Regional Economic Expansion / Expansion Economique Régionale

Transport Canada / Transports Canada

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR
Department of Industrial Development

CORNER BROOK HARBOUR DEVELOPMENT STUDY

EXECUTIVE SUMMARY

FENCO
FENCO CONSULTANTS LTD.
in association with
[illegible], MARWICK AND PARTNERS

HARBOUR LIMIT

TO GULF OF ST LAWRENCE

HUMBER ARM

NORTH SHORE

COOKS COVE

POVERTY COVE
(BANNATYNE COVE)

ALLENS COVE
(PLEASANT COVE)
(BIRCHY COVE)

CHURCH COVE

CURLING

HUGHES BROOK

SHOALS

WILD COVE

BRAKES COVE

SEAL HEAD

GENERAL CARGO AREA

BOWATER

CORNER BROOK

TRANS CANADA HIGHWAY

HARBOUR ARTERIAL

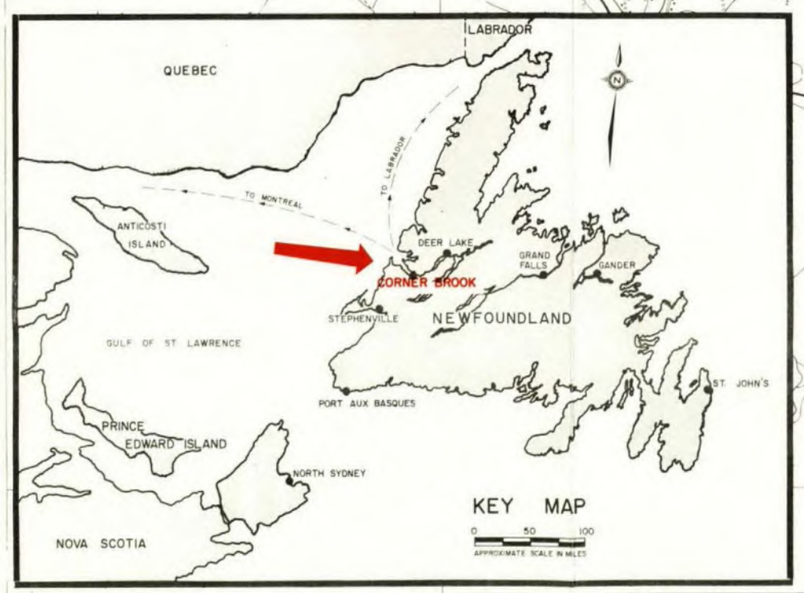
HUMBER RIVER

TO DEER LAKE

TO STEPHENVILLE & PORT AUX BASQUES

CORNER BROOK HARBOUR

0 1000 2000
SCALE IN FEET



FENCO
PMP

CORNER BROOK HARBOUR
DEVELOPMENT STUDY

FENCO

Planning
Engineering
Project Management

Suite 1020, Cogswell Towers
2000 Barrington Street
Halifax, Nova Scotia B3J 3K1
902-422-7495
Cable 'FENCOENG'
Telex 019 22718

October 21, 1976

Corner Brook Harbour Development Study
Steering Committee

EXTRA COPY

Attention: Mr. M. Staple, Co-Chairman
Mr. A.H. Williamson, Co-Chairman

Dear Sirs,

CORNER BROOK HARBOUR DEVELOPMENT STUDY

We are pleased to provide this Executive Summary, which documents the principal findings of the study.

The study has covered a broad examination of potential economic and physical developments, and it has identified the most promising options which are summarized in the Master Plan.

The consulting team of FENCO and Peat, Marwick and Partners records appreciation to the members of the Steering Committee for the valuable assistance and guidance which has been provided on this very interesting project. We also thank all those organizations and individuals who have contributed in so many ways to the study.

We take this opportunity of wishing the City of Corner Brook every success associated with the challenges of implementing new economic and physical developments in the harbour, and we look forward to further participation in the envisaged developments.

Yours very truly,
FENCO CONSULTANTS LTD.

DPOH/sim
7516
Enc.

D.P. O'Halloran,P.Eng.
PROJECT MANAGER

CORNER BROOK HARBOUR DEVELOPMENT STUDY

EXECUTIVE SUMMARY

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1. Introduction

1. INTRODUCTION

The Corner Brook Harbour Development Study was commissioned in May, 1975, by the Department of Industrial Development of the Province of Newfoundland and Labrador, and carried out by FENCO CONSULTANTS LTD. in association with Peat, Marwick and Partners.

Throughout the duration of the project the consulting team reported to a Steering Committee representing the three levels of government. The Steering Committee was composed of members from:

Government of Canada:	Department of Regional Economic Expansion
	Transport Canada
	Department of Public Works

Government of Newfoundland & Labrador:	Executive Council
	Department of Industrial Development
City of Corner Brook:	Corner Brook Economic Development Corporation

The role of the Steering Committee was to examine procedures and to review, guide and co-ordinate the work of the consulting team.

The study was funded under the second Special Areas Agreement between the Department of Regional Economic Expansion and the Province of Newfoundland with additional financial assistance from Transport Canada.

BACKGROUND

Corner Brook is located at the eastern extremity of the Humber Arm, some 20 miles from the Bay of Islands on the west coast of Newfoundland (see front plan).

The entire Humber Arm lies nestled in hilly terrain and forms a natural deepwater harbour. Due to the steeply sloping land around most of the shoreline there is a shortage of level water-front land for general harbour and industrial operations.

Existing marine activity in the harbour centres around:

- The operations of the Montreal-Corner Brook water transportation service, which are conducted at a Transport Canada wharf, and which mainly involve inbound freight
- The CN Coastal operation, conducted at an adjacent Transport Canada wharf
- The shipping of newsprint from Bowater
- Booming of logs brought down the Humber River
- The handling of fish at a small Transport Canada wharf and other wharves in Curling
- The inbound shipments of bulk products by four oil companies
- Outbound shipments of product from North Star Cement
- Recreational boating and small craft activity
- Miscellaneous activity, such as movement of construction equipment by water, special shipments, etc.

Since the start of the modern era of development around 1923, when a pulp and paper mill, now owned by Bowater, was constructed, Corner Brook has taken on an increasing role as a distribution point for off-island goods coming into the province. A substantial wholesale and retail trade has grown in conjunction with this, and port throughput volumes continue to increase. Corner Brook is the second largest city in the province and it is the major centre in Western Newfoundland.

Factors which led to the commissioning of this study were the desire to broaden the economic base of Corner Brook and the associated subject of future expansion of port activity.

OBJECTIVES

The principal objectives of the study were to identify the development potential of the harbour and of related industry, and to prepare a 20-year Master Plan for future implementation.

The terms of reference required specific attention to be paid to the following key items:

- an inventory and analysis of physical facilities, transportation and industry
- future marine terminal and land requirements
- identification of potential development areas
- assessment of the most suitable sites
- economic analysis of development projects

METHODOLOGY

The consulting team divided the work of the study into three evolutionary phases. At the completion of each phase a report was presented to the Steering Committee and this was followed by a detailed review.

The following listing provides the principal work content of each phase of the study:

Phase I : Examination of historical development

Transportation survey

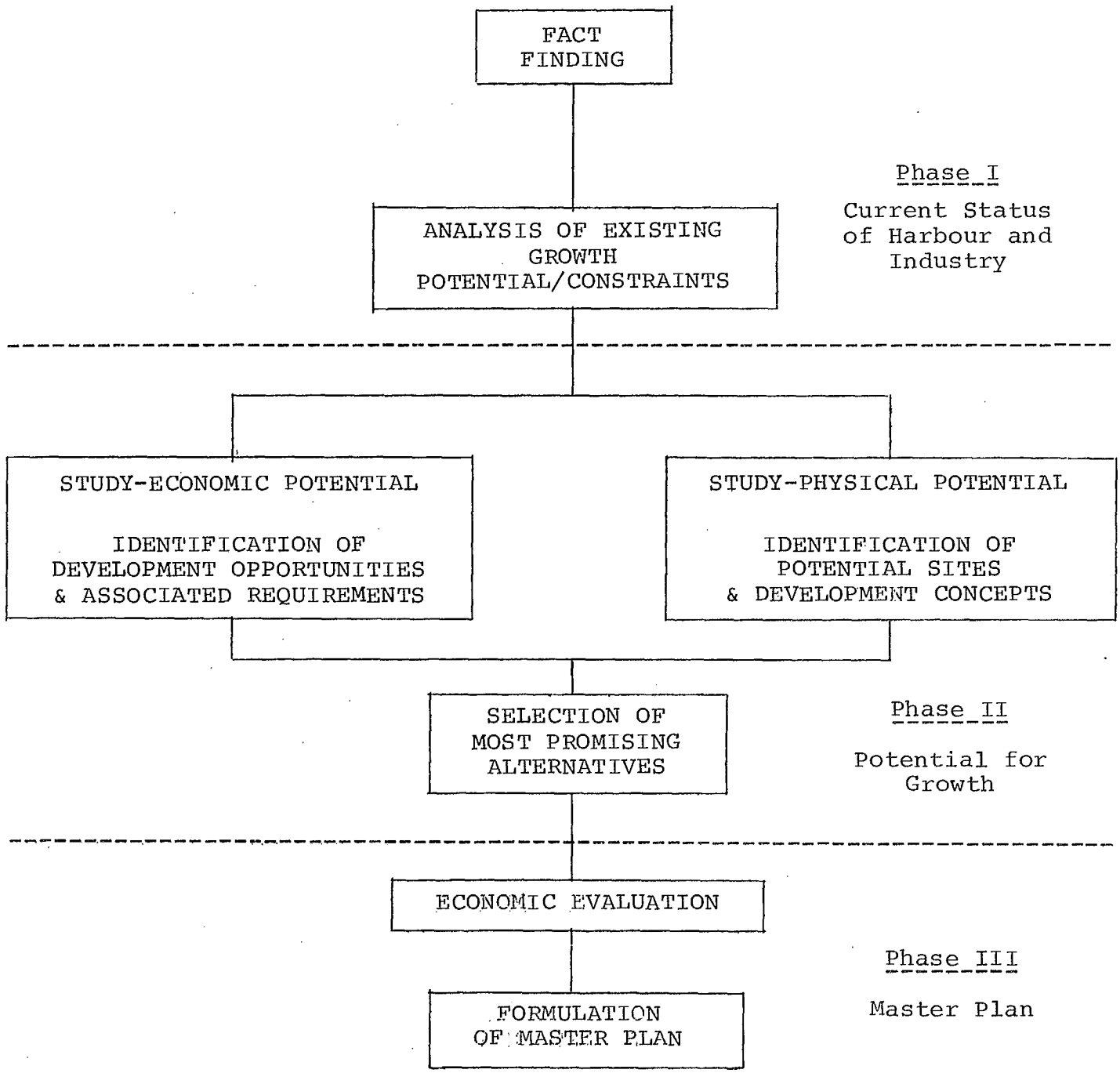
Industrial survey

Identification of short term requirements and operational problems

Physical facilities survey

Phase I served as a base for the balance of the study.

FIGURE 1


FACT FINDING
ANALYSIS OF EXISTING GROWTH POTENTIAL/CONSTRAINTS
Phase I
Current Status of Harbour and Industry
STUDY-ECONOMIC POTENTIAL
IDENTIFICATION OF DEVELOPMENT OPPORTUNITIES & ASSOCIATED REQUIREMENTS
STUDY-PHYSICAL POTENTIAL
IDENTIFICATION OF POTENTIAL SITES & DEVELOPMENT CONCEPTS
SELECTION OF MOST PROMISING ALTERNATIVES
Phase II
Potential for Growth
ECONOMIC EVALUATION
FORMULATION OF MASTER PLAN
Phase III
Master Plan

Phase II: Identification and evaluation of growth alternatives

Assessment of future physical requirements

Evaluation of potential development sites including a seismic survey of waterfront areas

During Phase II future growth projections were made and physical facility requirements were identified, corresponding to three possible economic growth scenarios (levels). The levels of growth are:

Level 1, in which the role of Corner Brook in the development of the Province remains consistent with its current share of provincial economic and industrial activity.

Level 2, in which Corner Brook develops at an accelerated rate over Level 1 as a result of induced growth in specific sectors.

Level 3, in which Corner Brook realizes its maximum realistic growth potential by capitalizing on new industrial development opportunities and changing transportation patterns.

Phase III: Detailed analysis of most promising growth opportunities

Further appraisal of potential development sites, including soils investigation

Development of a Master Plan for the harbour

The inter-relationship and basic content of these three phases is shown schematically in Figure 1.

REPORTS

Formal reports documenting the findings of the study were presented as follows:

Volume 1	September, 1975
Phase I	- Current Status of the Harbour and Industry
Volume 2	February, 1976
Phase II	- Potential for Development
Volume 3	September, 1976 (Preceded by a draft report, dated July 2, 1976)
Phase III	- Master Plan
Executive Summary	October, 1976

This Executive Summary is arranged in four sections to provide the main findings of the study in capsule form, as follows:

Introduction

Economic Development Opportunities

Master Plan

Conclusion and Recommendations

The section on Economic Development Opportunities presents the results of the projections and analyses which were performed both with respect to the future growth of existing industry and with respect to the more optimistic opportunities for additional development in the harbour and transportation sectors.

The Master Plan section describes the formulation of the conceptual physical plan from the projected future requirements matched with the physical development potential of the harbour. The Master Plan is presented along with cost estimates and a description of components included in the plan.

The final section is composed of conclusions reached during the study, with recommendations relating to pursuit of development opportunities and to further planning required in specific areas.

2. Economic Development Opportunities

2. ECONOMIC DEVELOPMENT OPPORTUNITIES

The early stages of the study involved the identification of current development trends, and this was followed by detailed projections at 5-year intervals of freight volumes for existing industry, and the identification of new opportunities. The more optimistic new opportunities were subjected to more detailed examination and financial assessment (Level 3 opportunities).

CURRENT TRENDS

Trends were identified following the industry and transportation surveys.

For the industrial and commercial sectors it was concluded that primary and secondary manufacturing growth depends on induced expansion, land availability with proper access, facility expansion and transportation system development. The wholesaling sector growth was shown to be very good. Wholesaling expansion would benefit from road system development, land development with adequate access and improved transportation services.

TABLE 2

LEVEL 3 DEVELOPMENT OPPORTUNITIES EXAMINED

FISHING INDUSTRY	- Herring Packaging Plant - Fish Meal Plant - Commercial Fish Farming
OFFSHORE OIL INDUSTRY	- Oil Production Platform Construction - Oil Exploration/Production Supply
MINERAL RELATED INDUSTRY	- Zinc Smelter - Aluminum Smelter - Aluminum Product Manufacturing - Cement Plant Construction/Expansion - Limestone Production - Magnesium Plant - Caustic Soda/Chlorine Plant
TRANSPORTATION INDUSTRY	- North Sydney/Corner Brook Railcar Ferry - Montreal/Corner Brook Water Transport Expansion - Storage/Transshipment of Northern Gas, Oil and/or Minerals - Transshipment of Materials and Supplies to the North - Establishment of Corner Brook as a Duty Free Port - Ship Repair Facilities
MISCELLANEOUS INDUSTRY	- Newsprint Production Expansion - Manufacture of Paper Products other than Newsprint - Production of 'Scotch' Whisky - Agricultural Development - Exploitation of Marble and Clay Deposits

TABLE I

FREIGHT FORECASTS TO 1995
LEVELS 1 & 2

(SHORT TONS)

YEAR	RETAILING & MISCELLANEOUS INDUSTRY GENERAL FREIGHT				WHOLESALING & GENERAL FREIGHT (EXCLUDING OIL COMPANY WHOLESALING)						RAIL TRANSPORTATION			
	LEVEL 1		LEVEL 2		LEVEL 1			LEVEL 2			LEVEL 1		LEVEL 2	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND	INBOUND	CORNER BROOK CONSUMPTION	OUTBOUND	INBOUND	CORNER BROOK CONSUMPTION	OUTBOUND	INBOUND	OUTBOUND	INBOUND	OUTBOUND
1974*	104,000	14,468	104,000	14,468	79,100	44,135	34,965	79,100	44,135	34,965	272,807	114,780	272,807	114,780
1980	118,000	16,452	118,000	19,760	112,000	61,465	50,535	112,800	59,850	52,950	312,700	151,800	323,500	75,600
1985	130,400	18,572	130,000	19,580	150,000	82,565	67,435	151,700	76,450	75,250	342,000	72,950	362,900	80,550
1990	144,000	21,892	144,000	20,700	195,000	110,615	84,385	204,000	101,500	102,500	341,000	74,100	355,800	81,700
1995	159,000	26,092	159,000	21,700	250,000	148,365	101,635	275,000	135,250	139,750	333,600	75,300	341,900	82,900

YEAR	ROAD TRANSPORTATION			
	LEVEL 1		LEVEL 2	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
1974*	228,256	132,415	228,256	132,415
1980	294,900	170,057	311,500	175,078
1985	349,900	206,883	307,500	222,144
1990	318,400	242,827	336,700	261,376
1995	360,900	269,608	386,400	313,928

WATER TRANSPORTATION – LEVEL 1

YEAR	INBOUND							OUTBOUND					
	GENERAL FREIGHT	PULPWOOD	FUEL OIL	GYPSUM	OIL BASE FUELS	GREEN HERRING	TOTAL	GENERAL FREIGHT	NEWSPRINT	CEMENT	WALLBOARD	PROCESSED HERRING	TOTAL
1976	67,570	258,900	135,900	—	305,044	2,000	769,414	11,670	286,500	4,700	1,700	3,566	308,136
1980	86,590	94,000	150,200	—	336,600	2,200	669,590	12,890	294,000	5,000	2,000	3,883	317,773
1985	111,620	—	158,600	—	380,900	2,400	653,520	14,850	294,000	125,000	2,000	4,277	440,127
1990	142,660	—	157,200	70,000	430,900	2,700	803,460	17,530	294,000	107,000	2,500	4,733	425,763
1995	180,690	—	161,800	70,000	487,600	3,000	903,090	21,060	294,000	125,000	2,500	5,222	447,782

WATER TRANSPORTATION – LEVEL 2

YEAR													
1976	67,620	258,900	135,900	—	311,000	2,000	775,420	13,110	286,500	4,700	1,700	3,566	309,576
1980	89,050	98,900	161,700	—	356,900	2,500	709,050	17,260	309,000	115,500	2,000	5,592	449,352
1985	119,630	—	168,700	70,000	423,900	2,800	785,030	20,930	324,000	103,300	2,500	6,676	457,406
1990	168,000	—	175,500	70,000	503,300	3,100	919,900	23,900	324,000	128,700	2,500	7,384	486,484
1995	241,300	—	184,100	70,000	597,800	3,400	1,096,600	27,700	324,000	159,800	2,500	8,132	522,132

* ACTUAL

Retailing was shown to be tied quite closely to the growth in the economy. Future expansion would be likely to occur as population grows and disposable income increases.

Within the transportation sector, and with respect to non-scheduled ship services it was concluded that few physical constraints exist which would hamper the development of these services. The importance of the services was identified in terms of tonnage of goods shipped.

The scheduled general freight service by water into Corner Brook is operated by Newfoundland Steamship Company Limited. The constraints for future growth of this service are primarily physical with demand for the service being quite high.

Road transportation was found to provide an attractive level of service and to be a growth area. Road transport companies are becoming larger to serve the increased demand. The number of small carriers on the island is diminishing. The largest carriers depend quite strongly on mainland originating traffic, indicating the importance of extra-island shipments on the future of this type of transportation service.

Rail transportation has experienced an increase in competition from motor carriers over the last several years. Although rail is expected to remain important for large shipments such as pulpwood, the attractiveness of this mode for general cargo movements has been decreasing. However, Canadian National has extensive land holdings in the Corner Brook area and realignment of land use patterns would have substantial implications for CN.

FREIGHT PROJECTIONS

Opportunities for growth were investigated under the three growth scenarios (Levels 1, 2 and 3) with each representing successively more optimistic growth, as defined earlier.

Detailed projections at 5-year intervals for key categories of activity are shown in Table 1.

ASSESSMENT OF POSSIBLE NEW DEVELOPMENTS

Level 3 Opportunities

A wide range of development opportunities for Corner Brook was examined (see Table 2). Each opportunity was subjected to preliminary analysis, and four opportunities were selected for more detailed evaluation. Of these, the construction of production platforms was being investigated by others, and the Steering Committee directed that another opportunity be studied, namely a North Sydney/Corner Brook railcar ferry. Thus the detailed evaluations consisted of:

- Herring Processing
- Expansion of Montreal/Corner Brook Water Transportation
- Offshore Exploration/Production Supply Base
- North Sydney/Corner Brook Railcar Ferry

The following pages summarize the detailed evaluations and their results. Conclusions and recommendations on each opportunity are presented in Chapter 4.

Herring Processing

The production and export of herring has long been a significant industry in Western Newfoundland with fishery operations in Curling predating the establishment of the Corner Brook papermill. The current operations are carried out by three firms, which produce approximately 3,000 to 5,000 tons of pickled herring fillets annually. The bulk of this output is exported to the United States in barrels with the remainder destined for European and Canadian packagers.

Traditionally, packaging (i.e. cutting, marinating and bottling) has not been carried out in Newfoundland, but has been controlled by a small number of firms in the food industry (e.g. Vita Foods) which possess the necessary expertise and market distribution channels. It was considered that potential might exist for vertical integration of the local herring industry to include packaging of the product. This would result in significant "value added" to the product within Newfoundland, and would generate local employment opportunities.

The fisheries in Curling have indicated a desire for cold storage facilities to protect their product from spoilage during periods of warm weather. Risk of significant losses is increasing as producers attempt to extend their operation into the summer months. Shortages of refrigerated trucks at peak period compound the problem. Currently, the majority of the barrelled product is shipped to cold storage facilities in the United States.

Cold Storage facilities would be an essential pre-requisite for the establishment of a bottling plant and would also be economically advantageous for the current fishery operation.

Accordingly, the evaluation included:

- establishment of a controlled temperature storage facility in Curling.
- establishment of a packaging plant with a cold storage facility in Curling. Under this option, a low volume plant (3,000 barrels of semi-processed herring per year) and a high volume plant (30,000 barrels) were assessed.

The strategy for evaluation was to examine separately the controlled temperature shed and the two packaging options. Markets were examined, preliminary development costs were determined, basic requirements for success were identified and government financial assistance programs were described where appropriate. Operating costs were calculated. In addition to the financial analyses, economic effects (e.g. generation of employment) were also considered.

It was generally found that the prospective degree of profitability of these enterprises would be marginal. The degree of economic benefit, however, was found to be substantial. The overall viability of the fish industry, together with the level of local employment would be enhanced. It is a worthwhile growth opportunity for Corner Brook and should be pursued on a step-by-step basis, beginning with the cold storage facility.

Montreal-Corner Brook Water Transportation Expansion

The majority of mainland originating general freight destined for the Island of Newfoundland follows the following routes:

Rail - via the Gulf Ferry Service between North Sydney and Port-aux-Basques

Road - via the Gulf Ferry Service between North Sydney and Port-aux-Basques

Water - originating at Montreal and calling directly at St. John's and Corner Brook

Steamship service from Montreal to Newfoundland has grown significantly in recent years as demand has increased. Government subsidies are paid to the carrier (Newfoundland Steamship Company Limited) in order that the service may be provided at reasonable freight rates.

Subsidization of the Gulf Ferry Service derives from the Newfoundland "Terms of Union" with Canada and its extent is due to high operating costs. Concern surrounds the present Mainland-Newfoundland transportation system because the Federal Government pays substantial subsidies.

It was established that significant expansion to the Montreal-Corner Brook water transportation system is possible - under appropriate conditions.

Following careful consideration of the issues of concern within Newfoundland and more generally to Canada, the consulting team developed an evaluation strategy which took account of Corner Brook's desire for expansion and the Federal Government's desire to provide transportation services to Newfoundland in the least costly manner, as follows:

TABLE 3

MAINLAND/NEWFOUNDLAND FREIGHT TRANSPORTATION FORECASTS

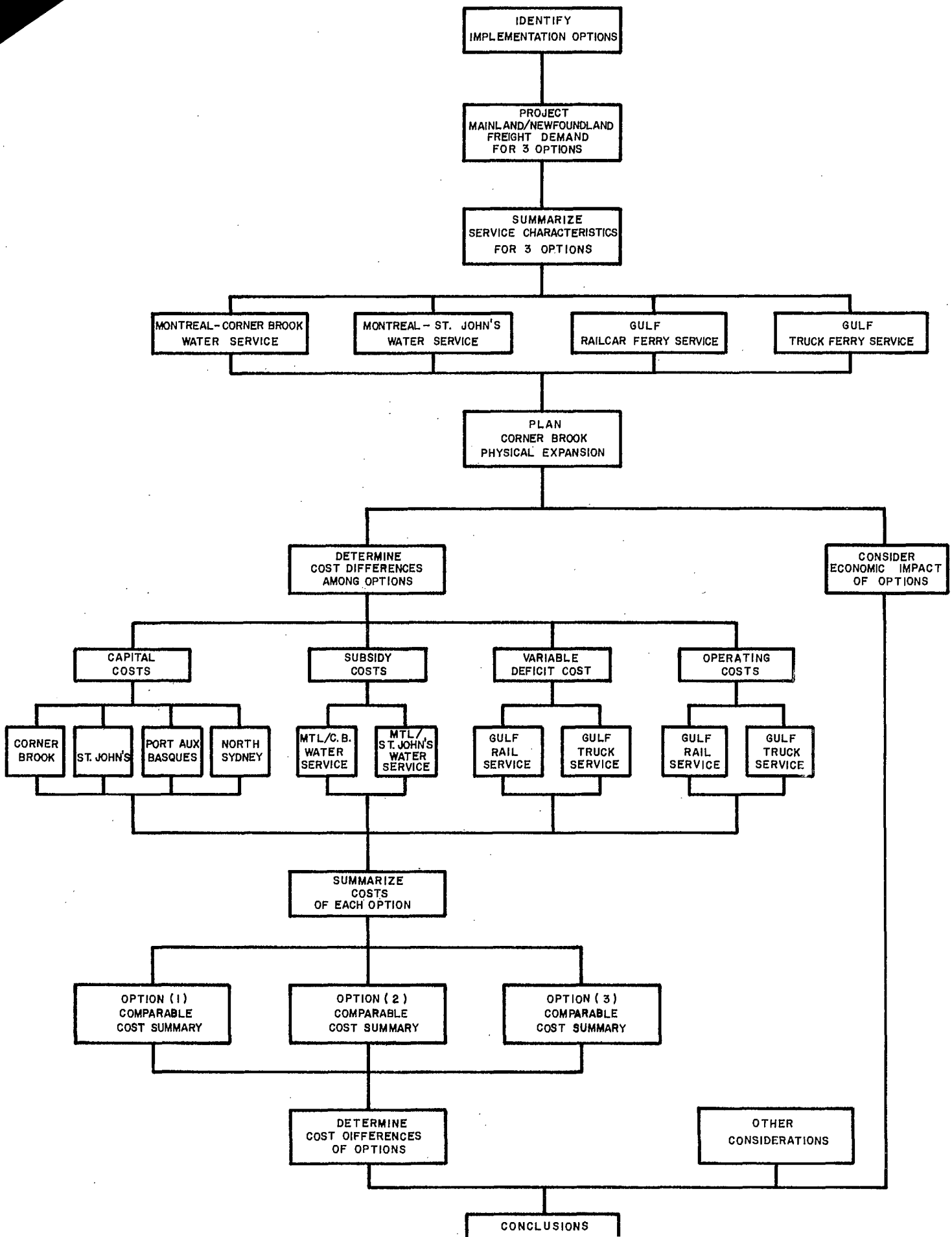
Excluding Major Bulk Commodity Movements
(x 1000 Short Tons)

		RAIL	ROAD	WATER				TOTAL TRAFFIC
		Total	Total Via Gulf Service	Via Nfld. Steamships to Corner Brook	Via Nfld. Steamships to St. John's	Other Carriers and Other Ports	Total	
OPTION 1 — Expansion of Gulf RAIL Service	1974*	561	133	46	166	50	262	956
	1980	625	269	88	249	50	387	1,281
	1985	735	306	119	349	50	518	1,559
	1990	818	371	167	490	50	707	1,896
	1995	879	451	240	687	50	977	2,307
OPTION 2 — Expansion of Gulf TRUCK Service	1974*	561	133	46	166	50	262	956
	1980	480	414	88	249	50	387	1,281
	1985	480	561	119	349	50	518	1,559
	1990	480	709	167	490	50	707	1,896
	1995	480	850	240	687	50	977	2,307
OPTION 3 — Expansion of MTL./NFLD. WATER Service	1974*	561	133	46	166	50	262	956
	1980	480	328	120	290	63	473	1,281
	1985	480	392	160	450	77	687	1,559
	1990	480	452	220	650	94	964	1,896
	1995	480	573	300	840	114	1,254	2,307

* Actual

FIGURE 2

MONTREAL - CORNER BROOK WATER TRANSPORTATION EXPANSION EVALUATION STRATEGY



- Implementation Options
- Operational and Physical Characteristics
- Financial Evaluation
- Economic Considerations

The approach of the evaluation is summarized pictorially in Figure 2.

The key to this evaluation is the difference in cost to the Federal Government between alternative options. Detailed calculations were performed of costs which would vary should different options be pursued. The three different options are based on emphasis of expansion of:

1. Gulf Rail Service
2. Gulf Road Service
3. Montreal/Newfoundland Water Transportation Service

It was noted that implementation of any one of the above options does not imply curtailment of growth of the other two modes. All options involve considerable growth in road and water freight. Each of the three options would have impact on the entire Island, since the transport systems moving goods to and from various locations in the Island are highly interrelated.

Under operational considerations, vessels were allocated to the appropriate services depending on the forecast tonnages, which are summarized briefly in Table 3.

In the financial evaluation, capital costs as well as operating, deficit and subsidy costs which vary were identified for each option, and for each of the four ports involved, i.e. Corner Brook, North Sydney, Port-aux-Basques and St. John's. Costs which remain the same under each option were excluded since they have no effect on comparative cost analysis. The total freight to be carried under each option is the same, and therefore the option with the lowest present value of variable cost to the Federal Government is the least costly.

Reduction of 20 year cost streams for each option using a 10% discount rate yields present values for each, used for relative comparison. The present values of comparative additional costs are:

	Present Value of Comparative Additional Cost	Present Value Differences	
1. Rail	$248.8 Million		
2. Road	$204.2 Million	$44.6 M	(1)-(3)
3. Water	$217.8 Million	$13.6 M	$31.0 M

It is noted that trucking subsidies paid under the Maritime Freight Rates Act (MFRA) amended by the Atlantic Region Freight Assistance Act (ARFA), did not form part of the evaluation due to the complexity involved relative to this study and the development of Corner Brook. Additional trucking subsidies would likely be paid under each option, but the greater cost of such subsidies under Option 2 (Road) would decrease its calculated cost advantage.

Emphasis on expansion of rail services was determined to be the most costly while road transport expansion proved to be the least costly. With the additional cost of truck subsidies included, it is probable that water transportation expansion would be of the same order of cost, or perhaps less costly than, the option emphasizing the truck mode.

It is evident that freight transportation demand characteristics favour expansion of road and water transportation systems. Moreover, transportation economics have been found to be more favourable to the expansion of these modes than for the expansion of rail service.

Under expansion of the railcar ferry system, employment in Port-aux-Basques would be increased. To a large extent it is this factor which makes the rail option the most costly, due to the labour intensity of the freight transfer system at Port-aux-Basques. Corner Brook and St. John's would both benefit from expanded water services, which are considered to be necessary. Based on the analysis, the least costly course of action would be to expand water and road transportation.

It was concluded that Corner Brook should encourage expansion of the water service to the City from Montreal.

North Sydney-Corner Brook Railcar Ferry

Port-aux-Basques is currently the gateway for the majority of rail freight destined for Newfoundland. Similarly, it is the gateway for exports via rail from the Island, although such freight volume is small in relation to imports. Two railcar ferries currently provide the link from North Sydney across the Gulf (M/V Frederick Carter and M/V Sir Robert Bond).

The narrow gauge rail line in Newfoundland necessitates that one of two activities take place at Port-aux-Basques for rail carload freight:

- railcar "trucks" are changed to allow the railcar to run on narrow gauge rails
- railcar loads are transferred to other railcars which can run on the narrow gauge rails.

TABLE 4

MAINLAND/NEWFOUNDLAND RAILCAR FERRIES
CORNER BROOK ANNUAL FREIGHT DEMAND

NORTH SYDNEY/PORT-AUX-BASQUES SERVICE ONLY
(TONS)

	Inbound Traffic	Outbound Traffic		
	General Freight	General Freight	Newsprint *	Total
1976	77,800	2,400	35,000	37,400
1978	77,200	2,450	20,000	22,450
1980	75,700	2,500	5,000	7,500
1985	73,300	3,650	5,000	8,650
1990	66,200	4,800	5,000	9,800
1995	52,300	6,000	5,000	11,000

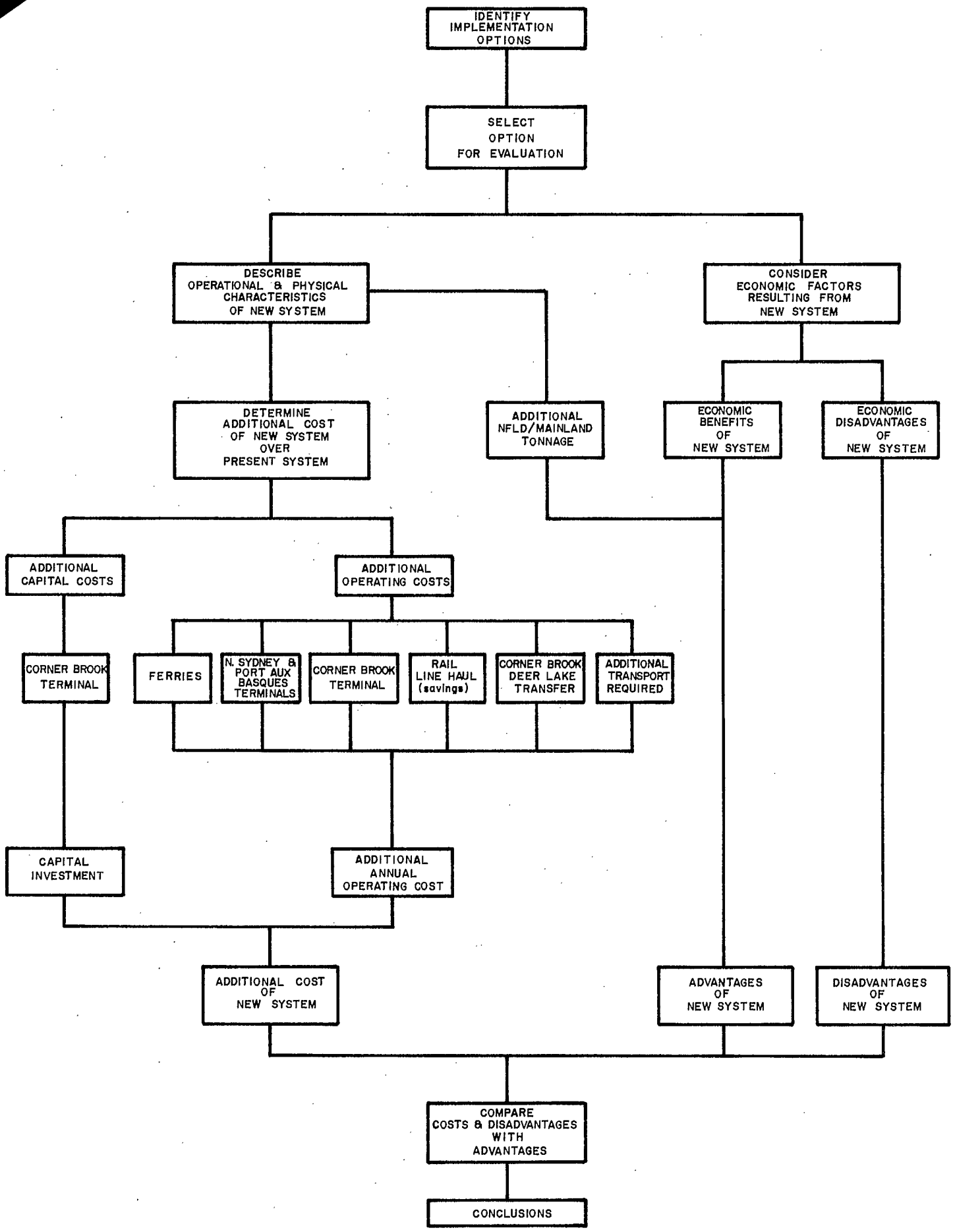
NORTH SYDNEY/PORT-AUX-BASQUES
AND
NORTH SYDNEY/CORNER BROOK SERVICE
(TONS)

	Inbound Traffic	Outbound Traffic		
	General Freight	General Freight	Newsprint *	Total
1976	77,800	2,400	35,000	37,400
1978	79,400	2,500	60,000	62,500
1980	81,000	2,600	80,000	82,600
1985	85,100	4,200	83,753	87,953
1990	85,100	5,900	83,753	89,653
1995	85,100	7,500	83,753	91,253

* Source: Bowater Sales Company, Connecticut.

FIGURE 3

NORTH SYDNEY — CORNER BROOK RAILCAR FERRY EVALUATION STRATEGY



Each of these operations (i.e. "truck-to-truck" and "car-to-car") requires significant labour input and adds to the cost of the total transportation operation.

With a view to improvements in service quality, the introduction of a railcar ferry on a direct North Sydney-Corner Brook routing was examined. Such a service would move only freight destined to or originating from the Corner Brook area.

The examination was conducted in the following sequence:

- Implementation Options
- Operational and Physical Characteristics
- Financial Evaluation
- Economic Considerations

A pictorial presentation of the evaluation strategy is provided in Figure 3.

The most appropriate implementation method involves routing one of the two existing ferries to Corner Brook twice a week, with the same vessel also calling three times a week at Port-aux-Basques. This maximizes the use of existing equipment and matches capacity most closely to expected demand.

The other ferry would continue as before, sailing between North Sydney and Port-aux-Basques only.

Operational and physical characteristics of each system were summarized. Freight demand expected to and from Corner Brook with each is described in Table 4.

A financial evaluation of the potential new service was carried out. Additional costs which would occur over and above the costs of the present system were identified. In this connection useful input was obtained from the Canadian Surface Transport Administration of Transport Canada.

The key advantage of a direct ferry service to Corner Brook would accrue to the newsprint mill operated by Bowater. This company believes they could achieve more efficient (heavier) railcar loadings, by-pass the handling process at Port-aux-Basques, deliver newsprint to new and closer markets and transport higher volumes of product by rail. The rail tonnage differences between the two systems are clearly shown in Table 4.

Capital expenditure required (estimated at $10 million) for the new service includes a berth and other facilities in Corner Brook. There would be no standard gauge/narrow gauge rail transfer in Corner Brook and no corresponding costs.

The following components of operating costs were derived for each year of the study period and summarized for a typical year:

- vessel costs
- Port-aux-Basques/North Sydney operations including freight transfer
- switching of railcars
- incremental costs at Corner Brook (i.e. ferry tie-down, loading/unloading, railcar upgrading and switching, general freight loading/unloading)

Additional costs identified included:

- rail line haul costs, Port-aux-Basques to Corner Brook
- Corner Brook/Deer Lake truck transfer
- Freight transportation requirements resulting from lower capacity of new system

The new system is estimated to cost an additional $700,000 per year, together with the estimated capital outlay of $10 million in Corner Brook.

Economic considerations hinge on employment in Corner Brook and Port-aux-Basques, and advantages to the Bowater Mill. The new system would result in some employment loss in Port-aux-Basques, because freight transfer would be reduced. It is estimated that 41 jobs would be lost. In Corner Brook, it is estimated that 50 full-time jobs and 25 part-time jobs would be created. The employment would clearly be a benefit to Corner Brook's economy.

Bowater expect that the viability of the mill would increase under the new system. New customers could be served, due to the standard gauge rail connection to Corner Brook. Loss and damage in transit are significant problems to Bowater. This, coupled with the age of the mill and its distance from present market areas presents operational problems relative to other mills. Consequently, during time of low demand for newsprint the Corner Brook mill is sometimes closed before others. Bowater feel the new railcar ferry system would help alleviate some of these problems.

However, the Bowater mill output is not expected to change from the estimates provided in the Phase II report under conditions of high market demand. Should the firm decide to decrease rail shipments, the traffic lost by the rail mode is expected to move via chartered vessel to other destinations.

It was concluded that this is not a growth opportunity which can likely be pursued with success. The benefits to Bowater (and perhaps the associated financial commitment which they might reasonably undertake) would need to be of a high order to render the service viable when the additional costs are considered.

Offshore Exploration/Production Supply Base

It is considered that potentially commercial oil and gas deposits off the Eastern Coast of North America offer conditional opportunities for Corner Brook. The basic opportunities are:

- Construction of oil production platforms in the Bay of Islands area with a significant proportion of the activity based in Corner Brook
- Establishment of a supply base in Corner Brook for offshore exploration and/or production activities

The latter opportunity was examined further in this study, while the former has been studied by others.

The evaluation strategy consisted of the following:

- Operational and Physical Characteristics
- Financial and Economic Considerations

Up to now offshore activity near the Atlantic Provinces has been served from St. John's, Botwood, Dartmouth and Mulgrave. Requirements for new supply bases are indefinite and the viability of Corner Brook as a possible site for a base is tied directly to the location of exploration. Corner Brook is reasonably well placed to supply Labrador drilling programs, however, sailing distance to the BP exploration area is about 100 miles greater from Corner Brook than from Botwood, indicating the higher suitability of the latter as a supply base in this particular instance.

Opportunities for Corner Brook to serve as a supply base are expected to be limited to exploration in the following zones:

- Western Newfoundland/Gulf of St. Lawrence
- Southern Labrador/Strait of Bell Isle

There are areas in which there is currently only a low level of interest, however, this situation could change should research so dictate.

With respect to implementation, it is vital to be able to respond quickly to meet the demands of oil companies. Competition from other ports will always be strong. The flexibility to adapt existing waterfront facilities to suitable offshore service facilities within tight time constraints could possibly be the deciding factor in attracting business to a port.

The cost of establishing a small scale supply base in Corner Brook is not of major proportions. Should the present Western Terminals operation be relocated to the Shoals area, then the facilities used by that company could form the centre of a small scale supply base operation. The existing wharf, shed and open storage facilities exceed the minimum needs of a simple supply base. The cost of converting part or all of the site to an offshore oil exploration/production supply base would be minor relative to other developments examined in this study.

Opportunities may exist with respect to the potential for Corner Brook to act as a transshipment point for construction supplies and equipment, or production supplies. While planning for such opportunities is not yet practical it is noted that expenditure in the area of Western Newfoundland, which is served by Corner Brook, of even a relatively small share of the total investment required to harvest the offshore resources could provide a significant stream of benefits to the City.

Under the assumption of minimum involvement of Corner Brook as a supply base, the City would supply a few drilling rigs for a few months each year. This base would certainly be small and thus would have minor impact on the local economy. The majority of the required supplies would be imported from the Mainland, and these would impact on the future transportation system serving Corner Brook, and would benefit the City in that way.

The supply base would seasonally employ 10 to 20 people. Spin-off benefits to the local economy would include purchases of food, repair service and shore-leave expenditures of the crews of offshore supply vessels. It is evident that as expansion of exploration and production activities takes place in the areas which can realistically be supplied via Corner Brook, the supply base operation could expand.

The importance of Corner Brook's involvement after initial exploration extends beyond direct economic impact. If and when exploration programs are expanded, or production development takes place, propensity will exist to expand the main supply centres to meet the increased requirements.

MISCELLANEOUS 'SPIN-OFF' ACTIVITY

Activities which could support or result from the successful realization of growth opportunities mentioned above are outlined below. These miscellaneous developments respond principally to Level 3 opportunities although some could become established to a lesser extent under the less optimistic growth levels.

- Ice-Breaker sub-agency establishment in Corner Brook could be justified under appropriate port acitivity growth levels.

- Road transport terminal development should likely take place to satisfy current and future demand expectations. A common user facility would assist the small road transport companies.

- Heliport or Stolport facility development along with the associated air service, both passenger and air freight, would be beneficial to supply base operations.

- Machine shop activity expansion would likely occur as a result of increased port activity and supply base operations. Minor repairs, pipe-threading welding and machinery maintenance are candidates for increased demand.

- Fuel supply including bunkering facility expansion could develop to satisfy demand increase resulting from increased port activity.

- Cement production expansion could occur depending on the City's involvement in, and the characteristics of, offshore activity.

- Minor vessel repair demand will occur with supply base development and will likely increase with general port activity.

- Heavy lifting services will likely be required with a supply base operation and could expand with general port activity.

- Ship chandlers and provisioners will be able to expand their business as the port serves more vessels each year.

- Stevedoring requirements will grow with the general freight traffic handled through the port.

- Electrical repair service demand will grow with other industries and transportation services.

- General warehousing service and facilities will likely exhibit a demand increase with general and specialized freight throughput.

- Freight forwarding businesses will expand and new ones could develop as Corner Brook grows as a distribution centre.

- Diving services could develop to carry out marine repair and salvage functions.

- Other business will likely experience an increase in transactions as a result of general port development. Some of these include:

  - accountants
  - banks
  - catering services
  - equipment rentals
  - fumigation services
  - packaging services
  - printing services
  - vehicle rental

In summary, many enterprises will be in a position to share in Corner Brook's development opportunities. The total 'spin-off' effect will be proportional to the extent of successful development of the opportunities identified.

3. Master Plan

3. MASTER PLAN

The Master Plan for the future development of Corner Brook Harbour has been derived from a close examination of the existing facilities, operations and infrastructure, coupled with the requirements for future facilities and the potential of more favourable development sites.

A summary of existing conditions, future requirements and potential development sites is documented. The way in which the potential sites can be developed to meet the projected requirements forms the backbone of the Master Plan.

EXISTING CONDITIONS

The existing harbour is shown on the plan at the front of the report. Much of the Humber Arm is over 300 ft deep, but the 600 acre Shoals at its eastern end is on average around 5 ft deep at low water.

TABLE 5

EXISTING PROBLEMS AND NEEDS

Sector	
Transportation	• General Cargo Area - shortage of open storage space - general congestion - interference caused by parked vehicles - lack of permanent office space for CN operating personnel - insufficient materials handling methods and equipment • Motor carrier terminal and maintenance facilities inadequate • Lack of refrigerated transport from mainland • Inadequate access/egress to City centre
Manufacturing	• Curling Fisheries - inadequate road access to waterfront and fish plants - lack of cold storage - wharf of low capacity and poor condition - shortage of open storage space • Insufficient land for expansion
Wholesaling	• Shortage of land with good access to markets • Scheduled services to provincial markets needed
Retailing	• Shortage of land for expansion of store and parking facilities • Transport of refrigerated goods • High loss and damage on the Gulf Service

Precipitous topography has been the main factor in the location of most of the development in the Arm, and existing industry has used up virtually all of the available waterfront land. Consequently there is a demand for level land, both close to the water and in other areas, for industrial and commercial use.

Water-related industrial activity has focused in five main areas along the south shore of the harbour (see Figure 8-1):

- the oil industry between Birchy Cove and Church Cove
- the fishing industry in Curling
- the Bowater pulp and paper mill at Corner Brook Stream
- the General Cargo Area consisting of two Transport Canada wharves and sheds, for Western Terminals (Newfoundland Steamship Co.) and CN Coastal operations.
- the cement and gypsum wallboard industries at Brakes Cove

Corner Brook is well served by road and rail connections to other parts of the island. However, some road development within the City is needed for further growth. Existing industry is satisfied with current rail siding capacity and location.

All normal services and utilities are available in Corner Brook, e.g. water, power, drainage, telephone, also limited heavy handling equipment and bunkering.

Power is currently in abundant supply in Corner Brook and in view of the Lower Churchill development it is expected that this will be the case in the future. The City is continuously up-dating its water and drainage facilities and has undertaken studies to ensure adequate services in the future.

Wharf space for general use is in short supply in the harbour. The small Transport Canada wharf in Curling is now inadequate for the needs of that community and the other two wharves in the general cargo area are used by Western Terminals and CN Coastal.

Services which have been deemed as presently insufficient include heavy lifting equipment, bunkering and vessel repair services.

Existing problems and needs are summarized in Table 5.

REQUIREMENTS

For further growth and development, existing industry needs more land and adequate access to the waterfront and to major road systems.

Future freight forecasts under Levels 1 and 2 growth were translated to requirements for physical facilities. Similarly, needs for physical facilities were developed from Level 3 opportunities. Some of the key requirements are listed as follows:

		Level 1	Level 2	Level 3
Western Terminals				
Open Storage, sq ft	1980	23,000	25,000	33,000
Open Storage, sq ft	1995	49,000	68,000	81,000
Closed Storage, sq ft	1980	53,000	57,000	74,000
Closed Storage, sq ft	1995	111,000	154,000	185,000
Wharf Space, lin ft	1980	800	800	800
Wharf Space, lin ft	1995	800	1,400	1,400
Total Land, acres	1980	4.0	4.0	5.0
Total Land, acres	1995	8.0	10.5	17.0
Curling Fisheries				
Closed Storage, sq ft	1980	-	16,500	16,500
Closed Storage, sq ft	1995	-	21,000	21,000
Wharf Space, lin ft	1980	300	300	300
Total Land, acres	1980	1.0	1.0	1.5
Total Land, acres	1995	1.0	1.5	2.0
Road Improvements				

Other new wharf requirements are:

Atlantic Gypsum	- 600 ft long, 30 ft depth alongside
Lundrigans	- 200 ft long, 15 ft depth alongside
Bowater & Oil Companies	- Nil

Good truck routes are needed, especially to waterfront areas at Curling and between the Transport Canada wharves and Riverside Drive.

Basic railcar ferry requirements are:

- 500 ft wharf, 20 ft depth alongside
- transfer bridge
- closed and open storage facilities
- standard gauge team tracks
- buildings, parking areas

Truck terminals and other industrial land - 80 acres.

TABLE 6

MORE FAVOURABLE POTENTIAL DEVELOPMENT SITES

SITE	ASSESSMENT
Shoals	Best overall potential Good soils Can be serviced by road and rail Large area can be created Room for expansion Available water depth at edge of Shoals for navigation purposes Reasonably good location from marine standpoint Less fill per acre needed than any other site Reasonably close to existing waterfront activity
Seal Head	Reasonable access Forms link area between Shoals and other waterfront activity Road can be provided Rail exists very close at CN Express Shed Limited area Poor soils (similar to existing wharves at General Cargo Area before they were built) Suited to road/rail activity Fill needed at this site to permit harbour service road
Old Sheds Site & Western Terminals	Limited area adjacent to General Cargo Area Good access, road and rail exist nearby Soils diffucult but not insurmountable Existing structure adjacent (Transport Canada/Western Terminals) Fair navigation No room for further expansion
Church Cove (Curling)	Good fillable area, fair soils Room for expansion, fill available nearby Deepwater available, good navigation Some land owned by City Some areas already filled Utilities available Road exists (poor), no rail Presently undeveloped, except for oil company wharf

HARBOUR LIMIT

TO GULF OF ST. LAWRENCE

COOKS COVE

POVERTY COVE
(HANNATYNE COVE)

ALLENS COVE
(PLEASANT COVE)
(HUGHES COVE)

CURLING WATERFRONT

CHURCH COVE

HUMBER ARM

DIRECTION OF PREDOMINANT WINDS

NORTH SHORE

HUGHES BROOK

SHOALS

BRAKES COVE

SEAL HEAD

WILD COVE

GENERAL CARGO AREA (SEE INSET)

CURLING

CORNER BROOK

TRANS CANADA HIGHWAY

HARBOUR ARTERIAL

TO DEER LAKE

TO CONNELL DRIVE

TO STEPHENVILLE & PORT AUX BASQUES

HUMBER RIVER

RIVERSIDE DRIVE

Meadows

Irishtown

Summerside

Pynns Pond

Indian Road

Pynns Brook

Inner Aspen Pl.

Grow Head

Wild Cove Brook

Mount Moran

WT. MORAN

PETRIES

BARRY FISHERIES

CHANEY FISHERIES

HUMBER COLD STORAGE

IMPERIAL OIL

ESSO OIL

CROW HILL

Pulp

Prize

Arts

Training Ground

Curling Rink

Grenfell Park

Grenfell Pond

Cemetery

Dump

Pine Cone Road

South Brook Road

Brook

Johns Point

Training Point

NORTH STAR CEMENT

LUNDRIGANS

ATLANTIC GYPSUM

BOWATER

LEGEND :

SEA BOTTOM CONTOURS BELOW CHART DATUM

SEAL HEAD

CN EXPRESS

CN YARD

CN OFFICES

ROCK CUT

CN COASTAL

TEAMSTERS TRUCKS

HUMBER ROAD

WESTERN TERMINALS

OLD SHEDS SITE

BOWATER

GENERAL CARGO AREA TO SEAL HEAD

0 100 200 300 400

SCALE IN FEET

FIGURE 8-1

POTENTIAL DEVELOPMENT SITES

0 1000 2000

SCALE IN FEET

FENCO
PMP

CORNER BROOK HARBOUR
DEVELOPMENT STUDY

POTENTIAL DEVELOPMENT SITES

The more favourable development sites are listed in Table 6, along with assessment comments, and the sites are shown in Figure 8-1. Advantages and disadvantages of all areas in the harbour were established by means of field inspection, a seismic survey and for the most promising areas, a program of soils investigations. Navigational aspects were examined with the Atlantic Pilotage Authority and Transport Canada.

Of the above sites the Shoals is unique in that it consists of a large area of granular alluvial deposits at the mouth of the Humber River. In terms of land creation it holds excellent potential and it is considered to be the pivotal area for future harbour development.

In addition to Church Cove, the balance of the Curling Waterfront holds potential for redevelopment, but it is considered best to develop first at Church Cove and then expand westwards along the waterfront as more land and wharf space are required.

Other sites hold some potential, but are less favourable for various reasons which include difficulty of access, remoteness from existing infrastructure, size limitations and soils conditions. For some of these other sites, non-industrial developments are presently being considered, as follows:

Cooks Cove	- Recreation, camping, trailer park
Poverty Cove (Bannatyne Cove)	- Day-use recreation
Allens Cove (Pleasant Cove) (Birchy Cove)	- Marina

MASTER PLAN DETERMINANTS

The major considerations in the formulation of the Master Plan are very briefly listed as follows:

Curling	- Need for wharf space, herring storage facilities, more land, local road improvements and upgrading of Curling Road.
Western Terminals (local operations of Montreal/Corner Brook shipping service)	- Early need for more space for open and closed storage facilities, and for a second wharf: Cannot be supplied at present site, therefore should be supplied at new facilities on landfill at Shoals.
Truck Terminals	- Approximately 40 acres needed. Best area considered to be on the Shoals, land created by fill. Would lead to

	co-ordinated and more efficient ship/ truck freight handling.
Harbour Service Road	- Connection needed between existing Arterial and Riverside Drive, to service existing operations and new developments. New road is feasible along waterfront, with some CN facilities relocated, including team tracks and offices.
CN Coastal	- Needs can be met at existing site, therefore no need for more room.
Railcar Ferry Terminal	- Operationally, the Old Sheds Site is favoured. As an alternative the Shoals should be considered. (Subject to further investigation also.)
Supply Base	- Small base could be established at existing Transport Canada wharf now used by Western Terminals on the basis that Western Terminals is relocated to the Shoals. If needed, a larger base could be built on the Shoals in future.
Icebreaker Sub-Agency	- Considered desirable; could be located with small scale supply base at existing Western Terminals wharf (Transport Canada).
Development of Existing Industry	- Atlantic Gypsum and Lundrigans both involved in landfill at Brakes Cove. New proposals are consistent with these plans.
Possible Development of Central & Northern Shoals	- Needs channelling of river or access from North Shore Road to more northerly landfill area
Logging and Booming on Humber River	- Likely to continue; needs booming ground, minimum 600± ft wide flow area in river mouth.
Environmental Considerations	- Environmental impact assessment will be required for landfill projects. Salmon runs must be protected (detailed input not available at this stage).
Other Offshore Opportunities	- Possibility of Corner Brook as a site for platform construction - presently not considered as likely choice due to shallow water in Bay of Islands area. However, the Shoals area may present a suitable site for certain construction operations.

CN Facilities	- Can expand Express operations on existing site at Seal Head; relocate offices and other facilities to provide room for harbour service road. Excavate south of main line by Western Terminals to provide more level space for CN in central area.

MASTER PLAN

The Master Plan provides a layout of the major components of future harbour development. It has been derived by matching future needs with the physical potential of the more favourable sites. Basic infrastructure has been included. Order of magnitude cost estimates are included for specific developments, together with projected timing where it can be identified.

The plan is presented pictorially on two drawings, Figures 9-1 and 9-2*.

Master Plan Sheet 1, Curling to Bowater (Figure 9-1)

To meet the principal requirements for Curling, i.e. improved wharf facilities, additional waterfront land, improved roads and development in herring processing, the following components are included:

- 300 ft wharf at Church Cove
- a landfill area behind the wharf
- a cold storage plant (controlled temperature storage shed)
- upgrading and realignment of Water Street to provide a 2-lane paved service road along the waterfront
- road improvements on Curling Road to improve access to and from central Corner Brook
- a herring packaging plant
- a provision of a possible future waterfront harbour arterial

The new wharf is designed to accommodate the larger fishing vessels which call at Curling, to supplement the existing small public wharf and other private wharves, and to provide additional common-use berth space for general use. The wharf can be extended westwards as the need arises in the future.

The road improvements will aid traffic flows, particularly truck movements, between Curling and Corner Brook. For the longer term, the feasibility and justifications of a waterfront arterial road should be examined. The road would connect Corner Brook and Curling, via DeGrouchy Point.

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* Figures follow Page 3-6

The cold storage plant would allow improvement of existing fish processing operations. It would lead to the elimination of storing barrels of herring in difficult conditions in winter, and the elimination of losses of curing herring which spoils in temperatures above 10°C (50°F). The plant can also serve for storage of other products such as fruits and vegetables.

The physical requirements of the herring packaging plant are not extensive, and provision has been made for the plant to be located in Church Cove. There is a possibility that this plant could be built partly on existing foundations which were constructed for another purpose but never used.

Master Plan Sheet 2, Bowater to Shoals (Figure 9-2)

The major future needs to be met in this focal area of the harbour are those of additional land, more wharves and an adequate transportation infrastructure. The principal components of the proposed plan are:

- construction of two berths and marine backup facilities on the southern Shoals to accommodate the local operations of the Montreal-Corner Brook shipping service
- landfill on the southern Shoals to create approximately 100 acres of land for truck terminals and other industrial uses
- construction of a harbour service road from the existing Arterial to Riverside Drive, with a connection to the new development on the Shoals
- provision of rail service to the Shoals
- landfill at Seal Head, and relocation of some CN facilities including team tracks and offices
- an icebreaker sub-agency at the existing wharf used by Western Terminals
- the continuation of CN Coastal operation at the existing site
- a future supply base at the wharf now used by Western Terminals
- excavation between the general cargo area and Humber Road to provide additional level land
- provision of a railcar ferry terminal at the Old Sheds Site adjacent to Bowater
- concepts for further development on the Shoals, e.g. construction yard for offshore platforms

The recommended relocation of Western Terminals to the Shoals is based on the projected requirements exceeding the capacity of the existing site.

The staged development of the southern Shoals is designed to provide for the shorter-term expanded requirements of Western Terminals, by initial construction of an 800 ft wharf and associated shed and open storage facilities. The longer-term expansion would be met by a 600 ft wharf extension along with a second shed and an increased open storage area.

Filling the Shoals east of the proposed marine terminal will create land to meet the pressing needs for truck terminal facilities, and other industrial park requirements, which experience has proved as being difficult to accommodate elsewhere. Located together on the Shoals, the truck and marine operations can be integrated to achieve more efficiency.

The proposed harbour service road will provide the necessary link between existing industries, and to the Shoals. It will also connect to Riverside Drive which joins to the Trans Canada Highway. A rail spur to the Shoals will meet the need for interconnection of transport modes.

Creation of additional land from Seal Head to North Star Cement will permit the construction of the harbour service road, and provide space for relocation of some CN facilities such as the team tracks. In turn the team tracks and CN offices should be relocated from the general cargo area, to allow the realignment of the existing roadway and its upgrading to become the harbour service road.

Excavation of an area south of the main CN lines near the foot of the Arterial ramp would assist in providing more level space near the general cargo area. This new area could then be used for CN-related requirements such as an office location and possibly for standard gauge tracks for a railcar ferry terminal at the Old Sheds Site. This excavation could be carried out in conjunction with the landfill at Seal Head.

The CN Coastal operation can continue, and expand, at the existing site and this is shown on the Master Plan.

An icebreaker sub-agency is considered desirable, and this can in the future be located at the wharf now used by Western Terminals, following their relocation. At the same wharf the existing facilities could be used at short notice for a small scale supply base.

A railcar ferry terminal is shown at the Old Sheds Site, near Bowater. This site has limited potential due to its size, and has been chosen on a preliminary basis for the railcar terminal primarily because it is close to Bowater, who would be a major user of the service. This proximity would minimize the amount of standard gauge track required. However, this particular development requires detailed consideration before a final site is selected.

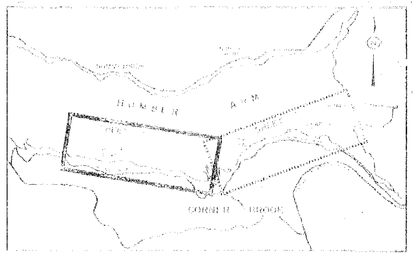
Included in the report (Figures 9-6, -7 and -8) are conceptual schemes for possible later development of further parts of the Shoals. It is recommended that this aspect of further development be given continued attention as time progresses, particularly as requirements for additional level land materialize and as other requirements evolve and become known. Concern has been expressed by Environment Canada that the Shoals area is environmentally sensitive. It is felt that all possible information should be gathered by the appropriate agencies to help with future planning and decision making regarding possible development of this important area.

Figures 9-1, -2, -6, -7 and -8 are presented on the following sheets.

FIGURE 9-1

MASTER PLAN

SHEET 1 - CURLING TO BOWATER



HUMBER

ARM

CURLING

WATER POINT

GEORGE COVE

FUTURE SEWAGE TREATMENT PLANT

DE GROUCHY POINT

BOWATER

CORNER BROOK

FENCO
PMP

CORNER BROOK HARBOUR
DEVELOPMENT STUDY

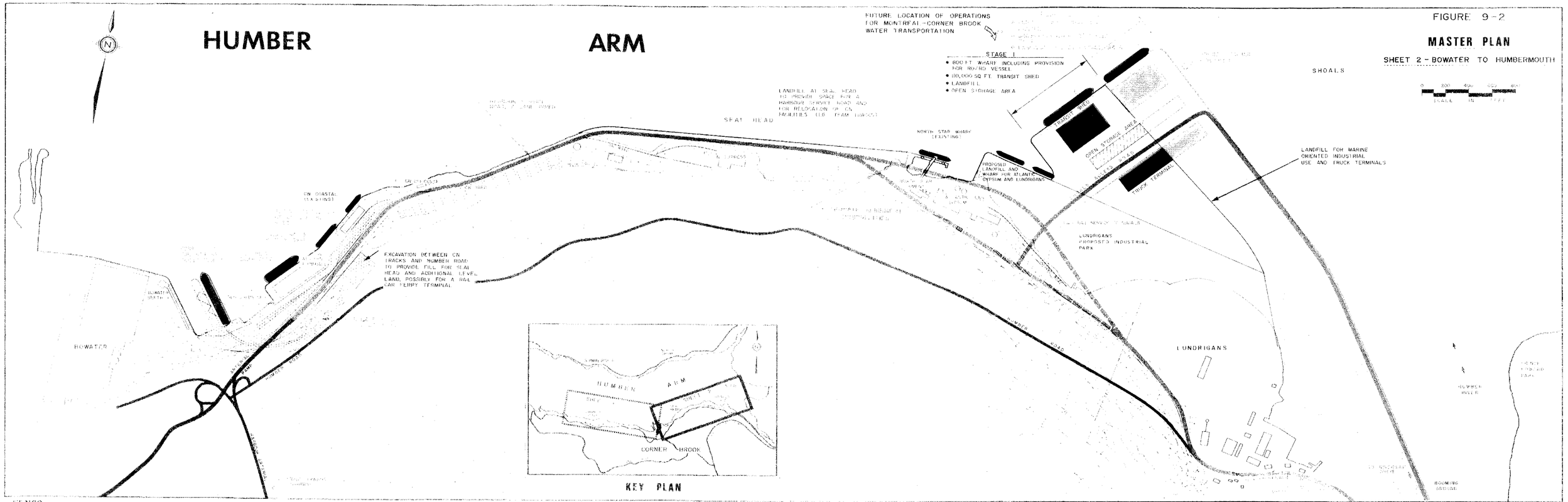


FIGURE 9-2

MASTER PLAN

SHEET 2 - BOWATER TO HUMBERMOUTH

FENCO PMP

CORNER BROOK HARBOUR DEVELOPMENT STUDY

N.B. THESE ARE CONCEPTS ONLY. FUTURE PLANNING WILL DEPEND ON THE RESULTS OF HYDRODYNAMIC AND ENVIRONMENTAL STUDIES.

IRISHTOWN

HUGHES BROOK

HUMBER ARM

NORTH SHORE ROAD

FUTURE EXPANSION (MARINE & INDUSTRIAL)

MARINE TERMINAL

TRUCK TERMINAL

SIGNALS ACCESS ROAD

ATLANTIC GYPSUM

NORTH STAR CEMENT

SEAL HEAD

HARBOUR SERVICE ROAD

C.N. (MAINLINE)

LUNDRIGANS' INDUSTRIAL PROPOSED PARK

INDUSTRIAL PARK

LUNDRIGANS

ROAD

HUMBER

WILD COVE

PRINCE EDWARD PARK

HUMBER RIVER

C.N. COASTAL

POSSIBLE SITE FOR RAILCAR FERRY TERMINAL

BOWATER

TRANS CANADA HIGHWAY

ARTERIAL

FIGURE 9-6

POSSIBLE FUTURE DEVELOPMENT CONCEPTS

SHEET - I

600' 400' 200' 0' 600'

SCALE IN FEET

FENCO PMP

CORNER BROOK HARBOUR DEVELOPMENT STUDY

N.B. THESE ARE CONCEPTS ONLY. FUTURE PLANNING WILL DEPEND ON THE RESULTS OF HYDRODYNAMIC AND ENVIRONMENTAL STUDIES.

IRISHTOWN

HUGHES BROOK

HUMBER ARM

VESSEL REPAIR FACILITY

CONCRETE PRODUCTION PLATFORM CONSTRUCTION

MARINE TERMINAL

TRUCK TERMINAL

SHOALS ACCESS ROAD

ATLANTIC GYPSUM

NORTH STAR CEMENT

SEAL HEAD

HARBOUR SERVICE ROAD

C.N. (MAINLINE)

LUNDRIGANS INDUSTRIAL PROPOSED PARK

INDUSTRIAL PARK

HELIPORT

LUNDRIGANS

HUMBER ROAD

NORTH SHORE ROAD

WILD COVE

PRINCE EDWARD PARK

HUMBER RIVER

C.N. COASTAL

POSSIBLE SITE FOR RAILCAR FERRY TERMINAL

BOWATER

TRANS CANADA HIGHWAY

ARTERIAL

FIGURE 9-7

POSSIBLE FUTURE DEVELOPMENT CONCEPTS

SHEET-2

600' 400' 200' 0' 600'

SCALE IN FEET

FENCO PMP

CORNER BROOK HARBOUR DEVELOPMENT STUDY

N.B. THESE ARE CONCEPTS ONLY. FUTURE PLANNING WILL DEPEND ON THE RESULTS OF HYDRODYNAMIC AND ENVIRONMENTAL STUDIES.

IRISHTOWN

HUMBER ARM

HUGHES BROOK

VESSEL REPAIR FACILITY

CONCRETE PRODUCTION
PLATFORM CONSTRUCTION

ACCESS ROAD

INDUSTRIAL

FUTURE EXPANSION

MARINE TERMINAL

TRUCK TERMINAL

SHOALS ACCESS ROAD

HUMBER RIVER

NORTH SHORE ROAD

WILD COVE

LOCAL AIRSTRIP

ATLANTIC GYPSUM

NORTH STAR CEMENT

SEAL HEAD

LUNDRIGANS' INDUSTRIAL PROPOSED PARK

INDUSTRIAL PARK

PRINCE EDWARD PARK

HARBOUR SERVICE ROAD

C.N. (MAINLINE)

LUNDRIGANS

HUMBER ROAD

C.N. COASTAL

POSSIBLE SITE FOR RAILCAR FERRY TERMINAL

BOWATER

TRANS CANADA HIGHWAY

ARTERIAL

FIGURE 9-8

POSSIBLE FUTURE DEVELOPMENT CONCEPTS

SHEET-3

600' 400' 200' 0' 600'

SCALE IN FEET

FENCO
PMP

CORNER BROOK HARBOUR DEVELOPMENT STUDY

COSTS AND TIMING

Alternative structural forms have been considered for future wharves, based on available information, including the results of the soils investigation conducted as part of this study. Preliminary designs have been prepared, and from these designs cost estimates have been calculated.

Generally, new wharves for the facilities considered in the study are required to be continuous marginal wharves providing access to and from all parts of berthed ships, as is the case with all general cargo wharves.

The order of magnitude cost estimates for wharves are presented in the following pages. Estimates have also been made for other components of marine developments, and where possible notes on timing have been included for each scheme.

Landfill costs on the Shoals have been derived on the basis of an average depth of 13 ft of fill (finished grade +10 ft above Chart Datum) and a unit price for fill of $2.50 per cubic yard. Thus the cost of fill per acre would be in the order of $55,000. Higher or lower prices for fill would result in proportionately higher or lower costs per acre for landfill. A tentative estimate for dredging granular material from the Shoals, and placing as fill, indicates a cost in the order of $2.50 to $3.00 per cubic yard.

It is noted that all cost estimates in this report are preliminary, as they are based on conceptual plans covering a very broad range of work. More refined cost estimates should be prepared for individual components of future developments during detailed planning and pre-engineering.

Cost Summary *

Curling	$ 1.7 million
Southern Shoals, Stage 1	$10.0 million
Southern Shoals, Stage 2	$ 8.0 million
Harbour Service Road and Services to Southern Shoals	$ 4.8 million
Typical 10 Acre Truck Terminal on the Shoals	$ 3.3 million
Railcar Ferry Terminal	$10.0 million

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* 1976 Order of Magnitude Cost

Timing

Item	Detailed Planning	Construction
Curling	1976-77	1977-78
Southern Shoals		
Stage 1, Level 1	1977-78	1980-82
Level 2	1976-77	1978-80
Level 3	1976-77	1977-78
Stage 2, Level 2	1987-89	1989-91
Level 3	1982-84	1984-86
Truck Terminal Development on Shoals	1976-77	1977-79
Harbour Service Road and Service to Southern Shoals	1976-77	1977-78 *

* to coincide with truck terminal development on the Shoals

4. Conclusions and Recommendations

4. CONCLUSIONS AND RECOMMENDATIONS

The Corner Brook Harbour Development Study has included the research of opportunities and the formulation of a logical development plan for growth of the harbour. Conclusions and recommendations are summarized under General Economic Development, Growth Opportunities and Physical Development.

GENERAL ECONOMIC DEVELOPMENT

Throughout Phase I and Phase II of the study, it was concluded that some existing industry in the City could grow signficantly. A brief summary of some of these conclusions is provided below.

- Retailing and Miscellaneous Industry growth depends on general economic climate
- Wholesaling offers substantial scope for future growth
- North Star Cement is likely to grow
- Atlantic Gypsum is likely to grow
- Herring Processing would benefit from cold storage facilities

- Road transportation will likely continue to be popular in which case truck services would expand
- Coastal Service to Labrador could expand markets for Corner Brook Industry

GROWTH OPPORTUNITIES

Conclusions and recommendations resulting from evaluations of potentially attractive growth opportunities are summarized below.

Herring Processing

The following conclusions were reached during the evaluation of vertical integration of the herring processing industry to include a bottling operation:

- cold temperature shed is essential should a packaging operation be implemented
- this operation would be marginally profitable although economic benefits would be substantial
- this is a worthwhile opportunity for Corner Brook and should be pursued

Should this development be pursued, it is recommended that the following action be taken by the lead organization, which should be assisted by the Corner Brook Economic Development Corporation and/or the Newfoundland Department of Industrial Development.

Cold Storage Shed *

- assess miscellaneous demand for cold storage
- negotiate commitments from potential users
- define facility size and cost
- apply for financial support
- arrange financing, construct, and recruit management

Low Volume Packaging Plant

- negotiate commitments for product purchase
- define facility size, details and cost
- apply for financial support
- arrange financing, construct and recruit management

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* These recommendations apply for a Cold Storage Shed with or without a Packaging Plant.

High Volume Packaging Plant

- initiate discussion with Vita Foods on their involvement
- apply for financial support
- negotiate contractual agreement with Vita Foods
- design, commission and staff the plant

Montreal-Corner Brook Water Transportation Expansion

The following conclusions were reached during the evaluation of the potential for expanding Montreal-Newfoundland water transportation services:

- water and road transportation services to Newfoundland are expanding
- expansion of Mainland-Newfoundland rail services is more costly than other modes
- Mainland-Newfoundland water and road transport expansion are most attractive and should be pursued
- Corner Brook would benefit from accelerated growth of scheduled water services from Montreal

Should this development be pursued, it is recommended that the following steps be taken:

- promote expansion with Transport Canada
- liaise with St. John's with a view to joint promotion
- liaise with Newfoundland Steamship Company Limited, with a view to joint promotion
- finalize planning of and implement port facilities as warranted

North Sydney-Corner Brook Railcar Ferry

The following conclusions were reached as a result of the evaluation of rescheduling one Gulf railcar ferry to call at Corner Brook:

- railcar ferry capacity would decrease
- the principal beneficiary would be Bowater Newfoundland Limited
- jobs would be lost in Port-aux-Basques but generated in Corner Brook
- cost of implementation is high relative to benefits derived
- it is not a growth opportunity which can likely be pursued with success

Should, however, it be desirous to pursue this development further, it is recommended that the following steps be taken:

- have Bowater define explicitly the overall benefits to that company
- determine extent of financial commitment from Bowater
- have Canadian National Railways assess financial benefit of additional newsprint traffic
- following satisfactory response from Bowater and CN, determine terms and conditions under which Transport Canada would support the development

Offshore Oil Exploration/Production Supply Base

The following conclusions were reached following the evaluation of supply base development in Corner Brook:

- Corner Brook can only participate as a supply base for activity relatively close to the City
- geographic location and type of activity, when it occurs, will determine the extent of Corner Brook's participation
- direct short-term benefits to Corner Brook would be small although potential benefits in the long-term would be significant
- this is an attractive growth possibility that Corner Brook should pursue and prepare for

Should this opportunity be pursued further, it is recommended that the following steps be taken:

- monitor progress of Atlantic oil exploration activity
- liaise with oil companies on this subject
- maintain flexible posture and be willing and able to respond to demand quickly
- plan for rapid transformation of existing water-front facilities to suitable offshore supply base facilities
- plan for relocation of businesses which would be displaced
- liaise with the Newfoundland Department of Industrial Development

PHYSICAL DEVELOPMENT

Until now general freight has been handled over wharves built in the area just east of Bowater. It is concluded that this area has very limited scope to accommodate further growth, primarily because of a shortage of back-up land behind the two

existing Transport Canada wharves. This situation has been in the forefront in examining the harbour for development sites.

Physical development along much of the waterfront of the Humber Arm is restricted by difficult conditions, involving steeply rising land, poor soils conditions and the steeply sloping sea bottom. While wharf construction is physically feasible, but costly in these areas, it is not easy or practical to provide sufficiently large back-up areas for viable operations. In addition, the provision of basic services, such as road and particularly rail, are difficult if not impossible along many stretches of the waterfront.

However, relief to this situation is provided by the Shoals (also called The Bar and the tidal flats) at the mouth of the Humber River at the east end of the Arm. There is shallow water over an area of approximately 600 acres, which includes Humbermouth, Wild Cove and Hughes Brook. Soil conditions on the Shoals are generally favourable for landfill and wharf construction, and the southern area can be served relatively simply by road, rail and other services. Advantage of these more favourable physical conditions is already being taken by the private sector.

In order to assist with achieving growth and development in the earlier noted economic areas, physical construction will be required and land must be created. It is concluded that this construction would best be centred on the southern Shoals.

It is also concluded that Church Cove is the best location for further marine development in Curling and that additional wharf facilities and land required by current and future industry in Curling should be provided initially in Church Cove. Road improvements both to Curling (from Corner Brook) and to the waterfront are considered necessary.

It appears that development on the Shoals represents a unique opportunity for physical port development in Newfoundland. With the general extremely rugged terrain and difficult conditions for on-shore development in the Humber Arm, it is fortunate that the Shoals area exists, and that the conditions on the Shoals are suitable from an engineering standpoint for construction. It is fair to say that without the Shoals, future development in the Humber Arm of marginal wharves with adequate land would be severely restricted and expensive.

Development of bulk product wharves, such as for oil, cement and other products which can be handled by pipeline or conveyor, is of course less difficult because wharf and land requirements are quite different.

The following recommendations are made:

1. With respect to development of the southern Shoals, further planning and pre-engineering work should be conducted with a view to the provision of the required new areas of land for marine and industrial use, as identified in the study. This work should include:

   - planning and close co-ordination with environmental agencies, including the provision by these agencies of firm environmental guidelines relating to landfill and the provision of land on the southern Shoals
   - hydrodynamic model studies to examine the effects of landfill in the Humber-mouth area and to provide a firm base for detailed layout of facilities
   - pre-engineering of the required facilities including wharves, truck terminals and the provision of services and utilities
   - detailed planning for the provision of a harbour service road linking the general cargo area with Riverside Drive (upgraded), with a connection to the proposed developed area in the Shoals
   - detailed planning with Canadian National for provision of rail service to the Shoals and relocation of some existing CN facilities to help provide room for the harbour service road
   - planning relating to land acquisition and general negotiations with involved parties, including for instance Lundrigans, CN and the City in connection with access to the Shoals
   - processing of applications for municipal, provincial and federal approvals and permits for the developments, including those to Transport Canada and Environment Canada

2. Wharf construction, landfill and road improvements should be carried out in Church Cove, Curling. Detailed planning should also be performed for this prospective development, including improvements to Curling Road.

3. The best location for a future controlled temperature shed and packaging plant for the Curling herring industry is Church Cove.

4. A complete relocation of the Montreal-Corner Brook water transport facilities (Western Terminals) should be made to the Shoals by the time the volume of annual freight

handled reaches approximately 95,000 tons per year. This may occur as follows:

Level 1	1983
Level 2	1981
Level 3	1979

At about 100,000 tons per annum, twice the 1974 amount of room for open and closed storage would be required and it is not possible to provide this space at the existing terminal.

5. The CN Coastal facilities should remain in their present location. Other facilities such as team tracks and offices should be relocated to allow for construction of a harbour service road.

6. The existing wharf and facilities at Western Terminals should become a Transport Canada icebreaker sub-agency wharf and, if the demand arises, a small scale supply base.

7. For further investigations relating to a railcar ferry, it is recommended that the Old Sheds Site be given first consideration as a future terminal site, with the Shoals area as an alternative.

8. Environmental data should be gathered for the entire Shoals area, to assist in preparing guidelines relative to possible future landfilling on the central and northern areas of the Shoals.

9. Further development on the Shoals should be given continued attention as time progresses. Environmental considerations, results of hydrodynamic studies, and future physical requirements should be used as a basis for determining patterns.

10. The physical feasibility and justification for a possible waterfront arterial route to Curling should be examined.