural changes which planning must release by making the right kind of response, e.g. by zoning land adjacent to deep water or urban motorways for industrial purposes. Economic spin-off is simply that. A planning authority can prepare a physical plan for development which will accommodate or encourage economic events; it cannot indulge in economic planning per se! Realising the economic potential of physical assets is one thing; their realisation quite another! How far this second process can be taken by a planning authority acting purely on its own account depends, in part, on just what kind of asset it is trying to promote as well as on the scale of the operation; some examples related to port facilities come later.

At the national level, where lies the greatest potential for planning itself to be an agency of change, in the case of port development the attitude has been essentially a negative one of control.

The service character of a highly competitive port industry has ensured that the external demands for modern maritime facilities has met with a positive response from the ports. The check on the enthusiasm of individual port authorities to translate their development proposals into reality, in the shape of section 9 of the 1964 Harbours Act, might be argued to be in the best 'national interest' in that, theoretically, it provides a safeguard against over-investment in port facilities. Yet the method by which investment schemes have been assessed does not equate with the national importance of such infrastructure works. The obsession with microeconomic appraisals based on return on capital is probably the most significant element which distinguishes the attitude of Central Government in Britain to the question of port facility provision, from that of Continental maritime nations where there is a strong tradition of State capital assistance and revenue subsidies on port operation. It may well be that it is the nature of the port competition here, compared with that on the Continent, which has fostered this difference in governmental attitudes. Whereas London is essentially in competition with other major U.K. ports, Antwerp has to match the rival claims of Le Havre, or Rotterdam, or Hamburg. The servicing of the common hinterland of Western Europe makes continental port competition international, while in the U.K. it is essentially intranational.

Geography and history have given the U.K. a selection of ports which is, at first sight, enviable. But it has also demanded that some kind of national development policy be formulated. That such a policy has not yet appeared is in some part a measure of the difficulty of establishing a list of criteria against which specific development proposals could be measured. Had the attempt to bring the major ports into public ownership not foundered in the face of the 1970 General Election a nationalised ports industry, by the very fact of being under State control, would have been even more demanding of a policy to guide investment. One wonders whether that policy would have been as strongly biased towards the use of purely financial criteria as applied to the essentially privately owned port industry to date; or would macroeconomic methods of assessment have evolved which paid greater attention to regional and national economic benefits accruing from the provision of new port facilities at selected locations? The inability (or unwillingness)

of government to give little credibility to the idea of supporting expanded centres of population on a maritime/industrial base suggests that a new approach to port matters would not have been forthcoming.

In fact, where the elements of port related industrial activity have been grasped with enthusiasm in the name of regional economic development has been very much outwith central government. After the seeds of the idea, in the form of the Maritime Industrial Development Area concept, had been sown by the National Ports Council, they had to be nurtured in the regions by reason of government neglect. The Clyde is, by now, a classic example of a regional attempt to demonstrate to central government that here was an answer to a particular case of economic disparity. As such it was also apparent that for it actually to become the solution, a high degree of government involvement would be called for. On this point a great deal eventually depended on what form the British Steel Corporation's investment policy for the next decade would take, in terms of amount and location of new steel making capacity. Even with the ground 'cleared' from a planning point of view, this kind of decision rested very much with the centre, albeit subject to attempts by regional political pressure groups to influence the outcome. The creation of the Hunterston Development Company represents a brave attempt at improving a regional economic 'lot' purely by dint of regional effort - to introduce into the situation that driving force which ought to be the duty of government to supply. One can only speculate over the degree of success which such an organisation might enjoy in its attempts to catalyse the realisation of the economic potential of Hunterston. It is not unrealistic to expect that industrial interests will also want to see national support for the exercise in the form of overall infrastructure provision. The Development Company is necessarily limited in the scope of its operations and moral support for its activities from the Scottish Office is not enough. It is this kind of Government backing which has made Marseilles-Fos a 'happening' while Hunterston comes ever closer to being labelled the biggest non-event in Scottish regional development.

Meanwhile, the activities of the Hunterston Development Company are being paralleled further north in Scotland by the recent formation of the Cromarty Firth Development Company. This body has been established to direct the investment and concomitant industrial, commercial and social development of the Firth which is already host to a number of new activities including an alumina smelter at Invergordon and an oil

rig fabrication yard at Nigg Bay, for which purpose the biggest dry dock in the world has been constructed. With land holdings totalling 2000 acres and operations to date representing an investment in excess of £2m, the Development Company appear anxious to exploit the MIDA qualities of the Firth which were recognised in the Halcrow Report to the National Ports Council. To this end some physical 'ground work' has already been accomplished in the form of land zoned for industrial use and the designation of industrial estates. As interest in the physical assets of the Firth increased so too has the need to control associated maritime operations. The Cromarty Firth Ports Authority Bill drawn up for this purpose by the Scottish Office last March, along similar lines to that controlling the activities of the Clyde Port Authority, has just received Parliamentary approval with minor modifications.

Continuing with additional examples of the provision of port facilities at the local authority, sub-regional level, it was said earlier that success here in exploiting their economic potential depended on what kind of asset was being promoted and the scale of the promotion effort. The activities of the two Development Companies described above lie at one extreme of a spectrum whose other extreme is, perhaps, represented by the following example. A recent joint advertising campaign to attract industry to the five Scottish New Towns had this to say about their location;

"With the best deep water port facilities on the North Atlantic Seaboard on the Clyde and on the east coast the container port of Grangemouth - the region could also be one of the major processing and manufacturing powerhouses of Europe".

It is appropriate that there should be a recognition of the uncertainty surrounding the whole concept but to extol the virtues of this particular regional asset, about which central government remains equivocal, is an act of faith indeed.

Perhaps an even bigger act of faith is the proposal of Berwickshire County Council to develop Eyemouth Harbour as a deep water port on the basis that this is the only centre in the County to be experiencing rapid industrial and population growth. The creation of this kind of asset, at an estimated cost of £2.5m will, it is hoped, help consolidate this situation. One can only wonder at the kind of reception it will receive from the National Ports Council should it ever reach the stage where section 9 authorisation is sought. Will the Council attempt to look at the situation from Berwickshire's point of view or will it dismiss this parochialism and, looking wider to the port

facilities of the Forth, proclaim 'enough is enough'!

Whereas Berwick is striving to create a port facility, Cumberland County Council have just succeeded in saving Workington Dock from closure by its present owners, the British Steel Corporation, in 1974 with the loss of nearly 100 jobs. But in the case of both counties the underlying motivation for their individual actions has been similar. The decision by Cumberland County Council, which will necessitate a Parliamentary Bill to make the Council the new port authority, will not have been an economic one if the immediate financial implications are considered in isolation. At current levels of expenditure the Council will inherit an annual deficit of £13,000. The willingness to accept this financial burden, initially at least, arises from the Council's belief that, faced with a decline of traditional industries and the need to attract new employers to the area, the loss of the port would be a serious blow to prospects. Whether this perception of the importance of port facilities is a correct one depends on what kind of activities it is hoped to attract. The existence of such facilities may allow the net to be cast wider, though it could probably be argued that the money could be spent with equal effect on, say, environmental improvement or better links with the M6. Whatever the remedy this is planning action to meet a crisis, in this case an unemployment rate in the town of Workington of 5.8%

In Shetland, the course of action being pursued by the County Council in response to the crisis situation in which it finds itself due to North Sea Oil exploration activity is in marked contrast to that being followed in the Cromarty Firth, even though oil is the common developmental agency. Planning activity on the Firth is, by and large, promotional, stimulated by a Development Company, aided and abetted by Ross and Cromarty County Council. In the case of Shetland the planning stance is very much a defensive one. As a convenient land-fall to exploration activity in northern waters, providing deep water anchorage adjacent to large expanses of flat land at Sullom Voe and Baltasound, it is felt that the exploitation of these particular physical assets by private enterprise would pose a serious threat to a prosperous and stable island economy. It is this potential exploitation which the County Council is seeking to control. To this end a Provisional Order has been drafted to give the county harbour and port authority powers for the islands. Additionally, compulsory purchase powers are sought for key industrial sites as well as the opportunity for the Council to acquire equity in any incoming commercial ventures. The purpose of these moves is to retain local interest in, and positive control over, the kind of projects - refining, rig fabrication and repair, tanker

terminals and power station - proposed by the prospective developers, Nordport Company Limited, through their parent company, Onshore Investments Ltd. The method being adopted to meet this kind of maritime related development and allow it only on County Council terms is certainly an ambitious one, and understandable, though the commercial enterprises involved must be very conscious that the time consuming aspects of compulsory purchase procedure could effectively block development; while the future of their land is in question their commercial initiative is 'on ice'.

Returning to the more general theme of communications infrastructure, of which ports are a part, presently there would appear to be little consensus concerning this particular form of Overhead Capital as an ingredient of policy measures formulated with a view to stimulating regional or national economic development. Four viewpoints may be identified; that of the 'activist' sees OC investment as having catalytic qualities with regard to economic development, preceding and inducing directly productive capital outlays; to the 'passivist' OC investment is necessary for development but it is not, of itself, a sufficient stimulus to bring development about. Because of its 'lumpiness' it should coincide if not lag behind directly productive capital formation rather than be put in place ahead of demand and run the risk of obsolescence and under-utilisation. Finally, the 'pragmatic' approach suggests that each case should be examined on its merits while the 'doubters' deny that OC has any special part to play in economic development. Non of these have, however, made any worthwhile contribution to the problem in operational terms, leaving unanswered the two key questions;

how much transport investment of specific kinds does development require?
what should be the timing of transport investments relative to other types?

In 1969 the Hunt Report devoted a great deal of attention to the need for improved communications as part of a comprehensive regional policy, making such statements as;

"We are glad to see...the growing recognition of the importance of infrastructure improvements as a basis for growth. For many years the emphasis has been on incentives to industry to set up in development areas. Only in recent years has the importance of creating an environment favourable to growth come to be recognised. The major road programmes for the North East and Central Scotland are striking examples of this..."

A demonstration of the Committee's adoption of an 'activist' viewpoint came in such expressions as;

"...there has been a very considerable improvement to Leith Docks which should provide an impetus to growth".

There has undoubtedly been a trend over the last decade towards an increasing emphasis on communications as a facet of regional policy. The question to ask is, whether it can be expected to continue. It seems the answer might be yes as far as the current Conservative Government is concerned. A future Labour Government might react differently. For example, it was not greatly taken with the Hunt Committee's views on the desirability of increased infrastructure expenditure, a situation reinforced in 1970 in a Report of Regional Planning Policy by a Labour Party Study Group which stated unequivocally that "we do not believe... infrastructure investment can be the central instrument of a distribution of industry policy". Given the current state of knowledge with regard to the developmental effects of what it called Economic Overhead Investment, the stance was by and large of the agnostic school of thought on the consequences of OC investment - of 'accompagnement' rather than 'entraînement', as the French would refer to it.

It is not a gross misrepresentation to say that of all the components of the transportation network, roads, rail, ports and airports, it is the former which has received most attention in the context of infrastructure provision and regional economic development. By comparison the other three elements have been greatly neglected; and of these, ports represent a significant potential contribution to the development of regional economies because their role as transshipment points at the land/sea interface confers upon them locational advantages for processing and manufacturing activities. In the history of port development this aspect has, until recently, been ancillary to the traffic or transfer function of ports. The increasing importance of port locations as processing and manufacturing centres in their own right is a relatively recent phenomenon and one highly developed at many of the major ports of Europe.

In embarking upon this piece of work the intention was to take a broad overview of the topic of port planning and its potential for integration into policies for encouraging regional development, rather than explore any particular facet in great depth; to outline British policy towards the ports; to identify the structural elements influencing

the changing role of port locations and to consider how far port planning and its implications for regional development have been integrated into British regional policy. If any conclusions can be drawn, one must be that the approach to the subject at the national level has been extremely equivocal. The announcement in the 1966 White Paper on Transport Policy that, "henceforth the planning of large scale port facilities must be closely related to the redistribution of industry and population" at the same time as the proposal of the Port of Bristol to create a major new liner terminal at Portbury was rejected, is an admirable illustration of this. One of the arguments advanced in reaching this decision was that port investment is permissive rather than activist in its effects;

"Although efficient port facilities must be available and geared to location of industry and population development, they can hardly be regarded as an effective weapon for bringing such developments about".

As the 'initiation sequence' of the 'Port Planning Process' scheme given in Part 1 indicates, it is the Maritime Industrial Development Area concept which provides the base upon which to build a wider strategy of industry and population redistribution; it was the theme underlying the Humberside and Severnside Feasibility Studies and an aspect which neither of the subsequent Reports chose to reflect. Since the appearance of the MIDA concept in 1966, the attitude towards it at the national level has been essentially passive. The realisation of the potential of a number of such sites - South Wales, Teesside and more recently the Cromarty Firth and Humberside - has been due in large part, to the efforts of private enterprise. If their exploitation is to be left to the operation of market forces, i.e. the demand for, and supply of, suitable sites, certain assurances must be sought. First, is the demand for this type of maritime site being met with minimum of delay so reducing the time taken to realise their economic potential? Or is their release to industrial interests being frustrated by the lengthy operation of the relevant planning processes? - a constraint on the supply of sites which makes this a quasi-market situation. Certainly there is a growing awareness of the need to satisfy the demand more speedily, including the suggestion that suitable sites should be processed by the planning machine even before a demand is made evident. This, however, implies that the characteristics of the various demands are known and the structural elements of particular activities fully understood from a planning point of view. Events on the Clyde have demonstrated that there

is a demand for the type of maritime site in question and that the demand can probably be expected to continue, and with increasing intensity. This example also serves to illustrate a permissive approach to the provision of maritime facilities by the operation of planning procedures which frustrate the conversion of physical assets into economic resource by even that most determined of catalysts, private enterprise. When an issue becomes polarised, as in this case, between encouraging economic spin-off or the preservation of amenity, once the implications of taking either course of action have been outlined, the exercise is finally reduced to one of political trade-off.

APPENDICES

APPENDIX 1: MARITIME-INDUSTRIAL DEVELOPMENT IN FRANCE -- THE EXAMPLE OF MARSEILLES-FOS.

A striking feature of port and related industrial planning on the Continent is the acceptance of the importance of seaport development for regional and national economic growth. This is reflected in the much wider view taken by national governments in the financing of port developments. The assessment of investment in ports covers the overall effects and not simply the revenue directly attributable to the investment.

The best illustration of this attitude is afforded by the French exercise in regional development centred on the port of Marseilles-Fos in the district of Provence. This location was one of three - the others being Le Havre and the Clyde - which, because of their deep water, Oceanspan 2 identified as important entry points for bulk raw materials flowing into Europe in the future. For the Clyde and Fos this is not the only common characteristic. Jean-Louis Horn, Public Relations Officer of the Marseilles Port Authority, has been quoted as saying that "Provence is to France what Scotland is to Britain". For example, the two areas share the problem of being a long way from the economic and industrial hub of their countries and of Western Europe. They are both areas of outstanding natural beauty and equally, although tourism is a source of a certain amount of employment, it does not provide enough to meet the needs of a large and long established population; and they each possess a strong local cultural and historical tradition whilst sharing a certain resentment against rule from the capital city. But the important common denominator is their deep water harbour facilities, capable of catering for the present and future generation of bulk carriers which will soon dominate maritime world trade. It is this geographical trump card which, if played to best advantage, will probably be the most important determining factor in their long term economic development. At this point the similarities end, for while the development of a major deep water port on the Clyde, with its associated industry, is still only a plan called Oceanspan, at Marseilles this concept is very much a reality, though by no means yet complete, in the shape of a new port-industrial area at Fos; as one member of the Scottish Council has remarked, "their problems arise from things happening - ours arise from things not happening".

Fos has been held up many times in the recent past as the example which Scotland must emulate if the deep water of the Clyde is to make

any significant contribution to the country's economy. Whether that be viewing Scotland as a nation or simply as a region of Great Britain, the important feature of Fos which seems to be overlooked in this kind of comparative exercise is the question of scale, not only in purely physical terms but also the scale on which the whole idea has been conceived. This has, to a large degree, been influenced by the realisation that on joining the EEC, the foreign trade of France was becoming far too dependent on the thriving ports of Rotterdam and Antwerp.

The Foreward to Oceanspan 2 stated that;

"regionalism is widely held throughout Europe to be the most important economic issue to be resolved...We cannot hope to have stability and prosperity unless the centre and periphery are kept in balance".

It is this kind of philosophy which has been the driving force behind the current developments at Fos. Even so, the idea of creating a port industrial zone here was strictly local in origin, one of the proponents being the president of the Economic Development Commission for the region, 21 of which have been established in France for planning purposes. The aim was to take advantage of the special geographical position of Fos in an attempt to revive the regional economy. To do this required the construction of both a port and an associated industrial zone; the port would become the source of raw materials at a time when the exhaustion of indigenous mineral resources was freeing heavy industry from its traditional geographical ties; the date was 1955.

Conversion of a concept into reality had to wait until the 1960's. The idea of regionalism came late to France and in 1963 the Government established an agency known as DATAR to coordinate the regional activities of the various Ministries. It has recently drafted an outline plan of regional development for the year 2000 based on the fact that the French are confident that theirs is now the strongest economy in Europe. Quite apart from rescuing those areas that are currently suffering economic troubles, the plan is aimed at producing a spread of balanced growth across the whole of France. Physical plans have been produced for the seven largest urban areas with the emphasis being laid on the need to link the regions by a new communications infrastructure. Above all the plan envisages a great move south with development of the Mediterranean coast as the biggest counter-attraction to Paris. This feature, which gave the development at Fos its real *raison d'etre*, has no parallel in the local problem solving British approach to regional planning.

It was the loss of Algeria in 1962 which accentuated the 'what to do about the Mediterranean' problem, an area already host to serious economic and social ills. Marseilles itself had passed one economic zenith with the fall of the Roman Empire, when the Mediterranean had ceased to be at the cross roads of communications. Colonial trade had brought about a revival but it has long been a splendid port in the wrong place, having, until recently, only tenuous links with central France while its immediate hinterland remained poor.

A significant element in the attempt to find a new purpose for this piece of coastline was the crucial decision, taken in July 1965, to establish six independent port authorities and to back their expansion plans with public money. Consequently the largest of the French ports were grouped, together with their annexes, dependencies and outer harbours, into 'Port Autonomes' - Bordeaux, Rouen, Nantes/St. Nazaire, Dunkirk, Le Havre and Marseilles - each with a standard administrative structure. Government aid is concentrated, in the main, in the provision of port infrastructure, with the State paying 80% of channel dredging, docks and berth construction and 60% of the investment necessary for the creation, extension and renewal of infrastructure installations like quays, roll-on roll-off berths, roadways and shiprepair facilities. The Port Authority finances port superstructures entirely but the cost of acquiring land and linking industrial areas to the national motorway system is borne by the Government. Thus, although under the new system the ports become more strictly controlled by the State, the latter assumes a greater share of the financial responsibility. The centralisation of port administration in the hands of an autonomous Council of Administration could only be advantageous because it abolished the dualism of the State and the Chambers of Commerce and clarified the responsibilities involved. Thus the Council of Administration, whose seat is in the port city, became the sole body responsible for drawing up and implementing port policy. One of the favourable effects was the fact that each port could subsequently set its own tariffs in relation to its own circumstances in the sphere of competition and transport structure. On the other hand, Paris no longer controlled port activities by reference to a standard pattern. Nevertheless the French ports remain very much public establishments.

Following its establishment in 1966, Marseilles Port Authority produced a development plan a year later. Its proposals were incorporated into a general plan for the whole Bouche du Rhone Region formulated by a local study group, OREAM, set up by central Government at the same time. The relevant regional plan was approved in 1969. Based on a greatly increasing population, it necessitated the creation of 12,000 jobs by 1975 with a further thirty to forty thousand to have been created a decade later. To achieve this - and support the associated 200,000 addition to the local population - meant Fos needed not just a harbour but large scale industry as well. Marseilles had a long tradition as an oil port used by companies like Shell, BP, Esso and Total, and the opening of a new terminal at Fos in 1968 provided an opportunity for them to bring in the biggest of modern tankers. The volume of oil traffic has taken Marseilles to the rank of third largest port in Europe. Fos is the terminal for the South European pipeline feeding 11 refineries up to the Karlsruhe in Germany and when two more pipelines up the Rhone Valley are completed, the annual pipeline capacity will be around 90m tons. In addition, the 4 refineries already established in the 'Fos-Berre petroleum complex' plan to step up their capacity to 54m tons by 1975.

The success of Fos as a port-industrial complex depends on more than simply the local tradition of oil and the locality's special suitability for the expansion of the petroleum industry. First, it depends on having a wider infrastructure than that of the immediate area. The construction of a Fos-Marseilles and Fos-Arles motorway has only just begun and the link westward (towards Toulouse) and eastward (towards the Ventimiglia-Genoa motorway) will not be finished before 1975. The Marseilles-Fos complex stands at the cross-roads of two important transport axes; that east-west is the less well developed and connects the richest region in Spain (around Barcelona) to the Genoa-Milan-Turin triangle. The north-south axis, which mainly links Marseilles and Lyons, is the busiest in France. This is the Rhone Valley, which, together with the sea, are presently the region's only outlets. Along it run the oil pipelines and the recently completed Lille-Paris-Lyons-Marseilles motorway which will ultimately terminate at Dunkirk. It is because of its importance that the Marseilles Port Authority have constantly impressed upon the relevant Departments the need for improved communications along this route and have succeeded in getting a rail link between Fos and the SNCF network. The Rhone is also gaining in importance as a commercial waterway. It is already open to 1,500 ton

barge convoys as far as Lyons and when canalisation work is completed by 1976, 3,000 ton barges will be able to use that stretch of the river. A waterway link for craft of international dimensions will be created eventually (with a view to the potential of LASH methods of cargo shipment), linking the Mediterranean with the North Sea by way of the Rhone, the Saone, the Rhone-Rhine canal and the Rhine itself. In addition, a series of dams along the Rhone enable this region to offer the cheapest electricity in France.

By the end of 1971 the Port Authority had spent £30m of public money out of a planned £70m program of development at Fos. The scale of operations by any standard, and particularly those of the Clyde, is enormous. Just one of the three wet docks under construction could accommodate the present port of Marseilles and total wharfe length will amount to 22 miles. The associated industrial zone is on a scale commensurate with that of the port infrastructure. What is labelled the first phase covers an area equal to the size of Paris! It stretches over 7,200 hectares, about half of which have a direct sea frontage. The utilisation of this acreage has been planned in three sectors - east, (heavy industry, steel making and refining), central (special steels, non-ferrous metals and chemicals), west (light industry).

One of the biggest tasks facing the Port Authority has been to interest industrialists in this vast and expensive (in site preparation terms) manufacturing location. The strategy for doing this began with the provision of basic power and communications facilities; then attract primary industries as a base for the establishment of secondary activities. The whole process has now entered this last phase but not without experiencing difficulties. An interesting feature of the promotional exercise is the fact that investment incentives are not directly on offer to firms wishing to go to Fos. The reason for this is that the Government consider that they have put the money into infrastructure so that Fos is now sufficiently attractive as to need no extra incentives. But lying behind this logic is the fact that Paris does not want Fos to enjoy overnight success; jobs in other depressed areas are still too valuable to allow the South to take them all.

Like the Clyde, the future of Fos was considered to be very dependent upon the presence of a steelworks at this coastal site,

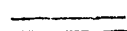






to join the existing refineries and the polyethylene plant of I.C.I. in forming a more diversified primary industrial base. Steelmaking in the South represented an entirely new activity and bringing it to Fos has not been easy. This French industry had become increasingly dependent on overseas sources of iron ore and coking coal and the first shift away from the traditional centres of Lorraine in response to this had occurred in 1963 when Usinor went to Dunkirk. At about the same time, De Wendel-Sideler, France's biggest steel producer, began investigating the other large French ports for similar reasons. Attention finally focussed on two sites, Le Havre and Fos. Both possessed sufficient area of land and were capable of accomodating ore carriers of 200,000 tons plus. But Le Havre had one advantage over its rival; it was closer to established northern markets. On the other hand, construction of a new works on flat coastal land at Fos would be cheaper and provide easy access to expanding markets of the Mediterranean, though not as lucrative as those in the north.

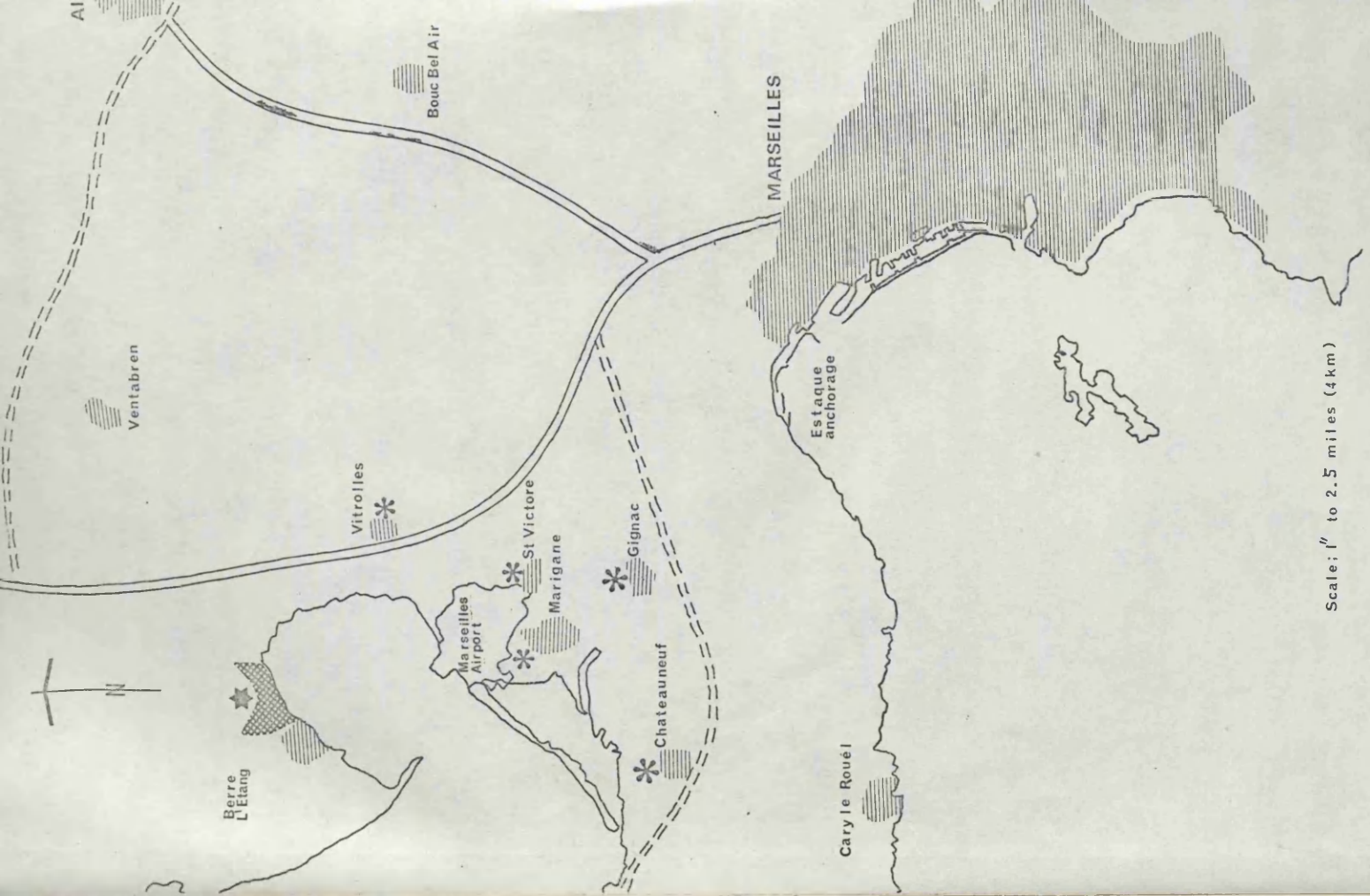
With a program of rationalisation resulting in the disappearance of 12,000 jobs in Lorraine, De Wendel was not capable of generating a sufficient cash flow to finance its third share in the £600m Fos project, leaving the Government, who were extremely anxious that their idea of a steelworks at Fos should not founder, with something of a dilemma. Had the decision been purely a commercial one, Le Havre would undoubtedly have been first choice. But Fos was chosen because without a steel plant it was felt that the whole development would lack the pulling power necessary for the economic regeneration of the region. A decision by the Government to invest £150m in the steelworks project has been partly vindicated by the fact that Ugaine Kuhlmann, special steels, would not have chosen Fos had De Wendel not come. Having got what it wanted, a 3,500 acre steel plant with a production capacity of 7.5m tons by 1980, the Government is still trying to shed some of the resultant financial load. Whether that will be possible depends on the perception of the profitability of Fos in general and the steelworks in particular. Even so, £125m of private capital has already been invested in the site.

Sahara gas is playing an important part in the creation of a primary industrial base for Fos. 'Gaz de France' has established a plant to feed calorifically adjusted natural gas into the national network while 'Air Liquide' are using liquified natural gas as a refrigerant to produce oxygen and nitrogen by air distillation.

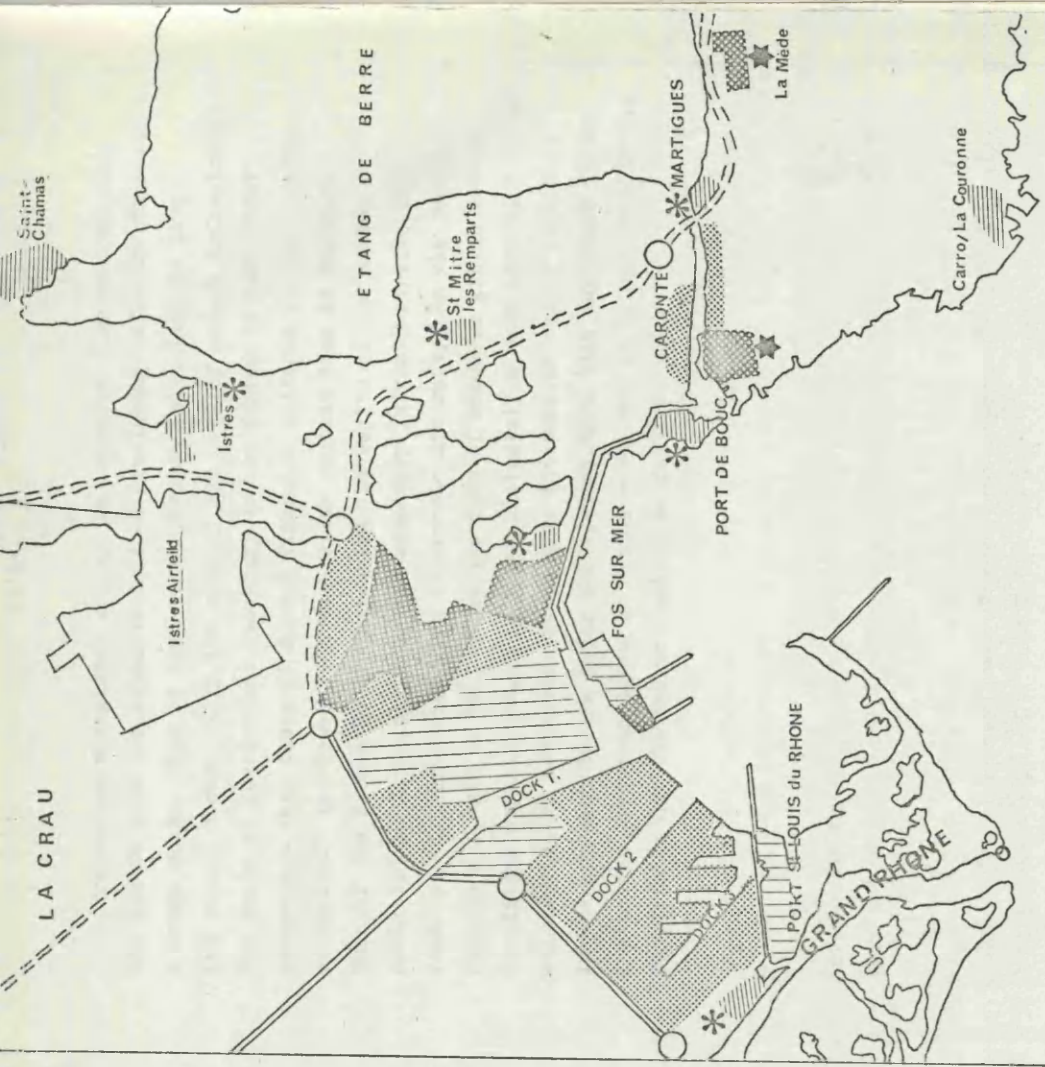
Facing page: M A R S E I L L E S - F O S

Legend:

-  Existing motorways
-  Motorways planned or under construction
-  Industrial and port zones, existing or under construction
-  Planned industrial and port zones
-  Land zoned for use by the oil industry and related activities
-  Refineries
-  Settlements selected for expansion



Scale: 1" to 2.5 miles (4km)



France has a regional policy that ensures firm control from the centre with the emphasis laid on developing infrastructure on a large scale. This is tied to the French logic that to live and expand economically, the country has need of modern infrastructure. The scale of development necessary is considered to have wider parameters than those of normal financial criteria so that 'return on capital' is viewed in a much wider context than in Britain. Thus, if the French Government, using the wealth of the nation collected as taxes, pays for the necessary infrastructure, be it roads, ports, airports or even supersonic aircraft, then the people receive a return on capital in the form of economic growth, better facilities overall and, it is hoped, ultimately a more efficient utilisation of resources. It is this attitude, so neatly expressed in its approach to the major ports, which, more than any other factor, influences decisions taken in France - and who is to say that, in the end, this is not the correct policy to follow?

APPENDIX 2: PORT PLANNING POLICY IN THE EUROPEAN ECONOMIC COMMUNITY.

In view of the entry of Britain into the EEC on January 1, 1973 it would be appropriate to include a brief note on the current situation regarding the formulation of a unified ports policy for the Community.

The only mention of sea transport in the Treaty of Rome which established the EEC occurs in Article 82, paragraph 2;

"The Council (of Ministers) may unanimously decide whether, to what extent and by what procedure, appropriate provisions shall be made in respect to sea and air transport".

The phrase 'sea transport' includes the merchant fleets of the original Six, which are bound by agreements wider in scope than the EEC, and any special rules imposed on them might hinder their world competitive position. A memorandum of the Brussels Commission on the general lines of the common transport policy recognised this fact and stated that it would not be in the Community's interests to question the competitive position of sea and air transport outside the sphere of the Treaty of Rome. In contrast, since seaports are manifestly upon the territory of the Member Countries, it has been suggested that their component installations fall under the rules of the Rome Treaty. One document presented to the European Parliament by the Commission for Transport (usually known as the Kapteyn Report of 1962) did consider the possibility of a European Port Policy. One of its principles was that there should be complete equality for the seaports of all member states; none ought to be favoured and all ought to have equal opportunities. Two special circumstances were suggested. The first concerned those ports where the hinterland has been restricted by the Iron Curtain, e.g. Hamburg and Trieste; secondly, there are those ports which have been handicapped by the loss of colonial trade, e.g. Amsterdam, Antwerp and Marseilles. The report recognised the need for a concentration of port investments where the berthing of large vessels was involved, while being aware of the possibility of creating monopolistic positions;

"If the weight of expenditure necessitates a concentration of expenditure on a particular port for the berthing of 100,000 ton

vessels, it would suffice that this concentration be made in the context of a national plan".

As well as wanting port dues placed on a common footing, though small is the role they play in inter-port competition, the paper suggested that proper port competition would be enhanced if all ports were to be linked to the major inland waterways.

Others have seen little point in drawing up a particular set of rules for ports simply because one is faced with a group of installations and services localised by the geographical site. Harmonisation of inland transport, it has been argued, will allow ports to exercise their proper function in a hinterland dependent upon their geographical position and their naturally competing capacities. Development of certain port traffics should be allowed when this can be justified by economic or social necessity. Two functions of the Commission would be to authorise the application of tariffs to help the trading position of ports and to oversee the planning of major transport routes to improve the relationship of certain ports with their hinterland.

APPENDIX 3: INVESTMENT CRITERIA AND THE FINANCING OF PORT DEVELOPMENT PROJECTS.

In the U.K., Government policy towards the financing of port developments is still based mainly on the Rochdale Report, which stressed that ports must be regarded as commercial enterprises and should not operate as a 'public service' with general access to subsidies. Currently, however, they can benefit from port modernisation grants of 20% on approved capital expenditure on buildings and civil engineering works (subject to certain conditions), payable under section 12 of the Harbours Act 1964, as extended by section 40 of the Docks and Harbours Act 1966. Even so, ports are still excluded from the provisions of the Local Employment Acts and from Government Regional Infrastructure programs. Rochdale added that "if a scheme of modernisation or development of a port can be shown to be economically sound then the port authority should be able to meet the expense of that scheme". While imposing a useful element of financial self discipline, where the creation or expansion of port facilities could result in associated industrial development it is unfortunate that a decision does not take account of the benefits likely to accrue at the local, regional and national levels. The narrow criteria whereby port developments have been judged are a definite obstacle if a broader maritime-industrial strategy is being attempted.

Presently, British ports face three problems:

- i. past financial management and government policies have left ports in a weak financial position - over-capitalised and with heavy interest charges.
- ii. the subsidies received by continental ports weakens their competitiveness.
- iii. the need for any port to raise sufficient revenue to cover its costs leads to too narrow a view being taken of port developments.

Although the 1964 Act gave the Minister of Transport reserve powers for taking the initiative in the execution of port projects, these, so far, have never been used. The greater part of port planning is done by the individual port authorities, who conceive the investment project, consider alternatives and prepare the proposal for consideration by the NPC and the Minister.

In so far as port development projects are competing with investment projects in other sectors of the economy for the limited resources available for the national capital expenditure, consideration of their desirability has to be carried out in a way which takes account of this fact. That is, the decision to spend ought to be based firmly on economic rationality, rather than being made simply on intuition. Consideration of whether a project is itself worthwhile basically means assessing the likely total cost outgoings of the project, the total benefits arising out of same and deciding whether the rate of return is sufficient. The analysis involves a discounted cash flow (dcf) calculation being made on the expected outlay, taking account of the timing of the costs involved and the benefits which arise.

In its Interim Plan the NPC gave little support to the use of dcf rate of return as an investment criterion suitable for adjudicating the worth of port projects, but nevertheless made a point of calculating and presenting such rates in the case of Portbury. Expressed views on the choice of discount rate have evolved over time. It was only after the Nationalised Industries White Paper of November 1967¹⁴ had announced 8% as the minimum test discount rate that the same figure was adopted by the NPC. The rate used represents the minimum return to be expected on a marginal low risk project undertaken for commercial reasons in the public sector. The NPC made it clear that the rate should be applied before taking account of any taxes or investment grants, while the White Paper indicated that expectations of continued inflation should be ignored in estimating future revenues. In August 1969 the Treasury announced that the public sector test discount rate was being raised to 10%.

In its dcf calculations for Portbury the NPC appeared to consider only those incremental cash flows which the port might experience in its own accounts even though wider influences were recognised in its advice to the Ministry on the project. This point introduces one of the more important aspects of the application of the dcf concept to port developments. It arises from the fact that the financial return to a port considered in isolation is seldom a satisfactory guide to the justification of investment for the financial motives and the national economic well-being might easily be in conflict. Of the incremental cash flows, the incremental revenue likely to be generated by the project is the most difficult to measure. In the case of

Portbury the Ministry implied that it would accept as an incremental revenue estimate a list of potential users and what they would be prepared to pay for the use of the new facilities.

Although traffic forecasting is an essential element of any port planning exercise, the view is held by some that providing it can be shown that a certain amount of traffic will flow, there is little point in investigating the rate of return. What is important here, however, is the need to take cognisance of external effects when making an appraisal of a port investment program, instead of simply examining the consequences for the port taken in isolation. An individual port is not well placed to assess these effects and with the control of ports in the hands of a large number of different authorities, neither is there much scope for establishing the nature of these interactions, even between the ports themselves. Thus the Ministry and the NPC are left with a particularly important part to play in determining likely relationships between port development proposals and the rest of the economy. However, the difficulties inherent in such accounting exercises have ensured that little progress has been made to date on this score.

Portbury provides an excellent illustration of what has been attempted in this respect and shows that for a general purpose facility traffic forecasting by an individual port authority is made particularly difficult by the interdependence between ports.

In backing the scheme the NPC saw it syphoning off some of the existing traffic and/or growth of London and Liverpool, and thought this desirable; it also argued that development at Portbury was to some extent an alternative to development at Southampton and in South Wales. In the case of the West Dock scheme, the BTDB's case against the Bristol Corporation Bill rested almost entirely on its argument that traffic through its South Wales ports would be reduced if the Bristol scheme went ahead. The fact that the BTDB made no effort to show that the economic costs outweighed the benefits is hardly surprising since the necessary calculations are difficult to establish. For these two schemes at least, attention was paid, albeit in an informal way, to the connections between the ports, but there is no evidence that these considerations entered into the calculation of dcf rates of return. The NPC calculations in the Portbury Paper

appear to have been based exclusively on the incremental cash flows to be experienced by the Port of Bristol alone.

The Nationalised Industries White Paper also made it clear that social costs and benefits should be recognised in reaching investment decisions. The creation or closure of a dock may affect the cost of providing other facilities; changes in port traffic may, for example, affect the degree of congestion on existing roads. While a port authority may have a fair knowledge of local effects of this kind, it is not necessarily well placed to undertake any evaluation of them. It is probable that such effects, if they have been recognised at all, have been recorded only in qualitative terms; this is true of the wider issue of motorway access to the ports. But in the even broader sphere of regional planning it is scarcely surprising that exceedingly little has been done in the way of explicit calculation. Given the present state of the art, the very idea of a discounted cash flow rate of return calculation for an investment proposal begins to dissolve in the complexity of concept and especially of measurement of the entire range of regional effects! To these some general consideration has been given: the Ministry saw no pressing need for Portbury and similarly resisted pressure from the South West Economic Planning Council in the case of West Dock, Bristol; it felt confident that the Feasibility Studies of Humberside, Severnside and Tayside would provide an adequate basis for regional planning decisions involving ports. Yet when these studies were completed the port component was conspicuous by its absence! So far there is little or no evidence to support the proposition that port investment and regional planning policies have been at all well integrated. If the NPC decides to continue the campaign for MIDA's then the associated problems will arise in a particularly acute form.

In this discussion of the difficulties of investment appraisal it is worthwhile examining the decisions made by the Ministry of Transport on some of the investment schemes mentioned in section 1.3. It is, however, only as a by-product of the relatively public examination of the two Bristol schemes that information on the other decisions came to light. Thus, in the House of Commons debate on the West Dock project, the Minister was pressed to give examples of port investment

schemes whose rate of return did come up to the 8% mark. These were included in the list of figures given below:-

Scheme.	Def rate of return, % on gross cost*.	Estimated capital cost, £m.
Tilbury: stages 2 and 3.	10.5 to 13	19.8
Seaforth (Liverpool).	9.6	33.1
West Dock (Bristol).	1.0 to 3.0	15.0
Greenock container berth.	16.0 to 22.0	2.4
Tilbury grain terminal.	10.3	5.0
Bristol: one berth reconstructed.	13.0	less than 1.0
Newport: reconstruction of two berths	11.8 to 12.4	2.1
Swansea: Ro-Ro berth.	11.0	0.6

*Gross cost appears to mean total cost before taking into account port modernisation grants.

Sources: Rates of return: Hansard, July 8, 1968, col. 148.⁶
Capital costs: NPC Port Progress Report 1969⁶.

Presumably these figures show that for the schemes listed calculations were made by the port authority concerned and/or the NPC with the stated results, but this does not mean that the calculations are necessarily well founded. They probably purport to measure the financial return to the individual port authority before allowing for port modernisation grants and supposing no further inflation. The rates quoted for Bristol's West Dock are the lowest of 4 sets of figures presented by the NPC and the two figures relate to a 25 and 50 year horizon assuming nil residual value in either case. With respect to this development the Minister argued that it might be more sensible for the traffic of the South West to be handled in other ports, thereby contradicting its Portbury evidence on the local nature of port hinterlands. There is, however, one important difference between the two situations. At the time of Portbury the Minister was arguing in favour of the traffic going to the new berths at Tilbury (already partly in use) and Seaforth (by then under construction). This interdependence may help explain (in political terms) the delay in giving a decision on Portbury since the PBA had made its application to build new facilities well before London and Liverpool had reached their own decisions; by the time the

Portbury decision was given, the Minister could point to the permission already given to construct container berths at Tilbury.

Amongst those schemes described earlier, the construction of new locks at Leith and Grangemouth are of particular interest for, together with Bristol, they are the only proposals for impounded dock systems to have come forward for a number of years; neither appear in the above list as the Minister made no mention of them.

Given that the financial health of many ports has been weak for some time, Leith and Grangemouth seem particularly poorly placed to support the interest and depreciation burden of a new lock. With an 8% test discount rate, the equivalent annual charge (including only a modest depreciation figure since the asset is long lived) is of the order of 10% of the capital outlay. On this criterion, Leith is required to earn about £0.5m in incremental operating surplus, while the total figure in 1968 was only £0.15m. If the cost of the Grangemouth scheme is taken as £8m, the corresponding values are £0.8 and £0.5m. The fact that larger ships will be able to enter these ports implies that some incremental operating surplus may be anticipated, but even allowing for an increase in the general level of port charges, it is doubtful if this will raise revenue to the required level. Set against this is the possibility that the ports would have to close entirely if these locks were not built, and on narrow financial grounds this seems the preferable solution. If so, the Ministry's decision to sanction these schemes can only be rationalised on regional planning grounds. But even if there is a sound case for a new lock on the Forth to prolong the life of one of its ports, it is not so obvious that there is a case for two such locks in the same area!

Paragraph 109 of the 1966 White Paper on Transport Policy stated that "the investment control procedure under the Harbours Act 1964 will secure that the projects approved yield the highest possible benefits to the community". The foregoing discussion has demonstrated that the realities are so complex and the unsolved problems so considerable that this view is not justified. Neither can it be so if the dof on the internal finances of a port continue to be considered of overriding importance. The concept of port profitability is never seriously considered in continental developments of this type where the correct economic appraisal is seen to be a national one. There

the notion that well planned ports bring enormous benefit to a nation's economy has resulted in the practice of the French Government to pay 80% and that of the Belgian Government of paying 100% of port infrastructure costs - in contrast to the British Government's contribution of a mere 20%, and that limited to certain kinds of port investment.

The Ministry's position has been that of being very anxious to impose some financial discipline on investment decision making in ports and has, therefore, apparently been willing to ignore shortcomings in the procedure. For example, it has been willing to start from the position that if benefits have not been identified and quantified they must be supposed not to exist. Whether or not we can expect improvements in the quality of port investment evaluations remains an open question. At one time nationalisation was seen as paving the way, with an opportunity to introduce a uniform pricing policy, but this was swept aside with the change of Government in 1970. Meanwhile the ports remain something of an anomaly in the whole of the U.K. transport system. That the activities they perform are of supreme importance to the economic well-being of this country goes without saying, yet it is just this context which makes their autonomy and competitiveness somewhat difficult to reconcile.

~ 37 000 words!

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