Eyemouth Harbour

Review of Fishing Port Development Proposals

Technical Report No. 275
September 1985

SEA FISH INDUSTRY AUTHORITY
Industrial Development Unit

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SUMMARY

Technical Report No. 275 has been produced for the Eyemouth Harbour Trust to assist in their development planning. The report details the historical development of the Eyemouth fishing industry and describes the existing fishing fleet, its operations and the supporting harbour, marketing and servicing infrastructure.

The extent and importance of the various facets of the fishing industry established in the town are described and the importance of adequate harbour facilities examined. The physical constraints of the existing harbour are discussed and the civil and maritime engineering implications of further development works are described with reference to recent (1982) proposals.

The location of Eyemouth and its existing resources are assessed to establish its current and potential value to the fishing industry nationally and regionally. It is concluded that the advantages of the geographical location with respect to the fishing grounds, other principal landing ports and the national processing and marketing system, coupled with the established "inshore" fishing tradition warrant serious consideration and justify the principal recommendation to proceed to a full feasibility study.

It is further recommended that grant aid be sought from central and local government, in particular DAFS, to assist with the study costs. Suggested terms of reference for a technical and economic feasibility study and for associated engineering surveys and investigations are included in the appendices to the report.

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H. Richings
D. Wood

EYEMOUTH HARBOUR

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EYEMOUTH HARBOUR

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1 INTRODUCTION

This report has been produced by the Industrial Development Unit of the Sea Fish Industry Authority on behalf of the Eyemouth Harbour Trust. It reviews the current proposals for the development of the fishing harbour and landing facilities at Eyemouth in the context of the current and probable future requirements of the fishing industry.

Agreement to proceed with the preparation of the report was given at the meeting of 13th August 1985 between SFIA representatives and the Harbour Trust. A study team comprising Messrs. J. D. Wood, Fisheries Specialist, and H. G. Richings, Maritime Engineer, visited Eyemouth during the period 20th to 29th August 1985. They researched existing documents and interviewed representatives of the local fishing industry including skippers, merchants, processors and

officials of the fishermen's association. Discussions were held with the Harbour Master, Mr. T. Maltman, and with the Fisheries Officer, Mr. F. Stride.

The team were assisted in obtaining information on the recent proposals and development plans by the Harbour Trust personnel and a meeting, attended by the Trust's Consulting Engineer, Mr. McLeish, was held on the 28th August 1985 at which technical aspects of the proposals were discussed.

Recommendations contained in the report are aimed at assisting the Harbour Trust in its decision making regarding future action on the proposals. The report is not intended as a feasibility study although it is hoped that much of the historical and general background material would be incorporated into such a study and thus minimise preparation time and cost. In drawing up their recommendations the Team took advice from the SFIA's Fisheries Economic Research Unit (FERU) and from DAFS.

2. RECENT DOCUMENTATION AND REPORT SOURCES

Subsequent to the last major harbour improvements which were completed in the 1960s there have been several documents produced containing proposals for further development. These documents are listed below and described briefly in Appendix II. Where relevant, comment is made on the proposals elsewhere in this report.

a) "Feasibility Study of Port Developments at Eyemouth Harbour" by P.A. Management Consultants Ltd., dated December 1973.

b) "Report on Feasibility Study of Engineering Aspects of Harbour Developments at Eyemouth" by R. H. Cuthbertson & Partners, dated January 1974.

c) "Proposed Harbour Extension - 1982. Interim Report", by R. H. Cuthbertson & Partners, dated September 1982.

d) "A Case for Harbour Improvements - A Review of the Fishing Industry at Eyemouth", dated September 1983.

e) "Additions to the Case for Harbour Improvements Prepared on Behalf of the Harbour Trust in September 1983", dated April 1985.

f) "The Case for the Development of Eyemouth Harbour", by the Harbour Trust and Borders Regional Council, dated May 1985.

To the best knowledge of the SFIA Study Team the above represent the only significant, recent documents relating specifically to Eyemouth, although reference is included in a previous SFIA report, "The Fisheries in Tayside, Fife, Lothian and Borders Region", of November 1984. These documents plus the official DAFS statistics, existing SFIA data and information gained from the Team's own researches in Eyemouth form the sources for this report.

3 THE EYEMOUTH FISHING INDUSTRY

3.1 Brief History

Figure 1 indicates the location of Eyemouth and Figure 2 the configuration of Eyemouth Bay and the location of the harbour, the River Eye and the principal features referred to in this Section.

Eyemouth has a fishing tradition spanning several centuries. Its modern growth was based upon the herring drift net fishery with the subsequent development of a demersal fishery, initially long lining but latterly trawling and seining with shellfish (Nephrops) accounting for a significant proportion of the landed value. Eyemouth escaped any significant effects during the ban on herring fishing between 1977 and 1984 due to the diversification of the fleet and the investment of local skippers in modern, highly efficient demersal fishing vessels.

As a result of its long fishing tradition the economy of the town is largely dependant upon the industry both directly and indirectly. Alongside the growth of an established fleet a whole range of supporting industries have become established and the town possesses a pool of skills in the handling, marketing and processing of fish, and in the engineering services, boat building and support activities required for its operation.

3.2 Local Significance

Fishing and fishing industry related activites, reportedly, employ some 50 percent of the town's working population. Figures given by the Department of Employment and by DAFS indicate a continuing growth

despite problems in the local processing industry in the early 1980s.

A detailed discussion of the employment statistics and recent trends is contained in the May 1985 report entitled "The Case for the Development of Eyemouth Harbour" produced jointly by the Harbour Trust and Borders Region.

Any industry which accounts for such a major proportion of a community's economic effort and which is represented across the breadth of its many facets is clearly of major social and economic significance. Coupled to this established position the fishing industry in Eyemouth has, and is, attracting private investment of money and effort despite some operational constraints which earlier (1973) reports had predicted would cause a decline if not removed. The industry is, thus, of great local importance and retains the confidence of experienced commercial operators.

3.3 Fishing Operations

Geographically Eyemouth lies mid-way between the Bressay Shoal Grounds to the east of Shetland and the Goodwin Sands off the south east coast of England (Ref. Fig. 1). It is thus centrally placed with respect to the principal fishing grounds of the North Sea all of which are worked at various times of the year by Eyemouth based vessels. Appendix I lists the grounds commonly exploited from Eyemouth by the trawl and seine net vessels which bring in the bulk of the demersal landings (see Fig. 1). The majority of these vessels operate on short trips of 2 or 3 days although some of the larger

vessels are capable of fishing more distant waters and are away for 7 to 9 days often landing at ports nearer to their current fishing grounds.

The intermediate coastal waters off Eyemouth are rich Nephrop grounds and a thriving shell fishery based on these, caught by trawl, and lobsters, taken by traps (creels), has been established. Although accounting for only between 4 and 10 percent of the landed volume shellfish is high value. Shellfish landings have fluctuated over the last 10 years as indicated on Table I and it should be noted that 1984 was an exceptional year with landings sixfold up on the previous year.

Eyemouth is a designated herring landing port but since the ending of the 1977 ban landings have not restarted.

3.4 The Existing Fleet

Recent changes in the definitions of the "Eyemouth Fishery District" can cause confusion when studying the statistical tables. As this report is concerned with operations in and out of the harbour it is considered that the best result will be obtained by using the Harbour Master's records of vessels paying composition dues[/1] in order to compile a "regular user" fleet. Table III shows some 70 vessels over 30 ft. in length which might be regarded as the Eyemouth based fleet. In addition to these vessels some 10 to 15 small craft work creels out of the port but, apart from problems due to congestion, they are little affected by the physical constraints of the harbour.

/1 Composition dues are charges levied on vessels making frequent visits over a six month period.

The fleet can be divided up by fishing method (Table VII), by length (Table III) or by vessel draught (Table IV). For the purposes of assessing the operational constraints placed upon the various sections of the fleet by the existing harbour entrance and basin draught is of more consequence than length. Table IV shows the draught of 42% of the fleet to exceed 8 ft. (2.4m) and of 17 percent to exceed 10 ft. (3.0m), with the largest five vessels requiring over 12 ft. (3.7m).

The fleet employs various fishing methods. Table VI analyses the landings of white fish (demersal) according to method of capture from which it will be seen that over 80 percent is taken by seine net fishing and pair trawling. From Table VII it will be seen that seine net fishing is the method used by the larger vessels of the fleet. More than half the fleet (36 vessels) prosecute either pair trawling or seine netting and Table VII further shows that the majority of these have draughts in excess of 9 ft. (2.7m).

The age structure of the fleet is a good indication of the profitability and level of recent investment and can also assist in identifying trends in fleet make up. Table V indicates that at the beginning of 1985 17 percent of the fleet was less than 5 years old and 54 percent less than 15 years old. In the 5 year period 1975 to 1979 10 vessels were built averaging 54 ft. in length, in the period 1980 - 84 a similar number were constructed but the average length had increased to 62 ft. (19m). Such trends must be considered together with other factors before use in predicting future trends but they illustrate how investment in fleet vessels of the

class which is most affected by the harbour constraints has continued in the face of these.

Ownership of the fleet is not entirely within Eyemouth. The town has evolved as the principal fishing port on a considerable length of coast spanning South East Scotland and North East England, as a result a number of skippers/owners having their homes in the Lothian ports base their vessels in Eyemouth while others have moved their residence to Eyemouth. The majority of the fleet defined as Eyemouth based is, however, owned by locally domiciled skippers.

Little has been said above about the Nephrop and light trawl vessel, which make up just under half the fleet, as although they account for a significant proportion of the landed value their draughts are generally less than 1.8m (6 ft. and they are thus not seriously affected by the draught limitations. However, as they are day fishery vessels the number of movements represented is considerable and their requirements within the harbour basin must not be overlooked. Although 1984 was an exceptionally good year it should be noted that the shellfish landings totalled £2.4 million or 33 per cent of total fish landed value for the Eyemouth district.

3.5 Arrival Patterns

An assessment of the restrictions which the physical characteristics of the harbour place on the fishing fleet operations requires an understanding of the arrival pattern of the fleet, particularly the larger vessels, and of the factors which influence the decision of skippers as to when to land.

Table VIII indicates the annual arrivals and days fished by the Eyemouth fleet divided up by fishing method for the five years 1980 - 1984. Appendix III lists in detail, on a week by week basis, the number of vessels working and the number of arrivals with a note on the weather conditions - these being relevant to the entry conditions into Eyemouth harbour.

It will be seen that for the Nephrop and light trawl vessels the number of days fished is similar to the number of arrivals confirming the day fishery nature of these activities. Most of the shellfish catch is sold on a contract basis and the vessel arrival time is therefore a function of fishing time and distance from port to the ground being fished. The team observed a regular pattern of vessels returning to port from mid morning through until early afternoon. A 3.00 p.m. white fish market is held daily and although only about 20 percent of landings of demersal fish pass through it, it is obviously a factor which influences the arrival time of the smaller trawl vessels. This class of vessel is the least vulnerable to depth constraints but even so they must avoid entry and departure at the bottom of the tide when the available depth drops below 4 ft.

The pair trawl and seine net vessels can be seen to be averaging trip lengths of about 2 days, although as stated earlier a few of the larger vessels are away for 7 - 9 days. Most of the demersal catch is consigned to the Grimsby/North Shields markets and thus arrival times are dictated by the market time at these centres and the transport and handling times. Ideally these vessels would want to land so that lorries could be on the road to Grimsby by 11 p.m. or a little later for North Shields.

Interviews with skippers of the pair trawl and seine net vessels revealed that whilst they can generally make a landing at Eyemouth, if they wish to, the depth limitation impose certain restrictions which can affect quantity, quality and value of the catch. All vessels drawing more than 2.4m (8 ft.) are significantly affected by tidal restrictions and it can be demonstrated that vessels requiring over 3.0m (10 ft.) of water can only use half the tide and then only in calm conditions.

The statistics on arrivals over the last five years indicate considerable fluctuations which echo the level of landings for the principal catches. Excluding the Nephrop trawl a tendency to longer trip lengths is demonstrated in Table VIIIB. This might be due to vessels working further afield or staying at sea longer than desired due to harbour entry restrictions. The more distant water activities of the larger vessels can result in them landing at ports nearer to their current fishing grounds and as such do not have a bearing on the trip lengths as recorded at Eyemouth.

3.6 Fish Landings and Marketing

The Eyemouth District landings for the period 1973 - 84 are set out in Table I and illustrated in Figure 3 Table II analyses the landings by composition and Table VI shows the proportion of demersal landings made by the various types of vessel.

During 1984 a total of 10,716 tonnes of fish valued at £7,772,320 was recorded as being landed at Eyemouth. This represents 2 percent by weight of all fish and shellfish landings at Scottish ports. The value,

however, accounted for 4 percent of the Scottish landings with figure for demersal fish only being just under 4 percent. Historically, it can be seen that since 1973 both quantity and relative value of the Eyemouth landings have increased. The landing figures in Table I indicate fluctuations but demersal landings increased 38 percent by volume and 413 percent by value. Shellfish show considerable fluctuations at between 250 and 676 tonnes with the exceptional landings of 1984 soaring to 2,445 tonnes with a value of £2.5 million.

The following places Eyemouth in perspective in the list of Scottish Fishery Districts on the basis of 1983.

		% of Total Scottish Landing by Value	
	Peterhead	29.5	
	Ullapool	15.6	
	Fraserburgh	7.0	
	Shetland	4.5	
	Ayr	4.0	
	Mallaig	4.0	
	Eyemouth	3.6	(4.0 1984)
	Campeltown	2.8	
	Stornoway	2.6	
	Oban	2.2	
with	Pittenweem, Abroath, Wick, Buckie, McDuff, Leith, Lossiemouth and Orkney Totalling	9.3	
		100.0	

The demersal catch is predominantly Cod and Haddock and as illustrated in the table below these two species have increased while the proportion of Whiting has fallen drastically. The trends indicated reflect the growth in consignments to the Grimsby market with its demand for Cod and movement of the Eyemouth based fleet towards more 'quality' fish and away from the lower value Whiting.

Analysis of Demersal Landings by Fish Species
(Figures are expressed as % of total)

Year	**1983**		**1982**		**1981**		**1980**		**1979**	
	Wt	**Value**	**Wt**	**Value**	**Wt**	**Value**	**Wt**	**Value**	**Wt**	**Value**
Cod	40	46	35	43	47	43	27	34	28	34
Haddock	43	39	46	40	37	34	31	32	25	30
Whiting	9	7	11	8	16	13	31	24	29	21

Fish landed at Eyemouth is marketed in one of several ways:

a) First sale auction in the market hall on the West Quay;

b) Consignment elsewhere for auction;

c) Sale by private arrangement for processing locally or elsewhere;

d) Sale under contract.

The bulk of high value shellfish is sold under contract to local merchants and can thus be landed at any time of day without the need for formal quayside arrangements. Vessels may be seen discharging at several points along

the quay with the boxes being collected by fork lift trucks and conveyed to merchants quayside premises.

White fish by-catch and the catch of some of the nephrop trawlers is sold at the first hand auction which takes place every weekday afternoon. Local retailers and small processors purchase the fish and some of the larger processors take more significant quantities during the winter months when landings to this market are heavier.

The bulk of the demersal fish (80 percent) is currently consigned to Grimsby or to the main Scottish markets although some skippers may choose to make private arrangements for sale of part of their catches. The team received conflicting views on the availability and demand for sales to local processors and the intricacies of the various market prices and vested interests come into play to obscure the situation.

The principal fishermen's organisation is the FMA (Fishermen's Mutual Association) which has offices on the quayside and arranges the consigning operation. Due to the advantages of bulk transport and an, apparently, well managed operation the skippers, particularly those who are members of the FMA, perceive the current consigning arrangements to be to their advantage. The current buying capacity of the local market is too low to be of serious interest although some opinion exists in favour of developing a full scale first sale market at Eyemouth.

3.7 Local Processing

There are a number of established local processors and there have been recent additions at the local industrial estate. Processing includes filleting and freezing with some production of breaded and salted products.

The team interviewed several managers of companies both established and new. Eyemouth is well placed geographically being only 2 miles off the A1 trunk road and thus accessible to the remainder of the Scottish landing ports for raw material supplies and also convenient for product distribution into the English market or overseas export markets.

Two recently established firms stated that the availability of high quality locally landed fish was important to them and that whilst not currently buying significant quantities foresee a growing requirement. One firm alone processes 100 boxes/day after only 3 months of operation and plans to increase to 300 boxes/day. The species and quality of fish required is available in Eyemouth and if suitable market prices can be established the prospect exists for a significant portion of the Eymouth catch to be absorbed by local processors.

The details of the local processing industry and the implications in terms of employment are dealt with in more detail in the May 1985 report referred to in Section 2. As with the investment in vessels, however, adequate evidence is available to suggest that the apparent advantages of Eyemouth as a fish processing centre are recognised by private companies. It should

be noted that currently Eyemouth does not enjoy any special development status.

3.8 Servicing and Support Industries

All the skippers interviewed agreed that Eyemouth offered excellent engineering support services and that often vessels landing North Shields would have to request skilled personnel to be sent from Eyemouth. The long "inshore" fishing tradition of the town has meant that all the crafts necessary to provide support to such a fishing fleet have become established locally.

Boat building is carried out at the Eyemouth Boat Building Company Ltd. which is apparently prospering despite restrictions imposed by the Eyewater Cut on the size of vessel that can be slipped. Plans to relocate the yard on Gunsgreen Point were prepared in the mid-1970s. These would have given the yard a deep water sea access and improved working areas. No action was taken on these plans but the yard was extensively modernised in 1977.

A fishermen's co-operative owns and runs the plate ice plant which with a 2 tonne/hour capacity supplies all the needs of the fleet and serves out of town customers as supplies permit. The ice plant is sited at the head of harbour and distributes ice in converted concrete mixer trucks. The siting of the plant prevents direct loading but the existing system is flexible and allows delivery to any berth with road access. The plant, which was commissioned in 1981 is another example of investment by the Eyemouth fishermen in their own port.

In addition to the above specific examples the town offers chandlery services, transport and the usual harbour administration and control services.

4 EYEMOUTH HARBOUR AND APPROACHES

4.1 Description

Eyemouth Harbour, situated in the south east corner of Eyemouth Bay, (Ref. Fig. 2) is the only deepwater haven regularly used by fishing vessels between Leith and the Tyne and is located on a particularly hostile stretch of rugged coastline. The harbour has developed over several hundred years with the most recent improvements having been completed in the 1960s following hydraulic model studies to ascertain the most suitable alignmnent for a new, self cleansing entrance channel.

The harbour is approached through Eyemouth Bay. The Bay faces north with Fort Point to the north west and Gunsgreen Point to the south east. The centre of the Bay is dominated by the Hukurs, a cluster of rocks which dry from 3 to 3.7m and which divide the entrance to the Bay into two channels, the West and East Yetts. The Bay itself is relatively shallow shelving from 9 to 12m in the Yetts to around 2m relative to Chart Datum, at the harbour entrance. The bed of the Bay is sand overlaying rock. The sand, reportedly, stretches northward through the West Yett towards St. Abbs, whilst the bed of the East Yett is apparently rocky. Leading lights align vessels approaching southward through the West Yett with the narrow harbour entrance channel - known locally as the "Canyon". The East Yett can only be used in daylight as there are no navigation lights on this approach.

Although the harbour basin is well sheltered the Bay is not an all weather haven and in a northerly storm the sea within the Hukurs becomes a mass of broken water and approach to the harbour is hazardous.

The harbour basin is entered through the "canyon" (Fig. 4) which is a channel some 50m long with vertical walls above high water the width being 18m at this level tapering to 15m at low water. The walls are designated the east and west breakwaters and the former has been extended 50m northwards to give shelter to vessels from easterly weather as they make their final approach. When constructed the channel had a rock bed but a mobile sand bed has formed which varies in thickness and restricts the available water depth to about 1m at LWST and some 3.3m at mid-tide. Figures 6 and 7 indicates the approximate water depths available based on an analysis of surveys taken by the Harbour Master over the last two years.

Spending beaches to the east and west inside the entrance dissipate wave energy from swell which enters the channel during north or north easterly weather. A low level training wall continues on the line of the east breakwater terminating against the eastern quay wall infront of Gunsgreen House. The training wall channels the ebb flow so as to assist with cleansing. An unfortunate, although infrequent, effect of the training wall is to prevent wave dissipation during the lower half of the tide and allow propagation of wave action up to the elbow where the basin swings to the south west. Reflections of these waves can result in an unacceptable degree of vessel movement along the west quay seaward of a point opposite the northern end of the middle pier (Fig. 4).

The main harbour basin is formed between the middle pier, on the south eastern side, and the west quay. It is some 200m long by 30m wide and terminates at a sluice which has a concrete slipway on its western side and a drying out berth to the East. There is some 400m of alongside berth space with vehicle access to much of it. A covered market backs a section of the West Quay with roller shutter doors opening directly to the public highway at the rear. The basin is regularly filled with vessels and congestion occurs particularly on a Thursday evening when the pair trawl and larger seine net vessels are landing for the Friday Grimsby market. The team witnessed some 46 vessels at berth on a Saturday during the study visit (Plate No. 2) and the Harbour Master reported that up to 65 vessels have been accommodated.

The basin was dredged out at the time of the entrance reconstruction and was intended to provide a minimum of 1.8m of water at low water. Whether or not this was achieved is not clear but currently vessels drawing 3m and over are clearly bottoming out from just after half tide. The accumulation of silt in the harbour has a cushioning effect and this situation, although not operationally ideal, is acceptable.

4.2 Operational Constraints

Previous reports refer to restrictions imposed upon fishing fleet operations due to the physical limitations of the harbour and its exposure. By examining available data and studying the existing fleet it is possible to illustrate that some constraints do exist. It is,

however, also necessary to recognise the psychological effect that the presence of these restrictions might have on skippers who have alternative landing possibilities or who may be occasional visitors.

Three areas may be identified in which constraints exist: the approaches; the entrance; and the harbour basin.

4.2.1 The Approaches

Weather conditions can turn the mouth of the bay into a dangerous area, the Hurkurs offer some protection during the lower part of the tide but this is lost at high water. Fortunately severe northerly weather is not too common occurring on average on less than 20 days/year. For a vessel approaching the harbour entrance, however, the shoaling water produces draught problems as well as causing swell and storm waves to build up. In calm conditions vessels drawing up to 3m (10 ft.) can approach the entrance on the top half of the tide. Once there is any significant wave action, however, the effective depth is reduced and the entry 'window' reduced. In storm conditions such a restriction can clearly have safety as well as operational implications.

4.2.2 The Entrance

As with the approaches the entrance has depth limitations. The design depth of 1.8m at low water has been reduced by sand deposition. The presence of a sand 'cushion' over the rock bed is advantageous in that it minimises damage due to 'bumping' in swell conditions but also it obviously restricts operations. Figures 7 and 8 show a typical sections through the entrance

and relate the available depth to the tidal states and various vessel draughts. The sand bed is mobile and, on occasions, banks form within the entrance limiting the available depth further.

All but the smallest vessels in the fleet are prevented from entering at low Spring tides although vessels drawing 1.8m or less (some 20% of the fleet) can probably enter and leave 1 hour either side of low water and are thus little affected. Some 40% of the fleet draw over 2.5m and 17% over 3m, these vessels suffer increased restrictions with the latter requiring half tide level and above in calm conditions and higher levels if any swell is running.

The alignment of the entrance allows direct entry to northerly swell and this affects both available depth and steerage.

In the Team's opinion an entry/exist window of half the tide or less imposed on the most productive section of the fleet must be considered a significant operational constraint. Such a constraint affects both Eyemouth specifically, and also the fishing industry generally through effects on quality and lost fishing time. A vessel may stay out an extra tide to the detriment of the quality of fish in its hold or may cut short its fishing in order to make an entry window thus reducing its productivity.

4.2.3 The Harbour Basin

The basin is completely sheltered apart from the occasional swell penetration of the section seaward of the elbow and thus provides an excellent haven once entered. It is, however, limited in available depth and in water area. Congestion is, reportedly, a regular occurrence although efficient management by the Harbour

Master minimises the effects. Again the design depth of 1.8m, reduced by some siltation, is insufficient for all-tide operation for the majority of the fleet and 50% of vessels would take the ground at low tide with the larger 25% aground for half the tide. Clearly this limits the use of unloading berths and complicates operational control as once aground at a berth a vessel monopolises the use of that section of the quay. Plate 7.

Coupled with restricted vehicle access and difficult manoeuvring situations the lack of space and depth in the harbour basin produces an undesirable situation. It is congested, inefficient and potentially wasteful in terms of crew and transport personnel time.

4.3 Engineering Considerations

The Team have studied available historic information, made visual inspections and talked to the Harbour Trust's Consulting Engineer. The interim report of September 1982 recommended further engineering studies. These would be essential before detailed design of any new works and some, including hydrographic surveys and site investigation, advisable before detailed cost estimates and feasibility studies are completed.

A number of general points can, however, be made from available data and they must be borne in mind in planning further studies and in assessing preliminary proposals.

4.3.1 Maritime Engineering

Any works outside the existing harbour will be exposed to northerly and easterly storm waves. The location of Eyemouth gives a fetch of over 1000 miles northward to the Arctic and although northerly winds are generally of short duration their severity combined with this fetch can produce waves of considerable height and long period. A review of available wave data and, possibly, a data collection programme will be an essential part of any design studies but it is certain that breakwaters will require high crest levels and heavy armouring, resulting in high capital costs.

At the time of the previous improvement works HRS reported that no local wave data was available. As part of their studies they applied hindcasting techniques to predict probable wave characteristics. It is possible that data on offshore wave conditions relevant to Eyemouth may have been collected subsequently as part of North Sea Oil industry operations. Design of the sea wall at the nearby Torness Power Station, however, constructed in 1979/80, relied upon modifying data from the port of Leith to predict extreme tidal conditions and derived design wave heights from wind data recorded at the Bell Rock lighthouse. The National Institute of Oceanography at Wormley, Surrey should be consulted on available sources of wave and tide data.

It is of interest to note that the breakwater constructed at Torness had a general crest level of +9.0m OD and used local limestone armouring of 6t size and 5.4t dolos units. (+9.0m OD = +12.7 (42 ft.) on the harbour gauge, i.e. some 5m (16 ft.) above the deck level of the existing east and west breakwaters).

4.3.2 Coastal Processes

The probability of siltation within any proposed harbour basin, entrance or dredged approach channel must be assessed particularly in view of past experiences at Eyemouth. The existing regime within the bay appears to be in balance with no significant net deposition of material from marine sources outside the bay. The Eye river clearly brings down fluvial material particularly in times of spate but historic evidence does not indicate any significant reduction in the volume of the bay during the last 140 years. The flood tide running south from St. Abb's Head produces currents capable of moving sand but although part of the flow passes inside the Hurkurs rocks it flows out through the East Yett without entering the main bay. The ebb flow is weaker and appears to flow northwestwards keeping outside the Hurkurs.

Significant sand movements do, however, take place within the bay and are the source of the current and historic siltation problems.

The principal mechanism moving the sand is wave action. Northerly and easterly storms produce conditions which draw-down the beach and deposit the sand below low tide level. Periods of calmer weather with gentle wave action gradually re-build the beach.

A particular manifestation of this is the relatively rapid formation of sand banks in the existing entrance when a northerly swell is running. The normal flood tide flow through the entrance does not draw in significant quantities of sand but when reinforced by wave action, which puts some material into suspension

and also assists in moving material along the bed (saltation), considerable movements into the entrance can occur. Banks form in the canyon and just inside the entrance where flow velocities reduce (Ref. Fig. 7). The ebb flow would be inhibited from scouring under these conditions as it will be flowing against the direction of wind and waves.

The exact form of the beach and location of sand banks will depend upon wave directions over preceeding days and although there are general seasonal trends the vagaries of the British climate make prediction difficult and may mean that particular conditions are only repeated after several years.

Soundings and observations of beach levels taken by the Harbour Master over the past two years demonstrate the degree of movement. Figure 7 shows some sample seabed contours in the harbour entrance prepared using the Harbour Master's records. Observations of the beach indicate variations in level against the seawall of over 2m in short periods and at the time of the Team's visit the level was 3m below a level reached some 4 years previously.

The Eyemouth catchment area is the source of some of the deposits found in the harbour and adjacent beach areas and at times of spate the river can cause siltation within the harbour basin.

The HRS, in their 1950's studies, verified the tidal flow patterns using float tracking techniques and undertook a comparison between the 1843 and 1956 hydrographic surveys of the bay which confirmed the volume of sand in the bay as being constant.

4.3.3 Construction Conditions

The Gunsgreen area is rocky and considerable rock excavation and dredging will be required in any significant development. The rocks outcropping on the headland have been geologically altered and folded and are characterised by a distinctive laminated appearance. The erosion pattern and information from previous works suggests varying degrees of hardness and blasting will certainly be required. The laminated nature of the rock will mean that any spoil from excavation will only be of use for general fill purposes and of no value as armour rock for breakwater construction.

The steeply tilted strata and the presence of gulleys mean that the line of any offshore structures will need to be carefully surveyed to establish the best route and also to allow reliable cost estimating.

The presence of rock does, however, suggest that secure foundations should be found for all breakwater and harbour structures.

4.3.4 Harbour Basin Conditions

The interim report by Cutherbertson's of 1982 sets out proposals for a new harbour basin with a phased development leading to the connecting of the proposed and existing basins. The report correctly identifies possible problems from wave action even given the protective breakwater. Care will be required in designing the harbour layout to avoid phenomena such as resonance, and the possibility of wave reflection from Fort Point into a north-westerly facing entrance will require attention.

The general exposure of Eyemouth and the whole of the Berwickshire and Northumberland coasts is such, however, as to make a completely protected harbour difficult to obtain economically. The existing basin is exceptionally well sheltered from wind and waves being screened by the high ground of Gunsgreen to the east and north east, the town to the west and north west and the inland hills to the south. A new basin in the proposed position would not be so favoured although there should be no problem in obtaining an acceptable harbour offering all tide and all weather entry. Some wave action on a few days a year is acceptable and design criteria should be specified accordingly to avoid excessive expenditure on protective works. Vessel safety must be ensured but suspension of landing operations or requirement for special mooring precautions under exceptional weather conditions should be acceptable.

The effect of connecting the new basin to the existing one would require study as this would affect the flow through the existing entrance and might increase siltation rates in that area.

4.4 Importance to the Local Fishing Industry

It may be obvious to state that the harbour is essential to the local fishing industry but it is necessary to examine the relationship between the various facets of the industry in Eyemouth and the harbour in order to evaluate the probable effects of the alternatives open to the Harbour Trust.

4.4.1 The Catching Fleet

The harbour is a home base to a sizeable fleet as described in Section 3.4. It provides a landing place, haven, servicing facilities and secure layover berthing. Should the harbour fail to develop to meet the needs of the fleet then a proportion of skippers might choose to base themselves elsewhere. The alternatives for the medium to large vessels would be Peterhead or Aberdeen to the north or North Shields to the south. These ports are currently used for a proportion of landings but all have disadvantages. North Shields lacks an inshore fishing tradition and evolved as a base for near/middle water, company owned and operated trawlers. It supplied all the servicing needs for such a fleet; a source of cheap fuel from the Northumberland coal fields together with a ready market for cheap food (of indifferent quality) to the densely populated conurbation of Tyne/Weir. Engineering services were readily available from shipyards. Essentially it is part of a commercial harbour complex owned and administered by the Port of Tyne Harbour Authority. The near/middle water company owned trawler fleet has now disappeared and in the absence of a locally based family owned and operated inshore fleet the fish trade at the port is in serious decline, a matter currently causing concern to North Tyneside Borough Council, Port of Tyne Harbour Authority, fish merchants, fish salesmen and agents. Because of the decline in fishing activity at the port and its site within a commercial harbour complex it is a matter of consideration to both the North Tyneside Borough Council and the Port of Tyne Authority whether the best economic return from the asset perhaps lies in its development as a commercial

port rather than in life saving investment in an attempt to maintain it as a fishing harbour. The uncertain future of North Shields must therefore make it a doubtful alternative base for part of the Eyemouth fleet (and other fleets operating in the central North Sea). Aberdeen and Peterhead could be used as alternative bases but both have disadvantages. Fish landing associated with over development exist at Peterhead. Both ports are not suitably sited for fishing operations in the Central/South North Sea.

4.4.2 Fish Merchants and Processors

Fish landed in Eyemouth forms an essential part of the trade of many of the fish merchants particularly those dealing in shellfish. The larger fish processors, however, currently only purchase a small proportion of their requirements locally.

During interviews with the processors it became apparent that the reason for the low level of purchases at Eyemouth was attributable to existing marketing practices. The quality and species of fish landed are suitable and a significant increase in local purchases is anticipated as the buying strength of the newly established processors grows. The presence of an active landing of high quality fish was given as a major consideration by the two most recently established processors both of whom intend exploiting markets which are increasingly putting a premium on quality.

Thus, whilst the shellfish merchants are unlikely to be much affected by any lack of harbour development, for reasons previously stated, failure to provide facilities that are attractive to the larger and most productive section of the fleet could have detrimental effects on the future of the processing industry.

4.4.3 Support and Service Industries

The presence of a significant Eyemouth based fleet supports engineering, boat repair, boat building and chandlery businesses as well as requiring bunkering and provisioning services. Any reduction or stagnation in development of the fleet due to harbour facility shortcomings would directly affect the development of the supporting industries. Recent trends in new vessels indicate an increase in size towards the top end of the 24m class. As skippers tend to prefer to have work undertaken at their home port any movement away from Eyemouth of vessels would reduce demand and employment prospects. Similarly any significant movement of landings to alternative ports would reduce the demand for routine supplies and affect the Eyemouth economy.

It may be argued that any loss to Eyemouth in terms of the support and servicing industries is a gain for somewhere else. This, however, assumes the availability of servicing capacity or the transferability of the skilled Eyemouth labour. Cost benefit studies must consider the social security costs of any increased unemployment resulting from a decline of the local service industries, the cost of lost skilled labour and the cost of transferring workers to another area.

5 EYEMOUTH AS A FISHING INDUSTRY CENTRE

5.1 Geographical Location

Figure 1 indicates the location of Eyemouth in relation to the fishing grounds, the other principal landing ports and the main markets for fresh and processed fish.

It can be seen to be centrally located to service a catching fleet operating in the central North Sea, well placed en-route between the principal Scottish landing areas and the Humberside markets and processors and adjacent to the main A1 trunk road for distribution and reception of fish products.

Road journey times to Humberside and Aberdeen are 5 hours and 3 hours and fresh fish en-route from ports such as Kinlochbervie to the English market must pass within 3 miles on the A1. To a skipper fishing the Central North Sea grounds Eyemouth must be an attractive landing port given suitable facilities. Steaming times are relatively short and transport costs and times to English and Scottish markets are reasonable.

For the processor the location offers the advantages of a local source of high quality "Scottish" style fresh fish with alternative or supplementary supplies "passing the door" if required. Road links to the main consumer markets are good and distances optimum to minimise raw material costs and transport on-costs.

It does not have the established distribution system that exists in the Humberside markets or the volume of landings to make the development of major fresh fish market probable and should not therefore be seen as a market centre.

5.2 Resources

5.2.1 Fish

The location relative to the fishing grounds for demersal and shellfish have been detailed in earlier sections and given the current fishery management policies of the EEC and the associated quota allocations current catching levels can be sustained and even increased.

5.2.2 Fleet

The existing fleet is modern and the fishing community has a long tradition of inshore fishing with all the associated skills and crafts that entails. The attitude of the fishermen and merchants can be seen to be confident and is evidenced by the investment made over recent years in vessels and servicing facilities.

5.2.3 Harbour

The harbour is strategically placed on a coastline lacking in havens and the Harbour Trust have a good record in making the best use of the available facilities and in planning for future development.

In its present form the harbour offers an excellent service to the nephrop fleet and light trawlers and a satisfactory although, at times, strained service to the more distant water seiners and trawlers.

5.2.4 Labour

The town is home to skippers, crew, merchants, marine engineers, fish filleters, etc. Fishing is a tradition, thus a processor requiring labour can be assured of finding workers prepared to handle fish and equipped with the basic skills. (Some labour shortages were

reported to the Team as a result of the current high labour demands of the Torness Atomic Power Station Project but these, even if existing, should be short-term).

5.2.5 Organisational Infrastructure

Eyemouth lies within the area covered by the Anglo-Scottish Producers Organisation for the purposes of administering of the EEC common fisheries policy management schemes. Fish selling activities are arranged by two well established organisations: Weatherheads (private company) and the FMA (Fishermens' Mutual Association) who handle all fish landings and provide a complete vessel agency service.

The Eyemouth Harbour Trust (EHT) own the harbour and the immediate quayside areas including the market building. Operational control of the harbour lies with the EHT who employ the harbour master and provide navigational and communications services.

A complete organisational structure, therefore, exists for the service of the fishing fleet.

5.2.6 Land

Areas suitable for harbour expansion can be defined although the very nature of the coast is hostile. Assuming no over riding planning, environmental or conservation objections the necessary areas for harbour development are available on Gunsgreen Point.

An industrial estate is already established and it is understood that although not defined as a "Development Area" there should be no problem in accommodating some expansion of the existing processing industry.

5.2.7 Infrastructure

As a well established town of 3000 population a full range of housing, schooling and social facilities is available and the major facilities of Edinburgh, etc. are within easy reach.

5.2.8 Communications

Road communications via the A1 and connecting trunk road system are excellent bringing large areas of Northern England and Scotland within five hours driving and London and Bristol only some 8 hours away.

The main east coast railway line has a main intercity station at Berwick with travelling times to Edinburgh and London of 50 minutes and 4 hours respectively.

Overseas freight links via Tyneside, Humberside and Immingham are within a reasonable driving time and offer Ro-Ro services suitable for frozen or processed product export.

In combination the above resources appear to add up to a valuable asset to the fishing industry in terms of existing facilities and potential. Eyemouth should therefore be assessed in a regional and national context in any detailed economic studies.

5.3 Regional Importance

The May 1985 report by the Harbour Trust and Borders Regional Council describes the importance of Eyemouth to the region's fishing industry and details the employment implications. The town is the centre of fishing operations on the Berwickshire coast and there is no

alternative comparable landing site within the region. Thus any decline in the Eyemouth operations would obviously be detrimental to the Borders Region and conversely any development guaranteeing continued or expanding operations would be good for the Region.

5.4 **National Importance**

The radical reorganisation of the U.K.'s fishing operations over the last decade and the imposition of management control over the principal fishing grounds has resulted in a situation which leaves the country as a considerable net importer of fish and with little scope for significant increases in catches by the national fleet. It is, therefore, imperative that the best use is made of the available resources to ensure that:

a) the home fleet gets the best return on its effort by presenting its catch to the market in optimum condition;

b) that the maximum portion of the high value fresh fish market is supplied by UK catchers;

c) that landings through the ports are maximised by attracting both UK and foreign vessels; and

d) that maximum opportunities for exporting high value products are taken and that processors can be guaranteed suitable supplies.

A major step in achieving these aims would be the development of well appointed strategically placed

landing ports. Eyemouth's geographical position, fishing industry traditions and established high quality landings make it a potentially important link in the national fishing industry network.

6 DEVELOPMENT PROPOSALS

6.1 Description

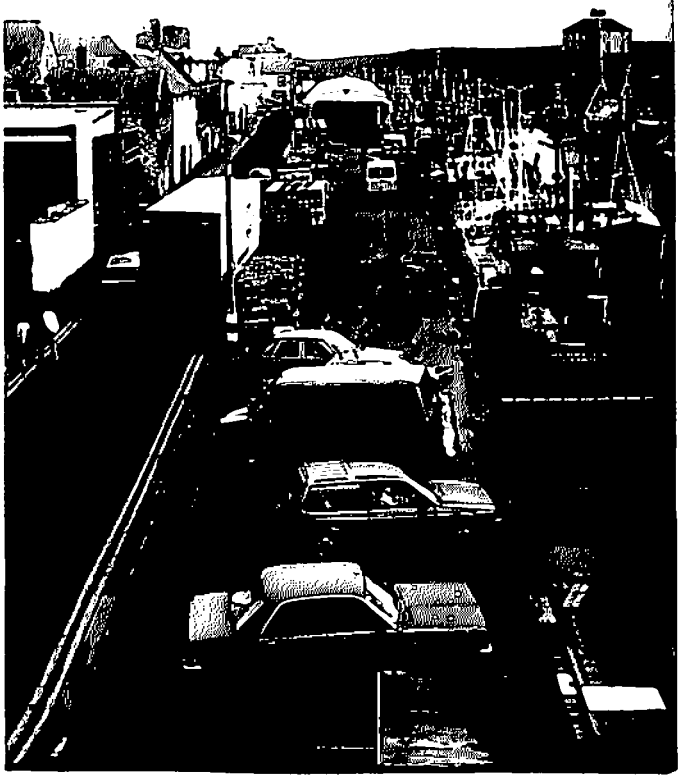
The current proposals are understood to be those contained in the Interim Report by R. H. Cuthbertson & Partners dated September 1982. These proposals, unlike those of 1973, are aimed solely at providing improved facilities for the fishing industry to cater both for existing needs and to give scope for its future expansion. The principal aims are to improve safety of vessels, relieve congestion and provide all tide facilities for the largest vessels in the fleet.

The details are very much in outline form only and the need for detailed studies before proceeding further is stated. It is proposed to construct a new harbour basin to the north east of the existing entrance. The location is justified on the grounds that it avoids the high ground, allows use to be made of natural, offshore strong points in the construction of a protective break water and avoids closure of the existing harbour during construction.

Figure 5 shows the proposed layout and identifies the principal features. The new basin would provide an effective quay length of about 400m, equal to that of the existing harbour, and a water depth of 4.9m (16 ft.) below the Lowest Astronomical Tide. Entry would be gained from the north west via a dredged channel some 180m in length. The approach line through the West Yett would use the existing leading lights.

1. THE CANYON

3. QUAYSIDE AND MARKET



2. BERTH CONGESTION

4. UNLOADING OPERATIONS

5. FISH HANDLING ON ROADWAY

6. MANOEUVRING IN CROWDED HARBOUR

7. HARBOUR AT LOW WATER

8. PART OF PROPOSED DEVELOPMENT AREA

Land access to the new harbour area is proposed via the middle pier and thence by a new bridge across the Eye Water Cut leading to a new access road in front of Gunsgreen House and onward to the harbour area. The outline plans of the future phased development retain this as the access although mention is made of an alternative route along the east side of the Eye Water Valley.

The Interim Report suggests a phased construction and deals primarily with the first phase which is limited to the provision of the harbour with its protective breakwater, quays and access road. The operation of the port including market areas, etc. is only briefly discussed although it is recognised that a problem may exist in the separation of the deep water berths from the existing market and harbour facilities. The suggested solution is the construction of a new covered market adjacent to the proposed deep water basin and the connection of the two harbour basins at a point opposite the Harbour Trust Offices via a new inner harbour. Figure 5 shows the outline proposals.

A global cost estimate of £8.5 - £10 million at 1982 prices is given for Phase 1 of the proposals and no costings for the second phase. The Interim Report discusses some of the factors affecting fleet operations out of the existing harbour and comments on trends in fishing vessel design and the value of the fleet which relies upon the harbour.

6.2 **Comment**

The question of road access requires more detailed study as the middle pier, in its existing form, could not accommodate regular two way traffic. It is only 5m wide without allowing for safety kerbs, railings or a footpath. Currently it is used for layover berthing and some off-loading onto articulated lorries although once one lorry is loading access is effectively blocked. The pier could be widened by covering over the Eye Water Cut, this would give an additional 7m, i.e. 12m overall. Such an arrangement would allow the construction of 5.5m or 6.0m wide road with a parking and handling area alongside the existing quay wall allowing its continued use. Modifications would also be required to the bridge over the sluices at the head of the harbour and the junction with the existing town road system. The costs of the access road must be included under phase 1 and any additional work over that foreseen in the Interim Report would obviously add to the costs to be borne initially.

Access via the middle pier whether or not the Cut is covered over would cut off sea access to the Eyemouth Boat Building Company's yard and require its relocation with, no doubt, associated compensation costs.

The operational and planning implications of the proposals require detailed study in the light of the probable developments in the fishing industry requirements. The construction of a new market area remote from the traditional west quay area may not be inappropriate if the majority of fish landed by the

large vessels continues to be consigned directly to outside markets, or if the majority of locally purchased fish is destined for the processors at the Eyemouth Industrial Estate. If the prawn trawlers continue to land to the existing west quay there may infact be little inconvenience to existing merchants. It is, however, known that there are redevelopment proposals for some of the old yards fronting the quay road and should the proposed use of these be related to servicing the fleet then the implications should be examined.

The proposal to construct a breakwater, new harbour basin and dredged access channel in the areas indicated should not present any insupperable engineering problems. The principal aim of obtaining a deep water entrance would probably be achieved although the proposed channel is probably in the path of some sand movement. The line of the channel takes it through the centre of the bay where existing depths are in the range 3 to 6m below chart datum and bed movement under wave induced saltation can be expected. The degree of any maintenance dredging cannot be assessed without more information but it must be remembered that channels act as traps to material moving across in either direction and thus low net movements of material are not necessarily indicators of low siltation rates.

The next step in any action to proceed with the proposals should include survey and data collection studies aimed at providing sound information for detailed cost estimates and preliminary designs and also some initial data on marine conditions to allow planning of detailed design studies. The suggested scope of such studies are given in Section 7 - Conclusions and Recommendations.

7 CONCLUSIONS

The following are the principal conclusions drawn by the study team.

7.1 Dependence of Eyemouth

The economy of the town is based on the fishing industry. Fishing and related commercial activities are the principal sources of employment.

7.2 Established Tradition/Relevance

The historical development of Eyemouth as an "inshore" fishing port has resulted in a pool of skilled labour and an infrastructure of service industries which are suited to the current fishing operations in the North Sea and North of Scotland waters. The modern, short trip demersal fleet are landing high quality fresh fish which are increasingly demanded by the market and which are essential if the home fleet is to make the most of its quotas under the Common Fisheries Policy.

7.3 Commercial Confidence

The condition and age-structure of the Eyemouth Fleet indicates a policy of continuous investment by skippers and owners. This investment and a similar investment in shore facilities shows commercial confidence in the town and a commitment by local fishermen to their town in preference to alternative ports.

7.4 Fish Landings/Quality

Over recent years there has been a steady increase in both total landed weight and relative value of the Eymouth landings. This indicates an increased

productivity and a move towards higher value species in response to market demands. The generally high quality of the fish landed is also reflected in higher than average prices.

7.5 Harbour Limitations

The depth restrictions in the harbour entrance impose a real constraint on the operation of the most productive section of the demersal fleet. The exposure of the approaches and the entrance channel to north easterly weather further exacerbates the situation and a lack of vessel manoeuvring space coupled with depth restrictions within the basin itself impose operational constraints.

7.6 The Nephrop Fleet

This section of the fleet is little effected by the depth restrictions as it is comprised mostly of smaller vessels with drafts of less than 3.5m.

The nephrop vessels are, however, engaged on day fishery operations and thus account for a major proportion of the vessel movements within the harbour and must be affected by the lack of water area.

7.7 First Sale Market

The lack of an established fresh fish distribution system makes it unlikely that a significant first sale auction market could be established at Eyemouth although it is probable that local processing plants will take a larger proportion of locally landed fish in the future.

7.8 Local Processing

The species and quality of the local whitefish landings are well suited to the needs of processors aiming at the high quality/high value segment of the market. This fact coupled with the geographical location of Eyemouth en route between the principal Scottish landing places and the English market should make Eyemouth attractive to high quality processors. It is not, however, envisaged that Eyemouth would ever become a major processing centre.

7.9 Engineering Feasibility

There are no apparent physical (or technical) restraints on constructing new facilities of the type proposed by the Harbour Trust. The exposure of Eyemouth Bay will, however, require substantial protective works with associated high capital costs for any development outside the existing basin.

7.10 Location and Access

The Gunsgreen headland offers sufficient land areas for a development of the size envisaged in the current proposals but further consideration must be given to the proposed access road.

7.11 Summary of Conclusions

Eyemouth manifests all the marks of a progressive fishing port and has made considerable advancement despite identifiable constraints. The port holds much potential but it will not be possible to realise this without removing some or all of these constraints. The principal constraint and thus the one which must be tackled in the first instance is the depth restriction in the harbour entrance. The solution to this lies in the Eyemouth Harbour Trust's proposals as outlined in the Interim Report by their Engineering Consultants R.H. Cuthbertson & Partners. There is no alternative means of increasing the depth of water within the existing entrance. Without further engineering studies it is not possible to evaluate the cost of these proposals but a global estimate of the costs of phase one only was suggested as being the order of £8.5M to £10M at 1982 prices. On this basis the capital costs of the proposals are almost certain to exceed £10M. Clearly this could not be funded by the Harbour Trust alone and so they would require to attract considerable subvention.

The report indicates that there are benefits of developing Eyemouth which cannot easily be measured in purely financial terms. These are related to the stategic location of Eyemouth in relation to the North Sea Grounds, its ready access to the main N-S road link and its considerable indigenous skills in fishing and associated industries. Eyemouth depends heavily upon these industries to maintain employment and the future success of the British fishing industry will depend upon rational development of established resources, e.g. Eyemouth?

Nevertheless the very large capital investment necessary to significantly improve the port is unlikely to generate sufficient benefits to satisfy normal economic investment criteria unless heavy weighting is given to the other benefits and the terms of reference of any Cost Benefit study are broadened to include national and EEC aspects.

8 RECOMMENDATIONS

If, having regard to the conclusions, it is decided to proceed further with the project then action on the following lines is suggested.

The Trustees' proposals, as outlined by their Consultant Engineers, require to be expanded to provide the detailed costing upon which a subsequent investment appraisal may be made. This will involve survey and site investigation contracts. A joint package could then be prepared for submission for funding to several agencies including the Department of Agriculture & Fisheries for Scotland, the Border Regional Council and the European Regional Development Fund. The suggested terms of reference for such studies are given in Appendix IV.

The commissioning of this exercise in itself will be costly and before contracts are placed the Trustees should have regard to the possible weaknesses of the project in cost benefit terms as expressed in the Summary of Conclusions. In the first instance an application should be made to D.A.F.S. for grant assistance towards the cost of carrying out these investigations. Such an application will require to be supported by the contractors estimated survey costs.

APPENDIX I

GROUNDS FISHED BY EYEMOUTH BASED FLEET

Pair Trawlers

Longston (25-50'), Deep Water Pelder (6') (NE to SE) Berwick Bank (50') NE Bank (70-80'), Barrels Black, Middle Rough (170'), Dunstalborough (35'), NW Rough, Farne Deeps (50').

Light Trawlers

Pelder and Off Eyemouth, Off St. Abbs Head, Kirk Hard, Tullos, Wee Bankie (25').

Seiners

Pelder, NE Bank, Longstone, (150') Montrose Oilfield, Devils Hole (95-100'), (100') Long Bank, Middle Rough, Long Bank (290') E of Shetland, Path Finder, (140'), Barrels Black, NW & Middle Rough (140') Auk Oilfield, Kirk Hard, Ekofisk (170') Oilfield, Swallow Hole (70'), Argyll Oilfield (170'), Tullos, Berwick Bank, Bressey Shoal.

TABLE I

EYEMOUTH LANDINGS 1973-84

	DEMERSAL		PELAGIC		SHELLFISH		ALL FISH	
	TONNES	£'000	TONNES	£'000	TONNES	£'000	TONNES	£'000
1973	5975.15	1013.06	116.08	6.68	339.70	156.17	6430.93	1175.91
1974	5616.19	1221.49	2686.00	174.85	248.87	104.89	8551.06	1501.23
1975	4737.20	1010.86	1943.00	182.63	259.90	110.46	6940.10	1303.95
1976	4411.70	1144.67	2180.20	228.18	472.70	217.88	7064.60	1590.73
1977	5624.00	2028.48	2.60	0.43	503.60	308.25	6130.20	2337.15
1978	6412.70	2597.86	0.10	0.01	676.40	347.48	7089.20	2945.35
1979	5858.70	2710.30	1.00	0.17	412.60	317.62	6272.30	3028.09
1980	5139.80	2610.73	3.30	1.38	273.30	245.41	5416.40	2857.53
1981	5937.90	2990.65	2.90	1.04	308.10	209.82	6248.90	3201.50
1982	8181.30	4660.92	0.00	0.00	334.20	299.04	8515.50	4959.95
1983	7951.00	5065.40	0.00	0.00	309.00	298.30	8260.00	5363.70
1984	8271.00	5196.20	0.00	0.00	2445.00	2576.10	10716.00	7772.30

Source D.A.F.S

TABLE II

EYEMOUTH COMPOSITION OF LANDINGS

	1980		1981		1982		1983		1984	
	tonnes	£	tonnes	£	tonnes	£	tonnes	£	tonnes	£
DEMERSAL FISH	5,162.3	2,621,362	5,953.3	2,999,782	8,182.5	4,661,469	8,032	5,111,700	8,271.0	5,196,200
% Scottish Catch	1.60	3.1	2.28	3.30	4.28	4.38	2.74	4.22	2.92	3.8
PELAGIC	3.3	1,383	2.9	1,038	-	46	+	+	+	+
NEPHROPS	227.9	229,089	251.5	204,285	279.7	283,048	442	518,100	1,299.6	1,577,737
% Scottish Catch	2.18	2.04	2.00	1.66	2.31	1.98	3.11	3.07	-	-
OTHER SHELLFISH	261.8	154,900	258.1	174,270	214.6	172,546	1,076	470,100	2,445.0	2,576,100
TOTAL LANDINGS	**5,655.3**	**3,006,734**	**6,466.3**	**3,381,375**	**8,676.8**	**5,117,109**	**9,134**	**6,100,000**	**10,716**	**7,772,300**
% Scottish Catch	1.52	2.65	1.45	2.65	1.74	3.44	1.8	3.6	1.97	4.0

TABLE III

EYEMOUTH BASED FLEET BY LENGTH GROUP

OVERALL LENGTH										
30-40ft		40.1-50ft		50.1-60ft		60.1-70ft		70.1-80ft		TOTAL
No	%	No	%	No	%	No	%	No	%	
18	25.7	9	12.8	25	35.7	10	14.3	8	11.5	70

TABLE IV

ANALYSIS OF DRAUGHT OF VESSELS OVER 30' O.A.L. ENTERING EYEMOUTH HARBOUR REGULARLY

	AVERAGE DRAUGHT					AVERAGE LENGTH
	4-5.9ft	6-7.9ft	8-9.9ft	10-12ft	12ft	
	15					40, 35, 37, 40, 36, 38, 40, 39, 41, 36, 40, 36, 40, 40, 38
		26				50, 40, 46, 52, 54, 58, 49, 53, 54, 42, 42, 50, 50, 40, 54, 54, 52, 52, 54, 53, 45, 42, 54, 50, 54, 54
			17			63, 65, 60, 60, 55, 66, 66, 62, 65, 65, 61, 55, 55, 65, 56, 55, 52
				7		70, 60, 77, 73, 60, 73, 60
					5	80, 75, 75, 80, 78
TOTALS	15	26	17	7	5	70
%	21.4	37.2	24.3	10.0	7.1	100

Source: Harbour Master, Eyemouth

TABLE V

ANALYSIS OF EYEMOUTH BASED FLEET BY AGE AND LENGTH GROUP

1985		1980 to 1984		1975 to 1979		1970 to 1974		1965 to 19		1960 to 1964		Before 1960		Not Known		TOTAL
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Vessels
2	3	10	14	10	14	16	23	10	14	6	9	11	16	5	7	70
75, 42		80, 66, 75, 80, 60, 60, 40, 42, 77, 35		63, 66, 70, 65, 40, 55, 40, 42, 60, 40		60, 54, 49, 55, 62, 65, 61, 41, 53, 73, 50, 78, 36, 73, 65, 60		55, 65, 52, 54, 52, 37, 55, 53, 52, 55		39, 56, 45, 54, 40, 40		40, 46, 54, 52, 54, 36, 36, 50, 40, 40, 54		58, 38, 40, 54, 38		70
——— 58 Average ———																

TABLE VI

ANALYSIS OF WEIGHT OF WHITE FISH LANDED BY EYEMOUTH BASED FLEET BY METHOD OF FISHING

METHOD OF FISHING	1984		1983		1982		1981		1980	
	Cwt.	%	Cwt.	%	Cwt.	%	Cwt.	%	Cwt.	%
LIGHT TRAWL	18,339	11.2	24,858	15.7	22,119	14.7	14,817	12.5	16,942	16.5
NEPHROP TRAWL	3,912	2.4	749	0.5	1,246	0.8	924	0.8	2,601	2.5
SEINE	73,088	44.6	82,905	52.4	82,756	54.9	53,907	45.5	47,594	46.3
PAIR TRAWL	68,366	41.8	49,801	31.4	44,565	29.6	48,903	41.2		
TOTAL WHITE FISH	**163,705**	**100.0**	**158,313**	**100.0**	**150,686**	**100.0**	**118,551**	**100.0**	**102,884**	**100.0**

Source: D.A.F.S.

TABLE V1B

ANALYSIS OF VALUE OF WHITE FISH LANDED BY EYEMOUTH BASED FLEET BY METHOD OF FISHING

METHOD OF FISHING	1984		1983		1982		1981		1980	
	£	% of demersal landings	£	% of demersal landings	£	% of demersal landings	£	% of demersal landings	£	% of demersal landings
LIGHT TRAWL	576,772	11	764,432	15	644,351	14	388,766	13	398,407	15
NEPHROP TRAWL	111,592	2	227,801	1	32,052	1	21,718	1	59,481	2
SEINE	2,432,051	47	2,720,008	53	2,406,252	55	1,371,605	46	1,265,956	48
PAIR TRAWL	2,071,273	40	1,602,582	31	1,276,535	30	1,210,207	40	896,766	35
TOTAL DEMERSAL	**5,191,688**	**100**	**5,109,802**	**100**	**4,359,190**	**100**	**2,992,296**	**100**	**2,620,610**	**100**

Source: D.A.F.S.

2.3 **Engineering Studies** To Include:

2.3.1

Description of Eyemouth's location and the maritime engineering implications of its exposure both in terms of civil engineering construction and harbour operation.

2.3.2

Description of the existing facilities, their operation and limitations.

2.3.3.

Details of survey, site investigation and data collection programmes carried out as part of the feasiblity studies.

2.3.4

Preliminary design studies based on the general requirements of the fishing fleet and port users as defined in 2.2 and on the findings of the studies described in 2.3.1 to 2.3.3. These studies should result in the following:

a) Alternative practical harbour layouts to meet the defined requirements.

b) Design parameters, or details of further studies required to establish these where necessary.

c) Construction methods: brief descriptions of the assumed construction methods for the various alternatives with particular reference to the likely effect on the operation of the existing harbour and any general environmental aspects.

d) Engineering quantities: schedule of the principal items and, where appropriate, the approximate quantities to be used in the cost estimates. Comment should be made on any cnstruction condition assumptions that if in error might significantly affect costs.

e) Discussion of the relative engineering and operational merits of the alternatives proposed and the reasoning behind the principal design parameters. (The hostile coastal environment, with the implicit high capital cost of protective works, and the economic restraints that generally afflict fishing port developments are bound to result in compromise solutions and it is important that design parameters for breakwater design, wave penetration, etc. are fully discussed and their relative importance in terms of cost v operation evaluated).

2.4 Engineering Cost Estimates

Detailed cost estimates based on current prices should be prepared for each alternative considered technically and operationally feasible. The estimates should be broken down into main cost headings and the source and basis of price data used in their compilation should be stated.

Where appropriate, engineering quantities and rates assumed should be stated and attention drawn to any particularly sensitive items where variation from the assumed values or conditions might significantly affect costs.

The principal cost headings should include:

a) Mobilisation

b) Maritime works: breakwaters;
dredging;
marine piling;
marine blasting;

Land based works: excavation;
rock blasting;
quays;
service areas, etc;
roads and surfacing;
drainage;
services;
buildings

Miscellaneous items:

Physical Contingencies:

Allowance for Contractor's Preliminary Items:

Detail design fees:

Construction supervision:

Costs of any additional survey, site investigation, data collection or model testing.

2.5 Economic Studies

These should include both financial and socio-economic cost benefit analyses of the various alternatives including the "do nothing" possibility.

2.5.1 Financial Cost-Benefit Analysis

The estimated capital, annual running costs, loan servicing costs, etc. should be set against potential increased revenues from harbour dues, levies and sale of services. The analysis should take due account of the probable relationship between the increase in fish sale prices and the general rate of inflation as the major income to the Harbour Trust is in the form of a levy on landed value.

2.5.2 Socio-Economic Cost-Benefit Analysis

The broader social and economic effects of the proposed alternatives should be analysed. In particular the effects on established local businesses dependent directly or indirectly on the fishing industry must be evaluated in terms of employment, social security costs and new employment opportunities.

APPENDIX IV

HYDROGRAPHIC SURVEY

Proposed Scope of Survey and Terms of Reference

1 **REQUIREMENT**

A bathymetric sounding survey of the area shown on Fig. 10 together with seabed sampling as described below. The survey to be in sufficient detail to allow comparison with existing historic surveys, assessment of the feasibility of the project and preparation of cost estimates for engineering works.

2 **SPECIFICATION**

2.1

Survey lines to cover the whole designated area at a spacing of 25m and area 'A' at a spacing of 12.5m and to be carried to mean high water spring tide levels by conventional land based survey techniques as necessary.

2.2

All depths to be reduced to Admiralty Chart Datum for the area and the relationship between this datum and both the Ordnance Survey and harbour tide gauge datums to be determined and stated.

2.3

Soundings to be to an accuracy of $\pm$50mm and plotted in metres and decimetres on a 25m grid to a scale of 1:1000 for the whole of the designated area.

2.4
A separate plan at a scale of 1:500 to be prepared of area 'A' (Ref. Fig. 10) using a 12.5m plotting grid.

2.5
Seabed contours to be plotted at 0.5m intervals from MHWS level down to 5m below chart datum and at 1m intervals thereafter to a depth of 10m below chart datum.

2.6
The master copies of both plans referred to above in 2.3 and 2.4 to be plotted on a dimensionally stable material and the client to be supplied with two paper prints, a full size negative on plastic film and the master copies upon completion.

2.7
Sea bed sampling to be carried out at prescribed locations using a grab-sampler or suitable drop corer. Samples to be labelled and retained for subsequent analysis and the locations to be marked on the master survey plans.

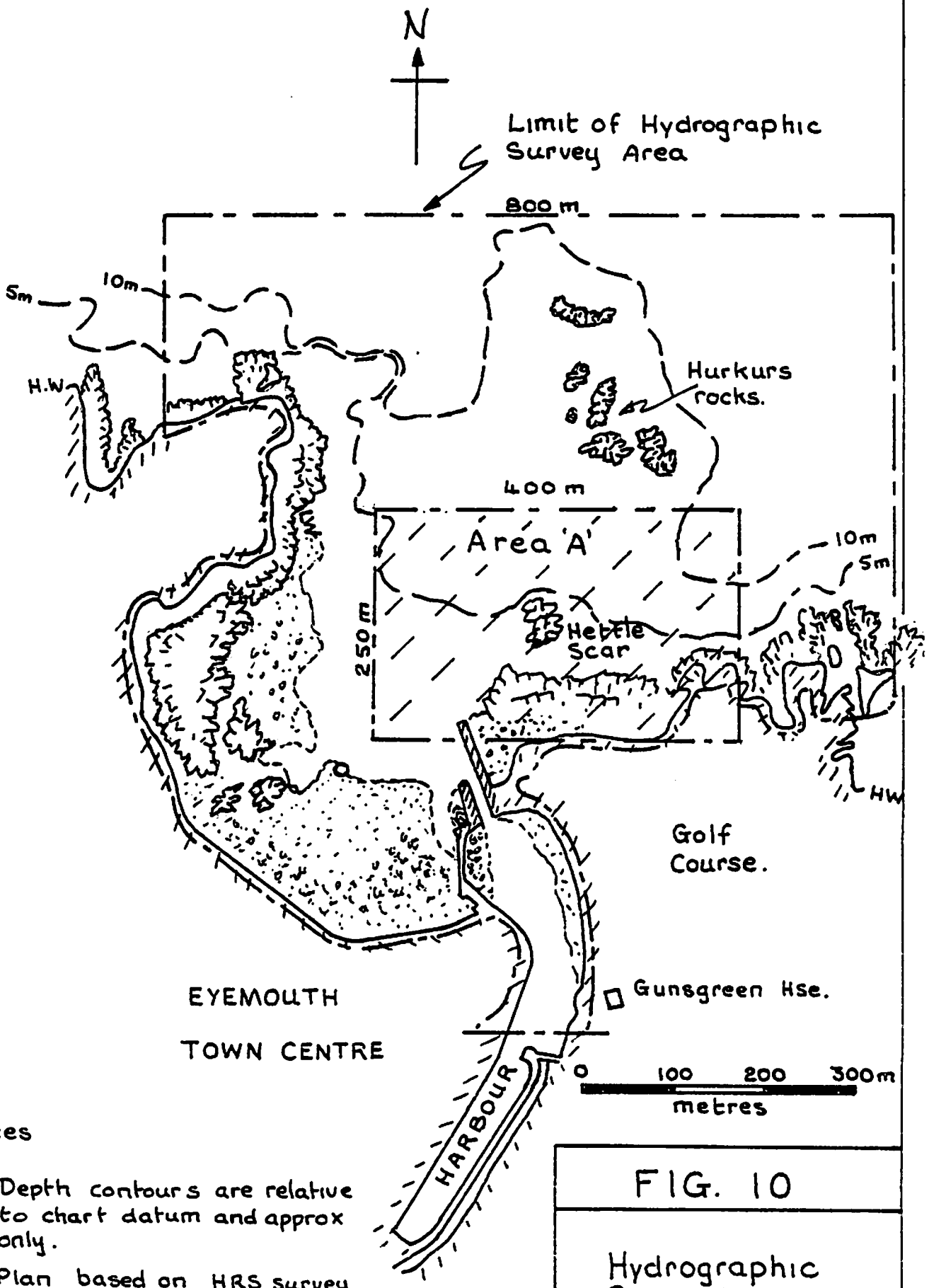
2.8
A sounding and position fixing system capable of obtaining the following accuracies is to be employed:

a) Horizontal position $\pm$1.0m
b) Vertical depth $\pm$50mm

Manufacturers' specifications and valid certificates indicating recent calibration checks are to be available before any work proceeds. In the case of echo-sounding equipment calibration using a bar-check to be carried out before each days work commences.

2.9

The establishment and maintenance of necessary shore control stations shall be included in the quoted price.



Notes

1. Depth contours are relative to chart datum and approx only.
2. Plan based on HRS survey of 1956 and Admiralty survey of 1843.

FIG. 10

Hydrographic Survey
(Ref Appendix V)

Nov 1985 | H.G.R.

APPENDIX V

SITE INVESTIGATION

The following preliminary site investigation is proposed for the purposes of confirming sea bed conditions and avoiding gross errors in engineering quantity calculations or in preliminary design assumptions related to foundation, excavation and dredging works.

Such an investigation would also be valuable in assessing the need, if any, for more detailed investigations prior to detailed design.

The use of seismic profiling techniques coupled with seabed sampling and a review of existing geological and previous construction records is considered an appropriate approach given the apparent geological conditions.

1 **REQUIREMENT**

a) To survey the area designated 'B' on Fig. 11 and establish the probable location of bed rock along the lines of the proposed structures and channels and locate any discontinuities or sea bed features which might significantly effect civil engineering construction works of the type proposed.

b) To establish the nature of the rock outcropping within the area designated 'C' on Fig. 11 and assess the type of excavation methods likely to be needed with particular consideration of the effect of the layered nature of the rock on blasting operations.

c) To review existing geological and recent site investigation data relating to the development area or similar nearby areas.

2 SPECIFICATION

2.1

Conduct a survey using seismic profiling or other approved method along predetermined lines at 50m intervals or such lesser intervals as might be necessary to cover the whole of area 'B'.

2.2

To take samples, as necessary, to establish the nature sea bed sediments and rocks and allow the acoustic properties of such materials to be determined.

2.3

Prepare geological profiles across the surveyed area indicating the probable rockhead level and the thickness of any overlaying sediments.

2.4

Survey details and results to be presented on a 1:1000 plan of the defined area with geological profiles drawn to the following scales:

Horizontal	1:1000
Vertical	1:50

fleet development and the effect of the harbour facilities on development of the industry. It concludes that unless the harbour facilities are improved a risk of loss of employment will exist and the potential for expansion, particularly in the service and support industries, will be lost.

e) "Additions to the Case for Harbour Improvements Prepared on Behalf of the Harbour Trust in September 1983", dated April 1985.

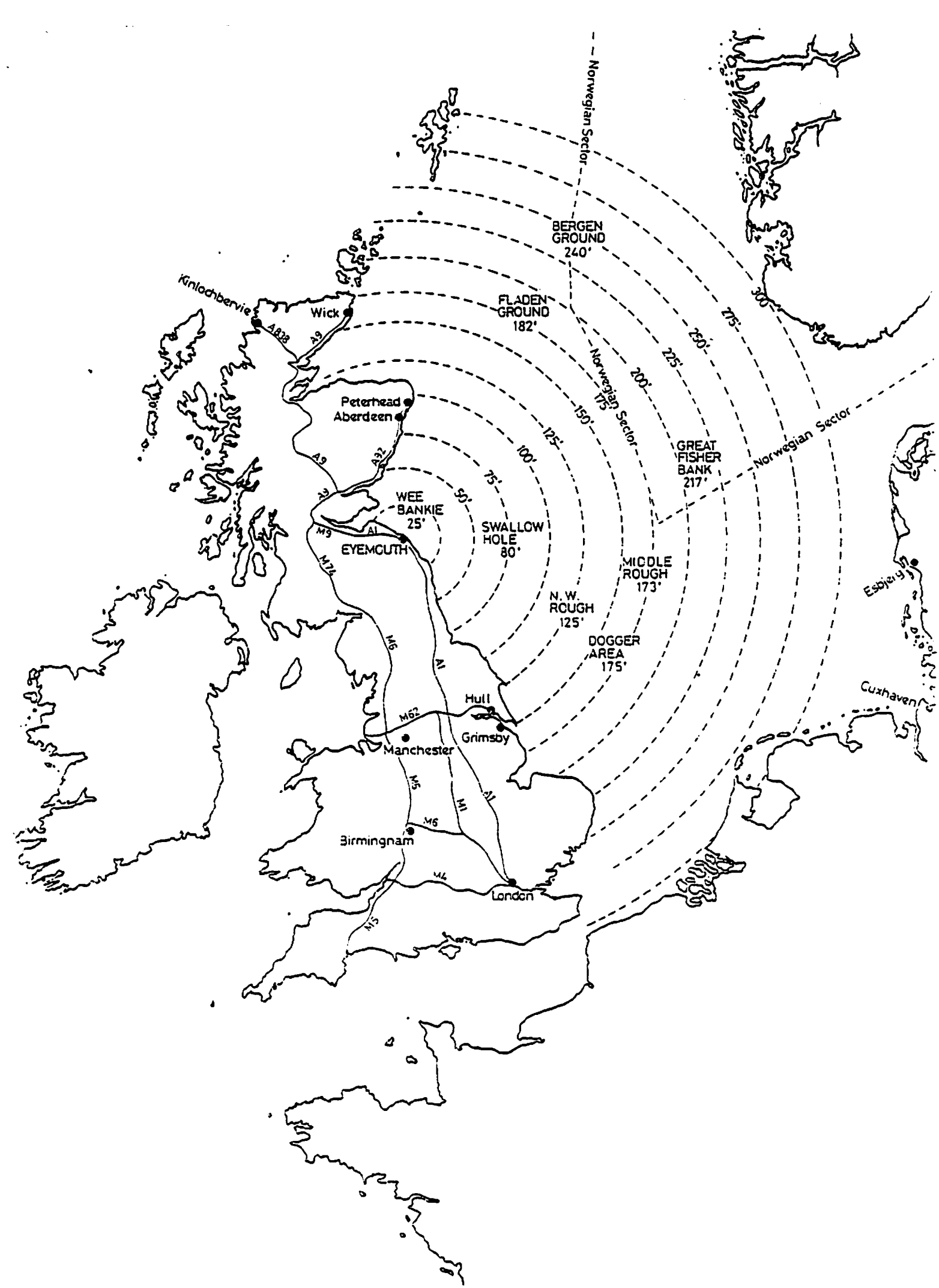
As the title suggests this is an update of d) above giving further statistics and emphasising the operational shortcomings of the existing facilities. It was prepared as background for a subsequent report prepared by the Borders Regional Council - f) below. Among the points noted are the agreement on common fisheries policy within the EEC, the expansion in local processing and the re-opening of the North Sea herring fishery.

f) "The Case for the Development of Eyemouth Harbour", by the Harbour Trust and Borders Regional Council, dated May 1985.

This presents the case for Eyemouth in a more regional context and restates the statistical data on employment and fish landings giving trends and values. It considers the current conditions in Eyemouth and the future prospects.

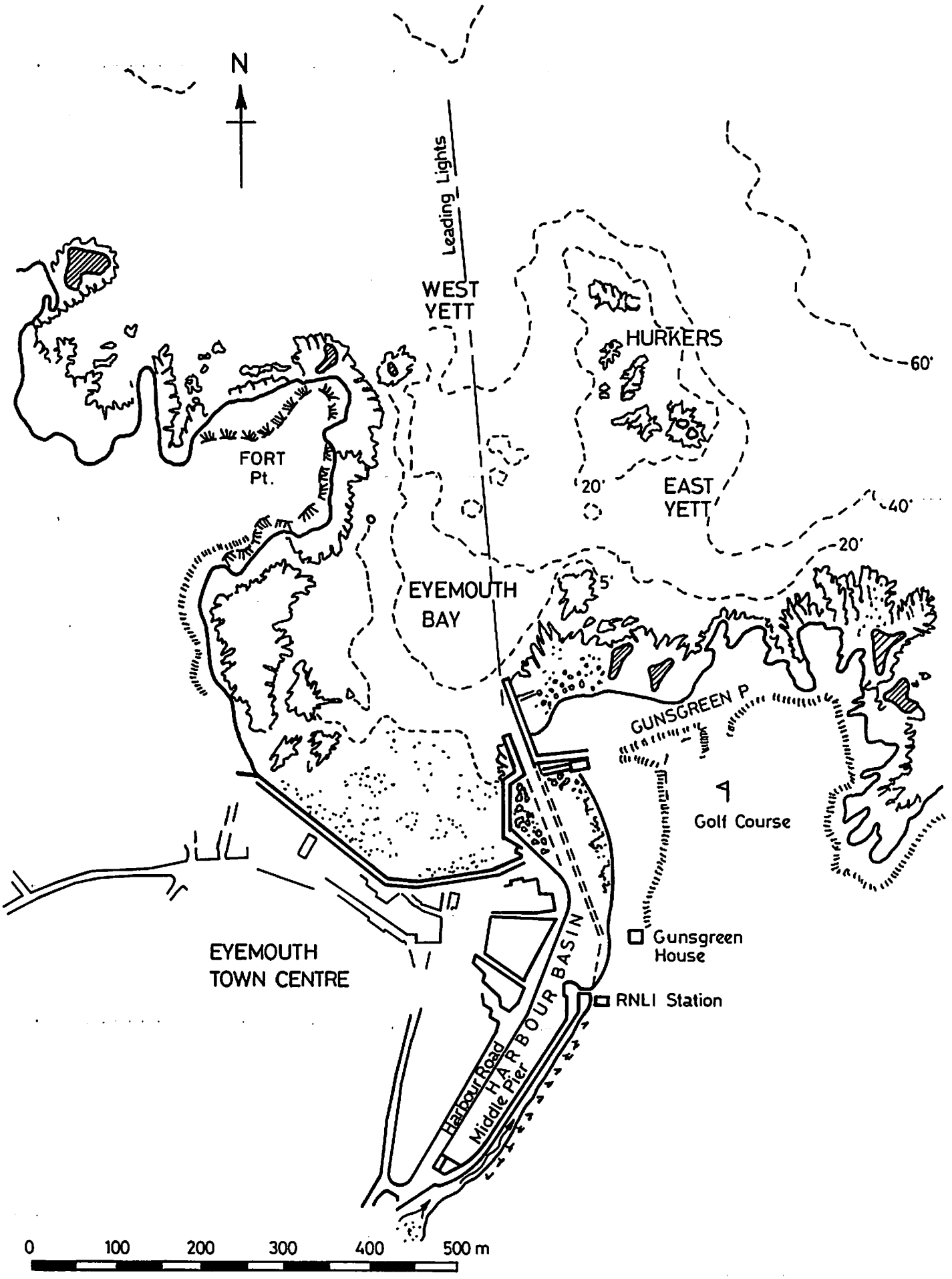
It concludes, again, that failure to proceed with harbour improvements could lead to a decline in the Eymouth fleet and industry which would represent a loss on recent investment by the fishermen. A potential for expanding the local and regional economies is foreseen if the development proceeds with increased landings, growth in processing and expansion of support industries. No detailed costs or economic analysis are included.

To the best knowledge of the SFIA Study Team the above represent the only significant, recent documents relating specifically to Eyemouth, although reference is included in a previous SFIA report, "The Fisheries in Tayside, Fife, Lothian and Borders Region", of November 1984. These documents plus the official DAFS statistics, existing SFIA data and information gained from the Team's own researchers in Eyemouth form the sources for this report.



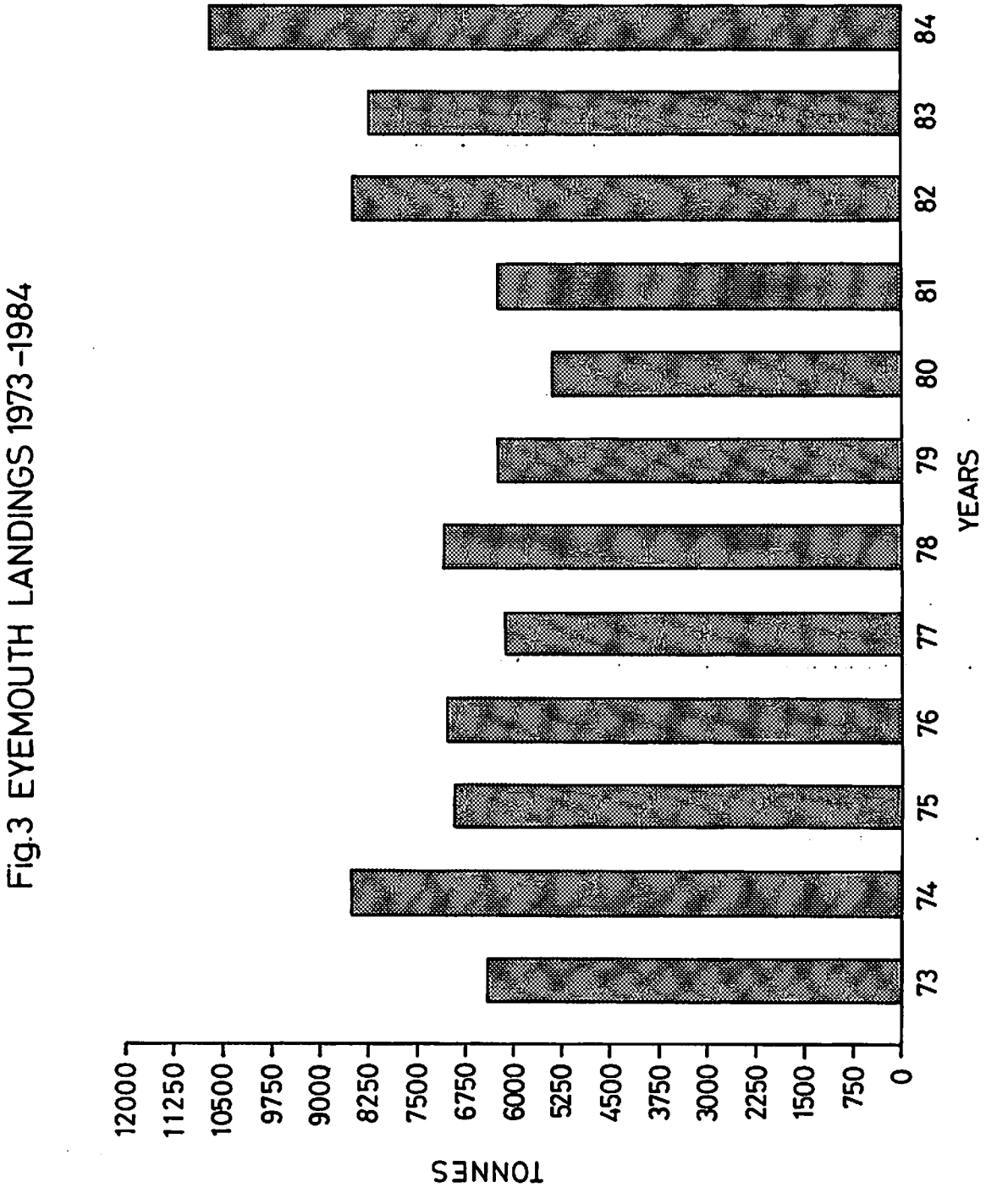
Location of Eyemouth

Fig.1



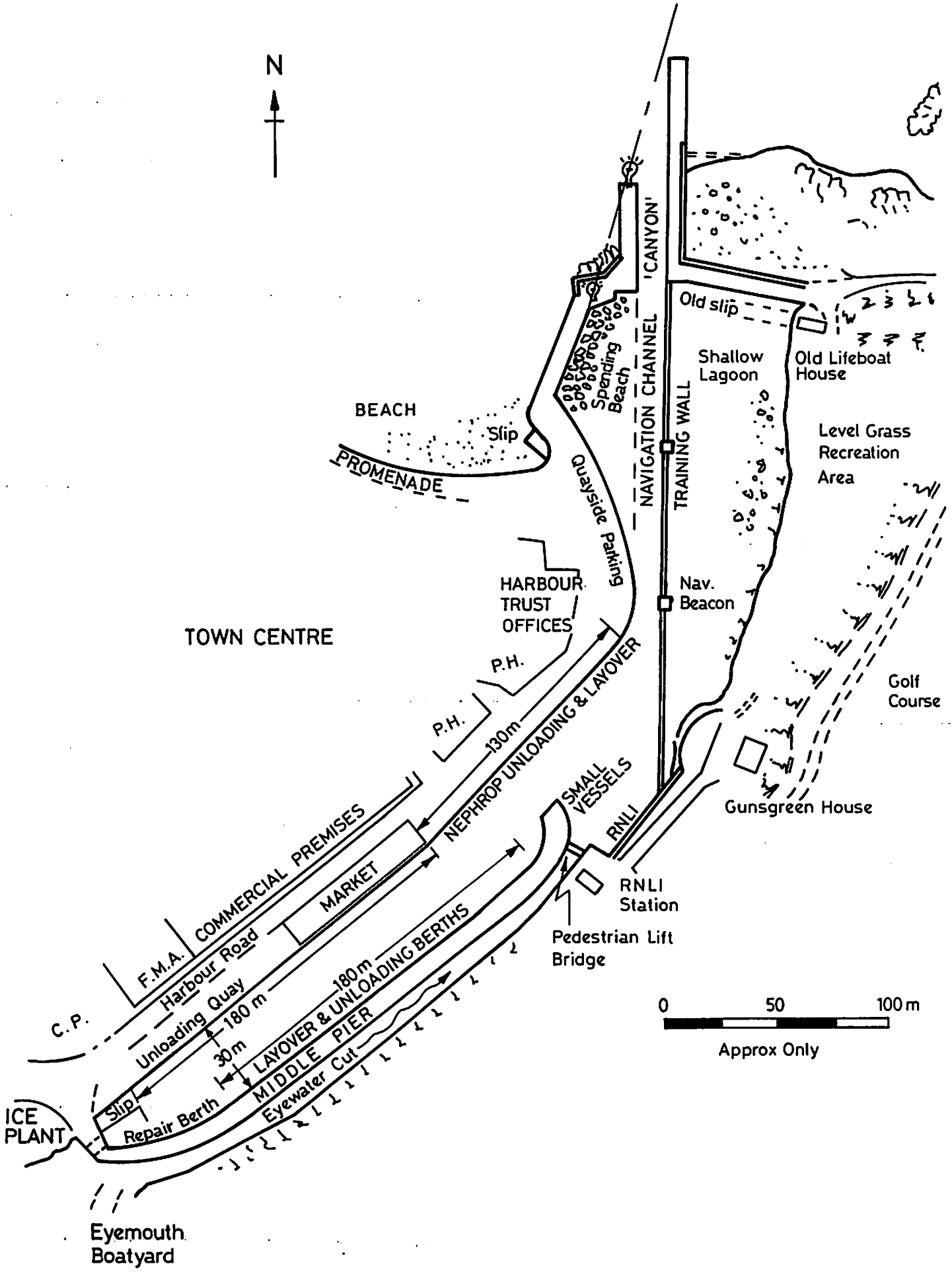
Eyemouth Bay and Location of Existing Harbour Basin

Fig.2



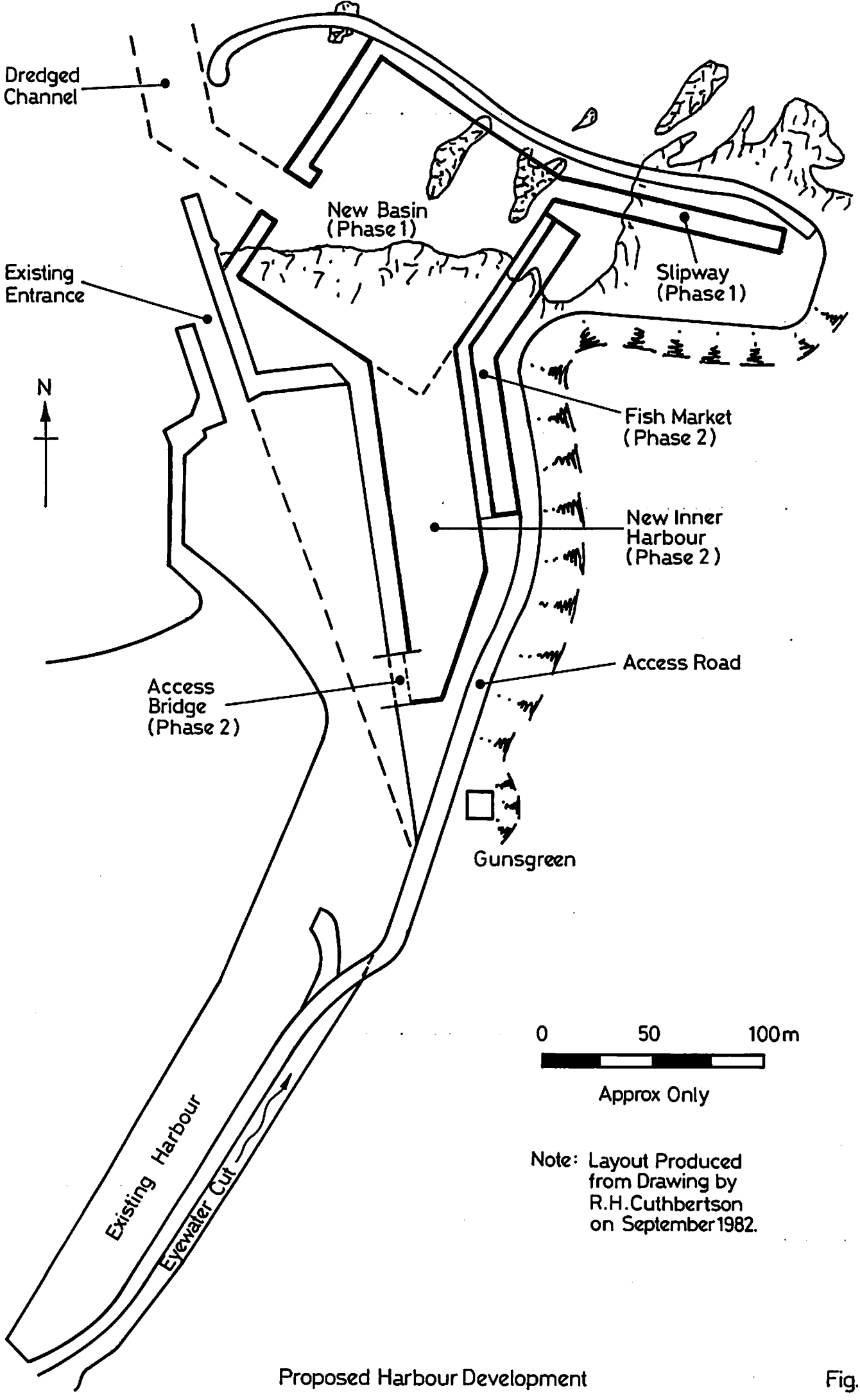
Eyemouth Landings 1973-1984

Fig.3



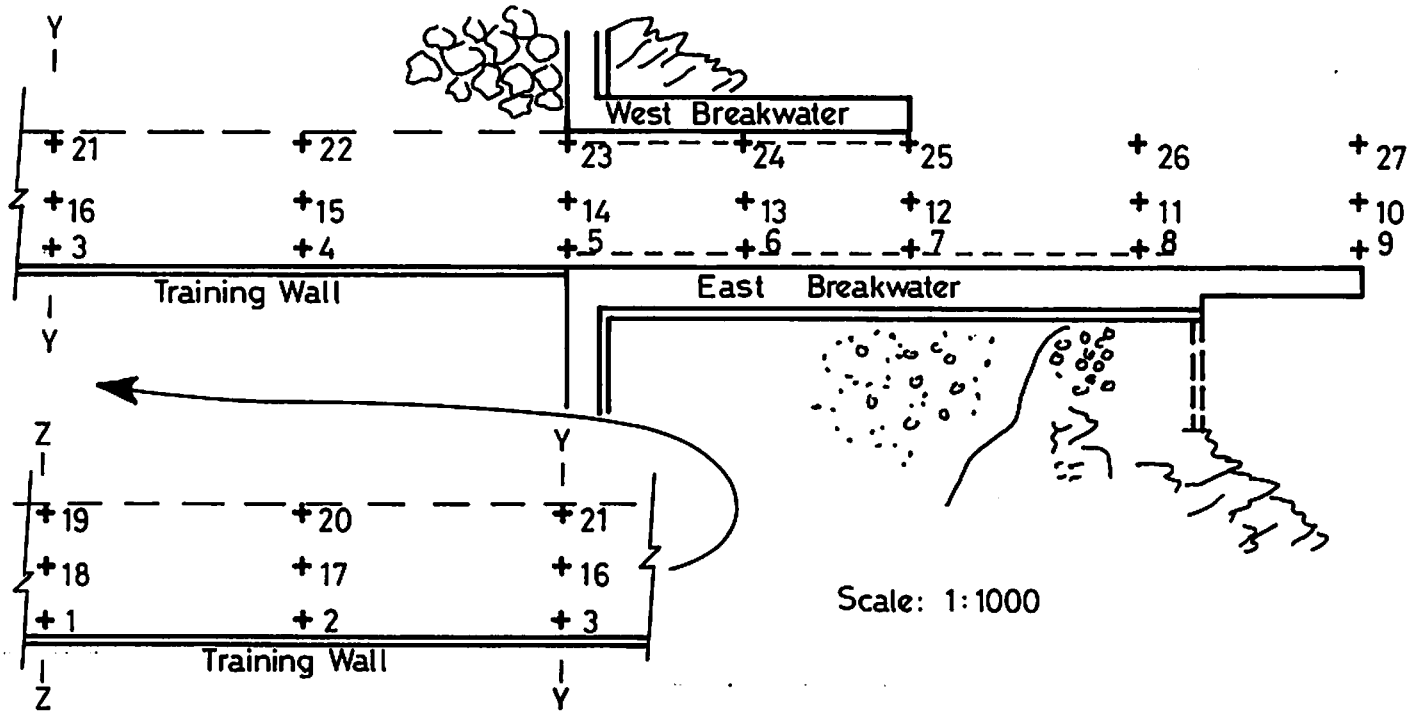
Existing Harbour Layout

Fig.4

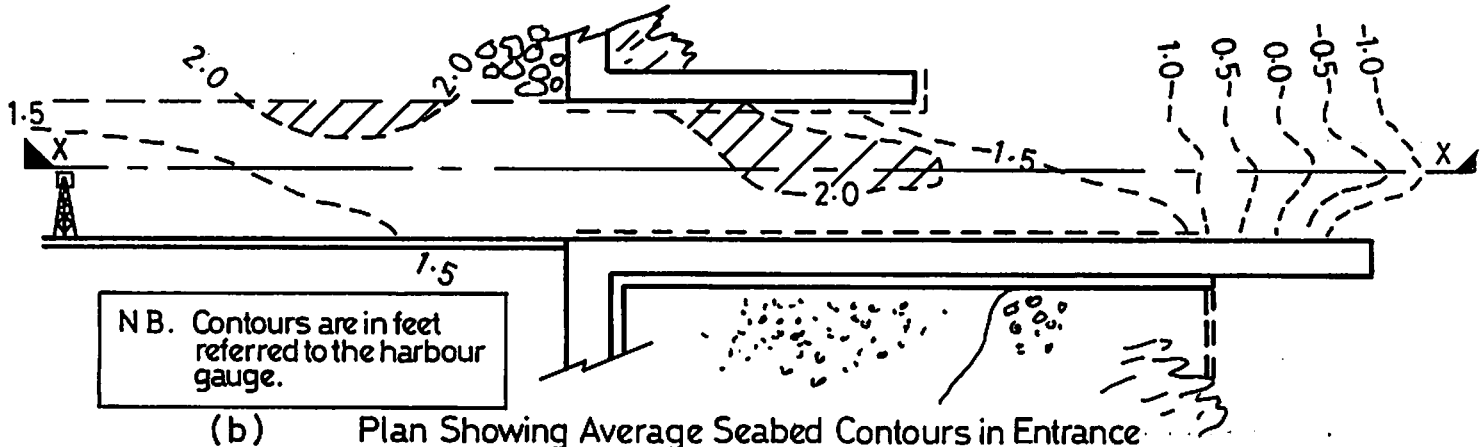


Proposed Harbour Development

Fig.5

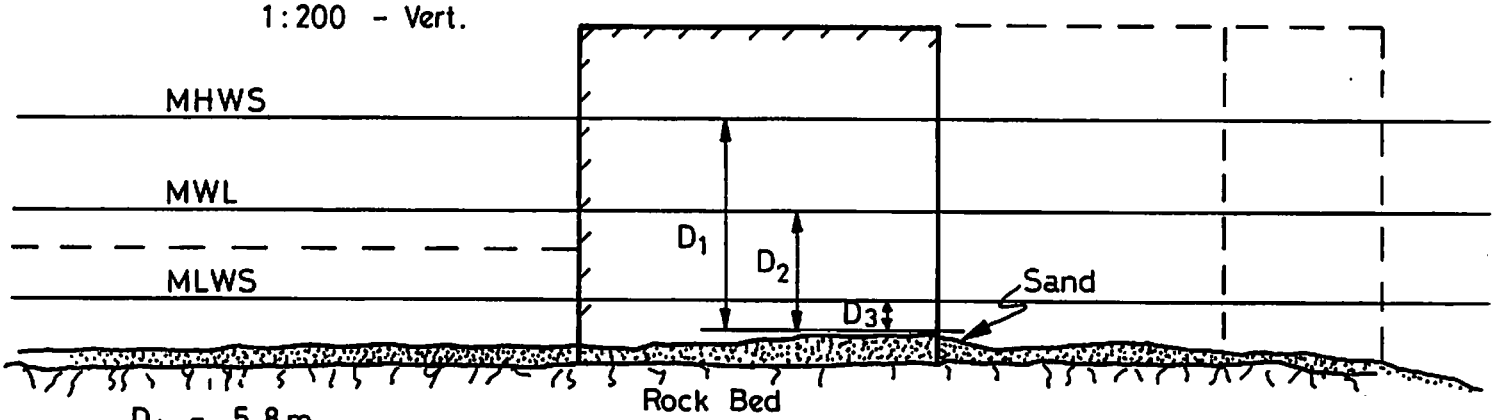


(a) Plan of Entrance Channel Showing Location and Numbering of Sounding Points used by the Harbour Master for Periodic Depth Survey.



(b) Plan Showing Average Seabed Contours in Entrance Channel for Period June 1983 to August 1985.

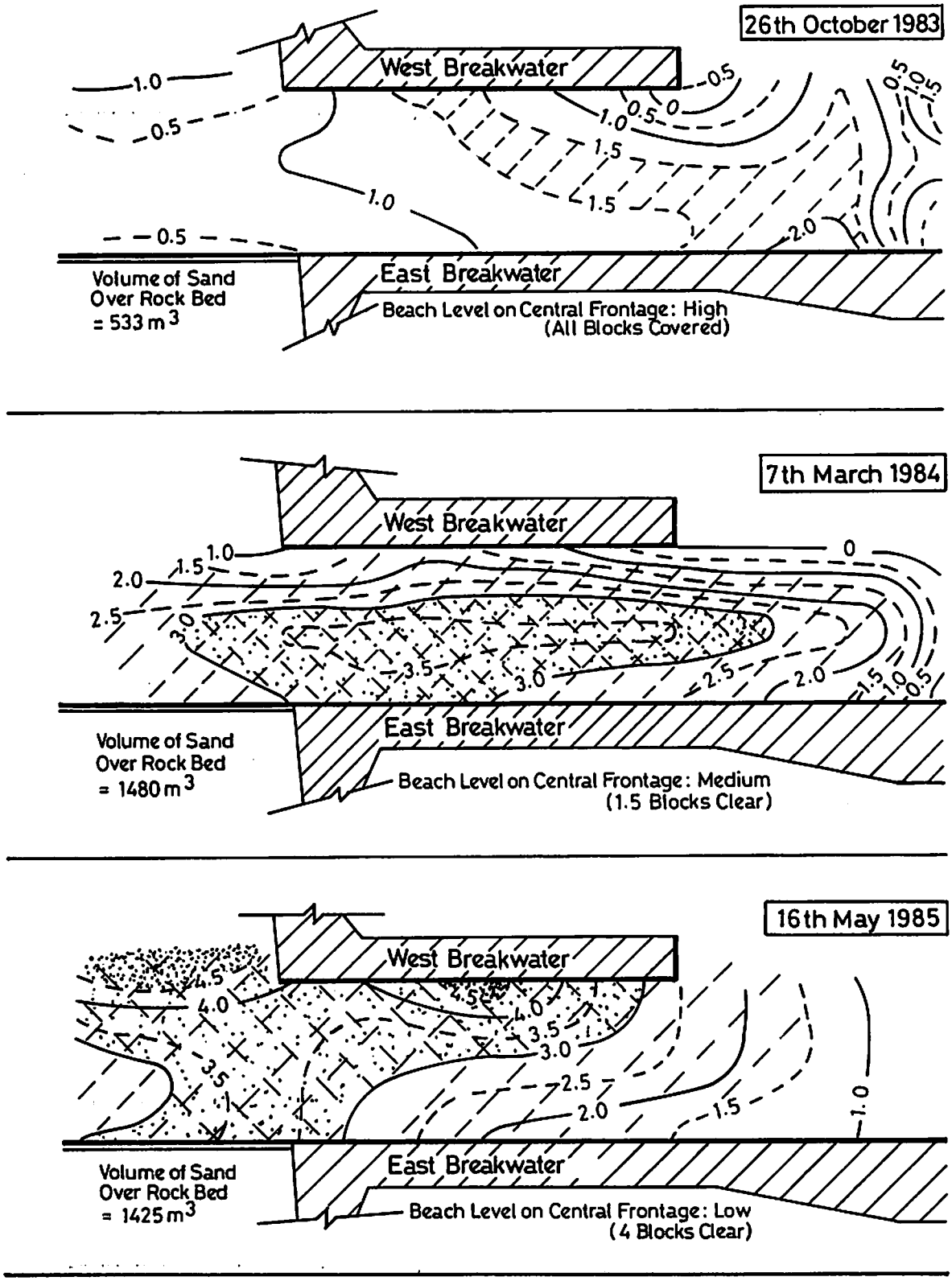
Scales: 1:1000 - Horiz.
1:200 - Vert.



D_1 = 5·8 m.
D_2 = 3·3 m. C.
D_3 = 0·9 m.

Section on X-X Showing Average Centre Line Depths 1983-1985

Existing Entrance Channel - Siltation in Entrance Fig.6

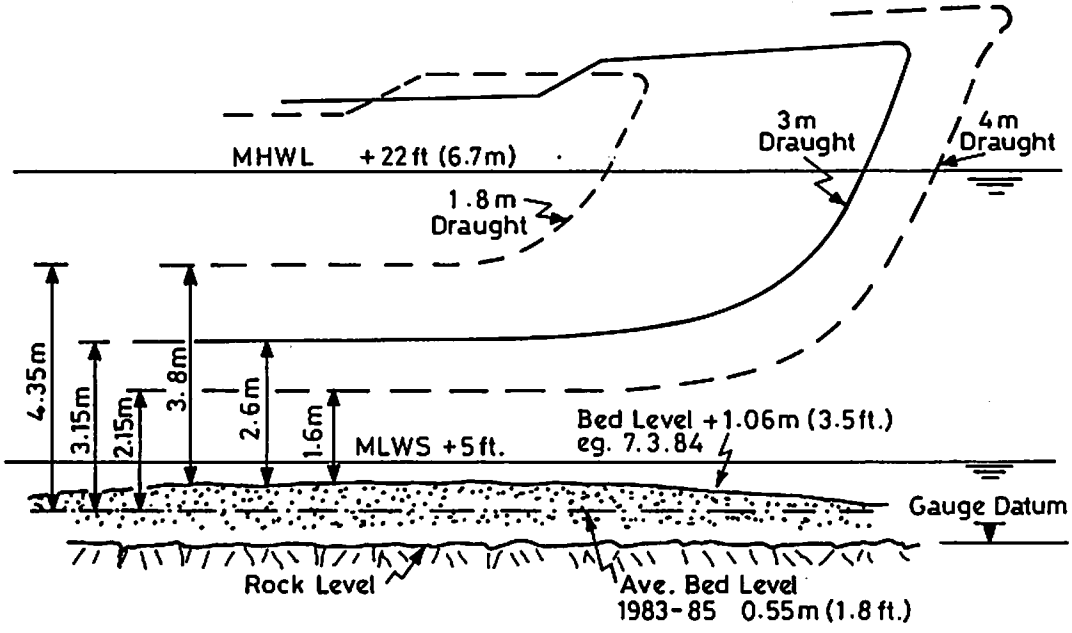


NOTES:

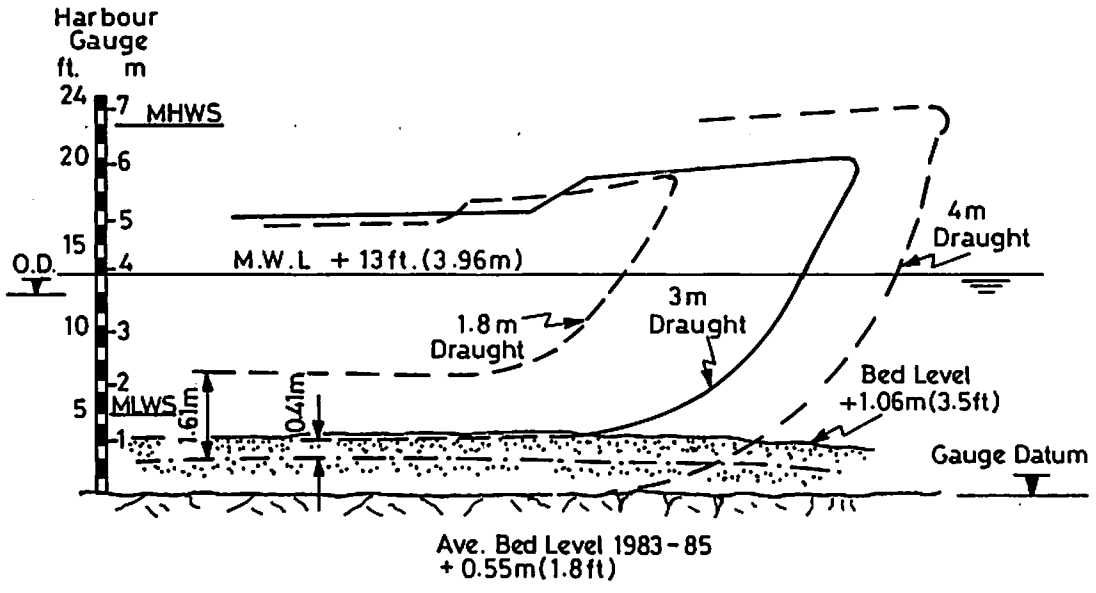
1. Depth contours are in feet referred to the harbour gauge.
2. Depth information obtained from the periodic surveys undertaken by the harbourmaster.
3. Beach levels are relative to the concrete steps at the base of the seawall. Each step = 0·45 m high.

Sand Movement in Entrance

Fig.7



Mean High Water Spring Tide



Half Tide

Notes:

1 The average bed level indicated is derived from the soundings for points 5,6,7,12,13,14,23,24,and 25 (ref.fig.7)

2 No account is made for the effects of swell or squat (depression of hull due to vessel speed).

Restrictions to Draught

Fig.8

APPENDIX III

TERMS OF REFERENCE FOR TECHNICAL/ECONOMIC FEASIBILITY STUDY

1 **REQUIREMENT**

A detailed study document setting out the current situation, detailing the future requirements and examining the technical and economic aspects of the alternatives open to the Harbour Trust and Regional Council.

Technical engineering studies to be in sufficient detail to permit reliable preliminary designs to be developed and for any necessary further data collection, site investigation or hydraulic studies to be specified.

Capital and annual costs for alternative schemes to be presented in sufficient detail for cost benefit analysis over the projected life of the project or required repayment period.

Economic studies to evaluate the local, regional and national benefits, if any, of the alternatives and present both economic and financial findings in a form suitable for presentation to appropriate government funding agencies.

Both the engineering and economic studies to concentrate on the particular requirements and anticipated development of the fishing industry within the managed EEC common fisheries policy.

2 SCOPE

2.1 General Background

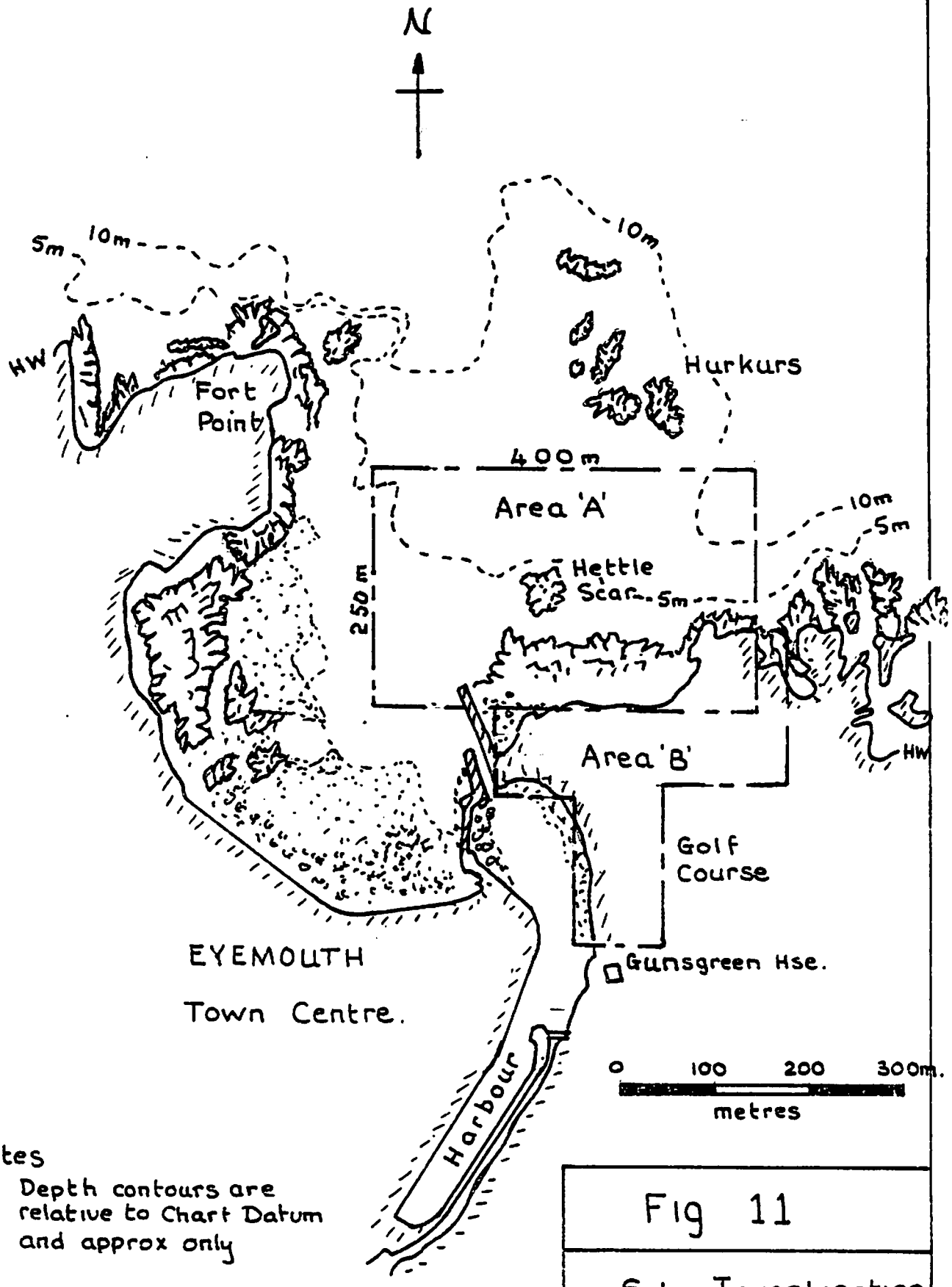
A concise review of the current situation drawing on existing documents and illustrating the importance of the industry to Eyemouth and vice-versa.

Statistical data relating to fish landings, local employment in the industry and the historic value of the trade should be presented and summarised.

The existing harbour facilities, their history and operation should be described with reference to existing and planned facilities at other ports serving the central North Sea fishing grounds.

2.2 Anticipated Requirements of the Fishing Industry at Eyemouth

A discussion of the probable development of the fishing industry in Eyemouth including both local and broader, national considerations leading to a definition of the type and capacity of harbour facilities that will be required. This requirement to be set against the existing facilities. Various alternatives, to wholly or partially meet the needs, to be described.



Notes

1. Depth contours are relative to Chart Datum and approx only
2. Plan based on H.R.S. survey of 1956 and Admiralty survey of 1843.

Fig 11

Site Investigation

(See Appendix VI)

Nov 1985 | H.G.R.

TABLE XII

AVERAGE UNIT PRICE OF COD & HADDOCK LANDED AT VARIOUS PORTS IN SCOTLAND

PORT	1983		1982		1981	
	Unit Price COD	Per Tonne HADDOCK	Unit Price COD	Per Tonne HADDOCK	Unit Price COD	Per Tonne HADDOCK
	£	£	£	£	£	£
EYEMOUTH	726	578	699	491	583	450
ABERDEEN	690	472	652	380	557	375
PETERHEAD	697	485	692	403	583	401
FRASERBURGH	670	405	635	338	643	370

Source: D.A.F.S.

APPENDIX II

RECENT DOCUMENTATION AND REPORT SOURCES

Subsequent to the last major harbour improvements which were completed in the 1960s there have been several documents produced containing proposals for further development. These documents are listed and described briefly below. Where relevant, comment is made on the proposals elsewhere in this report.

a) "Feasibility Study of Port Developments at Eyemouth Harbour" by P.A. Management Consultants Ltd., dated December 1973.

This study was commissioned by the Harbour Trust and takes the form of a cost-benefit analysis of a series of proposals which include a major commercial port and harbour development. Whilst including a fishing harbour within the port complex the proposals are primarily based on the provision of a Ro-Ro terminal.

b) "Report on Feasibility Study of Engineering Aspects of Harbour Developments at Eyemouth" by R. H. Cuthbertson & Partners, dated January 1974.

This report is complementary to a) above. It sets out alternative port and harbour layouts, details engineering factors including marine

exposure and site access by land and sea and recommends site investigation requirements prior to detailed design. The requirements of the various proposed users are considered and facility layouts specified accordingly. Cost estimates are given for the various schemes with the inherent problems involved in such estimating stated.

c) "Proposed Harbour Extension - 1982. Interim Report", by R. H. Cuthbertson & Partners, dated September 1982.

This report deals exclusively with proposals for a new fishing harbour. It discusses the engineering and operational requirements and describes the shortcomings of the existing harbour. Proposals are put forward for a new harbour basin adjacent to, but with a separate entrance from, the existing harbour. A phased construction programme finally links the old and new harbours. A global cost estimate for the first phase of £8.5 - £10 million pounds is given.

d) "A Case for Harbour Improvements - A Review of the Fishing Industry at Eyemouth", dated September 1983.

This report details the development of the fishing industry in Eyemouth during the previous decade giving statistics relating to employment, landings and revenues. It considers trends in

TABLE VII

ANALYSIS OF EYEMOUTH BASE VESSELS OVER 30FT BY METHOD OF FISHING

METHOD OF FISHING	LENGTH REG.	DRAUGHT	DRAUGHT RANGE	NO. OF VESSELS
NEPHROP TRAWL	51, 50, 39, 38 34, 51, 33, 39 52, 39, 46, 35 38, 51, 52, 39 50	6, 6, 7, 5, 6 4, 5, 8, 7, 5 5, 7, 7, 7, 6 6, 6	4 to 8ft. (Average 6ft)	17
LIGHT TRAWL	53, 51, 50, 46 50, 45, 53, 49 53, 53, 37, 35 38, 38, 53, 38 45	7, 7, 7, 8, 6 7, 4, 8, 5, 6 5, 5, 5, 7, 6 6, 7	4 to 8ft. (Average 6ft)	17
PAIR TRAWL	60, 62, 50, 51 55, 57, 63, 57 62, 63, 55, 62 63	9, 9, 8, 7, 11, 9, 9, 10, 9, 9, 11, 9, 9	7 to 11ft. (Average 9ft)	13
SEINE NET	71, 36, 43, 58 53, 51, 71, 67 69, 50, 75, 74 57, 55, 57, 88 71, 66, 68, 69 64, 66, 71	13, 6, 6, 8, 8, 7, 12, 11 11, 7, 12, 12 9, 6, 9, 13 12, 11, 11, 12, 9, 11, 13	6 to 13ft. (Average 10ft)	23

Source: D.A.F.S.

TABLE VIIIA

ARRIVALS OF VESSELS AT EYEMOUTH AND DAYS FISHED

CLASS OF VESSEL BY FISHING METHOD	1980		1981		1982		1983		1984	
	Arrivals	Days	Arrivals	Days	Arrivals	Days	Arrivals	Days	Arrivals	Days
TRAWL UNDER 80'	1,485	1,602	1,796	1,834	2,310	2,358	2,158	2,217	1,846	1,881
NEPHROP TRAWL	1,063	1,064	938	940	1,164	1,164	2,045	2,045	6,434	6,451
SEINE	1,372	2,035	1,084	1,771	1,092	2,118	1,195	2,354	1,088	2,283
PAIR TRAWL	708	1,134	850	1,403	743	1,269	668	1,300	927	1,722
TOTAL	**4,651**	**5,363**	**4,669**	**5,948**	**5,309**	**6,909**	**6,066**	**7,916**	**10,295**	**12,337**

TABLE VIIIB

This table extracts from Table VIIIA the demersal landings by trawlers under 80' (light trawl), seiners and pair trawlers

	1980	1981	1982	1983	1984	
ARRIVALS	3,588	3,731	4,144	4,021	3,861	(Excluding
DAYS	4,299	5,008	5,745	5,871	5,886	(Nephrop
AVERAGE TRIP	1.20	1.34	1.39	1.46	1.52	(Trawl

Source D.A.F.S.

TABLE IX

ANALYSIS OF FISH LANDED AT EYEMOUTH AND CONSIGNED FOR FIRST HAND SALE ELSEWHERE

TO CONSIGNED TO	1980		1981		1982		1983		1984	
	Cwts.	% of Total W.F. Landings	Cwt.	% of Total W.F. Landings	Cwt.	% of Total W.F. Landings	Cwt.	% of Total W.F. Landings	Cwt.	% of Total W.F. Landings
NEWHAVEN	42,036	20.85	34,977	29.50	33,133	22.00	29,915	18.90	+	+
GRIMSBY	25,353	24.64	50,128	42.28	72,104	47.85	88,076	55.63	74,565	45.55
NORTH SHIELDS	6,203	6.03	3,690	3.11	7,789	5.17	4,111	2.60	13,901	8.49
PITTENWEEM	+	+	425	0.36	58	0.03	+	+	148	0.09
ABERDEEN	102	0.01	+	+	+	+	+	+	237	0.14
GLASGOW	26	0.02	+	+	+	+	+	+	+	+
TOTALS	**73,720**	**71.55**	**89,220**	**75.25**	**113,084**	**75.05**	**122,528**	**77.40**	**88,851**	**54.27**

Source: D.A.F.S.

TABLE X

COMPOSITION OF LANDINGS OF DEMERSAL FISH BY EYEMOUTH BASED FLEET

SPECIES	1983		1982		1981		1980		1979	
	tonnes	% landed Demersal	£ tonnes	% landed Demersal	£ tonnes	% landed Demersal	£ tonnes	% landed Demersal	£ tonnes	% landed Demersal
COD	3,238	40	2,854	35	2,221	37	1,367	27	1,682	28
HADDOCK	3,455	43	3,774	46	2,269	37	1,607	31	1,479	25
WHITING	756	9	882	11	963	16	1,640	31	1,733	29

Source: D.A.F.S.

TABLE XI

VALUE OF ALL FISH LANDED BY EYEMOUTH BASED FLEET

	1984		1983		1982		1981		1980	
	£	%	£	%	£	%	£	%	£	%
WHITE FISH	5,191,688	67	5,112,000	83	4,661,469	91	2,999,782	89	2,621,362	87
NEPHROPS	1,577,737	20	518,000	9	283,048	6	206,285	6	229,089	8
OTHER SHELLFISH	999,483	13	470,000	8	172,546	3	174,270	5	154,900	5
TOTAL	7,768,918	100	6,100,000	100	5,117,063	100	3,380,337	100	3,005,351	100

Source: D.A.F.S.