1.0 INTRODUCTION

This Project Description for the Bathurst Inlet Port and Road Project is prepared as prescribed in Appendix B: Nunavut Impact Review Board (NIRB) General Requirements for a Project Description (NIRB, 1997). The format and sequence set out by NIRB has been adjusted to the extent required to avoid repetition. This Project Description along with related applications for land and water use are submitted for the purposes of Project screening by NIRB and also for developing guidelines for the benefit of the Project's proponent when preparing a Project Environmental Impact Statement (EIS) pursuant to the Nunavut Land Claims Agreement (NLCA) Article 12, Parts 4 and 5. A final Project Description will be submitted following the preparation of the Bathurst Inlet Port and Road Project EIS that meets the requirements of the guidelines issued by NIRB. The final Project Description will reflect any changes in the Project that may result from field conditions discovered in the field studies yet to be completed to meet the requirements of the EIS Guidelines. The scope and scale of the Project however, is not expected to change.

1.1 BACKGROUND INFORMATION

The Government of Nunavut has developed a detailed plan for Nunavut with the help of the people and organizations in Nunavut. This plan was finalized by Cabinet in Bathurst Inlet in August 1999 and became known as the "Bathurst Mandate". The plan sets out the priorities for Nunavut, outlining specific objectives for the first five years but also looks to the future, creating a vision of Nunavut in the year 2020.

The Nunavut priorities are:

- Healthy Communities
- Simplicity and Unity
- Self Reliance
- Continued Learning

Some of the underlying principles of these priorities include:

- People come first;
- Nunavut needs to provide options and opportunities which build the strengths of individuals, families and communities;
- Building the capacity of communities will strengthen Nunavut;
- Traditional activities and values will be incorporated into new strategies to participate actively in the development of economic resources.

The vision for 2020 includes the following:

- Well informed individuals and communities have the capacity and exercise responsibility for decision making; Nunavummiut own and manage a strong mixed economy where residents have productive choices for economic participation;
- Strong transportation and communication links exist between communities and southern Canada, and increase communities' land and water access;
- Create and maintain an *Economic Strategy* for Nunavut;
- Nunavummiut are active in taking up an increasing number of economic opportunities and have low levels of dependency on government.

Furthermore, the Government of Nunavut has developed a *Transportation Strategy* with a vision for transportation in Nunavut to the year 2021. Part of the vision for Land Transportation includes *"...important new surface transportation routes...between the Kitikmeot region mining properties and Bathurst Inlet. These are all-weather routes where resource development projects are able to contribute substantially to the required funding"*.

In addition, the Nunavut Planning Commission together with the people of the Kitikmeot have been developing a Draft West Kitikmeot Regional Land Use Plan. This Plan has been developed with a recognition that development of transportation infrastructure with resulting increased development of mineral resources is important to the future social and economic development of the region. The Plan envisions, in 15 to 20 years, a region where: *"Mines are operating and more are being considered. Skilled local people are working at the mines or for local businesses providing support services to those mines. A well-planned, environmentally sensitive transportation networkexists to provide access to the mineral resources, southern market and the communities"*.

In all of the above, "Transportation Infrastructure" is the keystone for a sustainable future.

In their *"Nunavut Economic Outlook, 2001"*, the Conference Board of Canada states:

> ***"The state of infrastructure in Nunavut is a serious problem that is affecting both the economic and social development of the territory."***

A major issue facing all Nunavut communities is the lack of transportation infrastructure. In southern Canada, governments have generally provided transportation infrastructure such as roads and ports. In the north, during the last 20 years or so, where specific projects or regions required major transportation infrastructure, there has been a general reluctance for governments to become involved. Most of the existing infrastructure supporting the economic and social development of northern Canada was installed by or in direct response to resource development. In most cases, when mineral production was initiated in a new region of northern Canada it was associated with or preceded by new energy and /or transportation infrastructure: Con Mine at Yellowknife, in 1930 required both an airstrip and improved barge services on Great Slave Lake setting the stage for Giant Mine 15 years later; Con Mine also developed Bluefish Hydro and a power line corridor to Yellowknife and Discovery Mine; hydro power on the Taltson River was developed and a railroad was built from Alberta to serve the Pine Point Mine; Tundra Mine developed an airstrip and pioneered winter road development; Echo Bay Mines developed a winter road system and jet strip for Lupin Mine; the MV Arctic, a Canadian ice breaking cargo ship was built by the Canadian Government to service Nanisivik Mine; the Ekati™ mine, Diavik and Snap Lake diamond projects depend on the Lupin winter road developed by Echo Bay.

The vast area of Nunavut, with relatively small isolated communities, is a major obstacle to the development of roads. There is also an absence of marine infrastructure in Nunavut, even with the strong reliance on marine transport for supplies during the short summer shipping season.

The only non-municipal road transportation infrastructure developed within the Kitikmeot region has been the winter road from Yellowknife to Lupin Mine, now also servicing the Ekati™ Mine, Diavik Mine and other developing diamond projects in the Northwest Territories. The winter road capacity is limited by weather and by the additional trucking requirements for the new diamond projects south of the Nunavut border. Transporting fuel and supplies through a port at Bathurst Inlet could provide reductions in operating costs and increased security of supply for these mines also.

The Kitikmeot Inuit Association and the Kitikmeot Development Corporation have taken the lead to provide much needed transportation infrastructure for resource development in their region through the Bathurst Inlet Port and Road Project. By forming a partnership with industry and governments they have been able to raise the funds to begin moving this exciting project forward through the feasibility and into environmental assessment stages.

Prior to June 2000, approximately $4 million of preparatory work had already been undertaken to advance the Project. This preparatory work included, hydro-graphic studies to assess the most appropriate shipping channels and location of the port; proposed routing for the road network; preliminary economic studies of the project capital and operating costs; and modeling to assess the economic performance of the port and road project. This work was supported by the Kitikmeot Corporation, KIA, GNWT, DFO and industry.

In June 2000, following a meeting in Cambridge Bay, a Technical Committee was formed to move the Project forward. The Committee is comprised of representatives from the Kitikmeot Inuit Association, Kitikmeot Corporation, Nuna Logistics Limited, Inmet Mining Corporation, Hamlet of Kugluktuk, Government of Nunavut (DSD and CG&T) and since November 2002 a representative from Bathurst Inlet.

A Feasibility Study was completed in 2002 (Nishi-Khon/SNC-Lavalin and Kitikmeot Geosciences). The environmental baseline studies were completed in April 2003 (Rescan Environmental Services Ltd. and Kugluktuk HTO). All of these studies were under the supervision of the Project Technical Committee.

The costs and field support to complete the feasibility study and undertake field work for environmental and engineering studies were provided by cash and "in kind" contributions from: Billiton-BHP, Canadian Coast Guard, Diavik Diamonds, Echo Bay Mines, Fednav Limited, Government of Nunavut, Hope Bay Joint Venture, INAC, Inmet Mining Corp., Kinross Gold Corp., Northern Transportation Company Limited (NTCL), Nuna Logistics Limited, and Tahera Corporation.

The original Feasibility Study was based on an all-weather road from Bathurst Inlet to the Izok Project, linked by a summer barge or winter ice road on Contwoyto Lake. The Study has been revised to cover the reduced scope of this Project, which includes a port site on Bathurst Inlet, an all-weather road to Contwoyto Lake and a small camp at Contwoyto.

Findings of the revised feasibility study include:

- fuel and bulk cargo supplied via the Bathurst Inlet Port and Road Project can be landed at the Ekati and Diavik diamond mines in the N.W.T. at the same or lower costs, and potentially on a more reliable schedule than is now possible from Edmonton via Yellowknife on the Lupin winter road. The Project will provide increased certainty and security of supply;

- fuel supplied via the port proposed by this Project can be delivered to Lupin and Jericho, at lower costs than via the current Lupin winter road;

- fuel from the port in Bathurst Inlet can be landed in Kitikmeot communitiesat a significantly lower cost than is presently the case via barge from Hay River, NWT;

- supplies delivered to the port via Yellowknife and the Lupin winter road can be shipped to Kitikmeot communities for a lower cost than the current barge network via Hay River and Tuktoyaktuk;

- supplies for Kitikmeot communities from suppliers in eastern Canada could be landed in Cambridge Bay for significantly less freight costs than via barge from Hay River or via the Lupin winter road;

- goods by barge from the port in Bathurst Inlet could be landed in Kitikmeot communities 4- 6 weeks earlier than is now the case. This provides a potential to increase the summer construction season by the same amount.

The primary benefits of the Port and Road Project will be:

- ***A reduction in the cost of fuel and supplies for Kitikmeot communities.*** Nunavut communities to be serviced by the Project will include Kugluktuk, Cambridge Bay, Umingmaktok, Bathurst Inlet, Taloyoak and Gjoa Haven. Fuel and supplies will be transported into Bathurst Inlet and shipped by barge to the communities, with significant cost savings.

- ***Reduced capital and operating costs for mineral exploration, mine development and operations in the northern portion of the Slave Geological Province resulting in more exploration activity.*** A large number of other mineral deposits have been identified within this region. Advanced projects in the region include Izok, George Lake, Goose Lake, Ulu, Hope Bay gold deposits and the Tahera diamond project. A new road system connecting to an arctic port will stimulate further exploration and increase the value of existing deposits leading to a greater probability of mine development.

  The abundant mineral endowment of the Slave Geological Province (SGP) has been known for several decades. The SGP has produced minerals continuously since the 1930's. However, the full potential of this area has yet to be realized due, for the most part, to the lack of transportation infrastructure.

- ***Increased employment, training, business development and the resulting social benefits in the region.*** Nunavut has the youngest population in Canada, approximately 60% of the population is under 25 years of age. The unemployment rate for the Inuit in Nunavut was 35.8% in 1999, with the 15– 24 age group averaging 48.1%. The mining industry has the greatest potential for employment in the future. The Kitikmeot communities rely on mixed economies blending wage employment, resource harvesting and government transfer payments and will benefit considerably from the increase in local employment and investment that the Project will provide.

- ***Increased economic activity and taxation revenues to Nunavut and Canada.*** While the Project is based in the Kitikmeot and substantive and sustainable benefits are expected for the Kitikmeot communities, the Project will also benefit the rest of Nunavut, the Northwest Territories and Canada through a stronger economy and tax revenues.

The findings of the Project feasibility study have shown that the Project as proposed is much more than a transport system for mines in the Slave Geological Province. It is rather, infrastructure that is commonplace in southern Canada as essential public facilities; infrastructure that will facilitate a diversity of economic opportunities for the Kitikmeot communities plus provide improved transportation services to current diamond and gold mines, and prospective gold and base metal mines in the Kitikmeot Region of Nunavut.

The Project will provide lower costs for fuel, supplies and power (diesel fuel) resulting in a higher standard of living for Kitikmeot residents.

The establishment of a marine port on Canada's Arctic coast, even though connected to the rest of Canada by road for only 100 days per year, will provide a significant boost to the security and sovereignty of the Arctic and Arctic waters. This is especially true considering the closure of Polaris and Nanisivik mines and the future reclamation of these sites.

This Project Description describes the physical configuration of the Project, the environmental setting of the Project area, schedules for Project construction and operations, and the interactions of the Project with the environment, as examined in the Project feasibility study. Figure 1 shows the locations of the port site and road alignment that were identified during the course of feasibility study field work in the summer of 2001.

1.2 PROPONENT IDENTIFICATION INFORMATION

The proponent for the Bathurst Inlet Port and Road Project is the **Bathurst Inlet Port and Road Joint Venture Ltd.** Bathurst Inlet Port and Road Joint Venture Ltd. will be owned (50% each) by Kitikmeot Corporation and Nuna Logistics Limited. Kitikmeot Corporation is wholly owned by the Kitikmeot Inuit Association. Nuna Logistics is an Inuit owned company with 51% owned by Kitikmeot Corporation and Nunasi Corporation (25.5% each) and the balance owned by Nuna Logistics management. By combining its direct and indirect interests in the joint venture, Kitikmeot Corporation will own 62.75% of the Project.

The stated purposes of Kitikmeot Corporation follow:

Our Vision A vibrant economic climate in the Kitikmeot Region of Nunavut.

Our Mission To create a strong, viable and stable financial base for our businesses, for Inuit entrepreneurs and for employment opportunities for Kitikmeot beneficiaries of the Nunavut Land Claims Agreement.

Our Mandate To be the Kitikmeot Inuit Association's economic development organization that develops businesses profiting Inuit of the Kitikmeot Region.

Develop a business climate in which Inuit entrepreneurs and employees can benefit economically.

Our Objectives Grow Kitikmeot Corporation's businesses and Joint Ventures to become the largest company in the Kitikmeot Region.

Assist Inuit entrepreneurs start and grow their businesses.

Provide opportunities for Inuit to find rewarding employment.

Provide assistance for Inuit training to take advantage of business and employment opportunities.

1.3 APPROVAL AGENCIES AND REQUIRED APPROVALS, LICENSES, AND PERMITS

Project construction is entirely in Nunavut and will develop a marine port, and 211 km of all-weather road. Project operations will include:

- annual re-supply of Kitikmeot communities with fuels and other bulk cargo;
- annual re-supply of fuel and other bulk cargo for the Lupin and Jericho mines, in the West Kitikmeot region of Nunavut;
- annual re-supply of diesel fuel and some bulk operating supplies to Ekati™ and Diavik diamond mines in N.W.T.

All new development in Nunavut is subject to the review process set out in the NLCA. It is expected that on examination, the Project will be found to pose "...significant impact potential..." (NLCA 12.4.1) and that an environmental review under the NLCA will be required. The permits, licenses and approvals required by the Project throughout its operating life and for its closure are enumerated below for each of the Project stages: construction, operations, and abandonment. All of the approvals required for each stage of the Project fall within the mandate of the NLCA and federal agencies in Nunavut. The applications to the Kitikmeot Inuit Association (land use), Nunavut Water Board (water use), and DIAND (land use), for land and water use required for Project construction and operations are included in this Project Description as Appendix 4 or were submitted earlier with the previous application. It is expected that these regulators will refer this Project Proposal, and in time the Project EIS, to the Nunavut Impact Review Board (NIRB) for review under NLCA Article 12.

The existing Lupin winter road is an essential element to the operations of this Project. However, all new construction and all incremental interactions with the environment proposed by the Project lie entirely within Nunavut. The environmental review is expected to be conducted by NIRB under NLCA Article 12 Part 5, (see Appendix 5).

1.3.1 Construction Phase: Project Proposal, Environmental Screening, and Project Review

- **Nunavut Planning Commission**
  Robert Lyall, Chairman
  Tel. 867 983 2730

  Review Project for compliance with regional land use plan pursuant to NLCA Article 11 and 12.

  The West Kitikmeot Regional Land Use Plan is in draft form and has been reviewed by the Project. The Project as proposed is configured to the extent possible to be in compliance with the Draft Plan. In the absence of an approved plan, the Project will not be reviewed by the Nunavut Planning Commission. (NLCA 12.3.5; 13.4.6)

- **Nunavut Water Board**
  Thomas Kudloo, Chairman
  Tel. 867 360 6338

Project review and Water Use License pursuant to NLCA Article 13.

Water use and waste disposal by Project operations including the camps are subject to terms and conditions of a license issued by the Nunavut Water Board (NWB) which also reviews civil works such as bridges that may encroach on water and water ways in Nunavut. A Water Use Application for the Project is included in Appendix 4 of this Project Description. NLCA 13.4.6 requires that the application and Project Description be referred to NIRB for screening to "determine whether it has significant impact potential".

- **Kitikmeot Inuit Association**
  Charlie Evalik, President
  Tel. 867 983 2458

  Land use license pursuant to NLCA Article 21 for commercial access, developing and operating quarries, and building roads on Inuit Owned Land (IOL).

  Surface lease pursuant to NLCA Article 21 for exclusive use of IOL for developing a camp at Contwoyto Lake.

  Negotiating an Inuit Impact and Benefit Agreement (IIBA) pursuant to NLCA Article 26.

  Significant areas of IOL are affected by the Project as proposed. IOL is needed for pits and quarries, right-of-way for the road, and the camp at Contwoyto Lake. On receipt of the application (please see Appendix 4) to use IOL for Project purposes, it is expected that the application and Project Description will be referred to NIRB for screening. An IIBA between the Proponent and KIA will be required before any of the approvals for Project construction are valid (NLCA Article 26).

- **Indian and Northern Affairs Canada (INAC)**
  Wilf Attwood, Regional Director General
  Tel. 867 979 4501

  Land use permit pursuant to Territorial Lands Act (Canada) for access to, and building roads on Federal Crown Land.

  Quarry leases and/or permits to develop and operate quarries on Federal Crown land.

  The port and about 60% of the proposed road alignment is on Federal Crown Land. Permits will be required for pit and quarry development; a lease, or perhaps outright purchase, will be required for the port, and a land use permit is needed for working along the alignment to build the road. The relevant applications are included in Appendix 4. It is expected that INAC will forward the applications for the permits and leases, and this Project Description to NIRB for screening.

- **Nunavut Impact Review Board**
  Elizabeth Copland, Chairman
  Tel. 867 983 2691

  Project screening, EIS Guidelines, and Project Certificate pursuant to NLCA Article 12 Part 5.

  The Project screening and review by NIRB can be done only at the request of parties such as KIA, INAC, and the NWB. NIRB would then conduct a screening and report its findings to the Minister of

INAC. Included in those findings will be the NIRB view on the potential impact and the need for a review by NIRB (12.5) or by a Federal Panel (12.6). If NIRB finds that the Project should be reviewed by NIRB under Part 5, and the Minister concurs, NIRB would issue guidelines to the proponent for the preparation of the Project EIS (NLCA 12.5.2).

The proponent will review the Project in the context of completed baseline studies and preparation of the Project EIS. It is expected that the Project Description will be refined to reflect findings in the EIS. On refinement, the Project Description will be resubmitted to NIRB for final review and report of findings to the Minister. The Minster will advise NIRB of his concurrence, or otherwise, of the Project review report. On advice from the Minister, and completion of the process described in the NLCA (12.5.1 to 12.5.11) NIRB will issue a project certificate approving the Project including the terms and conditions that have been accepted or varied by the Minister (12.5.12).

- **Fisheries and Oceans Canada (Iqaluit)**
  Bert Hunt, District Manager
  Tel. 867 979 8009

  Authorization for works affecting fish habitat pursuant to the Fisheries Act (Canada).

  Approval to construct water crossings for road route pursuant to the Navigable Waters Protection Act (Canada).

  The primary concern of the Department is expected to be the effects of the Project construction and operations on fish habitat. Interactions between the Project and fish habitat will be at water crossings. A photographic record of each proposed water crossing and the crossing design type will be developed and submitted as supplementary information to this Project description.

1.3.2 Operations Phase: Required Operating Licenses and Permits

- **Kitikmeot Inuit Association**
  Charlie Evalik, President
  Tel. 867 983 2458

  Land use license pursuant to NLCA Article 21 for operating roads, quarries, and a camp.

  Surface leases on Inuit Owned Lands pursuant to NLCA Article 21 for exclusive use to operate a camp.

  Implement IIBA pursuant to NLCA Article 26.

  The permits and licenses obtained for Project construction will be renewed for long-term application to Project operations.

- **Nunavut Water Board**
  Thomas Kudloo, Chairman
  Tel. 867 360 6338

  Water Use License for camp needs and general Project purposes pursuant to NLCA Article 13.

The water use licenses obtained for Project construction will be renewed for long-term operations.

- **Indian and Northern Affairs Canada (INAC)**
  Wilf Attwood, Regional Director General
  Tel. 867 979 4501

  Land use permit pursuant to Territorial Lands Act (Canada) for operating a toll road over Federal Crown Land.

  Surface leases pursuant to Territorial Lands Act (Canada) for exclusive use of crown lands to develop and operate a camp fuel tank farm.

  Quarry leases and/or permits to operate quarries on Federal Crown Land.

  The licenses and permits obtained for construction will be renewed for operations including a mechanism for the long-term occupation of crown land for a toll road right-of-way.

1.3.3 Closure and Abandonment: Approvals

- **Nunavut Impact Review Board**
  Elizabeth Copland, Chairman
  Tel. 780 890 8760

  Approval for closure and abandonment plan as it affects lands and waters in Nunavut.
- **Nunavut Water Board**
  Thomas Kudloo, Chairman
  Tel. 867 360 6338

  Approval for closure and abandonment plan as these affect water in Nunavut.

- **Kitikmeot Inuit Association**
  Charlie Evalik, President
  Tel. 867 983 2458

  Approval for closure and abandonment plan for installations on IOL.

- **Indian and Northern Affairs Canada (INAC)**
  Wilf Attwood, Regional Director General
  Tel. 867 979 4501

  Approval for closure and abandonment plan for installations on Federal Crown land.

1.4 PREVIOUS ENVIRONMENTAL ASSESSMENTS

No previous environmental assessments have been completed for this Project. A broad scoping study of a transportation corridor through the SGP was completed for the Department of Transportation, Government of the Northwest Territories (Ferguson Simek Clark, 1999).

Elements of this Project Description were originally developed in the Izok Project Environmental Evaluation by Metall Mining Corporation in 1993; the materials included in this Preliminary Project Description derived from that Project will be cited as "Metall 1993". Metall Mining has since been renamed and is now called Inmet Mining Corporation. Inmet is an active participant in the Project Technical Committee.

2.0 PROJECT DESCRIPTION

2.1 PROJECT TITLE

Bathurst Inlet Port and Road Project

2.2 TYPE OF ACTIVITY

A new all-weather road connecting the Tibbitt to Contwoyto Winter Road with a marine shipping terminal on Bathurst Inlet is proposed. The marine shipping routes for this Project would use existing shipping lanes from the eastern arctic that have served Polaris Mine on Barrow Strait since 1980. The route from Barrow Strait will be south through Peel Sound (Chart #7575), Franklin Strait (Chart #7573), Victoria Strait (Chart # 7784), cross Queen Maud Gulf, pass through Dease Strait, and enter Bathurst Inlet (Figure 37). The portion of the route from Barrow Strait to Queen Maude Gulf, a distance of approximately 650 km, is currently not a regular shipping route but has been used by summer tourist cruise ships and other vessels "sailing the Northwest Passage". The remainder of the eastern shipping route, through Queen Maud Gulf, Dease Strait and into Bathurst Inlet, is used annually for the sealift re-supply of Gjoa Haven and Taloyoak to the east, and Umingmaktok and Bathurst Inlet in Bathurst Inlet. The final 40 km of the route south of Bathurst Inlet community is also new but has been charted (Canadian Hydrographic Service charts # 7781, 7793). Shipping to Kugluktuk would follow the route that has been used for marine barge operations by Northern Transportation Company Limited for many years in annual re-supply to Kitikmeot communities.

The proposed land route, an all-weather road, from Bathurst Inlet to the northeast shore of Contwoyto Lake crosses 211 km of tundra. A 69 km winter road will cross Contwoyto Lake to Lupin. (Figure 1)

The all-weather road will have a single lane 8 m wide running surface with a 12 m wide passing turnout at 1 km intervals.

Winter road operations as proposed would include re-supplying the diesel fuel and specific bulk cargo needs to Ekati™ and Diavik diamond mines south of Contwoyto Lake and to Lupin and Jericho to the north using the exiting winter road. Winter road operations may also include shipments of general cargo from the south destined for Kitikmeot communities by way of a Bathurst Inlet based summer barge service. The summer barge operations will also ship fuel to Kitikmeot communities from the port in Bathurst Inlet.

2.3 ALTERNATIVE AND PREFERRED OPTIONS

Previous studies have examined several road alignments from the Slave Geological Province to a marine shipping terminal on Bathurst Inlet. The Izok Project investigated a port site 20 km east of Kugluktuk and a 270 km all-season road to the Izok Project base metal deposit (Metall Mining, 1993). Figure 2 shows the locations of these routes and road alignments. The rationale for the current Project configuration is its reduced construction and operating costs; also, flatter topography over the length of the present road alignment will require less terrain disturbance for construction due to reduced borrow and quarry material needs. These factors also contribute to reduced capital costs for construction. The proposed Project alignment is also amenable to serving more sites currently active in Nunavut. It is also better aligned to serve other mineral deposits whose economic potential may be enhanced by the lower development and operating

costs as a direct result of the Project. Also, the landed cost of diesel fuel at Ekati™ and Diavik diamond mines in the Northwest Territories from Bathurst Inlet, by way of the Lupin winter road south of Contwoyto Lake, will be less than the current supply out of Edmonton via Yellowknife. Similarly, the freight cost of general cargo into Kitikmeot communities procured in eastern Canada and brought in through the Bathurst Inlet Port is estimated to considerably less than the current transportation system based out of Edmonton and shipped via barge from Hay River.

This Project description addresses the issues raised in the draft West Kitikmeot Regional Land Use Plan by the Nunavut Planning Commission (1997) with respect to route selection for a transportation corridor (draft West Kitikmeot Regional Land Use Plan Appendix 6) and guidelines for developing a transportation corridor (draft West Kitikmeot Regional Land Use Plan Appendix 7).

No new and/or untried design and construction methods, or transportation techniques are contemplated for any aspect of the Bathurst Inlet Port and Road Project.

2.4 PROJECT LOCATION AND LAND STATUS

All the elements of the Bathurst Inlet Port and Road Project are situated entirely within Nunavut. Figure 3, and Table 1 show the location and describe the areas of land ownership affected by the different elements of the Bathurst Inlet Port and Road Project, respectively. The Project and related infrastructure proposed will be located on Inuit Owned Lands (IOL) owned by the Kitikmeot Inuit Association and on Federal Crown land.

Facilities on IOL include:

- Contwoyto camp 1.5 ha
- 82.3 km of road, 140.5 ha (including 18 quarries)

Facilities planned for Federal Crown land include:

- the Bathurst Inlet port site including camp and airstrip- 159 ha
- 128.9 km of road, 211.2 ha (including 19 quarries and pits)

The locations of the proposed gravel pits and quarry sites for road construction materials are shown on Figure 4.

The design and construction technologies for all alternatives examined to date are similar with the exception that a Nuna Logistics proposal had a narrower running surface. In every case a route alignment has been proposed for an all-weather road built with local gravel and/or crushed rock overlying undisturbed tundra. The selection of the alignment and placement of materials would protect the underlying permafrost from thermal degradation. The road alignment connects a tidewater marine shipping port with inland mining locations. The port would handle incoming bulk materials, primarily diesel fuel, explosives, and grinding media. The road would enable the movement of these bulk commodities from tidewater by conventional highway tractor/trailer haul units. The port would be re-supplied with marine shipments of bulk goods on a shipping schedule determined by marine ice conditions, community concerns, and environmental considerations.

The preferred options for the Project were set by the Technical Committee to include specific criteria for the port site, and the road alignment.

Port site selection criteria for the Project included the following:

- the port site should have a steep shoreline to 15-metre water depth to accommodate large ice class vessels. The dock site has been designed to handle 50,000 tonne vessels carrying fuel, mineral concentrate and general bulk cargo. Vessels of this capacity would be required only when a base metal project is brought into production. It is estimated that this Project will require vessels up to 25,000 tonnes;
- the port site ocean floor marine geotechnical conditions should support a closed cell sheet pile rock filled wharf;
- port site shoreline should provide rock foundations for shore side structures;
- the port should have an ice-free season of 100 - 110 days per annum;
- shoreline features should provide a free vessel turning distance of 1,400 metres, allowing ships to operate without tug support;
- the port site should also accommodate marine tug and barge units for community re-supply;
- the port site should be close to local source of rock and granular construction materials;
- the site should have a nearby site that offers suitable conditions for a 1,200 metre airstrip;
- the site should include room for future expansion.

Road route selection criteria included:

- the route should be accessible by current and potential mines;
- the route should have terrain slopes less than 8% to minimize "cut and fill" sites;
- the route should be in close proximity to rock and granular construction materials to keep construction haul distances under 10 km;
- the route should maximize surface and near-surface rock road base to reduce drainage pattern alteration;
- the route should minimize the number of water crossings to reduce construction costs and minimize interference with fish and fish habitat.

Table 1. Land status of port, road alignment, and Contwoyto camp site

Facility	Location	Land ownership	Disturbed Area (ha)		Total		Sub Surface Interests*
			Road	Quarry/Pit	IOL	Federal	
Port, camp and airstrip	km 0	Federal Crown				**159.0**	Wheaton River Nunavut Ltd.
Port to Contwoyto Lake Road	km 0 – 2.4	Federal Crown	3.2	2.0		5.2	Wheaton River Nunavut Ltd.
	km 2.4 – 20.2	IOL: BB-27/76 J**	23.5	10.0	33.5		
	km 20.2 – 29.1	Federal Crown	11.7	4.0		15.7	
	km 29.1 – 34.5	IOL: BB-16/76 G, J**	7.1	4.0	11.1		
	km 34.5 – 56.6	Federal Crown	29.1	10.0		39.1	
	km 56.6 – 59.7	IOL: BB-16/76 G, J**	4.1	2.0	6.1		
	km 59.7 – 62.0	Federal Crown	3.0	0		3.0	
	km 62.0 – 66.4	Federal Crown	5.8	0		5.8	974143 N.W.T.Ltd.
	km 66.4 – 67.3	Federal Crown	1.2	2.0		3.2	
	km 67.3 – 70.7	IOL: 16/76 G, J**	4.5	2.0	6.5		
	km 70.7 – 75.3	Federal Crown	6.1	2.0		8.1	
	km 77.3 – 85.1	Federal Crown	12.9	6.0		18.9	Pinnacle Resources Ltd.
	km 85.1 – 89.1	Federal Crown	5.3	2.0		7.3	
	km 89.1 – 90.6	Federal Crown	2.0	0		2.0	
	km 90.6 – 92.9	Federal Crown	3.0	0		3.0	
	km 92.9 - 93.2	Federal Crown	0.4	0		0.4	Echo Bay Mines Ltd.
	km 93.2 – 94.6	Federal Crown	1.8	0		1.8	C. Ronaghan
	km 94.6 – 95.1	Federal Crown	0.7	0		0.7	Echo Bay Mines Ltd.
	km 95.1 – 100.9	Federal Crown	7.6	0		7.6	C. Ronaghan
	km 100.9 – 114.5	IOL: BB 04/76 F**	17.9	4.0	21.9		C. Ronaghan
	km 114.5 – 126.6	Federal Crown	16.0	4.0		20.0	C. Ronaghan
	km 126.6 – 149.0	IOL: BB 05/76 F**	29.5	6.0	35.5		C. Ronaghan
	km 148.5 – 155.7	Federal Crown	8.8	2.0		10.8	
	km 155.7 – 164.8	IOL: BB 17/76 F**	12.0	2.0	14.0		
	km 164.8 – 200.6	Federal Crown	47.2	8.0		55.2	Kennecott Cad. Exploration Ltd.
	km 200.6 – 203.1	Federal Crown	3.3	0		3.3	
	km 203.1 – 203.2	Federal Crown	0.1	0		0.1	TeckCominco
	km 203.2 – 210.7	IOL: CO-12/76/E **	9.9	2.0	11.9		Aber Resources Ltd
Sub-total			**277.7**	**74.0**	**140.5**	**211.2**	
Contwoyto Camp	km 210.7	IOL: CO-12/76/E			1.5		Aber Resources
Inuit Owned Land	± 82.3 km						
Federal Land	± 128.9 km						
Totals			**277.7**	**74.0**	**142.0**	**370.2**	

* indicates parties with mineral claims along segment of proposed Project road alignment

** IOL = Inuit Owned Land; alphanumeric code is the specific block of IOL affected

2.5 SITE ACCESS AND TRANSPORTATION METHODS

2.5.1 Marine Access

Marine access to the proposed port site from the northeast will use existing shipping lanes that have served Polaris Mine near Barrow Strait since 1980. From Barrow Strait the route will be south throughPeel Sound, Franklin Strait, Victoria Strait, cross Queen Maud Gulf, pass through Dease Strait, and enter Bathurst Inlet. The portion of the route from Barrow Strait to Queen Maude Gulf, a distance of approximately 650 km, is currently not a regular shipping route but has been used by summer cruise ships and other vessels. The remainder of the shipping route, through Queen Maud Gulf, Dease Strait and into Bathurst Inlet, is used annually for the sealift re-supply of Gjoa Haven and Taloyoak to the east, and Umingmaktok and the Bathurst Inlet community. The final 40 km of the marine route south of Bathurst Inlet community is new. Barging to the communities will follow commercial shipping lanes used annually by Northern Transportation Company Limited (NTCL) in the annual marine re-supply of the coastal communities of Nunavut.

2.5.2 Overland Access

The transportation network proposed by the Project interconnects with the current Lupin winter road on Contwoyto Lake. The winter ice road on Contwoyto Lake is part of the current winter road between Yellowknife and Lupin Mine (Tibbitt to Contwoyto). (Figure 1)

2.6 PROJECT CONSTRUCTION

All Project construction activities will be based at, or serviced from camps at the Bathurst Inlet Port site and Contwoyto Camp. The road will be built in two "spreads", the initial spread from the Contwoyto camp site east and north; the second spread from the port site south and west towards Contwoyto Lake to meet up with the initial spread. The overall construction schedule will proceed in a sequence that includes:

- Port site development — late summer 2005 to winter 2006/2007;
- Road from km 0 (port) to km 126 — winter of 2005 through to the fall/ winter of 2006;
- Road from Contwoyto to km 126 — February 2005 to late fall 2006
- Contwoyto camp — January / February 2006

Figure 5 provides a schematic overview of this schedule; a more detailed Project construction schedule is provided in Appendix 3.

The initial shipment to start Project construction in September 2005 will include equipment and supplies for both port and road construction.

Mobile equipment	Equipment	Supplies
1 -150T crane 1 -50 T crane 1 -Fuel tanker 2 -Fuel trucks	1 maintenance shop 1 spill abatement equipment trailer 4 power generators 2 heat recovery units switch gear	7 rolls geo-textile 8 HDPE liner rolls with deploy equipment Sheet piling

3 -CAT D 8 dozer 4 -CAT 988 loader 1 -25T fork lift 1 -5 T fork lift 1 -boat with motor 1 -Hiab truck 2 -Excavator 2 -Sand/plow trucks 2 -CAT 14G graders 1 -CAT 14H grader 1 -CAT 16H grader 4 -CAT 777 trucks 2 -CAT 769 trucks 1 -100T float and tractor 2 -Tandem dump trucks 2 -Water trucks 1 -mechanics truck 1 -tractor with low bed trailer 2 -crew cab p/u trucks 1 -Ambulance 1 -Fire suppression unit 1 -12 passenger van 2 -Service trucks 1 -15 passenger van 2 -38 passenger bus 4 -Air track with compressor 1 -Tank drill 1 -CAT D 10 dozers 1 -CAT D 9 dozers 2 -CAT 992 front end loaders 2 -Agitator cement trucks	1 portable crushing and screening plant 1 Portable cement plant 1 -100 person camp for port 1 -60 person mobile camp with power plant, water treatment, and sewage treatment.	Steel for tanks Cement Bridges and decking 4 M litres diesel fuel

2.6.1 Port Construction

The first shipment of materials for construction at the Bathurst Inlet port site (shown above) will be shipped by marine barge from Hay River via Tuktoyaktuk to a staging site adjacent to the wharf site in the late summer of 2005. Functional accommodations and mess facilities for initial site work will be part of the barge shipment and will stay on site until the fall of 2006. Included in the initial shipment will be the camp, the construction equipment, construction materials for the dock, fuel and other bulk consumables for the first year of camp, airstrip and port and road construction. The fuel will be stored in a NTCL fuel barge that will be "tied up" and allowed to "freeze in" at the port site cargo staging area.

Construction for the major components of the port site is proposed to proceed as follows:

- Fall 2005 -site development
  -install water supply
- Fall 2005 -150 person construction camp, potable water supply, and sewage treatment
  -install first 4 fuel tanks;
  -install permanent power supply;

- Winter 2005/06 -install fuel dispensing system;
- Winter/summer 2006 -construct wharf;
- Summer/fall 2006 -install remaining 6 fuel tanks;
- Winter 2006/07 -site development complete and in operation.

The facilities at the port site will be built following standard construction methods for tundra terrain. Development sites will be levelled by regular earth moving construction equipment laying down successive layers of gravel and crushed rock; in all cases care will be taken to ensure that permafrost integrity is not compromised, especially under built -up structures such as the airstrip, camp buildings, and tank farm. Overall fill requirements for port construction are estimated to be 270,000 cu m of quarried rock. The fill requirements for all site development at the port are in balance with the volume of quarried materials that must be removed for preparing the area at tidewater for the wharf. Rock for base course construction will be quarried using a standard drill, blast, and haul sequence. Rock for intermediate course and top dressing will be crushed to predetermined sizes and stockpiled for use as required.

The tank farm will be designed to include a perimeter berm and interior sumps to serve as the first line of protection in case of a large fuel spill. Also, the port site surfaces will be sloped so that allrun off will pass through sedimentation ponds that can be controlled. In the event of an uncontrolled release of bulk materials that could be deleterious to marine environments, the run off would be trapped and the water treated before discharge - see Figure 6 for the configuration of the port site and related facilities. Final grades and drainage patterns will prevent site-specific surface erosion on or adjacent to the port site and associated facilities.

The sheet pile for the wharf will be driven from the ice in the spring of 2006. On completion of the sheet pile installation, rock fill will be placed in the space between the shoreline and the sheet piling. The rock fill will compact the marine clay sediment, but it is possible however, that the rock fill will displace the marine clay in which case it will have to be excavated and hauled to a spoil pile which will be located near the beach opposite km 2.5 of the road.

2.6.2 Port to Contwoyto Lake Road Construction

The road will be built using standard road building methods for tundra terrain - pushing quarried rock and granular materials over the tundra laid down by "end dump" mine trucks. In all cases the quarries and borrow pits will be developed immediately adjacent to the road alignment (Figure 4). The road base, 1 - 2 metres thick, will consist of quarried rock produced by drill, blast, load, and haul methods. This rock for the road base will be in the 600 - 900 mm size range. It will be covered with quarried crushed rock produced the same way but in the 100 mm size range. Road construction will run continuously with two shifts working 24 hours per day, 7 days per week. Road bed construction is expected to proceed at a rate of 10 km per month at each work camp; with two camps working (Port and Contwoyto camps) the rate of progress will be 20 km / month. Overall material needs for road construction from the Port to Contwoyto Lake are estimated to be 2.9 million cubic metres.

Please see Figure 7 for a typical cross section of the road.

Road construction from the port to Contwoyto Lake will proceed as follows:

- Winter 2005 -rough grade construction km 0 - 42 including bridge at km 2.5;
- Winter 2005/06 -mobilize camp and construction fleet to Contwoyto Lake;
- Winter /spring 2006 -rough grade construction km 42 -68;
- Spring/summer 2006 -intermediate grade km 2.5 - 65;
  -dress km 2.5 - 65;
- Spring/summer 2006 -rough grade km 68 – 126;
- Summer/fall 2006 -intermediate grade and dress km 65 – 126;
- Winter/spring 2006 -rough grade construction km 211 - 149;
- Spring 2006 -rough grade construction km 149 – 126
- Spring/summer/2006 -place intermediate grade and dress km 211 - 126;
- Summer/fall 2006 -complete intermediate grade to km 126;
- Fall/winter 2006 -road to Contwoyto complete and demobilize.

The equipment fleet above will be supplemented with an additional road construction fleet that will begin work from Contwoyto Lake toward the port. It will be mobilized from Yellowknife on the Lupin winter road in February 2005 and consist of:

Mobile equipment	Equipment	Supplies
1- 50T crane 1 -Fuel tanker 2 -Fuel trucks 2 -Service trucks 1 -Cat 14G grader 1 -CAT 16H grader 7 -CAT 777 trucks 2 -CAT 769 trucks 1 -100T float with tractor 1 -CAT D 6 wide pad 2 -Water trucks 2 -Sand/snow plough trucks 2 -Crew cab p/u trucks 1 -Boat with motor 2 -15 passenger van 1 -38 passenger bus 4 -Air tracks c/w compressors 1 -Tank drill 2 -CAT D 10 dozers 2 -CAT D 9 dozers	2 - 500,000 fuel tanks 1 -spill abatement equipment trailer 1 -portable crushing and screening plant 1 -60 person mobile camp with power plant, water treatment, and sewage treatment.	2 M litres diesel fuel cement bridge and deck

2 -CAT D 8 dozers 2 -CAT 992 loaders 1 -CAT 988 loader 1 -CAT 350 excavator		

Road construction workers will be based in two 60-person camps. They will be self-contained with a skid mounted sewage treatment plant and will be moved in response to progress in construction. Table 2 provides the details for a typical road construction crew required to operate two 12-hour shifts.

Table 2. Road construction crew

Job	Quantity
Site supervisor	1
Road foreman	2
Quarry/pit foreman	1
Drill/blast crew	5
Crusher crew	3
Dozer/loader/grader operators	21
Truck drivers	13
Servicemen/labourers	6
Camp/catering	5
Total	**57**

Road construction will begin with drilling and blasting rock at the quarry. Thedrilling/blasting pattern will be adjusted for the optimum size of blast rock required. Broken rock up to 900 mm size will be loaded into 90T trucks for hauling to the end of the road and dumping the rock for final placement by dozers pushing the rock to advance the road's base course. A portable crushing and screening plant operating in the quarry will produce the -100 mm size crushed rock road material for the top course. The crushers will not operate in the coldest months (December through February).

The rate of advance of the road is estimated to be 10 km / month and it is expected that the drills and crushers will be move every 30 days to reduce the haul distances for laying down the select granular base course of rock. Quarrying, hauling, and placing rock at the end of the road will have continuous construction activity occupy a linear distance of up to 20 km with the mobile camp located up to 20 km behind the active quarry.

2.6.3 Contwoyto Camp

Construction of the permanent Contwoyto camp will commence during the winter of 2006 as soon as the Lupin winter road from Yellowknife is operational. The campsite will be built with coarse and crushed rock on the same site development principles as the road.

2.6.4 Construction Labour Force

The construction labour needs identified in the Project feasibility study are provided in Table 3.

Table 3: Construction labour force requirements (man months)

Month/Year	2005		2006		2007	
	Port	Road	Port	Road	Port	Road
January			50	77	0	0
February			68	154	0	0
March			68	141	0	0
April			46	153	0	0
May			58	157	0	0
June			61	167	0	0
July	38		72	176	0	0
August	54		82	132	0	0
September	181		80	138	0	0
October	185	33	80	77	0	0
November	104	57	0	0	0	0
December	60	77	0	0	0	0
Sub-total	622	167	665	1372	0	0
Total Overall						**2826**

2.7 PROJECT OPERATIONS

Project operations will have a rhythm dictated by the seasons of the annual Arctic cycle. The shipping season may be variable from year to year but is expected to last approximately 110 days per year beginning as early as mid-July and running into late October. Fuel and selected cargo materials are expected to be delivered in ice class double hull tankers or OBO vessels (oil, bulk, ore). Summer shipping will also include barges from the port to Kitikmeot communities with fuel and general cargo. Table 4 shows the estimated volumes of cargo that is expected to be handled through the port in a typical year during the first 10 years of Project operations.

Table 4. Estimate of annual volume of cargo passing through the port in years 1 - 10

Destination/Source	Imports		Exports	
	Fuel (000's L)	Supplies (t)	Fuel (000's L)	Supplies (t)
Lupin	14,030	4,700		
Ekati	72,300	20,000		
Diavik	53,800	9,400		
Jericho	8,640	2,660		
Hope Bay	7,200		7,200	
Gjoa Haven	4,840	80	4,840	80
Cambridge Bay	9,360	150	9,360	250
Kugluktuk	4,800	110	4,800	150
Taloyoak	3,180	60	3,180	80
Bathurst Inlet	50		50	
Umingmaktok	60		60	
Total	**178,260**	**37,160**	**29,490**	**560**