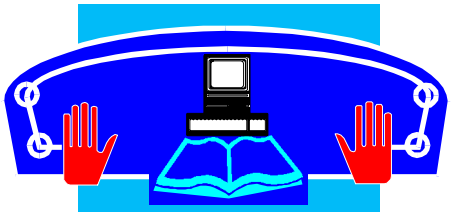

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Project Report

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Peat Marwick Stevenson & Kellogg
Management Consultants

project Report

NORTHWEST TERRITORIES TRANSPORTATION INFRASTRUCTURE STRATEGY -- SUMMARY OF COMMUNITY VISITS

Prepared for

Government of the Northwest Territories
Department of Transportation

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I

INTRODUCTION

In the summer 1989 the Government of the Northwest Territories awarded an assignment to study the transportation infrastructure needs for the NWT for the next 20 years, to a consulting group consisting of:

- Peat MarWick Stevenson& Kellogg.
- Mackay, Stewart Management Consulting Limited.
- Proctor & Redfern Group.

A major workstep in the project consisted of community consultations throughout the Northwest Territories. During the month of September 1989, the project team attempted to visit every community with a population above 50. These consultations have been completed with the exception of three small communities (Snare Lakes, Snowdrift, Lac La Martre). Weather problems and difficulties in scheduling mutually practical dates means that the three communities have not been visited. However, we have assembled preliminary information based on telephone discussions with community leaders, and personal discussions with residents during their visits to Yellowknife.

Each community was visited by a team of three people consisting of:

- A management consultant.
- An engineer.
- A representative of the GNWT.

Our visits were scheduled well in advance and we made ourselves available to meet with all interested parties. The following were our specific tasks during the visits:

- Inspect physical transport infrastructure.
- Meet community and business leaders.
- Discuss transportation needs, desires and constraints.
- Discuss proposed economic development projects.

Some communities were well prepared for our visit and had even assembled formal presentations. Other meetings with residents were of a more casual nature. However, in all cases we received the necessary cooperation and information from the people we met.

II

TERRITORIAL SUMMARY

The Northwest Territories can conveniently be considered as two separate areas with some common, but many individual characteristics and requirements. The two areas are the eastern and high arctic, and the western and central.

A. EASTERN AND HIGH ARCTIC AREA

1. Economy

The eastern and high arctic includes the following regions:

Region	Number of Communities	1989 Population
Baffin	13	10,800
Keewatin	7	5,400
Kitikmeot	6	4,100
Total	26	20,300

The eastern and high arctic area contains approximately 38% of the population of the NWT. The population is preponderantly Inuit, with small percentage non-aboriginals, employed predominantly by government. The area is relatively underdeveloped and traditional lifestyles are still relatively important, particularly in the smaller communities. Country foods (game and fish) comprise a large portion of diet. Subsistence harvesting is the largest form of employment in the area.

Opportunities for economic development are relatively limited. The area is rich in natural resources and has a physical capacity to produce commercial harvests of terrestrial mammals, fish and other seafood. The successful development of these resources depends largely on cheaper and more convenient transportation facilities. Tourism is growing in importance but the high cost of transportation in the north will obviously limit the size of the market.

Mineral development has potential. A large deposit of iron ore exists near Hall Beach and Urangesellschaft wishes to develop a mine west of Baker Lake. Gold deposits exist in the Keewatin and significant base metal of reserves have been identified in Kitikmeot. Precious metal producers can develop mines with little transportation infrastructure, but no road access can facilitate the employment of the local population. Base metal production requires large-scale infrastructure development, particularly if the minerals are to be shipped out by sea.

2. Transportation links

All 26 communities in the area have single airstrips of varying length. With the exception of Grise Fiord, all have a terminal building, and fuel is available at all locations except Grise Fiord, Lake Harbour and Gjoa Haven.

All communities in the three regions are located on the sea, and all receive supplies in summer by sealift, except for Pelly Bay where year round ice conditions restrict ship access. The only dock facility for sea going ships is located in Nanisivik where the Nanisivik Mine lands supplies and loads ore concentrates. Various forms of wharfage or protection for small craft have been attempted by various communities, but with limited success. Sealift barges dock on the beach or anchor offshore and are offloaded into smaller vessels. The only exception is Cambridge Bay where adequate barge docking facilities are available.

All existing roads in the three regions provide local service only.

In all communities, roads serve local needs only.

As might be expected with the heavy reliance on marine resources, the majority of the communities' are concerns related to marine infrastructure. New port facilities are regarded as important means of enhancing access to marine resources. Associated with this need were the desire for roads from communities to nearby areas which remain free of ice for a longer period, thereby increasing the fishing season. Roads to tourist attractions and hunting areas were also mentioned by some communities.

To a lesser extent, the quality of air services was an issue addressed by our respondents. Cost of transportation was, of course, a common concern. Many communities sought upgrades to their airstrips or terminal facilities.

Finally, an ail weather road linking Keewatin communities, together with the link to Churchill, were generally desired to reduce transportation costs. However, some residents expressed concern about the impact on their lifestyle of permanent access to the south.

B. THE WESTERN AND CENTRAL AREA

1. Economy

The western half of the Northwest Territories contains 62% of the population and has reached a higher stage of economic development than the eastern half. The area contains the following regions:

Region	Number of Communities	1989 Population
Inuvik	12	7,900
Yellowknife	1	13,100
Balance of Fort Smith	17	12,000
Total	56	33,000

The population is split roughly evenly between non-aboriginal and aboriginal groups (Dene and Metis). Non-aboriginals form majorities in Inuvik, Norman Wells, Yellowknife and Hay River. Aboriginal are the large majority in all the other communities.

Although the area is economically stronger than the east, this strength is centered in the larger communities. Government, transportation and communications, and services provide income to the majority of the working population. The traditional lifestyle is still practiced by many natives, particularly in the less accessible, smaller communities.

Economic development opportunities are greater than in the east, although the only large project on the horizon is the construction of the natural gas pipeline from the Mackenzie Delta.

Natural resource harvesting provides smaller opportunities for development than in the east. Commercial quotas for land mammals on the mainland are too low for exploitation. Banks Island contains muskox herds large enough for significant harvesting, but the feasibility of this venture depends to a large extent on transportation costs. The northern communities in the Inuvik Region have access to arctic char stocks, but no moves are being made to develop this resource.

Tourism has the potential to play a more important part in the economy of the regions. The Western Arctic is served by the all weather Dempster Highway while the communities around the Great Lake are also easily accessible to tourists. To many centres, road transportation links are cut during the freeze-up and break-up, and the present

condition of the Yellowknife Highway discourages some tourist traffic (as well as increasing truck transport times and costs). The tourism infrastructure is relatively well developed in the larger centres. Continued marketing efforts are required by the smaller centres to attract their share of the business.

Non-renewable resource developments are centered mainly in the oil and gas reserves of the Mackenzie Delta and the Beaufort Sea. Neither of these developments, nor the construction of a pipeline depend upon government investment in transportation infrastructure.

Some low grade mineral resources exist, but no plans for any mine development have been announced. A road north from Yellowknife to the Arctic Coast may make viable the development of some are presently unprofitable deposits.

2. Transport links

All communities in the area have airstrips of varying lengths and conditions, with the exception of Arctic Red River. All receive scheduled air service except Colville Lake.

All communities on Great Slave Lake, the Mackenzie and Peel Rivers, and the Beaufort Sea can receive barge service from Hay River. However, the construction of the Dempster Highway some years ago changed this pattern in some respects. Those communities on the highway use water transportation far less than they did in past years. In addition, Inuvik has become a transshipment point for the Western Arctic with goods being trucked to Inuvik and shipped by barge to the northern communities.

All weather roads serve the Western Arctic and communities around the Great Slave Lake. As mentioned earlier, these links are broken for approximately six weeks each year. All the remaining communities except Snowdrift are served by annually-constructed winter roads. Snowdrift is reached by a winter road across the Great Slave Lake only when large volumes of construction materials must be brought in.

Hay River is the northern terminus of the rail line from Alberta. The line was built to ship out concentrates from the Pine Point Mine. The mine has closed, and when the stockpiler of concentrate is exhausted, the Town fears that the line will be closed. If this happens, Hay River will lose its position as a transshipment node for bulk goods railed into the Territories.

The desire for improvements to the transportation infrastructure covered the major three modes.

Communities seek improvements to airstrips and terminal facilities for safety, economic and social reasons. Longer runways would permit the use of larger aircraft with resulting reductions in the cost of freight. Improved terminal facilities will increase the comfort of passengers. Re-aligned runways will increase safety or permit the natural expansion of the community.

Improvements sought in water facilities related mainly to barge landing sites and the provision of community wharfs. Some parts of the Mackenzie river need dredging.

Most communities seek improvements to the road service. In the Fort Smith Region, the paving of the Yellowknife Highway was seen as a priority. The extension of the Mackenzie Highway to **Inuvik** was also seen as desirable. Both in the Fort Smith and **Inuvik** regions, bridge crossings were considered preferable to ferry crossings. In both regions the smaller communities sought conversion of winter roads to all weather roads, or in some cases, there-alignment of the winter road.

III

BAFFIN REGION

A. OVERVIEW

The Baffin region consists of thirteen communities on Baffin Island, the high arctic islands and the Belcher Islands in Hudson Bay. The population of these communities are predominantly Inuit. They exhibit a traditional lifestyle with high reliance on hunting and fishing.

The NWT Bureau of Statistics estimates that the 1989 population of the Baffin Region is 10,776. Excluding Iqaluit, the largest community in the region, the average community population is 634. The population is relatively young. Family allowance information, as of June 1, 1988, indicates that there are 4,762 people, or 44.1 % of the population, who are 17 years of age or younger.

The NWT Bureau of Statistics estimates that the population of the Baffin region will grow to 16,957 by the year 2010, experiencing an annual average rate of growth of 2.7%. Assuming continued reliance on government for services and infrastructure, this indicates that a high level of strain on resources. The young, growing population will require significant social investment in economic development and education.

Development opportunities in the Baffin region are limited. In the renewable resource sector, the population is reliant on country food harvesting as a lifestyle commitment and as an economic imperative. Commercial development of the country food market and the fishery has potential to provide a small amount of income for a select number of hunters and fishermen.

The Baffin region is a tourist attraction, Its isolated location limits the level of traffic since transportation costs to these communities is high. Sports hunting and fishing offers a certain potential for seasonal employment. Nature tours also provide an opportunity in the high end of the tourist market.

Nonrenewable resource development potential is limited. Oil, gas and mining resources offer some opportunity. However, the costs of development in the arctic are high. In addition, Inuit participation in these developments has traditionally been low. The environmental consequences of such developments area paramount concern to a population reliant on the land and sea for nutrition.

In the consultation program, communities focused their interest on access to the marine resources. This can be accomplished by the development of port facilities and roads which facilitate access to sea ice and open water. In addition, the safety of hunters and the security of hunting equipment can be enhanced by the construction of breakwaters.

To a lesser extent, the quality of air services was an issue that the community councils addressed. Specifically, the safety of selected airstrips was a concern which must be addressed through the development of acceptable standards. The quality and price of air cargo and passenger services was also an issue to these communities who are solely reliant on air service for contact with the rest of Canada.

B. ECONOMY

1. Employment

The NWT Labour Force Survey reports that 3,999 people, or 63% of the working age population, were active in the labour force in the winter of 1989. Of that number, 3,145 were employed and 854 were unemployed, yielding an unemployment rate of21 %. In the same survey, 8,776 people stated that they wanted a job, revealing a strong "discouraged worker" affect. In addition,4,370 people indicated that they had worked in the previous year, demonstrating high seasonality in employment.

Of the 3,145 employed, a significant proportion worked in the public service - Federal, Municipal and Territorial governments and agencies. In the commercial fishery, 268 licences were issued by the Department of Fisheries and Oceans in the fiscal year 1987/88. In arts and crafts, it is estimated that 1,060 people were active in 1987. The two lead-zinc mines - the Polaris Mine and the Nanisivik Mine - also provided some employment although, as stated, local participation in these operations has not been high.

Employment in country food harvesting is also important. The Department of Fisheries and Oceans estimates that there were 4,565 char fishermen, 825 narwhal hunters, 900 beluga hunters, 705 walrus hunters and 2,280 seal hunters in 1987/88.

2. Income

Total personal income in the Baffin region in 1986 was $73.0 million, an decrease of 11.7%. over the previous year. Most of this decrease took place in Iqaluit where income fell from $35.() million in 1985 to $23.4 million in 1985. Excluding Iqaluit, personal income increased 3.9% from 1985 to 1986.

Average income in the Baffin region was $18,600 in 1986, an increase of 1.1% over the previous year. Employment provided 90.2% of income. Most significantly, 58.2% of tax returns reported income of $15,000 per year or less.

The majority of personal income is derived from employment in the public service. According to an Economic Data Base Study prepared by the NWT Department of Economic Development and Tourism, was estimated at $9.7 million in 1986. The two lead/zinc mines employ a total of 440 people with income to Inuit residents of the region estimated at $1.5 million. Some income is earned by seasonal employment in the

commercial fishery. Trapping income in the Baffin region is estimated at approximately $100,000 in 1985-86.

Estimates of the imputed value of country food harvests vary. The Department of Fisheries and oceans estimates that the value of harvests from marine sources only amounted to $5.6 million in 1987. This includes harvests of fish, narwhal, beluga, walrus and seal. An economic plan prepared for the hamlet of Arctic Bay in 1987 estimated that the imputed value of ail country food harvests in the community totalled $1.3 million. Applying this estimate to the region on a per capita basis would result in a regional harvest with an imputed value of about $26 million. This estimate is high. A conservative estimate of the value of country food harvesting in the Baffin region would place the imputed value in the $10-15 million range.

3. Development opportunities

As stated, development opportunities in the Baffin region are limited. This section will include a brief overview of significant opportunities which may be exploited over the next twenty years. These opportunities will be discussed by sector.

a) Commercial development of harvesting potential

The NWT Department of Renewable Resources has assessed the potential for commercial development of country foods in a document entitled, "Baffin Arctic Food Development Strategy". This document addresses distribution, processing, training and organizational requirements associated with the operation of a central sales outlet in Iqaluit. The potential harvests and product values to the harvester can be summarized as follows:

commodity	lbs.	Income
Caribou Meat	80,000	$100,000
Arctic Char	31 0,000	387,500
Muskox meat	3,000	6,000
scallops	22,000	143,000
Turbot	40,000	28,000
Total		$ 664,599

This development considers current harvest potential only. Research may reveal new stocks of marketable resources. This project would have an impact on a number of communities where commercial harvest potential exists. The project would also generate employment in the processing and sales of these arctic foods. There is also the potential for conflict with domestic harvests since the population is growing rapidly.

This project would rely on efficient, cost-effective movement of products by air height. In most communities, this is not a problem since there is excess capacity in outgoing air freight. Backhaul rates could be negotiated.

Another proposed development involves the construction of a small scale tannery in Broughton Island. Current plans call for a staff of six people. More significantly, the harvest of sealskins create a market for hunters. The harvest of 5,000-10,000 seals will also create a need to use the meat.

In the long term, Baffin Island has a potential to generate an impressive amount of protein, particularly marine mammals. While the current market may be averse to these meats, research into processing may eventually generate some uses. Products under consideration include dry meats, pates, dried pellets and jerky. The development of suitable products may contribute to protein needs in Canada and abroad.

b) Petroleum and minerals

There are two active lead/zinc mines in the Baffin Region. The Nanisivik mine, owned by Mineral Resources International, employs approximately 180 people. An aggressive exploration program may extend the life of the mine by 5-10 years. The potential exists, with suitable training, to expand Inuit employment at the mine.

The Polaris mine, owned by Cominco Ltd., employs approximately 280 people. The mine, with a life expectancy of 15 years, could also expand Inuit employment if suitable training were available.

The only other known deposit of commercial significance in the Baffin region is the Borealis iron ore deposit near Hall Beach. Open pit reserves have been estimated at 4.3 billion tons. Due to its isolated location, there are no immediate plans for development,

No new exploration programs are planned in the Baffin region in 1989.

The only oil field in production in the Baffin region is the Bent Horn field in the high arctic. Panarctic shipped 275,000 barrels of oil to Resolute Bay and the Polaris mine. Pending the success of these shipments, oil could be shipped to other high arctic communities and Europe. Access to the site is limited by sea ice.

There was no oil and gas exploration in the Baffin region in 1989. Seismic work in Lancaster Sound has revealed an estimated 4.07 billion barrels of recoverable oil. The Federal government has issued a drilling and exploration freeze in Lancaster Sound because of environmental concerns. There is no indication that development will occur in the immediate future.

Panarctic Oils Limited holds known reserves of 500 billion cubic meters of natural gas on Melville Island. If present trends continue, the project will not be developed for 20-25 years. Some of the projects identified above could proceed if technological innovations provided drilling and transportation techniques which are cost effective and environmental safe.

In conclusion, there are no petroleum or mining developments expected to proceed in the Baffin region in the immediate future.

c) Tourism

Tourism does not generate substantial employment in the Baffin region. Hotel and hospitality facilities are improving. Some communities are actively promoting local tourism with positive results. In addition, the development of historical sites and the provision of guide training will enhance the quality of service.

Tourism can be expected to grow quickly in the Baffin region as a result of local and government initiatives. Tour packaging and improved air services will contribute significantly. The extent of the market is limited by the high price of transportation to the region.

d) Commercial fishing

Ongoing research has identified commercial resources in the Baffin region. Two areas are of interest - the offshore shrimp fishery in the Davis Strait and the inshore fishery of Cumberland Sound.

Research in Cumberland Sound has uncovered commercial stocks of turbot and scallops. Quotas have been set for 22,000 pounds of scallops and 40,000 pounds of turbot. This provides an estimated income of $171,000 to local fishermen and local employment in processing. Although this is a small fishery, it is significant to the community. Additional research into shrimp stocks may also contribute to potential harvests. When taken together with the char fishery, there is potential for plant development in Pangnirtung. This creates an immediate need to develop marine infrastructure to rationalize operations.

The Canadianization of the Davis Strait shrimp fishery may provide the rationale for the construction of a $6 million shrimp plant in Iqaluit. If facilities are developed, the operation could purchase 1200 tons of industrial grade shrimps for processing over the course of the year. Sixteen Canadian licence holders operate offshore vessels in the Davis Strait during the fishing season. These vessels require a Canadian base to change crews, off-load catch and purchase fuel and supplies.

A dock and cargo terminal costing in the range of $10-25 million would be required to attract this business. User fees would partly offset the cost of development. It is estimated that 12,000 metric tons of shrimp and the Iqaluit sealift cargo of 8,000 metric tons could be trans-shipped at the terminal. The terminal would create 55 seasonal jobs. The shrimp plant, depending on its design, would create 16-34 jobs.

e) The public service

The Federal and Territorial Government have Affirmative Action Programs which may result in higher levels of Inuit participation in the public service in the years ahead. As the level of native education improves, Inuit may dislocate southern hiring. If this affect is significant, population levels in the Baffin region may not grow as rapidly as predicted. Local employment and incomes will be enhanced

f) Arts and crafts

As stated, it has been estimated that arts and crafts employ 1060 people and generate income of $9.7 million in 1986. Concern has been expressed that the arts and crafts workforce is aging. This may be offset by training to be provided by Arctic College.

c . SOCIAL ISSUES

As stated, the population of the Baffin region is characterized as young and growing. If present trends continue, the region will face high unemployment in the future. This prediction underlines the need for significant social investment to address future needs.

Social assistance information from the NWT Government for the fiscal year 1988/89 indicate that a total of $4.0 million was paid out in social assistance in the Baffin region. The average monthly case load was 622, representing an average of2,171 people or 20.1‘ZO of the population.

Of special significance is the fact that $1.3 million was paid out to those in the assistance category “unemployed but able”. This category accounts for 33.8% of social assistance. The monthly data in this category does not fluctuate dramatically, indicating that the recipients may be unemployed over the long term. It is also noteworthy that this is the largest single reason given for social assistance.

The second highest category is “not enough income”. In this category, $984,000 was paid out in the reporting period. This indicates that there is an income problem amongst those who are employed.

It is noteworthy that some communities experience relatively low social assistance costs. For instance, in Grise Fiord only $19,500, or $153 per capita, was paid out in the fiscal year. By way of contrast, in Iqaluit, where employment opportunities are more abundant, $739,000, or $233 per capita, was paid out. That is, per capita social assistance payments in Iqaluit are 52.4% higher than per capita social assistance payments in Grise Fiord. Per capita social assistance payment for the region averages $368.

The high level of dependence indicated by these statistics demonstrates that employment and training will be an important issue for the Baffin region for the foreseeable future.

D. CURRENT TRANSPORTATION INFRASTRUCTURE

1. Description

a) Air

All communities within the Baffin Region have single airstrips of varying lengths that meet standards for both day and night operations on a year round basis. With the exception of Grise Fiord all have a terminal building with weather/communication facilities either within the terminal, in a separate building located nearby, or in the community.

Fuel is available at all locations except Gnse Fiord and Lake Harbour.

All airstrips are gravel surfaced with the exception of Iqaluit, which is paved.

b) Water

All communities within the Baffin Region are located on the sea coast and with the exception of Pelly Bay, all have access to sea lanes. Year round ice conditions restrict ship access to Pelly Bay and as a result this community is served by air only.

The only dock facilities for sea going ships is located at Nanisivik where the Nanisivik Mine lands supplies and loads of ore concentrates.

Various forms of wharfage/protection for small craft have been attempted by the various communities but with limited success.

A gravel ramp extending from the beach landing site into the water is used for the sealift operations in some communities to form a landing area for the barges. In other locations, the barges are beached at or near high tide and unloaded when land based equipment can access the barge.

The Canadian Coast Guard ice breaker assists sealift operations when required.

c) Road

A gravel single land road of some 30 km in length connects Nanisivik with Arctic Bay. Access to the Nanisivik airstrip is from this road.

The road is under the jurisdiction of the GNWT and carries less than 10 vehicles per day on average year round.

All other existing roads provide local service only and are maintained by the community.

2. Transport service

a) Air

Jet passenger and cargo service via Yellowknife, Ottawa and Montreal is provided to Resolute, Nanisivik, Hall Beach and Iqaluit.

Propeller aircraft of varying sizes provide similar service to all other communities.

With the exception of Iqaluit, cargo terminal facilities at the airstrips are limited and consignees of cargo are expected to claim cargo virtually "on the apron" in many instances.

Iqaluit, and to some degree Resolute, act as receiving/distribution centres where freight arriving from the south is rehandled for ongoing shipment to the smaller communities and by smaller aircraft.

b) Water

The sealift resupply operation from eastern Canada involves the resupply vessel laying at anchor in close proximity to the community and unloading cargo onto barges for landing and unloading at designated beach sites.

Shore based equipment such as fork lift trucks, mobile cranes and trucks are used to deliver the cargo directly to the consignee or to a designated area on the beach for later delivery.

One or two sealift deliveries to the communities are made during the shipping season with Iqaluit receiving eight to ten deliveries of dry cargo and two of bulk fuel.

Some repackaging of dry cargo received by sealift in Iqaluit is transshipped via air to other communities in the Region.

3. Infrastructure **deficiencies under existing service demands**

a) Air

Runway resurfacing and strengthening is required at two locations - Broughton Island and Sanikiluaq.

A 1987 report on the Broughton Island Airport by Transport Canada notes that certain weight restrictions apply to the SH 748 aircraft. In addition, the report stated that "although the accessibility ratio is only 75%, there is no need for additional runways or reorientation of the present runway."

Runway resurfacing is required at Clyde River, it is understood that this operation will be started in 1990.

A request to the GNWT for runway resurfacing and strengthening has been made recently by the Sanikiluaq hamlet council.

Additions to and improvements of navigation aids and communications as required or available are considered to be part of the necessary and ongoing maintenance activities.

b) Water

Related to sealift operations and in a regional context, the present system or operation is flexible and requires very little infrastructure at the receiving points.

It is efficiency is influenced by weather, ice conditions and tides while the frequency of service is limited to a season of some two months only.

Wharf facilities for sea going vessels and barges, accessible at all tidal conditions, would improve the operation and reduce "time in port". The costs and benefits of such facilities for present conditions in the region will require an assessment as part of the development of alternative transport strategies for the region and the Territories.

c) Road

With the exception of a minor flow of goods and some passenger travel between Nanisivik and Arctic Bay, roads do not provide any transport service in the region.

The existing road between these points is adequate to meet present demands.

E. SHORT TERM IMPROVEMENTS DESIRED BY COMMUNITIES

1. Air

Airport improvements identified by various communities related to runway extensions. It is though that longer runways would permit the use of larger aircraft and in so doing service improvements and passenger fare/cargo rate reductions would be realized and be passed on to the citizens.

New or enlarged terminal facilities were identified as a necessity to support anticipated increases in traffic resulting from improved air service.

2. Water

Virtually all communities expressed a desire for wharf and/or protection facilities for small craft.

Iqaluit noted that a fish processing plant in Iqaluit would require appropriate dock accessible to offshore fishing vessels.

F. LONGER TERM INFRASTRUCTURE IMPROVEMENTS

All the communities expressed a very strong desire to see reductions in air fares and cargo rates together with improved air service.

Most, if not all the communities seemed to appreciate the various implications of a dock facility for the sealift operation since requests for such facilities were not made. However, requests for a dock were voiced in Iqaluit.

IV

KEEWATIN REGION

A. OVERVIEW

The Keewatin Region includes seven communities in the south-central NWT, on or near the west coast of Hudson Bay. The Keewatin Region includes the settlements of Arviat, Whale Cove, Rankin Inlet, Baker Lake, Chesterfield Inlet and Coral Harbour. The administrative and educational center of the region is Rankin Inlet.

The NWT Bureau of Statistics estimates that the 1989 population of the region is 5,398, or 10.2% of the NWT population. The residents are predominantly Inuit. Family allowance information, as of June 1, 1988, reports that 2,412 people, or 45.9% of the population, is 17 years of age or younger.

The NWT Bureau of Statistics estimates that the population of the region will grow to 8,577 by the year 2010, experiencing an annual average rate of growth of 2.8%. Assuming continued reliance on government for services and infrastructure, this indicates a high level of strain on resources. The young, growing population will require significant social investment in economic development and education.

Development opportunities in the Keewatin region are limited. In the renewable resource sector, the population is highly reliant on country food harvesting as a lifestyle commitment and as an economic imperative. Commercial development of the country food market and the commercial fishery offer limited potential for employment and income to a select number of hunters and fishermen.

Tourism development also offers an opportunity for limited seasonal employment. Some employment and business development opportunities are available with the exploitation of mineral resources. Federal and Territorial Governments will continue to play a large role in the future of the region.

In the consultation program, communities focused their interest on marine resources. The development of port facilities is regarded as an important means of enhancing access to marine resources. In addition, roads outside communities were identified as an effective means of opening Up access to sea ice and open water to hunters and fishermen. The safety of hunters and the security of hunting equipment was noted as primary to the development of break- waters. These facilities were regarded as important to the improvement of tourism.

To a lesser extent, the quality of air service was an issue. The quality and price of air cargo and passenger service was also an issue to these communities who are solely reliant on air service as a means of contact with the rest of Canada. With some reservations, highway development was seen as an effective alternative to air service.

B. ECONOMY

1. Employment

The NWT Labour Force Survey reports that 1,846 people, or 58% of the working age population, was in the labour force in the winter of 1989. Of that number, 1,452 were employed and 394 were unemployed, yielding an unemployment rate of 21 %. In the same survey, 1,293 people stated that they wanted a job, revealing a strong "discouraged worker" affect. In addition, 2,090 people indicated that they had worked in the previous year, demonstrating high seasonality in employment.

The unemployment rate was highest in Repulse Bay at 41 % and lowest in Chesterfield Inlet at 14%. Rankin Inlet had the highest number of employed people with 529 employed. Participation rates ranged from a low of 48% in Arviat to a high of 70% in Rankin Inlet.

Of the 1,452 employed, a significant proportion worked in the public service - Federal, Territorial and Municipal Governments. In 1986, labour force figures by industry division reported that 73.190 were involved in public industries. 24,9% of the 1986 labour force were active in the service industries.

Domestic hunting and fishing are an important source of nutrition in the Keewatin. In 1987/88, the Department of Fisheries and Oceans reports that there were 2,510 char fishermen, 240 narwhal hunters, 500 beluga hunters, 275 walrus hunters and 760 seal hunters.

2. Income

Personal income in the Keewatin Region totalled $31.7 million in 1986, an increase of 11.2% over the previous year. Average income was $14,900 or 71.670 of the Territorial average. Average income was highest in Rankin Inlet at $20,200 and lowest in Repulse Bay at $10,050.

In 1986, 89.6% of income was derived from employment. Most significantly, of the tax returns filed, 63.3% of the returns reported income of $15,000 per year or less.

The majority of personal income is earned by employment in the public service. Tourism brought in approximately $1.46 million of revenue in 1988. Commercial fishing added about $200,000 in the same year. The production of arts and crafts generates about $9 million per annum in income. Fur sales in 1988 added $225,000 to personal incomes.

Estimates of the imputed income from country food harvests were prepared by the Keewatin Wildlife Federation Harvest Study in 1982/83. Annual imputed income from harvests of caribou, other terrestrial mammals, marine mammals, fish and birds

totalled $7.7 million for the region. This is equivalent to 24.2% of the total personal income for the region.

The value of the harvest was highest in Baker Lake at $2.7 million and lowest in Whale Cove at $220,500. The average community harvest was valued at $1.1 million.

3. Development opportunities

Development opportunities in the Keewatin region are limited. This section will include a brief overview of opportunities which may be exploited over the next twenty years.

a) Commercial fishing

Commercial fishing in the Keewatin is small scale harvesting. Production, as reported by the Department of Fisheries and Oceans, has fluctuated from a low of 24,591 kg. in 1985 to a high of 44,934 kg. in 1988. This catch includes domestic harvest which account for about 25% of the catch. In addition, the production is spread around the region.

The GNWT has funded fish plants in Chesterfield Inlet and Rankin Inlet. In addition, two longliner freezer/packer vessels have also been funded by the government. The Department of Economic Development and Tourism is currently test marketing a canned, smoked char product in southern markets. The Department is also financing a fisheries strategy study for the Keewatin region.

There is potential for expansion of effort. Quotas for the Keewatin region total 180,000 kg. Some of these stocks are difficult to access. It may be preferable to fish in the isolated lakes in the winter, thereby mitigating the need for plant facilities. For the stocks accessible by collector boats, the quality of the marine infrastructure in a constraint since longliners are obliged to move with the tides when they need to access the shore.

The Department of Fisheries and Oceans issued test fishing licences n Chesterfield Inlet, Coral Harbour, Eskimo Point, Rankin Inlet and Repulse Bay in 1987/88. These licences were all issued to explore char stocks. Research should be expanded to include high valued species such as shrimp and scallops.

The commercial fishery in the Keewatin offers limited opportunity. If the entire commercial quota were caught and the fishermen received $4.40 per kg, gross revenue would be $360,000. A cannery or similar value-added operation creates some employment. However, labour and other operating costs are high in the Keewatin. In the longer term, the commercial fishery will be competing with the domestic harvests.

b) Services

Figures compiled by the NWT Business Directory indicate that the total number of small businesses in the Keewatin has increased from 82 in 1985 to 126 in 1988, an increase of 54%. The largest categories are retailers (16.3%) and construction (14.5%), while firms involved in Arts and Crafts comprised 11.3% of the total and Food and Accommodation 10.2%.

Community development corporations have also emerged as part of the region business community. These corporations generally focus on office rentals to government and the private sector.

As the population of the Keewatin region grows, the service needs of the population will also expand. These small businesses may generate important employment opportunities in their communities.

c) Tourism

The GNWT Department of Economic Development and Tourism estimates that there were 2,600 non-resident pleasure travelers in the region in 1988. These tourists spent an average of $560 each for an estimated total of $1.46 million. Tourist traffic to the Keewatin has increased dramatically in recent years.

The Keewatin is an attractive destination for the adventurous tourist. The region has unique geological, archaeological, cultural and wildlife resources. The quality of hotels and hospitality facilities has improved in recent years. Travel Keewatin has been formed to promote the region. In addition, there are more trained guides.

Access to some sites of interest to tourists could be facilitated by improvements to land and marine infrastructure. The tourist business is expected to continue growing. In the process, some seasonal employment will be created for residents.

d) Arts and crafts

An estimated $9 million in arts and crafts production provides employment for between 100-200 artisans. Ivory, soapstone and bone carving as well as paintings and prints are produced. Recently, concern has been expressed that the quality of the work has declined. Enhanced training through Arctic College may alleviate this concern to some extent. As well, increased contact with buyers may reduce the market channels and provide higher returns to the artist in the future.

e) Mining

In 1988, 17 exploration companies spent an estimated $46 million in the Keewatin. This year, the Geology Division of Indian and Northern Affairs Canada forecasts a lower level of exploration, particularly in terms of overall expenditure. The

Division predicts that 13 companies may explore for gold and 4 companies may explore for uranium and other commodities.

Gold properties are concentrated in the Ennada.i-Rankin Greenstone Belt. Three projects have been identified as potential small-scale gold mines. Corona Resources continues its reevaluation of the Shear Lake zone which produced gold in 1985. When the mine was operating between 1980-85, approximately 20-25 Keewatin residents were employed on a full-time basis.

Borealis Exploration Limited may develop a gold mine on its Fat Lake property west of Whale Cove. Employment could total 80-100 people with potential for 25-30 local hires. Site construction could include marine shipments with a transfer to a winter road. After construction is complete, only fuel and building material would be supplied by the marine mode.

The Turquetil gold discovery, 225 km. southwest of Rankin Inlet and west of Whale Cove, is held by Dejour Mines Limited and Noble Peak Resources Limited. A production decision could be made this year. The operators would combine marine transport with a winter road during construction.

The concentration of small gold finds in the Whale Cove area could result in winter road development. This development could open up the area for more exploration and eventual construction. In addition, road development could provide a transportation link at least to Whale Cove, thereby providing access to the local labour market. Other business development opportunities in expediting, catering, equipment leasing and construction could be exploited if the transportation infrastructure provides linkage between the mine and/or exploration sites and Whale Cove or other communities.

The Kiggavik uranium property, owned by Urangesellschaft Canada Limited, is located 75 km. west of Baker Lake. The company's proposal to develop the property is subject to the review of the Federal Environmental Assessment and Review Office. If approved, the mine will produce 1000 tons of ore per day for ten years. The company will also continue its exploration program in the area.

The company has indicated that 125 jobs or more could be provided to northerners if the site is developed. In addition, other spin-off opportunities in catering, expediting, equipment leasing and construction could result. Plans include construction of a wharf 10-12 km. east of Baker Lake and a winter road to the mine site. Product will be flown out. The transportation infrastructure will be used to transport construction materials and fuel resupply.

c. SOCIAL ISSUES

As stated, the population of the Keewatin region is characterized as young and growing. If current trends continue, unemployment may become even more widespread. The situation underlines the need for significant social investment to address future needs.

Social assistance information from the GNWT for the fiscal year 1988/89 indicate that a total of $2.7 million was paid out in the Keewatin region. The average monthly caseload was 368, representing an average of 1,362 people or 25.2% of the population.

Of special significance was the fact that $1.9 million, or 69.4% of the payments were in the assistance category "unemployed but able". Payments in this category do not fluctuate dramatically, indicating that the recipients may be unemployed over the long term.

The second highest assistance category is "not enough income". Payments of $466,000, or 17% of all social assistance payments, are recorded for the fiscal year. This indicates that there may be an income problem amongst those who are employed.

Per capita social assistance payments for the region is $505. Per capita payments range from a high of $824 in Baker Lake to a low of $344 in Rankin Inlet.

Education levels are also a cause of concern in the Keewatin, as they are in other regions of the NWT. In 1986, 55% of residents over the age of 15 had less than grade 9 education. More than 80% of those over 15 years of age had no post-secondary education.

For many of the residents of the Keewatin, hunting and fishing is a cultural and economic necessity. Investments in infrastructure which can improve access to these natural resources will enhance their living standard. For others, access to employment and business opportunities associated with tourism, and mining can be improved by changes in transportation infrastructure.

D. CURRENT TRANSPORTATION INFRASTRUCTURE

1. Description

a) Air

All communities within the Keewatin region have single gravel surfaced airstrips of varying lengths that meet standards for both day and night operations on a year round basis. All have a terminal building with weather/communication facilities either within the terminal, in a separate building located nearby, or in the community.

The airstrip at Rankin Inlet is currently being upgraded and will form a "Forward operation Station" of the Department of National Defence. Fuel is available at all locations.

b) Water

All communities within the Keewatin Region are located on the sea coast and all have access to sea lanes.

There are no dock facilities for sea going ships in the Region.

Various forms of wharfage/protection for small craft have been attempted by the various communities but with limited success.

A gravel ramp extending from the beach landing site into the water is used in some communities to form a landing area for the sealift barges. In other locations, the barges are beached at or near high tide and unloaded when land based equipment can access the barge.

The Canadian Coast Guard ice breaker assists sealift operations when required.

c) **Road**

All existing roads provide local service only and are maintained by the community.

2. Transport service

a) Air

Jet passenger and cargo service is provided to Rankin Inlet via Yellowknife and Ottawa is provided to Rankin Inlet.

Propeller aircraft of varying sizes provide similar service to all other communities.

Cargo terminal facilities at the airstrips are limited and consignees are expected to claim cargo essentially "off the apron". However a local from provides cargo distribution service at Rankin Inlet.

Some redistribution of cargo arriving from the south takes place in Rankin Inlet from where the transhipments are made to other communities by smaller aircraft.

b) Water

The sealift resupply operation from Churchill, Manitoba involves the resupply vessel (NTCL or other) laying at anchor in close proximity to the community and unloading cargo onto barges for landing and unloading at designated beach sites.

Land based equipment such as fork lift trucks, mobile cranes and trucks are used to deliver the cargo directly to the consignee or to a designated area for later delivery.

Bulk fuel is pumped ashore to tank farms. One or two sealift deliveries to the communities are made during the shipping season with Rankin Inlet and Baker Lake receiving three to four.

3. Infrastructure **deficiencies under existing service demands**

a) Air

Runway resurfacing is taking place and/or planned at various airstrips within the region. The Srnp at Rankin Inlet is in the process of being lengthened and upgraded by the Department of National Defence.

No significant deficiencies in infrastructure were noted and which would influence existing air service.

A new terminal building was under construction in Coral Harbour while an extension to the existing terminal was being constructed in Pelly Bay.

Additions to and improvements to navigation aids and communications are considered to be part of the necessary and ongoing maintenance activities.

b) Water

The present sealift operation is flexible and requires very little infrastructure at the receiving points.

Its efficiency is influenced by weather, ice and wind conditions and tides, while the frequency of service is limited to a season of some two months only.

Wharf facilities for seagoing vessels and barges, accessible at all tidal conditions, would improve the operation and reduce time in port. In addition, safe havens or temporary protection during high wind or storm conditions along the western shore of Hudson Bay would be a definite benefit to the smaller vessels now taking part in sealift operations out of Churchill.

The costs and benefits of wharf facilities and temporary protection for the present activities in the region would require an assessment as part of the development of alternative transportation strategies for the region and the Territories.

Since no wharf facilities exist, there are no deficiencies in the infrastructure. However, wharfage/protection for small craft owned and operated by the local inhabitants are extremely limited.

The GNWT has attempted to provide docking areas at three communities but with limited success.

Since the use of small craft for fishing and hunting purposes is of such importance to the inhabitants, it is suggested that the lack of wharfage/protection may be considered a current deficiency in all but a few communities.

E. SHORT TERM IMPROVEMENTS DESIRED BY COMMUNITIES

1. Air

Airport improvements identified by various communities related to runway extensions. It is thought that longer runways would permit the use of larger aircraft and in so doing, service improvements and passenger fare/cargo rate reductions would be realized and be passed on to the citizens.

New or enlarged terminal facilities were identified as a necessity to support anticipated increases in traffic resulting from improved air service.

The development of Rankin Inlet as a redistribution for the region was suggested particularly in view of the upgrading of the existing airstrip.

2. Water

All communities expressed the need for proper wharf and/or protection facilities for small craft.

It was suggested that safe havens or temporary protection during storm conditions at various locations on Hudson Bay would be of significant assistance to the smaller resupply vessels now operating or wishing to operate out of Churchill, Manitoba.

3. Road

Short term improvements or additions to existing local roads related to the provision of access to areas of tourist interest, access for hunting and fishing, and access to fresh water supplies and gravel sources.

However, some communities expressed the view that inter-community winter roads and a road to Churchill are short term requirements particularly in view of the uncertainty about the status of the Port of Churchill.

F. LONGER TERM INFRASTRUCTURE IMPROVEMENTS

All communities expressed a very strong desire to see reductions in air fares and cargo rates together with improved air service.

Most, if not all the communities seemed to appreciate the various implications of a dock facility for the sealift operation since requests for such facilities were not made.

The need for and possible benefits accruing from winter or all weather roads within the region and to Churchill was voiced by several community representatives. This matter was raised in part by the perceived uncertainty about the future of the Port of Churchill as a resupply base. It was noted however, that the idea of a road to Churchill had mixed reactions amongst some community representatives.

v

KITIKMEOT REGION

A. OVERVIEW

The Kitikmeot region is comprised of the Central Arctic Islands and the arctic coast as far inland as Contwoyto Lake. The region extends west to Holman Island and east to Pelly Bay. The regional administrative offices are located in Cambridge Bay.

The region include the communities of Holman Island, Coppermine, Cambridge Bay, Spence Bay, Gjoa Haven and Pelly Bay. Two unorganized communities, Bathurst Inlet and Bay Chimo are administered from the regional center.

The NWT Bureau of Statistics estimates that the 1989 population of the Kitik.meet region is 4,088. The population is predominantly Inuit. Community population range from 317 in Pelly Bay to 1,089 in Cambridge Bay, with an average size of 668. Family allowance information, as of June 1, 1988, indicates that 1,754 people, or 42.9% of the population of the region are 17 years of age or younger.

The NWT Bureau of Statistics estimates that the population of the Kitikmeot region will grow to 6,439 by the year 2010, experiencing an annual average rate of growth of 2.7%. This indicates a strong need for social investment on education and economic development.,

The region is currently highly reliant on government to provide income transfer programs, infrastructure and services. Country food harvest provide an important source of nutrition. In addition, tourism, arts and crafts and commercial fishing provide income to the residents. Mining exploration in the Bathurst Inlet area has intensified in recent years, demonstrating some development potential.

In the consultation program, communities emphasized the importance of marine infrastructure to resupply and traditional pursuits. Road and trail construction were also mentioned as a means of accessing the wildlife resources and attracting tourists. Air service was also a concern since none of these communities are connected to southern Canada by road. Pelly Bay relies exclusively on air service since this community does not receive sea lift service.

B. ECONOMY

1. Employment

The NWT Labour Force Survey reports that 1,372 people, or 58% of the working age population, were in the labour force in the winter of 1989. Of that number, 953 were employed and 419 were unemployed, yielding an unemployment rateof31%. In the same survey, 981 people stated that they wanted a job, revealing a strong "discouraged worker" affect.

In addition, 1,595 reported that they had worked in the previous year. Participation rate by community ranged from a low of 46% in Spence Bay to a high of 71 % in Cambridge Bay. The unemployment rate varied from a low of 13% in Holman Island to a high of 52% in Gjoa Haven. Labour force statistics for the unorganized settlements of Bay Chimo and Bathurst Inlet are irrelevant since these people have opted to live a traditional Inuit lifestyle. The unemployment rate in the region has increased from 22% in 1986 to 31% in 1989. Numbers employed has decreased from 955 in 1986 to 953 in 1989.

The unemployment rate amongst native people in the region has climbed from 23% in 1984 to 39% in 1989. Of the five regions in the NWT, the Kitikmeot region reports the highest rate of unemployment. Of the 953 employed, a significant proportion worked in the public service - Federal, Territorial and Municipal governments. Other services such as retail sales, accommodation and construction also provide employment. The traditional economy -- hunting, trapping and fishing -- also contributes significantly to the lifestyle and self-sufficient of residents. Arts and craft provide a means of supplementing income.

2. Income

In 1986, total personal income in the Kitikmeot region was $30,.6 million, an increase of 13.4% over the previous year. Average income for the region was $17,200 or 82.6% of the Territorial average. Average income by community ranged from a low of $11,300 in Gjoa Haven to a high of $26,000 in Cambridge Bay.

Personal income tax returns for the region reveal that 91.3% of income was derived from employment. Income from self-employment in 1986 recorded a drop of $305,000. Most significantly 61.2% of tax returns reported annual income of $15,000 or less. The top 10% of income earners made 75% of income.

The majority of income is derived from employment in the public service and agencies funded by government. Arts and crafts contributes in the range of $800,000-1,200,000 to personal income. Seasonal employment in the commercial fishery also provides some income with the landed value of fish harvested totalling $390,000. Trapping added about $300,000 to local incomes. Average income per trapper was approximately $750 in 1988.

Domestic hunting and fishing makes an essential contribution to the quality of life. Harvest figures from the NWT Department of Renewable Resources report that hunters in the Kitikmeot region harvested 18,646 caribou, 4,106 seals, and 585,530 kg. of fish in the year ended November, 1983. In the "Kitikmeot Region Economic Base Study" completed by Lutra Associates and H.J. Ruitenbeek Resource consulting Limited in 1985, market values are applied to the harvest to derive a total imputed value of $9,829,872. If these estimates are reasonably accurate, the imputed value of the harvest is equivalent to about 30% of the value of reported income.

3. Development opportunities

Development opportunities in the Kitikmeot region are limited. This section will include a brief overview of opportunities that may be exploited over the next twenty years

a) Commercial fishing

The Kitikmeot is an excellent fishing area. The commercial fishery is dispersed in isolated areas, however. For instance, in 1986, Gjoa Haven had quotas of 34,980 lbs. in three rivers while Pelly Bay quotas for 20,900 lbs. in four rivers. Although the communities are relatively close together, they are separated by sea ice. The construction of a plant requires economies of scale. In addition, it is expensive to ship product by air to the Yellowknife and southern markets.

In isolated communities with insufficient resource to justify the construction of fish plants, the winter fishery may be preferable since it requires less infrastructure and product can be shipped at the space-available rate. Alternately, high value to weight ratio products such as smoked char must be produced. Cambridge Bay, by contract has a relatively high quota with suitable plant in place, a acceptable dock and jet service. Fish plant production has ranged from a high of 83 tons in 1977 to a low of 25 tons in 1975. In 1987, the plant exported 45 tons with a landed value of $390,000 to the Freshwater Fish Marketing Corporation.

Over the long term, the success of the Cambridge Bay plant is dependent on the negotiation of acceptable backhaul rates with local air carriers. To justify fish plant and marine infrastructure improvements in the other Kitikmeot communities, additional commercial reserves need to be found. At that point, it may be rational to consider a collector/processor vehicle. Such a vehicle would need to combine speed, capacity and capability to operate over open water, land and broken ice conditions. This is a high order technological challenge.

b) Tourism

The Kitikmeot region offers tourists access to sports hunting and fishing, as well as non-consumptive tours. Non-consumptive tours can focus on wildlife, archaeological sites, cultural interest and geography.

The Kitikmeot Economic Base Study estimates that 4,500 visitors traveled to the region in 1982, spending $5 million. Of that number, it is estimated that 68% were on vacation and 32% were business travelers. It is also estimated that 600 guests stayed at sports fishing lodges in 1980, spending $837,760.

To exploit the potential of tourism development, infrastructure improvements may be required. Tours to isolated communities are relatively expensive as compared with foreign travel. Under these circumstances, guests require a reasonable standard of access to the communities and surrounding areas they wish to visit. This applies to air service frequency as well as access to areas adjacent to communities. Many communities suggested that trails and dock construction would benefit hunters and tourists.

c) Mining and exploration

Petroleum development in the Beaufort Sea may provide significant employment to residents of Holman Island and Coppermine, as it has in the past, if air service continues to be available to the Inuvik region.

The only operating mine in the Kitikmeot region is the Lupin gold mine, owned by Echo Bay Mines Limited. The mine is on Contwoyto Lake, 400 km. northeast of Yellowknife. One of Canada's most profitable mines. Lupin employs in excess of 420 people. The mine, which spends about $43 million per year on NWT purchases, is accessible from Yellowknife by ice road for two months of the year. The mine produced 6100 kg. of gold and 1000 kg. of silver in 1988. 35 people from Coppermine are employed on site.

In the short term, gold exploration in the Contwoyto Lake and Bathurst Inlet area is expected to be intensive. Lupin has expanded its exploration and smaller programs tested claims to the south, west and east of Lupin. Three projects explored for platinum on the Muskox Intrusions. Under the Canada-NWT Mineral Development Agreement, nine exploration projects were carried out in the Bathurst Inlet area in 1988.

To the north of the Lupin mine, significant base metal reserves have been identified. One hundred km. northwest of Lupin, the Izok Lake property, owned by Kidd Creek Mines Limited, has estimated reserves of 12.1 million tons of ore bearing zinc, copper and lead. The Hackett River property, owned by Cominco Limited, has reserves of 21 million tons of ore bearing zinc, lead, copper, gold and silver. The High Lake property, owned by Kennecott Exploration, has a 5.2 million tons ore body containing zinc, copper and gold 50 km. west of Bathurst Inlet.

Precious metal producers can develop mines with minimal road infrastructure. Ice road development to the Lupin mine may have an impact on other properties in the area. If the number of users increases dramatically, road improvements could follow. This, in turn has a potential impact on base metal properties to the north of the Lupin mine.

Base metal prices, particularly for zinc, have recovered after a long period of weakness. The properties in the Bathurst Inlet area would require a substantial investment in infrastructure to attract development. The current view is that a winter road north would be required, as well as a deep sea port on the Mackenzie Point Peninsula. In the long term, such an investment may be feasible, particularly if the ice road to Lupin is built by companies mining and exploring for precious metals.

c . SOCIAL ISSUES

As stated, the population of the Kitikmeot region is characterized as young and growing. This indicates a strong need for social investment in education and economic development.

Social assistance information from the NWT Government for the fiscal year 1988/89 indicates that a total of $3.7 million was paid out in the Kitikmeot region. The average monthly caseload was 537, representing an average of 1,610 people or 39% of the population. Of special significance is the fact that $1.6 million, or 42.6% of the payments were in the assistance category, "unemployed but able".

Per capita social assistance payment for the region were $912 in the fiscal year. Per capita payments by community range from a high of $1.328 in Spence Bay to a low of $520 in Cambridge Bay.

For many of the residents of the Kitikmeot region, hunting and fishing area cultural and economic necessity. Investment in infrastructure to facilitate these activities will serve to enhance their standard of living and their self-sufficient. These improvements will also be valuable to the development of tourism and commercial fishing. To others, the quality of air service will have a direct impact on mobility and their ability to participate in oil, gas and mineral development in the region.

D. CURRENT TRANSPORTATION INFRASTRUCTURE

1. Description

a) Air

All communities within the Kitikmeot Region have single, gravel airstrips of varying lengths that meet the standards for both day and night operations on a year round basis. All have terminal buildings with weather/communication facilities.

Fuel is available at all locations except Gjoa Haven.

b) Water

All communities within the Kitikmeot Region are located on the sea coast and all have access to sea lanes with the exception of Pelly Bay. Year round ice conditions restrict ship access to Pelly Bay and as a result this community is served by air only. The hamlet of Coppermine is located at the mouth of the Coppermine River near its discharge into the Beaufort Sea at Coronation Gulf. The river carries a heavy sediment load resulting in many shoals. Water depths are very shallow (3-6 ft.) for some distance.

There are no dock facilities for sea going ships in the region.

Various forms of wharfage/protection for small craft have been attempted by the various communities but with limited success except for Cambridge Bay. The facilities here are known throughout the Central Arctic coastline region as being excellent.

Except for Cambridge Bay where adequate barge docking facilities are available, gravel ramps extending from the beach/shoreline into the water are used in barge sealift operations.

Both Gjoa Haven and Spence Bay have excellent natural harbours where many boats can seek refuge in bad weather.

The Canadian Coast Guard ice breaker assists sealift operations when required.

c) Road

All existing roads provide local service only and are maintained by the community.

2. Transport service

a) Air

Jet passenger and cargo service via Yellowknife is provided to Cambridge Bay.

Propeller aircraft of varying sizes provide similar service to all other communities.

With the exception of Cambridge Bay, cargo terminal facilities at the airstrips are limited and consignees of cargo are expected to claim cargo virtually “on the apron” in many instances.

Cambridge Bay acts as a receiving/distribution centre where freight arriving from Yellowknife is rehandled for ongoing shipment to smaller communities by smaller aircraft or snowmobile.

b) Water

The sealift/barge resupply operation originates from Hay River. NTCL land their barges on the shorelines of the communities to offload their cargo. At Cambridge Bay, the barges are able to tie up to the dock to offload dry goods and fuel simultaneously.

Shore equipment such as fork lift trucks, mobile cranes and trucks are used to deliver the cargo directly to the consignee or to a designated area on the beach for later delivery.

3. Infrastructure deficiencies under existing service demands

a) Air

The airport at Coppermine requires:

A larger apron and gravel resurfacing of the runway
Widening of the run to 50m (150 ft.)
A larger terminal building
I.L.S. equipment and approach lighting
Increased fuel storage capacity

The airport at Cambridge Bay requires:

A larger apron and gravel resurfacing in the future

The airport at Gjoa Haven requires:

A 200 m extension of the runway for jet certification
Fuel dispensing capability in the future

The airport at Spence Bay requires:

An undetermined extension of the runway
The construction of cargo handling areas

The airport at Holman requires:

A larger terminal

Additions to and improvements to navigational aids and communications are considered to be part of the necessary and ongoing maintenance.

b) Water

Related to sealift/barge operations, and in a regional context, the present system or operation is flexible and requires very little infrastructure at the destination points.

Having said this however, Gjoa Haven is in a desperate situation with respect to its barge landing site. The barge operator NTCL has written the community and the community to the GNWT indicating there is a serious concern relating to the barge landing site. There is a chronic lack of sand material to push into the water to allow the barges to offload. The GNWT and the Coast Guard have a design for a docking facility prepared and waiting excellent natural harbour here with an excellent opportunity to construct a dock and see it survive.

The lack of deep water at Coppermine is of concern to the residents and the barge operator.

The efficiency of the sealift operation is influenced by weather and ice conditions while the frequency of service is limited to a season of some two months only.

Except for a new facility at Cambridge Bay, no wharf facilities exist, therefore there are no deficiencies. However, wharfage for small craft owned and operated by the local inhabitants is also non-existent. Since the use of small craft for fishing and hunting purposes is of such importance to the inhabitants, it is suggested that the lack of adequate wharfage maybe considered a current deficiency in all other communities.

E. SHORT TERM IMPROVEMENTS DESIRED BY THE COMMUNITY

1. Air

Airport improvements identified by various communities related to runway extensions and associated apron enlargements. It is thought that longer runways would permit the use of larger aircraft and in so doing, service improvements and passenger fare/cargo rate reductions would be realized and be passed onto the citizens.

New or enlarged terminal and cargo handling facilities were identified as a necessity to support anticipated increased in traffic resulting from improved air service.

Fuel dispensing capabilities are requested at all airstrips.

Given Pelly Bay's reliance on air traffic airport relocation is a priority -- possible use of DEW line site is one option for study.

In order to respond to the growing demands of air carriers, the level of service provided by staff at the airport must keep pace. This would include lengthening the hours of operation at most airports.

The imminent withdrawal of NWT Air service to the region is of concern to the communities and they are anxious to find a suitable replacement.

Improved water aerodrome facilities in some of the communities was requested.

2. **Water**

Except for Cambridge Bay, all communities expressed the need for new or improved wharf and/or protection facilities for small craft and/or barges.

3. **Road**

Short term improvements or additions to existing local roads related to the provision of access of tourist interest, access for hunting and fishing and access to fresh water supplies and gravel sources.

The community leaders of Coppermine see the construction of a winter road from Yellowknife to their hamlet. This is some 1200 km or 700 miles. This would then greatly reduce the dependence on the annual sealift.

F. LONGER TERM INFRASTRUCTURE IMPROVEMENTS

All communities expressed a very strong desire to see reductions in air fares and cargo rates together with improved air service. The communities do not want to see one airline having a monopoly on air/freight service.

Most communities see the need for improved docking facilities and staging area for the sealift operation. These would also serve the local people's need with respect to their own boats.

Pelly Bay suggest road links to provide access to adjacent communities which receive sealift and/or to DEW line station at Shepard's Bay.

The construction of an all weather road to the coast is seen in the distant future. In the meantime, perhaps the construction of a winter road from Yellowknife to Coppermine. Obviously this would reduce the dependence upon the barge and air service for the larger, non-perishable items.

VI

INUVIK REGION

A. OVERVIEW

The Inuvik Region includes 12 communities in the northwest NWT on or near the Mackenzie River and the coast of the Beaufort Sea. The present population is estimated to be 7,900 persons, representing 15% of the NWT population. The NWT Bureau of Statistics estimates that the population of the region will grow to 10,650 at an average rate of 1.5 % assuming zero net migration. Assuming continuing reliance on the government for services and infrastructure, this indicates an increasing level of demand. The population of children (0-14 years) and young adults (25-44 years) are expected to gTow more quickly than other age groups.

Ethnically, the communities fall into two categories. Those communities on or near the coast (Sachs Harbour, Paulatuk, Tuktoyaktuk) are predominantly Inuit. In Aklavik Inuit comprise 50% of the population. The economic centres of Inuvik and Norman Wells are predominantly non-aboriginal (58% and 85% respectively). The remaining communities (Arctic Red River, Colville Lake, Fort Franklin, Fort Good Hope, Fort McPherson, and Fort Norman), are predominantly Dene.

Transportation services provided to the communities vary widely, partly as a result of geographical factors and partly as a result of developments.

Arctic Red River has no airport. All other communities except Colville Lake have regular, scheduled air service.

All communities except Fort McPherson, Colville Lake and Fort Franklin receive barge service during summer.

The Dempster Highway, an all-weather road, serves Fort McPherson, Arctic Red River and Inuvik. During freeze-up and break-up when the rivers are impassable, these communities depend on air transportation. A winter road from Fort Simpson in the Fort Smith region serves Norman Wells, Fort Norman and Fort Franklin. Aklavik in linked to Inuvik by winter road along the river.

Development opportunities in the Inuvik region are limited, with the exception of oil and gas-related activity. The Native communities rely on fish and game for much of their subsistence. However, generally speaking, renewable resources are too small or too far from market to permit significant commercial harvesting. Tuktoyaktuk and Inuvik are adjacent to the commercially-harvested reindeer herd. Banks Island contains muskox herds large enough to be harvested commercially, but the viability of this opportunity is unproven. Arctic char may be available in commercial quantities near Paulatuk, Sachs

Tourism development offers an opportunity for further seasonal employment. Sports hunting is an active business and presents expansion possibilities without significant infrastructure development.

During our interviews the communities identified improvements in transportation infrastructure which would increase the convenience of movement and reduce the cost of living. For example, larger airports would permit the use of larger aircraft and reduce freight costs. Improvements to runways and navigational aides would increase safety. An all-weather road linking the southern communities to Fort Simpson in the south and Inuvik in the north will also significantly reduce the cost of living. At the same time it could increase tourism by providing a circle route.

In no cases did we learn of otherwise viable economic development opportunities which were stifled because of the inadequacies of the transportation infrastructure.

B. ECONOMY

1. Employment

The NWT Labour Force Survey reports that 3,808 people or 69% of the working age population, was in the labour force in the winter of 1989. Of that number, 3,123 were employed and 685 were unemployed yielding an unemployment rate of 18%. In the same survey 1,319 people stated that they wanted a job, revealing a strong "discouraged worker" effect. In addition, 4,167 people had indicated that they had worked in the previous year, demonstrating high seasonality of employment.

The unemployment rate was highest in Aklavik at 48% and lowest in Inuvik at 6%.

2. Income

As in other outlying regions in the NWT, Inuvik inhabitants obtained the bulk of their income from government employment and transfer payments.

The region has high income levels in the major centres, primarily as a result of higher employment in Yellowknife. In 1986 the regional average was $18,200 per annum. Norman Wells reported average income of $30,000, and Inuvik reported $28,100. Smaller communities showed significantly lower incomes ranging from $7,700 in Paulatuk to $17,700 in Sachs Harbour.

3. Development opportunities

Development opportunities in the Inuvik region are limited, with the exception of oil and gas industry. This section will deal briefly with opportunities which may arise over the next 20 years.

a) Oil and gas

A consortium of oil companies has recently received approval for the export of natural gas from the western Arctic to the United States. The consortium must now confirm its choice of transportation and prepare environmental impact statements. The gas conceivably could be exported by ship but a pipeline proposal is expected by most observers.

The pipeline will create a surge in employment and economic activity in the region, during the construction phase. This development is not dependent on an improved transportation infrastructure. After construction the pipeline will provide employment to a small number of operators, maintenance people and supervisors.

In 1982 Dome, Esso and Gulf proposed the construction of an oil pipeline from the Mackenzie Delta to southern Canada. The oil crisis halted actual development but a strong possibility exists that the project will be undertaken within the next 5 to 10 years. The original environmental impact statement forecast construction employment of at least 1,200 persons. On-site operation of a 16“ pipeline would provide 60 additional jobs in the N’WT.

Again, construction and operation of the pipeline does not depend on further developments of the transportation infrastructure.

b) Renewable resources

The GNWT has recently issued requests for proposals to study the feasibility of marten farming in the Inuvik area and a commercial muskox harvest on Banks Island. The fur-farming proposal will not be sensitive to transportation development since the proposed site will be close to the Dempster Highway. The viability of muskox harvesting will be very sensitive to transportation costs. The study itself will identify necessary transportation developments.

c) Other minerals

The Inuvik region is thought to be poor in mineral resources, other than oil and gas. A coal deposit, too small for commercial exploitation, has been found close to Aklavik. Low-grade lignite is available near Fort Norman. It is used as a local fuel but has no commercial significance. Low to medium-grade lead/zinc deposits have been identified near Normal Wells and Fort Good Hope. Again, their development is not commercially feasible.

Over the next 20 years demand for minerals may change to the extend that some of these deposits become more attractive. However, the probability of development is low.

d) Tourism

The three communities on or near the Dempster Highway are most accessible to tourists. In 1988 a total of 1,820 tourist vehicles transpornng over 5,000 people crossed the Peel River near Fort McPherson. These numbers exclude packaged tourists and sports hunters and fishermen. The tourism infrastructure is relatively developed with an adequate number of campsites and hotel rooms for current visitor volumes. The impact of tourism on Fort McPherson and Aklavik will be increased more by giving visitors additional reasons to stop off in the communities, rather than by basic infrastructure development.

Tourism is relatively undeveloped in the southern communities (Colville Lake, Fort Good Hope, Norman Wells, Fort Norman and Fort Franklin). They are accessible only by air during the tourist season. The construction of an all-weather road to join the Dempster will provide an unknown flow of traffic through the area. The communities will then have to develop their own tourist attractions to keep visitors in their communities.

The region produces high-quality arts and crafts. The resources exist to produce a larger volume, but market development must precede higher employment.

e) Services

The number of businesses in the region increases every year and further progress can be expected. The demand for support of pipeline construction is more likely to lead to the (temporary) expansion of existing businesses rather than the establishment of new ones. The service sector is relatively well developed in Inuvik and Norman Wells which have the highest income rates, employment rates and non-aboriginal populations. The smaller communities have relatively few services serving strictly local needs (with the exception of the Fort McPherson Canvas Shop). Services can be expected to grow with population but is unlikely to provide significantly increased employment opportunities.

On the other hand, the federal and territorial governments may provide employment to more aboriginal inhabitants of the region. The civil service is unlikely to grow in a period of restraint, but the GNWT's Affirmative Action Policy could lead to the displacement of southern workers with local inhabitants. The effect could be to reduce the level of unemployment, as southern workers are likely to leave the territory if jobs become unavailable.

C. SOCIAL ISSUES

The population of the Inuvik region will display sharp growth in the young (up to 14 years) and in the working adult (25-44 years). Unless the number of jobs increases more quickly than the working population, unemployment will increase, as will dependence on Social Assistance.

Social Assistance payments during the fiscal year 1988/89 amounted to $3.0 million. The average monthly caseload was 478, representing 1,280 people or 16% of the region's population.

Approximately one-third of payments were made in the category "unemployed but able." This was the largest category, representing an average of 140 people per month. The figure indicates the need for the development of employment-generators. The category "not enough income" was the smallest category specified. It would appear that those individuals who are employed tend to earn enough to SUppOrt themselves without help from the Social Assistance system.

In two of the communities we visited some individuals expressed concern over the social effects of an all-weather road. The reactions do not necessarily represent the attitude of the total community, but strong concerns were expressed that permanent road links to the outside world could result in alcohol problems and the migration of anti-social elements into the communities.

D. CURRENT TRANSPORTATION INFRASTRUCTURE

1. Description

a) Air

With the exception of Arctic Red River, all communities in the region have airstrips of varying lengths and conditions with lighting for both day and night operations. The terminals and landside facilities are generally satisfactory with the exception of Tuktoyaktuk were the passenger terminal requires urgent expansion. At Tuktoyaktuk the oil companies have constructed a separate apron and facility for their uses including transshipment to helicopters.

At Inuvik the runway is paved but all other airstrips are gravel. Inuvik has a major float plant base and the old runway adjacent to the town centre is still operational. Landing aids permit precision landings at Inuvik and only at Paulatuk is the runway orientation a major safety concern.

b) Water

The Region is served by tug-barge along the Mackenzie River and the north coast. Most communities have the sealift discharged on the beach or riverbank

and have no permanent facilities for docking. Similarly small craft used by residents are pulled upon the beach.

c) **Road**

Road access to the Region is provided by the Dempster Highway from the Yukon and B.C. to Inuvik of which approximately 268 km of gravel road is in the Northwest Territories.

Winter roads are constructed from Inuvik to Aklavik and Tuktoyaktuk (86 km and 194 km respectively) and between Fort Franklin and Fort Norman.

Ferry crossings of the Mackenzie and Peel Rivers interrupt traffic during freeze-up and break-up until ice roads are opened.

Construction is underway to pave the section from Inuvik to the Airport/.

Roads within the communities are generally earth or gravel except Inuvik where major roads are paved with curb and gutter, and sidewalks.

2. Transport services

a) Air

Inuvik and Norman Wells receive daily scheduled (combi) jet service by C.A.I. and/or N.W.T. from Yellowknife, Edmonton and Calgary.

Propeller aircraft of varying sizes provide scheduled services to the surrounding smaller communities but there is also extensive use of charter and private flying, as well as float planes.

The oil/gas companies operate jet charter on a regular basis from Edmonton to Tuktoyaktuk.

b) Water

NTCL operate the tug-barge sealift from Hay River to serve communities along the Mackenzie Valley usually once but sometimes twice yearly. The major cargo items include construction material and equipment, bulk dry goods and fuel, some of which originates from Norman Wells. The oil and gas industry receive major resupply shipments at Tuktoyaktuk. Inuvik is developing as a transshipment centre e.g. Aklavik receives goods by barge and Fort McPherson receives fuel by road, from Inuvik.

c) Road

The Dempster Highway provides all year access except during freeze-up and break-up when the ferry service is inoperable and the ice roads are not passable. An air ferry is operated from south of the Peel River to Inuvik to maintain supplies.

Winter roads, particularly to Tuktoyaktuk and Norman Wells, are important for moving heavy loads for the oil/gas industry.

Tourist traffic on the Dempster is an important component with more than 1800 vehicles recorded at the Peel Ferry in 1988.

3. Infrastructure deficiencies under existing service demands

a) Air

Runway relocation is required at Paulatuk because of crosswinds. A similar request was noted at Tuktoyaktuk although this was to permit expansion of the settlement. An urgent need at Tuktoyaktuk is expansion of the terminal buildings.

Arctic Red River, Fort Franklin and Fort Good Hope were included for new or improved airports under the terminated Federal Government Arctic Airport Program. These communities request improved airport facilities.

b) Water

Most communities stress the need for a community wharf to accommodate boats used for local fishing and hunting and which is usable at all times. This could also be used for float planes in some locations.

There were no serious concerns regarding infrastructure for sealift except at Aklavik, where they request a docking facility, and at Fort McPherson where local dredging is required to accommodate the sealift, particularly fuel shipments. In recent years Fort McPherson has not received sealift but has been supplied by road and air.

Inuvik residents argue that they require a permanent wharf to accommodate sealift and transshipment.

c) Roads

A common issue in many communities was the need for improved maintenance along the Dempster Highway and earlier construction of the winter road. The need for bridges at the Mackenzie and peel Rivers was stressed -- the latter by Fort McPherson. Arctic Red River request a separate ferry crossing to link them with the Dempster.

Extension of the Mackenzie road to connect with the Dempster was a repeated request and improvements to inter community links was in most communities considered desirable and advocated although. However in some cases the cultural/social consequences of increased personnel mobility were a matter of debate.

E. SHORT TERM IMPROVEMENTS DESIRED BY COMMUNITIES

Improved road maintenance
Earlier construction of winter roads
Enlarge terminal at Tuktoyaktuk
Provide community wharf at many communities
Connect winter road from Arctic Red River to Norman Wells
Resurface runway at Sachs Harbour
Relocate runway at Paulatuk

F. LONG TERM INFRASTRUCTURE IMPROVEMENTS

Connect Dempster Highway to Mackenzie Highway
Permanent wharf at Inuvik
Construct air ports at Arctic Red River, Port Good Hope and Fort Franklin
Bridge Peel and Mackenzie River on Dempster Highway
Construct road between - Fort McPherson and Aklavik
- Fort Franklin and Fort Norman (Mackenzie Highway)
- Inuvik and Tuktoyaktuk
Relocate Tuktoyaktuk Airport for urban expansion

VII

FORT SMITH REGION

A. OVERVIEW

The Fort Smith Region is the largest and most highly developed administrative region in the Northwest Territories. Nevertheless, the range of communities is very wide both in size and in development, At one end of the scale lies Yellowknife, the capital, with over 13,000 inhabitants and a highly developed economy. At the other extreme are communities such as Jean Marie River, Nahanni Butte and Trout Lake, all of which have fewer than 100 inhabitants.

The NWT Bureau of Statistics estimates that the 1989 population of the region approximately 25,100, or 46% of the NWT population.

Ethnically, non-aboriginals comprise approximately 55% of the population of the region. However, they are concentrated specifically in Yellowknife (86% of the population) and Hay River (71 % of the population). Dene form the next largest population group at almost 40%.

The NWT Bureau of Statistics estimates that the population of the region will grow to 30,941 by the year 2010 (with no net migration), experiencing an annual average rate of growth of 1.0%. The population will continue to rely on government for jobs, as well as for services and infrastructure. Even in the mature economies of Yellowknife and Hay River, the three levels of government (federal, territorial and municipal) provide a high proportion of employment. In the smaller communities the majority of formal wage jobs are provided by the Territorial and Community governments, together with Band Councils and their Development Corporations.

The following communities are served by all weather roads (although road access to the last four communities is suspended during freeze-up and break-up):

Fort Liard
Fort Simpson
Enterprise
Hay River
Pine Point
Fort Resolution
Fort Providence
Rae-Edzo
Yellowknife
Detah

The following communities are served by winter roads:

Trout Lake
Nahanni Butte
Jean Marie River
Wrigley
Lac la Martin
Rae Lakes

Snowdrift is irregularly served by a winter road when large volumes of construction materials must be brought in.

The winter road to Wrigley was originally built as an all weather road. However, no provision was made to cross the Mackenzie at Camsell Comer and so the road is at present used only in winter. Proposals have been made to convert the road to all weather use as far as Wrigley, and possibly continuing to Fort Providence.

All communities are served by air, even the smallest receiving scheduled service at least twice a week.

Barge service is becoming less important although barges do carry large freight items to communities not served by all weather roads.

Development opportunities in the Fort Smith region are concentrated primarily in Hay River and Yellowknife. They tend to be undertaken by private enterprise rather than government. In the smaller communities bands and their development corporations are trying with varying degrees of success to take over responsibility for winter road construction and general road maintenance from the territorial government. These corporations are also involved in the retail business, hotels and lodges, and highway gas and service stations. In these areas of activities, the strongest prospects for growth in the future lie in those businesses catering to tourists.

Some mineral deposits have been found in the Yellowknife area but we heard of no formal development proposals.

Transportation issues raised in the communities tended to fall into three categories:

- Safety improvements to airports
- The relocation of facilities such as airports, docks and barge landing areas to permit more orderly development of the community
- Improvements to road services to facilitate tourism and to reduce the cost of transport

B. ECONOMY

1. Employment

The NWT Labour Force Survey reports that in winter 1989, 13,224 people or 77% of the working age population was in the labour force. Of that number 11,654 were employed and 1,570 were unemployed, yielding in an unemployment rate of 12%. In the same survey, 2,909 people stated that they wanted a job or a different job. Part of the difference between this number and the number of unemployed may represent workers who have been discouraged from actively seeking employment. The same survey showed that almost 14,000 people had worked in the previous year, indicating a degree of seasonal employment.

The unemployment rate was highest in Rae Lake at 56% and lowest in Yellowknife at 4%. The smaller communities tended to have unemployment rates exceeding 20%. Of those employed, a significant proportion worked for federal, territorial and municipal governments.

Domestic hunting and other collection of country foods remain an important part of diet. However, the important varies inversely with the standard of road access and therefore the availability and cheapness of commercial food.

2. Income

Fort Smith region inhabitants earn their income from a wider range of sources than do residents in the other regions. However, the three levels of government still remain the largest employer.

Average income in 1986 was $23,000. The non-abandoned mine at Pine Point provided average incomes of $27,800, with Yellowknife close behind at $27,000. In the rest of the region the poorest community was Rae Lakes, with average incomes-of $5,700. Hay River, at $21,500 was the only community with average incomes higher than $12,500.

3. Development opportunities

Opportunities for new economic development (as compared with the transfer of responsibilities) lie in the areas of tourism and mineral development. Other than fishing in the Great Slave Lake, renewable resources appear inadequate for commercial harvesting.

a) Tourism

The majority of tourism is presently concentrated around the Great Slave Lake. The tourist infrastructure is well established with hotels and campsites adequate for present volumes. Growth in the number of tourists over the next 20 years will inevitably lead to the development of additional facilities. Communities in the area express

concern over the quality of the highway from Enterprise to Yellowknife. The number of cars traveling this route in 1989 was lower than the previous year. Community respondents felt that some tourists turned back because of the condition of the road.

Another area with great tourism potential is the Nahanni National Park. The three communities of Fort Liard, Nahanni Butte and Fort Simpson are positioned to take advantage of serving visitors to this area. Fort Simpson appears to have developed a lead, followed by tourism operators in Fort Liard. Nahanni Butte is a much smaller community and, although being closest to the park does not derive much benefit from park visitors.

Services to tourists would include hotels, lodges, highway service stations and arts and crafts.

b) Mineral development

Over the past 20 years the real value of mineral output has increased by two or three percent per year. New developments can be expected to continue in the future although, as mentioned earlier, no specific new mines are envisaged. The Colomac mine is now being developed a 150 kilometers north of Rae-Edzo. Other mineral resources include lithium, medium uranium potential (which was formerly mined in the region), silver and gold.

The construction of oil and gas pipelines from the Mackenzie Delta could benefit some of the communities along the river. Foothills Pipelines which proposes the gas pipeline would have three administrative centres in Inuvik, Norman Wells and Fort Simpson. Fort Simpson, and to a lesser extent Fort Liard could benefit from transportation requirements particularly if heavy loads are transshipped from road to barge at these points. In addition, the planning and administrative activities associated with construction will demand accommodation, transportation and communication services.

C. SOCIAL ISSUES

The population of the Fort Smith region will be the most stable and show the lowest growth rates over the next 20 years. Nevertheless, unemployment could become an even greater problem in the smaller communities unless jobs can be created more quickly than the population reaches working age.

Yellowknife, with over half the population of the region, required social assistance payments during the fiscal year 1988/89 of $1.9 million. The average monthly caseload was 270, representing 554 people or 2% of the city's population.

The most important category (one-third of payments) was "ill-health/disabled'. The category (unemployed but able) represented less than 10% of the payments and 13% of recipients. Unemployment is not a problem in Yellowknife.

In the rest of the region, total social assistance payments were $3.1 million, to an average monthly caseload of 580, representing 1,070 people, or 10% of the population. The category "unemployed but able" accounted for one-third of the payments, while the category (not enough income) accounted for another 2090. These categories indicate the need to provide adequately paying jobs in the smaller communities outside Yellowknife.

Some of the very small settlements depended very strongly on a traditional, land-based lifestyle. These communities did not view isolation as a drawback. In this region, as in others, the provision of permanent road access is viewed as a mixed blessing. The cost of purchased goods would fall but at a cost of potential social disruption.

D. CURRENT TRANSPORTATION INFRASTRUCTURE

1. Description

a) Air

The Region contains four category A or B airports at Fort Simpson, Yellowknife, Hay River and Fort Smith. With the exception of the former, daily scheduled jet passenger/cargo service connects the Region with southern Alberta (and thence to transcontinental flights) and to the other major centres in the Northwest Territories.

A number of communities rely upon the air mode as their sole or primary link for intra-regional travel. Among these communities are Snowdrift, Reliance and Trout Lake. The Region also has a number of centres with airports but which have alternative modes of transport available -- road/water -- although they maybe seasonal in operation. Examples of this type of community are Fort Providence and Rae Edzo.

b) Water

In the region and indeed for the Mackenzie Valley and western arctic, Hay River is the centre of activity for tug and barge operations by NTCL. Commodities and goods arrive from the south by rail and road and Hay River has large-scale storage, warehousing and transshipment facilities as well as ship building/repair capability. Fort Simpson also serves as a base for a tug barge operation by Cooper's which, while not as large scale as NTCL, is significant along the Liard River and southern Mackenzie.

Bulk commodities along the Mackenzie and Liard utilize sealift and most construction projects rely upon the barged sealift for mobilization. Most communities have no infrastructure for the sealift -- mainly because of the large seasonal variation in the river levels and the damage to docks resulting from freeze-up. Consequently the sealift unloads onto the river bank and is then moved by the community.

c) Roads

The primary all weather road connection, the Yellowknife Highway and a section of the Mackenzie Highway is, from Yellowknife to the Alberta border (610 km) on a gravel road except for the section between Enterprise and the border which is paved. This road also serves Hay River -- the barge transhipment centre -- and several smaller communities including Fort Providence, Enterprise and Rae-Edzo. It crosses the Mackenzie River by ferry at Fort Providence which typically operates from June to Sept. In winter it is replaced by an ice bridge.

The Liard Highway links the Mackenzie Highway at Fort Simpson to B.C. (107 km) and the other major road connection is from Hay River to Fort Smith. Within the Region therefore the major population centres are linked by all weather road.

d) Rail

Hay River is a terminus of the CN Rail network and a rail line serves the Pint Point mine with unit trains.

2. Transportation services

a) Air

The Region is well served with scheduled carriers competing daily between Yellowknife and southern Alberta as well as to Inuvik, Cambridge Bay, Rankin Inlet and Iqualuit with jet combi 727 and 737 aircraft.

There is a second tier of carriers with propeller aircraft based at Yellowknife, Fort Simpson and Hay River which connect to most surrounding communities with scheduled services.

Additionally there are charter operations including float planes serving the less travelled routes.

b) Water

The infrastructure and fleet capacity at Hay River and Fort Simpson is adequate for current requirements and with little infrastructure required at the communities, satisfactory service is provided. The comments relate more to the landside organization and management rather than the service and infrastructure, and to the transport costs which are considered excessive.

c) Road

The major concern relates to the condition of the existing road network and particularly the Yellowknife to Enterprise section which translates directly into higher transportation costs. An additional concern is the deterrent impact of the gravel

surface section upon tourist industry. The disruption during freeze-up and break-up is reflected directly in consumer pricing.

3. Infrastructure **deficiencies under existing service demands**

a) Air

The major airports are adequate for current demands. At the smaller community airports where air transport is a primary transport link some deficiencies have been identified. They include runway strengthening at Trout Lake and runway reconstruction/realignment for safety reasons at Nahanni Butte, Rae Lakes and Snowdrift. New airport locations are required at Snare Lakes which presently relies upon float/ski planes and the hi-annual winter road.

b) Water

A number of communities require relocation of barge landing areas -- Nahanni Butte, Wrigley and Fort Liard.

Hay River is concerned that its future role as a major centre of barging activity will be adversely impacted if the rail service stops. With road improvements, particularly to Yellowknife, direct shipment by truck would bypass the town.

c) Road

The paving of the route to Yellowknife is arguably the highest priority although a permanent crossing of Mackenzie was also an often repeated request.

Extension of the Mackenzie Highway to Inuvik firstly as winter road and ultimately to all weather standards was raised as a constraint to tourist development and would benefit local residents by linking communities.

A number of communities have identified road sections requiring major repair/upgrading:

Fort Simpson Airport Road
Yellowknife - Detah Road
Nahanni Butte winter road alignment

Other communities have proposed new roads section for tourist development and/or to improve accessibility to traditional hunting/fishing grounds e.g. Snowdrift. Some concern regarding the social consequences of improved mobility were noted, particularly at Snare Lake.

E. SHORT TERM IMPROVEMENTS DESIRED BY COMMUNITIES

1. Air

Highest priority is to upgrade/relocate airports excluded from the Arctic Airport Programme.

The second priority is to improve maintenance and reliability of service. At Hay River and Fort Smith the concern is to maintain direct service to Edmonton.

2. Water

Provision of suitable docking area for float plane and small hunting/fishing vessels is required at most communities.

3. Roads

Generally it is appreciated that major projects involve long lead times but improved maintenance was often mentioned.

Construction of relatively short sections of community access roads was noted and some improvements were suggested to winter road alignments that are potentially dangerous.

F. LONGER TERM INFRASTRUCTURE IMPROVEMENTS

The longer term improvements concentrate on road improvements particularly improving the Mackenzie and Yellowknife Highway with permanent bridge crossing to avoid disruption.

Development of loops was stressed -- Dempster connection with Mackenzie Valley, Fort Smith linking into Alberta, and a road around the eastern arm of the Great Slave Lake.