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The Strathcona Sound Mining Project

A Case Study of Decision Making

by Robert B. Gibson

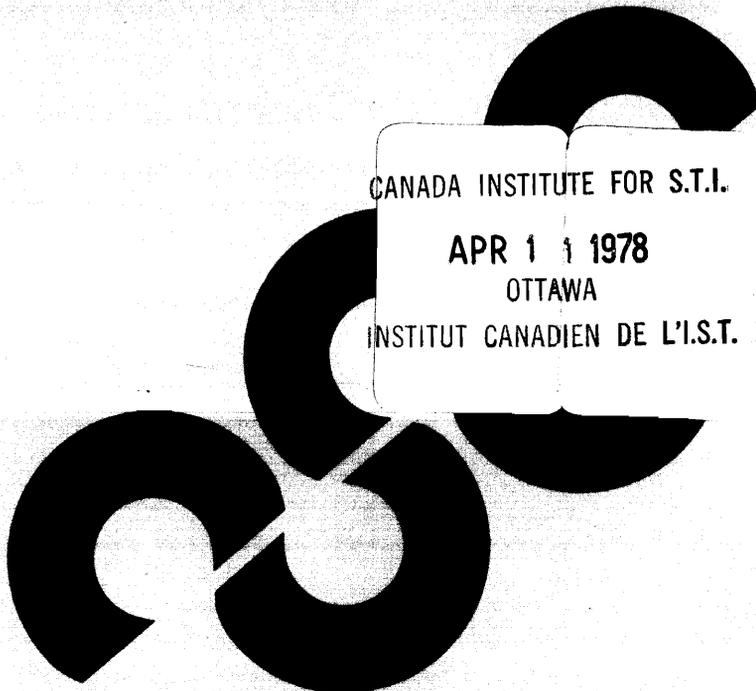
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MINING PROJECT
A Case Study in Decision Making

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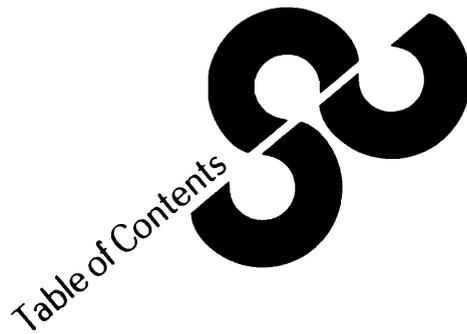
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J.F. Daw

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FOREWORD

This study by Robert Gibson, now a doctoral candidate at the University of Toronto, was commissioned by the Science Council as background material for Science Council Report No. 26, Northward Looking: A Strategy and a Science Policy for Northern Development. The Council had long recognized that specific issues of development in Canada's North could only be considered if there was an understanding of their decision-making context. We are also keenly aware that, for any project, large or small, Canadians must make the best use of existing and developing scientific knowledge and technological expertise so that developments in the North are for the benefit of northern peoples and all Canadians. A case study of the Strathcona Sound lead-zinc mining project was of particular interest because it was the first such project to be considered by the federal government after its announcement, in March 1972, of a new policy for northern development. We hoped that an analysis of the decision making involved in this project would allow us to judge to what extent government officials and others had become aware of the opportunities and hazards of resource exploitation projects and of the necessity for well-planned, comprehensive assessments of the social, economic and environmental effects, before the final decision is made.

As with all background studies, the analysis and conclusions are those of the author and do not necessarily reflect the views of the Science Council.

The other studies concerning northern development are:

- The Political Economy of Northern Development, by K.J. Rea, Science Council of Canada Background Study No. 36, Information Canada, Ottawa, 1976.
- "Decision Making in the North: Oil Sands Case Study," by Canadian Resourcecon Limited (W.R. Lee, D.K. Strang, G.A. Constable, and G.R. Staple). Mimeographed copies are available from the Science Council.
- "Le processus décisionnel dans la conception et la réalisation du développement nordique au Canada - La Baie de James," préparé par Eric Gourdeau avec la collaboration de Pierre Dansereau, Louis-Edmond Hamelin et Guy Rocher. Mimeographed copies are available from the Science Council.
- Northern Development and Technology Assessment Systems: A Study of petroleum development programs in the Mackenzie Delta-Beaufort Sea Region and the Arctic Islands, by Robert F. Keith, David W. Fischer, Colin E. De'Ath, Edward J. Farkas, and Sally C. Lerner, Science Council of Canada Background Study No. 34, Information Canada, Ottawa, 1976.

- "Offshore Petroleum Exploration on the Labrador Continental Shelf:
A Study of Decision Making," by R.D. Voyer. Mimeographed copies are
available from the Science Council.

J.J. Shepherd
Executive Director
Science Council of Canada

PREFACE

In June 1973 the Science Council of Canada decided to examine the scientific and technological issues raised by efforts to develop northern Canada. The Council recognized that the specifically scientific or technological issues in the North could be meaningfully considered only on the basis of a more general understanding of their northern context. The Council therefore decided to commission several case studies of recent and continuing northern projects. These studies would uncover relevant issues of northern development and provide insights into the nature and quality of present decision making processes.

The Strathcona Sound mining project was chosen for case study for several reasons. In particular, mining has for many decades dominated the industrial economy of the North and mining projects will continue to be socially, environmentally and economically significant in the foreseeable future of the North. A study of at least one such project was necessary. The Strathcona project was announced as "a new approach to natural resource development in the North" when the agreement to proceed was signed. Moreover, the Strathcona project approval was the first such decision made by the federal government after its adoption of a new policy for northern development in March 1972. The Strathcona decision offered an excellent opportunity to assess the actual implementation of the new policy pronouncements, to measure the extent of advance over previous practices, and to identify any new issues which may have arisen with the new policy. Because the project was to be undertaken in the territorial north, outside of any provincial jurisdiction, the decision-making process that led to project approval was less complex.

The Strathcona project is not extraordinarily large. With an estimated \$55 million initial cost, it is not nearly as significant in national economic terms as the multibillion dollar pipeline projects proposed for the North. It is, nevertheless, the largest industrial venture being undertaken in the Eastern Arctic. For the people of that region the project will be of considerable social, economic and, perhaps, environmental significance.

This case study was not intended to provide an examination of the Strathcona project itself. At the time the study was undertaken, the project was in its initial construction phase and important decisions concerning the final nature of its implementation had not been made. The subject of study is restricted to the decision-making process which began with an inquiry into the commercial feasibility of a mine-mill operation at Strathcona Sound and culminated on 18 June 1974 with the signing of an agreement between the Canadian federal government and Mineral Resources International Limited. The agreement, with various terms and conditions, granted government approval and financial support for the project.

The decision making which led to the signing of the Strathcona agreement was not carried out publicly. A copy of the feasibility study prepared for the corporate proponents and some documents pertaining to the government assessment were made available to the author. Additional information was provided in interviews and public statements by federal and territorial officials. Nevertheless, many details of the decision making could not be elicited from the decision makers, either officially or unofficially. Thus, while efforts were made to ensure that the information base for this case study was as complete as possible, some weaknesses were unavoidable.

Many complex social, environmental, and economic issues arose during the Strathcona project decision making. Other issues, directly implied by the nature of the proposed project, ought to have arisen. The nature and treatment of these issues are the chief concerns of this study.

To gain an appreciation of the context for its northern development study, the Science Council adopted a broad and comprehensive approach. It took the position that "northern development" should not be considered merely in terms of economic growth or increased exploitation of northern resources. Instead, the Council insisted that consideration be given to all the factors - social, environmental, and economic - which affect the lives of northerners and other Canadians. Northern development was broadly defined rather than expressed merely in terms of resource exploitation and economic growth.

In attempting to consider adequately the matters which lie within this broad approach, the author has relied upon the advice and experience of many individuals, as well as upon the available literature and documentary evidence. Wherever possible these debts have been acknowledged in notes. There were however some individual informants who preferred not to be identified. The assistance of both identified and anonymous informants has been indispensable owing to the limited availability of documentary evidence. Nevertheless, responsibility for the quality of the analysis and the accuracy of the conclusions remains with the author.

CHAPTER I

INTRODUCTION

A. THE STRATHCONA PROJECT

The Strathcona project involves the construction, operation and eventual closure of a lead-zinc mine and related facilities on a Baffin Island site about 27 km (17 miles) from the predominantly Inuit village of Arctic Bay (see Figure 1). According to the plans announced when the project agreement was signed, the mine and a 1.5 kt per day ore concentrator were expected to be in operation by late 1976, producing each year 125 kt of zinc concentrates and 20 kt of lead concentrates for export to European and American smelters.(1)

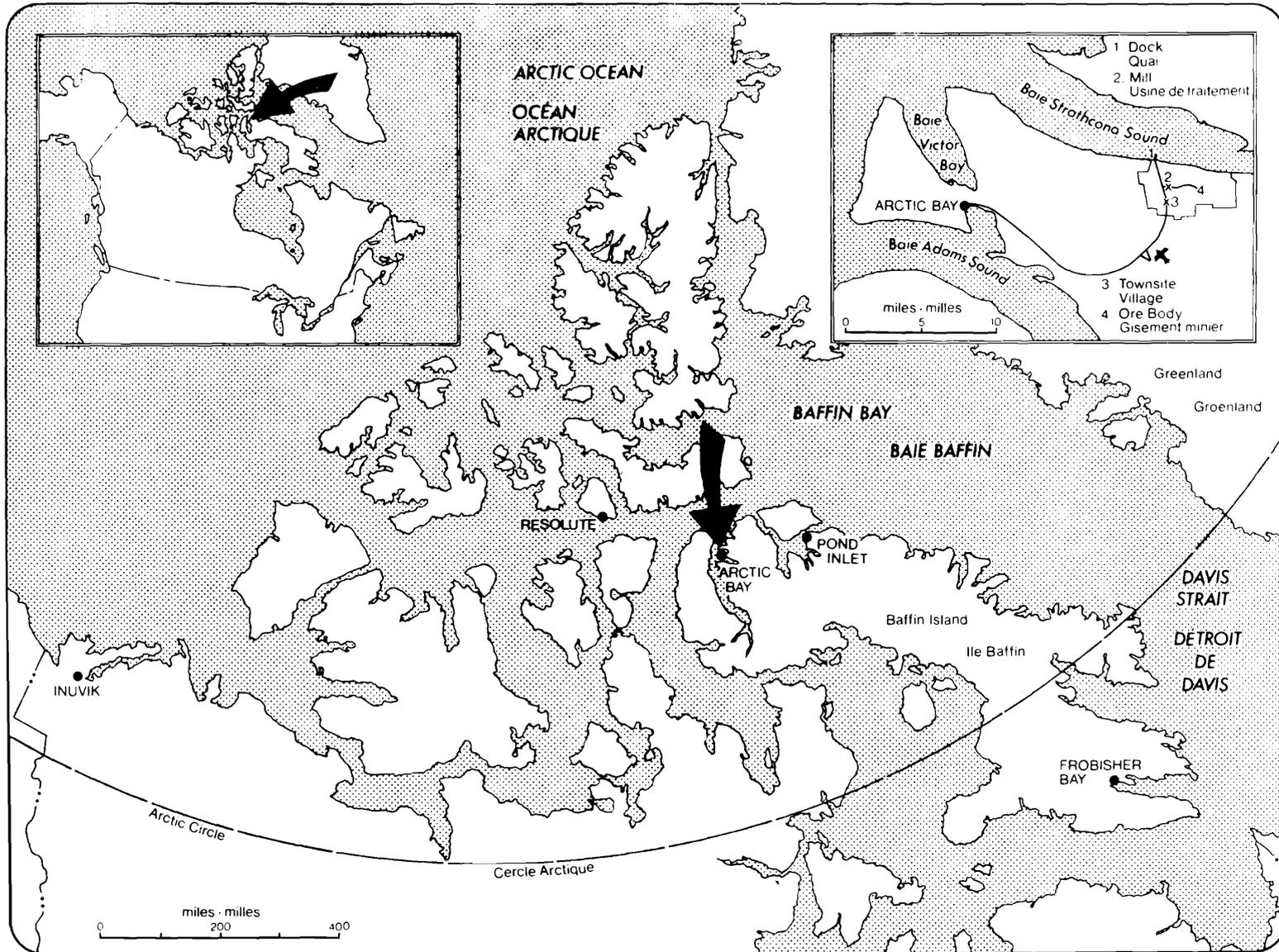
The operation was also expected to produce 375 kt of tailings (waste) annually.(2) These wastes were to be disposed into the waters of Strathcona Sound or behind embankments on land. The mine had a potential productive life expectancy of about 12 years, unless further ore reserves were found. During this time the project was expected to provide employment for about 170 people directly and another 30-50 people indirectly.(3)

Many of the specific characteristics of the Strathcona project and the terms and conditions for its implementation were set out in the formal agreement signed on 18 June 1974 by the Canadian federal government and Mineral Resources International Limited (MRI).(4) MRI, the proponent of the project, became majority owner of Nanisivik Mines Limited, the company which was created to carry out the Strathcona project.

In the June 1974 agreement, the government assured MRI of a licence to export its concentrate and undertook to provide \$16.7 million in grants and loans to MRI for infrastructure construction (docks, roads, airport and townsite). In return, the government received an 18 per cent equity interest in Nanisivik Mines and MRI agreed to its implementation of the project to meet several government requirements. Perhaps the most significant requirement bound the company to try, by the third year of production, to have 60 per cent of the labour force "northern residents" (in effect, native Inuit workers).(5) The company also agreed to cooperate in training programs and to carry out extensive environmental studies. The then Minister of Indian Affairs and Northern Development, the Honourable Jean Chrétien, claimed that the Strathcona agreement represented "a new approach to natural resource development in the North".(6,7)

The claim was at least partially accurate. In complexity and comprehensiveness, the Strathcona agreement has no precedent in the history of resource exploitation projects in the territorial north. However, the nature of the decision making which led to the signing of the agreement was in many ways consistent with previous approaches

Figure 1 - Location of Strathcona Sound



Source: Map courtesy of DIAND

to northern resource exploitation.

B. THE CONTEXT OF THE STRATHCONA DECISION - HISTORICAL EXPERIENCE

The decision-making process regarding northern mining projects has changed over the past two decades. In particular, the federal government has become increasingly involved in both the approval and the implementation phases of these projects. The nature, direction and effects of this increasing involvement are indicated in a brief survey of the history of three territorial mining projects, the Rankin Inlet, Pine Point, and Anvil mines. The background emphasizes the nature of the arrangements between the federal government and the private companies involved, and identifies both the advances that have been made and the recurring problems that demand further attention.

1. The Rankin Inlet Nickel Mine

The first significant mining operation in the Canadian Arctic was at Rankin Inlet where nickel ore was mined and concentrated in the late 1950s and early 1960s (see Figure 2). Like most pioneering ventures the Rankin Inlet project was not an unqualified success even during its years of operation. However, it served an educational role by providing an opportunity for learning technological and social lessons which would improve the quality of subsequent efforts.

The nickel orebody at Rankin Inlet was discovered and partially examined in the late 1920s and 1930s, but not until the early 1950s, when nickel prices increased, did mining begin.(8) Exploratory drilling and shaft development outlined an estimated 460 kt orebody grading 3.3 per cent nickel and 0.81 per cent copper.(9) Production began in 1956, after control of North Rankin Nickel Mines Limited was acquired by the Mogul Mining Corporation.(10) The orebody was expected to last a maximum of six years unless further reserves were discovered.

The development phase of the Rankin Inlet mine did not involve significant government assistance, nor did government officials insist on any particular restrictions or regulations.(11) The problems of whether and how to proceed with the project were left entirely in the hands of the company. For some of the company's technical, financial and personnel difficulties, there were no conventional solutions. A consultant, Andrew Easton, was hired to find a way to reduce the mine's extremely high labour turnover rate. After recommending that the company hire Inuit workers instead of importing transient workers, Mr. Easton was hired to act on his own advice. Beginning in 1956, the company actively recruited Inuit employees from the nearest coastal and inland settlements, especially Chesterfield Inlet, Eskimo Point, and Baker Lake.

Figure 2 - Canada North of 60°



The Inuit employment program at Rankin Inlet mine was probably the first large-scale experiment with the employment of Inuit workers in industrial wage-labour. In many ways it was an extraordinary success. The Inuit workers demonstrated that, after a remarkably brief period of adaptation and training, they could perform at least as well as their southern counterparts.

The chief beneficiary was the mining company which gained a relatively reliable and inexpensive labour force. However, the company deserves credit for the success of the experiment in light of its sensitivity to the difficulties of rapid cultural change. For example, the company adopted a rotational hiring system which allowed Inuit workers to become gradually accustomed to more rigid time schedules and the hierarchical authority of full-time mine employment. In addition, the company attempted to use traditional Inuit organizational structures. Most of the Inuit employees belonged to one of two extended families, the heads of which were used by the company as straw-bosses and organizers.

The proportion of Inuit employees increased very quickly. Five or six heads of household were employed during April 1956. By November the number of Inuit men employed had increased to 14. By the end of 1957, the number had reached more than 70. Since then the mine has provided steady employment for approximately 80 Inuit men, and several women.

Direct government involvement in the Rankin Inlet project was limited to assistance in the company's efforts to recruit Inuit workers. For example, 13 Inuit men from land camps in the Baker Lake region were encouraged by government officials to try employment in the mine and their fares to Rankin Inlet were paid by the government.(12)

The company's recruitment effort was also aided by the government's decision in 1958 to locate the Keewatin Rehabilitation Centre at Itivia, about a half mile from the Rankin Inlet mine. The Itivia settlement was set up hurriedly and, at least initially, was less a rehabilitation centre than a camp for Inuit displaced largely because of a serious decline in caribou population.(13)

Not all of the Inuit found mine work tolerable. Some Inuit had never intended to become permanent employees, but had accepted mine employment at Rankin Inlet as a temporary means of adding to their hunting and trapping incomes.(14) Other Inuit left their jobs at the mine because they could not accept or adjust themselves to the regimentation of industrial employment. Of the 13 Inuit from the Baker Lake region 11 returned to their homes within a year of being flown to Rankin Inlet. As a result, local government officials were unwilling to encourage others to migrate to the mine site.(15)

Although the government did very little to alter or regulate

the operation of the Rankin project, government officials were aware of its importance. They sent researchers to Rankin Inlet to study the effects of the project on the native people. The researchers identified several less than ideal aspects of the Inuit employment experiment. For example, the Inuit were trained to be labourers - not citizens. Those Inuit who were frugal, hard-working, punctual, and cooperative were "desirable" to the mining company. Those who did not adjust easily were rejected and forced to leave the community.(16)

Life in an industrial community affected the structures and traditions of Inuit culture. Difficulties were exacerbated by the fact that the Rankin Inlet area was not suited to traditional activities. Prior to development of the mine, the hunting resources of the Rankin Inlet area only supported a small and impermanent Inuit camp.(17) These hunting resources declined when the mine began operation.(18)

Rankin Inlet was not designed as a model community. There were three distinct settlements, two of which were built by the mining company. One was for white employees and the other, less luxurious, for Inuit employees and their families. The third settlement consisted of tent-shack dwellings built by other Inuit who had migrated to Rankin Inlet.(19) By 1958 the Inuit population of the Rankin settlements was 332.(20)

The recruitment and relocation of Inuit had been undertaken without much prior planning or preparation. Not surprisingly, social problems arose. One Inuk who grew up in Rankin Inlet remembers, "in 1959 my family and I moved to Rankin Inlet where my father was to work in the mine. We found that there were many other Inuit who had been sent to work at the mine site. When we arrived Rankin looked like a movie set. It was full of mud and in it people would fight when they were out of their minds with drink."(21)

Many of the problems of adjustment to relocation, industrial employment, and life in a wage economy were gradually solved by the people themselves or with the assistance of government officials. However, by then, the original orebody had been almost exhausted. Exploratory efforts failed to discover further exploitable deposits in the vicinity and mining operations ceased in September 1962.

Although the estimated size of the orebody and the rate of production had been published when mine operations began, the Inuit workers were not informed of the limited life expectancy of the mine when they were recruited.(22) Government researchers, in 1958, claimed that they themselves were "not aware of the estimated longevity of the present workings."(23) By 1960 government officials and at least some of the Inuit workers realized that the mine might last only a few more years. It was not until mine closure was imminent that the Department of Northern Affairs and National

Resources devoted serious attention to the problems which would accompany the collapse of Rankin Inlet's only economic base. Emergency meetings were held in Ottawa and Rankin Inlet, but there had been no contingency planning and there were no immediate solutions when the mine closed.

The first few years after the closing of the mine were difficult for the Inuit. The mine had provided the main source of wage employment for a group of native people who had just adapted to industrial employment and who had become dependent on money. Some Inuit attempted to return to a land-based economy, but hunting and trapping resources in the area were not abundant enough to support a major transition back to traditional activities. After the mine closed, the Department of Northern Affairs and National Resources began to seek means of providing new employment opportunities.(24) Unfortunately, the development of economic alternatives took several years. In the interim period, most Rankin Inlet residents were forced to rely on social assistance.

The Inuit perception of the aftermath of mine closure has been summarized by J. Kusugak:

"The white men who had worked in the mine began to leave, but the Inuit couldn't return to their former land and settlements. They had to stay in Rankin for good. The government welfare workers joined them - there was plenty for them to do in Rankin.

"The Inuit didn't know, before the mine was opened, how long they would have their jobs. Perhaps if they had known that the mine would operate for only five years, they wouldn't have gone to the settlement in the first place. For the people saw that because of the mine, because of the white man's actions, their main source of food, the animals, had disappeared.

"After the people of Rankin lost their jobs at the mine, they were forced to do things they didn't want to do. But they have become used to the area, and some of their unhappiness has melted away."(25)

Despite the shortness of its life and the disruption and deprivation which resulted from its closing, the Rankin mine was a valuable experience. It demonstrated that successful mining practices and technologies could be developed for arctic locations. It showed that Inuit could adapt to wage employment and could perform industrial tasks at least as well as workers imported from the south. But most importantly, the Rankin experience taught that such projects require comprehensive planning in their design and implementation if serious problems are to be avoided. Because the Rankin Inlet mine was a pioneering experience, many lessons could only have been learned through trial and error. Unfortunately, many problems could have been avoided or reduced had there been more serious attempts to

anticipate potential difficulties.

The Rankin Inlet project was only coincidentally an educational experiment. It was primarily a profit-oriented mining venture, designed and implemented to minimize economic costs to the company. Because of the narrowness of the company's interests and because of the absence of significant government involvement, the long-term social, environmental and economic costs were not seriously considered in the original decision or in the ad hoc problem-solving that typified its brief period of operation. The failure to assess and prepare for the broader and longer-term effects of the Rankin Inlet project resulted in significant costs that were borne by the Inuit residents of Rankin Inlet and, indirectly, by Canadian taxpayers.

2. The Pine Point Lead-Zinc Mine

The nature of the Pine Point project differs considerably from that of the short-lived Rankin Inlet mine. Still in operation, the Pine Point project has been a large-scale, economically-important venture. It attracted a relatively high level of government involvement. Consequently, the lessons from Pine Point differ somewhat from those arising from the Rankin Inlet experience.

Lead-zinc deposits in the Pine Point area (Figure 2) were first staked in the 1898. Some exploratory work was undertaken in the 1920s, but the history of the Pine Point project really did not begin until 1948, when the federal government granted an exclusive mineral exploration and development concession for the area to a group of companies head by the Consolidated Mining and Smelting Company (Cominco - a subsidiary of the Canadian Pacific Railway). Cominco and its associates established Pine Point Mines Limited in 1951 to take over exploration and development of the Pine Point deposits. By the end of 1954, the company had delineated enough proven and probable ore reserves to justify a full scale open-pit mining project, if an economically feasible means of transporting the ore concentrate were provided.

At that time, the area south of Great Slave Lake was served in the ice-free months by shipping in the Mackenzie waterway system extending north from the railhead at Waterways, Alta. The all-weather Mackenzie Highway, from the railhead at Grimshaw, Alta., to Hay River, NWT, had been completed in 1949.(26) Cominco did not consider either of these systems adequate or feasible for transporting concentrate from Pine Point. Instead, it took the position that the project would be possible only if a rail link to the south were provided.(27)

Although the Pine Point deposits were relatively rich and extensive and although Cominco's parent company was the CPR, Cominco

chose not to provide its own transportation infrastructure. Pine Point ore was not immediately needed to supply Cominco's smelter in Trail, B.C.; the company could therefore afford to go through the slower process of persuading the federal government to build a railway to Pine Point.(28)

Very little persuasion was necessary. Government support for the idea of providing a railway to Pine Point was indicated almost immediately in a brief to the Royal Commission on Canada's Economic Prospects by R.G. Robertson, then Commissioner of the Northwest Territories.(29) Most, if not all, subsequent arguments supporting government financing of the Great Slave Lake Railway were contained in this brief.

Robertson claimed that a railway to Great Slave Lake not only would serve the Pine Point mine but would "open up a whole new region" for economic development. The railway would lower freight rates, encourage mineral exploration in the NWT, assist agriculture and forestry activities in northern Alberta, and improve access to the North for national and continental defence purposes. Because fur prices and game populations (particularly caribou) were declining while the native population was increasing, the traditional economy and means of livelihood for native peoples was collapsing. Robertson expressed fears that the native people would soon become largely dependent on government relief and would lose "their capacity for self-reliance and constructive work" unless they were rapidly introduced into wage employment, particularly in mining, lumbering and construction.(30) Robertson did not mention and perhaps did not foresee the possibility of any viable alternatives for the native peoples of the North other than adaptation to conventional wage employment.

The federal government did not act immediately since there was controversy concerning the most desirable route. A Royal Commission, appointed to study the alternative routes, reported in July 1960.(31) In 1961, parliamentary approval was granted and an agreement with Pine Point Mines Limited was signed providing for a federal government expenditure of \$86,250,000 for construction of a railway from Grimshaw, Alberta, to Hay River on Great Slave Lake, with a spur line to Pine Point. The company agreed to ensure shipment of at least 215 kt of ore concentrate annually and to pay an amount not exceeding \$20 million to the Canadian National Railway over a 10-year period.(32)

Although Great Slave Lake Railway was promoted and defended for many reasons, it was undertaken chiefly to facilitate the Pine Point project. Certainly the railway would not have been built had that project not been involved. In addition to the \$86,250,000 railway, the government constructed a road from Hay River to Pine Point (connecting Pine Point to the Mackenzie Highway) costing about \$2,650,000, built a hydro power plant on the Taltson River costing

about \$9,120,000, and provided over \$1,100,000 for townsite development. The CNR also spent about \$4,350,000 to purchase special railway cars for the Pine Point lead and zinc concentrates.(33)

Some of these infrastructure facilities did not benefit Pine Point exclusively and some of the costs were recovered by the government through user charges, capital payments, and taxes. However, there is little doubt that the company reaped considerable profit from the government's infrastructural largesse.

The company was also exempted from paying taxes on the profits of its' first three years of production.(34) During this tax-free period, it mined exceptionally rich core deposits of ore which graded about 50% combined lead and zinc.(35) According to a DIAND official: "Total capital outlay by the Company, including \$16 million spent on mine/mill expansion between 1967 and 1970 totals \$40 million. However, since officially commencing operations in 1965, till the end of 1969, sales of approximately \$220 million have been made, with a net cash flow (undiscounted) of about \$160 million. During the first two years of dividend payment (1966 and 1967) the Company paid out \$47.3 million in dividends - that is, more than total investment to the end of 1969. If the Company had paid the total capital cost of the railway, net undiscounted cash flow (before dividends) would have been about \$75 million after five years of operation."(36)

Despite Robertson's initial arguments favouring government encouragement of development in the interests of providing wage employment opportunities for native people, and despite the intention that the Great Slave Lake Railway was to benefit the whole region, the federal government did very little in the initial years to ensure wider distribution of benefits.(37) In the early 1970s Professor Paul Deprez of the University of Manitoba, Centre for Settlement Studies, was commissioned by DIAND "to assess the impact of Federal financial participation (relating to the Pine Point project) on resulting native employment opportunities and on the economic spinoff the project generated for the region." He reported that "while the Federal and Territorial Governments showed extreme willingness to invest in anything the Company would require, there was considerably more reluctance to invest in projects that may have permitted the area to reap some of the returns accruing from the Pine Point operation."(38)

For example, of this reluctance, Deprez pointed to the government's delay in constructing a road between Fort Resolution and Pine Point. Had such a road been completed when mine operations began, it would have encouraged the native residents of Fort Resolution to seek and retain employment at Pine Point and to operate successful local enterprises serving the mine (e.g., a lumbering co-operative).

In terms of regional development and native employment goals, the difficulty seems to have been that the government's support for the Pine Point project was granted on the basis of an unquestioned conviction that a major natural resource exploitation project and its infrastructure would have a widespread and favourable effect on the economic well-being of the region in which it was located. Consequently, there were few if any attempts in the construction phase or in the initial years of production to encourage or force the company to design and carry out its project in a manner consistent with regional development and native employment goals.(39)

The government began, in the late 1960s, to promote native employment at Pine Point through housing programs and training agreements with the company. Despite the delay in beginning these efforts and despite inadequate and insufficiently coordinated planning, the native component in the Pine Point workforce rose from 4.6% in 1967 to 17.0% in 1970. However, by July 1975 only 7.2% of Pine Point's employees were native people.(40)

The federal government exhibited interest in encouraging on-site smelting of Pine Point ore. Because of concerns that national economic benefits were being lost through export of Pine Point concentrate to foreign smelters and because of regional development considerations, the federal government commissioned Canadian Bechtel Limited in 1966 to study the feasibility of establishing a smelter at Pine Point. Bechtel recommended against on-site smelting.(41) Subsequently, an in-house study was undertaken by DIAND. The DIAND report raised doubts about some of Bechtel's work, but concluded that a Pine Point smelter would be economically marginal.(42)

The Pine Point project was proposed, approved, and initiated before the rise of general public awareness of environmental issues. Not surprisingly, no consideration was given to the potential environmental effects of the project or of the extensive exploratory work inspired by the economic success of the Pine Point mine.

Environmental damage has been significant. The exploration work associated with, or inspired by, mine development caused considerable environmental damage. Areas of potential mineralization were thoroughly crisscrossed by geophysical exploration lines that were cut with little regard for environmental concerns or for the economic concerns of native trappers whose trap lines were disrupted.

The most serious negative environmental effects were directly related to the operation of the mine. After the open pit mining reached the water table, continuous pumping was necessary to empty the pits and allow continued mining. This pumping removed great quantities of water and, as a result, lowered the ground water table. Trees dependent on that water table were stunted or killed. This

mine-caused drought affected forested areas extending up to 30 miles from the mine site.(43)

Unsatisfactory tailings disposal also led to environmental damage. A study undertaken in 1971 by Environment Canada concluded: "Analysis results indicated a substantial area of the muskeg was being contaminated by mine effluent. Extremes in the heavy metal levels detected were attributed to inefficient operation of the tailings disposal system during periods of increased mill discharge or runoff."(44)

In terms of scale, profits, long term viability, and extent of government assistance, the Pine Point project is in a class above the earlier Rankin Inlet venture. Nevertheless, some of the lessons to be learned from government involvement in the Pine Point project were similar to those offered by Rankin Inlet. Rankin Inlet showed that, in the absence of government supervision and anticipatory planning, "development" projects could, by their means of operation or closure, have serious detrimental effects on the people of the region. Pine Point demonstrated that extensive and costly government involvement in infrastructural development would not ensure that the potential economic benefits even of extremely large and profitable enterprises would contribute substantially to the achievement of regional development or native employment goals.

As Deprez pointed out, "economic growth can occur in an area without resulting beneficial effects for that area".(45) The government may have intended that, through its investments, the Pine Point project would benefit the region and, in particular, the native population. But the government's initial efforts concentrated on facilitating resource exploitation. Only later did the government begin special efforts to increase native employment. By this time it was apparently too late. The government was not in a position to carry out the broad, well defined, and coordinated set of programs necessary to encourage and maintain a significant level of native employment.(46)

Through its heavy infrastructural assistance to the Pine Point project the government contributed greatly to the establishment of one of the most profitable mines in Canada. Unfortunately, an unduly large share of the benefits accrued to the mining company and an unnecessarily small share went to the people of the region being "developed."

3. The Anvil Lead-Zinc Mine

The most recent major precursor to the Strathcona project is the Anvil mine in the Ross River area of the Yukon Territory (Figure 2). Although lead-zinc deposits in the vicinity were discovered and staked in 1953, serious development did not become feasible until the

mid-1960s. Dynasty Explorations Ltd. of Vancouver, backed by Cyprus Mines Corp. of Los Angeles, had identified an estimated 63 Mt orebody grading 9% combined lead and zinc.(47) The two companies formed Anvil Mining Corporation Limited (60% owned by the U.S. Firm) and, in 1967, entered into negotiations with the federal government.

The federal government approached these negotiations with the expressed intention of ensuring that the Anvil project would contribute to regional development and provide employment for native people. "It is the Government's desire where major mineral deposits are developed that the maximum employment and economic benefit should accrue to the region from the mining and processing of these deposits. The north should not be regarded simply as a source of raw materials which could be extracted with a minimum of benefit to the Territory. It is also expected that the Company will make special provisions for the training and employment of Yukon residents, and will be able to draw heavily on the Indian population of the Territory."(48)

The development agreement, signed in August 1967, indicates that government negotiators had made a serious attempt to embody their policy position in the Anvil project. Under the terms of the Anvil agreement, the government agreed to provide most of the transportation infrastructure,(49) a power transmission line from Whitehorse to the mine and townsite, and townsite services (water, sewage, hospital, school and fire station) for a total capital expenditure of about \$23 million some of which was to be recoverable through user charges. The company's capital investment was about \$65 million.(50) The major regional access road was intended to connect other, existing settlements and to provide access to other known mineral deposits.(51) Furthermore, the townsite, Faro, was maintained as an open town and planned as a regional service and administrative centre. Thus, the government's expenditures relating to the Anvil project were not only proportionally smaller than those relating to Pine Point, but were less directed to the exclusive benefit of the mining company.

In return for government assistance, the Anvil Mining Corp. was required to make "a bona fide effort" to employ native people in the mining operations. The company agreed to "employ competent local residents, especially Indians and Eskimos to the extent of at least 5% of the total number of employees within the first year, rising to 10% in the second year and 25% in the fifth year after the mine comes into production." The government promised to assist native employment efforts through manpower training and relocation programs.(52)

The development agreement also reflected the government's concern about loss of national economic benefits through export on Anvil ore concentrate to foreign processors.(53) Anvil was required to study the feasibility of constructing a smelter in the Yukon and

to submit this study to the government within 5 years of commencing operations. If a local smelter was shown to be feasible and if the government met certain additional obligations, including provision of an adequate power supply, Anvil was obliged to construct a smelter and to endeavour to employ native people in its operation.(54)

In terms of its comprehensiveness and its clear intent to increase regional and native benefits from a mining project, the Anvil agreement was an indication that some of the lessons of earlier experiences were being learned and applied. Nevertheless, there were notable failures. In particular, attempts to employ native workers were unsuccessful. The percentage of native employees rose to about 10% at one point, but soon fell to about 1%.(55) Concerned about this failure and faced with various conflicting explanations, DIAND supported a special study of the problem. The report, released in May 1974, pointed to the complexity of the issues involved and provided no easy solutions.(56) Much of the difficulty seemed to lie in insufficient sensitivity to potential and actual native employees' attitudes and aspirations concerning employment, in over-concentration on fitting the worker to the job, and in a pervasive tendency to "blame the victim" of unemployment.(57)

The Anvil project also offered environmental lessons for subsequent projects. As at Pine Point, the mineral exploration activities related to, or inspired by, the Anvil mine detracted from the traditional hunting and trapping activities of native residents. "The ruin that the goldseekers visited upon the Klondike streams has again been repeated in the Ross River area. Here the federal government (which administers the resources) gave out permits for staking in areas over which Indians ran their trap lines...the obvious incompatibility between traditional and modern uses of the same piece of land is beginning to worry the Department of Indian Affairs and Northern Development."(58)

In addition, there have been problems with the Anvil mine's disposal system for mine and concentrator wastes (tailings). Between 1969 and 1975 there were about six breaks in the dikes around the mine's tailings ponds.(59) In the most recent and serious break, over 245 ML of water and tailings were spilled onto the surrounding environment.(60) The development agreement for the Anvil mine, though more comprehensive than previous agreements, contained no provisions relating to environmental protection or to assessment of potential environmental costs.

The Anvil agreement and its subsequent implementation indicate that the government's approach to northern mining projects had changed significantly since the Rankin Inlet experience and even since the opening of the Pine Point mine. Certainly the federal government had assumed the role of a major supporter of mining developments and a key actor in the decision-making processes affecting the design and implementation of these projects.

Government involvement was premised on the idea that economic growth would serve socio-economic development. But by the time of the Anvil negotiations, the tendency to equate growth and development had weakened. Consequently, the Anvil agreement contained special provisions intended to ensure that the region and its native population would benefit from the project.

Whether due to inadequacies in the agreement provisions or in the efforts to implement them, or due to the general unsuitability of mining projects as vehicles for regional development and native employment, the Anvil project failed to achieve the desired ends implicit in the Anvil agreement. Nevertheless, the agreement marked the beginning of a somewhat broader and more careful approach to northern development and heralded the new policy directions officially adopted in the early 1970s.

C. THE CONTEXT OF THE STRATHCONA DECISION - GOVERNMENT POLICY

Since the days of the fur traders and whalers, northern resource exploitation (other than that carried out within the traditional economies of the native people) has been undertaken for outside economic interests without much regard to social, environmental, or long-range economic effects.

Until the years following World War II, government involvement in development of the territorial north was minimal. In the post war years, government interest in northern resource exploitation was spurred by a perceived need for a more strongly-established Canadian presence in the North and by a common perception of the North as a defiant and challenging "last frontier." With this growing interest in the North came a growing awareness and a concern about the living conditions of the residents of the North, in particular the native people whose traditional economy and culture had been undermined. The initial focus of government activities was the provision of housing, medical and educational services, and financial assistance.

But by the late 1950s, the government's northern policy focus had shifted to encouragement of economic growth in the territorial north through support of natural resource exploitation. This government policy focus was clearly in harmony with the interests of the private sector. Indeed the government-industry relationship was openly described as a partnership.(61) To fulfill the requirements of partnership, the federal government introduced incentives designed to stimulate resource exploitation activities, especially mining projects, in the territorial north. These incentives included subsidies, tax exemptions, exploration assistance programs, and infrastructure grants.

The government's emphasis on resource exploitation reflected the belief that the exploitation of northern resources would, by

promoting economic growth, be both nationally and regionally beneficial. This belief was widely held and generally unquestioned until the late 1960s when several concerns combined to encourage a more critical approach to resource exploitation and economic growth. At the national level, many people began to doubt that past procedures had been adequate to ensure that maximum long and short term economic benefits accrued to Canadians. The extent of foreign ownership, the amount of unprocessed material exported, and the eventual exhaustion of non-renewable resources became subjects of national debate. In the North, increasing attention was focussed on the outflow of economic wealth, on the threatened and actual damage to sensitive northern ecological systems, and on the severity of the social costs associated with resource exploration and exploitation in a land to which native residents had never ceded title.

At least partially in response to these expressed concerns and criticisms, the government began, at the end of the 1960s, to reassess its northern development policies. Government officials became convinced that, at least at the level of stated policy, changes were needed and, in July 1971, a document outlining a new northern development policy was approved by the federal Cabinet.(62)

The new policy was publicly announced in March 1972. The Hon. Jean Chrétien (then Minister of Indian Affairs and Northern Development) presented the "Statement of the Government of Canada on Northern Development in the 1970s" to the House of Commons Standing Committee on Indian Affairs and Northern Development. Mr. Chrétien's presentation, published as Canada's North 1970-1980, became and continues to be the central statement of the federal government's official policy for northern development.

In the new policy document, the government indicated that it would emphasize efforts to improve the well-being of northern people and to protect the northern environment, and that it would adopt a more careful and critical attitude toward the exploitation of northern resources: "People, resources and environment are the main elements in any strategy for northern development. In the course of its policy review during the past year, the Government affirmed that the needs of the people in the North are more important than resource development and that the maintenance of ecological balance is essential."(63)

The government also recognized that efforts to provide social benefits must be directed by the expressed wishes of the people themselves. The new policy document reported that the government's first objective in the North was not only to help northerners gain "a higher standard of living, quality of life and equality of opportunity", but to do so using means "compatible with their own preferences and aspirations."(64)

In contrast with previous practice, encouragement of non-

renewable resource exploitation projects was placed at the bottom of the government's list of northern development priorities. According to the document, the new order of priorities was

- (1) To put into rapid effect the agreed guidelines for social improvement.
- (2) To maintain and enhance the natural environment, through such means as intensifying ecological research, establishing national parks, ensuring wildlife conservation.
- (3) To encourage and stimulate the development of renewable resources, light industries and tourism, particularly those which create job and economic opportunities for native northerners.
- (4) To encourage and assist strategic projects (key to increased economic activity in the region or Territory with solid economic and social benefits) in the development of non-renewable resources and in which joint participation by government and private interests is generally desirable.
- (5) To provide necessary support for other non-renewable resources projects of recognized benefit to northern residents and Canadians generally.(65)

For those large-scale projects which were considered likely to be found socially and environmentally acceptable, the new policy document indicated that relatively rigorous assessment requirements would have to be fulfilled before government approval would be considered. In particular, the policy established social and economic assessment prerequisites. "Government support for major development projects, whether public or private, should be based on full assessment of their economic and social impact, in the northern region concerned, in the Territories generally, and for Canada as a whole."(66)

In general, the policy statement indicated that the government had strong new social and environmental concerns and that it would assess proposed northern resource exploitation activities much more thoroughly than it had in the past. For the proponents and reviewers of the Strathcona project, this provided an official policy context considerably different from that which prevailed during the beginning of Rankin Inlet, Pine Point, and Anvil mines. The nature of the new policy suggested that the government had learned some lessons from the regrettable aspects of these previous project experiences. What remained a matter of uncertainty was whether and (if so) how the government would actually implement the new policy. In the decision-making concerning the proposed Strathcona mine, this question was to be at least partially answered.

CHAPTER II

STRATHCONA PROJECT DECISION-MAKING - A CHRONOLOGY

A. THE INITIAL STAGES

Minerals in the Strathcona area were discovered in the winter of 1910-11 by two prospectors, Albert English and Alfred Tremblay. They accompanied the government-sponsored expedition of Captain J.E. Bernier whose ship spent the winter of 1910-11 in Arctic Bay. Although the site was visited again in 1937, thorough investigation did not begin until the late 1950s. R.G. Blackadar, from the Geological Survey of Canada, mapped the area in 1954 and, on the strength of his report, the Texas Gulf Sulphur Company (now Texasgulf Inc.) initiated exploratory work and began staking claims in 1957.(1,2)

Texas Gulf carried out further work sporadically during the 1960s and expressed considerable optimism about the extent and value of the ore deposit. According to a DIAND report, "Company officials in 1964 stated that at Strathcona Sound ore averaging about 20 per cent or equivalent net value with lead and silver can be mined profitably and estimated several million tons of ore of this grade were available. By 1967, the project manager estimated 15 million tons of ore were available."(3)

In 1969 Texas Gulf initiated thorough studies of the Strathcona claims. After a large sea lift of materials to the site, the company undertook a bulk sampling program and reported an orebody of approximately 6 Mt grading 16 per cent lead-zinc.(4)

The exploratory activities were undertaken with the assistance of people from Arctic Bay, an Inuit community about 27 km from the mine site. According to a November 1969 report by the government's local official, 24 white miners and other skilled workers and 10 Inuit were working at the mine site. The white miners were earning \$3.50/h plus a bonus and received average monthly wages of about \$2400/month. The Inuit workers were paid \$1.75/h with time and a half after 48 hours in a week. The Inuit straw boss was paid \$2.00/h. The local official also noted that the white workers lived in wooden prefabs near the orebody and the Inuit workers (perhaps at least partly by choice) lived with their families in a separate location, on the beach by Strathcona Sound. Two Inuit families had been provided with wooden prefab housing; the other eight families lived in tents heated by oil stoves and lit by Coleman lanterns. These accommodations were reported by the government official as "overcrowded but warm enough." Texas Gulf provided Inuit workers lunch and supper at the camp kitchen, some gas for snowmobiles, fuel, extra canvas and plywood for tents and some fresh food for their families. Not surprisingly, the camp had no water or fuel delivery,

and no garbage disposal. Fresh water was obtained by cutting ice from the river or from nearby icebergs. The nearest store for food and other provisions was in Arctic Bay.(5)

In a subsequent memorandum, the government's Regional Administrator for the Baffin area stated that the wages paid by Texas Gulf to Inuit workers (\$1.75-2.00/h) were the lowest in the region. By way of comparison, he pointed out that the Government of the NWT (GNWT) paid \$3.71-3.81/h for (married) casual labourers in Arctic Bay and that workers in Resolute were paid \$2.45-3.15/h plus full benefits and 3 meals a day.(6) The Regional Administrator also noted the inadequacy of housing and services, the distance to a source of provisions, and the probability that school-age children of the families involved were unable to go to school.

Although the living conditions described were like those of Inuit hunting camps, the Regional Administrator considered them intolerable and unnecessary for mineral exploration employment. He was particularly displeased that the Economic Development Branch of DIAND in Ottawa had failed to inform the regional office of Texas Gulf's activity and that he had first heard about the situation from the local representative's report. He concluded: "It should be obvious that this office must in future be involved in all development which affects local people. We are supposed to be responsible for the co-ordinated administration of the Baffin Region and specifically the general welfare of the Eskimo residents. This is an impossible task at the present time when we have no direct access to the development companies, and while the people involved in discussion in Ottawa seem to be strictly resource oriented and not aware of the various local implications of any development....Without careful planning the project could easily become another disastrous experience for the Eskimo people, with more serious consequences."(7)

Thus in two reports written before there was any certainty of mining operation at Strathcona Sound, alert local and regional government officials drew attention to the dangers of unconsidered social effects and to the importance of regional information and consultation.

In 1970 Texas Gulf began to take steps toward developing the Strathcona properties. The company initiated preliminary economic and engineering studies and began negotiations with DIAND to obtain a mineral export permit.(8) However, Texas Gulf did not press its development proposal enthusiastically and was reportedly unwilling to accede to government stipulations regarding the employment of native northerners.(9) Texas Gulf's hesitation was largely attributable to transportation concerns: "It was realized that the shipping of concentrates during a limited time of the year would prove to be an area that would be viewed with great concern by those buying concentrates and those supplying production financing."(10)

Instead of pursuing its efforts to obtain export authorization, Texas Gulf entertained proposals from other companies for the development of the Strathcona mine. In August 1972, the company announced the signing of an agreement with Mineral Resources International Limited (MRI) in Calgary. The deal assigned the Strathcona property to MRI, with Texas Gulf to receive 35 per cent of the net profits of the mine after recovery of development costs.(11)

B. THE FEASIBILITY STUDY

Watts, Griffis, and McOuat Ltd. began a feasibility study of a mining development at Strathcona Sound in August 1972. The consultants and their advisors examined the various aspects of the project, discussed government requirements and possible government assistance with federal and territorial officials, and prepared their report.

The first step taken by the company and the consultants was to initiate further drilling and sampling operations to determine more precisely the quantity and quality of the Strathcona orebody. In late August 1972, the consultants and their engineering advisors visited the Strathcona site in order to gain a first hand acquaintance with the area. According to records in Arctic Bay, the chief consultant, Graham Farquharson, also paid a brief visit to that community. There is no record of any substantive information being passed to the people of Arctic Bay by the consultants at that time. In February and August 1973, the consultants, accompanied by government officials, held two meetings in Arctic Bay.(12)

The Arctic Bay meetings did not significantly affect the contents of the consultant's feasibility study. The consultant's work was, however, heavily influenced by extensive contact and frequent discussions with governmental officials, especially from DIAND. Secondary roles were played by the Government of the Northwest Territories (in particular the GNWT Department of Industry and Development and the Executive Secretariat) the federal Ministry of Transport (in particular the Arctic Transportation Agency), the Central Mortgage and Housing Corporation, the Northern Canada Power Commission, the Northwest Territories Water Board, the Geological Survey of Canada, and the Department of the Environment (Yellowknife office).(13)

Many meetings with government officials served to supply the consultants (and MRI) with information concerning relevant government programs, grants, loans, and other services which were or could be made available to the company. However, some meetings also served to set out the non-legislative requirements arising from government policies and preferences. The most important meeting was held, early in the feasibility study period, between MRI officials and consultants and the Minister and other officials of the DIAND. MRI had assumed that the Strathcona orebody would be exploited at the

economically optimum rate, which would exhaust the known reserves in about 8 years. Government officials, however, had decided that the possibility of broader benefits would be enhanced if the life of the project were extended. Consequently, they insisted in this early meeting with MRI officials and consultants, that no special government assistance to the project (e.g., for infrastructure) would be forthcoming unless the company adopted a rate of mining and milling that would give the project a minimum life of 15 years.(14)

DIAND officials had several reasons for insisting on a 15-year project life. First, while DIAND was still devoted to promoting exploitation of northern resources, it was also determined to encourage designers of resource exploitation projects to comply with DIAND's ideas concerning socio-economic development. In particular, the department wanted to ensure employment and training of native workers in the project.(15)

In order to encourage the company to proceed with the project, DIAND was willing to consider provision of infrastructural assistance (for roads, wharf, airport and townsite). However, DIAND officials felt they would have difficulty justifying such assistance for a project lasting less than 15 years. They also wished to avoid a repetition of the rapid boom-bust experience at Rankin Inlet.(16) By insisting on a slower rate of extraction and a lengthening of project life, the officials believed they would enhance the project's ability to weather fluctuations in metal prices and allow greater time to explore for more mineral ore in the vicinity. Furthermore, a longer project life would provide more time to adjust Inuit workers to wage labour, to train them in the necessary skills, and to initiate other, similar projects to employ them when the mine at Strathcona closed. Expecting that special government assistance would be received to compensate for the dis-economies of a slower extraction rate, MRI and its consultants willingly acceded to the government's insistence on a minimum 15-year project life.(17)

The company was also favourably inclined toward the government's insistence on employment of native northerners. High labour turnover rates and a general shortage of skilled workers plagued Canadian mines in more hospitable locations than Strathcona Sound. Unless the new mine paid significantly higher wages than mines in the south, it would be extremely difficult to attract a competent and reasonably stable workforce from the south. The training and employment of Inuit workers was the only plausible alternative.(18)

The consultants had little direct contact with potential workers in the various Inuit communities in the region, other than with Arctic Bay residents employed in their field programs. However, they did obtain advice and labour ability statistics from the territorial government and sought out former officials of the Rankin Inlet mine for discussions on native employment.

Initially, the consultants assumed that the project would be a bunkhouse operation with no permanent townsite. The workers would be flown to and from the site as at other frontier projects. However, after officials insisted on a 15-year minimum project life, the consultants concluded that a more permanent townsite would be necessary. The ideas of a bunkhouse community and of a closed mining town were rejected by the consultants. Instead a more ambitious alternative was chosen. The consultants envisioned, "an open town where the mining company is not the only body with a voice in the community's development, where the development of municipal government and the growth of the community as a regional centre is encouraged, and where home ownership, particularly amongst the Inuit, is made possible and encouraged."(18)

According to the consultants, both federal and territorial officials had expressed their strong support for this alternative. In fact, some federal officials were not convinced that a Strathcona community could continue as a viable regional centre after the mine closed.(20) However, enthusiastic senior territorial officials and the perceived benefits of a permanent townsite induced the consultants to proceed on the assumption that planning for a permanent community would be in the company's best interests.

A permanent community would involve greater costs than a bunkhouse operation. However, the consultants were certain that government assistance would cover a significant proportion of the capital and operating costs of the community. They also hoped that a fully-integrated, open community with facilities for family accommodation would offer possibilities for overcoming problems of labour force instability. In addition, adoption of the permanent community alternative would make the project eligible for other infrastructural assistance from the federal government.(21)

The two most important items which the company wanted from the government were a wharf to accommodate the ore carriers which would ship the Strathcona lead-zinc concentrate to overseas smelters and an Arctic Class A airport capable of handling Hercules aircraft year round.(22)

The wharf was an obvious necessity. The airport, would be a luxury. Much of the food and operating supplies as well as many of the personnel would have to be flown into Strathcona Sound. Reliable service using large freighter aircraft would greatly reduce transportation costs. Although the mine could get along with a smaller airport, it had good reason to persuade the government to provide a Class A airport. According to the criteria set by the Arctic Transportation Agency of the federal Ministry of Transport, an Arctic Class A airport could only be built to serve communities which were permanent, regionally-important centres. To meet these criteria the Strathcona townsite not only would have to be the permanent home for mine workers and their families during the expected 15-year life

of the mine, but it would need some basis for retaining regional importance after the expected mine closure. For this reason, the consultants argued that Strathcona should become a regional centre serving the north Baffin area.

There were four major interrelated considerations and conclusions upon which the consultant's feasibility studies, calculations, and planning were based: the project would have a life of at least 15 years; the employment of native workers would be encouraged; the project would need (government assistance for or government provision of) major airport and wharf facilities; and a permanent townsite with regional centre potential would be constructed.(23)

Not all of these assumptions were fully justified or realized in the actual implementation of the project. The assumptions fit together very well and, to the extent that they were subsequently found to be dubious (especially the regional centre idea), they were not so rigid or essential that the project collapsed upon the irremoval. On the other hand, they set the basis for the initial planning and assessment of the project, upon which in turn the eventual development agreement was based. The assumptions were set, in consultation with government officials, without a thorough examination of the effects and implications of other possible, and perhaps more desirable, assumptions.

The people who were to be most directly affected by the Strathcona project rejected at least part of the consultant's set of operating assumptions. The Inuit in Arctic Bay did not participate in the consultants' initial discussions and meetings. However, the Inuit were aware that the nature of the possible project was being examined, that the company had consulted government officials about the project, and that decisions were being made which would affect their community.

In November 1972, the people of Arctic Bay sent an unsolicited letter to the consultants pointing out that although they had not been consulted by the company or by either the federal or territorial governments, they nevertheless wished to express their preferences.(24) The Arctic Bay letter did not include comment on the desirability of the project itself. It was written with the hope that the local people might be able to influence how the project was to be undertaken.

The community received little information about the nature of the project or about its requirements, limitations, and implications. The people of Arctic Bay were, however, well acquainted with the area and the preferences of their own people. Accordingly, they recommended that mine site accommodation be limited to bunkhouse facilities, that families of Strathcona workers live in Arctic Bay, and that the infrastructural elements necessary to allow this (road,

airport, health and educational facilities) be provided.

The Arctic Bay position was incompatible with the consultants' operating assumptions regarding a permanent mine site community. The chief consultant, in his reply to the Arctic Bay letter, stated that the proponents were very concerned about protecting the interests of the community of Arctic Bay.(25) Nevertheless, there is no evidence that the proposal made by the people of Arctic Bay in their November 1972 letter was ever given serious consideration. The first meeting that provided information to, and received the opinion of, the people of Arctic Bay did not take place until February 1973, halfway through the feasibility study period. By this time the operating assumptions, upon which the feasibility study was carried out, had already been made.(26)

The February 1973 meeting in Arctic Bay involved representatives of the MRI and its consultants, the territorial and federal government and the Arctic Bay Settlement Council. The primary task of the meeting was to provide the people of Arctic Bay with information about the feasibility study and about the possible mining project at Strathcona Sound. There were also attempts at this meeting to solicit the people's views concerning the project. But because this was the first meeting of any consequence between the proponents of the project and the local Inuit and because little information about the project had been provided prior to this meeting, the opinions of the people of Arctic Bay concerning the project were based on rumours and second hand information, rather than on adequate information thoroughly considered and discussed throughout the community.(27)

When the community leaders stated that they supported the development and indicated that, although they were concerned about some aspects and effects of the project, they had chosen to be optimistic about the new benefits overshadowing the new problems, the company and government officials concluded that there would be no problem of native opposition to the project. The officials saw no need to hold further meetings with the community until the feasibility study was almost completed. The consultant's next meeting with the Arctic Bay Settlement Council took place after the general feasibility of the project had been accepted by MRI, when the company was at the stage of seeking markets and investors.

In August 1973 representatives of Canadian, German, Dutch, and Japanese smelting companies were brought north by MRI and given a tour of the Strathcona site. The industry party was accompanied by two DIAND officials. Like the MRI representatives, the DIAND officials were convinced that the Strathcona project was feasible and desirable. According to the Arctic Bay Settlement Manager's report, "DIAND personnel visited the site to plan assistance in development. Their representative said that they had funds for airstrip and roads and they hoped other government departments would offer other

assistance in this development. They said they were very much in favour of the development."(28)

In the Arctic Bay meeting held on 23 August 1973, the proponents of the project presented information to the community concerning the present status of the project and future plans. The Settlement Council was asked to state its preference concerning the timing of construction of a road from Arctic Bay to the proposed airport and mine site. There was no presentation of possible alternatives to the consultant's general plans for the implementation of the project nor any attempt to identify the likely problems which would accompany the project if implemented as planned. The absence of a broad and critical approach to the project plans at this Arctic Bay meeting was not surprising. From the consultant's point of view the nature of the project to be recommended in their feasibility report had been settled. The Arctic Bay meeting was not intended as a consultation exercise so much as a public relations effort. It was not part of the feasibility study, but rather part of the next stage, that of gaining approval and support for the project.

The consultant's final report, Feasibility Study of the Strathcona Sound Project, was submitted to MRI in September 1973. The report dealt extensively with geological, engineering, economic, and personnel aspects of the proposed development. It presented development plans for the townsite and other infrastructure, discussed the nature and sources of possible government assistance, and offered preliminary considerations and arguments concerning the environmental issues raised by the project. Parts of the feasibility study were shown to be not entirely accurate or complete after being subjected to close scrutiny and to consideration in light of subsequent studies. Nevertheless, it was a laudably comprehensive and quite progressive report. In terms of its attitude to the employment of native northerners it was probably unprecedented.

From the points of view of MRI and government officials, the most important fact about the feasibility study was its recommendation that the Strathcona project be undertaken. The consultants concluded that, assuming zinc prices remained about 22.8¢ per pound and assuming government assistance which had already been virtually assured, the company could expect a discounted cash flow rate of return (profit) of at least 15% from a 1.5 kt per day mining and milling operation at Strathcona Sound. According to the consultants, the project would not face any major transportation or environmental problems; the potential labour force difficulties would be solved through extensive use of native (Inuit) labour; and the mining project would be economically viable for a period of at least 13 years. (See Appendix A.)

The authors of the feasibility study stated that, if construction of the project began in the spring of 1974, full scale production would be possible by April 1976. However, before the

project could commence, financing and marketing agreements would have to be arranged and government approval and support would have to be officially granted. MRI wasted no time. As the August tour to the Strathcona site by MRI officials and potential concentrate buyers and financial backers indicated, efforts by MRI to secure markets and financial support were well underway before the feasibility study was formally submitted.

Discussions leading to governmental approval and support had also been initiated before the feasibility study had been officially submitted to MRI. As presented by the consultants, the project could only proceed if the proponents obtained infrastructural assistance and an export licence from the government. However the consultants anticipated no difficulties. On the basis of their discussions with federal and territorial officials throughout the feasibility study period, the consultants concluded that "both federal and territorial governments have indicated that strong support, financial and otherwise can be expected from government in order that the project may proceed as planned".(29) Moreover, they reported that DIAND officials (who would be chiefly responsible for reviewing the MRI proposal and the feasibility study) had "promised to carry out their review as expeditiously as possible in order that the project schedule may be maintained".(30) According to the project schedule contained in the feasibility study, discussions leading to finalization of arrangements for government participation had been initiated in mid-August and were expected to be completed by mid-November, only two months after MRI received the feasibility study report.

C. GOVERNMENT ASSESSMENT OF THE PROPOSED PROJECT

The authors of the feasibility study probably did not believe that government officials would be willing and able to assess the project proposal and negotiate a development agreement by mid-November 1973. More likely, they were hoping that a tight project schedule would encourage more rapid completion of government deliberations.

Government officials made no secret of their general support for the Strathcona project and the feasibility study authors were not alone in noting that government officials viewed MRI's proposal favourably. Shortly after the results of the feasibility study were released to the press in October 1973, one newspaper reported that "DIAND Minister, Jean Chrétien, went on record in a recent speech that the federal government is prepared to help in the development of Arctic mineral deposits and new communities. He said the government is willing to provide incentives and support and, in certain cases, participate in joint ventures with industry."(31)

This favourable predisposition did not guarantee rapid granting of approval and support. The government was certain to undertake serious investigations into some aspects of the proposed

project. Within the federal government, the assessment and decision-making involved several departments with overlapping jurisdictions and several layers of bureaucratic deliberations between specialized experts and the relevant Cabinet ministers. Particularly in the absence of established guidelines for the treatment of such project proposals, there was no possibility that assessments and negotiations could be completed in two or three months. Even if the government failed to undertake a comprehensive examination of the social, environmental and economic aspects of the project, a much longer assessment period would be required.

From MRI's point of view, it was crucial that the government assessment and negotiating phase be brief. Anticipating that government approval and support would be forthcoming in time to allow project construction to begin in the spring of 1974, MRI had shipped equipment and material to the Strathcona site during the 1973 sealift. The company wasted no time in making its formal submission to the government. Soon after the Watts, Griffis and McOuat report was submitted to MRI, copies of the document were provided to governmental officials.

Several government bodies participated in the assessment of MRI's proposal. The Government of the Northwest Territories provided DIAND with reviews of several aspects of the proposal, including manpower training and townsite development considerations. The Department of Energy, Mines and Resources undertook a preliminary evaluation of the project as a whole, emphasizing mineral policy concerns.(32) The Ministry of Transport, the Treasury Board Secretariat, and the Departments of Finance, Manpower and Immigration, Environment, and Regional Economic Expansion were all consulted about specific issues within their respective areas of competence.(33)

DIAND was, nevertheless, the dominant force in the project assessment. Those contributions from other agencies that raised doubts about the position adopted by DIAND had little impact on decision making.

There was little doubt in the minds of the DIAND officials supervising the assessment activities that the proposed project fit well with their approach and attitudes toward industrial development in the North. However, they recognized the necessity of reviewing the proponent's economic calculations to ensure that, with government assistance, the project would indeed be commercially viable. If, after the granting of public support, the project failed to be viable, the government and DIAND in particular would be left in an embarrassing position. Before submitting the proposal for Cabinet approval, DIAND officials also needed to prepare analyses of the probable national costs and benefits and the potential implications of the project in relation to government policy objectives.

The preliminary evaluation undertaken by DIAND analysts in the fall of 1973 focussed largely on economic considerations. In particular, the analysts examined the potential profitability and national and regional economic implications of the venture. On the question of profitability they reported that the price for zinc (the basis for revenues) which the consultants had used in their calculations was apparently realistic, but that both capital and operating costs had been underestimated by about 10%.⁽³⁴⁾ Nevertheless, they concluded that the project would likely be privately as well as socially viable.⁽³⁵⁾

The prediction of social viability referred to national benefits and was reported to be contingent upon the effect and nature of Inuit employment efforts and the indirect stimulation of economic activities in the rest of Canada (multiplier effect). DIAND analysts believed that significant numbers of local native people were under- or unemployed.⁽³⁶⁾ Consequently, they expected considerable benefits from Inuit employment at Strathcona Sound. On broader social issues, they expressed less certainty. For instance, they observed that life-style changes of Inuit employed at Strathcona Sound could entail both costs and benefits. While the project site was located advantageously, accessible and yet far enough away from most existing communities not to cause harm, DIAND noted that the project could have negative social effects on Arctic Bay, other settlements, and Inuit generally.⁽³⁷⁾ The DIAND analysts recommended that a study be undertaken to determine the attitudes of Inuit, particularly those in nearby settlements, to the proposed development plans for Strathcona Sound.⁽³⁸⁾ In addition, DIAND suggested that consideration be given to negotiation of equity (ownership of shares) in the project for the Inuit and that particular efforts be made to maximize employment of Inuit workers and to encourage Inuit participation in commercial activities accompanying the project.⁽³⁹⁾

Despite uncertainty concerning the social implications of the project and the likelihood that most of the project's negative social effects would be related to wage employment of Inuit at Strathcona Sound, DIAND analysts considered Inuit employment to be the most advantageous aspect of the proposed project. It was expected to increase Inuit income levels, allow redistribution of existing Inuit income sources, reduce government assistance requirements, and even provide an international example of enlightened resource development. It was not, however, the only project advantage. DIAND analysts anticipated that the project would also demonstrate effective Canadian sovereignty in the Arctic, act as an experimental venture providing lessons for future operations, and, possibly, benefit the Canadian shipping industry. Because of its moderate size, the proposed Strathcona project was considered particularly appropriate for the introduction of industrial resource extraction to the Eastern Arctic. The project would provide employment and experience benefits, but entail less severe hazards than a larger operation.⁽⁴⁰⁾

According to their summary of preliminary findings, DIAND analysts were concerned about several aspects of the project. The major disadvantage of the proposal was the project's marginal viability under existing government programs, particularly in light of the limited ore reserves and short expected project life. In addition to the direct capital and operating expenditures, federal project costs could include those relating to social and environmental disruption. Nevertheless, DIAND recommended government assistance to the project. In return, they expected commitments to carry out further exploration, and equity participation in the project for the federal government. DIAND hoped that negotiation of government equity would help to ensure net benefits for the project especially by enabling government assessment of the project's social impact and profitability.

In general DIAND's initial conclusions about the MRI proposal were consistent with the optimism DIAND officials had expressed toward the end of the feasibility study phase. Concerns about the commercial profitability of the project and uncertainty about its social implications were registered. But there was no suggestion that closer examination of the doubtful aspects of the project would reveal any reasons for withholding government approval and support.

The preliminary evaluation prepared by the Department of Energy, Mines and Resources was much less positive. EMR analysts were skeptical about the viability of the project and its contribution to government policy objectives. They judged that the consultant had seriously underestimated some project costs, especially the fuel and labour components. Recent zinc price increases, which might compensate for higher capital operating costs, might not continue. Moreover, they noted that the project would do little to further EMR policy aims. Export of Strathcona concentrate would contradict the federal policy of encouraging further processing of Canadian primary products in Canada. Also, the relative energy inefficiency of the project, due to its arctic location, would contradict efforts to reduce the rates of increase in Canadian energy consumption.(41)

EMR analysts recognized that their concerns were largely reflections of the responsibilities of their department, that the venture could provide valuable information and lessons from experience, and that the small size of the Strathcona project would diminish any disadvantages vis-à-vis the mineral industry that would result from its development. They conceded that the project might have socio-economic advantages consistent with other departments' objectives. But they cautioned that regional and social effects are difficult to predict and anticipated benefits frequently overstated. In particular, they recorded concerns about "the training and eventual fate of the native employees at the end of production," and suggested that prior to project approval the questions of benefits

and impacts relative to the local native population "should be resolved and agreement reached with the Inuit."(42)

EMR analysts concluded that "there is no national need for the production of zinc from the Strathcona deposits at this particular time, and that in some respects, production would be undesirable."(43) Nevertheless, they were willing to accept project approval if the concerns of other departments were satisfied, if the likelihood of socio-economic benefits was demonstrated, and if the proponents undertook to emphasize publicly that the venture was experimental and not to be construed as a precedent for future projects.

After their preliminary evaluations, DIAND officials began preparation of a submission to Cabinet recommending government approval and support for the project. They reworked their initial cost benefit calculations and analysed the relationship between characteristics of the project and policy objectives of the federal government. DIAND officials were firmly convinced that the net social (and socio-economic) benefits for the Inuit of the north Baffin region would compensate for the economic and environmental risks. The basis for this conviction is not obvious. It was not based on a full and thorough assessment of the project's social potentials and hazards. No such assessment had been attempted. Nor was it based on the expertise of DIAND social scientists and GNWT regional officials.

Prior to and throughout the period of government assessment, the GNWT Baffin Region Administrator encouraged the residents of Arctic Bay to consider and prepare for the social problems which could arise with the project and urged his superiors in Yellowknife to have a social impact study undertaken early in 1974, before the granting of project approval. The GNWT Executive Council was apparently unreceptive. Officials in the senior levels of the territorial government were strongly in favour of the proposed project and, in particular, were determined to support the MRI consultants' proposal that a new permanent residential community be created at the Strathcona site. In November 1973, before the federal government had completed even its preliminary evaluation, the territorial executive granted approval in principle for the new townsite.(44)

In DIAND several experienced assessors and social scientists expressed concerns about negative social effects, questioned the adequacy of existing information as a basis for judging the project's social acceptability, challenged the assumption that significant numbers of local Inuit were under- or unemployed, and echoed the recommendation of the preliminary evaluators that a study of Inuit attitudes to the project be carried out.

Internal critics, particularly individuals in the Territorial and Social Development Branch, challenged assumptions that wage

employment needs in the Baffin region were severe.(45) They argued that the existing under- or unemployment of native people had been exaggerated, largely by unwillingness to include in the employed category Inuit engaged in traditional economic pursuits. Existing unemployment was not, or at least not yet, a serious enough problem to warrant risking repetition of the boom-bust experience of the Rankin Inlet mine or to justify pressing forward with the Strathcona project before the local social and economic implications had been thoroughly examined.(46)

Despite these efforts the effective decision makers in DIAND demonstrated little interest in closer examination of the social implications of the project. Their only positive response came late in the assessment phase when a team of government researchers was sent to five communities in the north Baffin region (Arctic Bay, Pond Inlet, Clyde River, Igloolik, and Hall Beach) in order to collect data on the availability of Inuit workers for the Strathcona project. The team's efforts did not lead to a satisfactory exchange of information in the communities; their findings, even within the limited scope of labour availability concerns, were less than adequate.(47)

Environmental issues were also given little attention by senior decision makers during this period. The Northwest Territories Water Board was assigned to review the environmental aspects of the project proposal. The Board's recognition of the impossibility of an instant evaluation did not slow the decision making process. The assessment period was nearly over when the Board received from Department of the Environment experts a list of the studies required to determine whether or not the project was environmentally feasible.

In general, economic questions received most of the government's attention during the assessment phase of the decision-making process. The employment aspect was assumed to be positive. Other social factors were not considered important enough to warrant thorough examination prior to project approval. And, despite government policy, no environmental impact assessment was carried out prior to the government's decision to support the project.

The assessment phase ended with the completion of DIAND's memorandum to Cabinet recommending government approval and support of the Strathcona project. The submission of the memorandum took place five months after government assessment of the Watts, Griffis and McQuat feasibility study and the MRI proposal was begun. In light of the time usually required in government for cooperative intra- and inter-departmental work, for examining assumptions, writing analyses and reaching conclusions, and for guiding these through the bureaucracy to the Cabinet, particularly when the proposal and attendant issues are as complex and controversial as they were in the

Strathcona case, the five-month assessment period was exceedingly brief. Thorough consideration of the assumptions, implications, and issues raised by the Strathcona project was sacrificed.(48) DIAND officials, however, were convinced that there was need for expansion of economic opportunities in the Eastern Arctic. Consequently, the project assessment was carried out rapidly and immediate Cabinet approval requested.

Although the Cabinet memorandum was not officially released to the public, a copy was eventually provided to the community of Arctic Bay and is publicly accessible there. The authors of the Cabinet memorandum set out the relevant features and context of the proposal as thirteen separate factors. Not all were positive. DIAND conceded that known ore reserves would only support 12 years production, that agreement on the best means of dealing with the most serious environmental problem (tailings disposal) had yet to be reached, and that because of the danger of social problems (including unfavourable Inuit reaction to mine work, misuse of alcohol, and family breakdown) special guarantees and social safeguards would be required. These negative factors were presented in a manner which suggested that DIAND was aware of and concerned about the potential problems and confident that they could be solved or would not be serious enough to undermine the overall desirability of the project. The memorandum authors also emphasized the positive aspects of the proposed project's less desirable features. For example, they admitted that at least 80 per cent of the concentrates from the mine would be exported to foreign smelters, but suggested that Canadian processing of Strathcona ore could be significant if more ore were discovered and the life of the mine extended beyond present expectations.

The expected native employment benefits of the project were heavily emphasized. The authors of the memorandum reported that experience with other mining projects (e.g., Rankin Inlet, Lynn Lake, Asbestos Hill) had shown "the Inuit can become successful workers provided that significant assistance is available for relocation, training and counselling" and claimed that the project would provide needed employment opportunities for Inuit in a region suffering from significant under- and unemployment. In the discussion of the project's potential impact on employment opportunities in the rest of Canada, they stated that the present shortage of miners in the South would provide a further incentive to the company to hire native people.

The other major positive factor raised in the memorandum was that of the opportunity to test northern technologies and to obtain additional knowledge in the fields of northern construction, mining, shipping, townsite design, and employment policies. The proposed venture was considered a good example of the northern "strategic project" mentioned in the government's list of priorities for northern development in the 1970-1980 decade.(49) It was set forth as an exemplary or "pilot" project, which would provide information

useful to future projects.

On the economic and financial aspects of the proposal, the memorandum's authors estimated that government grants totalling \$8.8 million and loans totalling \$7.9 million would be required to begin the project. Even with this assistance the mining company owners were expected to receive only a "marginal corporate rate of return."⁽⁵⁰⁾ The proponents' continued interest in the project was explained in terms of MRI's belief in the potential for higher returns and the financiers' (the European smelterers, Metallgesellschaft AG and Billiton BV) interest in a secure supply of concentrates. The developers were said to be not adverse to government minority equity interest of 10 - 20 per cent. The authors of the memorandum did not see any danger (or at least failed to mention the possibility) of the Canadian government being left with additional expenses if the venture were to meet greater costs or lower revenues than expected.

In fact, it was suggested that the government might gain financially from the project. The recommended government capital investment was \$16.7 million (out of a total capital cost estimated at \$54 million), \$7.9 million of which was to be in recoverable loans. Operating costs to the government for maintenance and services throughout the life of the mine were estimated at \$0.77 million per year. It was claimed, however, that \$3.6 million in capital expenditures and \$0.32 million per year in operating costs would have been allocated to the area regardless of the Strathcona proposal.⁽⁵¹⁾ These estimated costs to the government were compared to an expected increase of \$12.64 million in government revenue through corporate income taxes, NWT royalties, sales, excise, and personal income taxes over the life of the mine. It was also noted that Texasgulf Inc., the original developer now partially owned by the Canada Development Corporation, had retained a royalty interest in the mine. The authors of the memorandum chose not to estimate the extent to which royalty payments to Texasgulf would benefit Canada. There was no suggestion that social and environmental problems might entail economic costs. Although the absence of domestic processing was mentioned, no attempt was made to assess the revenue loss to Canada from export of concentrate instead of refined metal.

The final factor discussed in the Cabinet memorandum was the question of timing. DIAND assumed that some project would have to be undertaken in the region. The alternative of encouraging immediate development of Cominco's Arvik mine on Little Cornwallis Island was raised, but it was noted that the Arvik had several disadvantages including a more hostile environment, more difficult shipping problems, less likelihood of Inuit employment, and little need for government assistance.⁽⁵²⁾ The alternative of non-support was rejected on the grounds that there was no other means of providing similar benefits to the region at comparable costs.

The authors of the memorandum claimed not only that the Strathcona project merited support, but that there was some urgency. Two arguments were provided. Immediate support was necessary because the private financing arrangements, which had been made with the European smelters, depended on the granting of government assistance to the project. The arrangements would lapse on 30 June 1974 if government aid was not secured. Within the general set of assumptions and attitudes surrounding the presentation of the proposal, this argument was quite reasonable.

The second reason was more curious: a delay of government approval would risk loss of Inuit support for the venture. Although the people of Arctic Bay were thought to be in favour of the project, it was suggested that "future attitudes towards the project could be influenced by the land claims issue." Stated in another way, as the Inuit, especially those in Arctic Bay, came to understand their interests more fully, particularly their interests in relation to the land, they might well come to oppose the Strathcona project. In effect, DIAND officials, who have repeatedly claimed to be primarily concerned with the interests of native northerners, chose to argue in this Cabinet memorandum for rapid approval of a project on the grounds that the native people might oppose it if given more time to consider their interests.

The arguments were effective. On 28 March 1974, Cabinet granted approval-in-principle for the expenditure of up to \$16.7 million in grants and loans for the Strathcona project. DIAND and the Department of Industry, Trade and Commerce were charged with negotiating a development agreement with MRI.(53)

The Cabinet decision ended the most important part of the decision-making process. Although the Cabinet decision was termed "approval-in-principle" and many uncertainties remained concerning implementation of the project and the division of responsibilities between the government and the company, it had been decided that government support would be forthcoming and that the project would proceed immediately. Relative to the questions decided by Cabinet, the remaining issues were details.

For some unexplained reason, Cabinet chose not to make its decision public. However, the president of MRI was informed and on 5 April 1974 announced that two European smelters, Metallgesellschaft AG and Billiton BV, would be financial backers for the project and that negotiations with the government had reached an advanced stage. On the basis of Cabinet's "approval-in-principle", the company pressed ahead with work on the site, completed preparations for the summer sea-lift of materials to Strathcona Sound, and entered into formal negotiations with the federal government to determine more precisely the project implementation requirements to which the company would have to agree in return for government assistance.

D. NEGOTIATION OF THE DEVELOPMENT AGREEMENT

The formal negotiation stage began soon after the March 28 Cabinet decision. A special Interdepartmental Working Group on the Strathcona Sound Project was set up under the Coordinating Committee of the Advisory Committee on Northern Development (ACND).(54) The Strathcona Working Group formed sub-groups to deal with specific aspects of the proposal. Throughout the drafting and negotiation period DIAND retained its dominant position. Much of the drafting was done by DIAND and sent to other interested departments for comments.(55)

The government departments and agencies involved in the negotiations and agreement drafting are listed in Table 1. The order in which actors are listed corresponds roughly to the order of their relative significance. Because of the secrecy surrounding the negotiations, it is not possible to be certain about the significance of each actor's role.

The entire procedure of drafting and negotiating the agreement was carried out with considerable speed. This may have limited the effectiveness of some participants. For example, contact and coordination between DIAND and GNWT suffered. During the negotiation phase, DIAND was not fully aware of the discussions which the territorial government was having with the developer concerning the nature of the proposed new townsite.(56) On the other hand, DIAND may not have allowed GNWT sufficient time to contribute as effectively as it might have in the drafting of the development agreement. On 3 April 1974, A.B. Yates, Director of the Northern Policy and Program Planning Branch, sent a memorandum to William Morgan, GNWT representative in Ottawa, outlining the Cabinet decision, and listing negotiation points. He asked that the GNWT forward any comments regarding additional concerns or suggested changes to him by 9 April. This clearly excluded any possibility of participation by GNWT officials in the region to be affected. Yates' note was not passed on to Baffin Region and Arctic Bay officials until 18 April.(57)

There was no attempt to involve the local people or native organizations in the negotiations.

The first formal meeting of the Strathcona Working Group took place on 29 April 1974. By the time of the second meeting on 14 May 1974, the initial drafting process was nearly completed. Negotiations with the company started in late May. The Strathcona development agreement was signed by C. Franklin Agar, President of Mineral Resources International Limited, and by the Honourable Jean Chrétien, Minister of Indian Affairs and Northern Development, in Frobisher Bay on 18 July 1974.(58)

TABLE 1

Government Actors in Drafting/Negotiation Phase

1. Department of Indian Affairs and Northern Development (DIAND).
Northern Affairs Program
 - general overseer and dominant force
 - responsibility for ensuring that northern resource development projects are undertaken in a manner consistent with approved policy objectives, legislation and regulations
 - responsibility for northern environmental protection
 - responsibility (with GNWT) for social issues especially relating to native northerners.
2. Government of the Northwest Territories (GNWT)
 - responsibility for local government and community matters, area development (excluding resource development), and education
 - particularly interested in the nature of the new townsite
 - contribution largely from Executive Branch - Secretariat.
3. Ministry of Transport
 - responsibility for general impact on Canadian transportation industry
 - contribution in airport and shipping aspects.
4. Department of Industry, Trade and Commerce
 - responsibility for maximizing use of Canadian goods and services
 - some concerns in area of domestic processing.
5. Department of Energy, Mines and Resources (EMR)
 - concern for maintaining consistency with overall mining policy and national interest regarding mineral resource exploration
 - particular interest in area of domestic processing
 - contribution on exploration and geology aspects.
6. Department of Manpower and Immigration
 - general concern regarding employment aspects
 - some shared responsibility with DIAND and GNWT for northern employment of native northerners.
7. Northwest Territories Water Board
 - major contributor in area of environmental study requirements, in particular, those related to the effects of tailings disposal. (The NWT Water Board is made up of representatives of DIAND and the GNWT, and of other federal departments including EMR, DOE and NHW.)
8. Department of the Environment (DOE)
 - advisor to DIAND regarding environmental matters.

9. Central Mortgage and Housing Corporation (CMHC)
 - responsibility for some housing development financing arrangements.
10. Department of Finance
 - concern regarding government equity interest and economic implications.
11. Treasury Board Secretariat
 - responsibilities concerning expenditures.
12. Northern Canada Power Commission
 - concern with provision project power plant facilities.
13. Foreign Investment Review Agency
 - responsible for overseeing foreign investment aspect of the project.
14. Department of Communications (DOC)
 - concern with northern telecommunications services.
15. Department of National Health and Welfare (NHW)
 - responsibility for northern health services.
16. Department of Justice
 - legal advice to drafters of agreement.

The agreement made specific and definite the decision made in March by the Cabinet. Several items were not finalized. For example, the particular nature of the townsite and the choice of the least environmentally-destructive method of tailings disposal were not decided. It was understood that several specific agreements concerning the infrastructural elements would be reached subsequently. Nevertheless, the basic formal agreement had been made and, as the official product of the decision-making process, released to public scrutiny.

E. THE AGREEMENT

In comparison with previous arrangements and development agreements which the federal government has had with the mining industry in the North, the Strathcona agreement represents a significant advance. Table 2 compares the Strathcona agreement with the requirements and arrangements relating to the three mining projects described in Chapter I and with the 1971 agreement between the Danish government and Greenex A/S for development of the Black Angel lead-zinc mine in Greenland.(59)

Table 2 suggests that the federal government has become increasingly concerned about and involved in decisions concerning northern mining developments. In particular, the contents of the Strathcona agreement demonstrate that the government, in the last few years, has become more determined to ensure industrial wage-labour opportunities for native people, more concerned about reducing the environmental effects of industrial projects, more determined to maximize benefits to Canadian producers and suppliers, and more willing to become directly involved in projects to ensure that the government policy objectives are attained.

In a speech delivered in Frobisher Bay at the signing of the Strathcona agreement, the Minister of Indian Affairs and Northern Development, Jean Chrétien, suggested that the government was aware of past failings and was using the Strathcona project as a testing ground for "a new approach to natural resource development in the North." He described the project as a "pilot Arctic mining venture involving many new concepts" and expressed his hope that it would be "a model for future mineral developments in the Arctic."(60)

There is no doubt that the government's approach to the Strathcona project was in several ways progressive and unprecedented. The Minister was justified when he stated that the Strathcona mine would be "a pilot project through which all those involved will gain experience in the social, technological, economic and environmental implications of such a development in the Arctic environment."(61) On the other hand, it is less than certain that the decision-making process leading to the Strathcona agreement dealt adequately with some of the considerations crucial to ensuring that the learning

experience would be the happiest possible one for the people and the environment affected by it.

Table 2 - Comparison of Development Agreements

Subject	Rankin Inlet	Pine Point	Anvil	Black Angel	Strathcona		
A. Special requirements of the company	no agreement	(agreement concerning native employment negotiated several years after commencement of mine operations)	goal of 5% - 1st a 10% - 2nd a 25% - 5th a mention of NWT Fair Practices Ordinance	encouraged, no set goals	- goal of 60% in 3rd a of operation		
<input type="checkbox"/> Employment : native northerners					- training of at least 12 apprentices		
					- participate in and cooperate with Training and Employment Advisory Cmte		
					- working and safety instructions in Eskimo syllabics and both official languages		
					- equal treatment and benefits		
					- orientation program for non-northern employees		
					- training program for Canadian deck officers on company chartered ships		
<input type="checkbox"/> Use of domestic goods and services					must use Canadian trucking company	preference to Danish companies encouraged	- requirements re prior consultation with government before purchases of foreign goods and services
<input type="checkbox"/> Domestic ownership/control							- particular encouragement of Canadian Arctic shipping
<input type="checkbox"/> Further studies required Exploration							- must retain Canadian control
<input type="checkbox"/> Local processing	(study requested subsequent to agreement)	study of feasibility of local smelter facilities		- \$250,000/a minimum expenditure on exploration (with probable government financial assistance through Northern Mineral exploration Assistance Program)			
<input type="checkbox"/> Domestic processing		domestic smelting encouraged if local smelter not feasible		- must try to find domestic processor (but export permit granted)			
<input type="checkbox"/> Provision of facilities/services				- construct power station in cooperation with Northern Canada Power Commission			
<input type="checkbox"/> Environmental impact				- provide for 50% of cost of health care facilities			
<input type="checkbox"/> Social impact			compensation to local people for damage to fishing and hunting due to company activities	- various studies required, including baseline studies, and examination of impact of construction activities on fresh water use, air and water pollution, and, particularly, trailings and other waste disposal			
<input type="checkbox"/> Life of project				- studies of social impact required			
<input type="checkbox"/> Termination of project				- restriction of use of alcoholic beverages			
				- consultation with local people and regional communities			
				- 12 full production years minimum			
				- at least 12 months notice			
				- disposal, clean-up, and site restoration			

Subject	Rankin Inlet	Pine Point	Anvil	Black Angel	Strathcona
<input type="checkbox"/> Monitoring of the project					<ul style="list-style-type: none"> - allow government access to records
<input type="checkbox"/> Special arrangements concerning government revenue				45% of profit after capital cost recovery to Danish government	<ul style="list-style-type: none"> - assistance to government Monitoring Committee and cooperation with Training and Employment Advisory Committee - 18% equity ownership to federal government
B. Government assistance	no agreement				
<input type="checkbox"/> Infrastructure		Great Slave Lake Rail Road - \$86m (\$14m recoverable)	roads and bridges \$10, transmission line and power station \$8m recoverable through user charges		<ul style="list-style-type: none"> - townsite: planning and design, roads, services, school, library, recreational and commercial facilities - \$2.2m grants, partially recoverable, and \$5.1m loans (CMHC, etc.) - dock - \$3.8m, 75% recoverable - airport - \$3.5m - total cost approx. \$16.7m plus maintenance, etc.
			municipal services (at least partially recoverable through sales of serviced lots)		<ul style="list-style-type: none"> - postal, police, and 50% of capital and operating costs of health services
			CMHC loans		<ul style="list-style-type: none"> - communications services
<input type="checkbox"/> Provision of permits			surface lease		<ul style="list-style-type: none"> - export permit - surface lease
<input type="checkbox"/> Workforce recruitment					<ul style="list-style-type: none"> - Canada Manpower involved in all recruiting
<input type="checkbox"/> Relocation programs			government assistance	<ul style="list-style-type: none"> - extensive government assistance 	
<input type="checkbox"/> Training programs			government assistance	<ul style="list-style-type: none"> - extensive government assistance 	
<input type="checkbox"/> Further studies			area transportation requirements and alternatives	environmental impact	<ul style="list-style-type: none"> - Monitoring Committee to report every 6 months - participation in Training and Employment Advisory Committee - overseeing of further studies by company

CHAPTER III

STRATHCONA PROJECT DECISION MAKING - THE ISSUES

The first two chapters of this study provided a discussion of the context and chronology of the Strathcona decision. From this discussion, it became evident that, although the breadth of concerns given attention in the Strathcona project decision making was unprecedented, in some areas the potential effects of the project were not as thoroughly considered as they might have been. This chapter will discuss issues raised by the project proposal and the treatment they were given. These issues are complex and inter-related. They do not fit neatly into categories. Nevertheless, an attempt at categorization is necessary and the discussion of issues in this chapter will follow the order of the federal government's expressed priority concerns for the North - social, environmental, and economic.

A. SOCIAL ISSUES

According to the government's March 1972 policy statement on northern development, the federal government's first priority in the North for the present decade is to further the interests of the people of the North in a manner consistent with their own "preferences and aspirations".(1) Similarly, the Minister stated in his speech at the signing of the Strathcona project agreement in June 1974, "our primary objective is to ensure that the maximum benefit will flow to the residents of the region, not only through job opportunities, but also through participation in the planning and management of the project. This is an opportunity to integrate our social development aims with an industrial project in a positive manner."(2)

Social issues have been explicitly recognized by the federal government as matters of primary importance and have been identified by government officials as foremost among the considerations leading to the Strathcona decision.

Three interrelated kinds of social issues are raised by the Strathcona proposal or by the nature of its assessment: (1) those issues which relate directly to the potential effect of the project on the native people of the North Baffin region, (2) those issues which arise from examination of the adequacy of the government's assessment of these effects in the light of its own official policy position, and (3) those more general issues which concern the advisability of the overall development strategy and ideology reflected in the government's application of its policy in the Strathcona decision-making process.

1. The Social Context

The employment opportunities, relocations, income flows and other less direct social impacts of the Strathcona project will affect the residents of several predominantly Inuit communities in the Eastern Arctic, including Pond Inlet, Clyde, Igloolik, Hall Beach, and Arctic Bay. However, Arctic Bay, a community of about 300 people located approximately 27 km from the Strathcona mine site, will bear the brunt of the project's social impact.(3)

Like many other Inuit settlements, Arctic Bay is a product of nationalistic and humanistic concerns acted upon by the federal government after World War II. In an attempt to establish an internationally recognizable Canadian presence in the Arctic and to meet the perceived health, education, and welfare needs of the native people there, the government began, in the 1950s, to encourage the Inuit to move from their many scattered hunting camps to a more limited number of settlements. In these settlements, schools, medical facilities, housing and welfare services could be provided and administered with relative efficiency.

The Inuit of the hunting camps prior to the shift to settlement life, were not totally independent people living the hunting and gathering life of their ancestors. They had already had several generations of contact with traders, the missionaries and the police. They had been sufficiently integrated into the market economy to be dependent on whites for credit or money for trade items such as rifles and ammunition.

Settlement life offered the Inuit both benefits and costs. The move to the settlement was a significant event. For many, the decision to move was a difficult one. According to Brody, "Most observers feel that great pressure was put on Eskimos to move, that the Whites were anxious to draw people into settlements. The pressures were informal and diverse, both as attractions (medical services, housing, proximity to store and church) and threats (no camp schools, illness in the camps). Once made, the central feature of the move was a new relationship to the Whites and their institutions: the move was acknowledgement both of the Eskimos' dependence on the White's goods and services, and White hegemony over social, economic and moral life. The move was made in full consciousness that, whereas camp life offered privacy and some sense of integrity and independence, settlement life must be lived under White domination - this consciousness at once described the terms of settlement life and assumed that the fundamental responsibility for them was in the hands of the White administrators."(4)

The move to the settlements did not lead to a cessation of hunting and trapping activities. On the contrary, hunting and trapping continue to provide a major source of income as well as of country food for the Inuit of settlements like Arctic Bay.(5) However, settlement life often meant less convenient access to

hunting and trapping grounds and localized pressures on the resource base. In addition, it led to greater exposure to the commodities and technologies of the Whites. This in turn encouraged, for example, the widespread replacement of dog teams by snowmobiles, and generally increased the cost of living. For settlement-based trappers, income from trapping is often insufficient to pay for the new kinds of equipment and other necessary commodities. Therefore, more money must come from elsewhere, preferably from wage employment or from soapstone or whalebone carving, but if necessary, from the income of others in extended family networks (e.g., those with more full-time wage jobs) or from welfare.

For considerable numbers of settlement residents - those who see themselves primarily as Inuit engaged in the traditional resource gathering activities - wage labour jobs are merely a valuable source of the income necessary to continue life's central occupations.

At the same time, other Inuit have chosen to take more or less permanent wage-labour jobs. For example, a recent survey identified 26 permanent jobs held by Inuit in Arctic Bay in 1973: 8 with GNWT, largely for in-settlement public works, 2 with the Co-op store, 2 with the Hudson Bay store, 2 with the Northern Health Service, and 12 held on a rotational basis, with Panarctic Oils.(6) Because not all of these jobs (in particular, the Panarctic jobs) were held continuously by the same persons, the total overstates somewhat the number of individuals who were actually employed permanently in 1973. During 1973, additional jobs available with Panarctic were not taken. Therefore the total indicates roughly the number of individuals who wished to take the permanent jobs available. According to the survey, 28 Arctic Bay men between the ages of 19 and 45 did not take permanent wage employment in 1973.

The difference between those who have and those who have not taken full-time wage-labour jobs should not be exaggerated. For most of the "permanently employed" as well as for those who take temporary wage-labour jobs only to provide extra income for continuance of more traditional pursuits, the acceptance of wage employment is more a product of necessity than a matter of preference. Brody, concludes that, "The use of [traditional land-based] skills and the taking of traditional wild-food are restricted, hampered and sometimes made impossible by financial difficulties, or commitment to wage-earning." Nevertheless "Eskimos' fundamental loyalties are to a land-based life and its skills and activities." The connections to the land and to traditional activities have been retained by the "permanently employed" as well as by those who are chiefly hunters and trappers: "Those who now work for wages and live in a government-designed settlement continue to maintain a mixed economic system; even full-time, year round employees hunt when they can."(7)

The number of Inuit willing to take full-time wage employment for extended periods, if not permanently, has increased in recent

years and may continue to increase. In part this is a product of the increasing population of Inuit settlements. Access to medical facilities has reduced infant mortality rates and spurred a continuing population increase. The actual rate of increase is uncertain, but there is little doubt that it is significant.(8) Because the fish and game resources within easy reach of the settlements have limited capacity, because the costs of hunting and trapping (especially when they involve longer distance trips) and the costs of settlement life often force even those who would prefer full-time participation in the hunting and trapping economy to seek some wage jobs, population increase tends to add to the numbers of those who see no viable alternative to wage employment.

At the same time, the largely White designed and oriented educational system has been preparing increasing numbers of young Inuit for life in the wage economy rather than for life on the land. Many of the younger people therefore tend to be more inclined to full-time wage employment than their parents.

The young people, perhaps more than the rest of the Inuit, are in a difficult position between the respected old traditions and the requirements of the Whites' economy. Independence in the old ways is no longer possible. Even those who are successful hunters and trappers often depend on occasional temporary wage employment in government agencies or in the resource companies. Meanwhile, hunting grounds and waters are increasingly threatened by the search for oil, gas, and minerals. In the absence of serious government efforts to support economic options consistent with traditional attitudes and skills, Inuit have little alternative but to accept wage-labour employment in the White economy - in semi-skilled and skilled labour jobs which accompany the exploration and exploitation of non-renewable resources.(9)

The present group of resource extractors is not the first to visit the Arctic. The whalers and fur traders preceded them with resource exploitation activities which could not be sustained. Present efforts to "develop" non-renewable resources will necessarily follow the boom-bust cycle of the previous experiences. Furthermore, they will be capital-intensive activities requiring in the longer term relatively small numbers of highly-skilled specialists. It is highly unlikely that a northern economy which is viable in the long term can be built around these activities. To the extent that these activities degrade the environment, reduce the renewable resource base, and assimilate Inuit workers into an economy and ideology which represses their sensitivity to, and appreciation of, the needs of the land and living resources of the Arctic, the eventual end of these activities will leave the Inuit in a much less hopeful position than their present one.(10)

In general, the present social (and socio-economic) reality for the Inuit is one of dependence. Because of the cost of living

in, and hunting and trapping from, the settlements, traditional activities are seldom adequate income sources. Additional income opportunities are necessary. For those who seek full-time wage employment the reliance on the Whites' economy is apparent. Brody notes, "Developers have found a ready acceptance in Eskimo communities for whatever employment scheme they have to offer. People who feel themselves to be utterly dependent on provision of foods and services from the south are slow to bargain over or complain about terms and conditions."(11)

The community of Arctic Bay, faced with the Strathcona project, was no exception. The people, perhaps because they suffered very little from shortages of full-time wage labour opportunities (due to the availability of Panarctic jobs), did protest about certain aspects of the proposed project as they understood it and did object to a lack of adequate consultation. But there is no record public questioning of the desirability of the project itself. Indeed, the Settlement Council of Arctic Bay was quite upset when they saw an article in the journal of the Inuit Tapirisat which criticized the proposed project.(12)

The Arctic Bay Settlement Council set out the reasons for its support of the project in two letters. In the first, sent in February 1973 to the Inuit Tapirisat, they stated,

"We, the Arctic Bay Settlement Council, are writing to let you know what our views are towards this development. We encourage it to develop. The same goes for Panarctic Oils Ltd. We want our men employed.

"We have no reasons to stop the development as it doesn't intend to infringe on our hunting areas and especially where the mine is located, there is no wildlife to speak of.

"We are cooperating with other people and they are cooperating with us. Exploration groups have been very careful not to disturb the wildlife when they are in hunting areas.

"The Government has helped us by giving us the tools we need to progress. We are in a period where we are progressing and we don't want to live by the traditional ways. You try hunting without a gun...."(13)

The second letter was sent by the Council to government agencies during the negotiation phase. It included the following passage: "In the present plan Inuit have nothing. Since we having nothing the Government could start by going against us. If we tried to stop them or they can just forget about us. The Government may even start thinking about death or they might split us up. But if our land is going to be worked on, we should like to know the plans before the activity starts so we can help each other. Also, so the

companies will have enough workers on their staff."(14)

These passages convey very clearly the people's perception of their dependence and powerlessness. At the same time, however, they also convey the depth of concern for the protection of their hunting areas and the living resources of their land. The importance of the land to the Inuit arises in part from their history and traditions and in part from their concerns for the future. The Inuit cultural identity is something which was shaped by their relationship with their environment. In Peter Usher's words, "Native people know that in order to be themselves, the land and the animals must be part of their life. In that sense, the land sustains them and their communities. Without the land, and everything it means, native people would lose that which makes them special in their own eyes."(15)

There is, as well, growing awareness among the Inuit that the current burst of economic activity in the industrial side of the mixed northern economy - the present non-renewable resource exploration and exploitation efforts - will not last indefinitely nor leave behind a viable economic base for the people of the Arctic. Consequently the land - the traditional base - must be protected. "When the boom is over, the outsiders can always go back where they came from. But most native people don't want to live in the south. The North is their home, so they have to think about the future. They have to make sure the North will always be a good place to live, for them and their children and their grandchildren."(16)

The relationship of the Inuit to the land carries another significance. Because the Inuit have lived on the land since time immemorial and have never signed away their rights to it, they still have a legal basis for claiming ownership of the land and will soon enter into negotiations with the federal government for a settlement of their land claims.(17) The settlement that is eventually reached could provide the Inuit with another alternative for the future. If the land and powers granted to the Inuit are sufficient, they may have a basis for creating and sustaining a viable mixed economy in which they could control the industrial economic activities in their land and, at the same time, engage in traditional hunting and trapping activities without dependence on casual wage labour jobs or welfare from the Whites.

At the time of the Strathcona decision, the possibility of such a land settlement was not widely known or understood in the north Baffic communities. Land settlement considerations did not enter into the efforts of north Baffin people to contribute to the decision making. The Inuit Tapirisat, which may have been expected to be concerned about the implications of the Strathcona decision for a future land claims settlement, was not invited to participate in the decision-making process. Nevertheless, the potential land settlement is an important element in the broader social context in

which the Strathcona project decision making took place.

There are also several factors of particular interest concerning the community of Arctic Bay. Perhaps the most significant is that the community is considered one of the healthiest in the Eastern Arctic. At the time the Strathcona proposal was being assessed, Arctic Bay did not suffer from unemployment. The per capita earned income from wage employment and traditional activities by Inuit was among the highest for native communities in the North.(18) The settlement neither had nor needed a detachment of the RCMP partly because the people of the community had consistently and overwhelmingly voted to disallow the opening of any kind of alcohol outlet in Arctic Bay.(19) Despite a somewhat unfortunate socio-economic situation - which they shared with the people of most Inuit communities - the people of Arctic Bay had a great deal to lose if unexpected or unexpectedly powerful social effects of the Strathcona project undermined the health of their community.

2. The Potential Effects

There was never any doubt that the Strathcona project would have major social and socio-economic effects on the people and communities of the north Baffin region. There would be dramatic effects on the lives of the workers and the families of workers who would be employed at, and perhaps be relocated to, Strathcona Sound. There would be direct effects on the community of Arctic Bay, which would not only supply workers, but be connected by road to the new airport and the mine site. More distant communities from which Strathcona workers would be drawn, would probably be less affected. Nevertheless, in these communities too, the quality of life might be significantly altered.

For the purposes of the decision to grant approval and support to the Strathcona project, government officials assumed that the project's positive effects would be significant and that its negative effects would be minimal, if appropriate requirements were written into the development agreement and necessary adjustments made during the implementation phase. This assumption was not arbitrary nor entirely unreasonable. But neither was it based on any thorough research. No concerted effort to identify the possible implications of the various aspects, to find alternative means of implementing the project and to examine these in the light of previous experiences was undertaken during the government's evaluation of the project proposal. Because of the government's failure to carry out such research, it is possible to provide only a general outline of the nature and possible severity of the potential effects of the proposed project. Even on the basis of this general outline it should be possible to assess the government's decision to dispense with a thorough examination of the social and socio-economic implications of the proposed project.

The project would undoubtedly have positive effects. These would be related to the provision of employment opportunities for Inuit who had, for various reasons, become increasingly dependent on wages. Those employed would gain increased disposable income, and their employment at Strathcona Sound would allow a redistribution of their prior income sources, and would increase the income base of the communities. Furthermore the project would provide opportunities to train Inuit workers for more skilled industrial employment in the future. If the project were properly implemented, such benefits from Inuit employment would be virtually assured. However, the extent and significance of the possible benefits could not be easily shown.

There were two problems. First, while it was certain that at least some Inuit in the region desired relatively permanent wage employment, the available information did not indicate an immediately serious shortage of wage employment opportunities in the Eastern Arctic.(20) Second, the expectation of benefits from wage employment and training rested on the acceptance of a general strategy for northern economic development and native employment which, if successful, would mold the Inuit into a mobile and highly skilled workforce available for employment in a succession of Arctic resource extraction projects.(21) This strategy did (does) not offer a very attractive or secure future for the Inuit. Definite advantages would be enjoyed by companies extracting the oil, gas, and mineral resources of the Arctic, but because long-term labour needs are minimal and because the resources to be extracted are limited and non-renewable, no reliable, long term economic base for the people of the area would be established.

The anticipated indirect benefits of Inuit employment at Strathcona Sound were also somewhat questionable. For example, recent experience with rapid increases in the income of communities had indicated that the effects are not uniformly positive. While new income had provided for equipment and other commodities necessary for traditional activities and settlement life, it also had less desirable effects on consumption patterns (e.g., alcohol) and community stability.(22) Similarly, the effects of redistribution of income sources would not necessarily be entirely beneficial. To the extent that people already holding wage jobs in the various communities were attracted to employment at Strathcona Sound, there would be vacated job opportunities for other people in the communities. But there would also be a considerable loss if those attracted away were important community leaders or key members of extended family units.

The likelihood of direct and indirect benefits from Inuit employment did not provide an adequate basis for assuming that the negative social aspects would be negligible, easily minimized, or overwhelmingly outweighed by benefits. In fact, there were reasons to expect that there might be serious problems.

Throughout the entire decision making process it was assumed that the proposed project would emphasize employment of Inuit workers, and that these workers would be drawn from the communities of the north Baffin region. Although close to the mine compared with southern population centres, most of these communities are a considerable distance from the project site. For example, Pond Inlet, the closest Inuit settlement after Arctic Bay, is located 250 km away. Consequently, there were major questions relating to whether to relocate Inuit workers and their families to Strathcona Sound or to organize and operate a rotational employment plan.

Under the relocation alternative, the workers recruited from the various communities and the workers' families would be moved to a new townsite established near the mine. For these people the new settlement would almost certainly have better and less crowded housing, better services, and better indoor recreational facilities than the settlements from which they had come. Due to transportation advantages of the new wharf and airport, residents of the new settlement would also have more frequent, reliable, and convenient access to other communities and would be able to import commodities from the south at lower freight rates. Most importantly relocation would allow the workers to be with their families every night, and whenever they were not on the job. It would not entail long periods of separation.

On the other hand, the Inuit families relocated to Strathcona Sound would face disappointments and problems. The bleak and windswept inland townsite would offer few physical attractions for people used to coastal life. It would provide poor access to hunting opportunities. Inuit workers wishing to continue traditional activities would be discouraged by the location. They would also face considerable pressures to adopt the ways of southern wage-workers and consumers. The relocated families would find themselves sharing a new community with a relatively large number of single male transient workers, mostly Whites imported from the south. At least in the initial years, White workers would outnumber the Inuit workers and, because of their numbers and their greater familiarity with life in industrial communities, would set the dominant social tone of the community. The Inuit would be to some extent isolated by a language and cultural barrier and there would be a tendency, evident in communities like Frobisher Bay, for intercultural cooperation to be more superficial than real. In particular, Inuit women not holding jobs would be outside the mainstream of community activities, distant from their old friends and extended families, and generally in a position likely to cause boredom, depression, and other strains. The presence of relatively large numbers of single male workers, White and Inuit, would inevitably put further pressures on family units. And there would almost unavoidably be problems caused by (as well as revealed by) over-consumption of alcohol.

The new Strathcona community of bunkhoused workers and relocated families would not only have considerable potential for social disintegration during the expected lifetime of the mining operation, but it would face the difficulties of closure when the mining ceased. Planning for the bust could prevent a re-enactment of the Rankin Inlet experience, but the place would by then be home for some people and whether they were allowed to stay or forced to go, there would inevitably be social costs.

The relocation alternative would also have negative effects on the communities and social costs for the people left behind. Extended family connections would be weakened by separations. This, combined with the tendency of industrial employment and southern culture to emphasize individual income and the nuclear family, would weaken the Inuit traditions of sharing through extended family networks and family responsibility for elderly members. Moreover, the communities would likely lose some of the individuals who are most familiar with the White's political economy and culture and most valuable for community dealings with outside forces.

The community of Arctic Bay would face particular problems. It might suffer relatively little loss from residents relocating to Strathcona Sound, but, particularly after completion of the expected road connection to Strathcona Sound, Arctic Bay would be threatened with the spill-over of any social disintegration at the new settlement, and with the effects of conditions there (for example, availability of alcohol) which it opposed but could not control.

For these reasons, the people of Arctic Bay recommended that, if there were to be relocations, the families ought to be moved to Arctic Bay. Under this version of the relocation alternative, the families would be located in a far more physically attractive and culturally familiar place than the Strathcona townsite. Community matters would be under Inuit control and, because the large body of single male workers would be housed in bunkhouse facilities at the mine site, some of the more problematical pressures would be less immediate. Consequently, the threat of social disintegration would be less pronounced.

However, the Arctic Bay version would not greatly reduce the negative effects of relocation on other communities. And, depending on the quality of transportation between Arctic Bay and the mine site, the workers might not be able to be with their families every night. Furthermore, the influx of considerable numbers of wage employed Inuit into Arctic Bay would likely have a considerable and perhaps unfortunate impact on the existing community balances and relationships. The additional population might increase pressures on the renewable resource base for traditional activities in the area.

The major alternative to relocation was a system of rotational employment similar to that used by Panarctic Oils and some other

companies which were undertaking temporary, remote resource extraction activities. Under the rotation alternative, the workers recruited from the various settlements would be transported to the mine site where they would live in bunkhouse facilities and work on the project for a certain specified period. They would then be flown back to their homes for a specified period of holidays while others took their places on a continuous rotation.

For Panarctic Oils, the sub-contractor (Pe-ben) transports workers from their home communities to the job site on a 2 weeks on, 1 week off rotation. The organization of the work party is done by Inuit organizers who arrange replacements for workers who decide they need more than 1 week off for a hunting trip, for example. Panarctic began its rotation system in late 1971 on a 20 days on, 20 days off basis.(23)

For the Inuit workers, the rotation alternative would involve extended periods of separation from their families. However, it would allow the workers and, perhaps more importantly, their families to retain their homes in the area with which they were familiar and among their relatives and friends. For the communities, rotation would have several advantages over the relocation alternative. Rotation would not involve the permanent loss of valued community leaders and it would offer participative opportunities if the communities were given responsibility for organizing the rotating work parties. In addition, rotation would probably spread the economic benefits of wage employment at Strathcona Sound more effectively throughout the communities of the region. However, the influx of new income would probably have negative effects on consumption patterns. The broader spreading of economic benefits would also entail a broader spreading of community dependence on the mine. In the end, adoption of the rotation alternative might result in less intense, but more widespread, social and economic disruption when the orebody is exhausted.

This survey of some potential social implications of Inuit employment at the Strathcona project is incomplete. But it does indicate beyond question that the project and the alternatives for its implementation posed significant questions concerning potential social effects. There was no basis for assuming that the negative social effects would be insignificant or that a proper assessment of the proposed project could be undertaken without a thorough investigation of its possible positive and negative social effects.

The fact that the Strathcona project would have significant social effects on the native people of the region was the chief, but not the only reason why there should have been a full assessment of the project's potential social impact prior to the decision concerning government approval and support for the project. An assessment was especially important in the Strathcona case because of the project's precedent setting nature. It was also required by the

government's own northern development policy.

3. The Policy Requirement

In its March 1972 official policy statement on northern development, the federal government announced that, for the next decade, its first priority in the North would be to enhance the well-being of the people of the North.

It claimed that the heaviest emphasis would be on the needs and aspirations of the native peoples, and that its first objective for the North was, "To provide for a higher standard of living, quality of life and equality of opportunity for northern residents by methods which are compatible with their own preferences and aspirations."(24)

The 1972 policy statement did not mean to imply that government officials had previously been entirely disinterested in the welfare of native northerners. However, it did constitute an implicit recognition that in the course of northern development initiatives in the 1960s, too little had been done to ensure that the native people of the North would benefit from resource exploitation. Although the March 1972 statement did not refer to the Pine Point or Anvil experiences, it did reflect new awareness that regional, social and economic benefits do not automatically accompany such projects.

This awareness was reflected in several aspects of the policy statement. Priority was given to social concerns and more attention would be devoted to ensuring native access to, and training for, employment opportunities, particularly in renewable resource activities.

Perhaps the most significant new departure, caused by awareness of the uncertain relationship between resource exploitation and benefits for the people of the area, was the new policy position that the regional as well as territorial and national, social and economic implications of major development projects should be fully assessed before granting government support. In addition, "Because of the immaturity of the economy in most of the regions and the disruptive effects ... of major development programs, the absorptive capacity of the regional economy concerned must be carefully assessed to determine what needs to be done to prepare the region and its people for public or private projects contemplated."(25)

The social elements of the government's new northern policy had several clear and direct implications for decision making concerning the Strathcona proposal. First, social considerations based on a thorough study of the potential social and socio-economic effects of the Strathcona project ought to have been central to decision making. Second, in order to ensure that the "preferences and aspirations" of the people to be affected were fully reflected in

the study, it ought to have been undertaken with the most complete possible involvement of the people of Arctic Bay and the other north Baffin communities. This implies that the local people ought to have been given enough time and clearly understandable and complete information about the project and its implications to allow them to develop and express their views concerning the proposed project in a well-informed and well-considered manner.

4. The Precedent-Setting Situation

The significance of the policy requirement for thorough social impact research and consultation prior to the Strathcona decision was multiplied by the fact that the proposed project was the first proposal to be considered by the government subsequent to the publication of the new policy. The Strathcona decision was a precedent-setting test case which would show whether the government intended to live up to the promises of its new policy or whether the policy was intended to be little more than new rhetoric to cover continuance of the old ways.

Since the announcement of the new policy, DIAND had frequently been accused of failing to enact it in practice. The Department had, for example, been stung by public criticism of its treatment of social and environment factors in the decision to speed construction of the Mackenzie Highway.(26) The Strathcona proposal presented the government with an important opportunity to demonstrate its determination and ability to match its decision-making practices with its stated policy intentions.

In fact, the Strathcona proposal was a challenge which went beyond policy enactment considerations. The Strathcona mine would be the first major industrial project to be undertaken in the Eastern Arctic. It would set a standard against which any similar future projects in the region would be judged. It would set precedents in the eyes of promoters of future industrial projects and in the eyes of the native people whose lives and land would be affected.

It was, or should have been obvious that if the government granted its approval and support for the project without adequate consideration of the social (and other) issues raised by the project, it risked setting inadequate standards which would be difficult to raise for future proposals and which would lead to deterioration of the quality of their lives. Had a thorough examination of the potential social impact of the Strathcona project been undertaken as part of the overall assessment of the development proposal, it would have contributed greatly to reduction of these risks.

Such a social assessment would also have set a precedent in itself. The idea that the social implications of major projects ought to be examined as part of the initial assessment of their desirability does not have a long history of acceptance in this

country. Social issues have often been brushed over or entirely ignored in consideration of major project proposals. No doubt this has frequently been due to the powerlessness of the people most adversely affected and the disinterest of the effective decision makers. Sometimes, perhaps, the need for special research efforts has been reduced by the weight of known experience in similar cases or by the political sophistication of those to be affected (who can be relied upon to inform themselves fully and to express their view forcefully). However, there is a growing recognition that in most cases the potential social effects of proposed projects have received inadequate attention. An exemplary study of the social aspects of the Strathcona project would have set a valuable and nationally-applicable standard for social impact assessment.

On moral and political, local and national, practical and theoretical grounds, and in recognition of the social issues, policies and precedents involved, there ought to have been a thorough and comprehensive examination of the various interrelated social and socio-economic effects of the proposed Strathcona project on the people and communities of the north Baffin region - a social impact study which would have examined the implications of the project in the light of the lessons of relevant previous experiences and which would have been based in large part on the results of painstaking consultation with the people to be affected.

Social impact studies of this sort are difficult and time consuming. It is not easy to understand and describe a people's present situation and it is much more difficult to know what to expect in the future. It takes time to explain the nature and implications of a proposed project, more time for people, individually and collectively, to consider what they have been told, and more time again for researchers to gather these thoughts and attitudes together, to analyze them, to relate them to other factors, and to take the conclusions back to the people once again for verification. For the Strathcona project, the potential social effects are even more difficult to assess because research is hampered by language and cultural barriers. Furthermore, the conclusions of social impact studies, when they are reached, are likely to be more obviously subjective than those concerning other factors.

Neither the difficulty of social research nor the subjectivity of social research conclusions make the potential social problems any less severe. Nor do they reduce the need for sensitive consultation and careful analysis. The difficulty of the task implies that social researchers ought to be careful not to overstate their conclusions. It also implies that superficial, last-minute surveys of the potential problems or whirlwind "consultative" visits to the people involved cannot possibly be satisfactory. If the potential benefits and costs are to be identified and incorporated into the overall project assessment, then the necessary time must be taken.

5. The Treatment of Social Issues

The actual approach taken to the assessment of the social implications of the Strathcona project was described in Chapter II. Within DIAND, experts had pointed out the lack of research information about the possible social and local economic effects of the project and the lack of knowledge about the Inuit attitudes to the project and the wage employment opportunities to be offered. Despite these concerns and despite a direct appeal by the senior GNWT official in the Baffin Region for a study of the potential social impact of the Strathcona project, no such study was undertaken before the government decision to support the project.

However, there were some attempts to discuss the project with the people to be affected and some socially relevant research was carried out. Government officials held some meeting with the people to be directly affected by the project and undertook a study of the availability of Inuit workers for employment at Strathcona Sound. But the government's consultative efforts and employment research were not carried out well enough to provide adequate basis for assessing the crucial social aspects of the proposed project.

(a) consultation with the local people

For reasons of policy, democracy, justice, and common sense, the federal government ought to have ensured that the local people, whose lives would be most directly affected by the Strathcona project, were enabled and encouraged to play a significant role in the decision-making process. It ought to have provided complete and understandable information. It ought to have allowed them enough time to develop and express well-considered views relating the proposed project and its implications to their concerns, values, hopes, and desires.

The federal government has a peculiar and not always recognized responsibility regarding the native people of the Canadian Arctic. Like all Canadians, these people have a moral and democratic right to have a say in the making of decisions that will directly and significantly affect their lives.(27) In addition, Arctic natives have a moral and perhaps legal right concerning resource exploitation projects like the Strathcona mine because such projects are undertaken on, and to some extent inevitably despoil, land which the Inuit have always considered to be their own and for which they have never ceded title.

Serious consultation with the local people was also a practical necessity for the government if its actual and effective motivation in considering and supporting the proposed project was that of ensuring maximum benefits for the people of the region and if

it wished to enhance the chances of the project being a social and economic success for the local people, for the mining company, and for the government itself. The government was aware that the economic success of the project was less than certain and that profitability might depend heavily on the existence of an increasingly skilled and stable local (Inuit) workforce. Serious consultations were necessary if the government was to be able to assess the likelihood of such a workforce in the light of expressed Inuit preferences and aspirations.

Thus, there were several pressing reasons for maximizing Inuit participation in the decision-making process. Government officials were not entirely unaware of these considerations and did make some attempts to consult with the people of Arctic Bay prior to the decision to approve the project. However, the extent and effectiveness of these consultative efforts merit close examination. There is no record of any serious attempts by the companies involved, or by the federal or territorial governments, to provide satisfactory information to the people of Arctic Bay. Nor is there evidence of any effort to solicit their opinions about the proposed development until well into the feasibility study stage of the project. According to the records of the Settlement Council and the Settlement Manager of Arctic Bay, the first notable effort by company or government officials to talk with the local people about the Strathcona project did not take place until February 1973, six months after Watts, Griffis and McOuat had begun the feasibility study for MRI.

The February 1973 meeting was held in response to an extraordinary letter sent to the consultants and various GNWT and DIAND officials by the people of Arctic Bay in November 1972. During the early fall of 1972, while the basic outlines of the feasibility study were being drawn, the community of Arctic Bay received little first hand information about the Strathcona project. But there were many rumours, at least some of which came through territorial government channels or through individual residents employed at the Strathcona site.(28) One of the more persistent rumours concerned plans to move the whole community of Arctic Bay to Strathcona Sound. Understandably concerned about the future of their community and about the nature of the project, the people of Arctic Bay drafted and sent a community letter to Watts, Griffis and McOuat Ltd. The original letter, dated 15 November 1972, was written in syllabics and signed by Levi Kalluk, the Chairman of the Settlement Council of Arctic Bay, and by 98 other adult residents of the community.(29,30)

The community began its letter with the following explanation:

"We are aware that the mining consultants have written to Yellowknife and Ottawa to solicit opinions on the mine, and that the governments in both Ottawa and Yellowknife have answered stating the things that they would like done, but

both governments replied without first asking us, the people of Arctic Bay, our opinions on the subject and what we desire here in our own land. And this despite the fact that we know that the development of the mine is of utmost importance to us and to our area. Therefore, although we have not been asked to do so, we wish to write to you to advise you of our thoughts."(31)

The people of Arctic Bay did not discuss the desirability of the mining project itself. Presuming that it would go ahead, they restricted their comments to how they felt the project ought to be implemented. In particular, they emphasized that they did not wish to move from Arctic Bay. Instead they recommended that mine site accommodation be limited to bunkhouse facilities and that families of Strathcona mine workers have their homes in Arctic Bay. This position was in direct opposition to one of the operating assumptions upon which the consultants had already settled - that a permanent community would be established at the mine site.

The writing, discussing and signing of this letter was a serious and unusual community initiative. It indicated the depth of the people's interest and concern about the nature of the mine development and their desire to take part in the decision-making process. Copies of the translation were sent not only to the consultants, but also to the Commissioner of the Northwest Territories, to the Director of the Northern Economic Development Branch of DIAND, to the GNWT Baffin Region Administrator, and to various other GNWT officials including the directors of the Departments of Local Government and of Industry and Development. Two replies were received: one from the consultants and the other from the Deputy Commissioner of the NWT.

The reply from the chief consultant, Mr. Graham Farquharson, contained a brief explanation of the purpose of the feasibility study and a recognition of the people's desire to have their permanent homes at Arctic Bay and bunkhouse accommodation at the mine for those who chose to work there. Mr. Farquharson did not reject any of the recommendations of the people of Arctic Bay, but neither did he state the company's preferences or mention the results of his discussions with government officials. In fact, his letter was noncommittal and conciliatory. Apparently taking the position of spokesperson for all outside interests, he wrote, "it is of the utmost concern to our client and the federal and territorial governments that the interest of the community of Arctic Bay be fully considered and protected, should a mining development at Strathcona Sound eventuate."(32)

The response from the Deputy Commissioner of the NWT, Mr. J.H. Parker, was more specific. He agreed that "Arctic Bay people should be able to work at the mine and keep their homes in Arctic Bay...." But he rejected the community's recommendation that Inuit workers from other settlements move their families to Arctic Bay instead of

the mine site, arguing that, "these people will be moving a long way from their traditional homes. They may not want to have their families at Arctic Bay, a place which would be strange to them, and not be able to see them every night."(33)

The Deputy Commissioner was clearly stating a preference for the alternative of relocating the families of Inuit workers from communities other than Arctic Bay to a new permanent settlement at the Strathcona site. He did not state it as a final and immutable decision and it may be that the senior GNWT officials had not yet taken a firm position on the matter. However, the GNWT did opt for the relocation alternative early in the feasibility study phase. The Watts, Griffis and McOuat consultants reported that the strong support of GNWT officials for the creation of a new community at Strathcona Sound had led them to undertake design and cost estimation exercises based on the assumption that a permanent community would be part of the project. Unfortunately, the GNWT's adoption of the Strathcona town alternative was not based on a serious and thorough examination of the implication of relocation or the relative merits and problems of the alternatives.

In a memorandum which was certainly available to the senior GNWT officials in Yellowknife, Mr. J.G. Haining, the GNWT Superintendent of Industry and Development for the Baffin region, had discussed some of the social and environmental aspects of the project. Mr. Haining did not attempt to provide a comprehensive analysis of the pros and cons of the various alternatives for project implementation. He merely noted some of the problems which would likely arise if Inuit families were relocated to Strathcona Sound, emphasizing particularly those potential difficulties which the government could minimize if it began preparatory efforts well before the project was begun. However, the potential relocation-related problems discussed in the memorandum were far from trivial. Mr. Haining indicated that, when viewed in the light of past experiences, there was some doubt an ideal White-Inuit community could be created by relocation:

"Co-residence in any community can be restricted through lack of a common means of communication, particularly between the wives who normally have little knowledge of the English language. This communications "barrier" makes it difficult for them to take part in community affairs or activities. communications "barrier" makes it difficult for them to take part in community affairs or activities.

"With regard to the Strathcona Sound Project the problems of relocation may not be as disastrous as they were for Lynn Lake or Yellowknife. These latter communities only had a few people to relocate into their areas, whereas, in the situation at Strathcona Sound we are talking in much greater numbers.

"The danger however, exists, that the indigenous labour force

will tend to bank together and will, through time alone, gravitate into a situation, as is evident in Frobisher Bay, where both cultures are together, but in fact really far apart."(34)

Mr. Haining did not question the advisability of creating a new community at Strathcona Sound, but his memorandum ought to have moved his superiors to initiate a closer examination of the various options in hopes of finding one which presented fewer difficulties.

The Arctic Bay community letter of November 1972 also ought to have led senior GNWT officials to re-examine the Strathcona town idea. The community clearly stated that they were opposed to the establishment of a permanent new town at Strathcona Sound. They also presented arguments supporting an alternative approach:

"We wish to live here in Arctic Bay; we do not want to live at the mine site in Strathcona Sound, or to move. And we think that the people who will work at the mine should have their homes in Arctic Bay with a bunkhouse up at the mine site. One reason for this is so that the women and children can be away from the actual work site.

"The mine site has very little suitable place for erecting a large number of buildings, and is very windy. Here in Arctic Bay there is more space for building many houses and it is a much better place for a home than is Strathcona Sound. It is also a favourable location for hunters and has an excellent harbour for those with boats.

"At the mine site there is only one source of water. Whereas here in Arctic Bay, if the population increases, there are two lakes with very good drinking water. The larger one is not used presently, but could be."(35)

They also recommended that a road be built from Arctic Bay to provide access to the mine site and, presumably, to the proposed new airport.

The Arctic Bay letter emphasized the physical advantages of their location, but it is not difficult to identify the deeper social concerns which underlay their arguments. The people of Arctic Bay were well aware of the fact that they have a relatively ideal community. Compared to many other Arctic communities, particularly those where the impact of White society and the extent of White domination is greatest, Arctic Bay is a paragon of social health. However, the people of Arctic Bay were aware of some of the social side effects of developments in other places. Many people knew from personal or shared experience of the problems of communities like Frobisher Bay and Resolute Bay. They had no desire to see these experiences repeated in their community.

The GNWT seems to have paid little attention to the Arctic Bay arguments. Instead it prepared a position paper which supported construction of a new townsite near the mine. According to the authors of the Watts, Griffis and McOuat feasibility study, the GNWT position paper advanced the following arguments against the suggestion that Arctic Bay be expanded to accommodate the relocated families of workers from other communities:

1. There is not an adequate water supply within reasonable distance of Arctic Bay that would support the expanded population.
2. Space limitations at Arctic Bay would require a long, narrow community that would be difficult to service.
3. Proper sewage disposal would be difficult.
4. Of the facilities now at Arctic Bay, there is little that would be suitable for the new community.
5. It is not certain that a road link could be kept open continuously between Arctic Bay and Strathcona Sound. The alternative of a town at Arctic Bay and a partialbunkhouse community at the mine would be socially undesirable.
6. The best site for a major airstrip is closer to the mine.
7. A new townsite for those people employed at the mine would allow the people who elect to remain at Arctic Bay to continue their present way of life if they so wish. Otherwise the influx of people from other settlements and from the south would leave present Arctic Bay residents in a minority in their own town. The existing social structure would be destroyed, and those who could not, or did not choose to, make the adjustment to full time wage employment could be at a disadvantage.(36)

These arguments do not indicate that the GNWT officials responsible had given careful attention to the opinions of the residents of Arctic Bay or that they had carried out a reasonably thorough investigation of the facts and alternatives. On the water supply issue, for instance, the Arctic Bay people had taken the opposite position, arguing that their community had better access to adequate fresh water supplies than the Strathcona site. And it was subsequently discovered that the GNWT assessment of water availability at Arctic Bay had not been based on any systematic on-site investigation of nearby fresh water sources.(37)

The question of the social implications of separate locations for family and bunkhouse accommodations was not something which could be resolved easily. The experiences of communities like Inuvik and Frobisher Bay and the comments of Mr. Haining had indicated that it was not reasonable to assume that a new community created at

Strathcona Sound would be without undesirable social characteristics. In fact, it would have been the height of credulity to expect that there would not be significant social problems in a mine site community largely populated by a mixture of single male transient workers (White and Inuit) and Inuit families. Such a situation would engender severe social stresses even among a homogeneous group of people fully acquainted with or assimilated into southern culture and the wage economy.

Uncertainty about the practical feasibility of the road link ought to have induced the GNWT to seek other options. The GNWT Deputy Commissioner had told the people of Arctic Bay that workers from their community would be allowed to keep their homes in Arctic Bay and commute to work at the mine. Even if a new Strathcona Sound community were created, a relatively reliable connection between the mine and Arctic Bay would have to be assured. A road might not have been the most ideal choice. Not only was there uncertainty about the possibility of keeping a road open throughout the year, there was a question of capital and maintenance costs and, more importantly, reason to expect that a road link would provide an effective means of transporting social problems from the mine site to Arctic Bay.(38) The possibility that the combined social and economic costs of a road would be very high was not recognized. There is no evidence of any examination of transportation alternatives. The option of adopting an air-shuttle employee rotation approach to the project was not seriously examined then or at any other time before the government decision to support the project. And it was not until well into the construction phase of the project that the possibility of a third alternative - commuting by all terrain vehicles - was raised:

"It is strongly recommended that a comparison be made regarding the costs involved in the construction (\$2.1 million, 1974) and maintenance (\$200,000, 1974) annually, and the costs and feasibility of using the type of "All Terrain Vehicles" with large high pressure tires such as are currently being used by the various Arctic oil exploration companys... It would appear that such A.T.V. units at a cost of less than \$100,000 (1975), would be able to traverse the distance between Arctic Bay and Strathcona Sound in the same time as any conventional vehicle over the proposed road; whilst providing the Inuit with maximum security and minimum costs. The use of such vehicles would obviate the need for extensive road maintenance, and in terms of making its daily journeys, it could be limited to the use of bona fide commuters; and, if the road is only suitable for ATV's it will deter many "sightseers" from visitng Arctic Bay, which is something about which the community has expressed concern."(39)

The prediction of negative social effects if Arctic Bay were to be expanded to accommodate families from other communities was not entirely convincing. It was, after all, the people of Arctic Bay who

had proposed this. Presumably, they thought that the Arctic Bay expansion alternative would be less socially threatening than the creation of a new community at Strathcona Sound. Particularly since the GNWT did not write its position paper on the basis of extensive discussions with the people concerned, there is little reason for accepting the assertion that the Arctic people not employed at Strathcona would have their lives and more traditional activities entirely undermined, nor that those in the wage economy would allow themselves to be entirely assimilated into the ways of White society. Perhaps the co-existence of traditional and wage economies in a predominantly native community would have certain positive effects, especially for the incoming native workers and their families. Perhaps it would at least avoid some of the difficult problems which would have to be faced if native families were to be relocated to a new town at Strathcona.

There were arguments both for and against the creation of a new town at Strathcona Sound. In order to identify and assess these arguments, the responsible governmental officials would have had to examine closely the various options and consider thoroughly the broader and more fundamental social impact issues, including those concerning White-Inuit relations, cultural conflicts, desirable and undesirable kinds of contacts, and the effects of mine closure. Neither the GNWT nor the federal government gave serious attention to the alternatives or to their social implications before deciding to support relocation of native families to Strathcona Sound.

The Watts, Griffis, and McOuat consultants had initially considered two alternatives: "(1) expanding the townsite at Arctic Bay to allow for the people and families that would be employed at Strathcona Sound or (2) moving the current residents of Arctic Bay to a new townsite at Strathcona Sound." But these alternatives were rejected very quickly and were not subjected to study. The consultants claimed that they were rejected because discussions with the GNWT and the Arctic Bay Settlement Council had indicated that "neither was feasible."(40)

They also claimed that, "The Arctic Bay Settlement Council, in a written statement expressing their views, also stated quite strongly their preference for leaving their community in its present form and that the townsite requirements for the mine should be located elsewhere."(41) The consultants' account of the Arctic Bay people's written statement was a complete misrepresentation. In their letter, the Arctic Bay people had stated quite clearly, "we think that the people who will work at the mine should have their homes in Arctic Bay." They had not said that "townsite requirements for the mine should be located elsewhere." The first of the two initial alternatives was rejected despite, not because of, the stated preferences of the Arctic Bay Settlement Council.

It was the GNWT, not the Arctic Bay Settlement Council, which

was responsible for pressing for relocation to Strathcona Sound. Despite the fact that it had not carried out any serious investigation of the attitudes of the Inuit in Arctic Bay or elsewhere regarding relocation, the GNWT was captivated very early by the vision of a new model community at Strathcona Sound.

Creation of a wealthy and successful new community composed of Inuit families and single transient workers and located at the site of a mine with a 12-year life expectancy would no easy task. It is perhaps to the credit of the GNWT that it was willing to accept the challenge, particularly in the light of the somewhat unhappy record of past attempts at community creation in the North (Inuvik, for example). But it is unfortunate that this particular challenge should have been accepted on the basis of so little research and consultation.

In their November 1972 letter, the Arctic Bay community expressed a desire for further information and discussion of the points they had raised. In response, the GNWT Deputy Commissioner promised to send a territorial government representative to Arctic Bay in January 1973 to discuss the proposed project. There is no record of such a meeting having taken place in that month; but territorial officials joined the consultants on their visit to Arctic Bay in February 1973.

In January, Mr. Farquharson, the chief consultant for Watts, Griffis and McOuat, had written to the Settlement Manager for Arctic Bay requesting a meeting with the Arctic Bay Settlement Council during the consultants' planned visit to Arctic Bay and Strathcona Sound. When the meeting took place on 15 February, Mr. Farquharson was accompanied by the president of MRI, C.F. Agar, and by representatives of three sub-contracted consulting companies, each of which had expertise in townsite location, planning or construction. With them were five territorial and federal government officials from Yellowknife and Frobisher Bay.(42)

According to the Settlement Manager's account of the meeting, the consultants discussed the various topics which they were considering in their feasibility study of the Strathcona project. Mr. Farquharson remarked that the consultants were assuming that the people of Arctic Bay supported the proposed project. He also stated that the study, which had been started in August 1972, would probably be completed in June, implying that he considered the feasibility study work to be about half finished. Nevertheless, he urged the Arctic Bay people to express their concerns.

The Arctic Bay Settlement Council and residents did not express any general opposition to the proposed project. In fact, they indicated some interest in the possibility of job opportunities at Strathcona Sound. However, they did raise some concerns about the social and environmental effects of the project's implementation.

The Arctic Bay residents reiterated the position they had taken in their November letter, stating that they did not wish to move or to be moved to the Strathcona site, but did wish to be able to commute to jobs at the mine. They stated that they hoped opportunities for skills development would be ensured for those who accepted or wished to accept mining jobs. The officials were not unreceptive to these concerns and requests: the people's desire to retain their homes in Arctic Bay and their desire to benefit from training programs were not difficult to reconcile with the operating assumptions which the officials had already accepted for the feasibility studies. But there was no extensive discussion of the Arctic Bay proposal concerning accommodation of families of Inuit workers at Arctic Bay and the consultants did not discuss other alternatives (e.g., rotation along the lines of the Panarctic model).

The discussion of environmental concerns was also limited. The problem of mine tailings disposal was raised and the alternatives of disposal on land or in the waters of Strathcona Sound were mentioned, but the consultants were unable to provide detailed information about the nature and possible effects of these options. Able to anticipate only that either alternative would probably cause environmental damage, the Arctic Bay people pointed out that the marine disposal possibility worried them more than land disposals. There was no significant land game in the vicinity, but the sea mammals were important to their traditional economy.

For the Arctic Bay Settlement Council and residents, this was the first meeting and presentation of information concerning the Strathcona project. As their November letter indicated, they had a basic understanding of some aspects and implications of the project. But, because they had not received comprehensive information about the project or about the various alternatives for implementation, there had been no information base for examination, consideration and discussion throughout the community prior to the meeting. Consequently, the people of Arctic Bay were not adequately prepared at the meeting to set out their position on the project or their concerns about its implementation.

Even had the information presented at the meeting been relatively broad and thorough, the people could not have developed well-thought-out questions, let alone opinions, about the proposal. Instant answers to questions with such major implications for cultural change cannot reasonably be expected from anyone. It is particularly unreasonable to expect instant answers from local people at meetings where, even with good translations, there is a language and cultural barrier which cannot easily be penetrated. Furthermore, any confrontation between local people and such a large number of apparently important experts and officials inevitably breeds uneasiness and reticence to speak out. Effective consultation

requires care, patience, and time for presenting and understanding preparatory information and for eliciting comments and uncovering concerns. It is not assured merely by holding meetings.

If such consultation is to be carried out, at least some of the central decision makers must be determined to maintain local people's interests. Local native people faced by proposed projects like the Strathcona mine seldom have any power to affect the decision-making process unless power is granted to them and protected by government officials.

Not surprisingly, local people need all the help they can get to strengthen their voices in decisions affecting their lives. For the Inuit of Arctic Bay and the other communities affected by the Strathcona project, assistance may have been available from the Inuit Tapirisat of Canada. At the national level, the Inuit Tapirisat (Eskimo Brotherhood) was recognized as the legitimate representative of Inuit interests. It was not a powerful organization. It had been founded in 1971 because a national body to speak for the Inuit was needed. But the idea of a national political organization was foreign to Inuit culture, and the Inuit culture to be defended was foreign to government decision makers. Consequently, the Inuit Tapirisat was in a difficult position. It had to gain legitimacy in the eyes of the Inuit it was to serve and, simultaneously, develop a sophisticated enough understanding of a culturally-foreign political system to be able to influence government decision making. At the time that the Strathcona project was first being considered, the Inuit Tapirisat had not yet developed close and extensive grassroots ties in all the communities. It was faced with many problems and complicated issues. Nevertheless, the Inuit Tapirisat could probably have been of some assistance to the people of Arctic Bay and other communities.

Had an effective working relationship between the Inuit Tapirisat and the Settlement Council of Arctic Bay been developed, the voice of the Inuit in the decision-making process might have been stronger. Unfortunately, such a relationship did not develop. In part this was the fault of the Inuit Tapirisat which did not (or was not able to) develop good cooperative relations with the community. But the most important factor frustrating development of a strong and united Inuit voice was a misunderstanding which resulted from remarks made during the February meeting by the chief consultant concerning the position of the Inuit Tapirisat on the proposed project.

At the February meeting the consultant, Mr. Farquharson, told the Arctic Bay Settlement Council that he had received correspondence from the Inuit Tapirisat concerning the proposed project. He suggested that the Tapirisat had expressed opposition to the Strathcona mine and asked the Council if the national organization had accurately or officially represented the people of Arctic Bay in the matter.(43)

The Arctic Bay Settlement Council was disturbed by the Inuit Tapirisat's alleged statement of opposition to the project. In response to the consultant's remarks, they stated that they were not aware of any correspondence on their behalf. The Inuit Tapirisat had sent them a letter asking for news about the project but the Council had not yet replied. They felt that the Tapirisat had no basis or right to speak on behalf of the people of Arctic Bay without first consulting them.

Subsequent to the meeting, the Settlement Council sent a strong letter to the then president of the Inuit Tapirisat, Tagak Curley. The letter did not mention the consultant's reference to correspondence from the Inuit Tapirisat but stated that the Arctic Bay Settlement Council supported the project and asked the Tapirisat not to speak on behalf of the Arctic Bay people unless expressly requested to do so.(44) Given the Council's irritation with the Tapirisat, no such request would be likely. The local Council had been effectively alienated from the national organization.

The tragedy was that the consultant had misled the Council. The Inuit Tapirisat had not expressed opposition to the Strathcona project in any correspondence with the consultants. There had been no substantial exchange of information or comments between the consultants and the Tapirisat. There was merely an exchange of notes which were aimed at setting up a meeting between the two parties.

The consultants, acting on the suggestion of the Director of DIAND's Northern Policy and Program Planning Branch wrote to Mr. Curley on 15 January 1973 requesting a meeting toward the end of that month. The meeting was proposed as an opportunity for the Inuit organization to have a description of the feasibility study and its objectives. There was no mention of soliciting comments from the Tapirisat. The reply from the Tapirisat stated only that Mr. Curley would be away until the second week of February and that arrangements could be made for a meeting with someone else at the Tapirisat offices. The letter included no comments on the proposed project and there were no other letters from the Inuit Tapirisat to the consultants before the February meeting in Arctic Bay.(45)

The correspondence to which the consultant referred in the Arctic Bay meeting did not exist. Nor had the consultant received any direct comments from Inuit Tapirisat representatives. The meeting proposed in the exchange of letters did not take place.

The Arctic Bay Settlement Council remained unaware of this for nearly two years. In the meantime, they distrusted the Inuit Tapirisat and sought to minimize its involvement. When the error was uncovered, the Council concluded that they had been intentionally misled and their mistrust shifted to the mining company and its representatives.(46)

After the February meeting, there were no further direct contacts between the Arctic Bay Settlement Council and the project proponents until late August 1973. Neither was any further information about the project provided to Arctic Bay residents. There were, in fact, only two significant references to the proposed mine in the minutes of Arctic Bay Settlement Council meetings between February and August 1973. The first was the slightly ominous note in the minutes of the 23 July meeting, which reported that "the people want an RCMP post soon to prepare for the Strathcona development." The other was a reference in the 9 August minutes to an article in the Inuit Monthly, a publication of the Inuit Tapirisat. The article, which was critical of mineral exploitation activities and plans in the north Baffin area, caused the Arctic Bay Council to express irritation with the Tapirisat for not consulting them first before discussing such matters. This deepened the split between the Arctic Bay Settlement Council and the Inuit Tapirisat and resulted in a further weakening of the native voice in the decision making process.

At the 23 August meeting with the consultants and MRI officials, the Settlement Council asked the mining interests not to communicate with the Inuit Tapirisat but to direct its questions and hold its meetings with the Arctic Bay Council.(47) Although the Arctic Bay Settlement Council had legitimacy as a representative of the interests of the people of Arctic Bay,(48) it could not claim to speak for the Inuit of other settlements which would be affected by the development. The consultants had little communication with the Inuit Tapirisat and no contact with nearby native settlements. The latter were effectively excluded from the decision making process during the feasibility study stage.

By the time of the second meeting in Arctic Bay, in August 1973, the feasibility study had been virtually completed and MRI had already begun to search for investors.

The official purpose of the August meeting in Arctic Bay was to advise the Arctic Bay Settlement Council of the progress made and the future plans for the project and to gather comments from Arctic Bay residents. The meeting was apparently not intended to be a forum for presenting and eliciting reactions to various alternatives.

The representatives of MRI and the consultants announced their hopes of beginning the construction in the following year. They stated that if all went well, they would undertake a major sealift of materials to the site in 1974 and would hire 30 men from Arctic Bay to take part in the construction work. It was noted that these plans would be carried out only if government approval and support for the project were provided. The DIAND representatives who accompanied the company officials and consultants allayed any fears that such support

might not be forthcoming. They stated quite clearly that their department favoured the project and was prepared to provide infrastructural assistance.

The Settlement Council's opinion was sought on one specific question. The company, in consultation with government officials, had decided to plan on the assumption that a new "open town" would be created at Strathcona Sound. But, because the people of Arctic Bay had insisted that they did not want to move from their community and because the major new airport would have to serve Arctic Bay as well as the mine site, it seemed evident to the proponents that a road from the Strathcona project and airport to Arctic Bay would be necessary. Such a road would be a major factor in increasing the social impact of the project on the community of Arctic Bay and some concerns were expressed at the meeting. No alternatives were presented for discussion. The Settlement Council was only asked when, in terms of the project construction schedule, they preferred that the road be built (i.e., during the early construction phase in 1974-75 or after the airport had been constructed). The Council agreed to discuss the question at their next meeting and promised to inform the consultants of their decision.

At the Settlement Council's 4 September 1973 meeting, it was decided that a road connected to the project site was wanted as soon as possible.(49) The decision, reached in the absence of a full presentation of the alternatives to the road connection, was understandable. For potential Strathcona employees who wished to retain their homes in Arctic Bay and who foresaw travel from Arctic Bay to the mine site by snowmobile (in winters) or by boat (during the open water season) as the only alternatives, a road had attractions. The dependence of Arctic Bay people on air transportation made a road to an apparently superior airport extremely desirable.(50) On the other hand, a road to the Strathcona work site and airport would also be a road to a likely alcohol outlet and a link between a balanced community and what would likely be a predominantly male settlement.(51)

The social effects of such a road are unpredictable. It is unfortunate that the negative and positive aspects of the road and other transportation alternatives were not fully examined before the Arctic Bay Council was asked to decide when the road should be constructed. The Council's decision on the road was less fully informed than it might have been.

The epilogue to this one case of a direct request for the Arctic Bay people's opinion is revealing. Despite the stated preference of the Settlement Council, no road connection was begun in 1974. The reasons for this do not include overriding concern about the possible negative social impact of the road. The effective decision on the timing of road construction was reached on the basis of equipment availability: it was felt that the road could be built

more easily and efficiently after the available earthmoving equipment had completed construction of airport runways.

The feasibility study was officially submitted to MRI in September 1973. It was almost immediately passed on to government officials as the basic document describing and defending the company's proposal for commencing operations at Strathcona Sound.

The people of Arctic Bay did not receive a copy of the feasibility study. Instead they received fifty pages of excerpts. The Settlement Manager complained about this in a note to his superior, the GNWT Baffin Region Administrator, and the complaint may have been forwarded to the responsible authorities. (52) The community did not receive a copy of the feasibility study until February 1975, long after the government had granted approval and support to the project.

The government's assessment of the MRI proposal was completed in less than six months. During this period the GNWT Administrator for the Baffin Region and several experienced individuals within DIAND tried to encourage senior officials to research more carefully and to devote greater attention to, the potential social effects of the project. They were unsuccessful.

On 19 September 1973, the Baffin Region Administrator sent a memorandum to his superior, the GNWT Assistant Commissioner (Administration), recommending that a social impact study be undertaken "early in 1974." The Administrator, who was the senior GNWT official in the Baffin Region, argued that such a study would be essential if the local people were to be provided with the information they needed to assess the project and their relation to it: "It is one of our duties to provide them with sufficient knowledge of what can be expected so that they may choose between their old ways and that which the mine may have to offer."(53)

One month later, the Assistant Commissioner replied that he approved the recommendation and would place it before the GNWT Executive Committee for decision. Unfortunately, the GNWT Executive Committee chose not to follow the Regional Administrator's advice. No social impact study was undertaken in early 1974 and the government assessment proceeded without the benefit of the information, debate and commentary that such a study would have gathered and elicited.(54)

Despite the fact that the GNWT Executive exhibited relatively little concern about the social implications of the proposed Strathcona project, the Regional Administrator urged the Arctic Bay Settlement Council to begin to consider ways of coping with the potential social problems. In a meeting in Arctic Bay on 21 December 1973, he informed the Council that he had asked the GNWT Assistant Commissioner to send on expert to carry out a social impact study.

Stressing the importance of such a study, he referred to the example of Frobisher Bay where "development", which had been carried out with little Inuit consultation and involvement, had created social problems. The Regional Administrator expressed concern that the potential social effects of the Strathcona project might be more severe if a road connecting Arctic Bay and the mine site were constructed. The Arctic Bay Councillors replied that they had already notified MRI that they wanted the road. They believed that unless there was a road, workers from Arctic Bay would have to move to the mine site. They wanted Arctic Bay workers to be able to live in Arctic Bay and commute to jobs at the Strathcona site. In addition, they wanted to ensure access to the new airport. In other words, they felt that they really had little choice in the matter, if they wanted to retain the viability of their community in relation to the dominant southern economy.(55)

One of the Councillors said that, when MRI asked the Council about the road, they had first thought of the road merely as a link to the mine and airport and that the possible social effects had not been given much attention. However, the Council Chairman suggested that Council's expressions of concern about social issues had not in the past been well received. He pointed out that in the two meetings held with company representatives the Council had asked that liquor be kept out of the new settlement, but had been told that if the new settlement wanted liquor there was nothing the Arctic Bay Settlement Council or the company could do about it.

The Chairman stated that the Councillors were doing what they could to prepare for the social impact of the project. Just one week earlier, they had held a meeting with the RCMP concerning the possibility of stationing a police detachment (one constable) in Arctic Bay.(56)

There was little else the Settlement Council could do. They were forced to operate on the basis of inadequate information because neither company nor government officials had made any systematic attempt to identify the potential social effects of the various project implementation alternatives and to explain these to the people of Arctic Bay. The ability of the Arctic Bay people to weigh and prepare for these social effects was limited. They chose, reasonably enough, to do what little they could (e.g., meet with the RCMP) and to be optimistic about the community's capacity for coping with whatever unexpected social problems might arise.

Without support from his superiors in Yellowknife, there was little more that the Regional Administrator could do. Support was not forthcoming. The Regional Administrator's attempt to encourage consideration of the potential social effects of the Strathcona project had been undertaken on his own initiative. There was no indication that his superiors were very concerned about potentially negative social effects. Certainly there was no thought given to the

possibility that the negative effects might be of sufficient magnitude to cast doubt on the desirability of undertaking the project in the near future.

In fact, by the time of the 19 December 1973 meeting in Arctic Bay, the Regional Administrator's superiors in Yellowknife had made up their minds on some of the issues which would have been examined in a social impact study. For example, in early November, the GNWT had granted approval-in-principle to a new residential community for Strathcona Sound and had begun a series of meetings with the company concerning implementation.(57)

Senior GNWT officials were not alone in resisting pressure for a thorough examination of the potential social effects of the Strathcona project. In Ottawa, senior officials were unwilling to accept the advice of their own staff. Several social scientists and experienced DIAND employees pointed out that it would be a serious mistake to assume that the social and local economic effects of the proposed project would necessarily be positive. In addition, at least two internal documents written by DIAND researchers and project assessors pointed to the lack of sufficient information to determine the social acceptability of the project.

One document noted that demographic and labour availability data were inadequate, that the cumulative effects of the several continuing and prospective industrial activities in the area had not been considered, and that relevant previous experiences (e.g., that of the Deception Bay asbestos mine) had not been examined. The document's authors recommended consideration of the relative merits of native employee rotation and relocation. They also recommended that the native people who would be affected by the project and who ought to be its beneficiaries be informed fully about the project and involved meaningfully in the decision-making process.(58)

In another document, the DIAND analysts who carried out a preliminary evaluation of the Strathcona project concluded with a recommendation that the Department undertake "a study to determine the attitudes of Inuit, particularly those in nearby settlements, to the proposed development plans for Strathcona Sound."(59) Despite these comments DIAND did not attempt to study the potential social effects of the project as part of its assessment of the Strathcona project.

The only related DIAND effort was a brief series of meetings undertaken jointly with GNWT officials in January and February 1974.(60) The meetings, which were held in Hall Beach, Igloolik, Pond Inlet, and Clyde River, as well as Arctic Bay, were intended as a means of collecting labour availability information. However, in some of the communities, the officials were required to answer questions about the project. There is some evidence that they attempted to hear the people's reactions to the social and economic

aspects of the project.(61)

Unfortunately, only the community of Arctic Bay had any prior knowledge of the nature of the Strathcona project. And the information provided to Arctic Bay residents was less than adequate. None of the Inuit in the region had had any experience in or knowledge of mine employment. It was unrealistic to expect them to be able to express clear and well-considered reactions to the various aspects of the project or to provide meaningful information concerning the attractiveness of employment in the Strathcona mine.

The problem was exacerbated by the inability or unwillingness of the government representatives to make clear and fully accurate statements about the likely nature of the project. The transcript of the meeting in Arctic Bay, the best informed community, indicates that the government officials' responses were often evasive and inaccurate. For example, in reply to a question about the disposal of mine wastes, one official said, "There are laws dealing with mine waste, the waste rock will probably be put back into the mine when mining is finished."(62)

It is difficult to believe that DIAND would entrust even a limited effort to discover the native people's attitudes about employment at the Strathcona project to an official who did not know that the company wished to deposit the mine wastes in Strathcona Sound and that the alternative was to build impoundment areas on the land. It is possible that he did know but was unwilling to pass this information on to the people of Arctic Bay. Regardless of whether the inaccuracy of the response was due to ignorance or to secrecy, the DIAND officials at the meeting were not prepared to provide adequate answers to the people's questions about the project.(63)

The tour was not intended to be a serious attempt at research into the reactions of the native people to the project as a whole. The weakness of the labour availability report which was written following the meetings indicates that the tour was not even designed to enable a very serious examination of the native employment aspect of the project.

A senior DIAND official has stated that the misinformation on the tailings issue was subsequently corrected.(64) If so, this is laudable. However, the February 1974 tour to Arctic Bay and the other north Baffin communities was the last set of meetings about the Strathcona project before Cabinet approval for the project was sought. No subsequent corrections or meetings could alter the fact the native people were not provided with the necessary information and opportunity to present well-informed reactions to the social, environmental and economic implications of the Strathcona project before DIAND urged the Cabinet to grant approval and support of the project.

Government officials were, at least to some extent, aware of the inadequacy of the information base in Arctic Bay and other north Baffin communities to be affected by the Strathcona project. A report, based on the January-February tour and completed one week prior to the DIAND memorandum to cabinet began, "The Inuit of Arctic Bay enthusiastically support the project but further efforts should be made to make them fully aware of the planning concepts, types of work, working hours, rates of pay, training requirements, linkages with Arctic Bay."(65) In other words, the "enthusiastic support" of the Arctic Bay people was based on a very limited understanding of some of the most fundamental aspects of the proposed project. Inuit in other north Baffin communities did not know enough about the Strathcona Sound Project to have formulated definite opinions on participation in mine employment, relocation, or other aspects.

The officials responsible for assessing the project exhibited little concern about the inadequacy of their efforts to consult the local people or about their consequent failure to gain a serviceable insight into the social implications of the project. Officials in both Ottawa and Yellowknife were aware that the project would have negative as well as positive social effects, but they chose to assume that the negative effects would not threaten the success of the project.

During the assessment phase of the decision-making process, DIAND officials attempted to list the potential project benefits and costs related to ten federal policy objectives.(66) The first objective of providing social and socio-economic benefits to northern residents was taken directly from the government's March 1972 policy statement. The "potential project benefits and costs" related to this objective are listed in Appendix G, Table 2. The list raised more questions than it answered. It pointed out some areas for closer consideration. For example, it indicated a need for more thought and research concerning the requirements and preferences of the local people for more permanent employment opportunities, concerning the real possibility of and limitations facing meaningful Inuit participation in community design of the project, concerning the nature of experiences elsewhere where rapidly increased income levels affected consumption patterns, and concerning the longer term alternative possibilities for the workers and the community to be left behind when the mine's operations cease. But, by itself, the list provided very little insight into the potential impact of the project. It indicated nothing about the relative severity of benefits and costs listed and it neglected entirely several areas of social impact concern, for example, the effects of White-Inuit interactions in the proposed Strathcona townsite and, due to the road connection, in Arctic Bay.

This list and an employee availability report (which will be discussed in the next section) were all that federal government officials had upon which to base their assessment of the social

aspects of the project.

The GNWT officials were in a similar position, having failed to act upon the Baffin Region administrator's recommendation for a social impact study. They had assumed primary responsibility for addressing the accommodation and community development issues raised by the proposed project, but senior territorial officials apparently did not think any special examination of the project's social implications was needed.

Very early in the decision making the GNWT officials became proponents of the relocation approach and shared the consultants' vision of creating, "an open town where the mining company is not the only body in the community's development, where the development of municipal government and the growth of the community as a regional centre is encouraged, and where home ownership particularly amongst Inuit, is also made possible and encouraged."(67)

This vision had to be scaled down because of economic considerations and because of federal government skepticism about the regional centre idea. But it was retained essentially intact throughout the decision-making process leading to the signing of the agreement.(68) The fact that the people of Arctic Bay had, from the time of their November 1972 letter, consistently opposed the creation of a full new settlement at Strathcona Sound made no difference.

The GNWT may have been convinced that the creation of a new community at the mine site would guarantee the greatest net social benefits for all those involved, but their position was not based on any serious examination of the merits and costs of the various options nor on any attempts to involve the local people in the effective decision making.(69)

During March 1974, while the DIAND memorandum recommending support for the Strathcona project was before Cabinet, meetings between company and government officials were held in Yellowknife. The discussions in the first meeting, which concentrated on the social and employment aspects of the proposed project, indicated that examination of these aspects was not complete.(70) The employment system to be adopted (sixteen weeks work, followed by one week paid holiday, and three weeks leave of absence, if desired) was announced, but it was noted that a GNWT survey of employment information on project positions and necessary training had not yet been completed. The future availability of alcohol at the new Strathconatown-site,(71) the road connecting Arctic Bay and the new community, and the eventual closure of the mine were identified as potential sources of social problems and, probably, economic costs to the government, if not to the company. But there had been no thorough examination of other options and no solutions were presented.

In the second meeting, the nature and design of the new

community of Strathcona Sound were discussed.(72) The bunkhouse and rotation option was quickly dismissed. The GNWT Deputy Commissioner, J.H. Parker, stated that the GNWT had decided to support "town design which includes provision for family living to therefore allow Inuit workers to be with their wives and families." Mr. Parker backed up the position "by outlining some of the family and drinking problems which have occurred in Pond Inlet when Inuit men are rotated to camp operations." The Deputy Commissioner's position on the matter had not changed since his reply to the November 1972 letter from the people of Arctic Bay. It was not an unreasonable position and the rationale given was not without merit. The community of Pond Inlet did suffer social costs directly attributable to the employment of Pond Inlet workers by Panarctic Oils and Panarctic did use a rotation system.(73) But the Deputy Commissioner and the GNWT had not thoroughly examined the options, nor had they critically examined the rationale(s) behind the position taken. The available evidence, though certainly limited, indicated that the relocation efforts in the past had been accompanied by social problems similar to those which the Deputy Commissioner associated with Panarctic rotation.(74) Such problems would not be avoided merely by dismissing the rotation alternative. Nevertheless, the decision making proceeded as if the relocation and townsite creation option was known to be the most desirable.

In the discussion of townsite and housing design, two major factors were considered: cost and flexibility, i.e., the possibility of converting buildings from single worker to family housing and facilities as the number of families in the community's population increased. According to the minutes of the meeting, discussions of the various proposed housing designs proceeded without consideration of the national benefits of favouring Canadian-made products, and without consideration of the preferences of the potential inhabitants.(75)

Also in March, while the DIAND memorandum was before Cabinet and while discussions were taking place in Yellowknife, a meeting was held in Arctic Bay.(76) Compared to the decision making which characterized the meetings in the federal and territorial capitals, the meeting in Arctic Bay seems chiefly to have been a public relations effort. The Arctic Bay Settlement Council was given a progress report on the status of the proposal and was informed that MRI was pressing for a quick decision so that shipment of construction equipment and supplies could be completed in time for the 1974 summer sea-lift. The Arctic Bay residents were given a slide presentation concerning accommodation for Strathcona Sound and were asked to suggest possible names for the new community. The March meeting probably helped to give the Arctic Bay people a somewhat clearer understanding of the company's proposal, but it was no model for participative decision-making. The significant decisions concerning the assessment of the project either had been made already or were in the process of being made elsewhere.

The March meeting was the last "consultative effort" undertaken in Arctic Bay before the signing of the development agreement in June 1974. Unlike the company, the community of Arctic Bay was not informed of the 28 March federal Cabinet decision to approve and support the Strathcona project. However, the message was clear by the third week in April when a six-man crew was flown to the Strathcona mine site and six additional Inuit workers were hired to begin construction activities.(77)

Levi Kalluk, the Chairman of Arctic Bay Settlement Council and Isaiah Attagutsiak, who had been the Council Chairman during much of the period prior to the final decision making, were flown by DIAND to Frobisher Bay to witness the signing of the Strathcona project development agreement on 18 June 1974. They were under the impression that they had been brought to sign the agreement as Arctic Bay representatives and participants in a kind of tripartite agreement between MRI, the federal government, and the people of Arctic Bay.(78) However, their presence and their roles as witnesses were of only symbolic importance. Only the first page of the thirty-one page agreement was translated for them.

In comparison with past efforts of industrial interests and government officials to consult with native and local people in the initial decision making concerning proposed projects, the consultative efforts in the Strathcona case were an improvement. At least in Arctic Bay, several meetings were held before Cabinet approval-in-principle was granted. Company representatives actively sought the approval and support of the local people and the residents of Arctic Bay were sometimes asked for comments on specific aspects of the project. Furthermore, at least from a public relations point of view, the consultative efforts were successful. On several occasions the Arctic Bay Settlement Council expressed its support for the project.(79) The Councillors frequently phrased their concerns and criticisms in a manner designed to emphasize how the problems identified would threaten the success of the project and not just the interests of the people of Arctic Bay.(80)

It is equally clear that the consultative efforts left much to be desired. The residents of Arctic Bay were not given complete information about the project. Their expressed concerns and preferences had little impact on the actual decision making. Important research concerning the potential social effects of the project was not undertaken. The Arctic Bay Inuit, as potential employees, were courted in a public relations manner and were given some information about the project. But they were excluded from the decision-making power.

The people of the other north Baffin communities which would also be affected by the project were left out almost entirely. They were visited by government officials in a January-February tour under-

taken to collect labour availability data, but were told little about the project. The people of Pond Inlet refused to deal with the DIAND representatives because of the inadequacy of the information provided. As late as September 1974, the editors of the Pond Inlet community newsletter asked, "Why has so little been told to the people of Pond Inlet concerning a mine that might affect their lives for the next thirteen years? Why have we not been informed of both sides of the picture?"(81)

Used in its richest and most laudable sense, consultation implies influential involvement in the process of making the effective decisions concerning the whether and how questions facing project proposals assessors. There was little if any of this kind of consultation with the local people in the Strathcona decision making prior to the signing of the development agreement.

Despite the superficiality of the consultative efforts which were undertaken, DIAND officials have insisted that the government carried out extensive and meaningful consultations with the native people before making its decision to approve the Strathcona project. For instance, Mr. A. Dibgy Hunt, the Assistant Deputy Minister in charge of DIAND's Northern Affairs Program, made the following statement to the House of Commons Standing Committee on Indian Affairs and Northern Development:

"Prior to the government entering into agreement with the company there were extensive consultations with the people, particularly the people of Arctic Bay, which is just fifteen miles away. The community council was made fully aware of the potentials of the mine and what it would and would not do. They were asked to give their opinions as to whether or not they were in favour of it. In fact they expressed themselves quite clearly that they thought it would be a good idea. They have been fully consulted, primarily through the agency of the Northwest Territorial government, on town planning and on the on town planning and on the facilities. They have been encouraged to participate in the future of this development ...the whole objective is to try to bring about a resource exploitation operation in which the local people are as fully involved as we can manage."(82)

Mr. Hunt may not have been intentionally exaggerating the role and importance of the native people in the decision-making process. It is possible that he was unaware of the inadequacy of the attempts at consultation. Nevertheless, his statement that the Council "was made fully aware of the potentials of the mine" prior to the government's decision was simply not true. In the absence of a thorough examination of the social implications of the various project implementation options the government officials themselves could not claim to be fully aware of the potentials of the mine. And the people of Arctic Bay had much less information about the project and the possible options than the government officials.

It is constructive to compare the Assistant Deputy Minister's remarks with a letter from the Arctic Bay Settlement Council to GNWT Commissioner S.M. Hodgson on 8 March 1975. (See Appendix D) The Council's letter contains some exaggerations, but it is their perception of the quality of the consultative efforts which is crucial. If the Councillors themselves report that they did not understand the full extent of the plans or the social threats posed by these plans during the decision making leading to the development, then the Assistant Deputy Minister's claim that they had been made fully aware of the potential of the mine must be rejected.

b) employment of native people

The development agreement between the federal government and Mineral Resources International Limited contained a long section of clauses concerning employment issues. The most significant of these clauses, at least in terms of the emphasis of government press releases on the subject of the Strathcona project, was the final one:

(29) The Company agrees to employ in the operation of the mine, northern residents in all positions for which such residents can be recruited by the Company directly, or through Canada Manpower. As a goal, the Company and the Minister further agree that within 3 years after the beginning of Stage 2, the Company will fill at least 60 percent of its regular positions in its total work force with northern residents.(83)

The definition of "northern residents" in the agreement made no explicit reference to native people but it was obvious that virtually the only people who are both northern residents as defined in the agreement and potential employees of the mining company at Strathcona Sound were the native Inuit of the Eastern Arctic.(84) In fact, the Minister of Indian Affairs and Northern Development, in his speech announcing the signing of the agreement, stated that the company and the government had "accepted a goal to fill 60 percent of the work force with Inuit in three years from the start of production."(85)

The employment clauses in the Strathcona agreement were not the first case of native employment goals being written into northern mine development agreements. A similar though less ambitious requirement was included in the Anvil agreement. The owners of the Anvil mine agreed to try to ensure that 25 per cent of their work force would be native employees by the fifth year of production. The 25 per cent target was never reached.

The government's decision making on the Strathcona proposal and its assessment of the employment aspects of the project were carried out in the absence of any comprehensive analysis of the reasons for the failure of efforts to employ native people at the

Anvil mine.(86)

Government officials were aware of the need for more thorough and effective efforts by both government and company officials at the Strathcona project if the 60 per cent native employment target were to be approached. The extent of the government's determination to enhance the chances of native employment efforts was indicated by the attention devoted to native employment matters in the development agreement. Most of the 29 clauses in the employment section (Appendix J, Section 4) dealt with the provision of training programs for "northern resident" employees, the prevention of discriminatory behaviour against native people, and the creation of a continuing system for monitoring the employment of native workers. The agreement showed that the government planned to supervise the native employment efforts more carefully and to take a more active role in these efforts in the Strathcona venture than it had in the Anvil project.

A full assessment of the adequacy of the employment provisions and the performance of government and company officials will not be possible until after they have been tested and observed in practice. However, the provisions and their implementation are only one side - and perhaps not the most crucial side - of the native employment issue. The other side is the "preferences and aspirations" of the native people. Unfortunately, the government's efforts in attempting to discover and understand the needs and wishes of Inuit toward employment at Strathcona Sound were very much weaker than those in establishing native employment provisions in the agreement with the mining company.

Prior to the submission of the Strathcona project proposal, the federal and territorial governments had very little basis for judgments about how mine labour opportunities fit with the "preferences and aspirations" of north Baffin Inuit.

There was little relevant experience to draw upon. There had been some success in the employment of Inuit workers in the Rankin Inlet mine but the Inuit of the Keewatin district in the late '50s had been in a much more desperate condition than the Inuit of the north Baffin were in the mid-70s. Besides, the closure of the Rankin mine brought social disaster and the subsequent attempts to relocate Inuit workers to other mines had not prospered.(87) Government officials knew from the Anvil experience that native employment schemes could easily fail. But because the Anvil case had involved different native people in a different situation from that at Strathcona Sound, its lessons would only have been partially applicable had they been known. At the time of the Strathcona decision making, no study of the causes of the Anvil failure was available. Nor had there been an assessment of the nature and effects of native employment at the Deception Bay asbestos mining project in northern Quebec.(88)

In the Baffin Region itself there had been no experience with mining projects. The Strathcona mine would be the first. The only significant experience with industrial employment of native people from the area was that of Panarctic Oils' rotation programs. From an employment point of view, the Panarctic efforts had been quite successful. A brief survey report on the effects of the Panarctic experience, published in November 1973, indicated that Panarctic had been able to fill 30 positions regularly with Inuit workers from Pond Inlet and Arctic Bay.(89) However, the implications for native employment at Strathcona Sound were not entirely positive.

The native people's acceptance of Panarctic employment opportunities suggested that at least some Inuit found it compatible with their "preferences and aspirations," or at least found they had no better alternative. But, because of the differences between the Panarctic employment system (in 1973, 20 days work followed by 10 days holiday, and the possibility of substitution for individuals who wished longer time off) and that proposed for the Strathcona project (16 weeks work followed by 1 week paid holiday and 3 weeks optional unpaid holiday, no substitution), the acceptability of Panarctic jobs might not apply to Strathcona jobs. More importantly, the Panarctic jobs reduced needs for other wage employment opportunities. In Pond Inlet and Arctic Bay, the two communities closest to the Strathcona mine site, there was little unemployment after Panarctic began recruiting Inuit workers.(90) Thus, by the time of MRI's proposal to begin the Strathcona project, the immediate desirability of, and need for, the project as an employer of native workers had become doubtful.

The effects of, and native attitudes to, Panarctic's employment of Inuit workers had not been examined in any detail prior to the government's assessment of the Strathcona project. The brief survey of the effects of the Panarctic program was based on interviews undertaken during a single brief visit to Pond Inlet and Arctic Bay in July 1973. It was not, and was not presented as, a detailed research effort.(91) Moreover, the limitations of the study were soon made obvious by events which contradicted some of the conclusions (particularly those concerning alcohol-related problems).(92)

In a DIAND report completed in March 1974, just before the department's submission to Cabinet concerning the Strathcona project, the need for a thorough study of the Panarctic experience was explicitly recognized: "The Panarctic (Peben) work system should be examined closely in terms of recruitment, working standards, duration of work and Inuit attitudes towards the system. Panarctic offers a model for social impact investigation to determine Inuit aptitudes and interests, effects on families, etc."(93)

No such examination of the Panarctic experiment had been carried out and the impact of Panarctic employment and Inuit

attitudes to it were largely unknown at the time of the Strathcona project assessment.(94)

In general, there had been few native employment experiments similar to that proposed for Strathcona Sound and, at the time of decision making, little available analysis of the few experiences which were relevant.

Even the existing data base of demographic information was weak and unreliable.(95) Some of the information which was available and relevant to the Strathcona case was hopelessly out of date. For instance, one of the most significant factors which encouraged the federal government to favour the Strathcona project was a 1969 survey which had indicated that the average per capita income of native people in the Baffin Region was \$1,323 (including an imputed value for native foods).(96) The 1969 figures did not reflect the effects of Panarctic wages which, Gourdeau reported, had "more than doubled the cash income gained by the regular wage workers in each community (Arctic Bay and Pond Inlet)."(97)

Nevertheless, government officials concluded that a significant expansion of the region's economic base was needed. In fact, economic expansion was thought to be urgently needed because of the rapid growth of the Inuit population. The government's position was that exploration for non-renewable resources provided a valuable but unreliable contribution to the economic base of the region and that production of these resources was needed "to give stability to the economy" and to the accompanying native employment opportunities.(98) The Strathcona mine would be the first non-renewable resource producer. It was envisioned as the first in a series of such projects and the first step toward creating a stable economic and employment base for the Inuit.

This position in favour of the Strathcona project was not without merits, but it begged a number of significant questions. What were the current equivalents of the out-of-date 1969 figures? To what extent had Panarctic employment added to the existing income sources and how urgent was the need for further employment schemes in the area in the near future? How adequate were the existing income sources? To what extent had Panarctic employment added to the existing income sources and how urgent was the need for further employment schemes in the area in the near future? How adequate were the existing income sources? To what extent would the renewable resource base be threatened by the demands of the increasing population? What were the Inuit perceptions of the adequacy or inadequacy of the existing income base? What were the Inuit attitudes toward permanent wage-labour employment in non-renewable resource extraction? To what extent could such activities be expected to provide a stable economic and employment base? And for how long? What would happen when the non-renewable resources were exhausted? What were the alternatives to an arctic economy based on non-renewable resource extraction?

There were no full answers to any of these questions when the government began its formal assessment of the MRI proposal. The government's undisguised predisposition in favour of the project indicated that it was unlikely many of the questions would even be asked. Government officials demonstrated little inclination to think critically about the general strategy of economic "development" through non-renewable resource extraction. Nor did they indicate willingness to question the assumptions that unemployment in the region was widespread and serious and that wage labour employment opportunities at Strathcona Sound would be welcomed by the native people of the vicinity.

In their initial evaluation of the Strathcona Sound proposal, DIAND assessors assumed that one of the project's advantages was the provision of jobs in an area where significant numbers of the local native people were under or unemployed.(99) However, they recognized that not enough was known about the nature of the jobs to be offered or about the native people's attitudes. The feasibility study had not provided adequately specific information concerning the jobs which would be available at the Strathcona project and the skills which would be required. The assessors suggested that such information ought to be obtained and recommended that a study be undertaken to determine the attitudes of the native Inuit of the region to the Strathcona Sound project.(100)

The lack of information relevant to assessing the native employment aspect of the project was more clearly pointed out in a commentary by two of DIAND's social research experts. After noting the inadequacy of demographic data and the difficulty of predicting the effects of relocation, they wrote, "Our knowledge of the adult male labor force in the North Baffin Region...is very limited. This coupled with the fact that we do not know the requirements of the project, in relation to education, training, language skill, creates a major area of unknown.

1. What is the fluency in English of native population?
2. What grades have been attained by percentages of population?
3. How much work adjustment training is required to assist natives to adjust to work situations?
4. What skills are available?"(101)

In response to the obvious need for more information, the GNWT undertook to compile employment data on positions and training requirements. Unfortunately, the information collected was not available until after Cabinet approval-in-principle for the project had been granted.(102)

DIAND and GNWT representatives were sent in January and February 1974 to visit the five north Baffin communities expected to supply workers for the Strathcona project and to collect labour availability information. Some of the inadequacies of this tour and, especially, the meeting held in Arctic Bay on 3 February, have

already been described. The visits suffered from brevity, from the inadequacy of prior efforts to provide information about the project to the people of Arctic Bay, from almost total failure to provide project information to people of the other communities, and from the apparent unpreparedness of the government representatives to supply full and accurate information about the project during the community meetings. Nevertheless, the two reports which were produced by the DIAND representatives who held the meetings provided the central decision makers with their only information concerning the availability of native labour.

The first report was a short memorandum written by S. Collymore of the Employment Liaison Section, Territorial and Social Development Branch, to A. Digby Hunt, Assistant Deputy Minister responsible for DIAND's Northern Affairs Program. The second report, A Background Paper on the North Baffin Communities in Relation to the Strathcona Project, was prepared by D. Bissett of the Resources Section, Northern Policy and Program Planning Branch.

Collymore's memorandum recorded his estimation of the possibilities of attracting native employees and his perception of the attitudes of the people of the north Baffin communities toward employment at Strathcona Sound. He reported that the people of Pond Inlet had expressed a "conservative reaction" to the prospect of Strathcona employment due to their healthy economic situation, but that others, the residents of Clyde, for example, had been more interested. Collymore expressed optimism about the company's chances of recruiting sufficient numbers of native workers from the visited settlements.

The report by Bissett was based not only on the findings of the tour, but also on data which had been previously collected by the GNWT and by Paul Gorlick of the Social and Territorial Development Branch of DIAND. Bissett's report became the only significant body of statistical information and commentary available to the senior decision makers concerning the employment aspects of the Strathcona project. However, it was a late entry. The DIAND memorandum to Cabinet recommending approval of and support for the Strathcona project was dated 8 March 1974. The initial draft of Bissett's report was made available on 1 March. It is unlikely that the senior officials responsible for the Cabinet memorandum took the time to examine and consider anything more than the general conclusions of the report.

This is unfortunate. The author's general conclusions concerning the number of native labourers potentially available to the mining company were favourable to the project's proponents. But a closer reading of the report would have revealed that these conclusions were not clearly supported by the available data and that the author himself had pointed out that the information base in most

of the north Baffin communities was so weak that the people were unable to formulate definite opinions about employment at Strathcona Sound.(103)

The central question addressed by Bissett was whether or not it would be possible to meet the projected native work force requirements set out in MRI's modified plans for the project. These plans assumed a total of 219 workers, 111 of whom would be Inuit. The information in the report consisted of rough data taken from GNWT population and employment statistics (mostly for 1973) and a 1969 DIAND Manpower Survey. Five communities in the North Baffin area were considered the most probable sources of Inuit labour for Strathcona. "Arctic Bay and Pond Inlet are key communities in terms of distance from the project. Igloolik and Clyde have large labour pools. Hall Beach Inuit have had extensive experience on the Dewline."(104) The communities of Resolute Bay, Grise Fiord, Broughton Island and Pangnirtung were labelled "perimeter communities": "We consider these less important in terms of recruiting for mine employment or relocation due to distance, lack of surplus labour force in the case of Grise Fiord and Resolute and lack of ready identification between population in Broughton Island and Pangnirtung and the five northern Baffin Island communities."

The statistics concerning the north Baffin labour force referred almost exclusively to male Inuit. The data in Bissett's report provided no basis for concluding that it was reasonable to expect that 27 Inuit women would be willing and able to take full-time employment at Strathcona Sound, as the MRI projection assumed. There was no evidence that Inuit women in any of the communities considered had been asked whether they would wish to work at Strathcona. In fact, the available statistics suggested that, while some Inuit women had in the past been willing to take part-time or short-term employment, only a few had taken full-time employment. According to the 1969 NWT Manpower Survey figures, quoted in the report's section on employment of Inuit women, a total of 31 women in Arctic Bay and Pond Inlet had taken wage or salary employment. However, only 5 of the women were employed full-time (38 weeks or more per year).

Another table in the report provided more recent statistics (1973) regarding the number of Inuit women in permanent wage or salary employment: Arctic Bay, 3, Pond Inlet, 5, Igloolik, 4, Clyde, 1 and Hall Beach, 5, for a total of 18 in the north Baffin communities.(105) The total number of women employed in the region as a whole was much lower than the projected number to be employed by the Strathcona project alone. There was no research to indicate whether the relatively low number of Inuit women with permanent jobs was due to a lack of wage or salary employment opportunities, to a lack of interest in such employment, or to some quite different factor. There was no basis for arguing that more women would take employment at Strathcona than had taken jobs in their home

communities. Nevertheless, Bissett stated "that it appears to be reasonable that these numbers (of female Inuit employees) can be recruited from the north Baffin and the perimeter communities."(106)

The report also concluded optimistically about the possibility of meeting the projected requirement for 84 male Inuit workers. Most of the data provided related the size of male Inuit work forces in the various communities (male Inuit between the ages of 19 and 45) to the number of these men who had taken permanent wage or salary employment in 1973. The number of permanent employees was then subtracted from the total work force to give the "available male work force." Although the statistics used were not entirely consistent, they indicated that there were about 200 "available" men in the 5 north Baffin communities and more than 100 more in the "perimeter communities." Bissett concluded that "non-committed labour force in these areas appears to be far in excess of immediate labour demands."(107) The conclusion was misleading. Although one table referred to those Inuit not in permanent employment as "available",(108), Bissett was careful to note, in a section distinguishing between permanently employed and "under employed" male Inuit: "under employed is used to designate part-time, casual and unemployed persons and relates simply to employment less than full-time employment or less than 9 months in continuous employment. Some individuals prefer a combination of wage employment and resource harvesting. There have been no serious appraisals of work attitudes or aptitudes among Inuit on north Baffin."(109)

It was simply not known how many of the approximately 220 men, who were in permanent wage or salary employment, were actually available for employment.

There were indications that the truly available work force was very small indeed. For example, 39 men in Pond Inlet were reported not permanently employed in 1973. Yet, in the summer of 1974, several women were hired as stevedores during a sea-lift because sufficient numbers of men were not available.(110) The work in question was in the home settlement, and therefore more attractive than employment at Strathcona Sound, which would require the workers to move to the mine community or to be away from their families for extended periods of time. Many of the members of the "substantial underemployed or unemployed labour force" were, and would prefer to remain, in the mixed economy. They were self-employed in the more traditional economy as hunters and trappers and/or carvers and, when necessary, took casual or part-time wage or salary employment instead of full permanent employment.

The attachment of the Inuit to their land and to the traditional resource gathering life seems to have been discounted in the calculation of Inuit labour availability, despite the fact that this continued attachment was demonstrated even by those who had chosen to take permanent wage or salary employment. Nevertheless,

considerable numbers of Inuit from settlements like Igloolik and Hall Beach were expected to move their families to Strathcona Sound for the sake of permanent employment. It was assumed that many of those not permanently employed would leave their relatives, their home villages, and their land - the land with which they were familiar and in which they had carried out their traditional activities. But there was no adequate evidence to support this assumption. Certainly, the Inuit have been a fairly mobile people. The older people, who were raised in the hunting and fishing camps, grew up knowing a nomadic existence; the younger ones were used to being moved about by the territorial education system. But there was no basis for presuming that this mobility reduced the significance to the people of the land which they knew from their hunting, trapping and fishing activities.

That the Strathcona project would offer an opportunity for permanent employment might play a far different role in the thinking of potential workers than was assumed. The permanency of the employment might be a positive feature for some, but for others, particularly those with strong ties to the land, it might be a disincentive.

The decision to move to the Strathcona site would be a major one for north Baffin Inuit. Many factors would be considered; it was possible that potential workers would choose not to relocate and take mine jobs. It should have been evident that, without research and knowledge of the attitudes of the supposedly underemployed and unemployed Inuit toward work at Strathcona, there was no adequate basis for concluding that MRI's projected requirements for Inuit workers could be met. The people of the north Baffin communities would have to have been given enough information to give them some idea of what to expect of life and work at Strathcona. No such research was undertaken and, given the general absence of information about the Strathcona project, none could have been done in any of the communities with the possible exception of Arctic Bay.

The people of Arctic Bay were better informed about the project because of some meetings with government and company officials and because some members of the community had been employed at the mine site during the early stages of the project. The proximity of Arctic Bay to the mine would enable Arctic Bay workers to accept employment at the project without having to move their homes. Consequently, they may have been reasonably expected to find employment at Strathcona Sound more attractive than would potential workers from other communities. Nevertheless, the number of workers which could reasonably have been expected from Arctic Bay may not have been large. Attagutsiak, an Arctic Bay resident who had been the companies' Inuit straw boss since exploratory work began in the 1950s, stated that he did not think that any more than 15 men from Arctic Bay would go to work at Strathcona Sound.(111)

While general awareness of the nature of the Strathcona project was relatively high in Arctic Bay, very little was known about mining, shift work, training requirements, arrangements for transportation between Arctic Bay and the mine site, and other matters which might affect the attractiveness of permanent employment at the Strathcona mine. In some cases, little information could have been provided because the relevant decisions had not yet been made. But, in several cases, available information was simply not provided or not provided in an understandable manner.

Perhaps the most glaring example of a missed opportunity to give potential mine workers a basis for assessing the desirability of full-time wage employment at Strathcona Sound was the government's failure to draw upon the expertise of Inuit who had worked in the Rankin Inlet mine. Some of these people had experienced not only the boom and bust at Rankin but also subsequent relocations to mines at Lynn Lake (Manitoba) and Yellowknife. The Rankin Inlet workers and members of their families could have provided direct personal knowledge about mine work and helped the north Baffin people to understand at least some of the social implications of arctic mining and relocation. Moreover, they would have recounted their experiences in the people's own language and from their cultural point of view. If the north Baffin people had been given the opportunity to learn about mine employment and its implications from the Inuit of Rankin Inlet, they would have had some basis for opinions about employment opportunities at Strathcona Sound. Government researchers would have had some basis for determining whether or not the company's native employment projections were realistic. Nevertheless, the Rankin people were not asked for assistance during the assessment of the Strathcona project.(112)

Bissett argued that, even if enough workers could not be attracted from the group classed as "not permanently employed", sufficient numbers of young people would be entering the labour force during the next few years to meet the company's requirements.(113) However, little was known about the attitudes of the upcoming generation to permanent mine labour employment, to relocation, to their traditions, and their land. Would young Inuit want to move to a new Strathcona town in the interests of obtaining decent housing or would they prefer to remain with their friends and relations in a relatively homogeneous native community? Would young men wish to remain on their land for the opportunity of continuing some traditional ways, particularly hunting and fishing, or would they be increasingly inclined by their southern-oriented educations to seek southern-style employment and to adopt fully the pattern and requirements of southern-style consumption? Would young women (particularly married women) wish to join the permanent wage-labour force? To some extent, answers to these questions would only be revealed by the eventual choices of young Inuit. But the questions were important because even unanswered they would have provided a perspective for the interpretation of the bald statistics about

numbers of young people "entering the labour force."

The possibility that labour force expansion would provide more potential employees for the Strathcona project should also have been considered in the context of the limited life expectancy of the mine. Unless further reserves were discovered, the mine would cease production after 12 years. In this light, the statistics concerning labour force expansion might more reasonably have been interpreted to suggest that the mine would be ceasing production just at the time of greatest needs for northern employment opportunities. The statistics might better have been taken as a reason for postponement than as a spur to early development.

c) summary and prospectus

The information available to the government prior to the decision to support the Strathcona venture did not provide a sufficient basis for assessing the project's social implications. Although the proposed project raised serious and complex social issues, the only socially-related research undertaken by the government was a survey of native labour availability - a study which did not provide satisfactory evidence for concluding that the company's projected requirements for Inuit employees could be met. In fact, analysis of the data indicates that there was reason to doubt the positive conclusions of the report. The possibility that employment benefits might have been greater if the project were postponed for a few years was not considered.

Despite the extent and the severity of the potential social costs, despite the requirements of government policy, and despite the recommendations and concerns of the senior regional officials and experienced government employees, no social impact study was undertaken before the government granted approval and support to the project. Several meetings were held with the people of Arctic Bay, but the consultative effort was inadequate. The local people were not provided with a sufficiently complete and understandable basis for assessing the project and the desirability of mine employment.

The value of social impact research should have been obvious. If the native people were to play a significant role in the decision-making process, if they were to make meaningful contributions based on well informed and thoroughly-considered positions, a social impact study carried out in conjunction with the relevant Inuit communities was indispensable. Regardless of the issue of native consultation, a serious and comprehensive description and assessment of the probable social effects of the project was necessary for the central decision makers in DIAND. It would have permitted inclusion of social factors in the overall assessment and would have facilitated the comparison of social and other factors according to current policy priorities. Moreover, a social impact

study would have been useful to indicate the constraints and assurances upon which the government would have insisted in the negotiation of a development agreement, in order to minimize the harmful effects of the development.

The lack of extensive prior experience with comparable projects may have made assessment of the Strathcona project's probable social impact more difficult. But it also made specific research into the Strathcona case more important.

In its press releases about the Strathcona project and the development agreement, DIAND emphasized that the government's overriding concern in the decision-making process was the interests of the Inuit of the north Baffin area. The then Minister of Indian Affairs and Northern Development, Jean Chrétien, stated in his speech announcing the signing of the Strathcona agreement: "Our primary objective is to ensure that the maximum benefit will flow to the residents of the region, not only through job opportunities, but also through participation in the planning and the management of the project."(114) Unfortunately, dedication to this objective was not strongly reflected in the government's decision-making practices.

Under the agreement, the company was required "to consult with the Settlement Councils of Arctic Bay, Pond Inlet, Igloolik, Hall Beach and Clyde River insofar as the project affects the interests of these settlements" and to "investigate through the conduct of social research the impact of its development."(115) In addition, an examination of some of the social implications of the project was initiated under government auspices subsequent to the signing of the agreement. This post-agreement social research was expected to affect the implementation of some parts of the project, but, by then, the decision to proceed with the project had been made and the general outlines of its implementation had been drawn.

The Strathcona project proposal provided the government with its first major and specific opportunities to enact the new policy which gave priority emphasis to the interests of the people of the North. As such, it was the first major test of the meaningfulness of the government's expressed policy intentions. The evidence concerning the social issues in the Strathcona decision-making process indicates that while the government performed better than it had in the past, it fell well short of fulfilling the requirements of the new policy.(116) The government decision makers did hold meetings with the people of Arctic Bay, but they failed to undertake a thorough examination of the potential social impact of the project and they failed to provide adequate and understandable information about the project and its implications to the communities concerned. The government entered into the Strathcona agreement without having opinions about the proposed project from the people to be affected by it and without having exhibited real and effective concern about the attitudes of the Inuit toward permanent employment in Strathcona Sound.

It is possible that social concerns will be given more serious and forthright consideration in the implementation of the project than they were during the initial decision making. It is also possible that the social effects of the project will be analyzed and that the lessons learned will be considered in the assessment of future project proposals. The development agreement, which provides for extensive studies to "optimize the experience benefits obtained from all stages of this pilot Arctic resource project", offers some basis for optimism.(117) If government officials ensure that the social research and analysis undertaken during the implementation phases of the project are carried out in a thorough and unrestricted manner, and that the findings are verified in open discussion and applied to future decisions, then a significant advance will be made.

This would require that the researchers be encouraged to probe into the general and fundamental questions raised by the project as well as into the more superficial and particular effects of the various aspects of the project's implementation. It would require that the scope and nature of their analysis not be restricted by consideration of narrow government interests. In brief, it would require the government to submit one of its well-publicized projects to close critical examination and bare itself to public rebuke if the results of the examination should be unfavourable.

DIAND and the GNWT might be willing to do this, but it would be unusual. Governments and government departments are notoriously unenthusiastic about self-criticism and public admission of mistakes. Furthermore, they have no shortage of means to restrict or prevent the production and public distribution of potentially embarrassing research and analysis. In fact, one of these means was written into the Strathcona agreement: "Information gathered during the course of the activities referred to in subsection (1) will be treated as confidential unless it is agreed by the Company and the Minister that the information may be public."(118)

The government became formally and publicly committed to the Strathcona project when it signed the development agreement. If, despite this commitment, DIAND and the GNWT take a forthright and critical approach to the continuing monitoring and assessment of the project's implementation, they will deserve considerable praise for defying standard bureaucratic practice. But it is evident that it would have been far better if adequate consultations and social impact research had been undertaken before the government officials signed an agreement which made them in large part responsible for the successes and failures of the project and gave them a powerful incentive to ensure that, whatever the reality, the project would be perceived publicly as a success.

The precedent-setting effect of the social aspects of the

Strathcona decision making may be the most crucial. The failure to enact satisfactorily the new northern policy emphasis on social benefits was the most obvious precedent set in the pre-agreement considerations. But the role that the Strathcona project seems to have played in the enactment of a "development" strategy for the Eastern Arctic may have a more critical social impact. In its nature and expected effects, the Strathcona decision has expressed and set the direction for effective government policy and practice regarding the socio-economic future of the Inuit of the Eastern Arctic.

Senior government decision makers have assumed that the economic future of most native northerners will be one of industrial wage employment in non-renewable resource activities (mineral, oil and gas exploration, extraction and transportation). These officials have frequently insisted that they do not wish to foreclose on the options for continued pursuit of traditional renewable resource harvesting activities by some native people. However, in cases where hunters and trappers have felt threatened by resource exploration activities, the government has consistently sided with the industrial interests.(119) DIAND officials have on occasion admitted that they have done relatively little to examine or encourage small-scale community industries which would be more compatible with cultural traditions and less threatening to the land which sustains traditional economic activities. Nevertheless, they continue to devote their attention almost exclusively to what amounts to a development strategy based on non-renewable resource exploitation.

The Strathcona project will be another testing ground for assimilation of Inuit into wage-labour through permanent employment in the non-renewable resource sector. More specifically, the project was expected to provide training and experience for Inuit employees who would apply their new skills to other projects when the orebody at Strathcona Sound is exhausted.(120) The project was seen as the first step in the development of an expanding, increasingly skilled and mobile Inuit workforce which would move across the Arctic from one resource extraction project to another - from Nanisivik to future mines or perhaps to gas or oil pipeline construction. This approach to native employment and northern economic development is compatible with the interests of the mineral and oil industries. It may also have been the only approach which senior government officials believed to be realistic. But it offers more certain benefits to the industrial interests than to the Inuit.

Because of the nature of the resource base upon which it depends and the mode of production which it entails, a development strategy based on native participation in industrial resource exploitation can pay little respect to the traditions and strengths of Inuit culture. In particular, it provides little that will sustain and much that will undermine the Inuit traditions of community cooperation and sensitivity to ecological imperatives - traditions which are increasingly needed not only in the North, but also, and

perhaps more desperately, in the South. Moreover, it is a strategy which depends on resources which cannot last indefinitely. While the inevitable exhaustion of the non-renewable resources of the Arctic may be generations distant, decisions like that concerning the Strathcona proposal made in times of abundance will determine whether or not there will be a viable social and environmental basis for survival when the non-renewable resources are gone.

Complex social issues and longer term problems are usually the first considerations to be neglected when decision makers face apparently crucial time pressures and staff limitations. Perhaps this is understandable. It is extremely difficult to reach definite and irrefutable conclusions about potential social problems or to foresee the future implications of general socio-economic strategies. These questions usually fall outside the interests of the industrial proponents of "development" projects. But the immediate social effects and long-term socio-economic implications of such projects are of crucial importance to local people and the nation of which they are a part. The Canadian government has recognized this in the words of its new northern policy. Regrettably, the evidence concerning the Strathcona case indicates that this recognition has not yet been fully reflected in the government's decision-making practice.

B. ENVIRONMENTAL ISSUES

In the federal government's official listing of priorities for the North, the goal of preserving the northern environment was preceded only by that of advancing the interests of northern people. The government's position was that, while a balance among social, environmental, and economic development considerations was needed, efforts "to maintain and enhance the natural environment, through such means as intensifying ecological research, establishing national parks, ensuring wildlife conservation" would be given priority over efforts to encourage and stimulate renewable and non-renewable resource exploitation projects.(121)

Government officials had for some time recognized the interrelations between social and environmental concerns and the importance of the environment to the native peoples' traditional economy and culture.(122) The March 1972 policy statement indicated that government officials were also aware of the sensitivity of the northern environment and the unacceptability of the unquestioned application of techniques and technologies designed for southern conditions. Moreover, the statement underlined the inadequacy of the existing environmental information base and suggested that environmental research efforts would be intensified: "Research on an expanding scale is a continued prerequisite if government, industry and all others concerned in the development and protection of the northern environment are to have timely and sufficient data on which

to base their plans, decisions methods and activities."(123)

The policy basis for a serious approach to examining the environmental implications of the Strathcona project appeared to be in place well before Mineral Resources International Limited became involved in the project and engaged Watts, Griffis and McOuat to commence feasibility studies.

1. The Environmental Context

When the feasibility studies were begun six months after the government's new northern policy was made public, there was little information relating specifically to the natural environment in the vicinity of the proposed project. General facts about the topography and climate of the area were evident or available. But there were few data or commentaries on the populations and characteristics of local flora and fauna, virtually no studies of the relevant ecological relationships, and little specific information about the physical environment.

The area is cold, dry, rugged, and, at first glance, largely barren. According to meteorological data collected at Arctic Bay, temperatures range from a daily mean of -31.1°C in February to 5.8°C in July. For only three months of the year (June, July and August) is the mean daily temperature above 0°C .(124)

Because of these low temperatures, the annual thaw and refreeze affects only about two feet of surface soil, gravel and rock. Below this "active layer" the ground is permanently frozen (permafrost). The amount of precipitation is low. Approximately 5 cm of rain and about 86 cm of snow fall annually.(125) The buildup of snow is less than might be expected. The erosion effects of spring and summer melt water and run-off from rains have been quite dramatic. They have given the plateau-like land deep V-shaped valleys and a rugged appearance.

Strathcona Sound itself is a fiord - long, narrow, and, deep. It opens into Admiralty Inlet, a much larger fiord which extends south from Lancaster Sound. Because of the predominantly low temperatures in the region, both Strathcona Sound and Admiralty Inlet are ice-bound for most of the year. The ice does not break up until mid to late July and begins to form again in late September and early October. Consequently, the shipping season for conventional cargo vessels is very short.(126)

Despite the low temperatures and the apparent barrenness of the landscape, the living environment exhibits considerable diversity and richness. Lancaster Sound has been described as "one of the most biologically productive offshore regions in the entire Arctic".(127) For centuries the renewable wildlife resources of the Admiralty Inlet

region provided a sustained economic base for Inuit in scattered camp communities.(128) By the time of the Strathcona decision making, hunting and trapping activities carried out from Arctic Bay no longer provided adequate livelihood for the Inuit, but were still of central economic (and cultural) importance.

The most important resources for the Arctic Bay Inuit were the sea mammals (ringed seal and narwhal, in particular), although significant numbers of some land species, including polar bear, arctic fox, and caribou, were also harvested.(129) The area in the immediate vicinity of the proposed mine was not an important Inuit hunting or trapping area. However, sea mammals frequented the area at the mouth of Strathcona Sound and were hunted there. There was, therefore, reason for concern about possible contamination of Strathcona Sound and other negative environmental effects of the proposed project.

When Strathcona project feasibility studies began, the largest body of specific information about the land wildlife and sea mammals in the vicinity of the proposed project was that retained by experienced local hunters. The efforts of scientists in the North had produced some general information about species which were known to frequent the region and had included some specific studies of areas which were in some ways similar to Strathcona Sound. But the Sound itself and the land surrounding it had not been studied. The environmental consultants hired by Watts, Griffis and McOuat recognized this explicitly: "The biological environment of Strathcona Sound is not described in the published literature. The closest point where data have been collected is Arctic Bay, located at Adams Sound approximately 15 miles west-south-west of Mineral Resources property. Current assessments of the existing biota and any predictions regarding environmental impact of the proposed project and tailings disposal must largely be based on inference from data collected at Arctic Bay, Bylot Island, Baffin Island in general, Ellesmere Island and West Greenland."(130)

When the feasibility of the Strathcona project was first being seriously considered, it was reasonable to assume, on the basis of other experiences, and because of the nature of the minerals, trace elements, and processes likely to be involved, that a base metal mining and concentrating operation at Strathcona Sound would present serious environmental hazards. More specifically, the project would be particularly hazardous if the mine wastes (which were certain to contain toxic substances) were allowed, by environmentally insensitive project design or by accident, to contaminate the biologically productive waters of the Sound. The potential environmental impact of the project as a whole and of the various possible technologies to be used needed to be analysed and assessed. For this a considerable amount of information about the local environment was required.

Little such information had been collected. It was known (or at least easily discoverable) that the aquatic and coastal environment of Strathcona Sound and vicinity was biologically significant and of some importance to the traditional economy of the local Inuit. But there was little specific information about the various aspects of the ecology of the region except for that held by local hunters and trappers. What was required, clearly, was a determined research effort to collect and provide the background or "baseline" environmental information required for an adequate assessment of the project's potential environmental impact. The importance of baseline environmental data and the difficulty of collecting them have long been recognized. Baseline data are indispensable both for assessments of the potential environmental effects of proposed projects and practices and for subsequent monitoring of those projects and practices which are undertaken or adopted. The data are necessary prerequisites for prediction of environmental changes which might result from the undertaking of a proposed project, and for identification of species and ecosystems which may be sensitive to (threatened by) such changes. In addition, baseline data are needed as fixed bases against which data collected at intervals subsequent to the commencement of a project can be compared for the purposes of monitoring the extent and severity of project-related environmental changes.

Collectors of baseline data face many difficulties, the most serious of which are usually related to time pressures. Recognizing this, the Working Group on the National Environment at the October 1972 Mont Gabriel "Seminar on Guidelines for Scientific Activities in Northern Canada", recommended that "it be realized that surveys in support of environmental impact studies cannot be organized overnight; and that account be taken in future (i) of the fact that certain elements, notably flood régime in rivers, occurrence of climatic extremes, and life cycles of many forms of wildlife, cannot be determined from short term studies; (ii) of the lag time involved in mounting northern studies, because of logistic problems."(131)

Environmentalists have insisted that some environmental baseline data simply cannot be collected in rapid and short term studies. They have frequently criticized governmental and industrial proponents of projects for suggesting that the results of short term studies are adequate for environmental impact assessment and monitoring purposes. And they have pointed out that, even when there is considerable pressure for rapid "development", the available time is often ill-used and environmental studies are often not undertaken until the last moment. E.B. Peterson, for example, stated in reference to petroleum exploration and exploitation in the North, "The time scale problem in ecological studies is well publicized by the pleas of ecologists for more time to carry out necessary data collection. Surprisingly, we often overlook the fact that the time required to explore and prove up a major oil and gas field in the North is probably not very different from the time required to obtain

environmental data on the behaviour of rivers and ice, population changes of wildlife species, responses to surface disturbance, or recovery rates of various ecosystems; in both cases a decade seems to be a reasonable minimum time requirement. In the example of northern oil and gas development, environmental considerations have entered the picture in an important way only as we approach the time of commitment for transportation of the resource. The weakness of placing a considerable environmental research effort on only later phases of a proposed development needs no elaboration."(132)

For mining projects, the length of the period between the discovery of a potentially exploitable mineral body and the commencement of project construction varies considerably. In some cases the period may be less than ten years. Moreover, it is often difficult to predict whether or not exploratory work on a site will lead to a mining project. While many promising areas and mineral showings are subjected to exploratory work, only a small number of actual mining projects result. It is not easy to determine when the likelihood of full-scale development is sufficient to warrant commencement of baseline environmental studies. The biggest problem, however, is the difficulty of convincing project proponents and governmental assessors to act on environmental considerations before the last moment.

2. The Treatment of Environmental Issues

(a) baseline studies

The seriousness of the potential environmental effects of the Strathcona project and the need for early studies was recognized relatively early by at least one governmental official. In a report submitted in 1972, J.B. Haining, GNWT Regional Superintendent of Industry and Development, included specific recommendations concerning environmental studies:

"Environmental and Ecological problems will most assuredly arise through a development of the type in the High Arctic.

"A prerequisite to a program of this nature should be that a Preliminary Ecological Study be made before any major development takes place. Independent Environmental Consultants should be hired to do this work and if government is unwilling to fund the study, then the mining company should be informed that the study will be their responsibility and that this be a mandatory condition prior to the granting of permits to proceed with development.

"The study should cover all resident and migratory birds and animals that may be found in the area to be developed. The effect on birds, land animals, fish and sea mammals, from a project of this type could be significant and precautions

should be taken to avoid upsetting the extremely delicate balance of nature that prevails here and throughout the High Arctic.

"Hunting patterns of the indigenous people through re-concentration into new areas may well disturb the balance of wildlife in the area of development. The added pressures on the renewable resources from the additional hunters relocating into the area could well create a depletion factor that may possibly exhaust the renewable resources within a fairly short period of time.

"The effect of a major marine terminal on the fish and sea mammal populations of the area will be noticeable. The activity at dockside combined with the normal marine effluent from deep sea vessels will have an almost immediate effect on the migratory routes of fish and sea mammals. What this effect will be can only be determined by studies of these particular resources and their behaviour patterns.

"I would recommend that immediate action be taken to implement the necessary environmental and ecological studies that this particular development demand."(133)

Mr.Haining's superiors did not act upon his recommendations. In August 1973, when the proponent's environmental consultants, the British Columbia Research Council, submitted their "preliminary assessment of the probable environmental impact" of the Strathcona mine, they too observed that there was a lack of baseline data relevant to the initial assessment and subsequent monitoring of the project. Like Mr. Haining, B.C. Research recommended "that an ecological study of the area be undertaken prior to commencement of mining-milling or major construction operations."(134) This recommendation was apparently unacceptable to the company's chief consultants and was not contained in their feasibility study.

The authors of the Strathcona project feasibility study were unwilling to acknowledge that further studies and more data were required to assess the feasibility and desirability of the project. In the chapter devoted to describing the Strathcona environment, the feasibility study authors admitted that "detailed studies of the biological environment at the property site on Strathcona Sound have not yet commenced" and that the environmental consultants, unable to find data on Strathcona Sound and the project site, had compiled a report based on studies undertaken at Arctic Bay and other adjacent areas of Baffin Island. In fact they explicitly recognized the inadequacy of the available data and proposed further studies. However, these studies were to be undertaken only in the interests of future monitoring efforts. The chapter concluded: "The foregoing is a very generalized description of the environment at Strathcona Sound. More specific data is obviously required, and will be

obtained with the baseline ecological survey to be initiated in 1974. Analyses of samples of marine life, water and sediments from Strathcona Sound will be acquired as a data base to compare with results obtained after mining operations commence. Similar sampling and analyses of terrestrial species, soils and fresh water, will also be undertaken." The authors carefully avoided any statement which might suggest that further studies and more data were required before the project could be approved and initiated. In the chapter on disposal of mine and concentrator wastes (tailings), they stated, "Environmental studies should commence soon after a production decision is made for the project."(135)

The consultant's position - the position they were urging on both the company and the government - was that the lack of environmental data and the consequent uncertainty about the severity of the environmental hazards posed by the project were only problems for final design, construction and operation; they were not project assessment problems. In other words, the consultants implicitly denied that the environmental hazards, whatever they might be, could possibly be so severe and intractable that they could contribute to questioning of the overall advisability of undertaking (or, in the government's case, approving and supporting) the project.

b) the environmental hazards and the consultants' analyses

Despite the poverty of the data base on the Strathcona environment, there was enough information in the feasibility study or easily available from other sources to indicate that several aspects of the proposed project presented environmental hazards.

It was evident that many hazards were environmentally insignificant or could be reduced to acceptable levels if due care were taken and appropriate technology used. The construction of the mine facilities and infrastructure, for instance, would not necessarily cause serious or widespread environmental disturbance. Similarly, the transshipment, storage, and use of fuels and chemical flotation reagents (required in the ore concentrating process) could be carried out safely. And, if effective precautions were taken, the amount of dangerous particulate matter escaping as dust from the concentrator and the concentrate storage area could probably be kept to environmentally tolerable levels.(136)

Although avoidable, these minor hazards could easily become quite serious in the absence of environmental concern on the part of the mine staff or contractors. Consequently, there was a need for government decision makers to ensure that the company could and would adopt environmentally benign practices and processes (i.e., to ensure that the company was and would be financially able to do so and that the incentives and penalties facing the company would lead it to act in an environmentally sensitive and cautious manner).

Other aspects of the project posed air pollution hazards which the environmental consultants also thought to be minor, but which could not be assessed accurately because of the lack of information. These hazards included gaseous emissions from the power plant (a thermal-electric station burning diesel fuel) and from the concentrate dryer. The consultants thought that unless there were equipment malfunctions or operator errors, the amount of sulphur dioxide and nitrogen oxides released into the environment would not likely cause significant problems. They were, however, careful to add that little was known about the ecological effects of the expected emissions.(137)

Uncertainty arising from the weakness of this information base may not have been enough to justify postponement of project assessment while the necessary data were gathered. However, the situation was quite different with regard to the environmental hazards posed by the concentrator tailings (wastes).

Both the environmental consultants and the authors of the feasibility study recognized that the most serious potential environmental hazards of the proposed Strathcona project were related to the tailings. The concentrator, operating at the planned rate processing 1.5 kt of ore daily, would produce about 375 kt of tailings each year. The tailings - mostly liquids containing suspended solids - were expected to have significant acid-producing potential and to contain zinc, lead, copper, cadmium, iron and arsenic.(138) Even in trace amounts, some of these heavy metals, cadmium in particular, can be extremely toxic. If the tailings reached the living environment, many organisms exposed to them would be killed directly or gradually through accumulation. In addition, organisms exposed but not killed might pass increasing concentrations of metals up the food chain, eventually contaminating higher order creatures, including fish and mammals (especially seal and narwhal) hunted by the native people.

The environmental consultants and the authors of the feasibility study considered two possible means of tailings disposal. The tailings could be transported in a slurry pipeline either to a disposal site on land and deposited behind retaining dykes or to a disposal site in the sub-surface waters of Strathcona Sound. The latter alternative, marine disposal, was favoured by the consultants for both economic and environmental reasons. The economic argument was straightforward: according to estimates in the feasibility study, the initial cost of marine tailings disposal would be \$304,200, compared to \$1,306,400 for land disposal.(139)

The environmental arguments in favour of marine disposal were less powerful. The authors of the feasibility study were apparently convinced that the tailings, if discharged into Strathcona Sound at a depth of 45 m, would settle harmlessly in the depths of the Sound.

Anything which failed to settle would be safely diluted before reaching the primary producing zone in the surface waters. They were not, however, able to provide much evidence to substantiate this conviction and, in some instances, seem to have contradicted their own environmental consultants.

The biological environment of Strathcona Sound had not been studied, the oceanographic characteristics of the Sound waters (the nature of currents, background heavy metal levels, etc.) were unknown, and bathymetric information about the Sound bottom was not precise.(140) Consequently, there was little possibility of accurately predicting the movements and effects of the tailings (liquids or solids) after they were released from the discharge point at 45 m.

The feasibility study authors, nevertheless, asserted that the marine disposal option would "allow the tailings to settle into a deep area in Strathcona Sound where no marine life is known to exist."(141) Because of the uncertainty about Sound bottom topography between the discharge point (at 45 m) and the deep areas (below 220 m), the assertion about the location of tailings settlement was dubious. Moreover, the clause about absence of marine life seems to have contradicted the judgment of the environmental consultants. B.C. Research had examined studies of related arctic locations and had reported, "Throughout the area covered by these studies, the sea bottom from six meters to 800 meters of depth sustained an appreciable number of species belonging to several phyla. The estimated population densities at northern Baffin Island ranged upwards to 1815 individual organisms per square meter of bottom substrate. It is highly likely that a relatively rich bottom fauna exists below the intertidal zone in Strathcona Sound."(142)

The feasibility study included no mention of the most hazardous aspect of marine disposal identified by the B.C. Research consultants: "A large portion of benthic fauna expected to inhabit Strathcona Sound are polychaete filter feeders. Other organisms which feed on particulate matter include zoo-plankton, fish fry, clams and shrimp fry. These organisms in turn serve as food for predators including fish, seals and other marine mammals." The possibility that these filter-feeders at the bottom of the food chain would ingest fine solids containing heavy metals from the tailings was, according to the B.C. Research report, the "most significant potential risk of marine discharge of tailings."(143)

In general, the B.C. Research consultants were more cautious in their assessment of the environmental acceptability of marine disposal than the authors of the feasibility study. Perhaps because of the significant economic advantages of marine disposal, the feasibility study authors seem to have carefully understated the concerns raised by the environmental consultants. They did admit there was a need for more environmental research concerning marine

disposal effects, but this admission seems to have been forced upon them by the Northwest Territories Water Board.(144) In discussions with the consultants, Water Board members apparently emphasized that marine disposal could not be approved on the basis of existing information. The consultants, consequently, allowed that "many aspects of this system...remain to be investigated in greater detail"(145), but they assumed that the findings of further studies would not affect the decision to proceed with the project and could be postponed until after such a decision was made. Despite the lack of information and the expressed doubts of the Water Board, the feasibility study authors were sufficiently confident of eventually receiving government approval for marine disposal that they assumed its lower costs in their economic calculations.(146)

Both the environmental consultants and the authors of the feasibility study discussed the alternative of retaining the tailings on land. Land disposal would require identification of a large and relatively flat containment area and construction of a retaining dam. The tailings would be pumped through a pipeline from the concentrator to the containment area. After the solids had settled out, the remaining liquids, largely water, would be decanted through the dam or would percolate through the soil and rock surrounding the containment area.(147)

Under ideal circumstances, the toxic heavy metal and acid-producing components of the tailings would be retained in the containment area with the settled tailings solids and remain there in a stable and environmentally safe condition even after the abandonment of the site. Unfortunately, such ideal circumstances could not be expected in the Strathcona vicinity.

According to the environmental consultants, the major difficulties would arise from the nature of local terrain and the arctic climate. Because of the general steepness of the terrain at the only possible disposal sites, fairly high retaining dams would be required. These would have to be built on permafrost (largely ice and granular materials) which could be degraded by exposure to the relatively warm tailings.(148)

If, due to permafrost degradation (or flash-flooding, poor maintenance or any other reason), the tailings dams should fail, during or after mining operations, highly toxic tailings material would flow directly to the biologically important surface waters of Strathcona Sound. Moreover, most of the melt and discharge of excess liquids would be limited to a short and biologically crucial period of the year - the arctic summer. According to the B.C. Research report, "High water discharge rates in summer periods will also cause transport of any acutely toxic components of tailings water, such as collectors and soluble zinc, directly into the surface zone of Strathcona Sound." The consultants predicted that this problem would apply both to the summer decant waters and to the melt-waters of

drainage beneath the tailings dam. Even the tailings solids retained in the containment area would pose problems resulting from the difficulty of preventing tailings materials from being wind-blown to locations where they could cause heavy metal contamination or acidification of soil and ground waters which flow into the Sound.(149)

B.C. Research reported that the most serious environmental damage threatened by the project would be contamination of the surface layers of Strathcona Sound "where photosynthetic and biological productivity are highest." After comparing the land and marine disposal options, they concluded that land disposal would pose greater hazards: "Tailings dam discharge will introduce a comparatively high level of soluble metals into the surface (productive) zone of Strathcona Sound and this discharge will fluctuate seasonally with the highest rate of discharge in the summer period when the biological productivity (and uptake of metals) will be highest."(150)

However, much of the evidence, particularly that related to marine disposal, was preliminary and B.C. Research recommended that more information, including data from on-site surveys, be collected before commencement of the project. They also stated that, while marine disposal seemed to be less hazardous, "both methods of tailings disposal have potentially serious environmental consequences."(151)

The feasibility study authors qualified their conclusions somewhat, but it was clear that they did not believe the uncertainty to be great enough to justify delay of the project or to warrant serious questioning of the preferred disposal alternative: "The studies carried out to date, although not yet complete, indicate that the disposal of tailings into an appropriate area of Strathcona Sound is the preferable alternative both with respect to minimizing the effects on the environment of the area and with respect to economic considerations."(152)

In general, the B.C. Research report and the Watts, Griffis and McOuat feasibility study, indicated that the proposed project entailed environmental hazards, some of which were potentially (perhaps unavoidably) serious, and none of which could be fully analyzed or assessed due to the lack of relevant environmental data. B.C. Research recommended that ecological studies be undertaken prior to project construction. The authors of the Watts, Griffis and McOuat report, on the other hand, confidently asserted that "there should be minimal impact on the Arctic environment from the proposed mining development."(153) They stated that further environmental studies could wait and that, for economic calculations, approval of the less expensive tailings disposal option (marine disposal) could be assumed. Perhaps because of their position as consultants to the

project proponents, neither group was willing to suggest that the project should not be undertaken unless and until adequate baseline information was available and a complete assessment of the potential environmental effects of the project undertaken.

The discussion of environmental issues in the feasibility study that was submitted to MRI and later to the government emphasized processes and procedures which would minimize environmental hazards. The authors apparently believed that this would satisfy the government decision makers. From their point of view the weakness of the environmental data base was an impediment but not a barrier to approval. They clearly expected government officials to be willing to treat environmental considerations lightly in their assessment of the desirability of the project.

c) the environmental hazards and the government assessment

Soon after the Watts, Griffis and McOuat report was submitted to MRI in mid-September 1973, the project proposal, as described and justified in the consultants' report, was presented to the federal and territorial governments for approval and support. The consultants had already discussed some of the environmental issues raised by the project with government officials, including members of the NWT Water Board. In these discussions, at least some officials with environmental responsibilities had been skeptical of the claims made by the proponent's consultants. In particular, Water Board members had not been convinced that the environmental acceptability of marine discharge of tailings had been demonstrated. (154)

After the Strathcona project proposal had been submitted to the government, the members of NWT Water Board were given central responsibility for examining the environmental aspects of the proposal and for contributing to the federal government's decision-making process concerning the advisability of granting approval and support to the project. This did not entail simply identification of the least hazardous means of carrying out the project, but, more importantly, analysis of the various potential effects of the project and assessment of the environmental acceptability of the project as a whole.

The Water Board was also responsible for deciding whether and under what conditions to grant the company a water use licence under the provisions of the Northern Inland Waters Act. This legal responsibility was related to the more general task of coordinating environmental analysis of the Strathcona proposal, insofar as considerations leading to approval or rejection of the water use licence application would also contribute to any comprehensive assessment of the general acceptability and desirability of the project.

As the Board members and other contributors (particularly from

the federal Department of the Environment) proceeded with the assessment task, it became apparent that a rapid decision would not be possible due to the inadequacy of available environmental data.(155) A document, "Strathcona Sound Project: Studies Required for Environmental Protection," based on contributions from various DOE experts who had examined the project proposal and the extent of available information, was completed in late February 1974.(156) Two categories of required environmental baseline studies were identified: (a) those required to determine the feasibility of the project and (b) those required once the commitment is made to proceed. The document's author(s) stated that "most of the studies associated with category (a) could be completed in a 9-12 month period." In other words, the position of the government's environmental experts was that the environmental feasibility of the proposed Strathcona project could not be determined until after completion of studies which would take at least 9-12 months.

The document was circulated on 1 March 1974. The DIAND memorandum to Cabinet recommending approval and support for the Strathcona project was dated 8 March 1974. The Cabinet memorandum included a statement identifying disposal of mine tailings as an environmental problem, but did not mention the inadequacy of existing baseline data or the possibility that neither of the proposed means of tailings disposal would be environmentally acceptable. The recommendations of the DOE officials who had studied the environmental aspects of the proposed project were, apparently, unknown to or ignored by the authors of the DIAND memorandum to Cabinet.

On 28 March 1974, Cabinet granted approval-in-principle to the Strathcona project. DIAND (in cooperation with the Department of Industry, Trade and Commerce) was assigned responsibility for negotiation and agreement with MRI. The negotiations were directed to "ensure compliance with reasonable environmental requirements to be determined by the Department of the Environment," but there was no provision for further environmental studies to be undertaken before the negotiation of a development agreement.(157) Indeed, it was expected that an agreement would be signed within three months (before the end of June, when the proponent's financial arrangements with its European backers would expire). In that time frame, it was impossible to carry out the studies which, according to the DOE experts, were necessary to determine the environmental feasibility of the project. But, in the absence of such studies, it is difficult to understand how "reasonable environmental requirements" could have been determined and ensured by the negotiators.

Shortly after the Cabinet's decision, senior DIAND and DOE officials met to discuss how environmental considerations would be included in the negotiations and eventual agreement with MRI. The officials, including L. Edgeworth, Assistant Deputy Minister responsible for the Environmental Protection Service of DOE; A.B.

Yates, Director fo the Northern Policy and Program Planning Branch of DIAND; and M.J. Ruel of the Northern Natural Resoruces and Environment Branch of DIAND, agreed that the NWT Water Board would coordinate the contributions of departmental experts. Therecom- mendations compiled by the Board would be submitted to theOttawa- based interdepartmental working group charged with coordinating all contributions to the negotiation process. More importantly, the officials agreed to dispense with attempts to ensure assessment of the potential environmental impact of the project. In his account of the meeting, Mr. Yates reported,

"In discussing the nature of the studies that might be required of the proponent we considered that the project should be dealt with as one requiring studies and requirements relating to environmental design rather than to environmental impact assessment. Recognizing the limited time available and the limited financial capability of the proponent, we concluded that the proponent could be advised that land disposal of tailings would be permitted without extensive studies but subject to acceptable environmental design. For disposal into the sea to be acceptable, however, the proponent would have to bear the cost of these studies. He would obviously have to judge for himself which course was most economical recognizing that the sea disposal studies might result in that alternative being totally rejected."(158)

The willingness of DOE officials to accede to an environmental design (best practical technology) approach rather than insisting on a full environmental impact assessment was understandable in the light of Cabinet instructions to prepare an agreement in a brief period.(159) However, the willingness of DOE as well as DIAND officials to permit land disposal of tailings "without extensive studies" was surprising. They must have been aware of the B.C. Research report which had outlined the potential environmental haz- ards of land disposal. Moreover, the officials' justification of the lower requirements on the grounds that there was "limited time available" and the proponent had "limited financial capacity" seems not to express the spirit of the government's stated northern policy.

By 9 May 1974 the NWT Water Board had completed its task of assembling the environmental contributions to the negotiations and had prepared a document listing the recommended environmental re- quirements to be included in the agreement.(160) Most of the requirements concerned studies to be undertaken by the company during the initial (construction) phase of the project. Of these the majority were related to the tailings disposal issue.

Following the instructions of the senior DOE and DIAND officials, the Water Board recommended considerably stiffer require- ments for marine disposal than for land disposal of the tailings. Despite the relatively uncritical approach to land disposal of the Strathcona mine tailings, the Water Board's recommended requirements

provided for a fairly comprehensive set of environmental studies. In order to ensure that the company was fully aware of the nature and implications of the requirements and fully committed to carrying them out properly, the Board emphasized that a series of technical meetings ought to be held between the proponent's advisors and government experts before the signing of the agreement. The participants in these meetings would discuss the specific study areas, and develop relatively precise outlines of the terms of reference, scope and cost of the studies. According to the Chairman of the Water Board, "it is essential that terms of reference for all environmental studies be sorted out and formally agreed upon between the government and MRI prior to final execution of the Agreement."(161) Unfortunately, these meetings were not held until after the completion of negotiations with the company.(162)

The rest of the Board's recommendations were, however, accepted by the negotiators and included virtually word for word as clauses in the agreement. The inclusion of these study requirements in the development agreement was an improvement. Environmental considerations had been almost entirely ignored in, for example, the agreement concerning the Anvil mine. The studies would be undertaken while construction was underway and would be limited by brevity (determination of cyclical variations and other such factors relevant to adequate baseline data would be difficult, if not impossible) and, in all likelihood, by the proponent's interest in speeding construction. But the results of the studies would provide the beginnings of a comparative base for subsequent monitoring of the project's impact. The results would also be available to the NWT Water Board, which would have to decide which method of tailings disposal would be approved, and to the federal Lands Office, which would have to determine what terms and conditions to attach to the surface leases it would grant to the company.

d) policy and practice

The treatment of environmental considerations in the Strathcona decision making was an incomplete step in the right direction. The potential impact of the project on the environment of Strathcona Sound and vicinity was not given serious attention in the government's assessment of the feasibility and desirability of the project. DIAND was, according to its official policy, dedicated to "maintain and enhance the natural environment." It had been informed that a 9-12 month research program was required before sufficient environmental data would be available to allow the feasibility of the proposed project to be assessed. Nevertheless, the Department recommended and received Cabinet approval-in-principle for rapid negotiation of an agreement providing extensive government support for the Strathcona project.

Tailings disposal was recognized as a serious potential

problem. Yet there seems to have been no consideration (at the decision-making levels) of the possibility that neither the water nor the land disposal alternative would be found environmentally tolerable. No other option was mentioned in the negotiated agreement. Neither when Cabinet approval was sought and received, nor when the agreement was signed was it known whether there was any environmentally acceptable and economically feasible method of disposing of the mine wastes.

In failing to assess the potential environmental impact of the Strathcona project before submitting the proposal for Cabinet approval, DIAND apparently defied an earlier Cabinet order. On 20 December 1973, a Cabinet directive had been issued requiring all federal departments and agencies to, "undertake or procure an assessment of potential environmental effects on time before commitments or irrevocable decisions are made for all projects which may have an adverse effect on the environment."(163)

The government had been under considerable pressure from public interest groups and native organizations to ensure that the potential environmental effects of major projects be fully assessed before granting approvals. In 1972, when the government neglected to carry out an environmental impact assessment before announcing construction of a major highway down the Mackenzie Valley, it had been roundly condemned, not only by environmentalists and native people, but also by industrial interests who, due to governmental insistence, were undertaking environmental studies related to proposed oil and natural gas pipelines. By the time of the government's assessment of the Strathcona proposal, Cabinet was aware that assessment of the potential environmental impact of projects like that proposed for Strathcona Sound were necessary to avoid both environmental degradation and political embarrassment. In its December 1973 directive Cabinet made its position quite clear. Nevertheless, DIAND did not undertake or procure an assessment of the potential environmental impact of the Strathcona project prior to submitting the proposal for Cabinet approval.

Senior DIAND officials have stated that the directive was ignored in the Strathcona case because the Department of the Environment had not yet established standard procedures for the environmental assessment and review process.(164) It is difficult to accept this as a satisfactory justification. A reasonably adequate assessment could certainly have been undertaken without DOE's procedures. Indeed, in the light of DIAND's repeated insistence that it can adequately protect the northern environment without surrendering jurisdiction to DOE, it was out of character for a senior DIAND official to imply that his department was unable to formulate interim procedures for an environmental assessment.(165)

The reason for the failure to carry out a pre-decision environmental assessment was not the absence of procedures, but the

absence of will. Senior officials were willing, perhaps determined, to include environmental stipulations in the agreement. They were concerned enough about the local environment to attempt to reduce the likely damage. But they were not concerned enough to ensure that potential environment effects be considered in evaluating the desirability of the project. They simply assumed that the environmental consequences of the project would be insignificant. Apparently they were not disturbed by the fact that the available information was not adequate to justify or support this assumption.

As government bodies which claimed to be seriously committed to protecting the arctic environment, DIAND and the other agencies charged with evaluating the Strathcona proposal ought to have operated differently. They ought to have ensured that the necessary baseline data was gathered and a comprehensive assessment of the project's potential environmental effects undertaken before any decision to approve and support the venture. They ought to have examined the implications of the project in the context of other existing or probable activities in the area (e.g., oil exploration in Lancaster Sound). Furthermore, because the native people were knowledgeable about the local environment and both economically and culturally dependent on its continued well-being, DIAND and the other government bodies ought to have ensured that the local people - the people to be affected by the project's environmental impact - were effectively involved in the consideration of the environmental issues raised by the project.

In practice, the Strathcona decision was made without adequate baseline information, without comprehensive analysis of the environmental implications of the project, and without public involvement in assessment of the potential environmental impact. While the inclusion of environmental study requirements in the development agreement was a progressive step, in general, the treatment of environmental considerations by the senior decision makers reflected little change from past practices. They acted without knowing whether an economically feasible and environmentally acceptable means of tailings disposal could be found. They gambled that the project's negative environmental effects would not be severe and intractable. By so doing they contradicted the spirit of the government's northern policy statement and the Cabinet directive on environmental assessment. They also set a precedent which was entirely inappropriate for a pilot project intended to be a model for future arctic development ventures.

C. ECONOMIC ISSUES

In industrialized countries like Canada, economics is the imperial discipline. Increased production of material wealth is widely accepted as the only real basis for improvements in well-being. In project assessments, decision makers generally devote their most

careful attention to wealth-related considerations and to factors which can easily be submitted to economic analysis. Decision making affecting the as yet non-industrialized North seems to be no exception.

For MRI and the authors of the Strathcona project feasibility study, one central question underlay their assessment exercise: could the project be undertaken with reasonable assurance of profits for the company? There were some complex ancilliary problems. The consultants were interested in finding ways of solving labour, climatic, and technical difficulties with minimum expense to the company and they wished to maximize the likelihood of substantial government assistance. But the basic question was that of project profitability.

For the government assessors, the issues to be addressed were less straightforward. They were responsible for protecting social and environmental interests, reviewing the proponent's assumptions and calculations relating to project viability and ensuring that regional and economic interests were served. Their assessment had to be more comprehensive than that of the proponents. But they too focussed most of their attention on economic matters.

1. The Economic Context

a) government policy

Because the Strathcona project was certain to be regarded as a precedent-setting venture and would consequently be subjected to scrutiny by potential critics of the government, the government assessors (and, indirectly, the proponents who wanted government assistance) had reason to be especially careful to avoid any contradiction of government policy. The policy context of the Strathcona project was complex. The proposal had implications related to several policy areas and, not surprisingly, the relevant policies were not in all cases clear and consistent.

The most significant policy relevant to the project was the federal government's position on northern development. The northern development policy expressed in the official March 1972 policy statement seemed quite clear. It contained an explicit list of the government's priorities in order of importance and, according to this list, support for non-renewable resource exploitation activities followed improvement of the social well-being of northerners, environmental protection, and encouragement of economic activities based on renewable resources.(166) The clarity was, however, muddled by other official statements and by actual practice. While the government gave non-renewable resource exploitation a relatively low priority, government officials expressed an overriding determination to increase the production (extraction) of wealth in the North and

treated non-renewable resource exploitation as the only realistic basis for expansion of the northern economy.(167)

The proposed project raised questions related to other government policies including, for example, the mineral policy developed by EMR. This policy emphasized encouragement of domestic processing and manufacturing of Canadian minerals (as opposed to raw export.(168) It was intended to be national in scope but, because exploitation of mineral resources (except uranium), is under provincial jurisdiction, there was reason for the federal government to be especially interested in applying the policy in the northern territories. Nevertheless, the relationship between mineral policy and northern development policy had not been defined. There was no specific policy position on the exploitation of northern minerals. The government had not developed, for itself or for potential applicants, guidelines setting out the general conditions which would have to be met by companies requesting permission to proceed with a mining project, and deserving government assistance and/or export authorization.(169) For the Strathcona project, these issues were addressed on an ad hoc basis.

b) economic considerations of the proponents

Although MRI and its consultants, were primarily concerned with the potential profitability of the project, they did not choose to begin their feasibility study in a narrowly conventional manner. Instead of first delineating the reserves, then determining the most profitable means and rate of extraction and concentration, and then approaching the government with a proposal, they began inquiries about possible government assistance as an initial step, before completing orebody delineation work and before undertaking detailed analyses.

The decision to assess the project on the basis of a 15-year expected life and a substantial level of government assistance was made after discussions with government officials at the outset of the feasibility studies.(170) The consultants did not claim to have examined the feasibility or profitability of the project under any other assumptions. They stated that all else being equal, the project would be more profitable for the owners at a higher rate of extraction and argued that because the company was sacrificing profits to allow a longer project life, substantial government assistance was merited.(171) However, there is no evidence to indicate that the consultants seriously examined the possibility of adopting a higher extraction rate and dispensing with government assistance.

The consultants carried out their economic analysis of the project on the assumption that 1.5 kt of ore per day would be mined and concentrated. At this rate, the known proven and probable

reserves of 6.97 Mt of zinc-lead-silver ore containing a minimum of 7% zinc or zinc equivalent could be worked for 12.5 years.(172) After assessing the expected capital and operating costs and likely revenues of the project, the consultants concluded that the project was feasible and would be profitable for MRI. "Our economic analysis of the project indicates that a Discounted Cash Flow rate of return of 15% on the project cash flow can be achieved, with a zinc price of 22.8 cents per pound and government assistance for the dock and airstrip. Higher rates of return would result at higher zinc prices and additional government support."(173)

The consultants did not find a potential domestic smelterer willing and able to handle ore concentrate from Strathcona Sound. However, several European concerns expressed interest not only in purchasing lead and zinc concentrate, but in participating in project financing. Consequently the consultants anticipated no difficulty in finding buyers for the mine production if, as expected, the government proved willing to authorize export of the concentrate.(174)

The consultants were confident that government approval and support would be forthcoming. According to their feasibility study report, substantial financial assistance for infrastructural development, as well as a licence to export ore concentrate from the mine were required from the government if the project was to be sufficiently profitable.(175) However, the consultants were convinced that government officials would not only agree to provide the necessary assistance and authorizations, but also that such agreement would be reached in time for project work to begin early in the 1974 construction season.

2. The Treatment of Economic Issues

As the consultants expected, the government did not subject the Strathcona proposal to a long and thorough assessment before granting approval and support for the project.(176) Several significant aspects of the proposal - most notably the social and environmental matters which required difficult and time consuming research efforts - were given very little attention. But other aspects were submitted to relatively careful analysis, in particular, questions relating to the financial viability and more general economic implications of the project.

The economic aspects of the MRI proposal were examined separately by DIAND and EMR. The departments concentrated on matters related to their respective interests, but, because a substantial amount of government assistance was being requested by the proponents, DIAND and EMR analysts reviewed the probable profits from the project.

a) project profitability

The consultants advised MRI that they could expect a profit rate ("discounted cash flow rate of return") of 15 per cent, assuming initial project capital costs of \$45,044,000, annual operating costs of \$7,537,500 and a zinc price of 22.8 cents per pound.(177) Each of these assumptions was examined by the government assessors.(178)

In both DIAND and EMR analysts found that the consultants had underestimated the probable capital and operating costs of the project. The labour cost estimates provided in the feasibility study were considered particularly unrealistic. Assessors in the two departments observed that the wage rates proposed by the consultants were lower than those currently paid at less isolated mines in southern Canada and predicted that these rates would have to be raised considerably if workers from the South were to be attracted to Strathcona Sound. Moreover, after examining existing wage rates and related conditions in the Eastern Arctic, DIAND assessors concluded that the proposed wages would also be insufficient to entice many Inuit to seek jobs at the mine.(179)

In addition to higher labour costs, EMR experts expected much higher fuel costs than had been assumed by the consultants. Fuel might be difficult to obtain if energy shortages continued.(180) Assessors in DIAND noted recent increases in smelting charges, expressed doubts about the consultants' power and shipping cost forecasts, anticipated a substantial increase in NWT royalty charges, and warned that tailings disposal costs would be considerably higher if a land disposal system were required.(181)

The consultants examined two possible means of tailings disposal. They anticipated that marine disposal, which involved piping mill wastes into the sub-surface waters of Strathcona Sound, would cost \$304,200. The cost of the land disposal alternative, which required pumping of the wastes to holding ponds behind retaining dams, was expected to be \$1,306,400.(182) Both of these estimates seem to have been extraordinarily low. In February 1975, 17 months after the feasibility study was completed, advisors to the proponent claimed that marine disposal would cost \$900,000, disposal on a land site \$13,000,000 and disposal in Kuhulu Lake (an option not considered in the feasibility study) \$3,200,000.(183) Such cost escalations could not be attributed to inflation. The problem was aggravated by the consultants' decision to assume, for the purposes of their overall cost calculations, that marine disposal would be adopted. The less costly option was clearly preferable for the proponents. Government approval would be required and the consultants knew from their discussions with the NWT Water Board that, while government approval of marine disposal was possible, it was not assured. It is unlikely that the consultants were utterly convinced that the government would permit marine disposal of the tailings.

Perhaps they believed that expressed confidence in the certainty of approval would enhance the likelihood of approval. Whatever the rationale, this approach reduced the reliability of the consultants' cost and profitability projections.

DIAND's assessors concluded that the consultants had underestimated both capital and operating costs by approximately 10 per cent.(184) Their counterparts in EMR were more critical: they stated that project costs could be 20 per cent higher.(185) By the time the DIAND memorandum to Cabinet was being prepared, DIAND officials had accepted the EMR estimate, at least for capital costs. According to the authors of the Cabinet memorandum, the project was expected to require an initial capital investment of \$54 million, an increase of 20 per cent over the consultants' estimate of \$45million.

The analysts evaluating the viability of the mine also had to assess the consultants' revenue predictions. This entailed prediction of base metal prices for the period of mine operation. Because of the sale of zinc concentrate would provide most of the project revenues, the expected zinc price was the most sensitive variable in profitability calculations. Zinc prices, like those of all metals subject to complex international market pressures, could not be forecasted with certainty. However, in the years prior to the feasibility study, zinc prices had not changed as erratically as those of other metals. From 1960 to 1968, the price of zinc (U.S. Prime Western) ranged between 12 and 15 cents per pound. It rose steadily from 14 cents in 1968 to 17.5 cents in 1972 and, in late 1972, began to increase rapidly. According to the consultants, average zinc prices during the first eight months of 1973 were approximately 20.5 cents per pound. But they also noted that the European Producer price for zinc in September 1973, when the feasibility report was being completed, was 27.8 cents per pound.(186)

When the Watts, Griffis and McOuat consultants chose 22.8 cents as the price to be assumed in their basic calculation of most probable profitability,(187) they seem to have intentionally erred on the side of caution. They reported that "all companies involved in the marketing and distribution of zinc concentrates and metals, with whom (they) had contact, have forecast a continued price rise from mid-1973 levels with most estimates indicating a five percent annual increase" and concluded, "although predicting base metal prices is always very hazardous, there seems to be little reason to believe that zinc prices, outside the United States, will fall significantly below the current European Producer Price of £250 (27.8 cents per pound)."(188)

When the MRI proposal was submitted to government, the price of zinc was 5 cents above the 22.8 cent level assumed in the consultants' calculations. By December 1973, about mid-way through the assessment period, the price of Canadian zinc (Prime Western

grade) was 31 cents to domestic buyers and 33 cents to the United States.(189)

The DIAND analysts assigned to review the project were aware that zinc prices were rising. For one of their recalculations of the project's potential rate of return, they assumed 35 cents per pound as a reasonable prediction of zinc prices during the period of mine operation.(190) Nevertheless, in their preliminary evaluation report, the DIAND assessors stated, "metal prices are notoriously difficult to predict but the chosen base case price for zinc, 22.8 cents per pound, appears realistic even though it is below current levels."(191) EMR analysts reached a similar conclusion in their project evaluation report: "It would appear reasonably safe to assume that a zinc price of at least 22.8 cents will prevail provided no oversupply is created through lessened consumer demand due to the current energy shortage - however, we cannot forecast with any assurance that zinc prices will remain in the range of 27-28 cents or better."(192)

In December 1973, at about the same time as the DIAND and EMR reports were completed, zinc producers increased their posted zinc prices to the 31-33 cents per pound range.(193) Despite these price increases, neither department seems to have reassessed its acceptance of the consultants' zinc price assumption prior to Cabinet consideration of the proposed project in March 1974. In March, while Cabinet was deciding to grant approval-in-principle on the basis of DIAND's analysis and recommendations, zinc prices were expected to rise again.(194) On 1 April, Cominco, the largest Canadian zinc producer, increased its prices to 34-36 cents per pound.

The authors of the DIAND memorandum to Cabinet concluded that, with \$16.7 million in government grants and loans, the Strathcona project would be viable. They insisted, however, that even with this support, MRI and its backers (the European smelters Metallgesellschaft AG and Billiton BV) could only expect a marginal corporate rate of return. As described in the memorandum, the project was not so economically doubtful that government support would be injudicious nor likely to be so profitable that government assistance would merely add to the proponents' wealth. It was, rather, just at the point where government support would make it marginally but reliably profitable for the proponents and, at the same time, permit additional government influence over project design and implementation.

No concerns were expressed about the possible consequences of marginal profitability for a project like the Strathcona mine. While economic marginality may often be a reasonable criterion for governmental assistance to industrial projects, it implies financial constraints. And such constraints, inevitably, encourage attempts to cut corners and discourage initiatives not absolutely crucial to project profitability. Cost minimization is, of course, practiced in

all enterprises devoted to maximizing profits (narrowly defined). But when the bare viability of the project is at stake the problem of costs is much more serious. Among the expenditures which tend to be sacrificed first are those relating to uncertain technological innovations to workers' health and safety, to social well-being, and to environmental quality. For projects like the Strathcona mine which are advocated as experimental "pilot projects", tendencies in this direction are extremely undesirable.

b) government equity

DIAND expected to be able to protect social, environmental and broader economic interests by means of specific guarantees and requirements written into a development agreement with the proponent and by obtaining equity in the company created to carry out the project (Nanisivik Mines Ltd.).(195) The possibility of equity involvement had first been raised in DIAND's preliminary evaluation report. DIAND assessors suggested that the government should not only seek equity participation in the Strathcona project, but begin to consider negotiation of equity for the Inuit affected by such projects. No action was taken on the Inuit equity proposal, but DIAND officials were convinced that government equity would be desirable.

Although the federal government had provided considerable infrastructural support for previous northern mining projects (e.g., the Pine Point and Anvil mines), it had never before negotiated equity compensation. DIAND officials argued that equity participation would be a significant new feature of the government's approach to the Strathcona venture. Not only would it give the government some evidence of return for its \$16.7 million assistance, but it would also entitle the government to a share (in addition to royalty charges) of any windfall profits which might accrue to Nanisivik Mines if, for example, zinc prices rose dramatically. Moreover, with positions on Nanisivik's board of directors, the government expected to have less difficulty eliciting information about company activities and profitability and, consequently, to be in a better position to supervise the project in the public interest.(196)

Analysts from departments other than DIAND were in favour of equity participation if the government decided to grant infrastructural support. But they noted that risks as well as benefits would be involved. According to DIAND's memorandum to Cabinet, MRI and its backers were not averse to ceding minority equity interest (10 to 20%) in the project to the government. The proponents' willingness in this regard was not explained, but it is possible that they anticipated a significant reduction of their risks. By granting infrastructural support and, in return, becoming a part owner of the mine, the government would publicly demonstrate its commitment to,

confidence in and responsibility for the project. This clear and direct association with the project would be politically and economically valuable to the government if the project proved to be profitable and generally successful. But if the project were to fail, the political embarrassment would be acute. In order to avoid such embarrassment and to ensure that the venture was not publicly perceived as a failure, the government might be expected to grant additional subsidies rather than allow the mine to close.(197) For MRI and the European smelterers who were to be the major financial backers, the likelihood of additional government funds in the event of major problems made their investments much more secure.

Furthermore, while equity participation and access to company information might facilitate assessment of the project's profitability and social impact, the added commitment would not increase the government's willingness to encourage public awareness of the project's failings and difficulties. In fact, as one of the responsible partners in the venture, the government would have more incentive to avoid open and critical assessment of the project. Unfortunately this problem applies to most activities for which the government is both assessor and assessee. Short of freedom of information legislation guaranteeing public access to government information, or considerable expansion of local supervision and control over such projects, there are no apparent solutions.

c) anticipated economic benefits

Because the project was expected to be only marginally profitable, even with government involvement and support, the government had no basis for presuming that its equity interest in the mining company at Strathcona Sound would yield significant dividends. The project would provide different revenues to the government. The memorandum to Cabinet claimed that over its expected 12-year life the project would increase government revenues through corporate income taxes, NWT royalties, and sales, excise and personal income taxes by \$12.64 million. In addition, the project would bring economic benefits for certain intended beneficiaries of government action and it would support some government policy efforts related to economic objectives.

Royalties and corporate profit taxes were probably the most obvious sources of increased government revenue from the project. The authors of the feasibility study report, who forecast a net profit rate of 15%, calculated that over the 13-year productive life of the mine, the company would pay a total of \$1,329,000 in NWT mineral production royalties and a total of \$5,673,000 in federal income taxes. However, they predicted that, due to various exemptions and deduction allowances in the early years of operation, royalty and tax payments would be negligible until the fifth year of production.(198)

DIAND analysts noted that the Canada Mining Regulations were under revision and that the NWT royalty rates set out in those regulations were likely to be raised. Although previous efforts to revise these regulations had been unsuccessful in the face of industry objections, the NWT royalties were considerably lower than those in the provinces and it was probably reasonable to assume that the government would impose higher rates before the end of production at Strathcona Sound.(199) It was therefore likely that the consultants had underestimated the total royalties to be paid on the expected profits. However, they were also thought to have underestimated operating expenses, treatment charges and shipping costs, all of which would be deducted prior to calculation of royalty payments. This would probably offset any increase in royalty rates. The same factors would also effect the calculation of federal income tax rates. Thus, the royalty revenues accruing to the government from the project were unlikely to be any higher than the consultants had forecast and the corporate income tax revenues were likely to be substantially lower.

There were other probable sources of new revenues. DIAND analysts anticipated revenues from mine employees' income taxes and decreased transfer payments (e.g., social assistance, subsidized housing, unemployment insurance). They estimated that increased wages to native northerners would amount to approximately \$6000 per year per Inuit employee and that, for each Inuit employed, government assistance costs would be reduced by \$1000 per year.(200) In addition, the government analysts expected indirect benefits from employment of Inuit workers. They predicted benefits to other Inuit arising from redistribution of existing Inuit income sources and hoped that, if significant numbers of Inuit were successfully attracted to wage employment at Strathcona Sound, other Inuit would be willing to follow their example and to accept similar employment. In the longer term, integration of a substantial proportion of Inuit into the extractive industrial economy might be regrettable. In the meantime, the income levels of native northerners would be increased, their dependence on government assistance programs reduced, and the need for alternative (non-industrial) employment opportunities apparently postponed.

There would be direct and indirect benefits to non-Inuit workers. Although proposed Strathcona wages were no better than those of more southerly Canadian mines and there were few unemployed and mobile mine workers in Canada, DIAND analysts calculated that the average non-Inuit employee would enjoy a \$4000 per year wage increase. To the extent that the commodities and services used in the construction and operation of the project were Canadian, there would be advantages for the Canadians who produced the commodities or provided the services. This possibility was emphasized by Cabinet. Hoping to maximize indirect benefits to Canadian suppliers, Cabinet directed the Department of Industry, Trade and Commerce to

participate with DIAND in negotiations with MRI.

No extraordinary advantages for Canadian suppliers were written into the development agreement, although provisions were made to ensure that Canadians would be given every opportunity to submit competitive tenders and that, all else being equal, Canadian bids would be preferred.(201) In one particular area, shipping, the government analysts anticipated significant benefits from encouragement of domestic participation. DIAND officials argued that the mine at Strathcona Sound would "provide an opportunity for the development of Canadian expertise in Arctic ship-building and operations".(202) At the time of the Strathcona decision making, there were no ice-strengthened Canadian ships which would meet the requirements for moving concentrates beyond the very brief ice-free season in Strathcona Sound.(203) No ice-breaking bulk carriers were commercially available anywhere in the world. The Canadian government, hoping to make Arctic Class shipping and ship-building an area of internationally respected Canadian expertise, began to support research and design work by Canadian naval architects leading to construction in Canada of the first bulk carrier capable of moving steadily through ice two feet thick.(204)

The development of such a ship did not depend on the Strathcona project. But the shipping needs of the project would be served by ice-breaking bulk carriers and the project would demonstrate the desirability of Canadian capability in arctic shipping. In order to ensure that Canadian ships would be used if available and competitive, and that Canadian expertise in arctic operations would be developed, government negotiators included provisions in the Strathcona agreement discouraging use of foreign shipping and providing for arctic naval training for Canadians on any foreign ships used.(205)

Because the Strathcona project would be controlled and largely owned by Canadians, and because it would involve a new community, enlarge the northern population, expand transportation and communications networks, and increase northern resource "development", DIAND officials argued that it would demonstrate and contribute to the maintenance of Canadian sovereignty in the North. They suggested, as well, that any use of Canadian shipping would further enhance the sovereignty benefits.

No doubt, these arguments had some validity. Without an outline of the nature and severity of present threats to Canadian sovereignty, it is difficult to assess the significance of the Strathcona project's potential contribution. However, as the events surrounding the voyages of the American tanker, "Manhattan", had indicated, the Canadian government's perception of its sovereign rights, particularly over the waters of the Arctic Archipelago region, was not necessarily shared by the United States.(206) By itself, the

opening of a mine at Strathcona Sound would do little to alter this situation. But, insofar as it was perceived to be the first of a series of projects greatly increasing the level of industrial activity in the Canadian Arctic, the Strathcona mine might be perceived by other nations as reasons to grant more respect to Canadian claims.

The Canadian government viewed the Strathcona project as a forerunner of other industrial resource extraction ventures in the Arctic. DIAND officials emphasized that lessons learned from experience at Strathcona Sound would assist the planning and undertaking of other mining ventures in the Arctic. When the signing of the development agreement was announced, the Minister of DIAND stated, "This small mine is a pilot project through which all those involved will gain experience in the social, technological, economic and environmental implications of such a development in the Arctic environment." In the same press release, DIAND publicists noted sites of future Arctic mines. "Other significant ore deposits in the Northwest Territories include the rich iron ore deposit at Mary River, the high grade lead-zinc deposit at Arvik on Little Cornwallis Island, and the Bathurst-Norsemines deposit at Hacket River."(207)

During the decision making, the potential experience benefits of the project were assessed both in quantitative financial terms and in relation to government policies. In their general evaluation of project costs and benefits, DIAND assessors estimated that the value of new knowledge and experiences at Strathcona Sound would be equivalent to the benefits expected from the Arctic Research Laboratory being constructed at Igloolik - \$250,000 per year.(208) No rationale for this rather extraordinary estimate is available. However, DIAND officials have reported that the project was expected to generate knowledge in several areas relevant to the operating of Arctic resource extraction projects, including "shipping, labour relations, employment policies, environmental management, inventory control, mining methods and milling processes."(209)

In their presentation of the relationship between the proposed project and government policies, DIAND assessors claimed that the experience benefits of the Strathcona pilot project would contribute to several different government policy objectives. They stated that social objectives in the North would be served by the "opportunity to study the attitudes (of Northerners) to and preferences for mineral industry jobs", that environmental objectives would be served by the "opportunity to study environmental effects of resource development in the Arctic", and that territorial political objectives (further "evolution of government in Northern Territories") would be served by the "opportunities to gain experience in working with resource companies."(210)

To some extent each of these points was questionable. In the case of expected social and socio-economic lessons, the extent and

usefulness of new knowledge would depend very heavily on the thoroughness and impartiality of the observations and analyses of the Strathcona experience. There would be opportunity for learning - but the realization of benefits would depend on the government's will to seize the opportunity, to ensure that researchers were competent, well-informed, adequately funded, and sufficiently independent of the government to publish embarrassing findings. This will was decidedly absent in the treatment of social issues during the evaluation of the proposed project. Its appearance during the implementation of the approved project would be laudable.

The negotiation of provisions in the development agreement relating to social research and project monitoring suggests that government officials planned to study the social (and other) aspects of the Strathcona project more seriously than they had in previous ventures. Most of these provisions were intended to ensure that the company would comply with the agreement and that the project itself would be as successful as possible from the government's point of view. But lessons applicable to other projects could be learned. Item 14 in the agreement was explicitly intended to "optimize the experience benefits obtainable from all stages of this pilot Arctic resource project." It provided for access to project information and required company cooperation for government officials and appointed representatives, presumably including researchers. Unfortunately, the information gathered would be "treated as confidential unless it is agreed by the Company and the Minister that the information may be made public." Because both the government and the company would have an interest in the apparent success of the project, it was likely that one or the other would be tempted to prevent public release of especially embarrassing findings. While some valuable social research might be undertaken, the conditions under which they were to be undertaken and the provisions for public access to the results were probably insufficient to guarantee the highest level of objectivity and maximum public benefit.

Similar doubts apply to the expectation of experiential knowledge about environmental impact. Relatively thorough studies would be carried out during project construction and prior to final approval of a means of tailings disposal, but once the project was in operation any research into the project's environmental effects would be constrained by the same limitations as social research.

The technical and managerial lessons learned from Arctic mining experience at Strathcona Sound would probably be less controversial than those revealed by social and environmental research and less likely to be withheld. The major constraint in this case would be the limited extent of technological experimentation. Because of the determination to emphasize employment of native northerners, there would be new experiences in labour relations and personnel management which might provide lessons of benefit to proponents of future resource extraction projects. But the company

was not expected to introduce many technological innovations in the operation of the mine and mill.(211) Initial plans called for use of off-the-shelf technology. The likelihood of extensive subsequent experimentation would be small if, as expected, the project were only marginally profitable.

Finally, the opportunity provided for territorial officials to work closely with a resource company was unlikely to be of great significance in the evolution of territorial government. Dealing with resource companies already occupied a major proportion of territorial officials' time. The experience at Strathcona Sound could be rich due to company-government intimacy and plans for relatively extensive monitoring. But MRI (and Nanisivik Mines) was a small and inexperienced company involved in one project. It lacked the power and flexibility of the large multi-national corporations with which territorial officials had their most important relations. While some aspects of Strathcona experience might be useful for territorial officials, the techniques learned would not necessarily be effective in dealing with the dominant powers in the resource extraction industry.

In summary, the Strathcona project was expected by government analysts and decision makers to provide economic benefits to the government both directly, through royalty and corporate tax revenues, and indirectly, through taxes on employee incomes and reductions in the transfer payment needs of northern communities. It was expected to provide economic gains to intended beneficiaries of government action, including the native northerners and others who would receive wage employment due to the project, the Canadian shipping and ship-building industry which would receive encouragement to proceed with planned ventures into Arctic shipping, and the resource extraction companies which would profit from experiential lessons. Not all of these benefits would be unaccompanied by costs. Some benefits were exaggerated or insufficiently qualified by the officials who advocated and granted government support for the venture. But while the potential for economic benefits may have been overstated, it was probable that the project would bring economic benefits. The major question concerned the relative severity of the potential costs.

d) anticipated economic costs

DIAND officials carried out a relatively thorough assessment of the capital and operating costs likely to accrue to the federal and territorial governments from the Strathcona project. They estimated that \$16.7 million in government grants and loans would be required for infrastructural facilities at Strathcona Sound (airport, roads, dock, townsite) and that an average of \$770,000 per year would be required for various operating costs throughout the expected life of the project. However, they also argued that some of these expenditures would be recoverable or not attributable to the project.(212)

Of the \$16.7 million in capital assistance, DIAND analysts anticipated that \$7.9 million would be recoverable through repayment of CMHC loans for townsite construction or user charges at the government financed dock. The remaining \$8.8 million would be non-recoverable expenditures of \$3.5 million for airport construction, \$3.0 million for roads (including a road linking Arctic Bay with the new airport and mine site), \$0.8 million for the dock, and \$1.5 million for the townsite. However, the DIAND analysts decided that not all of these costs should be charged to the project. In particular, they argued that only \$0.9 million of the actual expected cost of the new airport should be attributed to the Strathcona project because a "new airport costing \$2.6 million had been envisaged for Arctic Bay within the next 5 years"; also \$500,000 each for townsite and road construction costs would have been spent elsewhere if not at Strathcona Sound.

These arguments were not entirely convincing. For the airport costs, forecasting of infrastructural construction in frontier areas tends to be over-optimistic about the future availability for funds. Many more facilities are "envisaged" than are in fact provided in a given period. For townsite costs, the the relocation of Inuit families to Strathcona Sound from the older communities in the north Baffin area would reduce the demand for new housing in these communities by some degree and the GNWT would reduce the number of new houses provided to them. But in most of the communities the severity of the housing shortages was such that relocations would probably not solve the problems. Any reduction in the provision of new houses or other community facilities would be protested vigorously.(213) For road costs, it is not easy to see how the construction of roads linking the project facilities and Arctic Bay would entail a \$500,000 reduction in needs for other road construction. Nevertheless, DIAND analysts concluded that of the \$16.7 million total capital cost to government, only \$5.2 million should be treated as non-recoverable costs chargeable to the project.

A similar approach was taken to the estimation of operating costs. DIAND analysts predicted that during the project life the average annual cost would be \$670,000 for government services, administration, and maintenance; \$400,000 per year would not be recoverable. In addition, the GNWT and the federal Department of Manpower and Immigration had estimated the probable costs of relocation and training programs for native northerners to be \$100,000 per year, if averaged over the life of the project. However, they judged that at least half of the necessary funds would come from existing programs. They assigned only \$50,000 per year to the project. In total, the DIAND analysts anticipated operating costs of \$770,000 per year but concluded that only \$450,000 per year would be non-recoverable and solely attributable to the project.

No other potential project costs were quantified. However, DIAND officials judged that when these costs were compared to the quantified benefits, the results were "inconclusive." (214) The decision to approve the project was therefore based on comparison of unquantified benefits and costs. DIAND officials were convinced that benefits would be predominant, but they recognized the possibility of certain social, environmental, and economic opportunity costs.

The authors of the DIAND memorandum to Cabinet exhibited awareness and concern about potential social costs due to unfavourable Inuit reaction to life in an "industrial milieu" or due to the eventual closure of the mine. They expressed confidence that such problems could be minimized by adoption of "substantial guarantees and social safeguards." (215) The possibility of environmental costs was also mentioned, although vaguely. The memorandum authors stated only that, while the major environmental problem, tailings disposal, had yet to be solved, discussions with MRI were continuing. For both social and environmental reasons, DIAND analysts should have provided the senior decision makers with more complete information. Because they had failed to carry out adequate assessments of either the social or the environmental implications of the project, DIAND officials and Cabinet members were in no position to draw meaningful conclusions about the potential significance of these costs.

Economic opportunity costs of allowing foreign processing of Strathcona concentrate and allocating scarce capital resources to Strathcona Sound were also noted. EMR analysts stated that "a case could be made that government support for both the zinc industry and the mining sector of the mineral industry could be better made elsewhere in Canada, with much greater employment resulting from the same government investment." (216) However they were willing to concede that compensating regional benefits might be anticipated. The opportunity costs of foreign processing were more serious.

e) processing

Under the project financing arrangements negotiated by MRI, two European smelterers, Metallgesellschaft AG of West Germany and Billiton BV of the Netherlands, each received 11.25 per cent of Nanisivik shares in return for financial backing. (217) Equity participation was, however, not the major reason for the involvement of these smelterers. For them and for the New Jersey Zinc Company, which was also to take part in project financing, the chief concern was for secure future supplies of lead and zinc concentrates. (218, 219)

DIAND's memorandum to Cabinet noted that MRI planned to sell 80 per cent of Strathcona concentrates to Metallgesellschaft and Billiton. By the time the development agreement was signed in June, it was clear that the remaining 20 per cent would go to New Jersey

Zinc.(220) The European and American smelterers were expected sign long term sales agreements with Nanisivik Mines and to process most if not all of the anticipated concentrate production. Because of this, the development agreement included assurance to MRI that the government would permit export of 1.6 Mt of concentrate, an amount which would exhaust the known reserves at Strathcona Sound.(221)

The assurance in the agreement was qualified. The authorization would apply to 1.6 Mt or to "such lesser amount that may be required to satisfy the loan repayments..." If a lesser amount was sufficient for loan repayment, renewal for export of the remainder of the 1.6 Mt was assured so long as the company was unable to reach at least equally satisfactory sales agreements with Canadian smelterers. Particular conditions were added to ensure purchasing opportunities for domestic processors. Throughout the period of mine production, the company was to "continue to assess possibilities for processing within Canada" and, after the debts to foreign smelterers were repaid, to offer at least 50 per cent of remaining concentrates to any Canadian processors willing to accept "terms no less favourable to the Company than those available elsewhere." However, neither government nor MRI officials expected there would be sales to domestic processors unless the project life was lengthened by further ore discoveries.

From the beginning of their involvement with the project, MRI officials anticipated that the ore would be processed in foreign smelters and that government authorization for exports would have to be obtained. For this reason, they met with DIAND officials before completing negotiations with Texasgulf for the Strathcona property. It is unlikely that the DIAND officials made any firm commitments at that time. However, apparently they gave the MRI representatives sufficient reason to assume that export authorization would be obtainable.(222)

The consultants reported that they had inquired into the possibility of domestic processing and had held discussions with Noranda Mines Limited, "the only Canadian producer of zinc metal geographically situated to handle Strathcona Sound concentrates." Noranda informed them that its current smelting capacity was fully committed.(223) The consultants also noted that a Canadian market might eventually open if new zinc smelting facilities were constructed in eastern Canada. However, they clearly expected that the bulk of ore concentrate would be processed in foreign smelters and focussed their attention on market conditions in Europe, Japan and the United States.

C.F. Agar, president of MRI, indicated that, although MRI had continuing ties with Texasgulf and had expected that Strathcona concentrates would be exported, the company had no predeliction for foreign ore processors or financiers. According to Mr. Agar, MRI officials attempted to find concentrate buyers and financial backers

in Canada before approaching foreign markets. They discovered that Canadian smelterers had no perceived need for Strathcona concentrate and sensed that the Canadian mineral industry was skeptical of MRI's ability to carry out the project successfully.(224) Foreign processors, in comparison, were much more receptive. Because they foresaw zinc shortages in the long term, they were willing to participate in project financing in order to secure reliable future supplies of ore concentrates.(225)

To MRI, it mattered little whether domestic or foreign processors received the concentrate. The company had narrow interests; potential profits, shipping costs and processing fees were of greater importance than the nationality of the smelterers.

Government officials had much broader interests to serve. For them, the implications of foreign processing were more serious. Although the export of unprocessed resources has been an economic tradition in Canada, the practice has been recognized as undesirable.(226) Raw exports, which have often been justified as sources of immediate revenues, are in the longer view a less reliable and usually less lucrative basis for a healthy national economy than domestic processing and manufacturing of national resources. Particularly when the resources being exported are non-renewable or renewable but threatened by over-exploitation, the long term costs can be very high. Moreover, there are significant losses of potential revenues when resources are not processed domestically.

The federal government, aware of the seriousness of these problems, decided that the first priority in Canadian mineral policy would be to encourage domestic processing of Canadian ores. Responsibility for enacting this policy lay with EMR. In EMR's preliminary evaluation report on the MRI proposal one of the major criticisms was that the Strathcona ores would be exported to foreign processors: "The federal government has announced that it favours a policy of further processing of Canadian primary products, and this department specifically believes that a higher degree of further processing of domestic base metal concentrates is both desirable and possible. Furthermore, while the management of mineral resources is the responsibility of both the federal and provincial governments, it would be appropriate for the senior government to take the initiative in this direction, a position which highlights the exclusive federal responsibility for minerals in the two territories, and the position of the Strathcona project as the first possible producer in a major new region - the Arctic Islands. Further consideration should be given to the processing of Strathcona ore during the life of the operation..."(227)

DIAND analysts expressed less concern about MRI's plans to export Strathcona concentrate to foreign smelters. In the initial DIAND assessment, foreign processing was not included in a list of project disadvantages with respect to government policies. Nor was

it mentioned in the discussion of broadly-defined project costs, where quantifiable costs were noted. Perhaps as a concession to EMR, this oversight was corrected by the time DIAND made its submission to Cabinet. The memorandum conceded that 80 per cent of the mine's expected concentrate production was already allocated to European smelterers, but suggested that Canadian processing could be significant if production from the Strathcona project extended beyond present expectations. Nevertheless, it must have been clear to Cabinet that approval would have to be granted or withheld on the basis of present expectations and that, in the absence of special government efforts to ensure availability of domestic smelter capacity, little or no concentrate from Strathcona Sound would be processed in Canada.

Two days before Cabinet made its decision on the Strathcona proposal, the then Minister of Energy, Mines and Resources, Donald S. Macdonald, reiterated the government's position on further processing of Canadian ores. In a presentation to the House of Commons Standing Committee on National Resources and Public Works, he stated, "Cabinet agreed that the first priority in mineral policy should be increased diversification of the Canadian economy through minerals." (228) The evident incompatibility of this policy with the Strathcona project did not prevent Cabinet from granting approval-in-principle.

Cabinet accepted DIAND's position that, although foreign processing was regrettable and steps to enhance the possibility of domestic processing were warranted, the policy and economic costs of foreign processing were not high enough to justify questioning the project's overall desirability. However, no estimate of the magnitude of these costs was included in any of the available documents concerning the Strathcona project assessment, despite the fact that a rough estimate was made by at least one of the government officials involved in the project assessment. (229) A DIAND economist calculated that, if for 10 years the concentrates produced by an operation the size of the Strathcona mine/mill (about 150 kt per year) were processed in Canada instead of exported, the total tax revenue gain for Canada "would be in the range of \$80 - \$150 million over the 10 year period." (230) This is a considerable sum. Moreover, it refers only to increased tax revenues. The total economic gain for Canada would be much higher. (231)

It is not known whether or not this particular estimate was made prior to Cabinet discussion of the Strathcona proposal. But an estimate of the potential losses to Canada due to foreign processing of Strathcona concentrate could and ought to have been made and included in the discussion documents. The failure to include such an estimate in the Cabinet memorandum indicated that the confidence of DIAND officials in the desirability of the project may have led them to present Cabinet with a project evaluation which emphasized the merits of the proposal and downplayed the less favourable aspects. Some of the quantitative estimates of anticipated project benefits,

which DIAND officials did make and chose to record, were no less inherently speculative than any estimate of losses due to foreign processing would have been.

Inclusion of a foreign processing cost estimate may not have altered Cabinet's decision on the Strathcona proposal. On the other hand, it might have inspired insistence on domestic processing of Strathcona concentrate and on efforts to find or provide additional Canadian smelting capacity. Insistence on domestic processing would almost certainly have entailed delay of the Strathcona project at least until new financing arrangements could be made.(232) However, it would have ensured retention of economic benefits and it would have provided an ideal demonstration of the federal government's dedication to further domestic processing of the Canadian resources under its jurisdiction.(233)

Provision of domestic smelter facilities for Strathcona concentrates would probably have required special government initiatives and would have entailed confronting problems related to domestic concentrate and foreign metal markets. Because of the market benefits of vertical integration, most smelterers prefer to process concentrates from mines they own or control.(234) In the Canadian zinc mining and smelting industry, the four major smelterers reserve most of their smelting capacity for their own concentrates.(235) These smelterers process less than half of the concentrates produced in Canada.(236) Consequently, expansion of the smelting capacity of current processors would not necessarily entail availability of capacity for Strathcona ores.

If the government were determined to have concentrates from the Arctic smelted in Canada, it might have been forced to act on its own or in conjunction with provincial interests or independent mines to provide the requisite smelting capacity. This possibility was, in fact, within the scope of the government's thinking at the time. While the Strathcona proposal was being evaluated, an inter-departmental working group was established to examine the possibilities for encouraging construction of smelting facilities in the Atlantic provinces where smelter construction would serve the goals of further domestic processing and of regional economic expansion.(237)

The processed product would have to be sold, probably in foreign markets since only about one-quarter of the zinc metal produced in Canada is used domestically.(238) Finding markets for refined metal would be more difficult than finding markets for raw concentrates. Because of the economic benefits of domestic processing, most industrialized countries prefer to import necessary materials in the least processed state possible. However, Canada was expected to be in a relatively strong position for sales of processed zinc. EMR experts anticipated that concentrates would be in limited supply in international markets and that countries which processed

domestic concentrates would have a considerable advantage over countries which relied on concentrate imports. In addition, Canada, as the supplier of "about one-quarter of the world's zinc requirements and ... the largest exporter of zinc concentrates and zinc metal in the world", would have considerable bargaining power.(239)

Despite the economic and policy advantages of domestic processing, and despite the apparent recognition, at least by EMR officials of the desirability and probable viability of further processing facilities in Canada, neither DIAND nor Cabinet gave serious consideration to the possibility of delaying the Strathcona project in the interests of finding or providing domestic processing facilities.

f) the resource base

The government's willingness to dispense with domestic processing in the interests of supporting a project with alleged advantages in other areas would have been more justifiable had the project not been adopted and advertised as "a new approach to natural resource development in the North" and had the resources in question been renewable. Extraction and export of renewable resources do not necessarily entail long-term costs. With proper husbandry and maintenance of extractive activity well below maximum sustainable yields, renewable resources can be exploited indefinitely. The same cannot be said for non-renewable resources.

Ore bodies, once exhausted, are not replenished. Continued extraction leads unavoidably to increasing reliance on technological advances and higher prices to permit exploitation of less accessible and less rich orebodies. Eventually, costs become too great and ore too scarce to allow maintenance of extraction rates. As production declines, the price of earlier profligacy becomes apparent. Unless the exhausted resources have been used to establish a society which can exist comfortably without them, the price will be extremely high.

The price to be paid by future generations for the present exploitation of non-renewable resources is seldom considered in project decision making. For the Strathcona proposal, both DIAND and EMR officials recognized that there was no present domestic need for the zinc and lead to be mined, but neither department exhibited noticeable concern about long term needs for the metals. Analysts in the departments were convinced that no shortages would be likely in the next few decades. Senior EMR officials conceded that for several Canadian minerals, including zinc and lead, "deposits which are being mined now or are considered mineable in the near future" would be sufficient to meet growing domestic and foreign demand only "to the 1980s."(240) They were nevertheless confident that further exploration would uncover new orebodies and that technical advances

combined with higher prices would open presently uneconomic reserves to profitable exploitation.(241)

This confidence will be to some extent justified. The potential for further zinc discoveries, particularly in the Territories, seems high. But Canadians have reason for caution when faced with the argument that future supply problems will be overcome by exploration, technology and price increases. Until recently, a virtually identical argument was used in relation to oil and gas in Canada.

Even if, as expected, the resource base proves adequate to support increased base metal extraction rates until the turn of the century and beyond, the basic problem remains sooner or later the exploitable orebodies will be exhausted. The relative abundance of zinc and lead ore in Canada does not reduce the government's responsibility to ensure that these resources are not exploited unnecessarily and without regard for the needs of future Canadians. The predominant attitude of the senior decision makers concerning the proposed Strathcona mine seems to have been that the future would take care of itself. Shortly after the announcement of the government's decision, the then Minister of Indian Affairs and Northern Development, Jean Chrétien was quoted saying, "I don't buy this theory we should sit on our resources. We should maximize the development in Canada - wherever it's practical.(242)

The embodiment of this attitude in the Strathcona project is probably a matter for greater concern than the actual non-renewable resource exploitation directly involved. The mine was approved as a pilot project which, government officials hoped and intended, would be "a model for future mineral developments in the Arctic." Moreover, it would be the first mine to open in one of the remaining frontier areas, the Arctic Islands. DIAND officials clearly indicated that they expected other mining projects to follow the Strathcona mine in that area.(243) Thus, the project was certain to be regarded as a precedent-setting venture and the Strathcona decision making was likely to set the standard for future deliberations. If the practice of discounting future metal needs is adopted in the evaluation of subsequent proposals for larger-scale projects, the long term significance of the Strathcona decision could be very much greater than that of the Strathcona mine itself.

In the long term, adoption of the Strathcona precedent will have other major implications with respect to the non-renewability of the resources being extracted. Inuit and other northerners would be led into dependency on the industrial non-renewable resource economy - an economy which is not only doomed to eventual collapse but is, in almost every way, contrary to the traditional Inuit economy.(244) For native northerners, life in the industrial economy almost certainly entails neglect if not rejection of traditional practices and activities. And for most of the native people, even for community

leaders, it requires acceptance of the least secure, least prestigious, and least influential positions in the process of extracting non-renewable resources. Hugh Brody forecasts an especially bleak future: "The most recent trends are pushing native people increasingly towards the lowest and least certain rung on the national class ladder: if separated from his own means of production and unable to have a sure relationship to the intruders' means of production, the Eskimo - like many Canadian and American Indians before him - will be turned into a migrant worker, a casual labourer, and - as this lumpenproletarian condition develops - prostitute, petty thief and beggar. Abundant signs of this course of events are already visible. The problem will not be cleared away by promises of high pay at the golden frontier: short term booms that are so characteristic of frontier development only worsen the problems that will follow."(245)

At very least those assimilated into the industrial resource extraction economy will suffer a considerable socio-cultural loss. The old skills and attitudes which formed the basis for economic survival prior to the coming of extractive industries, will no longer be retained by those who have adopted the new ways. The new skills and attitudes may serve some northerners well for a time, even though they will be required to live a somewhat unsettled existence following the successive booms from project to project across the North. But the new skills and attitudes will be of little use when the remaining non-renewable resources of the North can no longer be profitably exploited. At best the extractive economy can provide short and medium term benefits; in the long term it threatens disaster. If extraction of non-renewable resources is allowed to become the dominant aspect of the northern economy, and if the short term benefits from extractive activities are not used to create and nurture an indefinitely sustainable economy, then the eventual social and economic costs of this "development" will be incalculable.

Responsibility to future generations does not entail rejection of all proposals for non-renewable resource exploitation. Nor does government approval and support of the Strathcona project ensure the future predominance of extractive industry in the North. However, the Strathcona mine was very clearly presented as a pilot project which would show the way for other similar projects in the future. And there is no evidence in any of the available documents that concerns about the long term effects of a development strategy based on non-renewable resource extraction were raised during the decision-making process.

Government officials were not utterly lacking in foresight. From the very beginning of project deliberations, DIAND officials demonstrated concern about the life of the mine. Their insistence on a minimum 15-year life expectancy was intended to postpone the eventual closure of the mine as long as possible, allowing time for further exploration, development of worker skills, and initiation of

subsequent projects to provide continuing employment opportunities. Also, DIAND ensured in the development agreement that the company would act to minimize at least some of the potential problems accompanying mine closure. Unfortunately this foresight seems not to have extended beyond the expected date of orebody exhaustion at Strathcona Sound. Anticipation of the full implications of non-renewable resource extraction required a much longer view.

CHAPTER IV

RESPONSIBILITY FOR THE DECISION

The central event in the Strathcona project decision making was the Cabinet decision to grant approval-in-principle to the project with government assistance. Consequently, ultimate responsibility for the decision and the quality of the decision making rests with the federal Cabinet. But because of the considerable burdens on Cabinet, careful and thorough review by Cabinet of all proposals is not possible. A large portion of the credit or blame for any Cabinet decision rests with the proponent department(s).

The government proponent and the dominant force in the decision making concerning the Strathcona project was the Department of Indian Affairs and Northern Development. Other departments were consulted during the evaluation of the MRI proposal and were involved in the negotiation of the development agreement, but none wielded influence comparable to DIAND's. The Government of the Northwest Territories, which was, at senior levels strongly in favour of the Strathcona project, played a generally supportive role.(1)

Within DIAND, the project decision making was the responsibility of the Assistant Deputy Minister in charge of the Northern Affairs Program. Three branches of the Northern Affairs Program were concerned with the Strathcona proposal - the Northern Natural Resources and Environment Branch, the Northern Policy and Program Planning Branch, and the Territorial and Social Development Branch (see Appendix I.) Because the Strathcona project was viewed by DIAND officials as a significant and precedent-setting proposal and therefore one which raised matters of policy, the Northern Policy and Program Planning Branch dominated the decision-making process.(2)

The Northern Policy and Program Planning Branch administers development incentive programs, deals with interdepartmental relations, and formulates overall northern policy. The division of this branch which contributed most to decision making on the Strathcona proposal was the Northern Program Planning Division. As can be seen in Table I.1 in Appendix I, the division is charged with reviewing development programs and conducting economic studies on resource development and northern transportation. Not surprisingly, this branch, which played the central role in the Strathcona decision, approached the proposal and the relevant policy issues largely from the point of view of the economic factors in resource development. Social and environmental concerns were the functional responsibility of the other two branches.

The Territorial and Social Development Branch is responsible for considering the general social effects of such ventures as the proposed Strathcona mine (see Appendix I, Table I.2). There seems to have been considerable discussion of the proposal within this branch

throughout the decision making process.(3) Nevertheless, its contribution to the actual decision making was apparently minimal. The only significant socially-related study which may have entered the process at an effective level - a report on the possibilities for employment of native northerners - was compiled by an official of the Northern Policy and Program Planning Branch.(4)

The Northern Natural Resources and Environment Branch (see Appendix I, Tables I.3-I.6) plays a largely regulatory and administrative role in the area of northern resource development. It also shares with the federal Department of the Environment responsibility for environmental protection in the territories. The weakness of this branch's voice in the decision-making process is indicated by the failure of the decision makers to press for an assessment of the environmental impact of the Strathcona project before Cabinet approval and support for the venture were sought.(5)

To the extent that DIAND's organizational structures shape its approach to the consideration of issues and proposals, the separation of social and environmental from economic and policy functions in the organization of the Northern Affairs Program may explain the evident weakness of social and environmental considerations relative to economic considerations in the assessment of the Strathcona proposal. As presently structured, the Northern Affairs Program is organizationally inclined to give greater attention to economic concerns in its policy considerations than to social or environmental concerns, even though social and environmental concerns are listed before economic concerns in the government's official "order of priorities in the North."(6)

It is, nevertheless, unlikely that reorganization of the Northern Affairs Program would prevent recurrence of the failings of the Strathcona decision making. By themselves organizational reforms contribute more to the appearance than to the reality of change. They do not penetrate to the roots of problems.

CHAPTER V

CONCLUSIONS

The general principles for decision making in the public interest are not difficult to identify. It is only fair, reasonable and prudent to become as well informed as possible about all potential effects of a project or action before making final evaluations, to involve expected beneficiaries and victims fully in decisions that will affect their lives, and to use every opportunity to enhance the quality of life to be inherited by future generations. Granted, these principles are not easy to put into practice. They are particularly difficult to implement in decision making concerning the complex, large-scale projects which typify industrial economies. But this in no way reduces the validity or importance of the principles.

Despite the obvious sensibleness of these principles, they have not, until recently, been granted widespread recognition. Their application is still rare and is frequently resisted with considerable vigour. This is not surprising for they challenge a long dominant conviction that industrial economic expansion necessarily brings net benefits. Although this conviction has been shown by many regrettable experiences to be false if not pernicious, it has served the interests of industrial project proponents and continues to be strongly defended by them. Moreover, both industry and government officials have found it to be a useful justification for an alliance, based on a perceived identity of interest, which has been especially apparent in the exploitation of northern resources.

Within the last decade undeniable evidence of social, environmental and economic costs and increased public concern has forced government officials to begin to review project proposals more carefully and critically. The Strathcona agreement provides a clear indication of the degree to which government officials have become aware of the hazards of resource exploitation projects and the need for interventions to ensure benefits. Compared to previous arrangements between government and industry for mining projects in the territorial north, the Strathcona agreement represents a laudable advance.(1) If only though the breadth of concerns expressed and the topics covered, the agreement attests to the government's adoption of a more comprehensive, integrated, and thoughtful approach to the issues raised by such project proposals.

The decision making which led to the signing of the Strathcona agreement also left a great deal to be desired. The federal government failed to ensure meaningful consultations with the people to be affected and proceeded without a thorough assessment of potential social impact, despite the spirit and letter of its own official northern development policy and the advice and recommendations of its own experts.(2) Similarly, the government failed to carry out an environmental impact assessment or even to collect

essential baseline data prior to the decision, in contravention of an explicit Cabinet directive which required such an assessment before any commitments or irrevocable decisions were made.(3) The government's mineral policy dedication to domestic processing of Canadian raw materials was also overridden.(4)

In extreme cases, contradiction of stated policies may be justified by the extent and necessity of guaranteed benefits.(5) However, in the Strathcona case, no such justification is apparent. Government officials rationalized project approval and the granting of \$16.7 million in grant and loan assistance largely on the basis of anticipated employment benefits for north Baffin region Inuit and experience benefits for future arctic mining ventures.(6) But there was no evidence of serious and immediate Inuit needs and desires for industrial wage employment.(7) And, in the absence of social and environmental impact assessments, there was no satisfactory basis for judging whether or not the learning experience was likely to be a happy one for the people and environment to be affected by it. Nor, indeed, was there an adequate basis for determining whether the experiment itself was well-advised, well-designed, and well-timed.

The fact that the actual practice of decision making in the Strathcona case was allowed to contradict government policy - in particular the March 1972 policy document on northern development and the December 1973 Cabinet directive on environmental impact assessment - suggests not only that government officials had retained their prior dedication to resource extraction as the vehicle for northern development, but also that they feared this development strategy would be threatened by enactment of the new policies. The desirability of a development strategy that could be threatened by enactment of such reasonable policies is doubtful. It is disturbing that the policies and not the strategy - or the project - were sacrificed.

The Strathcona decision was the first to be made concerning a resource extraction project subsequent to the adoption of the new policies. It is possible that the government's decision-making performance will improve in the future, that the policies may be practiced, and that more concerted attempts will be made to evaluate future project proposals in a genuinely comprehensive, participative, and future oriented manner.(8) But there is no assurance of this. On the contrary, there is reason for continued public concern about the practice of northern development and for careful public scrutiny of the efforts of those government officials who are responsible for the welfare of the people, environment and resources of the territorial North.

Watts, Griffiths and McQuat Limited

SUMMARY OF THE FEASIBILITY STUDY

Detailed studies of the Strathcona Sound zinc-lead project on northern Baffin Island in the Northwest Territories have been carried out on behalf of Mineral Resources International over a one-year period. The studies have shown that the Strathcona Sound project, despite its far northern location, has the potential to become a profitable mining operation, and to be the first major industrial project in either the eastern or high Arctic.

Situated 475 miles north of the Arctic Circle, the deposit is less than two miles from the deepwater of Strathcona Sound, accessible to ocean shipping for a minimum of two months of the year.

The climatic conditions of northern Baffin Island differ from more southerly locations in that the winters are longer and include a period from late November to early February when the sun does not rise above the horizon, but the temperatures and winds are not as extreme as found in the mid-continent regions of Canada. Long daylight hours prevail from April to September, permitting continuous outside activity.

Work carried out to date on the project by Texasgulf Inc. and by Mineral Resources International Limited at a total cost in excess of \$4,000,000 has developed the project to the point where construction could commence in the Spring of 1974, with the objective of achieving full-scale production by April, 1976. A substantial quantity of equipment purchased by Texasgulf Inc., is on site and has been augmented by equipment and fuel shipped to Strathcona Sound by Mineral Resources International during the 1973 shipping season. This will be sufficient to start construction activities in early 1974, prior to a major sea-lift in August, 1974.

Ore reserves of 6,971,000 tons have been delineated, with an average grade of 14.12% zinc, 1.40% lead and 1.77 ounces per ton silver. Zinc grades mined during the first eight years of operation will be between 15% and 17%.

The ore reserves are sufficient to assure a minimum life for the project of 13 years, at a milling rate of 1,500 tons per day. There are good possibilities for adding to the ore reserves at depth beneath the main deposit, and elsewhere on the property.

Mining of the deposit is proposed using a highly mechanized room-and-pillar method with trackless equipment, for which the orebody configuration is ideally suited. Ground conditions are excellent with a very competent dolomite rock enclosing the majority of the orebody. Access to the orebody would be via a horizontal adit.

The ore is very coarse grained and metallurgical testwork has demonstrated that very clean concentrates grading 60% for both zinc and lead, can be produced with recoveries of 95% for zinc and 90% for lead. The zinc concentrates have a silver content of 8 to 10 ounces per ton.

Annual production for the first eight years of operation will be 120,000 to 140,000 short tons of zinc concentrates, and 6,000 to 12,000 short tons of lead concentrates. A large storage building will be erected at Strathcona Sound to store the annual production of concentrates to await marine shipment during the months of August and September.

Adequate supplies of freshwater are located on the property. Power will be supplied by a diesel power plant with an installed capacity of 6,000 kilowatts. Storage tanks with sufficient capacity for one year's fuel supply will be erected near the marine terminal.

Favourable conditions exist for the construction of a large dock, the first in the Canadian Arctic. Sufficient depth of water for 50,000-ton vessels is found in close proximity to the shore.

A site for a major airstrip capable of handling jet aircraft, has been identified between Strathcona Sound and Arctic Bay. The airstrip would serve as an alternative for Resolute Bay, which currently handles all the air traffic in the high Arctic, but which does not always have favourable weather conditions.

An open community is planned, to be expanded and developed in accordance with progress made by the Inuit residents of Baffin Island

in adapting to an industrial society. A development plan in four stages for the townsite has been prepared, to accommodate an eventual population of 850 residents.

It is intended to provide maximum opportunity for the Inuit to gain employment and training at Strathcona Sound and we are confident they will ultimately occupy the majority of positions on the project. The greatest single problem facing the Strathcona Sound project is undoubtedly that of attracting and maintaining a stable work force in a remote location. We feel the best solution to this problem is the employment of the maximum possible number of Baffin Island residents.

Environmental studies have been initiated but more remains to be done in this area, particularly with respect to assessing the impact of marine disposal of tailings in Strathcona Sound.

Ice and navigation studies, together with discussions with shipping companies with interest in Arctic shipping, have confirmed the feasibility of shipping for two months per year with ice-strengthened ships currently available.

Markets for zinc are currently very strong, and the outlook for the future is equally good. A great deal of interest in the Strathcona Sound project has been expressed by European and Japanese zinc producers and to a lesser extent, by zinc smelters in the United States. Little difficulty is anticipated in disposing of the entire concentrate production with long-term marketing arrangements being likely for the bulk of the zinc concentrates.

Total estimated capital requirements to bring the Strathcona Sound project into production are \$45,044,000. Generous allowances have been made for all areas where the Arctic location of the project could cause major overruns in estimated capital costs.

Operating costs per ton of ore milled are estimated at \$14.36 in 1973 dollars. Escalation of costs is expected to be fully covered by corresponding increases in zinc prices.

Good co-operation has been received from all levels of government and we have worked closely with the Department of Indian and Northern Affairs, Ministry of Transport, Government of the Northwest Territories and the Arctic Bay Settlement Council, during the feasibility study period. We expect strong support and financial assistance to be provided by government to facilitate the realization of the Strathcona Sound project, because of substantial benefits the project will have for the residents and the development of the eastern Arctic.

Our economic analysis of the project indicates that a Discounted Cash Flow rate of return of 15% on the project cash flow can be achieved, with a zinc price of 22.8 cents per pound and government assistance for the dock and airstrip. Higher rates of return would result at higher zinc prices and additional government support.

As a consequence of having carried out this detailed study of the Strathcona Sound project, we are confident the project can be successfully developed and be a viable operation, provided the anticipated government support is forthcoming and satisfactory marketing arrangements are made incorporating a minimum guaranteed zinc price of 22 cents per pound during the initial years of operation when debt obligations are being repaid.

Accordingly, we recommend that Mineral Resources International Limited pursue and finalize discussions with government, make final arrangements for the marketing of the majority of the concentrates, and secure the financing required to bring the Strathcona Sound project into production.

The Strathcona Sound project presents a unique opportunity for private industry and government to collaborate in the development of a viable economic project and to demonstrate that mineral and other natural resource developments in the Canadian Arctic are possible and feasible.

Appendix B

Arctic Bay, N.W.T.
November 15, 1972.

Mr. G. Farquharson,
Watts, Griffis, and McOuat Ltd.

Dear Sir,

We, the Settlement Council of Arctic Bay, are writing our thoughts concerning the mine at Strathcona Sound, and the thoughts the local people have concerning the commencement of activity at the mine. Before activity begins, we are expressing the desires of the people of Arctic Bay and the Settlement Council.

We are aware that the mining consultants have written to Yellowknife and Ottawa to solicit opinions on the mine, and that the governments in both Ottawa and Yellowknife have answered, stating the things that they would like done, but both governments replied without first asking us, the people of Arctic Bay, our opinions on the subject and what we desire here in our own land. And this, despite the fact that we know that the development of the mine is of utmost importance to us and to our area. Therefore, although we have not been asked to do so, we wish to write to you to advise you of our thoughts.

Townsite

We wish to live here in Arctic Bay; we do not want to live at the mine site in Strathcona Sound, or to move. And we think that the people who will work at the mine should have their homes in Arctic Bay, with a bunkhouse up at the mine site. One reason for this is so that the women and children can be away from the actual work site.

The mine site has very little suitable place for erecting a large number of buildings, and is very windy. Here in Arctic Bay there is more space for building many houses, and it is a much better place for a home than is Strathcona Sound. It is also a favourable location for hunters and has an excellent harbour for those with boats.

Water Supply

At the mine site there is only one source of water. Whereas here in Arctic Bay, if the population increases, there are two lakes with very good drinking water. We are now using the small lake as our source of water. The larger one is not used presently but could be.

Road

There would need to be a road from Arctic Bay to the Mine. Attagutsiak has worked at the mine, and knows the most practical areas through which a road could be built.

Airstrip

At the end of the water lake at the Strathcona Sound mine site is a location where an airstrip could be built, of approximately 9,000 feet length, and suitable for jet landings.

School and Nursing Station

There is a school and nursing station in Arctic Bay. If the population increases, these would need to be enlarged.

When decisions are being made by the government concerning our area, we would appreciate it if the Settlement Council of Arctic Bay could be queried first.

We would also like your comments, in person or by letter, on your thoughts concerning the points we have raised in this letter.

Yours sincerely,

Levi Kalluk,
Chairman, Settlement Council
of Arctic Bay.

N.B. This is a translation. The original was written in Inuttitut syllabics. It was signed by virtually the entire permanent adult population of Arctic Bay.

Arctic Bay Protests Strathcona Townsite

Opposition to the building of a townsite in Strathcona Sound is mounting in Arctic Bay. Following is a letter sent to Commissioner Hodgson by the Settlement Council of Arctic Bay and a statement by Arctic Bay teacher Kenn Harper who lost in the March 10 Territorial elections by a slim margin to Grise Fiord settlement manager Ludy Pudluk.

The Editor

Dear Mr. Hodgson,

We, the Settlement Council of Arctic Bay, would like to voice our strong objection to the construction of the town being planned for Strathcona Sound. At no time were the residents of this settlement, or this council, ever consulted as to the desirability of having a town built at Strathcona Sound.

In November of 1972, the Settlement Council first became aware of the negotiations being conducted between the governments and the mining company for the development of a mine at Strathcona Sound. At that time we insisted that we should be consulted about any development in this area; as we had not been, we wrote an unsolicited letter to the mining consultant firm of Watts, Griffiths and McQuat Ltd., a letter signed by 98 permanent adult residents of Arctic Bay, with nine carbon copies to interested parties. That letter supported, as we still do, the development of Strathcona Sound as a mining operation, a place where men could go to work, as they do to Panarctic oil sites, and bring their money back to their home settlements. We expressed our desire also at that time for a road from the mine to Arctic Bay, to allow men from this community to commute to the mine and to allow this community access to the airport. We must stress that the Strathcona Sound project was at the time presented to us as being a planned bunkhouse operation, and it was with that understanding that we approved the development. Had we been informed at the time that the mining company planned a full-scale town at the mine site, and had we also been informed that the Government of the

Northwest Territories hoped that Strathcona Sound would become a major regional administrative centre for the High Arctic, the opinions we expressed would undoubtedly have been very different.

Until very recently, we continued to regard the development at Strathcona Sound as a planned bunkhouse operation. The fact of the proposed town, where workers would live at the mine site, and the development of a major regional government centre, are pieces of information which have been given to us piecemeal and only recently; they are matters on which we were not consulted - our opinions were never solicited. We have been simply told the nature that the developments

at Strathcona Sound will take.

We support the comments made against the proposed town by Mr. Bryan Pearson, Territorial Councillor, in the discussions concerning the Strathcona Sound project during the last session, that the Territorial Government congratulates itself on the nature of the consultation which has taken place between the mining company and the Territorial Government on the one hand, and the Arctic Bay Settlement Council on the other hand; we however, recognize that the consultation for what it has been - tokenism - for we have been consulted on numerous matters of small importance, but rarely on any thing of any consequence. This tactic has succeeded, until recently, in keeping this council from making any statement on the real issues at stake here - the development of the townsite, social implications of the development of a town at Strathcona Sound on the population of Arctic Bay, the future of the settlement of Arctic Bay if a town is developed there, the future of neighbouring settlements in the Baffin Region. (In a previous letter, we mentioned the example of the fate of Apex due to its proximity to Frobisher Bay, and the fate of Aklavik due to its proximity to Inuvik, in fact, the fate of all one-visible small settlements situated close to larger, more developments.

We fail to be reassured by the Territorial Government liaison officer's statements to us, implying that we are foolish to envision such a fate for Arctic Bay.)

We have been slow to realize completely the nature of the developments planned for Strathcona Sound. Had there been any meaningful consultation in the past, this would not have been allowed a virtual free hand in its discussions and "consultations" with this Settlement Council, largely unsupervised by any government personnel until recently, such would not have been the case. Had this Settlement Council not been duped, two years ago, into rejecting the potential assistance of Inuit Tapirisat of Canada in consultations, such would not have been the case. Had we been provided with a copy of the Feasibility study prepared by Watts, Griffiths and McQuat when it was first completed instead of only last month, such would not have been the case, for we would have realized the scope of the developments planned. As none of these things occurred, we have only recently realized the full extent of the plans for the development of Strathcona Sound, and the threat that this poses to the way of life of the people of Arctic Bay.

We must now state very clearly that the Settlement Council of Arctic Bay opposes the development of a town at Strathcona Sound. A motion to this effect, which continues to recommend a bunkhouse operation to which native employees from North Baffin settlements could be flown on a rotational basis such as Panarctic uses, was passed at a meeting of the Settlement Council on March 4.

By copy of this letter, we are advising interested parties of our decision. You will note that in January, in a letter of which you received a copy, we authorized Inuit Tapirisat of Canada to act on our behalf, and in consultation with us, on all matters concerning the Strathcona Sound project, and we will expect their full support on this.

Yours Truly,
Levi Kalluk,
Chairman, Settlement

Appendix D

Transcript of
Meeting between DIAND officials and the Settlement Council of
Arctic Bay, February 3, 1974.

The following transcript is somewhat incomplete at the beginning. According to the videotape of the meeting taken by Eric Tagoona of the Inuit Tapirisat of Canada, the initial remarks of the Chairman were followed by a statement by the DIAND official (Bissett) regarding the purpose of the visit. He said that the government wanted to hear what the people had to say about the mine because both the federal government and the GNWT wanted to ensure that the project be carried out properly and there were many things that Ottawa did not know about what the people were thinking.

The Settlement Council Chairman then began with the points listed on the Council's agenda. The first part of the discussion was approximately as follows:

CHAIRMAN: Item No. 1 - We all know there will be a mine at Strathcona Sound. People from Clyde River, Pond Inlet, and Arctic Bay will get jobs. People from the other communities will come to live at the mine townsite. What will happen to them afterwards?

BISSETT: We know that the mine will last for 15 years. We do not know what else will happen in the North. Maybe there will be other mines.

CHAIRMAN: Item No. 2 - What happens with Arctic Bay workers. Will they travel to the mine or live in the mine townsite. (No answer - decision that Item No. 2 was not a concern of the people from Ottawa.)

MEETING BETWEEN DIAND AND
SETTLEMENT COUNCIL - ARCTIC BAY
"STRATHCONA SOUND"
FEBRUARY 3, 1974

The Chairman Mr. Attagutsiak, declared the meeting open after a brief welcome to the visiting party. Reference was made to the Agenda and it was pointed out that item No. 2 did not concern the people from Ottawa. It was suggested that we move on to item No. 3.

CHAIRMAN Item No. 3:- Deals with liquor in the proposed Mine Site.

CHAIRMAN It will be better if there was no liquor in the proposed Mine Site at all.

BISSETT The Government in Ottawa knows that the Arctic Bay people are concerned about liquor at the Mine.

This is one of the things the Government in Ottawa and the Territorial Government have been talking to the company about.

CHAIRMAN The reason why the community is particularly concerned about liquor on the proposed mine site is because if there is liquor perhaps the people working there would not do as much work as if there was no liquor at the site.

BISSETT This problem will have to be solved by the mining company, the people of Arctic Bay and the Government.

CHAIRMAN One of the many reasons why we brought up the question of liquor in this mining site is because, we know that there will be people coming into the mine to work and we know their relatives will perhaps be worried about them because there will be liquor in the mine.

BISSETT I think the solution to this problem comes in the form of a strong local Government. When the mine is operating there will be a town and the people who are in local Government will have a strong say.

CHAIRMAN I wish to proceed to item No. 4 if there are no further comments or questions on item No. 3 ... Item No. 4 deals with a road from Arctic Bay to the Proposed Mine Site. It is approximately 8 miles or maybe more from Arctic Bay to this location. If the mine goes into operation we would like to have a road built from Arctic Bay to the mine site.

and we would like to have it kept open and properly maintained in the future even if the men from Arctic Bay who go there to work finally decide to live there.

BISSETT

I would ask if this relates to the Airstrip that would be built at the mine. Do they mean they want the road maintained so that the Airstrip can be used after the mine is closed?

CHAIRMAN

Yes.

BISSETT

The people who are studying the airstrip are taking this into consideration so that the airstrip will be used if and when the mine closes.

I must say for now we understand the mine will last for 15 years but the mining Company will always be looking for new ore and the mine may last longer.

The Government had told the Company that it would like the Company to try hard to find more ore.

RESIDENT

We understand what was said on item No. 4.

If the mining Company builds this airstrip will other airplanes be allowed to land on this airstrip?

BISSETT

The mining Company has asked the Government to help build the airstrip. The airstrip will be open to other air traffic. The Government will operate the airstrip.

RESIDENT

What about rental deductions for housing, will the men receive their full pay cheques or will there be payroll deductions for house rent?

BISSETT

What I know of the mine now the housing will be a separate thing. He will pay his rent to the town or to a housing association connected with the town. The deductions from a pay cheque are an easy way of paying rents. They might use this method.

CHAIRMAN

We will bring this up again at another meeting, because this method is about the best that we can think of; this way we will not accumulate rent. I think that we pretty well understand item No. 5. Perhaps we should go on to item No. 6.

We know that in Arctic Bay, not all the men here would want to work at the mine. Some would prefer to remain behind, perhaps to hunt and live off the land in this country. Right now, quite a few men from here go out to work for the Oil Company. When this new mine opens up, we would like to see men working for this Company too, but we would also like to see some men staying behind to get country food for the community.

BISSETT Is this the way it works in Arctic Bay now?

CHAIRMAN Right now, we know that they are men working for Panarctic who get so many days off and work so many days. Whenever these men come back from the Oil Company and they have an opportunity they go out caribou hunting or seal hunting or whatever to catch country food.

CHAIRMAN Perhaps we can proceed to Item No. 9 on our agenda.

RESIDENT We know Panarctic hire Eskimo people the majority of them are men. What about jobs for women?

BISSETT Jobs for Women

The Government is interested in this idea that there should be jobs for both Inuit men and women as you know there will be a town.

RESIDENT We want our we hope that many Inuit men and women will find jobs at the mine or in the new town. There is nobody over there right now but when the mine opens and the town is established would families be asked to move there or could they move there if they wanted to or just the men who would be working there be allowed to move over there?

BISSETT To build a mine it takes a lot of work and a lot of time. For the first year, I believe the mine will employ men. It takes time to build a town.

When the mine is working, it will be up to the Arctic Bay people to decide where they want to live at Arctic Bay or at the mine.

The Government is very worried about the idea of only a bunkhouse, where only men would live.

We would be interested to hear the feelings of the Arctic Bay people on what they want.

RESIDENT Perhaps a house like a bunkhouse would be ideal for a young couple who don't have any children but if you have children you need a better house.

BISSETT What I actually meant was that at some mines in Canada they do not have women, they only have men working there without their families. I would like to know what the Arctic Bay people think about this.

BISSETT What kind of housing accommodation PE BEN provides for their employees?

RESIDENT The type of housing like the PE BEN accommodation would not be adequate for a family with children and especially children of school age. A man with children should have a nice house.

BISSETT I take it that the people at Arctic Bay feel they want houses at Strathcona Sound for families.

RESIDENT We want nice houses for our family.

RESIDENT Last year when they started recruitment here they asked us what kind of housing we wanted and the people said if the men would be travelling back and forth, a bunkhouse would be alright, but if families would be living there they would want housing like here at Arctic Bay.

Also here is another question I WANT to bring up, the question is:- Will the Company be providing transportation for the people who work at Strathcona and live at Arctic Bay.

BISSETT I think this point should be clarified. Talk about the type of housing related to the life of the mine.

When the Government talked to the Company, the short time that the mine would last raised questions about the kind of development.

I think, I am right when I say, I believe the Arctic Bay people want a town rather than just a mine with bunkhouses for the men.

RESIDENT The kind of accommodation the Oil Company has right now is not safe for a family because when there is a strong wind these poorly built accommodations can be blown away with the wind.

RESIDENT When the mine is developed and the community over there is developed will there be nurses over there or will they remain at Arctic Bay.

BISSETT There are certain laws about mines that require that there be health facilities for the workers and their families. The housing at Strathcona Sound, will be according to the number of families that want to live there whether they come from Arctic Bay, Pond Inlet, Igloolik or Clyde River.

CHAIRMAN Are there any questions on Item No. 9 concerning housing?

RESIDENT One question, when is the Company starting or when do they want to start?

BISSETT

The Company has said, it would like to start this year, but there is a problem with money.

The question of whether the people from Arctic Bay will move to Strathcona Sound or stay at Arctic Bay will be I think decided by the Arctic Bay people.

If I might go back to George's question for a moment I must add that to my knowledge the company is most anxious to start the mine this year. They are meeting all the time with the Government and the Bank. The Government is like the Settlement Council. It must spend its money carefully.

RESIDENT

We must understand that we know, the mine will be in existence for approximately 15 years and during that time that development will be slow. We must understand also that the accommodation will not be first class when it first opens and we should realize that in a few years or more that the accommodation will improve and everything else will also improve. We must also think that the accommodation will not be of the best, the first year when it first opens, and we must accept the housing condition as it is because we know in the future things will improve.

BISSETT

That is true. The mine says it will take up to 4 years, to get the mine and the town completely finished. As far as housing goes, the housing looks good. Today, houses can be built very quickly.

The Government would be very concerned if living conditions are not good from the beginning.

RESIDENT

Perhaps there should be a meeting with representatives from the mining Company, and people from Igloolik, Pond Inlet and Clyde River or which ever communities that will be involved. There could be one representative from these communities who would meet with these people from the Company and discuss the housing situation among other things.

BISSETT

That is a very good idea.

The mine had said it intends to visit the communities.

CHAIRMAN

Unless there are any comments or questions on Item No. 9, I wish to move on to Item No. 10. After that, if there are any questions or comments, everybody is welcomed to ask any question.

RESIDENT

When the mine is open and it is fully functioning and the people are removing ore and rocks that is not good to anybody where will all this waste go to. After they have taken all the good mineral out of it?

BISSETT There are laws dealing with mine waste, the waste rock will probably be put back into the mine when mining is finished.

RESIDENT When the mine is in operation will they work on Sundays as well?

BISSETT The mine is planned on a 40 hour week. My understanding of the mine is that the workers will have a choice as to the number of hours they wish to work.

But it will be very difficult to run the mine, if workers did not want to work at least 40 hours or 5 days a week.
- Some workers will work during the day.
- Some workers will work at night.

WHITE
RESIDENT

I don't think we are finished for unless I am mistaken when the preliminary work is done on the roads, airstrip and housing, unless that is counted as part of the mining operation in itself, then could you really tell us how many jobs will there be for Eskimo and white employees in the actual mining operation?

BISSETT When the mine is in full operation, the mine has said there will be 100 jobs for Inuit at the mine and 23 jobs in the town.

The global work force at the mine is around 150. Population at the mine will be 850 people of which there will be 620 Inuit.

That, of course, includes men, women and children. The figures, I am quoting are from the study the mine gave to the Government.

WHITE
RESIDENT

We discussed medical services housing facilities and the people in the area should be discussing recreational facilities.

BISSETT The mine and the Government have talked about recreation, they have talked about a gymnasium, an arena, and a swimming pool. The plan of course, have not been finalized.

WHITE
RESIDENT

I have a question on the shift work by miners. Under the old plan the last I heard from the mining president on staff was that the white people that were coming in they would come in and work for 3 months, or 6 months I am not sure but with the situation now with the bunkhouse what is the turn over for time in and time out. In other words do they come for six weeks and work for a week or what kind of a situation will happen.

BISSETT

I am sorry that I cannot say what the plans of the Company are in regard to white miners but, I will say this, that the Company has made provisions for time off for both white and Inuit workers.

WHITE
RESIDENT

I ask this question because the previous question that was asked about recreation the whole idea of the previous Townsite with no permanent family situation was that the white people that were coming in and would remain long enough to get a feeling of the area and develop the town socially and recreational as a family situation but now with the bunkhouse situation the people that are coming in will most likely be single they will probably be coming in on some sort of a term contract and the length of time that they will stay here will be very short and they will not have the same feeling for the land or for the townsite; therefore to overcome some of that I think it is very important that serious consideration be given to recreation.

BISSETT

I think something should be clarified, this matter of bunkhouse, accommodation keeps coming up. The Company must of course have a permit to operate the mine the big question is again how much of a townsite can be developed given the question of money.

I believe the Company is very concerned about keeping all the workers happy.

It has been proven with other Northern mines that the family situation is extremely important.

TABLE 1

ESTIMATED COSTS OF PUBLIC SECTOR INVOLVEMENT IN THE STRATHCONA SOUND PROJECT

\$'s millions

Item	TOTAL ESTIMATED PROJECT COSTS	TOTAL PUBLIC COSTS			PUBLIC COSTS CHARGEABLE TO THE PROJECT		
		Non-recoverable (Non-Commercial)	Recoverable (Commercial)	Total	Non-recoverable (Non-Commercial)	Recoverable (Commercial)	Total
<u>Capital</u>							
Airport	3.5	3.5	-	3.5	0.9	-	0.9
Roads	3.0	3.0	-	3.0	2.5	-	2.5
Dock	3.2	0.8	2.4	3.2	0.80	2.40	3.2
Townsite	7.0	1.5	5.5	7.0	1.0	5.5	6.5
TOTAL	16.7	8.8	7.9	16.7	5.2	7.9	13.1
Privately financed items	37.3	-	-	-	-	-	-
PROJECT TOTAL	54.0	8.8	7.9	16.7	5.2	7.9	13.1
<u>Operating</u>							
Administration, operation, maintenance	0.67 per annum	0.67 p.a.		0.67 p.a.	0.40 per annum	-	0.40 p.a.
Relocation, training	0.10 per annum	0.10 p.a.		0.10 p.a.	0.05 per annum	-	0.05 p.a.
TOTAL	0.77 p.a.	0.77 p.a.		0.77 p.a.	0.45 p.a.	-	0.45 p.a.

10-11-87

RELATIONSHIP OF POLICY OBJECTIVES TO POTENTIAL
BENEFITS AND COSTS OF THE STRATHCONA SOUND PROJECT

POLICY OBJECTIVE

POTENTIAL PROJECT BENEFITS

POTENTIAL PROJECT COSTS

- | | | |
|--|--|---|
| <p>1. To provide for a higher standard of living, quality of life, and equality of opportunity for Northern residents by methods which are compatible with their own preferences and aspirations</p> | <p>Provision of permanent employment opportunities for northern residents
Provision of suitable accommodation in new community
Opportunity for educational and vocational advancement
Opportunity for northern residents to participate in community design, development and operation
Provision of examples to northern residents not employed at Strathcona Sound
Possibility of lowering shipping rates to Arctic communities through use of inbound concentrate ships
Redistribution of existing income sources in settlements contributing Strathcona Sound employees
Opportunity to study the attitudes to and preferences for mineral industry jobs</p> | <p>Possibility of relatively few employment opportunities for northern residents if satisfactory employment agreements are not made with southern contractors
Negative effects of consumption i.e. higher incomes earned by northern residents
Negative effects on communities supplying project workers, for example, loss of key community workers, leaders, dislocation of family units
Negative effects if few Inuit are successfully employed on the project
Effects of short-term project operation and need to relocate when community loses viability</p> |
| <p>2. To maintain and enhance the northern environment with due consideration to economic and social development</p> | <p>Opportunity to study environmental effects of resource development in the Arctic
Opportunity to develop alternative means for dealing with environmental effects of resource development in the Arctic
Opportunity to develop optimal environmental quality standards</p> | <p>Unprevented environmental disruption</p> |
| <p>3. To encourage viable economic development within regions of the Northern Territories so as to realize their potential contribution to the national economy and the material well-being of Canadians</p> | <p>Generation of knowledge on operating resource projects in the Arctic
Use of Canadian inputs in construction and operation phases of the project
Increase of mineral exploration in the region
Expanded northern transport and communications network
Creation of employment benefits in Canada outside Territories.</p> | <p>Use of non-Canadian inputs in construction and operation phases of the project
Use of some capital and labour resources that would be used elsewhere in Canada in the absence of the project</p> |
| <p>4. To realize the potential contributions of the Northern Territories to the social and cultural development of Canada</p> | <p>Opportunity to promote equality between native people and other Canadians which will enable native people to benefit materially and psychologically from resource development in the North
Increase in the awareness and respect for the culture and social organizations of native peoples in the North</p> | <p>Possible negative effects of an industrial milieu on Inuit cultural and social organizations
Negative effects if Inuit fail to achieve at least some of the higher skill, supervisory and managerial positions in the project work force</p> |

POLICY OBJECTIVE

POTENTIAL PROJECT BENEFITS

POTENTIAL PROJECT COSTS

5. To further the evolution of government in the Northern Territories	Generation of personal and corporate taxation, royalty, and other government revenues Opportunities to gain experience in working with resource companies	
6. To maintain Canadian sovereignty and security in the North	Canadian control of resource development Canadian shipping participation Increased northern population New northern community Expanded northern transport and communications network Higher level of northern resource development	Some non-Canadian participation in project
7. To develop a world recognized capability for operations on or along ice-covered water (Ocean Policy)	Opportunity for Canadian shipbuilding and shipping companies to acquire experience in transporting resource products from Arctic areas	
8. To sustain and develop further the Canadian shipbuilding and shipping industry	Opportunity for Canadian-built, Canadian-flag ships to participate in the project	Difficulty of entering Arctic ship building field if opportunities presented by this pioneering project are not accepted
9. To increase the processing of Canadian resources in Canada		Non-Canadian processing of virtually all mine output
10. To enhance Canada's international standing as a country providing increased employment opportunities for members of disadvantaged minority groups, and according priority placement in jobs to native people of the Territories in keeping with the tenor of Article 5 of the International Labour Organisation Convention 111	Provision of employment, social and cultural opportunities for native people of the region	Negative effects if Inuit participation in project is unsuccessful

A.B. Yates, Director, Northern Policy and Program Planning Branch, DIAND, "Nanisivik - 'The Place Where Things Are Found' " (Ottawa, DIAND, April 1975), Tables 1 and 2.

APPENDIX G - Opportunity Cost of Foreign Processing

An excerpt from a draft working paper on northern economic development, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND.

"...Revenue losses to Canada may be significant, even in the case of relatively small mines. For example, consider a Canadian mine producing 150,000 tons per annum of lead-zinc concentrates, for which a Canadian smelter would offer (if smelter capacity were available) "normal" profit concentrate prices of \$305/ton as compared with an offer of \$246/ton by a foreign based smelter. On this basis the latter smelter would make $(59 \times 150,000) = \$8.85$ million p.a. in excess profits outside Canada. The loss in tax revenue over 10 years would be approximately $(8.85 \times 10 \times .48)$ million = \$42.48 million, assuming a tax rate of 48 per cent. If these profits accrued to the Canadian mine (through receipt of the higher concentrate price of \$305/ton) Canada would gain approximately \$30 million in additional corporate taxation. This allows for about a third lower effective tax rates on mining companies (\$42.48 mill. - \$12.48 mill.).

"This analysis does not take into account the revenues generated directly and indirectly by having the concentrates smelted in Canada: these revenues could run around \$75 million over 10 years (150,000 tons per annum x 10 x \$50/ton). This figure assumes that the processing of each ton of concentrates within Canada generates \$100 of profits within Canada and that these profits are taxed at 50 per cent.

"Under these assumptions, the total revenue gain to Canada would be \$117.5 million $(42.5 + 75.0)$ million or about \$13 million per annum. The actual revenue gain would depend mainly on metal prices, smelting costs, tax rates, and smelting multiplier effects actually prevailing over the 10 year period. Nevertheless there is a high probability that the actual revenue gain would be in the range of \$80-\$150 million over the ten year period.(1)

1. This hypothetical case used recent smelter schedule terms studied by the Department of Industry, Trade and Commerce, Ottawa.

APPENDIX H - Ore Reserves of Selected Arctic Mines

Project	Ore Tons	Lead-Zinc Tons	Average Grade	Production Rate (Tons/day)
Pine Point	38,000,000	3,100,000	8.16%	11,000
Anvil	63,455,000	5,140,000	8.1%	10,000 ^a
Strathcona	6,971,000	1,080,000	15.5%	1,500 ^b
Arvik (proposed project)	25,000,000	4,700,000	18.8%	-
Black Angel (Greenland)	4,900,000	970,000	19.8%	1,650

a - plant expansion for first quarter 1974

b - projected

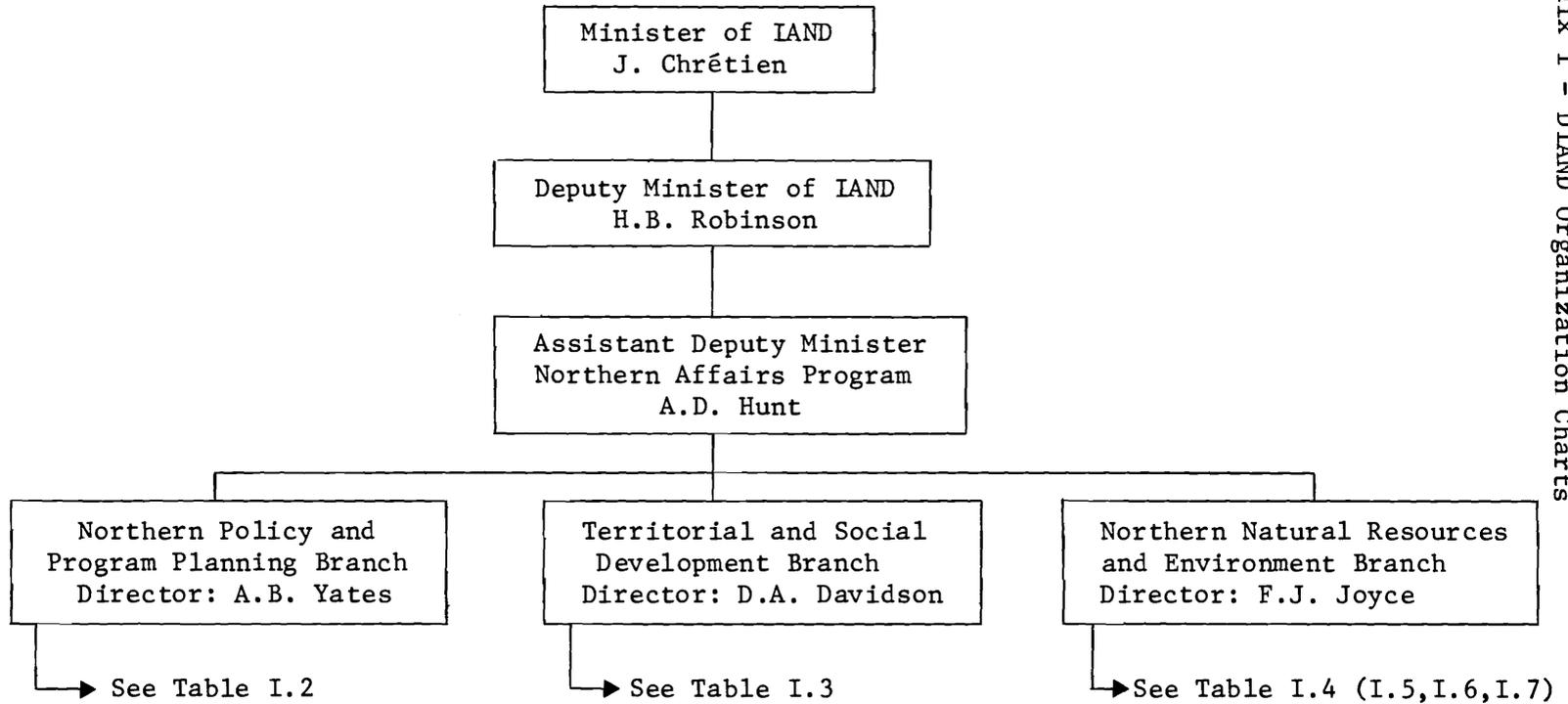
Sources:

Pine Point, Arvik, Black Angel: Cominco Annual Report 1973, pp. 8-9.

Strathcona: Watts, Griffis & McOuat, Feasibility Study of the Strathcona Sound Project for Mineral Resources Ltd., September 1973, p. 84.
Tonnage figures assume 7% zinc equivalent cut off and a zinc price of 23.7¢/lb.

Anvil: Financial Post, Survey of Mines 1974, p. 232.

Table I.1 - DIAND Northern Affairs Program*



* At the time of the assessment of the Strathcona Proposal

Table I.2 - DIAND Northern Policy and Program Planning Branch

Assistant Deputy Minister
Northern Development Program

Director; Northern Policy and
Program Planning Branch

The Branch is responsible for: (1)
 -implementing northern policy in new and existing federal programs;
 -preparing an overall development plan for the Territories;
 -preparing regional development plans;
 -evaluating existing federal and Territorial programs; and
 -co-ordinating the activities of the Advisory Committee on Northern Development
 (A.C.N.D.: See Table VIII)

Policy and Planning
A.C.N.D. Division

The Division formulates overall northern policy and regional development plans, and prepares various socio-economic studies, statistical abstracts and economic models. Current work includes econometric analysis of total government expenditures on northern matters, preparation of social performance indicators for evaluating federal northern programs, and studies on expanding the regional economic base of the Territories.

Northern Program
Planning Division

The Division reviews DIAND's northern development programs, conducts economic studies on the development of resources and on northern transportation, and advises on proposed northern programs.

Prior to the Departmental reorganization in 1973, these duties were performed by the Economic Staff Group, which published some 140 studies between 1961 and 1973.

Information and
Liaison Division

The Division provides information liaison with other federal departments and agencies, the private sector, and other circumpolar countries, particularly the U.S.S.R. and Denmark (Greenland).

Liaison A.C.N.D.
Division

The Division is the Secretariat for the Advisory Committee on Northern Development (A.C.N.D.) and its Sub-Committees and Working Groups (see Table VIII).

Northern Roads and
Airstrips Division

The Division administers the Mackenzie Highway Project and the following development and incentives programs:

The Northern Roads Program, a \$100 million, 10-year project: to build the Dempster Highway, the Mackenzie Highway and the Ft. Simpson-Ft. Liard Road; to assist developers to build pioneer roads; and to reconstruct existing roads (The Northern Development Program places great emphasis on road construction and DIAND estimates that aggregate expenditures for the period 1965-1977 will approach \$140 million);

The Resources Airstrips Program, begun in 1965 to assist developers to build access airstrips for resource exploration (\$271,200 total DIAND contribution during the period 1965-1972);

The Remote Airstrips Program, begun in 1965 to build airstrips in isolated communities (\$200,000 provided from 1965 to 1972);

The Northern Minerals Exploration Assistance Program, begun in 1967, under which 40% of the cost of mineral or oil and gas exploration may be covered by a grant which is repayable only if products ensue (\$3.5 million between 1967 and 1972).

(1) Source: Estimates for the Fiscal Year Ending March 31, 1974;
Section 10.

Table I.3 - DIAND Territorial and Social Development Branch

ADM, NORTHERN DEVELOPMENT PROGRAM

Chairman: -Interdepartmental Committee on Federal-Territorial Finance (monitors federal financial assistance to the Territories)

A.C.N.D. Federal-Territorial Economic Planning Committee (see Table VIIIA)

DIRECTOR,
TERRITORIAL AND SOCIAL DEVELOPMENT BRANCH

The Branch is responsible for co-ordinating federal-territorial relations.

TERRITORIAL AFFAIRS DIVISION

The Division:

- administers federal-Territorial financial agreements;
- continues to transfer provincial-type functions to the Territorial governments;
- assists in the development of self-government in both territories by advising the Commissioners and assisting the administrators of Territorial programs;
- co-ordinates arrangements between the Territorial governments and federal departments and agencies;
- analyzes Territorial policies and programs vis-à-vis federal and provincial practice; and
- administers federal programs not transferred to the Territorial Governments.

SOCIAL DEVELOPMENT DIVISION

The Division co-ordinates the administration of special programs for native northern residents, either on behalf of the Territorial Governments, or representing residual federal responsibility;

- The Employment Liaison Section encourages expanded employment opportunities for native northerners, by negotiating employment agreements with companies operating in the North;
- The Vocational Education Section operates several schools for Eskimos;
- The Commercial Development Section provides small-business loans to a maximum of \$50,000 per loan. The program was begun in 1970; total provision for each Territory is \$5 million of which \$300,000 is made available annually. The Section also conducts studies on establishing commercial enterprises in the North;
- The Indigenous Claims Section sponsors research on the land claims of indigenous northern residents;
- The Inuit Art Section and the Inuit Life and Language Section supports Inuit culture through various programs and loan funds.

SOCIAL RESEARCH DIVISION
(formerly the Northern Science Research Group)

The Northern Science Research Group has been conducting research on the social problems related to northern development since 1957, and has published studies under the NSRG General Series, the NSRG Mackenzie Delta Research Project series and the Yukon Research Project series. In addition, the Division provides some \$350,000 grants per annum to northern research institutes and northern scientific research expeditions, and operates the Scientific Research Laboratory at Inuvik. The Division plans to build a similar research laboratory at Igloodik.

Some of the current research is being conducted in co-operation with the Environmental-Social Program, Northern Pipelines of the Task Force on Northern Oil Development (see Table IX)

Table I.4 - DIAND Northern Natural Resources and Environment Branch

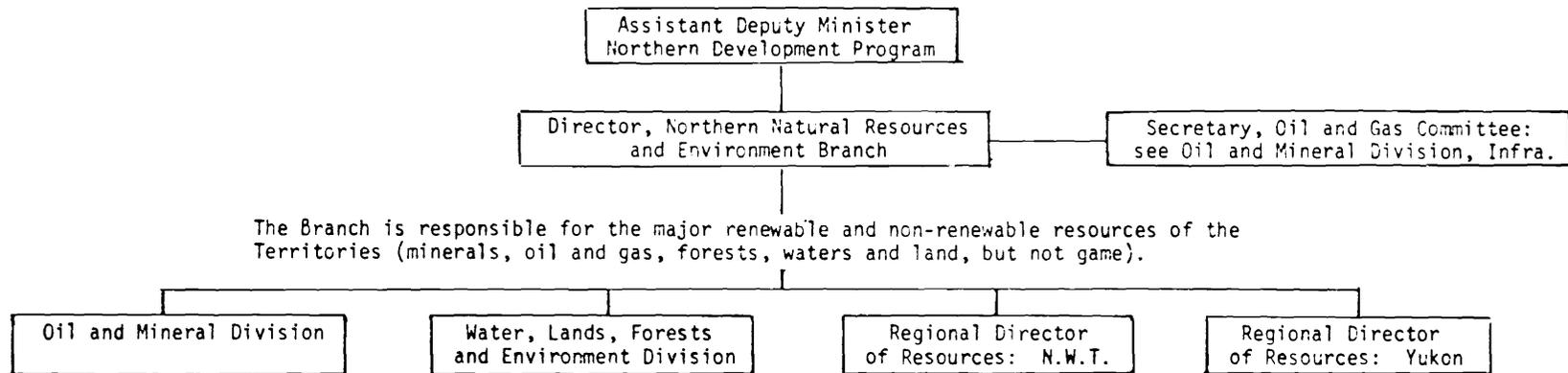
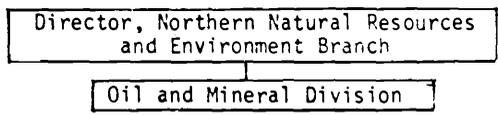


Table I.5 - DIAND Oil and Mineral Division, Northern Natural Resources and Environment Branch

176



The Division manages the development of non-renewable resources located in the Territorial mainland, the Arctic continental shelf and the Arctic Archipelago (Note: the Resource Management and Conservation Branch, Dept. of Energy, Mines and Resources administers non-renewable resources in Hudson Bay and Hudson Strait and off Canada's east and west coasts, under the legislation presented in this Table: see Table II et. seq.)

The Oil and Mineral Division issues and administers oil and gas exploration permits, leases and royalties under the Canada Oil and Gas Land Regulations, 1961. Promulgation of amended Oil and Gas Regulations, which were prepared in consultation with industry, is expected in the near future. The amendments deal principally with oil and gas royalties, the term of oil and gas leases, and the disposition of Crown Reserves.

The Oil and Gas Drilling Regulations govern such technical matters as excavation, well plugging and the abandonment of wells.

Amended Oil and Gas Drilling and Production Regulations will be promulgated under the Oil and Gas Production and Conservation Act in the near future. This Act was passed in 1969, and amended in 1970 to apply to the east and west offshore areas. It empowers the Governor-in-Council to enact regulations respecting "the exploration and drilling for, the production and conservation, processing and transportation of oil and gas"; contains provisions regarding "waste", unitization and pooling; authorizes DIAND and DEMAR staff as Chief Conservation Officers to enforce the Act and its Regulations; and establishes a

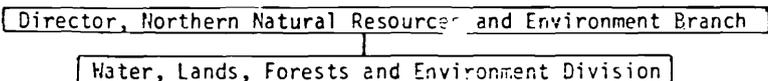
five-member Oil and Gas Committee (2 members of which must have "specialized expert or technical knowledge of oil and gas") under the direction of the Minister of DIAND for territorial lands and Arctic waters, and the Minister of DEMAR for Hudson Bay and Hudson Strait and the other regions administered by DEMAR. The Oil and Gas Committee is empowered to hold investigations and public hearings, and its orders may be made orders of the Federal Court of Canada.*

By Dec. 1972, 445 million acres were held under oil and gas permit and 4.9 million acres were held under oil and gas lease in the Territories, including the Arctic Islands and Arctic offshore areas. There have been no invitations to tender for oil and gas rights on Crown Reserve Lands since January 1969.

The Oil and Mineral Division also issues and administers prospector's licences, prospecting permits (for NWT), mineral claims, mineral leases and royalties, under the Canada Mining Regulations for the NWT, and under the Yukon Quartz Mining Act and the Yukon Placer Mining Act. Bill C-187 to update the Yukon mining legislation and make the Territorial Land Use Regulations (discussed in Table I-E) applicable to Yukon mining operations, was withdrawn from the House of Commons in 1971. The Canada Mining Regulations also apply to the regions administered by DEMAR.

* A senior DIAND official has stated that the Oil and Gas Committee is largely responsible for the continued shaping of the growth of the northern oil and gas industry by inquiring into any matter under its jurisdiction, by providing advice to the Minister, and by providing a body to which industry may appeal the orders of the Chief Conservation Officer, who is responsible for the day-to-day enforcement of Regulations under the Act.

Table I.6 - DIAND Water, Lands, Forests and Environment Division, Northern Natural Resources and Environment Branch



The Division is responsible for:

- the administration of surface rights to land in the Territories (except those areas in and near communities that have been designated "Development Control Zones and transferred to the direct administration of the Territorial government);
- the management of renewable resources (except game) in the Territories;
- environmental protection in the Territories (except those aspects that have been statutorily assigned to other federal agencies).

Within the past few years, the Federal government has promulgated three legislative measures designed to ameliorate the adverse effects of development on the northern environment. These are:

The Arctic Waters Pollution Prevention Act & Regulations

- Act passed 1970; Act & Regulations came into force in August 1972.
- applies to waters throughout the Arctic Archipelago and 100 miles out to sea from the Canadian land masses.
- responsibility for administration is divided between the M of T (for shipping activities), DEMAR (for non-shipping activities in Hudson Bay and Hudson Strait), DIAND (for non-shipping activities in the remainder of the Arctic).
- the Act specifies safety regulations for the construction of Arctic safety zones for navigation; restricts the dumping of wastes at sea; and imposes liability for cleanup and for damages.
- DIAND is developing an administrative framework for the Arctic waters legislation, as well as policy for the prevention of spills, reporting and clean-up operations. An Arctic Waters Oil and Gas Advisory Committee has been established to advise upon the environmental-protection stipulations that are included in Drilling Authorities.

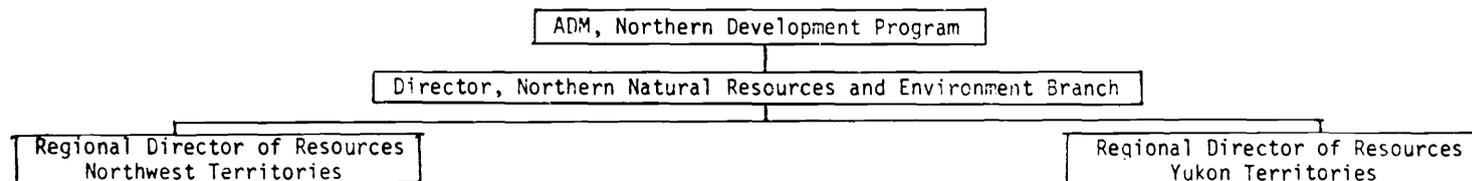
The Northern Inland Waters Act & Regulations

- Act passed June 1970, proclaimed in force February 1972; Regulations promulgated September 1972.
- the Act is designed to provide a comprehensive framework for the management of Territorial water resources. It requires that a Water Licence be obtained for any activity affecting water rights or water use (with the exception of water for domestic purposes) within designated Water Management Areas. The Licences are issued by statutory Water Boards in each Territory, the objects of which are "to provide for the conservation, development and utilization of the water resources "of the Yukon and N.W.T. (see Table I-F).

The Territorial Land Use Regulations:

- Regulations promulgated in November 1971; promulgation of amendments is imminent.
- designed to permit multiple use of Territorial land and to protect the environment.
- Part I establishes a code for all "land use operations" in the Territories.
- Part II applies to "land use operations" in areas that are designated as "Land Management Zones", within which all operations must be authorized by a Land Use Permit containing environmental protection stipulations.
- Land Management Zones have been designated in the northern Yukon, the Mackenzie Valley, and the western Arctic.
- DIAND has established a Land Use Advisory Committee in each Territory to advise upon these Permits (see Table I-F).
- The Regulations do not apply either to hunting, fishing or trapping by territorial residents, or to activities on land, the surface rights to which have been disposed of by the Minister of DIAND (including disposition by sale, lease, or by right-of-way easement). The definition of "land use operation" contains exceptions that exclude most of the exploration phase of mining activities. The Regulations do not apply to mining activities in the Yukon, for Bill C-187 "the Yukon Minerals Act" was withdrawn from the House of Commons in 1971. The amended Regulations, drafted in consultation with industry, are expected to cover certain of these exclusions.

Table I.7 - DIAND Regional Directors of Resources, Yukon and NWT; Northern Natural Resources and Environment Branch



The two Regional Directors of Resources provide the field administration of DIAND's legislation, Regulations, policies and programs, including the operation of mining recorders offices, forest management and protection services, oil and gas conservation offices, & land management offices (under the legislation discussed in Table I-5); and the provision of territorial environmental protection services (under the legislation presented in Table I-6).

Since 1972, the NWT Regional Director of Resources has been responsible for administering the sale and lease of surface rights to land; this function has been performed by the Yukon Regional Director of Resources for some time.

In the NWT, DIAND regional staff co-ordinates the Arctic Waters Oil and Gas Advisory Committee, which is chaired by DIAND, and composed of representatives of the federal Department of the Environment, the Ministry of Transport (two representatives) and the DIAND Oil and Gas Conservation Engineer. The Committee was established by Cabinet in 1973 to help regulate the environmental aspects of offshore drilling, by advising on stipulations under the Arctic Waters Pollution Prevention Act (see Table I-6) and the Oil and Gas Conservation and Production Act (Table I-5). (*)

The Regional Directors are responsible for two Committees:

- (a) The NWT and the Yukon Water Boards- chaired by the Regional Manager of Water, Lands, Forests and Environment, DIAND;
-composed of representatives of the Department of the Environment; National Health and Welfare; the Department of Energy, Mines and Resources; the Ministry of Transport; the federal Department of Public Works; and three representatives appointed by the Commissioner of the Territory;
-The Boards are established by the Northern Inland Waters Act (see Table I-6). They are required to hold public hearings for water licences (subject to statutory exceptions) and may hold such other public hearings vis-à-vis water rights and water use as are "in the public interest".
- (b) The NWT and the Yukon Land Use Advisory Committees:
-chaired by the Regional Manager of Lands, Water, Forests and Environment (DIAND); composed of field staff of DIAND, the federal department of the Environment and representatives of the Territorial Governments. In NWT, these are representatives of the Territorial Department of Local Government and the Game Management Division of the Territorial Department of Industry and Development. In the Yukon, representatives of the federal Department of Public Works and the Department of National Health and Welfare have participated on occasion. The Committees advise on applications for land use permits under the Territorial Land Use Regulations (see Table I-6).

(*) Note: this Advisory Committee is distinct from the statutorily-established Oil and Gas Committee discussed in Table I-5.

THE STRATHCONA AGREEMENT

THIS AGREEMENT was made this 18th day of June, 1974

BETWEEN:

HER MAJESTY THE QUEEN in right
of Canada, hereinafter called
"HER MAJESTY",

OF THE FIRST PART

AND

MINERAL RESOURCES INTERNATIONAL
LIMITED, a body corporate, incorporated
under the laws of the Province of
Ontario and having its registered
office at 401-44 Victoria Street, in
the City of Toronto, in the Province
of Ontario, hereinafter called
"the Company",

OF THE SECOND PART

WHEREAS the Company is desirous of bringing into
operation a mine for the commercial production of lead and zinc
concentrates at Strathcona Sound on Baffin Island, the Northwest
Territories, subject to the terms and conditions specified
herein;

WHEREAS Her Majesty wishes to encourage and support
the proposed mining development in order to provide employment
and other socio-economic opportunities for Canadians, particularly
those resident in the said Territory, and to obtain information
on resource development possibilities in Arctic areas of the
Northwest Territories; according to the Government's Priorities
for the North as set out in Canada's North, 1970-1980, and;

WHEREAS the feasibility of commencing commercial
production in a manner acceptable to Her Majesty will depend,
to a substantial extent on the co-operation and financial support
of Her Majesty as hereinafter set forth;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in
consideration of the premises, and of the covenants and agreements 179

contained herein, the parties covenant and agree, each with the other as follows:

1. In this Agreement,

- (a) "apprentice" means a person nominated by the Counsellor and accepted by the Company to fill one of the designated apprentice positions;
- (b) "area development road" means an area development road as defined in the Northern Roads Policy of the Department as authorized by Cabinet on December 21, 1971;
- (c) "Canada Manpower" means an officer of the Department of Manpower and Immigration;
- (d) "Commission" means the Northern Canada Power Commission;
- (e) "Commissioner" means the Commissioner of the Northwest Territories or any person authorized to act on his behalf;
- (f) "Counsellor" means an officer appointed by the Commissioner to provide information, guidance and assistance to northern residents and their families in respect to training, job orientation, working, and living conditions and social adjustment, before, during and after employment;
- (g) "Department" means the Department of Indian Affairs and Northern Development;
- (h) "development area" means a development area as defined by the Area Development Ordinance, Revised Ordinances of the Northwest Territories;
- (i) "employee" means a person who meets the employment criteria and is referred for employment by the Canada Manpower Centre and is accepted by the Company in a regular or training positions;

contained herein, the parties covenant and agree, each with the other as follows:

1. In this Agreement,

- (a) "apprentice" means a person nominated by the Counsellor and accepted by the Company to fill one of the designated apprentice positions;
- (b) "area development road" means an area development road as defined in the Northern Roads Policy of the Department as authorized by Cabinet on December 21, 1971;
- (c) "Canada Manpower" means an officer of the Department of Manpower and Immigration;
- (d) "Commission" means the Northern Canada Power Commission;
- (e) "Commissioner" means the Commissioner of the Northwest Territories or any person authorized to act on his behalf;
- (f) "Counsellor" means an officer appointed by the Commissioner to provide information, guidance and assistance to northern residents and their families in respect to training, job orientation, working, and living conditions and social adjustment, before, during and after employment;
- (g) "Department" means the Department of Indian Affairs and Northern Development;
- (h) "development area" means a development area as defined by the Area Development Ordinance, Revised Ordinances of the Northwest Territories;
- (i) "employee" means a person who meets the employment criteria and is referred for employment by the Canada Manpower Centre and is accepted by the Company in a regular or training positions;

- (j) "Feasibility Study" means the feasibility study prepared for the Company by Watts, Griffis and McOuatt of Toronto;
- (k) "leased land" means land leased by the Company pursuant to section 3 of this Agreement;
- (l) "Local Apprenticeship Committee" means a committee appointed by the Superintendent of Apprenticeship Training to provide advice and assistance on matters relating to apprenticeship and tradesmen's qualifications;
- (m) "mine" means the aggregate of the facilities enumerated in paragraphs (a), (b), (c) and (d) of subsection (2) of section 2;
- (n) "mine area" means the area immediately surrounding the mine over which the Company holds, or is assigned, leases for the purpose of developing and operating the mine;
- (o) "Minister" means the Minister of Indian Affairs and Northern Development or any person authorized to act on his behalf;
- (p) "northern resident" means those persons born in the Northwest Territories and Arctic Quebec who have resided in the Northwest Territories for at least 75 per cent of their lifetime, but who may have relocated outside of the Northwest Territories in order to seek employment;
- (q) "pioneer road" means a pioneer road as defined in the Northern Roads Policy of the Department as authorized by Cabinet on December 21, 1971;
- (r) "processing" means treatment of mine concentrates to at least the production of metal stage;

- (s) "project" means all stages in the life of the mine and its associated infrastructure including all exploration and development activities from the date of signing this Agreement;
- (t) "regular position" means a position established by the Company which is required as a continuing part of the mine operation;
- (u) "Territory" means the Northwest Territories;
- (v) "trainee" means a northern resident designated by Canada Manpower or the Counsellor and accepted by the Company in a training position;
- (w) "Training and Employment Advisory Committee" means a committee composed of the Counsellor, a representative from Canada Manpower, a person designated by the Company, and a native person nominated by native employees and trainees, the Chairman of which shall be the Counsellor;
- (x) "training position" means a position identified from time to time by the Company for the purpose of preparing a northern resident to occupy a regular position.

2. (1) This Agreement will be carried out in two stages.
- (2) During the first stage the Company will
 - (a) develop and bring into production a mine capable of producing at the rate of 525,000 tons of ore per annum,
 - (b) construct and bring to effective operation a concentrator, with a rated capacity of 1,500 tons per day, to produce lead and zinc concentrates,

- (c) Construct such other facilities as are required to complement and service the mine and concentrator, such facilities to include
 - (i) safety, first aid and medical services as are required in the Public Health Ordinance of the Northwest Territories to be available at the mine site,
 - (ii) a room in one of the service buildings suitable for training programs.
- (d) arrange for the disposal of concentrator tailings and other waste materials in a manner consistent with the provisions of section 17,
- (e) assist in the design and development of the development area pursuant to section 5 by consulting and co-operating with the Commissioner in this work and in the preparation of such financial submissions as are required, and
- (f) Undertake other Stage 1 activities as are specified in this Agreement.

(3) The first stage starts on the day this Agreement is delivered, after having been signed and sealed, and ends on the day the mine comes into production, within the meaning of section 28(2) (c) of the Income Tax Application Rules, 1971. This stage is to be completed within a period of four years unless otherwise approved by the Minister.

(4) Based on present ore reserves and the initial design capacity of the mine and concentrator, the Company will, during the second stage, operate the mine and concentrator for twelve

full production years which may extend beyond twelve calendar years. The production rate of the mine and concentrator shall be between 450,000 tons and 600,000 tons of ore per annum unless otherwise approved by the Minister. Any changes in the production life are subject to the approval of the Minister.

(5) The second stage starts on the day following immediately the day on which the first stage ends. Stage 2 ends when the project is permanently closed and all the Company's responsibilities under this Agreement are discharged.

3. The Minister will, upon the execution of this Agreement, recommend to the Governor-in-Council the issue of a surface lease to the Company to cover an area suitable for its operations including a mill site, an underground mine, ancillary services, and the area required for disposal of concentrator tailings.

4. (1) The Company will co-operate with the Counsellor and Canada Manpower to provide information, guidance and assistance to northern residents in respect of job possibilities, training, job orientation, relocation, working and living conditions and social adjustment.

(2) The Commissioner will designate an employee of the Government of the Northwest Territories who will act as Counsellor.

(3) Where northern residents lack the basic education to qualify for initial entry into training positions the Counsellor will arrange for the upgrading of those residents to the required standard.

(4) Job standards will be set by the Company in co-operation with the Government of the Northwest Territories and such standards should reflect the job to be done and not unrealistic academic levels.

(5) The Company will permit the Counsellor to contact employees covered by this Agreement and their supervisors at all reasonable times for the purpose of evaluating the progress of such employees. Where possible such interviews will be cleared with Company management before they take place.

(6) The Training and Employment Advisory Committee will meet at least once a month to review the progress of the stated objectives and terms of this section of the Agreement. A report of such meetings will be sent to the Minister, the Commissioner and the Minister of Manpower and Immigration.

(7) The Company will provide Canada Manpower and the Counsellor with a breakdown of work force requirements during the construction and operation and life of the mine, wharf, airport, power plant, townsite and all other operations.

(8) All northern residents in the employ of the Company will enjoy equal benefits and privileges in respect to transportation costs, accommodation, shift rotation and recreation with employees who are not classified as northern residents.

(9) (a) Employment policies of the Company governing employees at the project are to be developed in consultation with the Commissioner.

(b) The Company will endeavour to develop work schedules compatible with the traditional pursuits of northern residents.

(10) The Company and the Commissioner shall make available to non-northern employees orientation courses for the purpose of familiarizing them with cultural and social patterns of northern residents.

(11) The Company will take prompt disciplinary action against supervisors or foremen who exhibit discriminatory attitudes or behaviour towards northern resident employees.

(12) The Company will provide at its sole expense, satisfactory office space on its premises at its Strathcona Sounc project for the Counsellor and Canada Manpower.

(13) The Company is to provide all working and safety instructions in Eskimo syllabics and the official languages of Canada.

(14) The Company will ensure that all contractors and sub-contractors accept the intent and operate within the principles of the Agreement with respect to section 4.

(15) The conditions referred to in subsections (1) to (14) and (18) to (31) inclusive, of section 4 may be modified if they are not complied with, if the Minister is of the opinion that the Company has made a bona fide effort to comply with them.

(16) The Company will meet annually with the Minister to evaluate the progress being made in training and in the employment of northern residents in the light of such factors as wages, employee turnover, career development and innovative employment practices.

(17) In addition to complying with the undertakings set forth in subsection (1) to (14) and (18) to (31) inclusive of section 4, the Company will comply with the Fair Practices Ordinance, of the Northwest Territories.

(18) The Company will use the services and facilities of the Government of the Northwest Territories and the Department of Manpower and Immigration to the maximum extent practicable

under applicable policies and regulations for training northern residents.

(19) The Superintendent of Apprenticeship Training may appoint a "Local Apprenticeship Committee" to provide advice and assistance on matters relating to apprenticeship and tradesmen's qualifications.

(20) The Company will, in consultation with the Training and Employment Advisory Committee, provide on-the-job training positions for northern residents.

(21) The Company will provide training for a minimum of twelve northern resident apprentices in accordance with the requirements of the Apprentice Training Ordinance of the Northwest Territories.

(22) All employees, including trainees, will become eligible for Company benefits arising out of employment in a regular position after three months of satisfactory employment whether it be spent in a regular position, trainee position or combination thereof.

(23) To ensure career progression amongst apprentices the Company must meet standards for the training of apprentices to achieve journeyman status as provided by the Apprentice Training Ordinance. The apprentice's performance will be reviewed every 90 days in light of these criteria by the Company and the Counsellor and the apprentice informed of his strengths and weaknesses. All measures must be taken to help the apprentice overcome his difficulties bearing in mind that journeyman status will be the ultimate goal.

(24) The Company will continue to employ each trainee who has completed his training to the satisfaction of the Company, the Counsellor and Canada Manpower, if applicable, in the job category for which he has been trained.

(25) The Company will place job orders for their total work force requirements with Canada Manpower, allowing sufficient time to identify and refer qualified northern residents with priority given to those originating from the following zones in the order set out below:

- Zone 1. Baffin Region
- Zone 2. Keewatin and Arctic Coast Regions
- Zone 3. That part of the Territory not included in Zone 1 or Zone 2.

(26) The Company must show just cause to Canada Manpower and the Counsellor if any northern residents referred to are not offered employment.

(27) The Company will provide the Counsellor, at agreed intervals, with a roster of employees, with their job classifications, identifying the northern residents.

(28) The Company will provide the Counsellor with prior notice of the termination of the employment of any northern resident. Where the termination is the result of the Company's initiative the Company must be able to demonstrate to the reasonable satisfaction of the Counsellor that such action is necessary. Where an employee has been discharged, resigns, or is laid off, the Company will be responsible for repatriating the former employee and his dependents to his or their former community or southern point of hire. The Company will have pre-established

procedures for removal compensation.

(29) The Company agrees to employ in the operation of the mine, northern residents in all positions for which such residents can be recruited by the Company directly, or through Canada Manpower. As a goal, the Company and the Minister further agree that within 3 years after the beginning of Stage 2, the Company will fill at least 60 per cent of its regular positions in its total work force with northern residents.

5. (1) The Minister will set aside sufficient land for the development area and will request the Commissioner to define and establish the development area by regulations to control jurisdictional areas pursuant to the Area Development Ordinance, of the Northwest Territories and to appoint an Area Development Officer no later than August 31, 1974.

(2) The Minister will request the Commissioner subject to the laws of the Territories, and after consultation with the local people, to negotiate a series of separate agreements with the Company for the development of a townsite at Strathcona Sound within the principles outlined in the following paragraphs of this section.

(a) The Commissioner will be responsible for the planning and design of the townsite and the development area at an estimated cost of \$200,000 and will recover all costs together with interest from rate payers of the townsite over a 12 year period.

(b) The Commissioner will be responsible for the design and construction of all municipal roads, services, fire hall and municipal garage at an estimated cost

of \$900,000. Furthermore the Commissioner will recover all costs together with interest from the various users over a 12 year period.

(c) The Commissioner will be responsible for the design and construction of the school, library and recreational facilities for the townsite and will provide funds estimated at \$800,000 for such facilities, subject to recovering from the Company a total of \$175,000 for recreational facilities through 12 equal and annual installments.

(d) The Commissioner will be responsible for all design and construction of space and facilities for service and commercial use, at an estimated cost of \$300,000 which will be recovered together with interest from the various users over 12 years.

(e) All recoveries referred to in paragraphs (a), (b), (c) and (d) will be subject to an extended amortization if the mine life extends beyond 12 years or conversely if the mine life is shortened total payments will be amortized over the shorter period.

(f) Total government financial assistance for capital cost of townsite development, including Central Mortgage and Housing Corporation, Housing and Development Loans and other Government loans, is estimated at \$7.3 million.

(g) The Minister acting on the advice of the Commissioner will request the President of Central Mortgage and Housing Corporation to provide all Corporation loans that are necessary, applicable and available for the townsite development.

(h) When a municipality is formed, normal municipal grant structures will apply.

(i) Operation and maintenance costs of municipal services and general municipal administration, including equipment and building maintenance and operation but excluding the school, will be fully recoverable from all users.

(j) (i) accommodation for Company employees is to be the responsibility of the Company in terms of construction and administration.

(ii) the Company in consultation with the Commissioner will provide suitable furnished accommodation for its married and single employees of a suitable standard and such accommodation will be allocated through agreement between the Company and the Commissioner in accordance with the provisions of Section 4 of this Agreement;

(iii) The accommodation allocated for use by employees for whom the Commissioner or the Company is responsible is subject to exchange according to requirements from time to time.

(3) Acting on the advice of the Commissioner the Company agrees to consult with the Settlement Councils of Arctic Bay, Pont Inlet, Igloolik, Hall Beach and Clyde River in so far as the project affects the interests of these settlements.

(4) The Company agrees to recognize that any settlement established in the Strathcona Sound development area has the full right to develop such local government structures as are

recognized in the Territory and such bodies, where formed, shall be responsible for local, social and political development. Until such time as a local government is established the company agrees to co-operate with an Area Development Officer to be appointed by the Commissioner after this Agreement comes into effect.

(5) The Company agrees that until a local government is established in the development area the Company will restrict the use of alcoholic beverages within the development area as directed by the Commissioner.

(6) The Minister will request the Postmaster-General to establish postal services within the development area.

(7) The minister will request the Commissioner and the Solicitor-General to provide adequate police services for the development area.

(8) Her Majesty will provide health services for the development area during Stage 2 of the project on a cost-shared basis with the Company under a separate agreement to be negotiated between the Company, the Minister of National Health and Welfare and the Commissioner, the Company to bear 50 per cent of capital and operating costs of such facilities, the Company contribution to capital cost not to exceed \$250,000. The Company will be responsible for all medical and dental transportation for employees and their dependants.

(9) No contracts for supply of local services, including retail outlets, will be tendered or let without prior consultation with the Commissioner.

6. If and when social problems arise either directly or indirectly through effects of the project, the Company will co-operate in the investigation and solution of such problems. The Company shall also investigate through the conduct of social research the impact of its development and will determine in co-operation with the Minister and the Commissioner the timing, design, staffing, and execution of such research.

7. (1) The Minister will instruct the Commission to enter into negotiations with the Company to operate a power station,

- (a) to be financed and built by the Company to a design acceptable to the Commission,
- (b) to supply (i) power to the mine and the development area, and
- (ii) surplus power at cost to other potential users.

(2) The Company agrees to enter into the negotiations described in subsection (1).

(3) The Company agrees that in the case of power shortages domestic power usage is to have preference over mine power usage.

8. (1) Her Majesty will provide for the construction of

- (a) a pioneer road from Arctic Bay to the boundary of the leased land,
- (b) a pioneer road from the Strathcona Sound airport to the road referred to in paragraph (a), and
- (c) an area development road from the leased land to the wharf referred to in section 9,

at a total estimated capital cost to Her Majesty for these roads of \$2.1 million.

(2) Her Majesty will be responsible for maintenance costs of the roads referred to in subsection (1).

(3) The Company will undertake to build the roads referred to in subsection (1) in accordance with a separate agreement to be negotiated between Her Majesty and the Company. Her Majesty reserves the right to make other arrangements for the construction of the roads that may be in the interests of Her Majesty.

9. (1) Her Majesty will provide for the construction of a new public cargo shipping wharf at Strathcona Sound in accordance with plans and specifications acceptable to Her Majesty at an estimated capital cost to Her Majesty of \$3.8 million.

(2) Seventy-five (75) per cent of the capital cost of the wharf referred to in subsection (1) is to be recovered by Her Majesty by way of user charges based on an estimated project life of 12 years, subject to the provisions of section 24. Operating and maintenance costs are to be the responsibility of the Company on a user basis.

(3) The Company undertakes to build the wharf referred to in subsection (1) in accordance with a separate agreement to be negotiated between Her Majesty and the Company subject to the reservation that Her Majesty may make any other arrangement for construction of the wharf that may be in the interests of Her Majesty.

10. (1) Her Majesty will provide for the construction of a new airport at Strathcona Sound to Arctic Class "b" standards in accordance with plans and specifications acceptable to Her Majesty at an estimated total capital cost to Her Majesty of \$3.5 million.

(2) Upon completion of the construction of the airport and acceptance by Her Majesty of the airport as a completed work, operating and maintenance costs of the airport shall be the responsibility of Her Majesty subject to normal airport user charges.

(3) The Company undertakes to build the airport referred to in subsection (1) in accordance with a separate agreement to be negotiated between Her Majesty and the Company subject to the reservation that Her Majesty may make other arrangement for construction of the airport that may be in the interests of Her Majesty.

11. The assistance and facilities to be provided by Her Majesty pursuant to sections 5, 8, 9 and 10 hereof shall be made available as required by the project.

12. (1) The Company will maximize and give preference to the use of Canadian services, materials and equipment for all phases of design, construction and operation, to the extent that such services, materials, equipment, and components are available from Canadian engineering and construction firms or from Canadian production at competitive prices, quality and delivery by:

(a) consultation with the General Director of the Machinery Branch of the Department of Industry, Trade and Commerce prior to issuing calls for tender to ensure qualified Canadian firms are invited to tender,

(b) providing Canadian consultants, contractors and materials and equipment producers with adequate technical and other data and adequate time to submit a proposal,

(c) consultation with the General Director of the Machinery Branch of the Department of Industry, Trade and Commerce prior to placing any orders with foreign suppliers to ensure that Canadian services, material and equipment are given preferred status. In those cases where Canadian bids are close to foreign bids, the Company will be requested to:

(i) review all data relating to bids, particularly specifications, to ensure discrepancies have not occurred in the interpretation of the requirements by Canadian bidders, and

(ii) assure that comparison of quotations is made on the basis of cost of items laid down at site, or other agreed upon location, and inclusive of any import duties, notwithstanding the fact the item may be subject to remission of duty.

(2) On request the Company will submit purchase receipts to the Minister of Industry, Trade and Commerce.

13. (1) It is acknowledged by the Company and Her Majesty that shipping agreements for the transport of products from the project shall be entered into with first consideration being given to:

(a) ensuring the reliability of such transportation;

(b) ensuring that such transport is carried out on competitive terms.

(2) (a) Subject to subsection (1) the Company shall use Canadian-flag, and Canadian-built vessels for the transport of supplies and other materials to the

project and for the transport of products from the project.

(b) The Company shall consult with the Ministers of Transport and Industry, Trade and Commerce prior to negotiating with foreign shipping firms to ensure that Canadian firms are contacted and given adequate opportunity to compete.

(c) The Company will present for assessment by the Ministers of Transport and Industry, Trade and Commerce proposed afreightment contracts, to ensure that Canadian firms are given preferred status when suitable Canadian ships are available.

(d) Should the Company demonstrate that Canadian-flag and Canadian-built vessels are unavailable at commercially reasonable rates or inadequate for the required service, the Company may be authorized by Her Majesty to use non-Canadian ships. For products being moved out from the project such authorization shall be for not longer than the first two shipping seasons and thereafter for not longer than one shipping season. For supplies and materials being moved into the project, regardless of origin of these supplies and materials, authorization shall be for not longer than one shipping season. Her Majesty acknowledges that the Company may enter into longer term shipping agreements for transport of products from the project provided that such agreements contain provision for cancellation after two years.

(e) The Company will use its best efforts to the satisfaction of the Minister of Transport to ensure that in afreightment contracts with foreign firms a minimum of two Canadian deck officers will be on board each non-Canadian ship for familiarization and training purposes during the time the non-Canadian ships are operating in Canadian waters under contract to the Company. Her Majesty will reimburse the Company for the day-to-day costs of these officers.

14. (1) To optimize the experience benefits obtainable from all stages of this pilot arctic resources project, the Company shall permit officers of the Government of Canada of the Northwest Territories or other persons designated by the Minister or the Commissioner

(a) to have access at all reasonable times to all company records and studies, including technical, personnel and financial records,

(b) to study aspects of the project which in the opinion of the Minister or the Commissioner can provide significant experience benefits for this and other current and future projects in the Territory.

(c) to request that information required to undertake these activities be provided in a form set out by the designated officers of the Government of Canada or the Northwest Territories or other designated persons, if such request is not unreasonable,

(d) to engage in research in the development area aimed at generating a better understanding of technical,

social and other problems encountered in Arctic resource projects, and, where necessary, to consult with officers of the Company in the undertaking of this research, providing it does not unreasonably interfere with the operation of the mine.

(2) The implementation of subsection (1) shall not unreasonably interfere with the operations of the Company.

(3) Information gathered during the course of the activities referred to in subsection (1) will be treated as confidential unless it is agreed by the Company and the Minister that the information may be made public.

15. (1) The Company agrees to provide information and advice requested by a Monitoring Committee, comprising representatives of the Government of Canada and the Government of the Northwest Territories designated by the Minister and the Commissioner respectively.

(2) The Monitoring Committee will prepare reports every six months for the Minister and the Commissioner concerning the compliance of the parties with the terms of this Agreement.

16. (1) Each year during Stage 1 and 2 the Company will actively explore for extensions to the presently known orebody and will submit to the Minister plans and estimated expenditures for the following year's exploration program, and results from the previous year's exploration program.

(2) Subject to annual review by the Minister, the Company agrees to conduct exploration programs in areas in Northern Baffin Island not covered by subsection (1) for the first 10 years of Stage 2, annual expenditure on this exploration program to be not

less than \$250,000, first priority being given to exploration in that region which could supply feed to the project's concentrator. During this period the Company will submit plans and estimated expenditures for the following year's exploration program to the Minister, together with results from the previous year's exploration program.

(3) The costs incurred in Stage 1 on exploration programs conducted or caused to be conducted by the Company in the areas referred to in subsection (2) shall be credited to the expenditures required to be made in subsection (2) if the plans and results of such programs are submitted to and approved by the Minister.

(4) The Minister will consider applications from the Company for financial assistance with the exploration programs referred to in subsections (2) and (3), under the Northern Mineral Exploration Assistance Program.

(5) The Company must bring to the attention of the Minister any increase in ore reserves available, to the project, for production, who will consider the effect of the availability of such reserves on the conditions set out in subsection (4) of section 2.

17. (1) (a) The Company shall develop in consultation with appropriate government agencies Terms of Reference satisfactory to those agencies for reasonable environmental study projects and agree to undertake such studies.

(b) The Chairman of the Northwest Territories Water Board is to be the Company's initial point of contact on all environmental matters.

- (c) The Company agrees to the monitoring by government officials of the environmental study projects referred to in this section.
- (d) All reports and data generated by the Company of an environmental nature or consequence are to be submitted to the Minister.
- (e) The Company shall conduct baseline studies of living resources in the area to facilitate effective protection and management on a sustained yield basis of these resources that might be affected by the presence of the mining development.
- (f)
 - (i) The Company shall undertake a detailed assessment of Twin Lakes and its drainage area including water budget and volume of water available to ensure supply is sufficient to meet the requirements of the development area.
 - (ii) The Company shall submit data on the water quality of the proposed water supply source to the Northwest Territories Water Board.
- (g) The Company shall investigate
 - (i) methods to reduce freshwater usage within the mine and mill, including recycling processes and the use of backfill techniques to reduce tailings slurry, and
 - (ii) the feasibility of electrical heating of mine water.
- (h) The Company shall carry out studies to analyze the air pollution effects and operating implications

of atmospheric inversions in the development area and airport area.

- (i) The Company shall submit technical information in relation to the location and construction of facilities for the storage of petroleum products and hazardous materials, including site plans, foundation analysis data, design and operation of fuel transfer facilities. In addition, the Company will prepare and submit for approval a contingency plan for the containment and clean-up of spilled petroleum products and other hazardous materials.
- (j) The Company shall develop and describe procedures for the minimization of concentrate spillages and of dusting associated with concentrate storage, transfer and loading at the marine terminal.
- (k) Where it is responsible for the construction of such facilities the Company shall submit plans for the construction and operation of a municipal water supply for the townsite, and for the collection, treatment and disposal of sewage and garbage.
- (l) Where it is responsible for the construction of such facilities the Company is required to ensure, by submission for approval of construction plans and schedules, that the development of roads, airstrips, marine terminal, townsite and mine area facilities will cause minimal disturbance to the natural environment.
- (m) The Company shall provide plans for emergency facilities to contain spills at the concentrator site.

(2) The company will be permitted to dispose of tailings on land, subject to the completion of studies and technical investigations necessary to ensure acceptable location, design and operation of the tailings disposal system. In order to arrive at an adequate assessment of disposal of tailings on land, the Company shall undertake studies and investigations of the following:

- (a) alternative sites,
- (b) stability of tailings pond embankments,
- (c) tailings pond capacity requirement over anticipated life of the mine,
- (d) operation of the tailings pond including retention time, minimization of glaciation and decant methods for disposal of liquid fraction,
- (e) redirection of freshwater run-off from the tailings area.

(3) (a) The Company shall be permitted to dispose of tailings in Strathcona Sound if detailed environmental studies are carried out by the Company and it is clearly demonstrated to the satisfaction of the Minister of the Environment and the Minister that damage to the marine ecosystem is controllable and acceptable and potentially less hazardous to the environment than the land disposal alternative. Environmental studies required and their respective purposes are as follows:

- (i) physical and chemical oceanographic characteristic studies of Strathcona Sound waters and their relationship to the waters of Admiralty Inlet. This information is

essential to the success of biological studies and to determine the movements of deposited tailings;

(ii) Studies to investigate and develop optimal methods for handling and treatment of tailings for sea disposal (heavy metal elution, flocculation, dispersion minimization), including modelling studies utilising results of oceanography studies;

(iii) toxicity investigations to determine tolerance levels (lethal and sub-lethal) of fish and invertebrates to discharged tailings;

(iv) invertebrate population studies to establish species, composition, abundance, distribution of marine invertebrates, plus reproductive habits of marine invertebrates, plus reproductive habits of important species, in Strathcona Sound;

(v) fish population studies to establish population structure and distribution of fish communities, including migratory, spawning, and feeding habits of important species in order to be able to assess the potential effect of marine disposal on the fish community.

(vi) marine mammal studies to establish population structure and distribution including migration patterns, feeding habits and location of denning and hauling up areas of important species such as walrus, seals, and whales, in order to be able to assess the potential impact of sea disposal on the mammal community utilizing Strathcona Sound;

(vii) polar bear studies to determine the occurrence, denning and movement habits of the polar bear community utilizing the Strathcona Sound area to enable assessment of the possible intake of undesirable levels of contaminants in the polar bear populations through the marine disposal; (viii) seabird studies to determine the status of seabirds utilizing the Strathcona Sound area, including distribution species composition, feeding and reproductive ecology, components of the food chain, with the object of determining possible adverse effects on these populations of uptake of contaminants resulting from marine disposal.

(b) If it is clearly shown to the satisfaction of the Minister of the Environment and the Minister that,

(i) the tailings are not toxic, and

(ii) the tailings settle directly to the bottom of Strathcona Sound (in the deep), and remain immobile and do not affect the living environment,

then studies referred to in sub-paragraphs (vi), (vii) and (viii) of paragraph (a) may not be required.

18. (1) The Minister will request the Minister of Communications to provide advice and assistance to the Minister, the Commissioner, and the Company, in preparing communication services plans for the project.

(2) Communications services should be provided by the public telecommunications carrier for the area. The Company must justify any private system it wishes to install by showing good reasons for not using the public telecommunications carrier systems.

(3) Any telecommunications which the Company and the public telecommunications carrier agree to install must be extendable to serve the general public with local and long-distance telephone service.

19. (1) The Minister will recommend to the Governor-in-Council that pursuant to section 104 of the Canada Mining Regulations the Company be authorized to export 1,800,000 short dry tons of lead and zinc concentrates from the project, or such lesser amount that may be required to satisfy the loan repayments referred to in section 21, subject to the provisions of section 20, and 21.

(2) Nothing in this agreement will conflict with the provisions of the Export and Import Permits Act.

(3) In the event of the lesser amount referred to in subsection (1) prevailing, the Minister, subject to the provisions of section 21, will give first priority to, and will recommend to the Governor-in-Council, the renewal of the export authorization for the balance of the 1,800,000 short dry tons referred to in subsection (1).

20. (1) During Stage 2 the Company will continue to assess possibilities for processing within Canada, concentrates produced by the Company from the project. This assessment will include discussions with firms or groups of firms operating or interested in operating lead and/or zinc smelters located in Canada, in order to determine the best possibilities for processing the project's concentrates within Canada.

(2) The Company will submit to the Minister a report on such activities at least once every three years of the export authorization.

21. (1) The terms on which the Company sells concentrates from the project will be set for an initial term ending

- (a) after four years of full production, or
- (b) when loan financing guaranteed by Metallgesellschaft A.G., Billiton B.V. and New Jersey Zinc Company and used by the Company, is repaid from the cash flow generated by the project, whichever alternative is last realized.

(2) In order that the initial term of the concentrate sales agreements referred to in subsection (1) is not unduly extended, the Company agrees that all cash flows derived from the operation of the project, to the extent required by a loan repayment schedule approved by the Minister, shall be applied to the repayments of the indebtedness referred to in paragraph (b) of subsection (1) above.

(3) On December 31 of each production year the Company will report to the Minister the amount of the outstanding loans referred to in subsection (1), together with an estimate of the remaining repayment period.

(4) Terms for the sale of concentrates are to be negotiated at the end of the initial term referred to in subsection (1) and at the end of each two year period thereafter to ensure that the Company sells concentrates on a basis competitive with net smelter returns available elsewhere at that time. The Company agrees with Her Majesty that prior to entering into any renewal of concentrate sales agreements the Company will ensure in accordance with a reasonable procedure approved by the Minister, to provide an opportunity to one or more Canadian smelters to

purchase such concentrates, subject always to the right of refusal by the Company in respect of 50% thereof, on terms no less favourable to the Company than those available elsewhere.

22. Subject to Section 21, should the Company export concentrates from the project for which one or more Canadian smelters offered net smelter returns at least as favourable to those available elsewhere, the Company shall pay to Her Majesty a sum calculated at a rate of 10 per cent of the net smelter returns realized on the sale of such concentrates, it being mutually agreed that the said sum represents a genuine pre-estimate of the amount of damages caused by such non-performance.

23. (1) The Company must ensure that all times the project is effectively and beneficially controlled by Canadians and be able to demonstrate that this is so on a request from the Minister at any time.

(2) Subsection (1) shall not prejudice the rights of secured creditors of the Company to realize or otherwise deal with their security in the event that the Company fails to meet its obligations under loan agreements, the terms and conditions of which shall be subject to the approval of the Minister.

(3) Nothing in this agreement shall conflict with the provisions of the Foreign Investment Review Act.

(4) The Company will undertake to offer in the first instance, the opportunity of advancing any over-run financing of the project earning equity in Nanisivik Mines Limited, to Her Majesty or a company designated by the Minister. Such an offer is to be on conditions at least as favourable as those that would be offered to another company or individual.

24. (1) Prior to the permanent closure of the mine due to the exhaustion of ore reserves the Company agrees to give at least twelve months notice of such closure, to the Minister.

(2) In the event of the permanent closure of the mine it shall be the responsibility of the Company:

(a) to dispose of materials, equipment and buildings, including housing, under its ownership or title, within a time period, and in a manner, satisfactory to the Minister and the Commissioner,

(b) to submit to the appropriate government agencies plans and schedules for the abandonment, clean-up and restoration of the site. The abandonment, clean-up and restoration shall be undertaken in a manner socially, aesthetically and environmentally acceptable to the government agencies concerned. In the case of the tailings disposal system, the planning activities are to be undertaken before Stage 2 commences,

(c) to pay relocation costs not otherwise reimbursable, for employees and their dependents having to move due to impending or actual closure of the mine and

(d) to retire fully any outstanding portions of loans, outstanding user-charges and other debts payable to

Her Majesty and chargeable to the project.

25. (1) In consideration for the assistance provided by Her Majesty the Company shall reserve for Her 18 per cent of all classes of all shares issued and allotted by Nanisivik Mines Ltd., and reserve for Her Majesty the opportunity to participate in any share issues after the initial allocation of shares.

(2) Share certificates representing the percentage of shares set forth in subsection (1) shall be deposited by the Company with a trustee satisfactory to Her Majesty and shall be released to Her upon Her Majesty substantially completing the activities described in sections 5, 8, 9 and 10 of this Agreement.

(3) Her Majesty shall be entitled to representation on the Board of Directors in proportion to Her equity share in the Company, provided that Her Majesty shall be entitled to at least one member of the Board of Directors. Any person occupying such a position shall be designated by the Minister.

(4) The provisions of subsection (3) shall apply mutatis mutandis to the composition of the Executive Committee of the Board of Directors.

26. The Company shall submit to the Minister any agreements or changes in such agreements entered into by the Company and relating to the project.

27. The Company will deliver to the Minister a guarantee deposit of \$500,000 in the form of a guaranteed promissory note to guarantee the observance of the terms and conditions set out herein. Where the Company has failed to comply with the terms and conditions hereof and damage has or is likely to result, and

the Company has not remedied the failure within a reasonable time after it has received notice to do so, then the Minister may take such action as, in his discretion, he deems reasonable to remedy such failure and the costs thereof may be charged against the security deposit.

28. Where the parties are unable to agree upon the terms and conditions to be detailed in separate agreements pursuant to sections 5, 8, 9 and 10 or upon the interpretation of any provision of this Agreement the matter shall be referred to a single arbitrator who shall be a judge of the Federal Court of Canada appointed by the Chief Justice of the Court and the decision of the arbitrator shall be final and binding upon the parties.

29. (1) The Company shall assign this Agreement and all the rights and liabilities hereunder the Nanisivik Mines Ltd. which Company shall own and operate the project. The Company shall cause Nanisivik Mines Ltd. upon such an assignment to undertake with Her Majesty to be bound by and perform all the terms and conditions of this Agreement.

(2) Except as provided in subsection (1) this Agreement shall not be assigned without the prior written consent of the Minister.

30. The Company shall indemnify and save harmless Her Majesty from and against all suits, proceedings, claims, losses, damages, costs, actions or causes of action arising out of all operations of the Company pursuant to this Agreement.

31. All of the time limits contained herein shall be extended in the event of any delay caused by an act of God, Her Majesty's



Appendix K

SPEECH NOTES

FOR THE

HONOURABLE JEAN CHRÉTIEN

MINISTER OF INDIAN AND NORTHERN AFFAIRS

AT THE SIGNING OF THE

NANISIVIK MINES LTD. AGREEMENT

FROBISHER BAY, NWT

JUNE 18, 1974

Communiqué

I am very happy to announce to you today the start of a new mining venture on Baffin Island -- one which will give a shot in the arm to your economy and will provide jobs and other economic opportunities to the Inuit. I am speaking of the Strathcona Sound lead-zinc mine 18 miles from Arctic Bay which has been under active exploration since 1958.

I will be signing an agreement today with Mr. Frank Agar, the president of Mineral Resources International Ltd., which will provide for an immediate start on the construction of the mine, mill, townsite and other infrastructure and make it possible for the mine to go into production by 1976. The mine will provide direct and indirect employment for some 200 persons 60 per cent of whom could be Inuit by 1979.

This is a new approach to natural resource development in the North. We are attempting to introduce mining production into a region of the north which, up to now, has experienced little economic activity. However, our primary objective is to ensure that the maximum benefit will flow to the residents of the region, not only through job opportunities, but also through participation in the planning and management of the project. This is an opportunity to integrate our social development aims with an industrial project in a positive manner.

Accordingly, the agreement contains extensive provisions relating to consultation, training and employment, entrepreneurial opportunities and other provisions of this nature. Specifically, the company and the government have accepted a goal to fill 60 per cent of the work force with Inuit in three years from the start of production. Apprentice positions will be identified and special training programs will be undertaken. A counsellor appointed by the Northwest Territories Government, a Canada Manpower representative, and an Inuk from amongst the employees will serve as a Training and Employment Advisory Committee. Extensive discussions on working arrangements will take place with employees and residents of nearby communities. The townsite will be an open one developed in conjunction with the Inuit. It will be connected to Arctic Bay by road. Business opportunities will be developed and offered to local people. Social research will be conducted in co-operation with local residents on the impact of this development. All of these subjects are spelled out in the agreement.

If the known deposits were to be mined at an economic rate they would be exhausted after six or seven years. The agreement provides for a slower paced operation extending the life of the reserves to at least 12 years

so as to avoid the boom and bust phenomenon. Furthermore, geologists assure us that this is a promising area and so the agreement provides for expenditures on exploration by the company each year to a minimum of \$250,000. While we cannot be sure, we hope that this activity will discover further reserves and extend the life of the mine. The mine is to be called Nanisivik or "the place where people find things" and I am hopeful that this will continue to be the case.

We must be concerned about what is to happen when the mine is exhausted as eventually it surely must be. We are taking care in the agreement, however, to ensure that adequate advance notice is given to the people and we already know of other economic opportunities such as the Arvik mine on Little Cornwallis Island, or the Mary River iron deposits which may take the place of Strathcona Sound.

This is a pilot project. It is the first mine this far north in Canada although there are other such mines elsewhere in the world. From it we expect to learn much about Arctic mining operations. Shipping is a critical aspect of the mine. Canadian ships are to be used where available and competitive and the mine

will lead to the development of such ships. Although the terrain is relatively insensitive, detailed environmental studies will be carried out to avoid any unnecessary damage to the land, the sea, or their resources. In particular, special attention will be paid to the method of tailings disposal and water supply and usage. By carrying out this operation in a carefully controlled manner we expect to learn a great deal about mining operations at this latitude and their effect on the environment.

The project has been a long time coming because it is located in such an isolated area with inadequate infrastructure. Economic forces alone would not be sufficient to put it into production even now when metal prices are high. Accordingly, and in order to gain the social and economic benefits, the government has agreed to provide much of the necessary infrastructure including an Arctic Class 'B' airport, a shipping wharf, some roads and the townsite. User charges and building rents will, however, recover much of these costs over the life of the mine. Those remaining a charge to the government will be the public facilities such as the airport, subject, of course, to normal landing charges, the school and the road system connecting Arctic Bay to the townsite. The costs of municipal utilities in the townsite will be recovered from users in the normal way.

Because the government wants to ensure that the social and northern economic benefits are fully realized and because the government is investing substantial funds we have negotiated and obtained an equity interest in the company. For the first time in Canada the federal government has obtained an 18 per cent equity in a mining company with full right to representation on the Board of Directors and Executive Committee. I intend to appoint an Eskimo as one of the government's Directors. This equity will also entitle us to a share of the profits.

Lastly, what of Canadian content and control? The operating company Nanisivik will be 77½ per cent Canadian controlled, 11¼ per cent will be held by Metalgesellschaft A.G. of West Germany and 11¼ per cent by Billiton B.V. of Holland. These latter two companies are putting up much of the debt capital and are guaranteeing cost over runs for the mine itself. In return, through export authorization being granted to the company, they will receive the concentrates until the debts are repaid.

There is no market in Canada today for the lead and zinc which will be produced from this mine. Neither is there smelter capacity for further processing. Hence export of the concentrates is being authorized for a limited period. Provision is made in the agreement both

for a review of the export authorization and of the availability of Canadian smelters.

Canadian content of the materials going into the mine is guaranteed subject to their availability and competitiveness and, as I have already said, Canadian ships are also to be used subject to the same conditions.

This is a pilot Arctic mining venture involving many new concepts. It has taken a long time to come to fruition. Residents of Baffin Island will recall that the deposit was first discovered by Captain Bernier in 1910. Texas Gulf Sulphur Ltd. carried out development work over the period 1958 to 1970 and Mineral Resources International Ltd. have been working since 1972 on the development. The government started discussing the project with M.R.I. in 1972 and commenced detailed negotiations last fall when the company's feasibility study was completed. I know the people of Arctic Bay are impatient with the delays but we wanted to have the best agreement possible. I am convinced that Nanisivik will bring substantial benefits to northerners particularly those here on Baffin Island and to Canadians generally. It is my hope it will be a model for future mineral developments in the Arctic.



Appendix L

1-7423

Nanisivik: Canada's First Arctic Mine

Frobisher Bay, N.W.T. (June 18, 1974) -- The federal government will have an 18 per cent equity interest in a new lead-zinc mine on Baffin Island designed to give a boost to the economy of the Eastern Arctic and to provide new employment opportunities for Eskimo people in the area.

Under terms of the agreement signed here today by Jean Chrétien, Minister of Indian and Northern Affairs, and C. Frank Agar, President of Mineral Resources International Ltd., an independent Canadian company based in Calgary, Nanisivik Mines Ltd. was formed to develop lead-zinc deposits at Strathcona Sound on the northern end of Baffin Island. Nanisivik, which means "place where people find things" will operate the first Canadian mine north of the Arctic Circle.

Construction is due to start on the project this summer. This underground mine located in rugged terrain is expected to be operational in 1976 or 1977.

The federal government will be investing \$16.7 million in this project though part of that amount was already earmarked for Arctic Bay under the continuing northern development programs and much will be recovered by user charges.

The total breaks down as follows: \$8.9 million in loans for townsite development and dock facilities; \$3.5 million for airport facilities to replace present facilities which are already inadequate; \$2.1 million for roads; \$2.2 million for townsite infrastructure.

In return for this funding of infrastructure costs, the federal government has acquired an 18 per cent equity interest in the new company. MRI of Calgary will own 59.5 per cent of the new company and Metallgesellschaft A.G. of Germany and Billiton B.V. of Holland, 11.25 per cent each.

In addition to part ownership in the company, the federal government will have the right to appoint at least two members to the company's board of directors one of whom will be an Eskimo from the Eastern Arctic.

"I believe this is the first time that the Federal Government has obtained part ownership in a mining company in return for funding local improvements", the Minister said. "The government's participation will ensure that the Inuit of the area receive maximum opportunities for training and employment. The mine will offer opportunities in a part of the Eastern Arctic where no natural resource development has so far taken place."

The Settlement Council of Arctic Bay, 18 miles from the mine site, and the Territorial Councillor for the area, Paul Koolerk, have both expressed strong support for the project. Many Arctic Bay residents are already familiar with the wage economy through employment with Panarctic Oils Ltd. and many have worked on the exploration and study phases of the Strathcona mine project since 1958.

The company is expected to employ about 170 people in on-site mining activities. A further 30 to 50 people will work in support activities at Strathcona Sound. As a target, the government and the company have agreed to employ northern residents for at least 60 per cent of its workforce within three years of the start of production.

The mine is expected to provide economic opportunities in the south as well as the north. The agreement calls for the use by Nanisivik Mines of Canadian materials and equipment to the extent that they are available competitively. Also the company must make maximum use of Canadian built and registered vessels for its shipping requirements. Time restrictions are placed on contracts with foreign shipping companies.

The known orebody will provide 500,000 tons of ore a year for a minimum of 12 years. On-site processing will result in 150,000 tons of lead-zinc concentrates to be shipped annually. The company is committed to spend at least \$250,000 a year for 10 years on further exploration in the area. There is no market in Canada today for these metals. Neither is there smelter capacity for further processing. Hence authority is being granted for the concentrates to be exported for a limited period. Provision is made in the agreement both for a review of the export authorization and of the availability of Canadian smelters.

Studies are being made here in Canada regarding the building of Canadian reinforced vessels capable of carrying about 30,000 tons of concentrate through northern ice. This type of special vessel would lengthen the shipping season in this part of the Eastern Arctic to more than 20 weeks from the present eight to ten weeks.

Commenting on the agreement, Mr. Chrétien said:

"This small mine is a pilot project through which all those involved will gain experience in the social, technological, economic and environmental implications of such a development in the Arctic environment.

"The need to broaden the economic base of the Eastern Arctic has been a major concern. However, our primary objective is to ensure that maximum benefit will flow to the residents of the region, not only through job and entrepreneurial opportunities but also through participation in the planning and management of the project and townsite.

"I am pleased with the enthusiasm of the Eskimo people of Arctic Bay and with the good relations which the company has already established with these people.

"The local residents, the company and the government are all aware that the success of this project will be

carefully noted by all those interested in the balanced development of Canada's north.

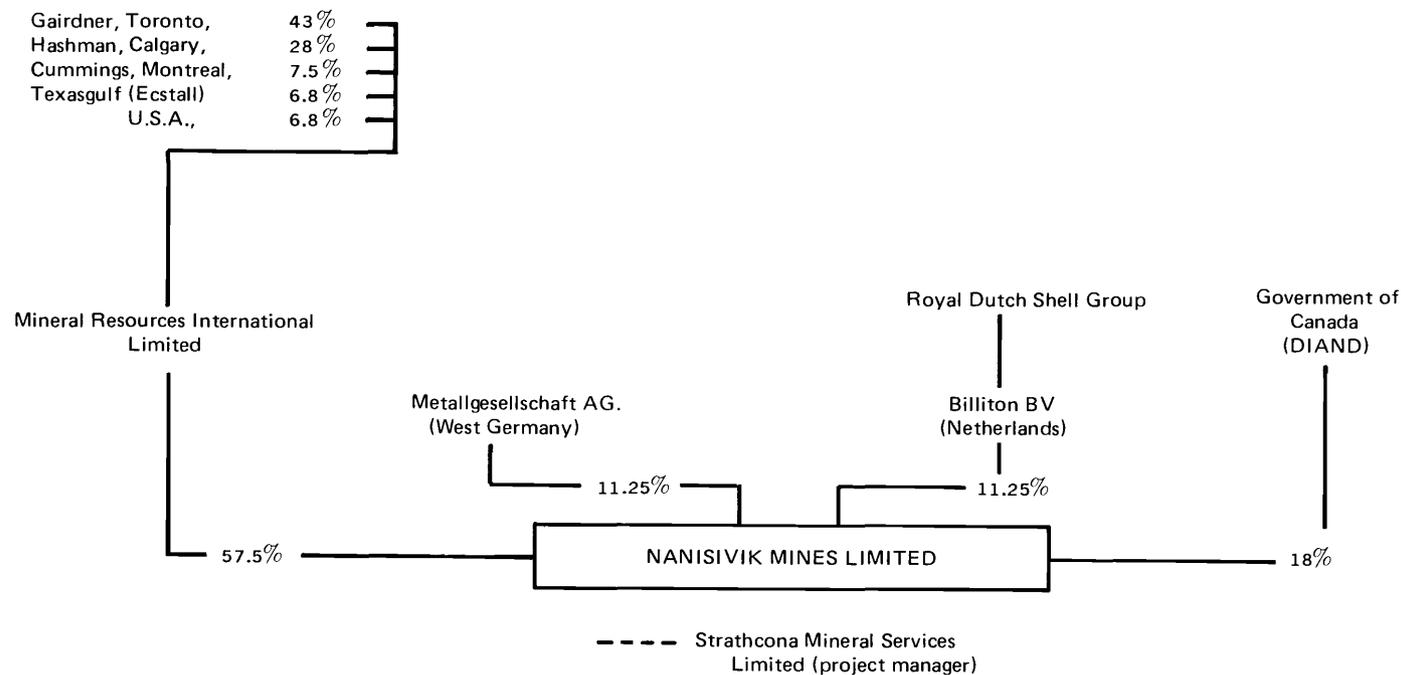
"It is my hope that this new project will be a model for future mineral developments in the Arctic."

Other significant ore deposits in the Northwest Territories include the rich iron ore deposit at Mary River, the high grade lead-zinc deposit at Arvik on Little Cornwallis Island, and the Bathurst-Norsemines deposit at Hacket River.

- 30 -

Ref: technical: Graham Armstrong,
Ottawa,
(613) 992-1213

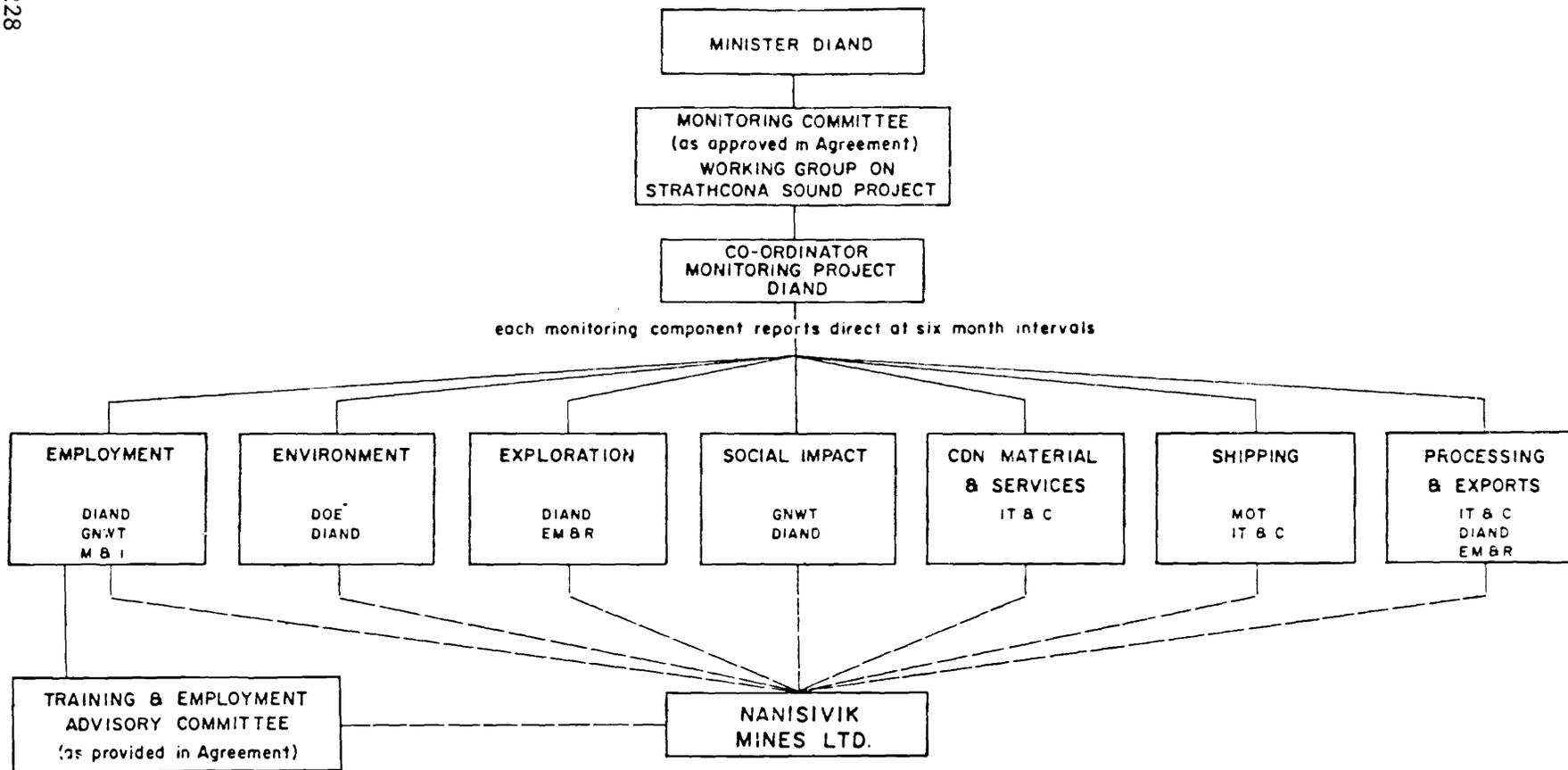
Appendix M - Nanisivik Mines Equity Ownership



Notes:

1. Equity ownership after signing of 18 June 1974 agreement
2. For Hashman, Calgary, see C. Balfour, "Domestic processing left out in Ottawa's Arctic mine deal", Montreal Gazette, 5 July 1974, p.15.
3. For Texasgulf, see Northern Miner, 27 June 1974, p.1. From the August 1972 deal by which MRI received the Strathcona properties, Texasgulf retains a royalty interest of 35% of net profits after cost recovery.

STRATHCONA SOUND PROJECT MONITORING PROCESS



Solid lines denote a reporting relationship
 Broken lines denote a functional relationship

Footnote: Monitoring components are to report direct to the Monitoring Committee in the case of a serious breach of the Agreement.

NOTE: This chart has been prepared to show the reporting and functional relationships involved in monitoring the adherence of Mineral Resources International (MRI) in relation to the agreement of June 18, 1974 executed by MRI and the Minister of the Department of Indian Affairs and Northern Development.

APPENDIX 0 - The Black Angel Mine and Agreement

The situation of the Black Angel mine, for which a development agreement was signed in 1970, is in some ways comparable to that of the Strathcona project. The Black Angel project exploits a small but rich lead-zinc orebody on the west coast of Greenland(1) and is largely owned and operated by Canadian mining interests.(2) However, because the Black Angel ore deposits were located inconveniently on the side of a 10 m cliff above the Marmorilik Fjord, in an area where fresh water was unavailable, there were technological difficulties to be faced which were not present at Strathcona Sound.(3) Also, because the mine was located in Greenland, the Canadian proponents had to deal with the Danish government. Although Danish officials studied Canadian regulations and practices, both the contents of the development agreement and the nature of the decision-making process differed markedly from Strathcona.

In 1966, after on site geological work had located the Black Angel orebody, Cominco Limited, Westfield Minerals Limited (of Toronto), and the original Danish-Canadian discoveries of the deposit created Vestgran Mines Limited and a wholly-owned Danish subsidiary, Greenex A/S (see Figure 0-1). Greenex carried out additional studies of the orebody and initiated contact with the Danish government concerning a development agreement.

Because this was to be the first major mining concession granted under the new Greenland mining regulations (1965, amended 1969), Danish officials approached the negotiations with some caution.(4) Canadian consultants were hired to report on Canadian experience and to provide recommendations concerning application of Greenland regulations. When formal discussions between Greenex and the Danish government began in 1969, the government negotiators from the Ministry for Greenland were assisted by Parliamentary and Danish Supreme Court lawyers.(5)

1. According to the Cominco Annual Report, 1973 (pages 8-9), the Black Angel deposits contained 4.9 Mt of ore, grading 19.8% lead and zinc. The 1973 production grade was 22.9%.
2. See Figure 0-1.
3. See John M. Willson, "The Black Angel Mine - A Danish/Canadian Development in Greenland," Mining Magazine, July 1973, pp. 21-25.
4. See W.S. Watt, "Mining Regulations in Greenland," Polar Record, vol. 16 (100), January 1972, pp. 81-90.
5. DIAND, Press Clippings on Greenland, vol. 2, p. 93.

Agreement was reached in October 1970, but the licence was not issued until late January 1971. Unlike the Canadian process, which ends with an announcement from DIAND, the Danish process, as set out in the Greenland mining regulations, requires that concession agreements be submitted to the special Concessions Committee of the Danish Parliament (and therefore be subjected to public scrutiny) and that an opinion be sought from the National Council of Greenland before a concession is granted.(6)

The Black Angel agreement was in many ways different from the Strathcona agreement. Generally, the one for the Black Angel mine seems to have been less comprehensive. This is partially explained by the fact that the deal involved no governmental assistance in the provision of transportation and townsite infrastructure. In addition, there seems to have been little effective concern regarding the social quality of the community. The agreement included clauses designed to encourage the employment of Danish and Greenlandic workers, but no training programs for Greenlanders were set up and by September 1972 only 7 of 200 workers were Greenlanders.(7)

Marmorilik was established as a company town and, following the perceived interests of the company, was designed as an all-male, barracks community. Workers were to be attracted only by the opportunity to make substantial amounts of money. Although the hourly wages would be lower than those in Denmark proper, long hours (workers put in a 12-hour day) and earnings which are tax-free for workers who stay 2 years (16 working months) in Greenland would permit monthly wages ranging from 6000 to 14,000 kroner(\$960-2240).(8)

There seem to have been no clear plans concerning avoidance of negative social impact on surrounding native settlements.(9) There were no discussions with the Communal Board of Umanak, the nearby town which was to bear the impact of Greenex workers. The workers bought power boats to permit temporary escape from an all-male company town where liquor was prohibited and beer rationed.(10)

The agreement did include some expressions of concern about environmental damage. For example, Greenex was required to compensate the local population if pollution from the mining operation

6. Watt, op. cit.

7. DIAND, op. cit., vol. 7, pp. 19,37.

8. Ibid., vol. 8, p. 46; vol. 11, p. 47.

9. Ibid., vol. 8, pp. 10-11.

10. Ibid., vol. 7, pp. 33-34,; vol. 8, p. 45.

negatively affected fishing and hunting.(11) One suspects, however, that it would be difficult for local people to prove the connection between Greenex' activities and any declines in fish and game populations. The company was allowed to deposit mine and concentrator (tailings) into the fiord.(12) The effects of this will be monitored to some extent but it is clear that the question of environmental impact was not seriously considered by Danish authorities prior to the signing of the development agreement. According to the Danish press the first government field research did not take place until August 1972, nearly two years after the agreement was reached, and the studies lasted one week.(13)

The major concern of the Danish government in the agreement with Greenex seems to have been that of assuring adequate returns to the state from the mining operation. Under the terms of the agreement, the government would receive 45 per cent of the profits of the operation after the company has recovered its initial costs of exploration and development.(14) In addition, the company would pay 300,000 kr. (\$40,000) per year to the government to cover administrative costs.

The 45 per cent of profits arrangement was subjected to some criticism in the Danish press. In particular, concerns were expressed that the company, through intra-corporate dealings, would be able to declare its profits elsewhere. In response to this contention the Greenex project leader stated (in 1972), "We cannot

11. Ibid., vol. 8, p. 45.

12. Contents of waste deposited in fiord at Black Angel: "The following amounts of solid ore will be discharged in the waste water daily: Over 8 tons of lead ore, over 12 tons with zinc, 215 tons with iron, 23 kilograms with cadmium, 420 kilograms with copper, 147 kilograms with arsenic, 34 kilograms with antimony, 8 kilograms with nickel, 6 kilograms with cobalt and just under one kilogram with mercury. In addition the following amounts will be discharged daily in solution: 1/2 kilogram lead, 2 kilograms zinc, 1/2 kilogram copper, 7 kilograms iron, 7 kilograms sodium-cyanide and 2 tons of calcium plus 25 kilograms of organic compounds and scum-forming materials. 300,000-450,000 tons of waste-water will be emptied into the fiord annually, a quarter of which consists of heavy metals, mainly as sulphide ore." From Politiken, 16 August 1972, in ibid., vol. 7, p. 13.

13. Ibid., vol. 7, p. 12.

14. It is not clear how great these costs were. The Danish press consistently reports 300 million Kroner (about \$43m) as does Willson, op. cit., p. 25. However, the Financial Post Survey of Mines 1974, p. 267, reports \$51.2m.

refine the Greenlandic ore in our smelters. We are not planning to build new smelters. That we shall sell the ore to other companies will be a guarantee against any manipulations concerning the profit. The Danish state can rest completely assured of this."¹⁵ However, in August 1973, Cominco announced that it had begun feasibility studies for a new zinc smelter in north-east England. The new smelter was to be supplied with concentrate from the Black Angel mine.¹⁶

The extent of the returns to the state will also depend on the life of the mine. Although the Black Angel deposits are extraordinarily rich (the 1973 average production grade was 22.9 per cent lead-zinc), the orebody is not large in comparison with any of the others discussed in this study, (see Appendix H). At a production rate of 1.65 kt per day, the mine was expected to last only eight years unless additional deposits were found. Originally the Danish government did not anticipate any returns from the Black Angel mine for five years. Subsequent increases in world zinc prices changed this and it became likely that Greenex would be able to recover its capital outlay after 3 years of operation.¹⁷ However, the Danish government evidently reached its agreement with Greenex believing that it would be five years before the state would receive any significant returns from the mine and, presumably, knowing that the mine might only operate for eight years.

In summary, it seems that the Danish government made some attempts to maximize the economic benefit to the state from the Black Angel development, but may not have been particularly successful. Substantial returns to the Danish treasury will depend on continued high zinc prices, the discovery of more rich ore at Black Angel, and the ability of the state to prevent the company from declaring its profits elsewhere. It should be noted, in the interests of comparisons with Canadian examples, that the project was undertaken without government assistance in the provision of infrastructure or services. Thus the Danish government had no major expenditures to recover and the economic costs involved were largely opportunity costs. On other matters the Black Angel agreement was more obviously deficient. Environmental protection requirements seem to have been weak at best and social impact problems were scarcely considered.

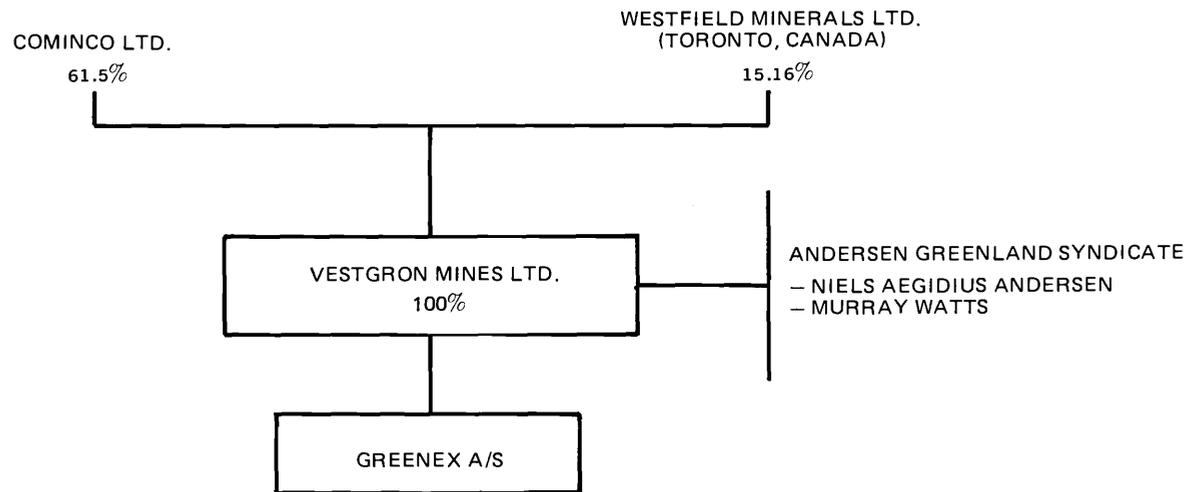
The end effects of the project and, consequently, the adequacy of the agreement cannot yet be assessed, but the Black Angel case does not at this point seem to provide an attractive model for Canadian developments to emulate.

¹⁵. DIAND, op. cit., vol. 11, p. 23.

¹⁶. Mining Journal, 31 August 1973, p. 169.

¹⁷. DIAND, op. cit., vol. 11, p. 46.

Appendix Figure 0.1 - Black Angel Ownership



Source: Financial Post, Survey of Mines 1974, pp.267-8.

NOTES

Chapter I: Introduction

- 1 Figures quoted from A.B. Yates, Director, Northern Policy and Program Planning Branch, Department of Indian Affairs and Northern Development (DIAND), "Nanisivik - 'The Place Where Things Are Found'" (Ottawa: DIAND, April 1975), p.1.
- 2 Watts, Griffis and McQuat Ltd., Feasibility Study of the Strathcona Sound Project for Mineral Resources International Limited, vol. 1 (Toronto, September 1973), p. 161. The feasibility study summary is reproduced in this study as Appendix A.
- 3 Canada, DIAND, Communiqué "Nanisivik: Canada's First Arctic Mine," (18 June 1974) p. 4. This press release is reproduced in this study as Appendix L.
- 4 The Strathcona project agreement is reproduced in this study as Appendix J. It is henceforth referred to as the Strathcona Agreement.
- 5 Appendix K, Item 4, especially paragraph 29.
- 6 Although it is officially still the Department of Indian Affairs and Northern Development and although this name still appears on legal documents, DIAND has within the last few years chosen to call itself the Department of Indian and Northern Affairs. For consistency and convenience, this study will use the older legal title and the acronym DIAND.
- 7 See Appendix K, first page.
- 8 Robert G. Williamson, "The Keewatin Settlements", The Musk-Ox No. 8, 1971, p. 21.
- 9 Terrence W. Foster, "Rankin Inlet: A Lesson in Survival" The Musk-Ox, No. 10, 1972.
- 10 Ibid.
- 11 At this time the government agency responsible for the territories was the federal Department of Northern Affairs and National Resources.
- 12 See F.G. Vallee, Kabloona and Eskimo in the Central Keewatin (Ottawa: Northern Coordination and Research Centre, Department of Northern Affairs and National Resources, May 1962), p. 58.

- 13 Ibid., pp. 35-39 and 52-57; Francis Harper, Caribou Eskimos of the Upper Kazan River, Keewatin (Lawrence: University of Kansas, 1964), pp. 56-62.
- 14 Foster, op.cit., p. 35.
- 15 Vallee, op.cit., p. 58-59, 117.
- 16 Robert C. Dailey and Lois H. Dailey, The Eskimo of Rankin Inlet: A Preliminary Report (Ottawa: Northern Coordination and Research Centre, Department of Northern Affairs and National Resources, June 1961), p. 4.
- 17 Ibid., p. 4.
- 18 J. Kusugak, "Rankin - Yesterday and Today", Inuit Monthly, Vol 3 (4), p. 16.
- 19 Dailey and Dailey, op.cit., pp. 10-23.
- 20 Ibid., p. 20
- 21 Kusugak, op.cit., pp. 15-16.
- 22 Interviews with Rankin Inlet residents recorded by the Inuit Tapirisat of Canada, videotape.
- 23 Dailey and Dailey, op.cit., p. 4.
- 24 See D.M. Brack and D. McIntosh, Keewatin Mainland Area Economic Survey and Regional Appraisal (Ottawa: Industrial Division, Dept. of Northern Affairs and National Resources, March 1963).
- 25 Kusugak, op.cit., p. 16.
- 26 See R.G. Robertson, "The Northwest Territories - Its Economic Prospects", a brief presented to the Royal Commission on Canada's Economic Prospects, at Edmonton, Alberta, 22 November 1955, p. 20.
- 27 K.J. Rea, The Political Economy of the Canadian North, (Toronto, University of Toronto Press, 1968), p. 264.
- 28 The Pine Point ore was not needed for the Trail smelter until the early 1960s. See ibid, p. 142; and Canada, House of Commons, Debates 1960-61, Vol. VI, p. 7319.
- 29 Robertson, op.cit.

- 30 Ibid., pp. 13-17, 23-28.
- 31 Canada, Report of the Royal Commission on the Great Slave Lake Railway (Ottawa: Queen's Printer, 1960).
- 32 G.T. Armstrong, "Economic Development of the Northern Canadian Territories", a paper presented to the Australian and New Zealand Association for the Advancement of Science, 43rd Congress, Brisbane, Australia, May 1971, p. 20. (Mr. Armstrong had been, and subsequently returned to become again, a DIAND economist.)
- 33 See Paul Deprez, The Pine Point Mine and the Development of the Area South of Great Slave Lake (Winnipeg: Centre for Settlement Studies, University of Manitoba, October 1973), pp. 23,24-25,28,54.
- 34 The 3-year tax exemption applied to any new northern mine and was part of a government incentive program embodied in the Income Tax Act and the Canada Mining Regulations.
- 35 Canadian Bechtel Limited, Feasibility Study: Lead-Zinc Smelter, Pine Point, NWT, prepared for the Government of Canada (Ottawa: Queen's Printer, 1968), pp. 1-2.
- 36 Armstrong, op.cit., p. 21.
- 37 The limited regional economic effects of the Pine Point project are noted in D. Radojicic, Great Slave Lake - South Shore: An Area Economic Survey (Ottawa: Industrial Division, Northern Administration Branch, DIAND, July 1968), pp. 82, 84.
- 38 Deprez, op.cit., p. iii.
- 39 Ibid., pp. 127-132. The government did, however, assist in an Inuit relocation and employment program with the Great Slave Lake Railway beginning in 1965. The experience was not an entirely happy one. See D.S. Stevenson, Problems of Eskimo Relocation for Industrial Employment (Ottawa: Northern Science Research Group, DIAND, May 1968), pp. 5-12.
- 40 Deprez, op. cit., p. 98; and Territorial and Social Development Branch, Northern Affairs Program, DIAND.
- 41 Canadian Bechtel Limited, op.cit.
- 42 Graham Armstrong and Andrew J. Freyman, "Cost-Benefit Analysis of a Lead-Zinc Smelter in the Northwest Territories" (Ottawa: Economic Staff Group, Development Branch, DIAND, January 1969).

- 43 See Drake Hocking, Forest Deterioration Survey: Pine Point, Mackenzie District, Northwest Territories, File Report NOR-7-14 (Northern Forest Research Centre, Canadian Forestry Service, Environment Canada, Edmonton, Alberta, August 1973, unpublished), especially p. 27.
- 44 J.N. Stein and M.D. Miller, An Investigation into the Effects of a Lead-Zinc Mine on the Aquatic Environment of Great Slave Lake (Resource Development Branch, Fisheries Service, Environment Canada, Winnipeg, Manitoba, 17 April 1972, p. 48.
- 45 Deprez, op.cit., p. 128.
- 46 Ibid., pp. 127-132.
- 47 Canada, DIAND, A Prospectus for Resource and Economic Development in the Yukon and Northwest Territories (Ottawa: Queen's Printer, 1969) p. 3 - 6.1.4.
- 48 Canada, DIAND, Press Release 1-66161, 20 March 1967, p. 1.
- 49 The government refused a request by the White Pass and Yukon Route (railway) for \$50 million to extend its narrow-gauge railway from the Whitehorse railhead to the Anvil mine. See D. Wm. Carr and Associates Ltd., The Yukon Economy - Its Potential for Growth and Continuity: Vol. 1 Final Report, a report prepared for DIAND and the Government of the Yukon Territory (Ottawa: November 1968) p. 138.
- 50 See Agreement between Her Majesty the Queen in Right of Canada and Anvil Mining Corporation Limited, 21 August 1967 (henceforth, Anvil Agreement), pp. 6-9; and Armstrong, op.cit., pp. 33-34.
- 51 According to Armstrong, ibid., p. 34. The road probably did facilitate and encourage mineral exploration in the area. Nevertheless, Anvil remains the only producing mine in the area.
- 52 Anvil Agreement, p. 4,9.
- 53 The first 8 year's production of ore concentrate was contracted to Japanese smelters.
- 54 Anvil Agreement, pp. 9-14.
- 55 Figures from Territorial and Social Development Branch, Northern Affairs Program, DIAND.
- 56 Walter J.P. Lampe, Native People's Perceptions of Factors Associated with Job Acceptance and Retention (Ottawa: Social

and Territorial Development Branch, DIAND, May 1974).

- 57 Ibid., especially Chapters I, IV, and VI.
- 58 Jim Lotz, Northern Realities: The Future of Northern Development in Canada (Toronto: New Press, 1972) p. 220.
- 59 According to an official of the Yukon Lands and Forests Service cited by Shirley Culpin, "No Word Yet on Anvil Action" The Whitehorse Star, Friday, 21 March 1975.
- 60 The Whitehorse Star, Monday, 24 March 1975.
- 61 For example, the authors of the DIAND pamphlet "Canada North of 60: an introduction to resource and economic development in the Yukon and the Northwest Territories" (Ottawa, 1969) asserted, "Today, the combination of private enterprise and initiative with the full cooperation, encouragement and assistance of the Federal Government, is fashioning a chain of keys to unlock the great natural storage vaults containing Canada's resources." For a similar but much earlier statement, see R.G. Robertson, Deputy Minister of Northern Affairs and National Resources, "Address to the National Northern Development Conference", National Northern Development Conference, Proceedings (Edmonton, September 1958), esp. pp. 53-55.
- 62 See Edgar J. Dosman, The National Interest: The Politics of Northern Development 1968-75 (Toronto: McClelland and Stewart, 1975), pp. 99.
- 63 Canada, DIAND, Canada's North 1970-1980 (Ottawa: Information Canada, 1972), p. 6.
- 64 Ibid., p. 10.
- 65 Ibid., p. 29.
- 66 Ibid., p. 30.

Chapter II: Strathcona Project Decision-Making - A Chronology

- 1 P.J. Laporte, Mineral Industry Report - 1969 and 1970 Vol.2 Northwest Territories East of 104 West Longitude (Ottawa, Information Canada, 1974), p. 152; and Kenn Harper, interview, Arctic Bay, September 1974.
- 2 Watts, Griffis and McOuat Ltd., Feasibility Study of the Strathcona Sound Project for Mineral Resources International Limited, vol. 1 (Toronto, September 1973), p. 36. The

feasibility study summary is reproduced in this study as Appendix A.

- 3 D. Bissett, Northern Baffin Island: an area economic survey, (Ottawa: Industrial Division, DIAND, November 1968), Vol. 2, p. 106.
- 4 Watts, Griffis and McOuat, op. cit., p. 39.
- 5 Report by William G. Kempt, Acting Area Administrator, Arctic Bay, to Regional Administrator, Frobisher Bay, 13 November 1969.
- 6 Memorandum by G.N. Faulkner, Assistant Regional Administrator, Frobisher Bay, 18 December 1969.
- 7 Faulkner, op.cit.
- 8 Watts, Griffis and McOuat, op.cit., p. 39. A mineral export permit is required under the Canada Mining Regulations for ore or concentrate destined for foreign smelters.
- 9 Private communication, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND, Texas Gulf seems not to have been averse to hiring Inuit workers. The authors of a 1968 DIAND study (Bissett, op.cit., Vol. 1, p. 178) reported, "the project engineer has estimated that probable employment would range in the vicinity of between fifty and a hundred men (of which 90 percent would be Eskimo)." However the company demanded standards which may well have been prohibitively high. "The project engineer has stressed the importance of learning English as a requirement for Eskimo employment and the development of rudimentary skills such as reading, writing and elementary mathematics."
- 10 Watts, Griffis and McOuat, op.cit., p. 39.
- 11 Northern Miner, 27 June 1974, p. 1.
- 12 These two meetings are the only direct company community contracts recorded in the files of the Arctic Bay settlement. The authors of the Feasibility Study note only the February meeting. Watts, Griffis and McOuat, op.cit., p. 40.
- 13 Ibid., pp. 7, 83, 163, 166, 178, 220, 333-337, and 339.
- 14 Ibid., pp. 47-48. The 15 years include a 2-3 year construction phase.
- 15 The presentation of DIAND's reasoning is based on private communication with officials of Northern Policy and Program

- Planning Branch, Northern Affairs Program, DIAND.
- 16 Appendix K.
- 17 Watts, Griffis and McOuat, op.cit., p. 49.
- 18 Ibid., pp. 49-50, 296-7, 318.
- 19 Ibid., p. 237.
- 20 Private communications, Northern Policy & Program Planning Branch, and Social and Territorial Development Branch, Northern Affairs Program, DIAND.
- 21 Watts, Griffis and McOuat, op.cit., pp. 238, 239.
- 22 Ibid., pp. 49, 208-210, 219-221.
- 23 Ibid., p. 51.
- 24 Correspondence, L. Kalluk, Chairman, Arctic Bay Settlement Council, et al. to G. Farquharson, Watts, Griffis and McOuat Ltd., 15 November 1972. The original Arctic Bay letter was written in Inuttitut, in syllabics, and signed by the chairman of the Settlement Council, Levi Kalluk, and by 98 other adult residents of Arctic Bay. The translation of the letter which was sent to the consultants (with copies to various government officials) appears as Appendix B.
- 25 Correspondence, G. Farquharson of Watts, Griffis and McOuat Ltd. to L. Kalluk, Chairman, Arctic Bay Settlement Council, 4 December 1972.
- 26 This conclusion is supported by the fact that in late December 1972 the Deputy Commissioner of the NWT, who had received a copy of the November letter from Arctic Bay, wrote to the Arctic Bay Settlement Council defending the idea of a permanent townsite at Strathcona which the GNWT had apparently already decided to promote.
- 27 The discussion on the February 1973 meeting in Arctic Bay is based on a report, dated 7 March 1973, sent by the Arctic Bay Settlement Manager to the GNWT Baffin Regional Administrator. From subsequent indications of the level of the community's understanding of major aspects of the project, it is apparent either that the information provided at the February meeting was inadequate or that it was presented in a manner which did not ensure that it would be understood by the people of Arctic Bay. This issue will be more closely examined in Chapter III.

- 28 Report of Arctic Bay Settlement Manager to GNWT Baffin Regional Administrator, August 1973. The DIAND representatives favourable attitude to the project, as reported by the Arctic Bay Settlement Manager, reflected the department's general position at that time. A summary review of the project stated that DIAND "has been closely involved with the Company during the course of the feasibility study and is prepared to facilitate in certain measure, the opening of a mine inasmuch as the methods indicated by the Company to be used in mining will allow the use of semi-skilled workers, possibly numbering 100 men of which the majority will be Eskimos. Considerable benefits would accordingly accrue to the community of Arctic Bay, 13 miles west of the mine site."
- 29 Watts, Griffis and McOuat, op.cit., p. 326.
- 30 Ibid., p. 334.
- 31 Calgary Herald, 26 October 1973, p. 61.
- 32 Department of Energy, Mines and Resources (EMR), "Preliminary EMR Evaluation of Feasibility Study prepared for Mineral Resources International Limited on Proposed Strathcona Sound Zinc-Lead Project in the Arctic Islands", 13 December 1973.
- 33 "A.B. Yates, Director, Northern Policy and Program Planning Branch, Department of Indian Affairs and Northern Development (DIAND), "Nanisivik - 'The Place Where Things Are Found'" (Ottawa: DIAND, April 1975), pp. 8-9. Yates lists several other departments which were also involved in the decision making process, including Industry, Trade and Commerce, External Affairs, National Health and Welfare, and the Foreign Investment Review Agency. However, he does not distinguish between participation in the assessment phase and participation in the negotiation phase which followed Cabinet's granting of approval-in-principle on 28 March 1974.
- 34 DIAND, "Summary of the Preliminary Findings of the Strathcona Sound Evaluation Study" (undated, probably December 1973).
- 35 DIAND, "Preliminary Evaluation - Conclusions and Recommendations" (undated, probably December 1974), Item 1. The profitability question is discussed in detail below in Chapter III, Part C,2,a.
- 36 DIAND, "Summary", op. cit. See below, Chapter III, Part A,5,b.
- 37 Ibid., Appendix A.
- 38 DIAND, "Preliminary Evaluation," op. cit., Item 6. No such

study was undertaken during the assessment phase. See Chapter III.

39 Ibid., Item 3. Equity for Inuit was not sought, but there were definite efforts to encourage Inuit workers and entrepreneurial opportunities.

40 DIAND, "Summary," op. cit., Appendix A. The anticipated project benefits are more thoroughly discussed below, Chapter III, Part C,2,c.

41 EMR, op.cit.

42 Ibid., p. 13

43 News of the North, 7 November 1973, p. 11.

45 Private communication, Territorial and Social Development Branch, Northern Affairs Program, DIAND.

46 See Hugh Brody, The People's Land: Eskimos and Whites in the Eastern Arctic (Harmondsworth: Penguin, 1975) pp. 226-227.

47 See below, Chapter III, Part A,5,a and b.

48 The extent of sacrifice is detailed in Chapter III.

49 DIAND, Canada's North 1970-1980 (Ottawa, Information Canada, 1972), p. 29.

50 This seems to have been a compromise assertion since the various economic studies had come to inconsistent conclusions: expecting corporate rates of return ranging from 0 to 17%. (See below, Chapter III, Part C,2,a. The rate of return actually expected by the proponent is not known. The Watts, Griffis and McOuat report had predicted 15%. However, in a subsequent review prepared for the Toronto Dominion Bank and MRI's (then potential) European backers, a probable rate of return of 9% was forecast. (The Northern Miner, 27 June 1974, p. 2.)

51 See Appendix F, Table F-1.

52 It is somewhat surprising that the absence of need for government assistance should be listed as a disadvantage. This was not explained, but it may have been related to a perceived need to find and support a project which fitted the description of a northern "strategic project" mentioned in the government's March 1972 northern policy document.

53 The Department of Industry Trade and Commerce was included

as a prime negotiator in the Cabinet instructions to ensure maximization of benefit to Canadian suppliers, shippers and, possibly, processors, in the construction and operation of the project. These concerns had been underemphasized in DIAND's Cabinet submission.

- 54 DIAND is the lead department in the ACND and the ACND Secretariat is the Policy and Planning ACND Division of the Northern Policy and Program Planning Branch of DIAND's Northern Affairs Program. See Appendix I, Table I-1.
- 55 Private communication, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND.
- 56 Private communication, Social and Territorial Development Branch, Northern Affairs Program, DIAND.
- 57 This information is taken from the Arctic Bay Settlement files.
- 58 The text of the agreement is included Appendix J. In addition, the Minister's speech and the DIAND Communiqué announcing the agreement are included as Appendices K and L.
- 59 Greenex A/S is the wholly-owned Danish subsidiary of Vestgron Mines Ltd. which is 61.5% owned by Cominco Ltd. of Vancouver. Cominco, a subsidiary of the Canadian Pacific Railway, also controls Pine Point Mine. The Black Angel Project is discussed more fully in Appendix O.
- 60 See Appendix K.
- 61 See Appendix L.

Chapter III: Strathcona Project Decision Making - The Issues

- 1 DIAND, Canada's North 1970-1980 (Ottawa Information Canada, 1972), pp. 10, 29.
- 2 Appendix K.
- 3 This discussion draws heavily from Hugh Brody, The People's Land: Eskimos and Whites in the Eastern Arctic (Harmondsworth: Penguin, 1975), a study of "the nature and consequences of White-Eskimo interaction" in the Eastern Arctic, based largely on research undertaken in Pond Inlet and Arctic Bay. For those interested in a more complete description and analysis of the social context of the Strathcona project, Brody's work is highly recommended.

- 4 Ibid., pp. 167-168.
- 5 D. Bisset, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND, A Background Paper on the North Baffin Communities in Relation to the Strathcona Sound Project (draft, 1 March 1974), p. 15. In Arctic Bay where rotational employment with Panarctic Oils and stone and whale-bone carving are of considerable economic importance, "12 family heads out of 38 are dependent on hunting and trapping as their major income sources."
- 6 Ibid., pp. 8-9, 11. In the report permanent employment is defined as full-time employment for at least 9 months of the year. All but 3 of these jobs were held by men.
- 7 Brody, op. cit., p. 175.
- 8 According to A.B. Yates, Director, Northern Policy and Program Planning Branch, Department of Indian Affairs and Northern Development (DIAND), "Nanisivik - 'The Place Where Things Are Found,'" (Ottawa: DIAND, April 1975) p. 4, the Inuit population on Baffin Island is growing at a rate of 4% per year. However, Bissett (op.cit., p. 4) had earlier reported: "Between the 1971 census and 1973, population increase does not appear to have approached a projected 4% per annum increase... The total population (of Pond Inlet, Arctic Bay, Clyde River, Grise Fiord, Hall Beach, and Igloolik) in 1971 was 2,078 while only 1,966 persons were listed by the Territorial Services Division in February 1973. The lower number in 1973 may be attributable to persons in schools or hospitals outside the area not being listed in the 1973 population count." Northern demographic information is widely recognized to be unreliable. See ACND (Advisory Committee on Northern Development), Sub-Committee on Science and Technology, Science and the North, proceedings of a seminar on guidelines for scientific activities in northern Canada, 15-18 October 1972, Mont Gabriel, Quebec (Ottawa, Information Canada, 1972) pp. 45-47, 55.
- 9 See Brody, op.cit., pp. 227-228.
- 10 The Inuit are not unaware of this. In a petition presented on 29 August 1975, to then Minister of Indian Affairs and Northern Development, Judd Buchanan, the citizens of Broughton Island objected to seismic operations in the Davis Strait which, they feared, would disturb the sea mammals in the area. Part of the petition reads: "If oil development proceeds, an upheaval of ten to twenty years will occur, after which representatives of DIAND and Shell Oil indicate the field will be abandoned. The southern oil market will benefit temporarily at the cost of a

total destruction of our society and the present life style. For the future, Broughton people can look forward to a welfare economy when jobs in the oil industry are gone, and so are the sea mammals. The land and its live resources we believe are forever, if not destroyed for the temporary convenience of a foreign culture." The petition in its entirety is reproduced in Dialogue North 4-75 (Yellowknife: DIAND, Regional Public Affairs, 1975), pp. 13-15.

- 11 Brody, op.cit., p. 228.
- 12 Arctic Bay Settlement Council, Minutes, 9 August 1973.
- 13 Letter from Council Chairman of the Arctic Bay Settlement Council to the President of the Inuit Tapirisat of Canada, dated 20 February 1973. It should be noted that "traditional ways" in the letter refers to pre-contact-with-Whites ways (e.g. without rifles) and not to present hunting and cont'd trapping activities (using rifles and snowmobiles referred to as "traditional" in this chapter.
- 14 Quoted by Brody, op.cit., p. 229.
- 15 Peter J. Usher, "The Significance of the Land," Northern Perspectives, vol 3, no. 4, 1975, p. 15. See Brody, op. cit., especially pp. 125-144.
- 16 Ibid., p. 15.
- 17 The federal government, to its credit, has provided funds to the Inuit Tapirisat and other Inuit organizations to prepare for land claims negotiations. The funds are to be repaid out of the eventual settlements.
- 18 According to Bissett (op.cit., p. 20), the estimated per capita earned incomes for Inuit of Arctic Bay and Pond Inlet were \$1,397.79 and \$1,408.82 respectively. According to testimony before the House of Commons Standing Committee on Indian Affairs and Northern Development by A.B. Yates, Director, Northern Policy and Program Planning Branch, DIAND, the most recent available statistics (1969) indicated that the Baffin Region average native income per capita of \$1,323 was higher than that for any of the other regions of the NWT. See Canada, House of Commons, Minutes of Proceedings and Evidence of the Standing Committee on Indian Affairs and Northern Development, Issue No. 24, 17 April 1975, pp. 6-7.
- 19 See Appendix E.
- 20 See Chapter III, Part A,5,b.

- 21 Watts, Griffis and McOuat Ltd., Feasibility Study of the Strathcona Sound Project for Mineral Resources International Limited vol. 1 (Toronto, September 1973), p. 161. The feasibility study summary is reproduced in this study as Appendix A. This strategy is expressed in the report and is implicit in the Minister's speech at the signing of the Strathcona development agreement. Appendix K.
- 22 Brody, (op.cit., pp. 222-224), discusses the effects of rapid introduction of Panarctic wages into Pond Inlet.
- 23 See Eric Gourdeau, The Social Impact of Panarctic's Employment Policy in Arctic Bay and Pond Inlet (Arctic Institute of North America, November 1973), esp. p. 3. Some of the conclusions of this report have been severely criticized (e.g. Brody, op.cit., pp. 223-224); however, it remains that a report, which was generally favourable to the rotation option for native employment in Arctic resource extraction, was available to the decision-makers before they decided to support the Strathcona project and the relocation option. The Panarctic rotation system itself was in operation and open for examination before the feasibility study was undertaken.
- 24 DIAND, op.cit., pp. 6, 29.
- 25 Ibid., p. 31
- 26 See Pollution Probe at the University of Toronto, "Special Arctic Report #2: The Mackenzie Valley Highway" (Toronto, 19 October 1972); Northern Perspectives (Canadian Arctic Resources Committee) Vol. 1, Nos. 1 and 8; and remarks by Bob Charley in Douglas H. Pimlott et al., Arctic Alternatives (Ottawa: Canadian Arctic Resources Committee, 1973), p. 42.
- 27 This is not a legal or constitutional right. Indeed it is a right which is often frustrated and denied by law and political practice. But it is nevertheless a right which is broadly accepted and one upon which Canadians frequently insist.
- 28 The territorial government is represented in communities like Arctic Bay by a settlement manager who reports to a regional director (i.e., the Baffin Regional Director in Frobisher Bay) who, in turn, reports to superiors in Yellowknife.
- 29 Most of the native people in Arctic Bay older than 25 are not fluent or literate in English, but almost all are literate in their own language, Inuttitut, which is written in syllabics.
- 30 The population of Arctic Bay at the time was about 300. The

98 signators constituted virtually the entire adult population of the settlement.

- 31 Correspondence, Settlement Council and residents of Arctic Bay, N.W.T., to Mr. G. Farquharson, Watts, Griffis, and McOuat Limited, Toronto, 15 November 1972. A copy of the English translation of this letter is attached at the end of this paper as Appendix B.
- 32 Correspondence, G. Farquharson of Watts, Griffis and Mcouat Ltd., to L. Kalluk, Chairman, Arctic Bay Settlement Council, 4 December 1972.
- 33 Correspondence, J.H. Parker, Deputy Commissioner of NWT, to L. Kalluk, Chairman, Arctic Bay Settlement Council, 29 December 1972.
- 34 J.B. Haining, GNWT Regional Superintendent of Industry and Development, "Comments on the Strathcona Sound Project", 1972. The memorandum is reproduced in Bissett, op.cit., Appendix 45, pp. 93-96. The above passage appears on p. 93.
- 35 See Appendix B.
- 36 Watts, Griffis and McOuat, op. cit., pp. 252-253.
- 37 Private communication, Social and Territorial Development Branch, Northern Affairs Program, DIAND.
- 38 Concerns about the social implications of the road connection were subsequently raised by GNWT Baffin Region Administrator and by experts in the DIAND Social and Territorial Development Branch, to little avail.
- 39 Glen B. Warner, "Strathcona Sound: Social Implications and Suggestions with reference to the Primary Agreement" (Yellowknife, NWT, April 1975), p. 58.
- 40 Watts, Griffis and McOuat, op. cit., p. 252.
- 41 Ibid., p. 253.
- 42 Where not otherwise noted, the information presented here concerning the February 1973 meeting in Arctic Bay is taken from one or both of two reports dated 6 and 7 March 1973 by the Arctic Bay Settlement Manager. According to the report, the consultants were E. Broughton of UMA Group (town engineers), F. Tordon of Terratech Ltd. (soils), and E. Jacobson of Tower Foundation Co (construction). The government officials were R. Pilot, GNWT Administrator for the Baffin Region (Frobisher Bay), B. Lynn and D. Steward of DIAND (Yellowknife office),

- H. Chambers of the federal Department of the Environment (Yellowknife office) and K. Lawrence of GNWT Department of Industry and Development (Frobisher Bay).
- 43 Report of Arctic Bay Settlement Manager, 7 March 1973, *ibid.*, and B. Gunn, "Report on Visit to Nanisivik and Arctic Bay, December 3rd-11th, 1974", (Social & Territorial Development Branch, DIAND), pp. 8-9.
- 44 Correspondence, Arctic Bay Settlement Council to Mr. Tagak Curley, Inuit Tapirisat of Canada, 20 February 1973.
- 45 Correspondence, Mr. G. Farquharson of Watts, Griffis and McOuat Ltd. to Mr. Tagak Curley of the Inuit Tapirisat of Canada, 15 January 1973; Correspondence, Mr. B. Gamble of the Inuit Tapirisat of Canada to Mr. G. Farquharson of Watts, Griffis and McOuat Ltd., 19 January 1973.
- 46 In a letter to NWT Commissioner S.M. Hodgson, dated 8 March 1975, the Settlement Council claimed that they had been "duped...into rejecting the potential assistance of Inuit Tapirisat of Canada in consultations". See Appendix C.
- 47 Report of Arctic Bay Settlement Manager to GNWT Baffin Region Director, concerning 23 August 1973 meeting.
- 48 This legitimacy should not be overestimated. The family is traditionally central to Inuit politics and there is reason to doubt that settlement councils have the same political legitimacy in the eyes of the native people for whom they claim to speak as they have in the eyes of the white officials and bureaucrats who solicit their views.
- 49 Arctic Bay Settlement Council, Minutes, 4 September 1973, meeting.
- 50 The words "apparently superior" are used here because no studies had been undertaken to determine what problems would be faced by Arctic people when the new airport replaced the old one at Arctic Bay. It was known that the proposed airport for the Strathcona development would be bigger than the one then in use at Arctic Bay. It would accommodate larger aircraft and attract more regular flights, thus providing the apparent guarantee of better communications, more direct and probably cheaper transportation to places like Igloolik, and quicker access to hospitals. Moreover, because the new airport would be constructed on the plateau about 610-670 m above sea level, it would be much less vulnerable to coastal fog problems than the old Arctic Bay strip which was located about 3 m above sea level. On the other hand, at higher elevation, relatively

close to the project the new airport would be more frequently cloud-bound and subject to the local climatic effects of mine mill emissions. In some seasons, it would also be extremely difficult to keep the road open between Arctic Bay and the new airport. Consequently, there was an unresearched possibility that emergency services might not be improved when the new airport replaced the old one at Arctic Bay.

- 51 Arctic Bay is presently "dry" and, largely because of the people's knowledge of the effects of alcohol in other people's communities, particularly Frobisher Bay and Resolute Bay, has voted overwhelmingly to stay that way. (See Appendix E)
- 52 Memorandum, T. Demcheson, Arctic Bay Settlement Manager to R.S. Pilot, GNWT Baffin Region Administrator, 28 November 1973.
- 53 Memorandum R.S. Pilot, Baffin Region Administrator, to E.M.R. Cotterill, GNWT Assistant Commissioner (Administration), 19 September 1973.
- 54 G.B. Warner, op. cit. The GNWT did eventually commission a survey of the social issues raised by the project, but not until long after the irrevokable decision to support the project had been made. In fact, the June 1974 development agreement was used to define the outlines of the Warner study.
- 55 This meeting was not held just to discuss the Strathcona project. The following account of the part of the meeting devoted to the Strathcona issues is taken from Arctic Bay Settlement Council, Minutes, 21 December 1973 meeting.
- 56 Arctic Bay Settlement Council, Minutes, 14 December 1973.
- 57 News of the North, 7 November 1973, p. 11; and Bissett, op.cit. p. 39.
- 58 P. Gorlick and D. Savoie, "Comments on Strathcona Sound Feasibility Study" (DIAND, undated).
- 59 DIAND, "Preliminary Evaluation - Conclusions and Recommendations" (undated, probably December 1974), Item 6.
- 60 This account of the meetings is based on Bissett, op.cit.; a transcript of the February 3rd meeting in Arctic Bay, entitled "Meeting between DIAND and Settlement Council - Arctic Bay: Strathcona Sound" (this transcript appears as Appendix D at the end of this paper); a report sent by the Arctic Bay Settlement Manager to GNWT Baffin Region Administrator, dated 5 February 1973; and Arctic Bay Settlement Council, Minutes, 5 February 1974 meeting.

- 61 Appendix D; also Bissett, op.cit. pp. 1, 41-43.
- 62 Appendix D, pp. 5-6.
- 63 The Arctic Bay Settlement Council was disappointed and somewhat puzzled by the meeting. The Minutes of the Council's 8 February 1974 meeting record that the members of the Council felt that nothing had been gained from the meeting with the government officials. They were not certain what the purpose of the meeting had been and thought that the interpreting had been less than satisfactory.
- 64 A.B. Yates, at the "Conference on the Development of Canada's Arctic Energy Resources", York University, Faculty of Environmental Studies, Toronto, 25 October 1974. Mr. Yates did not say whether other evasive or misleading information was also corrected. A reading of the transcript of the February meeting (Appendix D) indicates that the remark about tailings was the most blatant but by no means the only case of an inadequate answer given to a direct question. See, for example, the evasive response given to the question about work on Sundays. (The mine will operate seven days a week so some workers will clearly have to work on Sundays. This simple answer was not given.)
- 65 Bissett, op.cit., p. 1.
- 66 The list is included with this paper as Appendix F, Table F-2. It appeared in Yates, "Nanisivik," op.cit., as Table 2.
- 67 Watts, Griffis and McOuat, op.cit. p. 237. Home ownership as advocated by the consultants is not discussed in this study. However, it is worth noting that in the context of a limited-life mining project the ownership option has weaknesses. In addition, from the comments of Inuit questionnaires at the February 1974 meeting in Arctic Bay (see Appendix D), there is some indication that at least some Inuit favoured a simpler approach.
- 68 The decision to adopt a less ambitious vision of the new community for the purposes of decision making was taken by the GNWT in late 1973 or early 1974. The choice of a scaled-down version was mentioned in a memorandum from P. Dixon, Program, Policy and Planning Division, GNWT Executive Secretariat, to R.S. Pilot, GNWT Baffin Region Administrator, dated 8 January 1974.
- 69 Federal government officials tended to prefer a more modest vision of the new community but, like the GNWT, they favoured relocation without examining the options or discussing these in depth with the local people. They felt that a mere

bunkhouse community would not be sufficiently attractive to potential Inuit employees; however, they did not reach this conclusion on the basis of a thorough study of the options and the people's preferences. DIAND, "Preliminary Evaluation," op. cit.

- 70 GNWT, Minutes of Meeting, 19 March 1974. These minutes, prepared by D. MacNeill, were sent to adult education workers in the Baffin Region.
- 71 The project would be "dry" in the construction phase, but it was expected that the residents of the new community would choose to have an alcohol outlet.
- 72 GNWT, Minutes of Meeting, 26 March 1974.
- 73 See Brody, op.cit., pp. 223-224.
- 74 See, for example, D.S. Stevenson, Problems of Eskimo Relocation for Industrial Employment: A Preliminary Study, (DIAND: Northern Science Research Group, May 1968), 25pp.
- 75 The author of a subsequent study reported, "It is regrettable that what has been the most popular northern home with both Inuit and others, does not appear to have been considered for Strathcona Sound, that is the suspended basement house". Warner, op.cit., p. 54.
- 76 Arctic Bay Settlement Council, Minutes, date of meeting not noted (probably between 15 and 19 March 1974). The meeting was attended by G. Farquharson and J. Marshall representing MRI, two town design consultants, three representatives of German banking interests involved in financing the project, G. Armstrong of DIAND, and D. Lowing of the GNWT Department of Local Government.
- 77 Report of the Arctic Bay Settlement Manager to the Baffin Region Administrator, 22 May 1974.
- 78 It is not known whether they had been given this impression unintentionally by those who had invited them or whether they had deduced it as the most reasonable explanation for the government's action in flying them to Frobisher Bay.
- 79 For example, in the Settlement letter to Tagak Curley of the Inuit Tapirisat (op.cit. footnote 227) and at the March 1974 meeting of the Arctic Bay Settlement Council.
- 80 See, for example, the transcript of the 3 February 1974 meeting in Arctic Bay, especially the Chairman's second comment concerning Item 3. (Appendix D)

- 81 Quoted by F. MacDonald, M.P., in Canada, House of Commons, Minutes of Proceedings and Evidence of the Standing Committee on Indian Affairs and Northern Development, 22 October 1974 meeting, p. 3:23.
- 82 Ibid., pp. 3:10, 1:11.
- 83 Strathcona Agreement, Section 4. (See Appendix J), Stage 2 refers to the production as opposed to construction phase of the mine development.
- 84 "Northern residents" were defined in the agreement as "those persons born in the Northwest Territories and Arctic Quebec who have resided in the Northwest Territories for at least 75 percent of their lifetime, but who may have relocated outside the Northwest Territories in order to seek employment". Strathcona Agreement, Section 1 (p). (See Appendix J).
- 85 Appendix K. Emphasis added.
- 86 A survey of the attitudes of Indians towards industrial wage employment opportunities was undertaken in the Anvil area in late 1973. However, the report - Walter J.P. Lampe, Native People's Perceptions of Factors Associated with Job Acceptance and Retention (DIAND, Territorial and Social Development Branch, May 1974), 161 pp. - was not available until after the Cabinet decision had been made and had no impact on the decision-making process.
- 87 See above, Chapter I, Part B,1. On the relocation efforts see Stevenson, op.cit. Haining (op.cit.) refers to the problems of relocation experienced by Rankin Inlet people moved to mines at Yellowknife and Lynn Lake as "disasterous".
- 88 According to Gorlick and Savoie, op.cit.
- 89 Gourdeau, op.cit., pp. 3-4.
- 90 Guy-Marie Rouselière, omi., "Une communauté esquimaude condamnée par la bureaucratie", Le Devoir (Montreal), 22 mars 1975. See also Brody, op.cit., pp. 226-227.
- 91 Gourdeau, op.cit.
- 92 See Brody, op.cit., pp. 223-224.
- 93 Bissett, op.cit., p. 46.
- 94 For DIAND's purposes the closest substitute for a thorough study of the Panarctic experience was the social research

- undertaken by Hugh Brody, a social scientist and sometimes DIAND researcher who spoke Inuittitut and had spent considerable time in Arctic Bay and Pond Inlet. However, Brody's views were apparently ignored by the senior decision makers (Brody, op.cit., p. 227).
- 95 See Milton M.R. Freeman, "Demographic Research in the Canadian North: Some Preliminary Observations", in Canada, ACND, op.cit., pp. 55-57.
- 96 Cited by A.B. Yates, Director, Northern Policy and Program Planning Branch, DIAND, in response to questioning before the House of Commons Standing Committee on Indian Affairs and Northern Development: Canada, House of Commons, 17 April 1975 meeting, p. 24:7. See also Yates, "Nanisivik," op.cit., pp. 4-5. The Baffin Region native per capita income was higher than that for each of the other regions of the GNWT according to the 1969 survey.
- 97 Gourdeau, op.cit., p. 4.
- 98 Yates, "Nanisivik," op.cit., pp. 4-5.
- 99 DIAND, "Summary of the Preliminary Findings of the Strathcona Sound Evaluation Study" (undated, probably December 1973).
- 100 DIAND, "Preliminary Evaluation," Item 6.
- 101 Gorlick and Savoie, op.cit., p. 2.
- 102 The GNWT employment requirements survey was undertaken by Terry Forth and Pat Dixon. It was referred to as unavailable in the minutes of a GNWT-MRI meeting held on 19 March 1974.
- 103 Bissett, op. cit., p. 1.
- 104 Ibid., p. i.
- 105 Ibid., p. 9.
- 106 Ibid., p. 37
- 107 Ibid., p. 9.
- 108 Ibid., p. 8.
- 109 Ibid., p. 11.
- 110 Private communication, Social and Territorial Development Branch, Northern Affairs Program, DIAND.

- 111 Interview, Arctic Bay, 15 September 1974.
- 112 In December 1974, six months after the signing of the Strathcona Agreement, the Inuit Tapirisat, acting on its own initiative, brought two miners from Rankin (Donat Anawak and Ollie Ittinuar) to Arctic Bay to discuss their experiences.
- 113 Bissett, op.cit., p. 12.
- 114 See Appendix K.
- 115 Strathcona Agreement, Section 5(3), p. 12, (See Appendix J). Section 6, p. 13.
- 116 In the case of the Anvil project, which also involved native employment plans, the government had not even undertaken a rudimentary labour availability survey. According to Lampe (op.cit., p. 22), "A simple count of the number of Indians resident in the area and their availability for employment appears to have been amongst the data missing when the agreement to hire Indians as an escalating proportion of the mine's labour force was negotiated."
- 117 Strathcona Agreement, Section 14(1), p. 19. (Appendix J)
- 118 Ibid., Section 14 (3), p. 19.
- 119 See, for example, Peter J. Usher, The Banklanders: Economy and Ecology of a Frontier Trapping Community, (Ottawa: Northern Science Research Group, DIAND, 1971), especially Vol. III; Milton M.R. Freeman and Linda M. Hackman, "Bathurst Island, NWT: A Test Case of Canada's Northern Policy", Canadian Public Policy, Vol. 1, No. 3, pp. 402-414; and Dialogue North (Diand, Yellowknife, NWT, 1975) Vol. 3-75, pp. 8-19 and Vol. 9-75, pp. 13-15.
- 120 This expectation was explicitly expressed in the feasibility study: "During the 15 year period, it is agreed by all concerned that the skills of the Inuit population employed at Strathcona Sound and their adaptation to an industrial society, would have progressed to the point where they could rapidly move and adjust to other industrial developments which are sure to occur over the next 15 years in the Canadian Arctic." Watts, Griffis and McOuat, op.cit., p. 48. See also the Minister's speech (Appendix L).
- 121 DIAND, Canada's North, op.cit., pp. 6,29.
- 122 A booklet published by DIAND in 1972, based on an earlier public address by A.D. Hunt (Assistant Deputy Minister,

Northern Affairs Program, DIAND), included the following statement: "The wildlife of the North is an important attribute of the region which must be preserved, not only because it contributes to our understanding and enjoyment of nature, but also because it forms an integral part of the traditional way of life of the people of the North. To protect these animals we must protect their habitat." DIAND, Canada North of 60: Its People, Environment, Development (Ottawa: Information Canada, 1972), p. 3.

- 123 DIAND, Canada's North, op. cit., p. 17.
- 124 See Watts, Griffis and McOuat, op.cit., pp. 23-27.
- 125 Yates, "Nanisivik", op.cit., p. 3. Watts, Griffis and McOuat, op.cit., p. 20, reported 71 cm mean annual snowfall.
- 126 Watts, Griffis and McOuat, op. cit., p. 376. Non-ice-strengthened vessels are permitted entry into Strathcona Sound between 15 August and 20 September.
- 127 Douglas Pimlott, Dougald Brown, Kenneth Sam, Oil under the Ice (Ottawa: Canadian Arctic Resources Committee, 1976) p.85. The authors stated, "In Arctic terms, (Lancaster Sound) and the adjacent areas are teeming with life, particularly marine mammals, polar bears, waterfowl, and sea birds. So ecologically rich is the Sound that the Canadian Committee of the International Biological Program has proposed that the Sound be established as a major ecological reserve." (p.85). They also provide a brief survey of the available information concerning the wildlife of Lancaster Sound and vicinity (pp. 87-88).
- 128 D. Bissett, Northern Baffin Island: an area economic survey, (Ottawa: Industrial Divison, DIAND, November 1968), Vol. 1, 2. Brody (op.cit., pp. 227-228) points out that government agencies, which have provided considerable support to the non-renewable resource industry, have done very little to strengthen the Inuit hunting and trapping economy.
- 129 Bissett, ibid., Vol. 2, pp. 40 (fox), 39-61 (seal, esp. ringed seal, 70-72 (narwhal), 85 and 88 (caribou).
- 130 B.C. Research, "Environmental Impact of a Mining Development on Strathcona Sound", prepared for Watts, Griffis and McOuat Ltd., August 1973, pp. 3-4.
- 131 ACND, op.cit., p. 19.

- 132 E.B. Peterson, "The Pipeline Problem in Review," in Proceedings of the Royal Society of Canada Symposium on Energy Resources, 15-17 October 1973 (Ottawa: Royal Society of Canada, 1973) p. 389.
- 133 Haining, op.cit., pp. 95-96.
- 134 B.C. Research, op.cit., pp. 3, 23, 25.
- 135 Watts, Griffis and McOuat, op.cit., pp. 343,175,346-347.
- 136 B.C. Research, op.cit., pp. 18-19, 22. It is interesting to compare the discussion of this problem by the environmental consultants with the edited version provided in the Watts, Griffis and McOuat feasibility study (op.cit., p. 354). B.C. Research:
Discharge of dust from the concentrate drier or storage area should be avoided since these dusts would contain substantial amounts of lead and zinc which could contaminate the ground environment. In the areas where the dust settles, the metals and acid contamination resulting from oxidation of sulfide concentrates is likely to inhibit the growth of vegetation. Settling on fresh water will result in contamination of aquatic life. Thus exhaust from any concentrate drier should be vented through a bag- house or precipitator. Concentrate storage areas should be enclosed and concentrate, should not be dried to the point where it generates dust readily. As a precautionary measure, provision should be made for spraying of concentrate piles with solutions of sealing agents to stabilize the surface against wind erosion.
Edited version in feasibility study:
Discharge of dust from the concentrate drier or storage area will be avoided since these dusts would contain substantial amounts of lead and zinc which could contaminate the ground environment. Thus exhaust from the concentrate drier will probably be vented through a bag-house or precipitator. Concentrate storage areas will be enclosed and concentrate will not be dried to the point where it generates dust readily.
- 137 B.C. Research, op.cit., pp. 20, 21.
- 138 According to the authors of the feasibility study "it was found that the tailing solids had the potential to create 2,760 pounds of acid per ton of tailings solids" (p. 174). The environmental consultants on the other hand, seem to have made their judgments on the basis of test results indicating "that the tailings solids could potentially generate up to 1,800 lb. of sulphuric acid per ton of solids." (B.C. Research, op.cit., p. 9.) Also, Watts, Griffis and McOuat, p. 162 and B.C. Research, p. 9.

- 139 Watts, Griffis and McOuat, op.cit., pp. 175-176.
- 140 Oceanographic characteristics were not discussed in the B.C. Research report in the feasibility study. Only very general bathymetric data were provided in the Watts, Griffis and McOuat feasibility study (op.cit., p. 165). In the minutes of a February 1975 meeting the following exchange is recorded:
...Mr. McElroy (of B.C. Research) presented a schematic of the marine tailings disposal. He stated that the bathymetric data available on the area that could feasibly be the site of the outfall was not good and that he could not make any factual statements on the profile of the bottom over most of the path of the tails. The outfall would be located somewhere below 150 feet. The tailings slurry would behave, as long as it was flowing, like a heavy liquid in the marine environment and would flow along the bottom as long as the slope was over 1%. Once the material reached the zone of settlement and the solids settled out the specific gravity would change and there would be an upwelling of fresh water...
...Mr. Walker (of Environment Canada, Ocean and Aquatic Affairs)...asked if more soundings were done. He said he had looked at the outfall as it was presented in one of the feasibility studies and seemed as if the tailings at 50 metres would go down a fairly steep slope for a while and then into a very flat slope where the upwelling of fresh water might begin. From the soundings that were available he said it was impossible to tell what the slope would be as it appeared perfectly flat. He was not satisfied that the the tailings would flow to the deep. Mr. McElroy thought that more work would be scheduled. Mr. Morison (DIAND, NWT Water Board Chairman) said that after the fourth meeting the company should have a clear indication of what further work would be needed and what level measurement would be required to establish whether the tailings would or would not flow to the deep.
from DIAND, "Minutes of Meeting #3 between Strathcona Mineral Services and the Government of Canada on Environmental Studies-Nanisivik Mine, Yellowknife, N.W.T. February 6-7, 1975", pp. 14-23.
- 141 Watts, Griffis and McOuat, op.cit., p. 163.
- 142 B.C. Research, op.cit., p. 4. The feasibility study authors also reported that the "British Columbia Research Council have stated in their analysis of the Strathcona Sound tailings disposal alternative, that if the point of discharge is below the trophic zone, (150 feet), the turbidity and suspended solids levels of the tailings are less significant," (Watts, Griffis and McOuat, op. cit., p. 168). In fact, the B.C.

- Research people stated, "By locating the tailings outfall well below the zone of significant trophic activity, the effects on primary production of increased turbidity would be diminished." (op.cit., p. 13, emphasis mine). They certainly did not suggest that areas deeper than 150 feet were below the trophic zone. On the contrary they expected widespread burial of benthic organisms (p.12).
- 143 B.C. Research, op.cit., pp. 13,18.
- 144 Watts, Griffis and McOuat, op.cit., p. 3. The consultants held discussions with NWT Water Board members concerning requirements under the Northern Inland Waters Act (under which the Board was created) and the Arctic Waters Pollution Prevention Act (for which the Board members seem also to have been given responsibility in this case).
- 145 According to the feasibility study (ibid., p. 166), "The Northwest Territories Water Board has made it clear that this alternative (marine disposal) will have to be researched thoroughly before they would be in agreement. They are particularly concerned that unacceptable damage should not result to the aquatic environment of Strathcona Sound."
- 146 "Environmental studies should commence soon after a production decision is made of the project. For the purposes of this feasibility study we are assuming that the disposal of tailings into Strathcona Sound will be the alternative agreed to by all concerned, and have incorporated the cost of this alternative into our assessment of the project economics." Ibid., p. 175.
- 147 This follows the description by B.C. Research, op.cit., p. 10.
- 148 Ibid., p. 11; Watts, Griffis and McOuat, op.cit., pp. 171-172.
- 149 B.C. Research, op.cit., p. 11,12.
- 150 Ibid., p. 18.
- 151 Ibid.
- 152 Watts, Griffis and McOuat, op.cit., p. 175.
- 153 The consultants' covering letter accompanying and summarizing the feasibility study findings, addressed the president and directors of MRI signed by G. Farquharson of Watts, Griffis and McOuat Ltd., and dated 17 September 1973.
- 154 According to the feasibility study (Watts, Griffis and McOuat, op.cit., p. 166), "The Northwest Territories Water Board has made it clear that this alternative (marine disposal) will have

to be researched thoroughly before they would be in agreement. They are particularly concerned that unacceptable damage should not result to the aquatic environment of Strathcona Sound."

- 155 According to a memorandum, dated 8 January 1974, sent by P. Dixon, Chief, Program Policy and Planning Division, Executive Secretariat, GNWT, Yellowknife, to R.S. Pilot, GNWT Baffin Region Administrator, Frobisher Bay, "The NWT Water Board has indicated that it would not be able to make a decision on an application until at least the fall of 1974."
- 156 Canada, DOE, "Strathcona Sound Project: Studies Required for Environmental Protection." The covering letter accompanying the document was dated 1 March 1974 and signed by J.R. Marsh, Chief, Environmental Control Branch, Northwest Region, Environmental Protection Service, (DOE).
- 157 Cabinet instructions quoted by L. Edgeworth, Assistant Deputy Minister, Environmental Protection Service, DOE, in a memorandum dated 5 April 1974.
- 158 A summary of the discussion and points of agreement is contained in a memorandum, dated 18 April 1974, sent by Mr. Yates to Mr. Edgeworth. In a covering letter, dated 19 April, Mr. Edgeworth confirmed that Mr. Yates' reporting of the discussion was accurate. The meeting between Mr. Edgeworth and Mr. Yates took place on 17 April 1974.
- 159 If DOE had wished to insist on an environmental impact assessment of the project, it would have had to take a strong position on the matter prior to or during the Cabinet decision making. By April 1974, it was too late.
- 160 Northwest Territories Water Board, "Environmental Requirements to be Accepted by Mineral Resources International as a Condition of an Agreement between the Company and the Government of Canada in relation to a Mining Development on Strathcona Sound, N.W.T.". The document was undated but according to a covering letter by the Board Chairman, D.J. Gee, the recommendations had been compiled on 8 May 1974.
- 161 Correspondence, D.J. Gee, Chairman of the NWT Water Board (and DIAND Regional Manager, Water, Lands, Forests and Environment Branch, Yellowknife), to A.B. Yates, Director, Northern Policy and Program Planning Branch, DIAND, dated 9 May 1974. This was the covering letter accompanying the NWT Water Board document, ibid.
- 162 When the first meetings were held on 16-17 June 1974, the agreement had been finalized. The official signing ceremony took place on 18 June.

- 163 Quoted by the Interdepartmental Committee on the Environment, "A Procedure for Implementation of a Federal Environmental Assessment, Review and Protection Process" (undated), p. 4.
- 164 After the federal government announced that environmental assessments would be required for all major projects in which the federal government is involved, Mr. A. B. Yates of DIAND, testifying before the House of Commons Standing Committee on Indian Affairs and Northern Development, was asked whether this policy was followed in the case of the Strathcona project. He replied, "No, there was no federal environmental assessment carried out in accordance with the recently announced procedures because as I understand it at least, these were not ready at the time." Minutes of 22 October 1974, p. 316.
- 165 Even after the creation of a federal Department of the Environment, the responsibility for managing and protecting the environment of the federally controlled northern territories has remained with DIAND. However the Department has often found itself under attack because of its handling of the three frequently conflicting aspects of its mandate: protection of the northern environment, advancement of the well-being of northern natives, and promotion and regulation of northern resource exploitation.
- 166 DIAND, Canada's North, op. cit., p. 29.
- 167 For example, in a speech to the NWT Council in January 1974, the then Minister of Indian Affairs and Northern Development, Jean Chrétien, stated: "I am sure that it is clear to all of us that without resource development to provide the economic muscle for the achievement of our objectives, these plans are in danger of becoming idle dreams and the achievements beyond our grasp." Canada, DIAND, "Speech Notes for the Honourable Jean Chrétien, Minister of Indian Affairs and Northern Development at the Legislative Dinner on the Occasion of the Opening of the 51st Session of the Council of the Northwest Territories, Yellowknife, January 18, 1974", p. 13.
- 168 See, for example, Canada, EMR, "Notes for an Address by the Honourable D. S. Macdonald, Minister of Energy, Mines and Resources, on the Main Estimates 1974-75 to the Standing Committee on Natural Resources and Public Works, March 26, 1974".
- 169 This was recognized in a draft working paper on northern economic development prepared in the Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND, circulated at the time of the Strathcona decision making.
- 170 Watts, Grissis and McOuat, op.cit., p. 48.

- 171 Ibid., pp. 48-49.
- 172 Ibid., pp. 79-89, 441.
- 173 Ibid., p. 4.
- 174 Ibid., pp. 385-386.
- 175 In their calculations, the consultants assumed that government assistance would include a minimum of \$8,675,000 in grants and at least \$5,000,000 in loans for townsite construction. Ibid., p. 443.
- 176 The assessment process leading the March 1974 Cabinet decision to grant approval-in-principle to the project took longer than the consultants had anticipated, but was brief enough to allow the proponents to begin project construction in the spring of 1974, as they had hoped.
- 177 Watts, Griffis and McOuat, op.cit., pp. 430,403.
- 178 Little information on the government analysts' evaluation of potential project profits was made available to the author. Because of this, the following account is unavoidably incomplete and may contain some inaccuracies.
- 179 The basic wage rate proposed for labourers at the Strathcona mine was \$3.50 per hour. (Watts, Griffis and McOuat, op.cit. p. 303). According to Bissett (A Background Paper, op.cit. p.33), "The average mine labourer hourly wage rates for surface workers in October 1972 were as follows: British Columbia \$3.70, Quebec \$3.70, Ontario \$3.76, Manitoba \$3.60." EMR assessors noted that in 1973 the basic hourly rates for underground mine labour in Ontario was \$4.31 and for surface workers in British Columbia \$3.95. Departments of Energy, Mines and Resources (EMR), "Preliminary EMR Evaluation of Feasibility study prepared for Mineral Resources International Limited on Proposed Strathcona Sound Zinc-Lead Project in the Arctic Islands", 13 December 1973. For Baffin region wages rates see Bissett, idem, p. 31.
- 180 EMR, ibid.
- 181 DIAND, "Summary," op. cit.
- 182 Watts, Griffis and McOuat, op.cit., pp. 175-176.
- 183 See C. Freitag, Kilborn Engineering Limited, cited in DIAND, "Minutes of Meeting #3, op.cit., p. 10.
- 184 DIAND, "Summary," op.cit.

- 185 EMR, op.cit.
- 186 Watts, Griffis and McOuat, op.cit., pp. 401, 403; Financial Post, Survey of Mines 1974 (Montreal; Financial Post), p. 40.
- 187 They also calculated potential profit rates for the project at four other zinc price levels: 18.0, 20.0, 24.4, and 27.8 cents per pound. Watts, Griffis and McOuat, ibid., p. 446.
- 188 Ibid., pp. 400, 403.
- 189 Northern Miner, 28 March 1974, p.1.
- 190 Private communication, Economic Programs and Government Finance Branch, Department of Finance.
- 191 DIAND, "Summary," op.cit.
- 192 EMR, op.cit., p. 12.
- 193 The EMR evaluation was submitted 12 December 1973. The price increase took place on 11-12 December (Northern Miner, 28 March 1974, p.1)
- 194 Northern Miner, ibid.
- 195 By the terms of the Strathcona Agreement (Section 25(1): See Appendix J) the federal government would receive 18% of the shares of Nanisivik Mines Limited, the company created to carry out the project. See Nanisivik Mines equity ownership chart, Appendix M.
- 196 DIAND, "Summary," op.cit.
- 197 Concern about the possibility of demands for further government subsidies were voiced during the assessment of the MRI proposal by those government analysts (in particular those in the Treasury Board Secretariat) who were skeptical about the financial viability of the project.
- 198 Watts, Griffis and McOuat, op.cit., pp. 450-452. They anticipated royalty payments to Texasgulf amounting to \$12,848,000, in accordance with the terms of the 1972 agreement whereby MRI took charge of the project. Texasgulf is an American company 30.5% owned by the Canada Development Corporation (at the time of the Strathcona Agreement).
- 199 The NWT Royalty rates followed a graduated scale from 3% on profits in the \$10,000 to \$1,000,000 range to a maximum of 12% on profits over \$35,000,000. Profits from the first three years of production of a new mine were exempt from royalty payments.

- 200 DIAND, "Summary," op.cit., Appendix A. The calculation was based on assumption of \$5.00 per hour wages, 50 hours per week and 40 weeks per year paid employment and \$4,000 per year previous wages. According to Bissett (A Background Paper, op.cit., p. 27), it was anticipated that there would be 111 Inuit employees.
- 201 Strathcona Agreement, Item 12. See Appendix J.
- 202 Yates, "Nanisivik," op.cit., p. 10.
- 203 Watts, Griffis and McOuat, op.cit., p. 376. By the Canadian Arctic Shipping Pollution Prevention Regulations, non-ice-strengthened vessels are permitted entry into the Strathcona Sound area between 15 August and 20 September.
- 204 One of the objectives of Canada's "Ocean Policy" was "to develop a world recognized capability for operations on or below ice-covered water." Yates, "Nanisivik," op.cit. Table 2, p. 2. (See Appendix F, Table 2). Through its Program for the Advancement of Industrial Technology (PAIT) the federal Department of Industry, Trade and Commerce was funding work by Federal Commerce and Navigation Limited and Camot International Transportation Consultants Limited (naval architects), both of Montreal. Shortly after the announcement of the signing of the Strathcona Agreement, and before the 8 July 1974 federal election, then Minister of Transport, Jean Marchand, announced that preparations for construction of an ice-breaking cargo ship for arctic service would begin "as soon as possible." (See Jeff Carruthers, "Liberals pledge new type ship for Arctic", Globe and Mail, 20 June 1974, p. B9). Approximately a year and a half later, Federal Commerce and Navigation and the federal government arranged for a 28 kt ice-breaking bulk carrier (Arctic Class 2 - able to operate in the Strathcona Sound area for almost 5 months of the year) to be constructed by Port Weller Dry Docks Limited of St. Catherines, Ontario. The ship, to be called the MV Arctic, was to be completed by 1978 at a cost of \$39 million. It would be leased to a new company 51% owned by the federal government and 49% by a consortium of private companies including Federal Commerce and Navigation. (See Oilweek, 14 July 1975, p. 7; and 8 December 1975, p. 11, and Arctic Digest, February 1976, p. 11)
- 205 Strathcona Agreement, Item 13, (Appendix J).
- 206 See Edgar J. Dosman, The National Interest: The Politics of Northern Development 1968-75 (Toronto: McClelland and Stewart, 1975), pp. 41-61.

- 207 Appendix L.
- 208 DIAND, "Summary," op.cit., Appendix A.
- 209 Yates, "Nanisivik," op.cit., p. 10.
- 210 Ibid., Table 2, pp. 1-2. See Appendix F. Potential benefits from shipping experience were also mentioned.
- 211 Watts, Griffis and McOuat, op.cit., pp. 95-102, 136-141.
- 212 These and the capital and operating cost estimates reported in the following paragraphs are taken from Yates, "Nanisivik," op.cit., pp. 11-14 and Table 1. See Appendix F, Table 1.
- 213 See Inukshuk, 2 April 1975, p. 4.
- 214 Yates ("Nanisivik," op.cit., p. 12) offers no explanation.
- 215 A somewhat different list of possible social problems was included in the DIAND analysts' presentation of project implications relating to government policy objectives. See Appendix F. Table 2.
- 216 EMR, op.cit., p. 13.
- 217 See Nanisivik Mines equity ownership chart, Appendix M. The two European smelterers guaranteed \$25 million in loans from the Toronto-Dominion Bank, Citicorp Limited (of the United States) and the Kreditanstalt fur Wiederaufbau (of West Germany), provided \$8 million in direct loans, purchased 400,000 shares in MRI for \$1.75 a share, and guaranteed cost over-run financing which, if provided, would earn them larger percentages of Nanisivik equity. See Yates, "Nanisivik," op.cit., p. 15; and Globe and Mail, 28 February 1975, p.B4.
- 218 New Jersey Zinc is an American smelterer linked with Texasgulf for the purposes of purchasing Strathcona concentrate. New Jersey Zinc/Texasgulf agreed to guarantee financing for any loans covering costs beyond the project's expected capital cost of \$55 million. See Financial Times, 24 June 1974, p. 10; and Globe and Mail, 28 February 1975, p. B4.
- 219 NJZ's interest in secure supplies was mentioned by C.F. Agar, president of MRI, in an oral presentation to Science Council of Canada Seminar on Northern Development, Calgary, Alberta, 15 January 1975.
- 220 See Financial Times, 24 June 1974, p. 10.

- 221 Strathcona Agreement, Item 19, paragraph 1; see Appendix J. Assuming annual production of 125 kt of zinc and 20 kt of lead concentrates, 1.8 Mt would represent 12.4 years' production. The expected life of the project if no significant extensions to the orebody were discovered, was 12 to 13 years.
- 222 Agar, op.cit.
- 223 Watts, Griffis and McOuat, op.cit., p. 386.
- 224 Agar, op.cit. MRI was a very small company with no previous mining experience and limited resources.
- 225 Ibid.
- 226 A.J. Cordell, "Resources: Implications of Ownership", in W.D. Bennet et al., Essays on Aspects of Resource Policy, Science Council of Canada, Background Study No. 27 (Ottawa: Information Canada, May 1973), p. 100. "There can be no question that development of the Canadian economy from the earliest colonial period has been based largely on extraction of natural resources. Early colonization and development was based on fishing, furs, timber, and agriculture for local and then export markets. Mineral production also began at an early date. Resource processing and resource-based and other manufacturing has always tended to lag resource extraction by a considerable margin, especially in the two non-agriculture resource sectors that have come to be predominant: mineral and forest resources."
- 227 EMR, op.cit., p. 11.
- 228 Canada, EMR, Hon. D.S. Macdonald, "Notes for an Address on Main Estimates 1974-75 to the Standing Committee on National Resources and Public Works, March 26, 1974".
- 229 In Yates' account of the Strathcona decision ("Nanisivik," op.cit.) the economic (as opposed to policy) costs of foreign processing are not even mentioned.
- 230 This estimate was included in a working paper concerning strategies and other considerations for economic development in the North. An excerpt from this paper containing the calculations leading to the estimate is reproduced at the end of this report as Appendix G. Although the calculations were clearly based on the Strathcona case, no direct reference to the project was made in the paper.
- 231 The tax rates assumed in the calculation are 50 per cent or less. Thus the actual additional profits, to be taxed, would be at least twice the sum of the expected revenues (i.e., \$160-\$300 million).

- 232 The financial backing of the European smelterers was contingent upon export commitments.
- 233 Mining (except for uranium) falls largely under provincial jurisdictions. Federal policy enactment must therefore proceed by negotiation and example. The potential value of the Strathcona example was noted by EMR analysts.
- 234 Cordell (op.cit., p. 103), "A vertically integrated firm is one that is active at more than one stage of the production process. That is, it has decided to grow or expand its operations not by doing more of the same, but rather by merging with its present activities some one or more operations which precede or follow its present activities in the production process." A smelting company which bought a mine to supply concentrates or a mining company which established a smelter to process its ores would have become vertically integrated. A brief discussion of the advantages of this practice for the firm involved is provided by Cordell. "Generally speaking, vertical integration like any other diversification is an attempt to provide for stability of profits through reduction of risk."
- 235 The major processors are Noranda (Canadian Electrolytic Zinc Ltd., Valleyfield, Quebec), Texasgulf (Ecstall Mining Ltd., Timmins, Ontario), Hudson Bay Mining and Smelting (Flin Flon, Manitoba), and Cominco (Trail, B.C.). See George S. Barry, "Zinc," in EMR, Mineral Development Sector, Canadian Mineral Survey 1974 (reprinted from Canadian Mining Journal, February 1975 issue), especially the "zinc smelter capacity" chart, p. 42; and the "principal zinc and lead producers 1974" chart, pp. 49-50.
- 236 See Statistics provided by G.S. Barry, "World Zinc Supply and Demand to 1980 in a Canadian Context," CIM Bulletin, June 1974, p. 20. In a subsequent article, Barry reports that in 1974 Canadian mines produced 1,278,139 short tons of zinc concentrate, of which 930,000 short tons were exported. (Barry, "Zinc," op.cit., p. 42.
- 237 Private communication, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND.
- 238 See statistics provided by Barry, "World Zinc Supply," op.cit., p. 20.
- 239 Ibid., pp. 19,22.
- 240 J. Austin, Deputy Minister of Energy, Mines and Resources, "The Canadian Mineral Industry by the Year 1999", presented at the 76th annual meeting of the Canadian Institute of Mining and Metallurgy, Montreal, 22 April 1974, p. 20.

- 241 See, for example, Jean-Paul Drolet, Assistant Deputy Minister, EMR, "Canadian Mineral Policy in an Interdependent World," September 1974, especially pp. 32, 39-40.
- 242 Quoted in Clair Balfour, "Domestic processing left out in Ottawa's Arctic mine deal," Montreal Gazette, 5 July 1974, p. 15.
- 243 In his speech announcing the signing of the Strathcona Agreement, the Minister of Indian Affairs and Northern Development stated, "...we already know of other economic opportunities such as the Arvik mine on Little Cornwallis Island, or the Mary River Iron deposit which may take the place of Strathcona Sound". Appendix K.
- 244 The industrial economy is typified by large-scale and capital-intensive production, emphasizes individual consumption and accumulation, and requires a certain insensitivity to the environment. In contrast, the traditional Inuit economy is based on cooperative activities generally based on the extended family, emphasizes sharing, and requires profound understanding and appreciation of the natural environment.
- 245 Brody, op.cit., pp. 229-230.

Chapter IV: Responsibility for the Decision

1 The dominance of DIAND over the GNWT in the Strathcona decision-making was based on its authority over resource exploitation matters. Although the Commissioner of the NWT is appointed by the Governor-in-Council (i.e., by Cabinet) and reports to Parliament through the Minister of DIAND, the Commissioner and, consequently, the GNWT have considerable independence in areas where the GNWT has quasi-provincial status - for example, education and local government. However, the federal government, through DIAND, retains virtually complete control over several crucial areas including non-renewable resource exploration and exploitation. The federal and territorial areas of concern are not always easily divisible. Therefore, although both DIAND and the GNWT are in practice responsible to the same Minister, there are sometimes conflicts between the two, just as there are conflicts among the various branches and divisions within DIAND.

In the Strathcona decision-making the only apparent area of dispute between DIAND and the GNWT concerned the nature of the new community to be constructed at Strathcona Sound. The GNWT favoured a fully-equipped, permanent community while DIAND was inclined to take a less ambitious approach. Although this was generally within the jurisdiction of the GNWT, its view

did not immediately prevail. According to A.B. Yates, Director, Northern Policy and Program Planning Branch, DIAND, "Nanisivik - 'The Place Where Things are Found,'" (Ottawa: DIAND, 1975), pp. 12-13, the decision makers opted for a "flexible townsite pattern."

- 2 Private communication, Northern Policy and Program Planning Branch, Northern Affairs Program, DIAND.
- 3 Private communication, Social and Territorial Development Branch, Northern Affairs Program, DIAND.
- 4 D. Bissett, Northern Policy and Program Branch, Northern Affairs Program, DIAND, A Background Paper on the North Baffin Communities in Relation to the Strathcona Sound Project, (draft, 1 March 1974).
- 5 See Chapter III, Part B.
- 6 DIAND, Canada's North 1970-1980 (Ottawa: Information Canada, 1972), p. 29. The official list of priorities is reproduced in Chapter I, Part B.

Chapter V: Conclusions

- 1 See Chapter II, Part 5, especially Table 2. The Strathcona agreement (see Appendix J) also seems superior to the agreement negotiated by the Danish government concerning the Black Angel mine (see Appendix O).
- 2 See Chapter III, Part A.
- 3 See Chapter III, Part B, especially 2,d.
- 4 See Chapter III, Part C,2,e.
- 5 On the other hand, conflict between a government's actual decision-making practice and its stated policies and attitudes is a serious problem for any political community whose national leaders are trusted to apply general policies to specific decisions. Because the specific decisions are numerous and often complex, few can be given any very profound or sustained attention by members of the public. Consequently, the leaders' actual practice is seldom closely examined. If the leaders consistently fail to apply the general policies to which they verbally subscribe, or apply them only to those few decisions which will attract wide-spread public attention, the result is government by duplicity.
- 6 See Strathcona Agreement, prefatory clauses (Appendix J).

- 7 See above, Chapter III, Part A,5,b.
- 8 The example of the Mackenzie Valley Pipeline Inquiry represents some progress in this direction, but it is not yet clear how the Inquiry's work will affect the final decision in that case. Nor is it clear to what extent the Inquiry's practices will be adopted for future assessments.

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