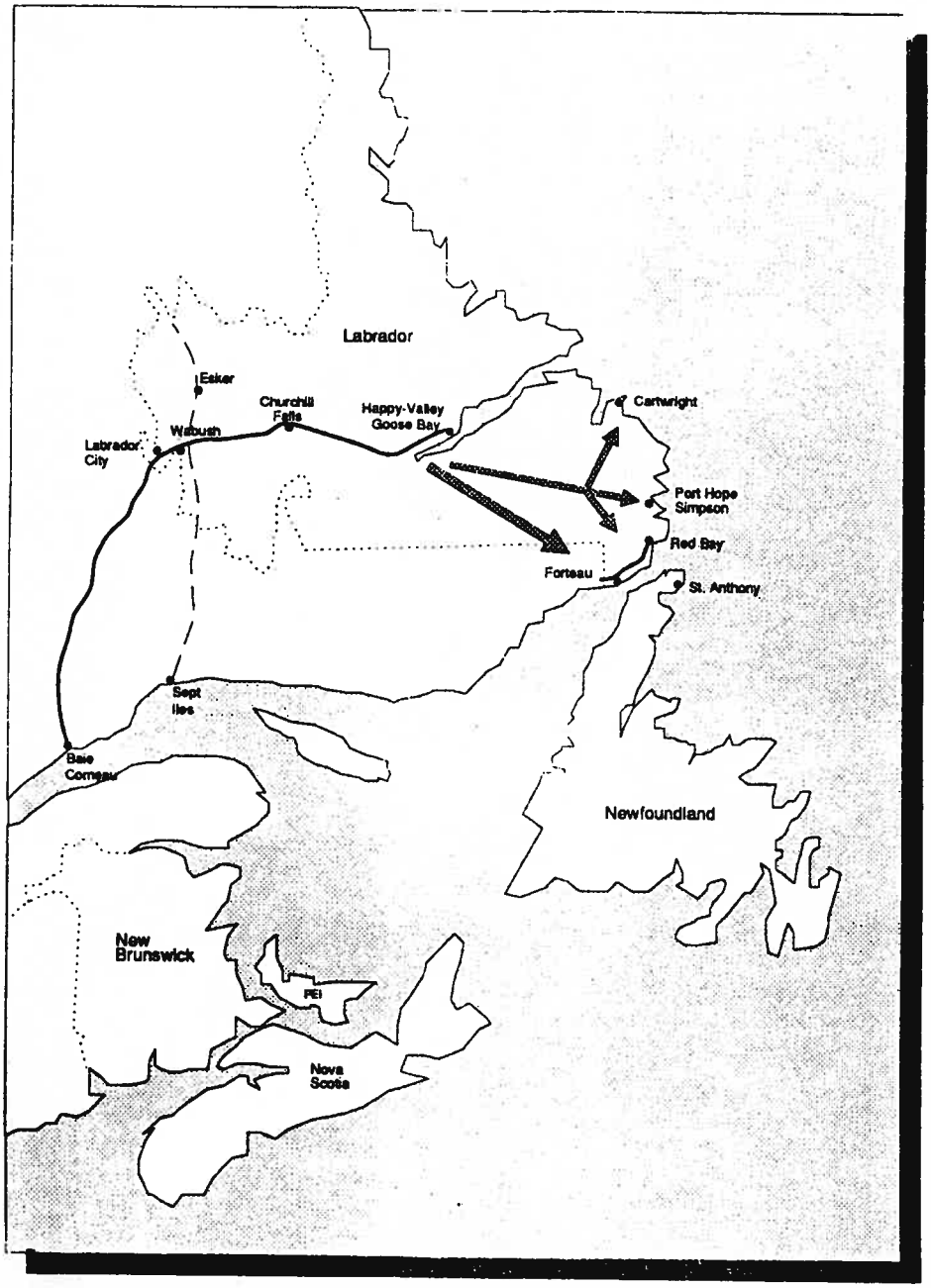
TRANS LABRADOR HIGHWAY

SOCIAL AND ECONOMIC PROJECT FEASIBILITY ANALYSIS

CONDENSED FINAL REPORT



January, 1993

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CONDENSED FINAL REPORT

TRANS LABRADOR HIGHWAY SOCIAL AND ECONOMIC PROJECT FEASIBILITY ANALYSIS

For:

Department of Works, Services and Transportation
Policy and Planning

Prepared By:

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In Association With:

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PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
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This Permit Allows
FIANDER-GOOD ASSOCIATES LTD.
To practice Professional Engineering
in Newfoundland and Labrador.
Permit No. as issued by APEGN A1050
which is valid for the year 1993.

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91-0651-01

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RE: TRANS LABRADOR HIGHWAY SOCIAL AND ECONOMIC PROJECT FEASIBILITY ANALYSIS

Dear Sirs:

I am pleased to enclose herewith our *Final Report* on this project.

I thank you for the opportunity to have assisted you with this challenging project. If we can be of further assistance, please contact me at your convenience.

Yours truly,

Allan Fiander, P.Eng.
President

bv

Encl.

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SUMMARY

1.0 INTRODUCTION

1.1 **Background** - This study entitled *Trans Labrador Highway Social and Economic Project Feasibility Analysis* was carried out under the Comprehensive Labrador Cooperation Agreement. The study was directed by an Advisory Committee composed of representatives from the Federal and Provincial Governments, the Joint Councils of Labrador, the Combined Councils of Labrador, and the Labrador Community Futures Committee.

1.2 **Objective** - As stated in the Terms of Reference, the objective of this study was:

> *"to establish a reasonably accurate forecast of the social and economic impacts of a Trans Labrador Highway, constructed and maintained at national highway policy standards. The impacts on tourism, resource development and other economic development are to be quantified, translated to dollars, and used in a cost benefit analysis with a thirty year life for the highway"*

In addition, non-quantifiable positive and negative social and economic impacts are noted.

1.3 **Highway Development Options Evaluated** - In accordance with the Terms of Reference, the project included evaluating the impact of the following three primary options for development of a Trans Labrador Highway:

1). ***"Coastal Access" Option 1***: Developing a new road corridor to National Highway Policy Standards from Happy Valley-Goose Bay to the Straits (with a crossing of the Churchill River at Muskrat Falls). The primary trunk would join the existing road network at Red Bay and provide connectors to Cartwright, Charlottetown, Port Hope Simpson and Mary's Harbour/Lodge Bay. This option includes upgrading the existing facilities between Baie-Comeau and Goose Bay to the same National Highway Systems Standards.

2). **Option 2**: Upgrading the existing Trans Labrador Highway between **Baie-Comeau and Happy Valley-Goose Bay** to National Highway Policy Standards.

3). ***"Direct Link"* Option 3**: Developing a new road corridor to National Highway Standards from Happy Valley-Goose Bay to the Straits (crossing the Churchill River at Muskrat Falls) along a generally direct and straight link between Muskrat Falls and Forteau. This concept also includes upgrading the existing Baie-Comeau to Goose Bay facilities, but it does not provide connectors to the communities along the South Coast of Labrador, as would be the case with **Option 1**.

2.0 PROFILE OF EXISTING TRANSPORTATION FACILITIES AND SERVICES

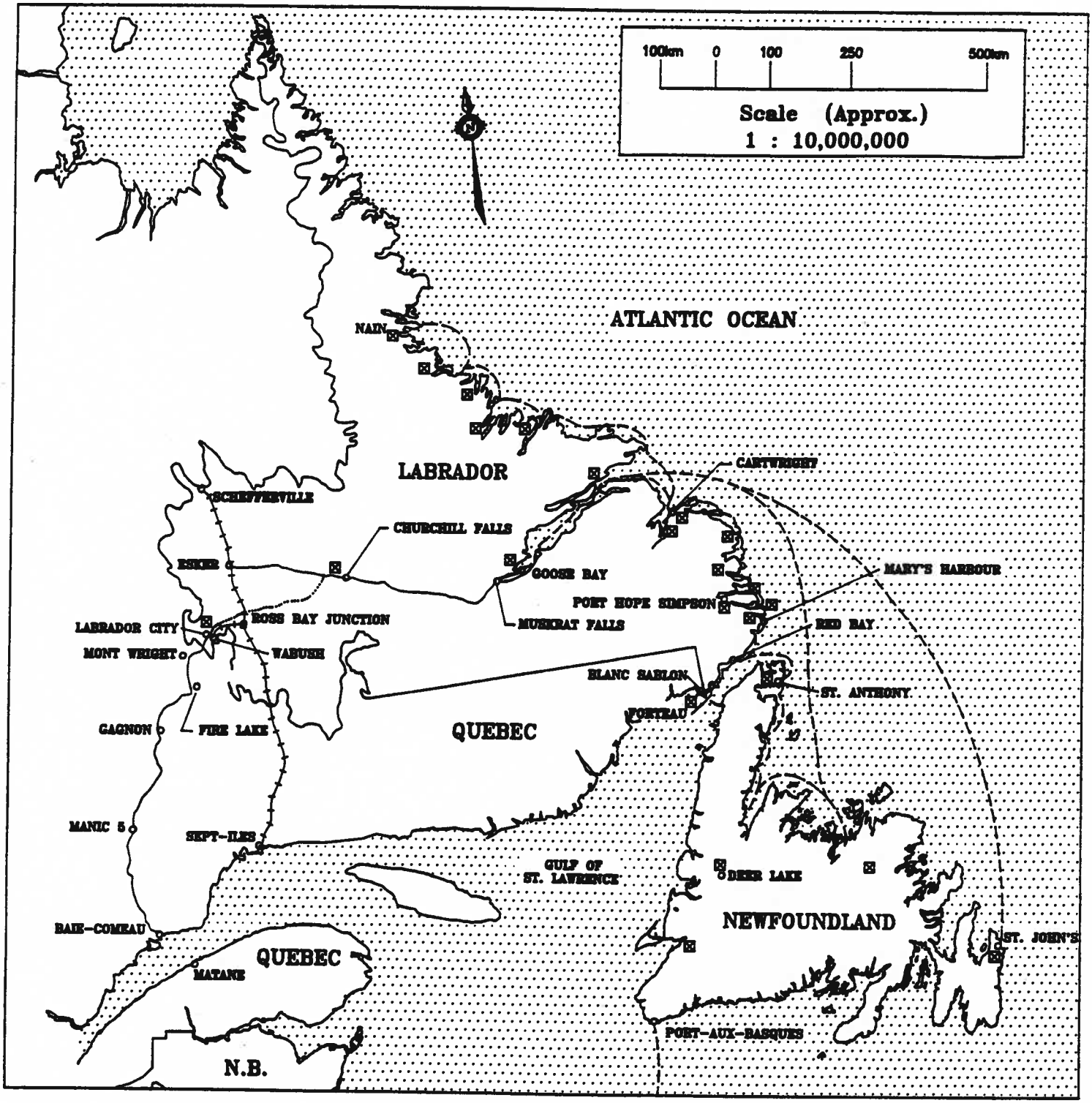
Figure 1 provides an illustration of Labrador's existing regional transportation facilities and linkages. An overview of these modal linkages and services is critical to understanding the context into which the Trans Labrador Highway (TLH) must fit. This overview is also critical to appreciating the intermodal impacts and trade-offs which have been integrated into the economic analysis.

Summary profiles were prepared for the existing transportation modal infrastructure and the services and utilization patterns applicable to each of the following five distinct regions of Labrador: Labrador West, Central Labrador, the North Coast, the South Coast, and the Straits Region. The evaluations of impacts of a Trans Labrador Highway were based on the unique characteristics of each of these regions.

3.0 HIGHWAY IMPROVEMENT REQUIREMENTS.

3.1 Components of the TLH Network: The components of the Trans Labrador Highway are illustrated in **Figure 2**. The potential development options for the Trans Labrador Highway include both upgrading and new route development elements.

Upgrading of Existing Routes: As indicated in **Section 1.3**, upgrading of the existing facilities west of Goose Bay is an integral part of all three development options



LEGEND:

- EXISTING ROAD
- RAILROAD
- COASTAL FREIGHTER/FERRY
- AIRPORT LOCATION
- ROAD UNDER CONSTRUCTION (OPENED IN SUMMER OF 1992)

FIGURE 1
EXISTING TRANSPORTATION FACILITIES AND LINKAGES IN LABRADOR

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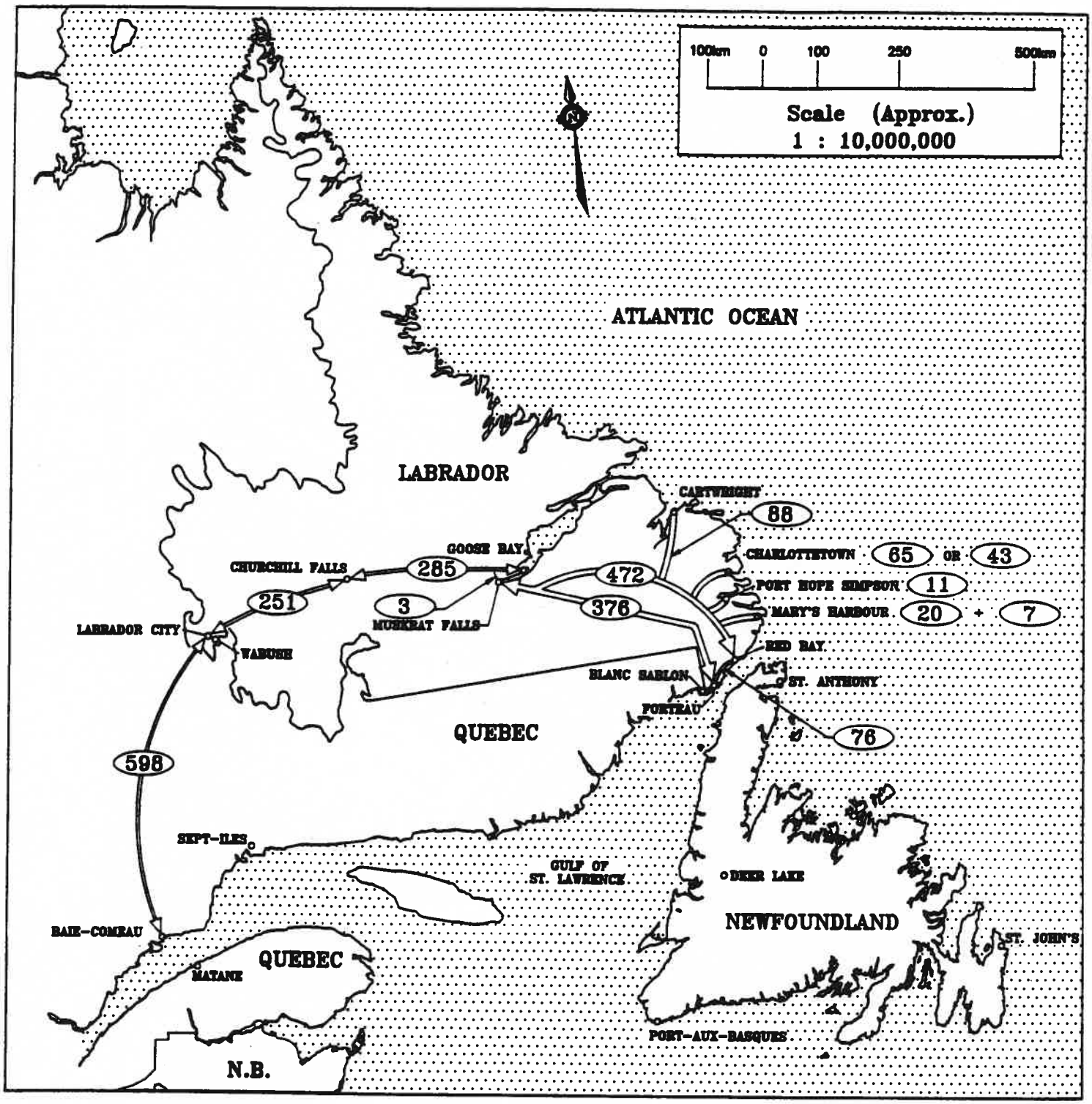

LEGEND:

- ⟺ — KEY SEGMENT OF NEW ALIGNMENT
- ⟺ — KEY SEGMENT OF UPGRADING
- (285) — LINK DISTANCE (Km)

FIGURE 2

MAJOR SEGMENTS OF TRANS LABRADOR HIGHWAY

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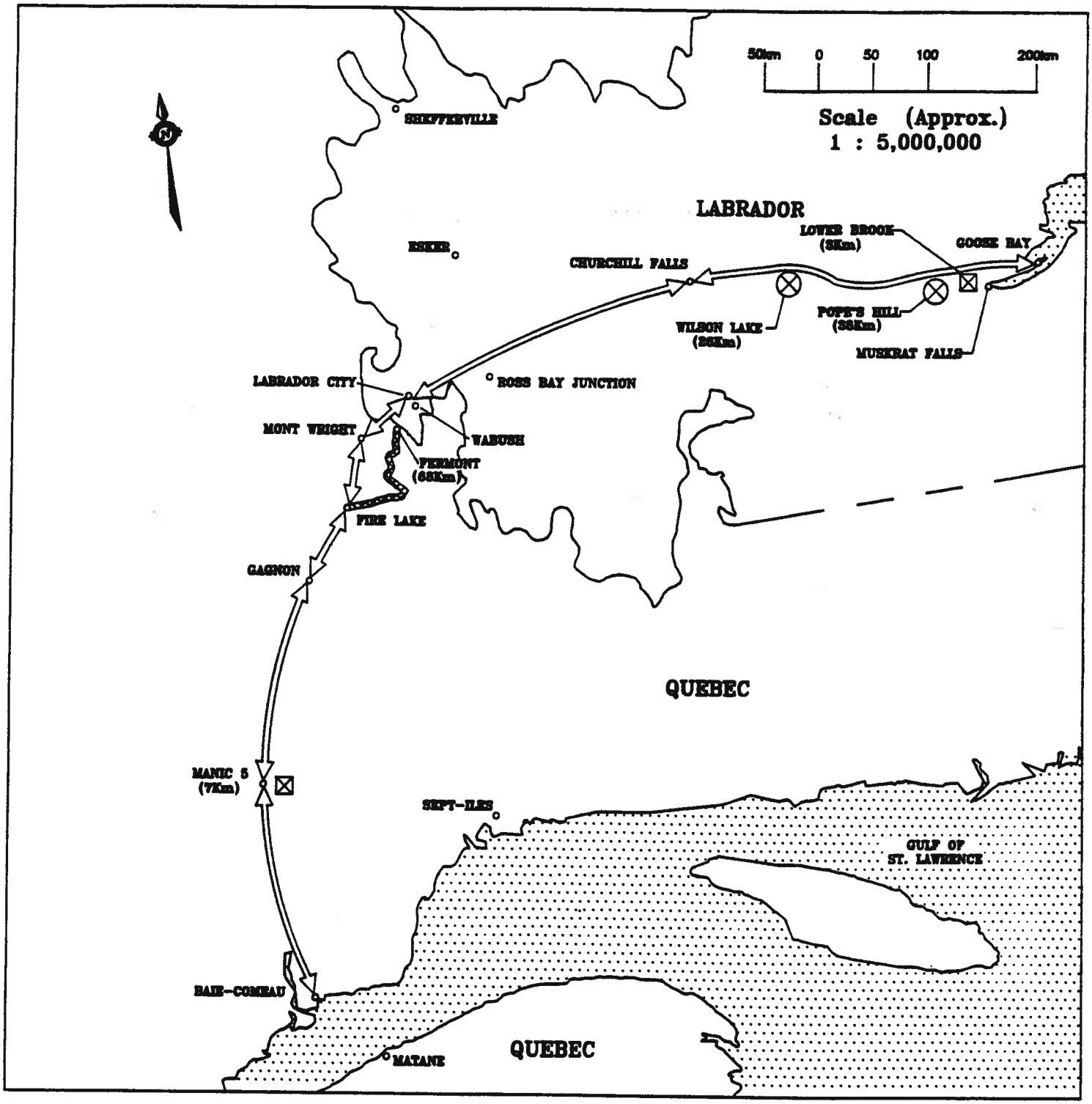
considered for the Trans Labrador Highway. Much of this existing route between Baie-Comeau and Goose Bay can be upgraded to National Highway System Standards by general realignment and upgrading of the existing facilities. However, in certain locations it is not feasible to upgrade along the existing route. At these locations total relocation, or realignment, will be required. These relocations would effectively involve diverting around the existing facility in order to achieve a more cost-effective approach to improving the standards to the level desired. **Figure 3** illustrates the five specific areas where realignments are proposed.

New Route Options (Goose Bay to Forteau/Red Bay): In addition to upgrading the existing facilities between Baie-Comeau and Goose Bay, the "***Coastal Access***" **Option 1,** includes locating a new road corridor from Happy Valley-Goose Bay (over the Churchill River at Muskrat Falls) to Red Bay. This option also provides connector routes to the following communities along the South Coast of Labrador: Paradise River, Cartwright, Charlottetown, Port Hope Simpson, Mary's Harbour and Lodge Bay. The general location of this new route component of **Option 1** is illustrated in **Figure 4**. This alignment provides a good compromise in terms of: providing a reasonably direct (although slightly arced) linkage between Goose Bay (via Muskrat Falls) and the Strait of Belle Isle; giving good, reasonably close, access between the main route corridor and six of the larger coastal communities between Red Bay and Cartwright (with connector roads to additional communities being possible in the future); and providing improved access to the natural resources (ie. forestry, fish and game, and other tourism opportunities) in the coastal and inland areas.

The "***Direct Link***" **Option 3** provides an extension of the Trans Labrador Highway from Goose Bay to Forteau. Although a preliminary corridor location for the **Option 3,** "***Direct Link***" was provided by the client, substantial adjustments were made in its location because of changes in some of the major constraints to route location regarding the impacts of relatively recent modifications in the long range plans for hydro power developments in southeast Labrador.

General Comparison of Options: **Table 1** summarizes the length characteristics of the major sections of the three options for development of the Trans Labrador Highway. These major segments are illustrated in **Figure 2**.



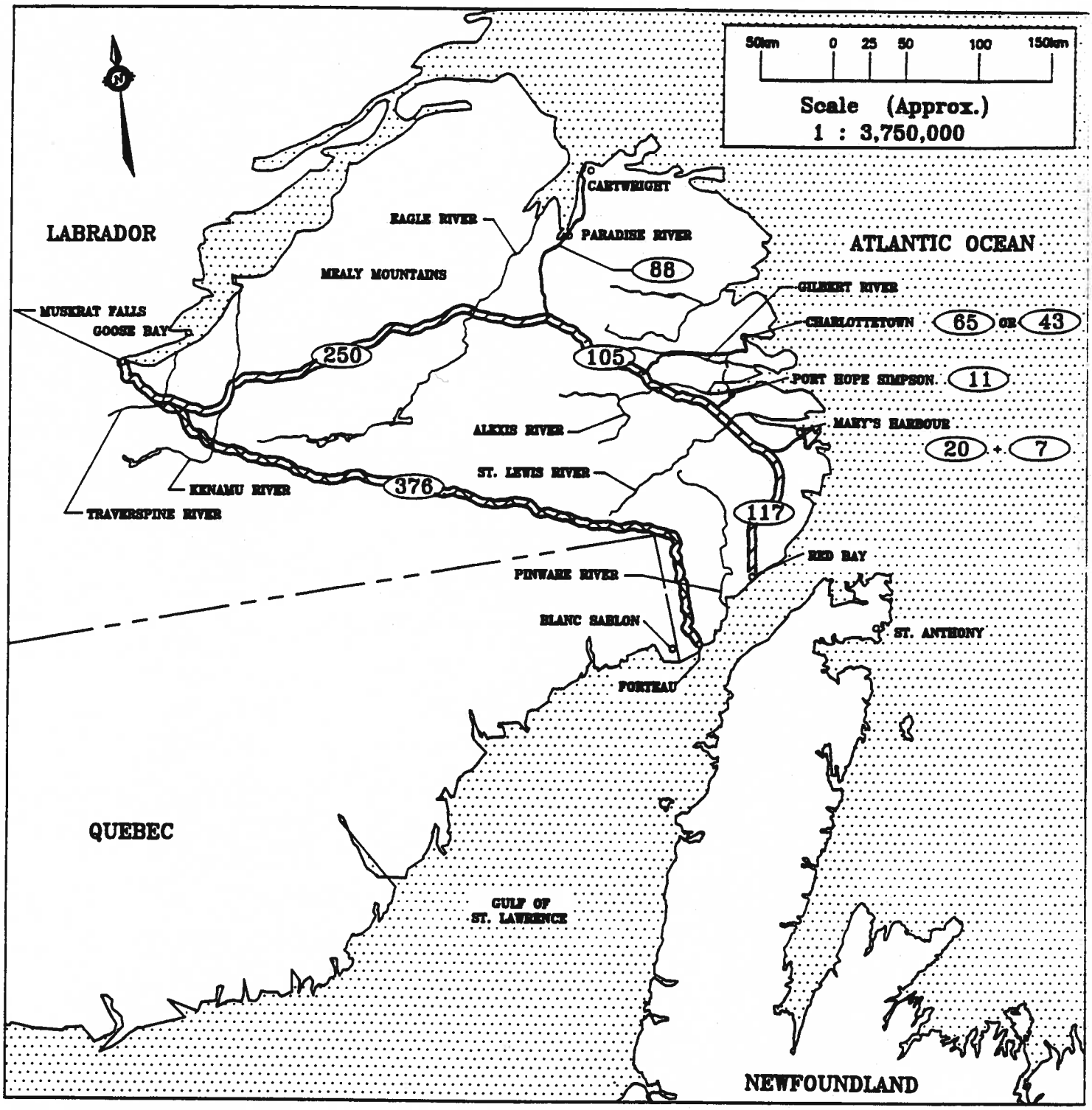
LEGEND:

⊠ – SHORT LENGTH REALIGNMENT

⊗ – MEDIUM LENGTH REALIGNMENT

▬ – LONG LENGTH REALIGNMENT

FIGURE 3
SECTIONS OF UPGRADING WHERE MAJOR REALIGNMENT IS DESIRABLE



LEGEND:

- COASTAL ACCESS OPTION
- DIRECT LINK OPTION
- OPTIONAL CONNECTOR
- (179) LINK DISTANCES

FIGURE 4

LINK DISTANCES FOR NEW CORRIDORS TO THE STRAIT OF BELLE ISLE

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TABLE 1

SUMMARY OF UPGRADING AND NEW ALIGNMENT REQUIREMENTS FOR THE TRANS LABRADOR HIGHWAY (BASED ON EXISTING DISTANCES)

		Length (km)		
		Option 1	Option 2	Option 3
Type of Work	Location	*"Coastal Access"*	*"Baie-Comeau to Goose Bay"*	*"Direct Link"*
Upgrading[1]	Baie-Comeau to Goose Bay	1,134	1,134	1,134
	Red Bay to Forteau/L'Anse-au-Clair[2]	76	–	–
	Subtotal	**1,210**	**1,134**	**1,134**
New Alignment (main route)[3]	Freedom Road (at Muskrat Falls) to Red Bay	475	–	379
	Primary Connectors to Cartwright, Port Hope Simpson and Mary's Harbour	119	–	–
	Subtotal	**594**	–	**379**
	OVERALL TOTAL	**1,804**	**1,134**	**1,513**

1 The distances quoted in this table for upgrading are the distances based on the length along the existing routes (ie. ignoring potential adjustments in route lengths in the 5 areas where realignment is required).

2 This actually includes 1.5 km in Quebec to upgrade the linkage to the ferry at Blanc Sablon.

3 In addition to these main (or trunk) route requirements, the *"Coastal Access"* option could provide access to St. Lewis (Fox Harbour) with an additional separate 53 km connector from Port Hope Simpson and to Lodge Bay with upgrading of about 7 km of existing roadway.

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3.2 Phasing of Highway Development - Given the high magnitude of costs for any of the three development options for the TLH, the extensive length of the TLH network, the sparseness and low densities of population in Labrador and the large distances between the small communities of Labrador, it was recommended that the TLH be developed in a phased approach. The following construction phasing program was proposed and approved by the Steering Committees:

1). the project be developed in three phases with the entire TLH system generally being fully developed to each phase before developing any of the highway network to the next phase;

2). that the phases be:

- **Phase 1** - develop to a **roadbed 9.0 m wide at the top of subgrade** (which is consistent with the standard of highway on the recently completed section in the Ossokmanuan Reservoir area);
- **Phase 2 - pave this 9.0 m wide roadbed;**
- **Phase 3 - upgrade** all appropriate geometric and roadway structure characteristics **to achieve National Highway Standards** (ie. RAU 90/100).

Given the general magnitude of construction costs and the objective of limiting the implementation period to about 20 years, the implementation strategy was based on a phasing scheme which would involve an expenditure program of approximately $100 million per year. This phased approach has the key advantage of: a). allowing development of an overall network much earlier than would be achieved if a non-phased approach were utilized (ie. a complete highway network could be developed in 4 to 5 years compared to 18 to 23 years); and b). achieving the potential user, mode shift, business and developmental benefits earlier in the analysis time frame, thus increasing positive benefits early in the life of the project which enhances the overall economic viability of the Trans Labrador Highway.

3.3 Capital Cost Summary - Figure 5 summarizes the results of the overall evaluation of costs for highway and bridge construction for each of the three phases of the three

highway development options for the Trans Labrador Highway. The numbers illustrated in these figures include a 10 percent allowance for design and engineering costs. Based on the phase totals illustrated in **Figure 5** for each option, it can be noted that:

1). The total estimated costs for the three Trans Labrador Highway development options range from a low of $1.1 billion for the "***Baie-Comeau to Goose Bay***" **Option 2** to a high of $2.2 billion for the "***Coastal Access***" **Option 1**, with the cost of the "***Direct Link***" **Option 3** being about $1.8 billion.

2). The relative share of total cost associated with each of the three phases of development is fairly consistent for the three options. With the proposed three stage phasing program, the entire Trans Labrador Highway system can be implemented to Phase 1 (ie. 9.0 m wide subgrade) from anywhere between 16 and about 22 percent of the total cost for any of the three options. For each of the three options, the paving (ie. **Phase 2**) associated with the 9.0 m subgrade system represents between 13-14 percent of the total cost for each respective option. Therefore, the total cost associated with the 9.0 m wide subgrade system represents approximately only 1/3 of the total cost. The remaining 2/3 of the costs relate to Phase 3 of the program which involves upgrading the 9.0 m subgrade to the National Highway Standard characteristics.

Figure 6 shows the breakdown of the construction costs for full development to National Highway System Standards associated with the portions of the TLH in Labrador and Quebec. The total expenditures required to upgrade the portion of the TLH in Quebec, between Baie-Comeau and the border between Fermont and Labrador City is $470.3 million. This Quebec portion of total capital costs represents about 21, 43 and 26 percent of the total project costs for Options 1 to 3, respectively.

3.4 **Implementation Strategy** - Based on the cost estimates identified in **Figure 5**, and an assumed average annual capital construction program of $100 million per year, the times required to complete each of the three major phases of the project were calculated for

Figure 5
Trans Labrador Highway
Construction Costs ($1992)

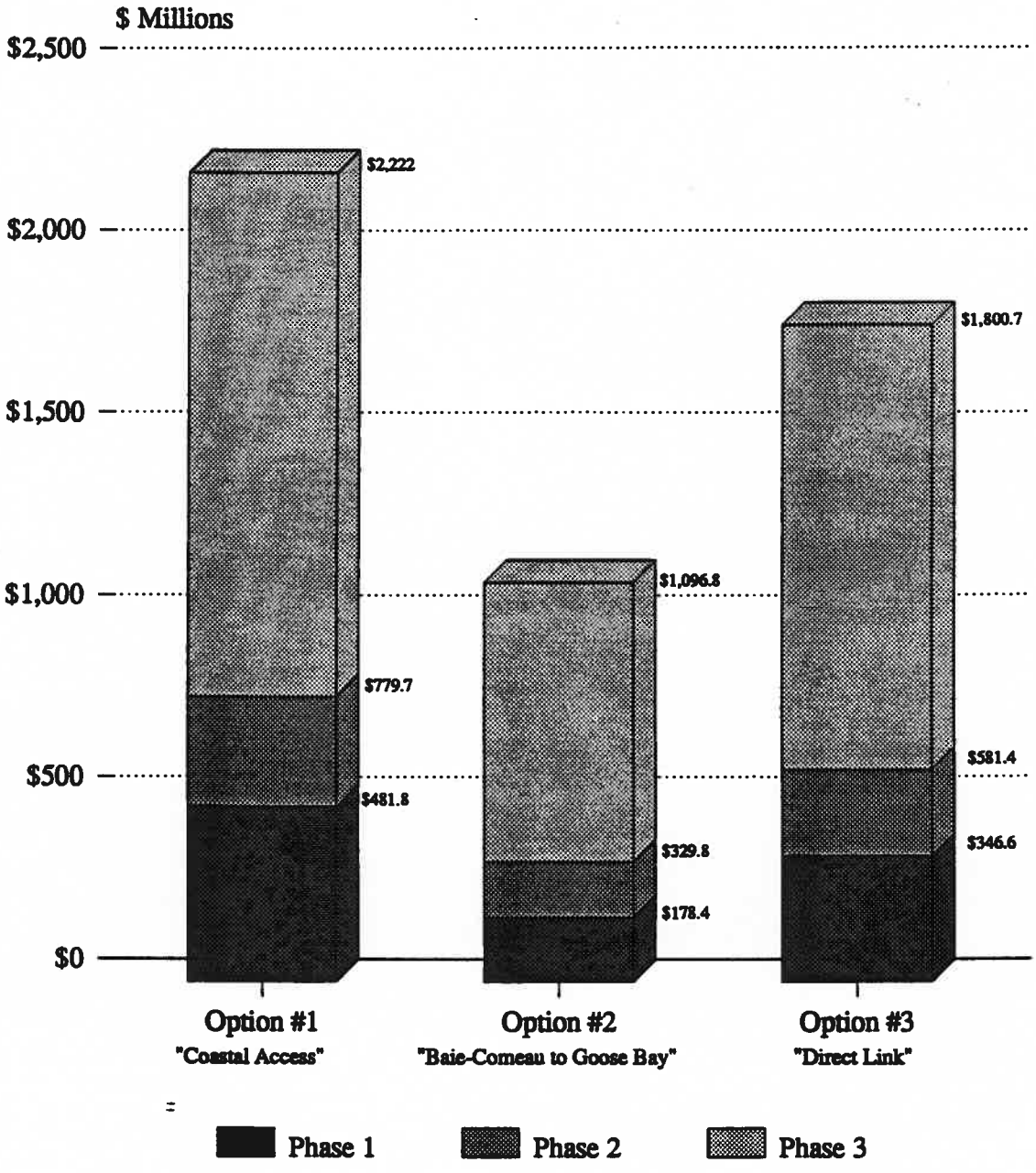

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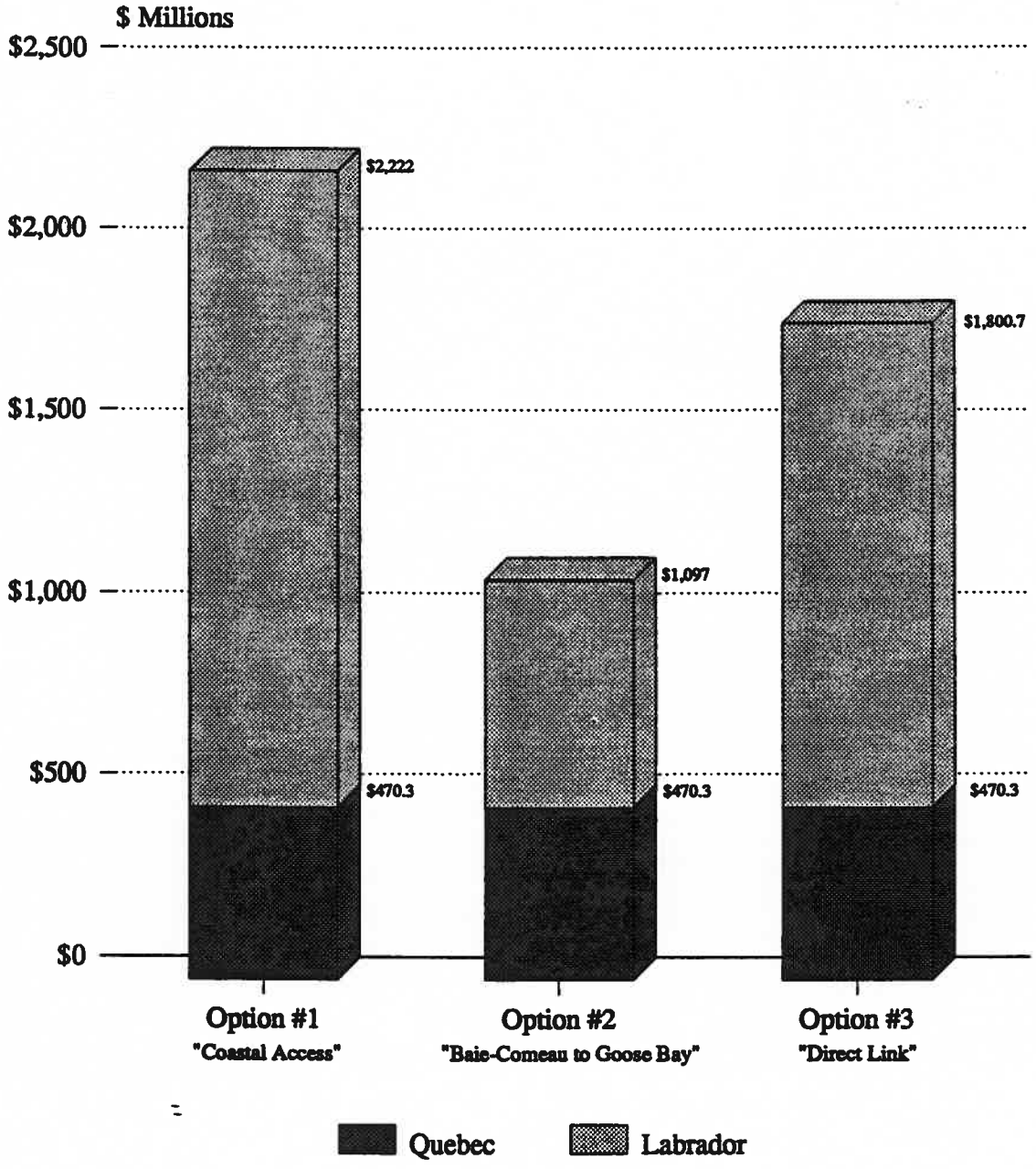
Figure 6
Geographical Breakdown of TLH Construction Costs ($1992)



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each of the three Trans Labrador Highway development options. Based on assumed construction initiation in 1995, this information indicates that:

1). The "*Baie-Comeau to Goose Bay*" Option 2 could be completed in the shortest year time frame (ie. in 11 years). This implementation schedule which would attain project completion by Year 2005 recognizes that there is some overlap of activity during the interface between each of the three phases.

2). For the "*Coastal Access*" Option 1, the overall implementation period would span 23 years, with the "*Direct Link*" Option 3 requiring 18 years to complete.

A comprehensive construction implementation schedule was prepared for each of the three Trans Labrador Highway development options based on a detailed, link-by-link, analysis of several criteria including: budgetary constraints; economic priority; traffic demand; existing infrastructural condition; engineering rationale; and regional distribution.

4.0 ENVIRONMENTAL CONSTRAINTS ASSESSMENT

Both the upgrading of existing facilities and the location of corridors for the new alignment components of the TLH development options were evaluated with respect to preliminary environmental constraints to such development. Primary biophysical constraints were used to assist in identifying areas to be avoided regarding new route development. Similarly, in cases of upgrading existing routes, the availability of known constraints along the existing corridor were used to formulate guidelines for appropriate mitigative measures.

The environmental constraints available for this study process included: water fowl staging areas; moose wintering areas; caribou migration and wintering patterns; fresh water fisheries; and commercial forest operations. In addition to the biophysical constraints, this environmental assessment was supplemented by similar evaluations of the constraints relating to native land use and occupancy.

Although avoidance of significant environmentally sensitive areas has been integrated into the route location process, suggestions for mitigative measures are identified and guidelines for an Environmental Protection Plan (EPP) have been recommended. These guidelines identify required precautions associated with specific sites and specific construction stages/activities. The proposed EPP would provide a comprehensive, field-usable, document that facilitates the mitigation of predicted environmental impacts both during construction, and subsequently during the operational phase. Specific elements requiring mitigative measures to be detailed during subsequent phases of the planning and design for this project are identified.

5.0 QUANTIFIABLE HIGHWAY BENEFITS

The quantifiable benefits to be derived from potential development of the Trans Labrador Highway include:

- **Highway User Benefits** including vehicle operating cost savings, travel time savings, accident cost savings and highway maintenance cost savings;

- **Transport Mode Shift Cost Savings** including those relating to transfers to road from the rail, marine and air modes. Separate analyses were undertaken for each of the **passenger** travel mode shift cost savings and the **freight** transport mode shift cost savings; and

- **Economic Benefits** which are derived from new business development opportunities as well as from the expansion of, and improvements to, existing business.

The analysis of impacts (ie. benefits and costs) for all three of the above major benefit categories was based on a detailed, link-by-link breakdown of each of the three TLH development options and recognizes the similarly detailed implementation strategy. The developmental related economic impacts (ie. for business expansion and new business opportunities) were calculated on the basis of a detailed assessment of each of nine sectors of the Labrador economy.

6.0 BENEFIT-COST ANALYSIS OF IMPACTS TO LABRADOR

All discounted costs and benefits associated with the economic impacts attributable directly to the Labrador area were summarized for each of the three TLH development options. Other economic impacts to areas outside Labrador (ie. the Island of Newfoundland, Quebec and Canada as a whole) are noted in **Section 7.0**. All present values of the highway costs and benefits were discounted at ten percent and five percent discount rates.

6.1 **Highway Costs** - Highway costs are composed of the annual highway construction and maintenance expenditures. Annual highway construction expenditures occur only during the respective construction periods of each TLH development option. However, highway maintenance costs are annual expenses subsequent to development of each option and continue throughout the 30 year analysis period.

For all three options, the majority of the present value highway costs are the construction costs. This is illustrated in **Figure 7** for each option and at both the five percent and ten percent discount rates. **Figure 7** clearly shows that the discounted highway maintenance costs represent only three to four percent of the total discounted construction and maintenance costs during the 30 year analysis period.

6.2 **Highway Benefits** - The shares of total benefits in each of the three major categories of benefits (ie. user, mode shift and economic) are illustrated in **Figure 8**. The economic benefits to Labrador from new business development and business improvements constitute approximately half of the total highway benefits for TLH development **Options 1 and 3**. However, the economic benefits to Labrador are proportionally less for the **"*Baie-Comeau to Goose Bay*" Option 2**. Generally, for all three options, the user and mode shift cost savings each represent about one quarter of the total benefits.

Figure 8 also indicates the substantially lower level of total benefits derived from the **"*Baie-Comeau to Goose Bay*" Option 2**, in comparison to the two other options.

Figure 7
Present Value of Trans Labrador Highway Costs per Option
(Based on 5% and 10% Discount Rates)

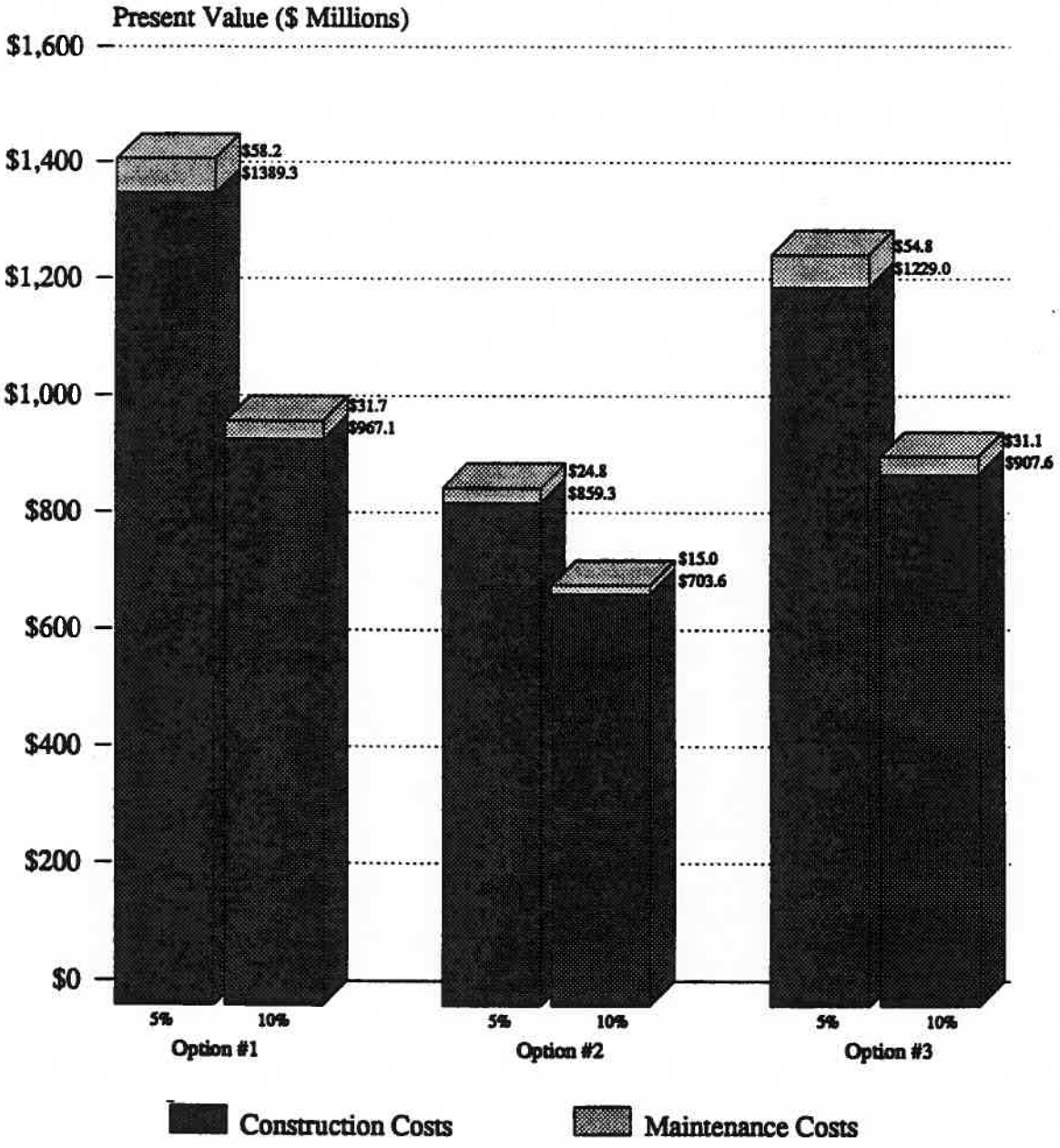

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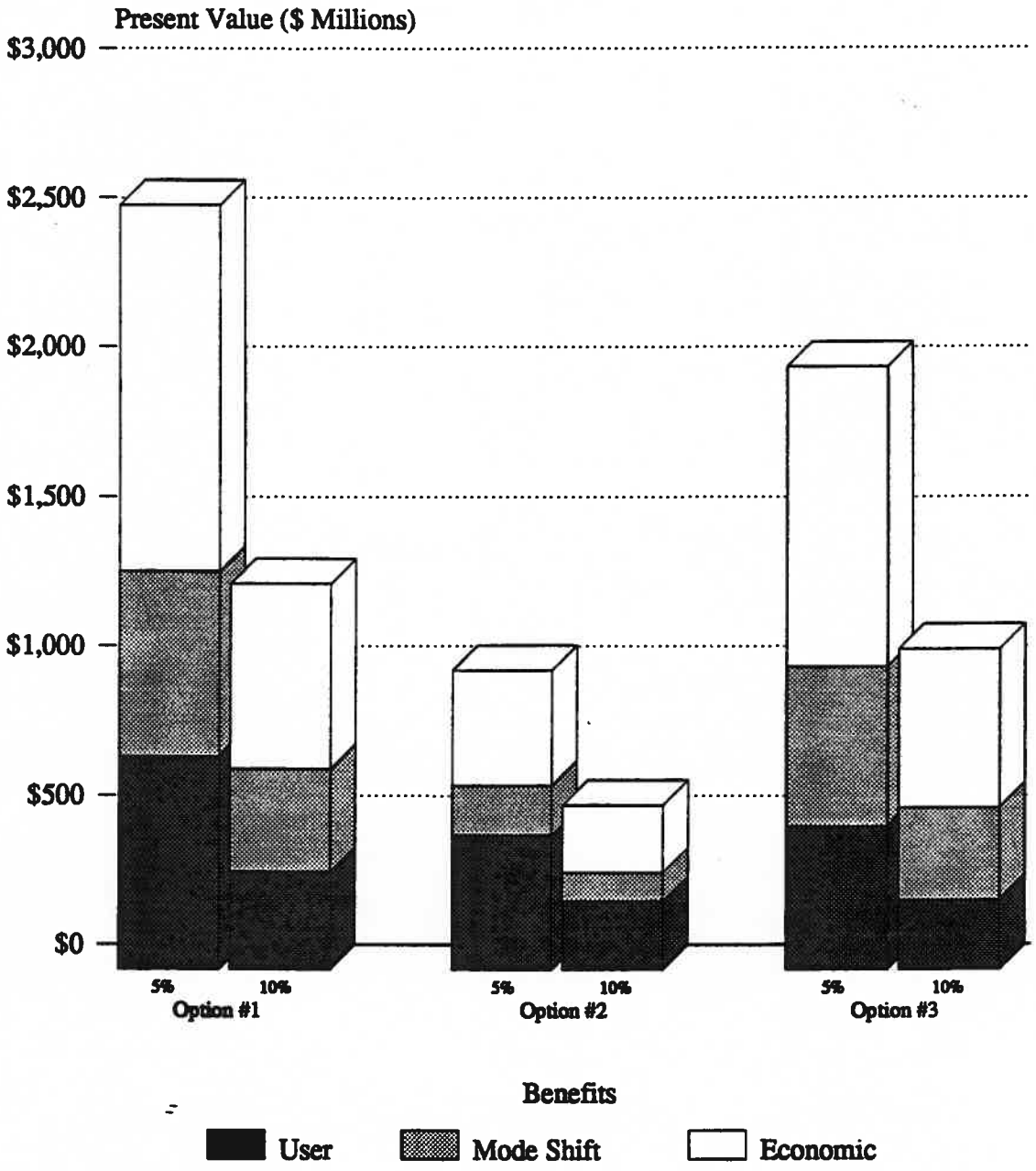
Figure 8
Present Value of Trans Labrador Highway Benefits to Labrador
(Based on 5% and 10% Discount Rates)



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7.0 OTHER IMPACTS

7.1 Introduction - In addition to the TLH's ability to generate quantifiable economic benefits of substantial magnitude for the Labrador area, there are also other substantial quantifiable impacts associated with the TLH development project, namely:

1. Economic Impacts Outside Labrador - the economic benefits facilitated by the TLH, which are generated outside Labrador on the Island of Newfoundland, within Quebec and Canada as a whole; and

2. Highway Construction Impacts - the direct and indirect expenditures and employment generated from the public investment in the TLH during the three consecutive and overlapping construction phases.

7.2 Economic Benefits Outside Labrador - The principal beneficiary of the TLH project is Labrador. However, there are also additional economic benefits, which would clearly be achieved within Quebec, on insular Newfoundland, and elsewhere in Canada.

Island of Newfoundland: Benefits and disbenefits (ie. negative impacts or costs) to the Island part of the Province have been considered. These include **benefits** in terms of: a). the attraction of additional tourist traffic; and b). **disbenefits** in terms of: reductions in activity related to marine transportation; reductions in wholesaling margins; and diversion of some tourist traffic.

The indirect and induced effects of the TLH related business development on the Island of Newfoundland, as well as the total benefits to the Province as a whole, were calculated. The result of this analysis indicates a net loss to the Island of Newfoundland.

Quebec: There are a number of benefits and costs to the Province of Quebec, other than those associated with the building of the road, which have been estimated along the same lines as for Labrador. In particular, estimates were made for the tourism sector, mineral exploration, wholesale trade, construction and government expenditures. These estimates

included: a). benefits generated in Quebec; and b). indirect benefits to Quebec from Newfoundland developments.

Canada: Economic activity in one province produces indirect economic activity in all other parts of Canada. As in the case of Quebec, the measure of these indirect effects to other parts of Canada were calculated. These estimates of benefits to areas of Canada other than Labrador, insular Newfoundland and Quebec were restricted to cases where there would be a net increase in the goods and services produced from a national perspective. Care was taken to avoid including shifts in production from one area of the country to another.

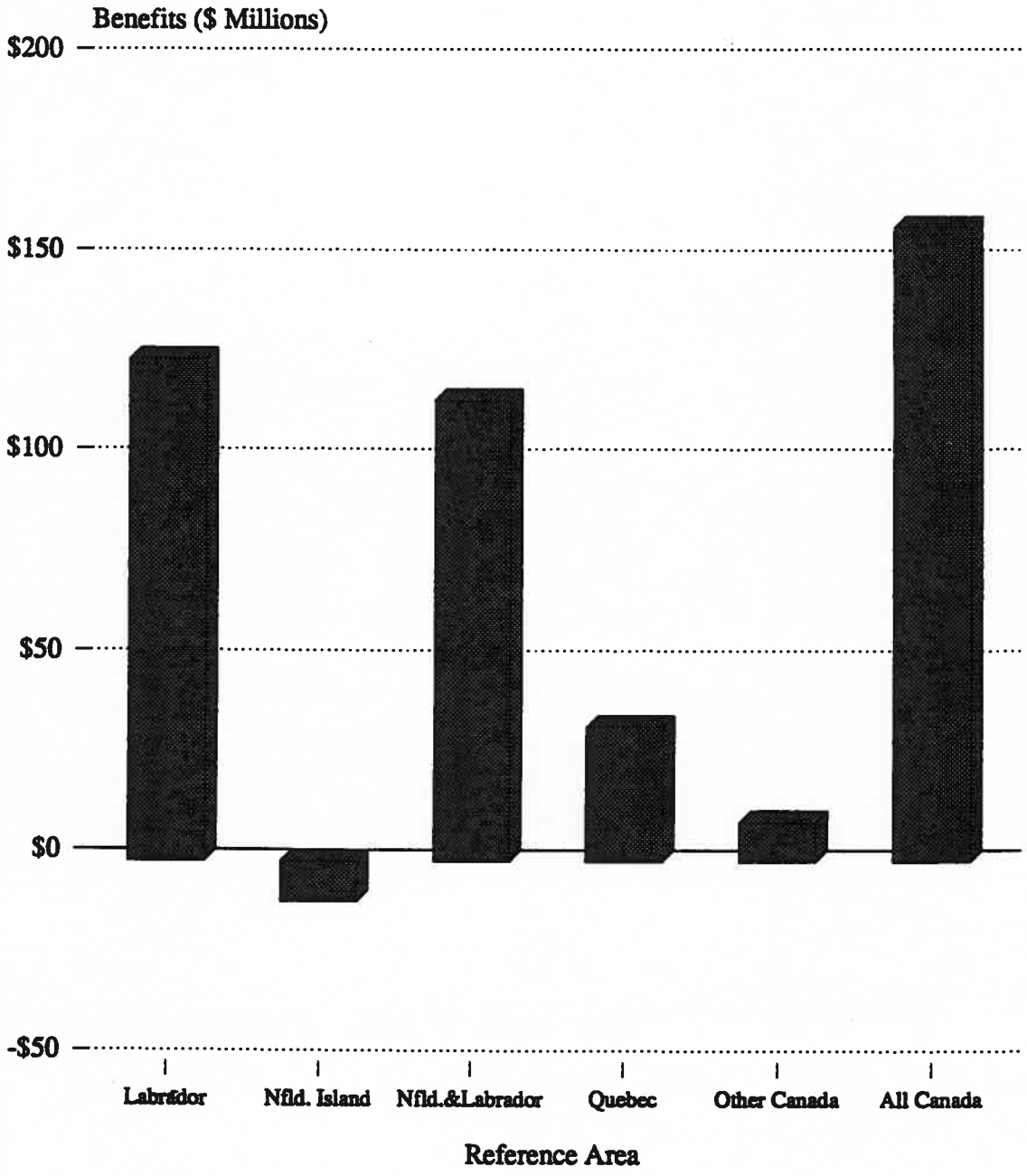
7.3 **Summary of Economic Impacts** - The economic impacts summarized included benefits, net present values (ie. discounted benefits minus discounted costs) and benefit/cost ratios.

Benefits: Direct and indirect economic benefits and disbenefits of the TLH have been determined from the perspective of various potential reference areas for the study (as illustrated for the "***Coastal Access***" **Option 1** in **Figure 9**). From the standpoint of the Province of Newfoundland and Labrador reference area, a maximum impact of a net loss of $10.1 million on the Island of Newfoundland is expected to occur annually upon completion of Phase 3 of the TLH "***Coastal Access***" **Option 1**. This loss would be taken from Labrador's annual economic development and business improvement benefits of $125.1 million, resulting in a net overall benefit to the Province of Newfoundland and Labrador of about $115 million annually shown in **Figure 9**.

From the Federal perspective, direct and indirect positive benefits realized in Quebec and other parts of Canada would in combination amount to $43.6 million per annum upon completion of Phase 3 of **Option 1**. Therefore, the annual economic benefits upon completion of Phase 3 of TLH **Option 1**, from the Provincial and Federal perspectives would be $115.0 million and $158.6 million respectively, as illustrated in **Figure 9**.

Net Present Values: Recognizing the detail inherent in the phasing program, the implementation strategy and the changes in user costs, mode shift costs and economic development impacts as affected by the phasing and implementation strategies; the overall net present values of the discounted time streams of all costs (including

Figure 9
Annual Economic Benefits
of the "Coastal Access" Option 1



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construction and maintenance) and all benefits were calculated. The results of this analysis determined the Net Present Values (ie. discounted benefits minus discounted costs) for each of the three development options. This analysis was done for each of three geographic reference areas (ie. Labrador, Newfoundland and Labrador, and Canada as a whole). Furthermore, the results were established for both ten percent and five percent discount rates - the results of which are illustrated in **Figures 10** and **11**, respectively. These figures clearly illustrate the substantially greater benefits associated with a five percent discount rate compared to the ten percent rate. It is also clear that:

1). The "***Baie-Comeau to Goose Bay***" **Option 2** creates the lowest net positive impact of the three options. In fact, at a ten percent discount rate (in **Figure 10**) the net present values for **Option 2** are negative from the Labrador and the provincial perspectives, with only a nominal positive impact even from the national perspective.

2). For all cases, the net present values (ie. discounted benefits minus discounted costs), are greatest when viewed from a national perspective. This results from the spin-off effects generated for Quebec and the rest of Canada.

3). From the provincial perspective, these positive impacts are somewhat less than for Labrador on its own. This results because of the negative impact on the island due to losses in some activity associated with the marine transportation services and some of the distribution/wholesaling functions which have traditionally been done from the Island of Newfoundland. There is also potential for the island to suffer a nominal loss in tourism activity, although this will be counter-balanced by an increase in the great circle/loop tourism potential.

4). Clearly, the "***Baie-Comeau to Goose Bay***" **Option 2** does not compare at all to the other two options. Of the other two, The ***"Coastal Access"*** **Option 1** provides substantial greater positive economic impacts than would be the case for the "***Direct Link***" **Option 3**. The superior performance of **Option 1** relative to

Figure 10
Net Present Values for TLH Options
(i.e. Benefits Minus Costs)
Based on a 10 Percent Discount Rate

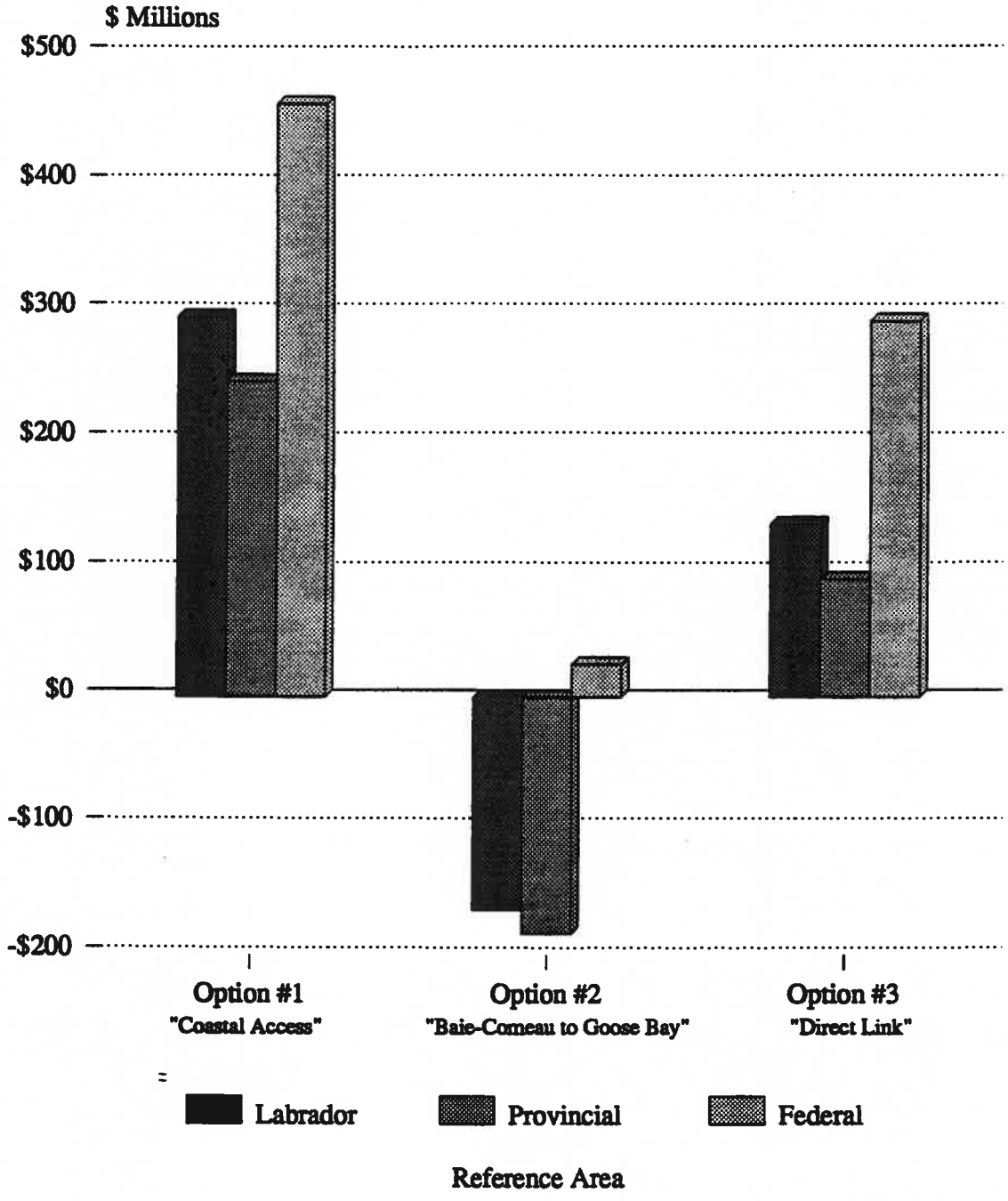
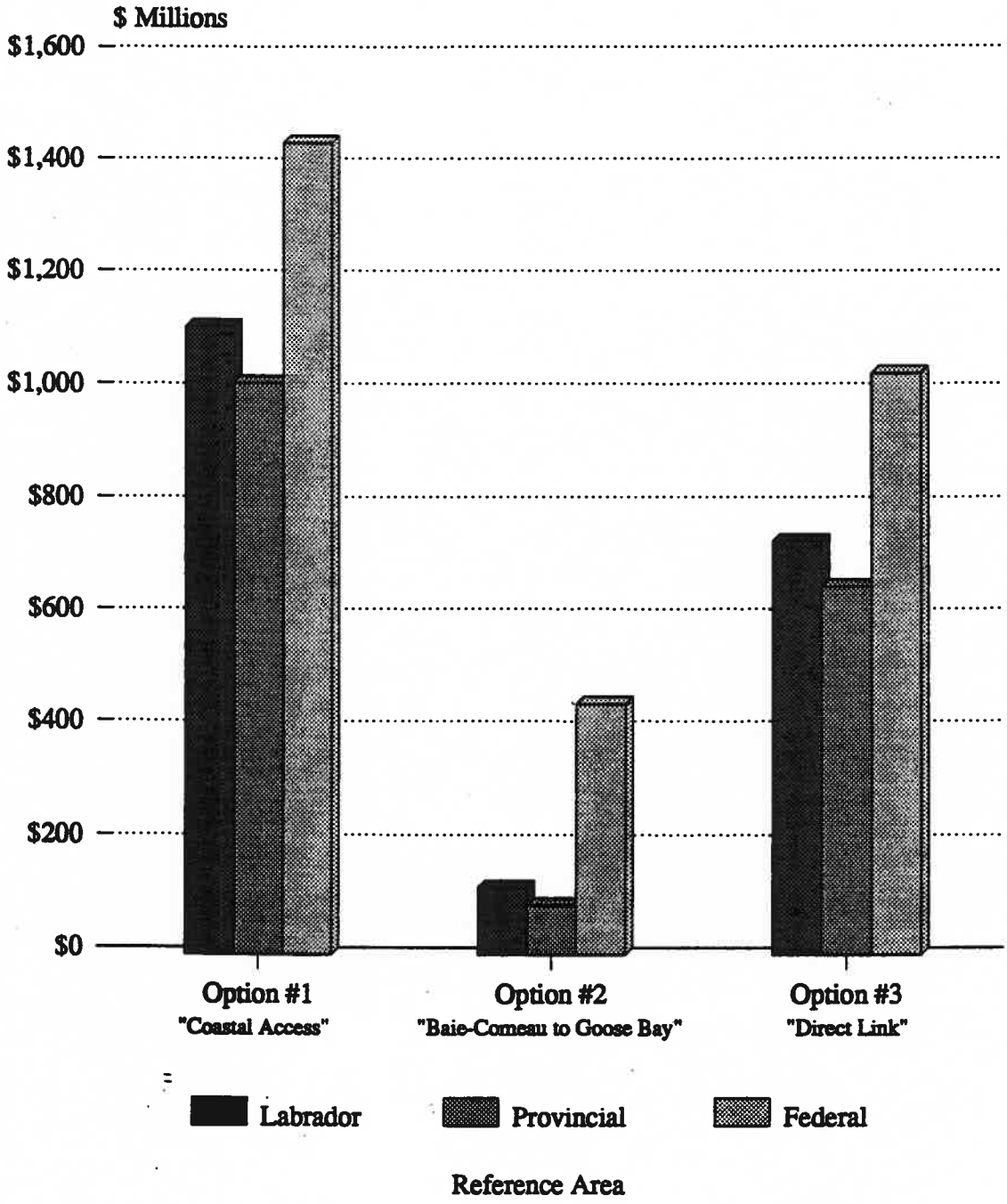


Figure 11
Net Present Values for TLH Options
(i.e. Benefits Minus Costs)
Based on a 5 Percent Discount Rate



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Option 3 from an economic impact perspective, is also supported by Option 1's superior qualities in terms of social impacts. The superiority of Option 1 over Option 3 in terms of both the economic and social perspectives is derived to a large extent from Option 1's ability to provide direct linkages to at least six communities along the South Coast of Labrador. None of these communities would be served by the "*Direct Link*" Option 3.

Benefit/Cost Ratios: Figures 12 and 13 illustrate the other important aspects of the economic analysis - ie. the benefit/cost ratios for each of the three highway development options, from each of the three geographic areas of reference: ie. Labrador only, the Province of Newfoundland and Labrador, and the national/federal perspective. The results of the benefit-cost analysis illustrated in Figures 12 and 13 support the above conclusions regarding the net present values of benefits relative to costs.

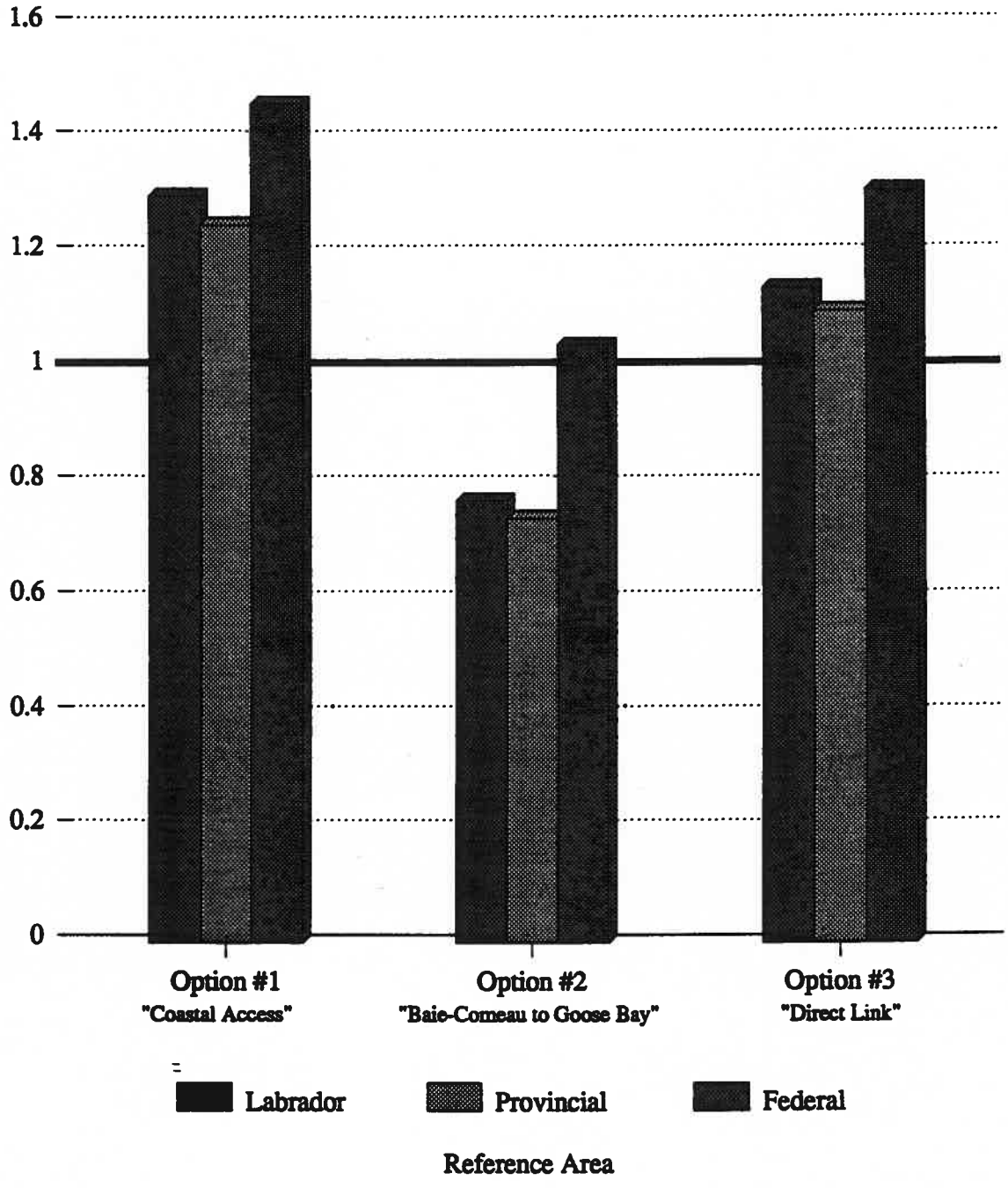
7.4 Highway Construction Impacts - There is a considerable amount of economic activity generated by highway construction projects. The impacts of public expenditures on highway construction are both immediate and largely localized, and generate considerable local skilled and unskilled employment, as well as business activity.

These gross construction impacts generated from the public investment in highway are redistributive or allocative impacts, and as such, do not strictly represent incremental benefits, as have been included in the previously noted benefit-cost analysis. Although these construction expenditures and employment impacts are not directly additive to the net benefits summarized in the benefit-cost analysis, they are important to the overall economic evaluation of the proposed TLH project.

Gross construction impacts include all expenditures and employment generated by the transfer of capital on highway construction and should not be understated. The local communities along the TLH project would receive a good share of indirect impacts from the increased use of accommodations, restaurants, entertainment facilities, commercial business, financial institutions and other services by employed workers.

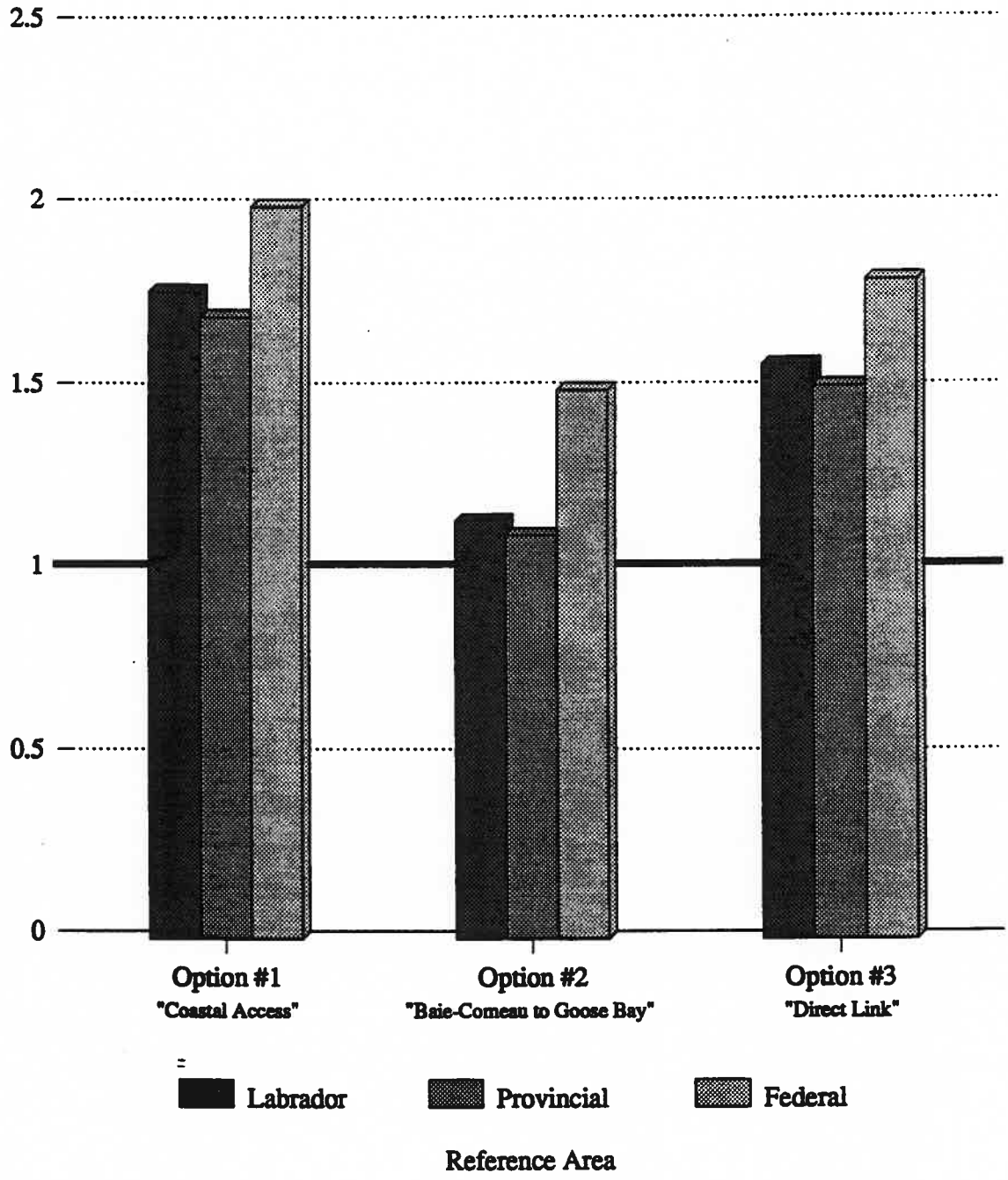
Direct impacts arise from the expenditure of project funds on goods, services, salaries and wages. Indirect and induced impacts arise from the expenditures on goods and services

Figure 12
Benefit/Cost Ratios for the TLH Options
Based on a 10 Percent Discount Rate



FGA

Figure 13
Benefit/Cost Ratios for the TLH Options
Based on a 5 Percent Discount Rate



that in turn, result in further expenditures for goods, services and wages in other businesses. The direct and indirect/induced "spinoffs" for expenditures and employment have been calculated and summarized for each of three TLH development options in **Table 2**.

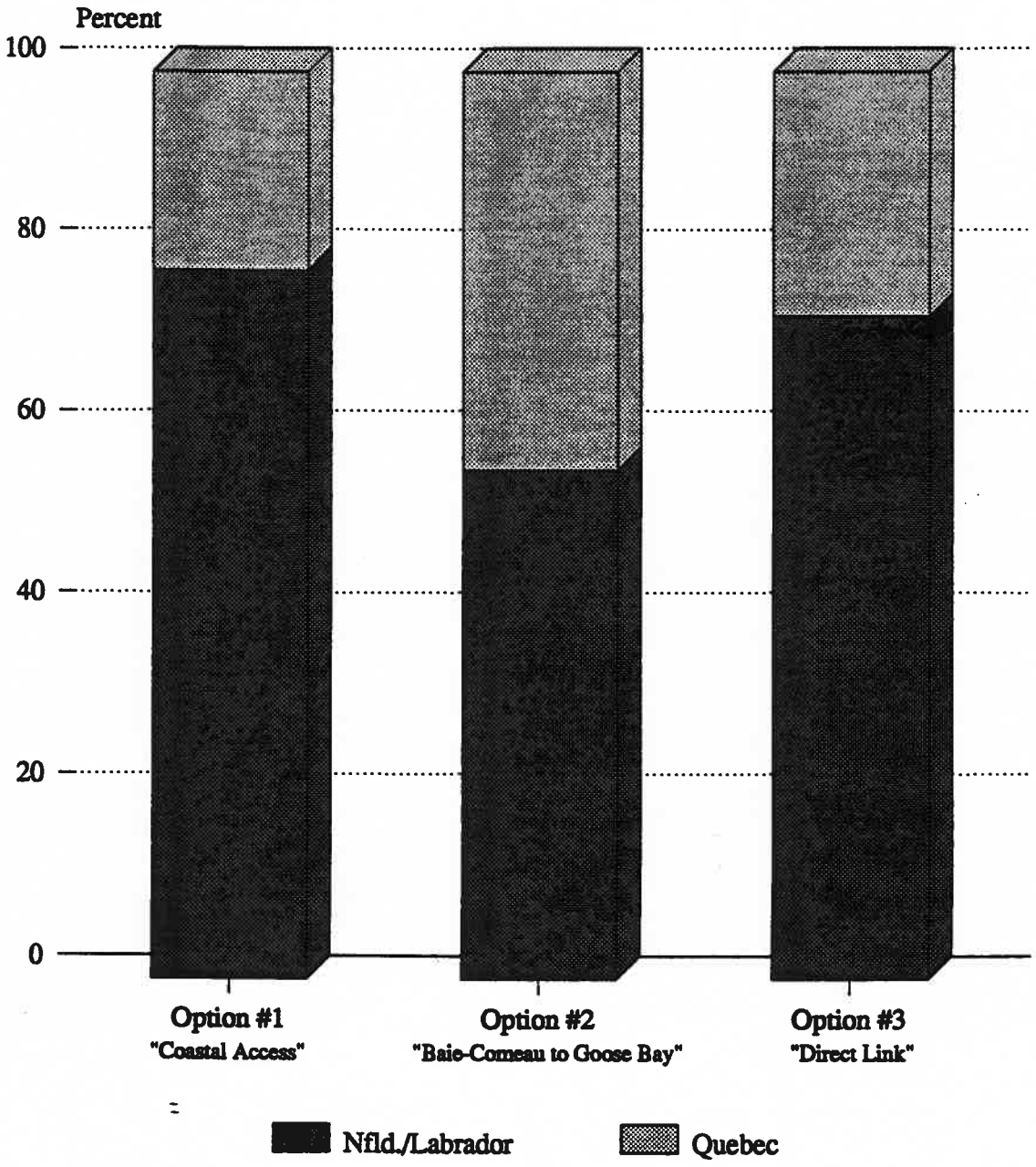
TABLE 2
TOTAL CONSTRUCTION IMPACTS OF TRANS LABRADOR HIGHWAY ($'000)

	TLH Development Options		
Total Construction Impacts	*"Coastal Access"* Option 1	*"Baie-Comeau to Goose Bay"* Option 2	*"Direct Link"* Option 3
Period of Construction (years):	23	11	18
Direct Expenditures ($'000):	$2,222,072	$1,096,689	$1,800,466
Indirect Expenditures ($'000):	$2,484,731	$1,246,810	$2,020,965
Gross Expenditures ($'000):	$4,706,803	$2,343,499	$3,821,431
Direct Employment (person-years):	14,814	7,228	11,958
Indirect Employment (person-years):	16,780	8,755	13,759
Gross Employment (person-years):	31,594	15,983	25,717

The data in **Table 2** indicates that the ***"Coastal Access"* Option 1** generates the greatest construction expenditures and most employment activity. This is a direct outcome of the fact that TLH **Option 1** is the highest cost highway development option (ie. highest direct expenditures) and the spin-offs are all proportional to the level of direct expenditures. **Option 1** also maintains a positive contribution to the local economy for a much longer period of time than would be the case for the other two TLH development options.

Assuming the construction impacts are split between Quebec and Newfoundland/Labrador in proportion to the ratio of construction costs in each area, the relative share of gross construction expenditure impacts (ie. direct plus indirect) is illustrated in **Figure 14**. The share in employment impacts are similar.

Figure 14
Breakdown of Construction Impacts
(Direct and Indirect Expenditures)
(Share in %)



8.0 POTENTIAL SOCIAL IMPACTS OF THE TLH HIGHWAY

8.1 Consultation Process - This study included an extensive consultation process. A key element of the consultation process included presentations by the Study Manager, and other key members of the Study Team to various groups including municipal councils, co-ordinators of development and historical associations, Chambers of Commerce, tourism and other industry groups and aboriginal associations. In addition to the meetings in the major centres in central and western Labrador, meetings were held in eight communities in the Straits and South Coast Regions.

8.2 Overview of Key Issues - Based on general research and input from the consultation process, a comprehensive list of potential social impacts of the Trans Labrador Highway was prepared. These impacts have been grouped into several categories and summarized into a list of eighty-two specific issues/impacts, each of which is described in the main report. The categories of social impacts were: land claims/aboriginal issues; freedom and flexibility of movement; social fabric/lifestyles; coastal/Straits Region's community impacts; social stability/job opportunities; education; tourism; fish and game; social and emergency services; product and service quality; other transportation modal impacts (ie. air, marine, and rail); and general impacts.

8.3 General Conclusions Regarding the Social Impacts of the TLH - The consultation process revealed a strong sense of public support for the Trans Labrador Highway by virtually all residents of Labrador other than the Innu Nation.[1] Generally, the consultations indicated the TLH would have a positive impact on all categories of social impact listed above (other than the land claims/aboriginal issues). The primary concern relates to pressures on fish and game resources. However, these can be mitigated with increased management and enforcement efforts. In all other categories, only nominal concern for negative impacts was expressed. In these cases, the negative impacts were considered to be minimal in contrast to the overwhelming positive impacts to be derived from the TLH.

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[1] The primary source of negative concerns about the TLH relate to those believed to be held by the Innu Nation. Although these concerns are not shared by most individuals consulted, they are of serious concern to the Innu Nation. Consequently, these issues are at the top of the list of issues relating to the TLH development.

The support for the TLH expressed by nearly all groups consulted during this study, is a reinforcement of the same sentiments which have been expressed by groups from throughout Labrador during the past several years. This is exemplified by the high priority given to the Trans Labrador Highway project in many of the briefs submitted at various occasions during the past decade - starting with "*The Labrador in the '80's Conference*" of over a decade ago and culminating with the "*Advisory Council on the Economy*" briefs submitted during the past two years.

With the exception of the major conflict between highway development and the unresolved aboriginal Land Claims issues, the impacts of the Highway are generally perceived as being positive. Furthermore, the consultations held during this study indicate there is strong support for the extension of the highway east of Goose Bay to the Straits by means of the "*Coastal Access*" option. There is little, or no, support for a "*Direct Link*" option to the Straits based primarily on its lack of ability to service any of the communities along the South Coast between Paradise River/Cartwright and Mary's Harbour/Lodge Bay.

8.4 Land Claims/Aboriginal Issues

The Land Claims issue is of paramount importance. The outstanding native land claims affecting virtually all of the Study Area is a major factor influencing development of not only the highway, but a broad range of social and economic activities in Labrador. Initially, this study was to include representatives of all native people's groups as part of the general consultation process. Two of the primary aboriginal groups, the Inuit and Metis, have been consulted. However, because of the general sensitivity of the issues surrounding land claims by the Innu Nation, their representatives felt that direct consultation was not appropriate at this time.

The Innu treat their claims to the lands of Labrador with grave concern. Aside from their concerns regarding the study content and its relationship to the on-going negotiations regarding their land claims, the Innu representatives feel the study may not recognize the fundamental alteration that the Trans Labrador Highway would have, regarding the sudden increase in accessibility and the impacts this would have on the peoples and resources of the area. These impacts are of particularly high importance, especially to the Innu, because of their traditionally close connection to the land.

Although some of the concerns noted in correspondence to the client from the Innu Nation are outside the intended scope of this study, many of their concerns have been addressed. From the Innu perspective, the issue would probably be the extent to which they were dealt with, given the intended nature and magnitude of effort inherent in the work program, time and budget constraints of this study.

Further detailed work on both the social and environmental issues and impacts will be required if governments should decide to proceed with the Trans Labrador Highway project. In particular, extensive additional work would be required not only regarding environmental factors, but also on many elements of detail regarding planning, design and implementation. These very important points have been noted in discussions and presentations held throughout Labrador during the course of this study.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions - The primary conclusions drawn from the results of this study are:

1). Based on the factors considered in this evaluation, the Trans Labrador Highway would be a viable project from the perspective of positive economic impacts generated as a result of the highway development. There would also be major positive construction impacts in terms of the direct and indirect expenditures resulting from development of the highway. Similarly, the job creation resulting from direct and indirect jobs derived from the highway development and associated spin-off activities would be extensive. On average, approximately 1,350 to 1,450 person-years of direct and indirect jobs would be created annually as a result of this project. For the recommended "***Coastal Access***" **Option 1**, this level of job creation would span a period of 23 years.

2). The economic viability of the Trans Labrador Highway project is self sustaining, as its viability is derived from the overall impacts of a broad range of benefits associated with user costs, mode shift cost savings for both freight and passenger transportation, and the economic developmental impacts associated with expansion and

improvements to existing businesses as well as the opportunities for development of new business activity.

3). Although the Lower Churchill Power Development would benefit substantially from the improved transportation services which would be available with the TLH, the highway is viable on its own right. The positive benefits which would accrue to the Lower Churchill Power Development during the relatively short construction period (eight to nine years) for that project would enhance the overall benefits to be derived from the Trans Labrador Highway Project. However, these relatively short term impacts, which could be accrued during construction of the power project, are relatively small in terms of the overall long term impacts derived from the three other major categories of highway benefits which would be sustained throughout the 30 year analysis period. Thus, although the highway's viability is enhanced by the benefits to the Lower Churchill Power Development, these impacts are not critical to the overall economic viability of the Trans Labrador Highway.

4). With the exception of the potential impacts on the Innu Nation, the social impacts associated with development of the highway are primarily positive. The primary positive social impacts, which apply to all, are: increased freedom and flexibility of movement at will, and generally at substantially lower costs; improved social inter-community interaction opportunities and increased mobility with resulting enhancements to lifestyles; improved educational opportunities, (at lower costs and with less disruption and dislocation from families/friends); increased job opportunities; improved mechanisms for delivery of social programs and emergency services; enhanced opportunities for tourism, forestry and other business developments; improvements to product and service quality for a broad range of goods and services acquired by Labradorians; and major increases in accessibility for several communities along the South Coast (only for Option 1). These

overriding positive impacts are counter-balanced by negative impacts such as pressures on fish and game resources (although this could be mitigated with increased enforcement efforts). The TLH would also likely have some negative impact on the provision of services by the air and marine modes (and probably an impact on rail service to Labrador West). In balance, however, the positive impacts far outweigh the negative impacts.

5). Based on the extensive consultation process conducted during the course of this study, there is an overwhelming sense of public support by the residents of Labrador for the highway (except for the Innu perspective). This public support strongly favours extension of the highway to the Straits Region by means of the "***Coastal Access***" **Option 1** which would provide connector routes to the larger communities along the South Coast of Labrador. Very little public support appears to exist for the "***Direct Link***" **Option 2.**

6). The economic impacts analysis supports selection of an option which is consistent with the public support and maximizes the potential positive social impacts, in that all of these factors favour the "***Coastal Access***" **Option 1.**

7). The "***Baie-Comeau to Goose Bay***" **Option 2** is not nearly as attractive as the other two options from an economic benefits perspective because it only serves the central and western parts of Labrador. Thus, a large component of potential economic impacts would never materialize with this option.

8). The two options which provide for extending the highway to the Straits generate substantially improved economic benefits compared to the "***Baie-Comeau to Goose Bay***" **Option 2.** Of these two options providing linkage to the Straits, the "***Coastal Access***" **Option 1** provides substantially greater overall economic benefits. This results primarily from it's ability to serve at least six coastal

communities, as well as open up a variety of new business development opportunities relating primarily to the forestry and tourism. This "*Coastal Access*" option also enhances the medium to long term support for the currently troubled fishery.

9). The "*Coastal Access*" **Option 1** provides the greatest level of public service in that it provides direct service to the largest share of Labrador's population. This is reflected by the fact that the "*Coastal Access*" option provides for direct service to six of the primary communities in the South Coast region. This option also has the potential for more convenient and cost-effective long term expansion by providing additional connectors to other communities in the future.

10). The "*Direct Link*" **Option 3** provides somewhat improved overall economic impacts compared to the "*Baie-Comeau to Goose Bay*" **Option 2**. However, the relative ratio of incremental benefits to the proportionate costs is not consistent with the much improved level of incremental benefits which could be achieved with the "*Coastal Access*" **Option 1**. The major negative features of **Option 3** are associated with its inability to provide service to communities on the South Coast of Labrador. In fact, most people consulted during the study indicated that the direct link option should not even have been considered as a serious potential candidate for the Trans Labrador Highway.

11). In addition to achieving the maximum economic benefits inherent in the benefit/cost analysis, the gross construction impacts of direct and indirect expenditures and employment creation are by far the greatest for the "*Coastal Access*" **Option 1**. This option would involve direct expenditures totalling approximately $2.2 billion (in 1992 dollars). This would also stimulate indirect spin-off expenditures of about $2.5 billion, resulting in total direct and indirect expenditures of $4.7 billion during the construction period for the project. Similarly, the gross employment generated by the

"*Coastal Access*" **Option 1** represents a total of nearly 31,600 person-years, of which 14,800 person-years are direct employment on construction activity, and the balance of 16,800 person-years would be derived from indirect employment as a result of spin-off activities related to the highway expenditures.

9.2 Recommendations - Based on the evaluation of economic and social factors considered during the course of this study, **it is recommended that:**

1). Given the results of the benefit-cost analysis, along with the generally positive social impacts to be derived from the highway and the substantial positive construction impacts, the Trans Labrador Highway appears to be viable from both the social and economic perspectives.

2). Based on the comparative analysis of the three options for development of the Trans Labrador Highway, the recommended option is the "*Coastal Access*" **Option 1**.

1.0 INTRODUCTION

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1.1 Background

This study entitled *Trans Labrador Highway Social and Economic Project Feasibility Analysis* was carried out under the Comprehensive Labrador Cooperation Agreement. An Advisory Committee composed of representatives from the Federal and Provincial Governments, the Joint Councils of Labrador, the Combined Councils of Labrador and the Labrador Community Futures Committee oversaw the study.

Existing highway access to the various communities throughout Labrador is limited. Movement of people and goods is primarily by coastal ferry and air services, with highways currently playing a very minor role in many regions of Labrador. Only since 1988, has it been possible to travel by highway between western Labrador and the rest of Canada. This was made possible with completion of the northern section of the Baie-Comeau to Fermont highway. As of mid year 1992, it was also possible to travel totally by highway between Labrador West, Churchill Falls and Goose Bay.

1.2 Objective

As stated in the Terms of Reference, the objective of this study is:

> *"to establish a reasonably accurate forecast of the social and economic impacts of a Trans Labrador Highway, constructed and maintained at national highway policy standards. The impacts on tourism, resource development and other economic development are to be quantified, translated to dollars, and used in a cost benefit analysis with a thirty year life for the highway"*

In addition, non-quantifiable positive and negative impacts are noted. The Study Area and evaluation process acknowledges impacts in Labrador as well as those on the Island of Newfoundland, on Quebec and on Canada as a whole.

1.3 Highway Development Options Evaluated

In accordance with the Terms of Reference, the impacts of the following three primary options for development of a Trans Labrador Highway (TLH) were evaluated:

1). ***"Coastal Access"* Option 1**: Developing a new road corridor to National Highway System Standards from Happy Valley-Goose Bay to the Straits (with a crossing of the Churchill River at Muskrat Falls). This option would connect to the existing Straits area road network at Red Bay and provide connectors to Cartwright, Charlottetown, Port Hope Simpson and Mary's Harbour. This option includes upgrading the existing facilities between Baie-Comeau and Goose Bay to the same National Highway System Standards.

2). **Option 2**: Upgrading the existing Trans Labrador Highway between **Baie-Comeau and Happy Valley-Goose Bay** to National Highway System Standards.

3). ***"Direct Link"* Option 3**: Developing a new road corridor to National Highway System Standards from Happy Valley-Goose Bay to the Straits (crossing the Churchill River at Muskrat Falls) along a generally direct and straight link between Muskrat Falls and Forteau. This concept also includes upgrading the existing Baie-Comeau to Goose Bay facilities, but it does not provide connectors to the communities along the South Coast of Labrador, as would be the case with **Option 1**.

1.4 Scope of Work

Key elements of the work program for this study included:

1). Conducting an extensive consultation process to assist in identifying the hopes, aspirations and impacts (positive and negative) of the Trans Labrador Highway from the perspectives of

those who live in and adjacent to the potential highway corridor. Consultations were held with a broad cross-section of representatives of all levels of government, aboriginal groups and industry and commerce (including regional development, tourism and historical development associations). This important aspect of the work program resulted in an extensive series of on-site visits and consultations with community leaders and organizations in, and adjacent to, the primary Labrador study area.

2). Evaluating highway improvement requirements including identifying the upgrading and relocation needs of existing facilities as well as locating and evaluating the new corridor linkages between Goose Bay and the Straits. This work included preparing a detailed phasing and implementation strategy for all three highway development options.

3). Preparing cost estimates for all three highway development options on a link-by-link basis. This provided a cost estimate consistent with the level of detail necessary to formulate a meaningful implementation phasing strategy and the inherent time streams for the economic analysis.

4). Conducting a preliminary evaluation of key environmental constraints impacting both upgrading and new alignment components of the Trans Labrador Highway.

5). Conducting a detailed analysis of the benefits in terms of changes in highway user costs, transport mode shifts, and business/developmental impacts which would be derived from the Trans Labrador Highway options.

6). Conducting a benefit-cost analysis of the quantifiable impacts on Labrador based on the variables identified in Items #2, #3 and #5) above.

7). Evaluating **other quantifiable economic impacts relating to areas outside Labrador** (ie. to the island of Newfoundland, to Quebec and the rest of Canada). This analysis also included quantifying highway construction impacts including direct and indirect expenditures and the magnitude of job creation attributable to each of the three highway development options.

8). Preparing social profiles of existing conditions in Labrador and identifying the potential nature of social impacts of the Trans Labrador Highway options.

Throughout this document all costs are expressed in 1992 dollars (except as noted). The economic analysis was based on a 30 year period and discount rates of ten percent and five percent.