7.0 MITIGATION MEASURES AND RESIDUAL IMPACTS

The risk of environmental effects from Project construction and operations relate to the direct interactions between the Project and elements in the environment. The interactions and related environmental risk outlined in Table 7 above will be elaborated on here.

The overall mitigation measures that will be practiced are the product of a high level of environmental care and diligence by the proponent in all Project activities. Notwithstanding the best practice, and successful mitigation measures, some interactions between the Project and the environment will have residual impacts which are described for the relevant Project activity.

7.1 AIR QUALITY

Combustion of diesel and other hydrocarbon fuels will produce greenhouse gasses which cannot be avoided. The amount can be reduced by an aggressive energy conservation effort. The residual environmental effects of burning hydrocarbons are debatable but may include global warming.

7.2 MARINE SHIPPING

Marine shipping associated with the Project will take the form of vessels up to 25,000 tonnes and barges serving Kitikmeot communities. All shipping will be done by commercial carriers operating in compliance with the relevant Canadian laws and regulations.

The Project will go beyond the specifics of the law in mitigating the effects of shipping through the Kitikmeot Region. The shipping season will be planned so that no ship movement is required during the time of potential early winter ice cover on Dease Strait and so avoid the risk of interfering with caribou migration from Victoria Island to the Kent Peninsula. Also, no ship movement will be planned for the spring when caribou return to Victoria Island. The first ship of the season is planned for an open water arrival and so Project shipping will not interfere with human travel on the spring ice either.

No residual impacts of marine shipping are expected.

7.3 CAMP OPERATIONS

Interactions with the environment at Project camps will involve water quality, waste management, and wildlife. Sewage from the camps will be treated to meet waste water quality standards prior to discharge. All combustible waste will be incinerated on a regular basis so not to attract scavengers; non-combustible waste will be disposed of either at a solid inert waste site or be shipped out. All hazardous wastes that cannot be disposed of by the Project (i.e. used oil can be destroyed on site by a waste oil burner) will be shipped out.

A "Bear Alert" program will be used at all camps to advise personnel when grizzly bear are sighted at or near a camp.

Project employees will probably engage in recreational angling but hunting by Project personnel will be prohibited. The policy on recreational angling by Project workers will be in compliance with the West Kitikmeot Regional Land Use Plan (when approved).

No residual impacts are expected to water quality, fish populations or wildlife populations as a result of camp operations. The remains of a solid inert waste site could be visible for many generations.

7.4 UNLOADING SHIP CARGO

Handling marine bulk cargos has the attendant risk of spills with associated potential effects on coastal habitats. The first defense will be a code of best practice that will be followed by the commercial carriers and their staff. Next, the Project will adopt contingency plans that employ the best practice available for Arctic conditions.

No residual impacts are expected from normal port operations. Effective contingency plans and equipment with trained personnel will be in place to reduce the risk of residual impacts from accidents.

7.5 PIT /QUARRY DEVELOPMENT

Pits and quarries will alter an estimated 2 ha of tundra terrain at each site for a total of ± 74 ha at approximately ± 37 sites. Sites for pits and quarries will be selected with care so that the terrain disturbance can be contained in as small an area as possible. Quarries in sulphide bearing rock with a risk of acid generation in the quarry or by the rock on the road will be avoided. During operations, effective contingency plans will be in place to ensure that accidents do not result in residual impacts. On closure quarry and pit walls will be sloped to avoid progressive terrain alteration, but the visual effect of the pit and quarry will remain.

7.6 PORT SITE DEVELOPMENT

Port site development, like quarry and pit development will involve terrain alteration on a large scale. It is estimated that the cumulative area of all the development at the port will involve approximately 159 ha. , including the dock site. A Project environmental management system will be in place to reduce the risk of environmental effects from normal operations. Contingency plans will be in place to ensure that accidents do not cause long term impacts.

The residual impacts of port development will be the visual and inert. These effects of terrain alteration will be evident on the tundra for many years.

7.7 ROAD CONSTRUCTION

Road construction will affect a total estimated 277.7 ha with a further 74 ha for quarries. The alignment has been selected for its benign effects on drainage basins and terrain features like eskers. Road construction like pit and quarry development will be governed by rigorous attention to good practice and effective contingency plans to reduce the risk of long term environmental effects from accidents.

The presence of the road will not have any long term negative impacts on water, vegetation, or wildlife. Water crossings will be designed to avoid the stream channel in fish bearing streams during normal flows. Caribou will use the road as insect relief during periods of heavy insect infestation. The presence of the road, like the presence of an esker, will be visible for many generations.

The residual impacts of the road construction will be visual and inert. These effects of terrain alteration will be evident on the tundra for many years.

7.8 CONTWOYTO CAMP DEVELOPMENT

The Contwoyto Camp site development will occupy 1.5 ha. Like the road, Camp construction will be completed with care and diligence. The Contwoyto parking area and push outs, like the road, will be areas used by caribou as insect relief during periods of heavy insect infestation. The gentle terrain of the sites is such that the risk of progressive erosion is negligible.

The residual impacts of Contwoyto Camp construction will be visual and inert. These effects of terrain alteration will be evident on the tundra for many years.

7.9 PORT SITE OPERATIONS

Road operations at the port will produce dust in summer which will be subject to dust suppression by watering the surfaces. Contingency plans will address the risk of spills. Sedimentation ponds will be used as a back-up for spills that could affect the quality of run off water. These ponds will be located to collect run off so that it can be tested and held for treatment, if necessary, before entering Bathurst Inlet. No freshwater systems are at risk from port site run off.

No residual impacts are expected from normal port operations; effective contingency plans and equipment with trained personnel will be in place to handle accidents.

7.10 ROAD OPERATIONS

All trucks operating on the road will be required to carry a basic spill kit to handle incidental spills. A contingency plan and a mobile spill kit will be on standby at all times to handle accidental spills like a truck roll over. The road environmental management plan will show the drainage pattern for both sides of the road for the entire right of way so that effective cleanup measures can be initiated with full knowledge of the natural lay of the land.

Wildlife will always have the right of way; in the event of continuous caribou movement across the road, travel may be suspended.

No residual impacts are expected from normal road operations; effective contingency plans and equipment with trained personnel will be in place to handle accidents.

7.11 LOADING BARGE CARGO

The commercial carriers will be expected to employ best practices for fuel and cargo handling. The experience of Polaris and Nanisivik will be used in developing handling procedures and for related spill contingency plans.

Loading barges with deck cargo and fuel in holds will follow standard practice.

The port will be equipped with a full complement of spill containment and clean-up equipment.

No residual impacts are expected from normal port loading operations; effective contingency plans and equipment with trained personnel will be in place to handle accidents.

7.12 CONTINGENCY PLANS

Contingency plans that are specific to potential risks inherent in Project construction and operations will be submitted with the Project EIS. Included will be contingency plans for:

- discharging fuel from ship to tank farm
- tank farm operations and management
- unloading bulk materials at the port
- storage of hazardous materials at the port

8.0 ABANDONMENT/DECOMMISSIONING PLANS

It is expected that the Project as examined in the feasibility study (Nishi-Khon SNC and Kitikmeot Geosciences, 2002) will enhance the economics of resource development in the West Kitikmeot in a very significant way for the long term. Decommissioning the Project is therefore not foreseen. It is accepted however that elements of the Project will change and that selective decommissioning will be required from time to time.

8.1 QUARRIES

Quarries not required for maintaining the road way during operations will be contoured and abandoned on completion of road construction. At no time during the construction or operations of the Project will active erosion of any terrain on or adjacent to the port and road and associated lands be allowed to proceed unchecked or alter natural drainage patterns in adjacent lands.

8.2 ROAD

It is expected that the road will be in use for many generations in the future, nevertheless, the Project proponents acknowledge that non-renewable resources are finite and that some day in the future sections of the road and associated facilities may no longer be required. Closure and abandonment will include removal of all imported materials and structures, treating all contaminated soils, contouring all surfaces to reduce the possibility of erosion and to enhance the natural re-vegetation of all terrestrial surfaces disturbed or altered by the Project.

8.3 SEASONAL SHUTDOWN

The road and port operations are seasonal, road in the winter, port in the summer.

The Project's operations plan will include seasonal, temporary, and permanent closure procedures.

There will be some road maintenance in summer. Equipment used for building and operating the winter ice road on Contwoyto Lake will be laid up for the summer.

Temporary suspension of all operations might be associated with global economic factors that force the suspension of operations at all participating sites. One such factor could be a price increase of fuel oil to levels that make all mining in remote regions uneconomic. Contingency plans for such factors arising will be developed and submitted in support of the Final Project Description and Project EIS.

9.0 MONITORING AND MAINTENANCE PLANS

The Project will undertake environmental quality and public health monitoring programs as required by the Project's "license to operate" for both the construction and operating phases. Monitoring programs are expected to be prescribed by the Project's environmental regulators for water quality generally and for public health issues specifically. Furthermore, the Project would explore collaboration with other industry parties and government in the event that long term wildlife monitoring programs were to be initiated in the Kitikmeot region of Nunavut.

The Project permitting approvals requirements includes that an Inuit Impact and Benefit Agreement be negotiated with the Kitikmeot Inuit Association. It is expected that compliance and monitoring functions will be included in that agreement.

10.0 LIST OF INFORMATION SOURCES

Personal Communications

Page Burt, naturalist at Bathurst Inlet Lodge for 20+ years and principal investigator 2001 field studies of plants and vegetation in Project area.

Sam Kapolak, resident, community of Bathurst Inlet.

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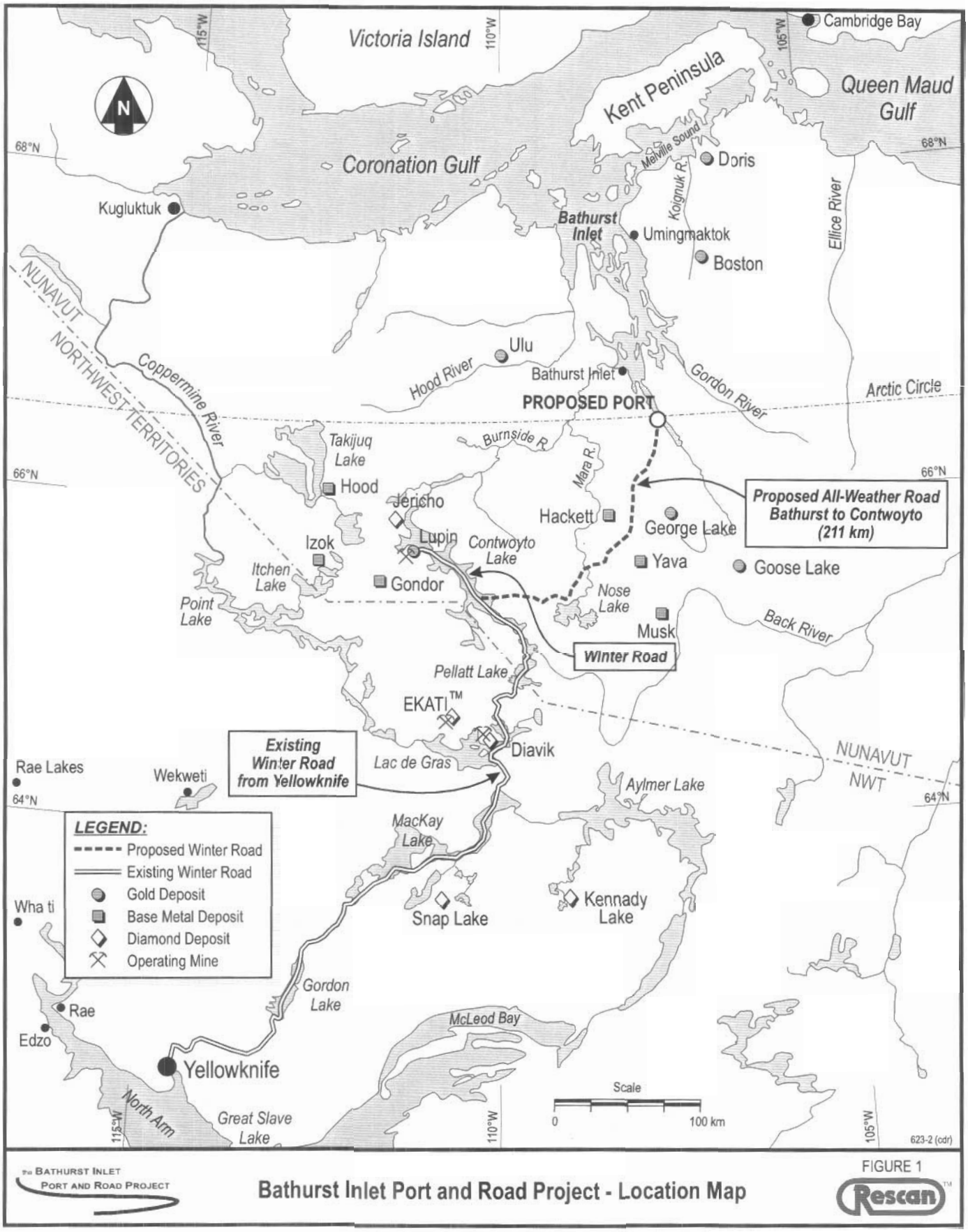
FIGURES

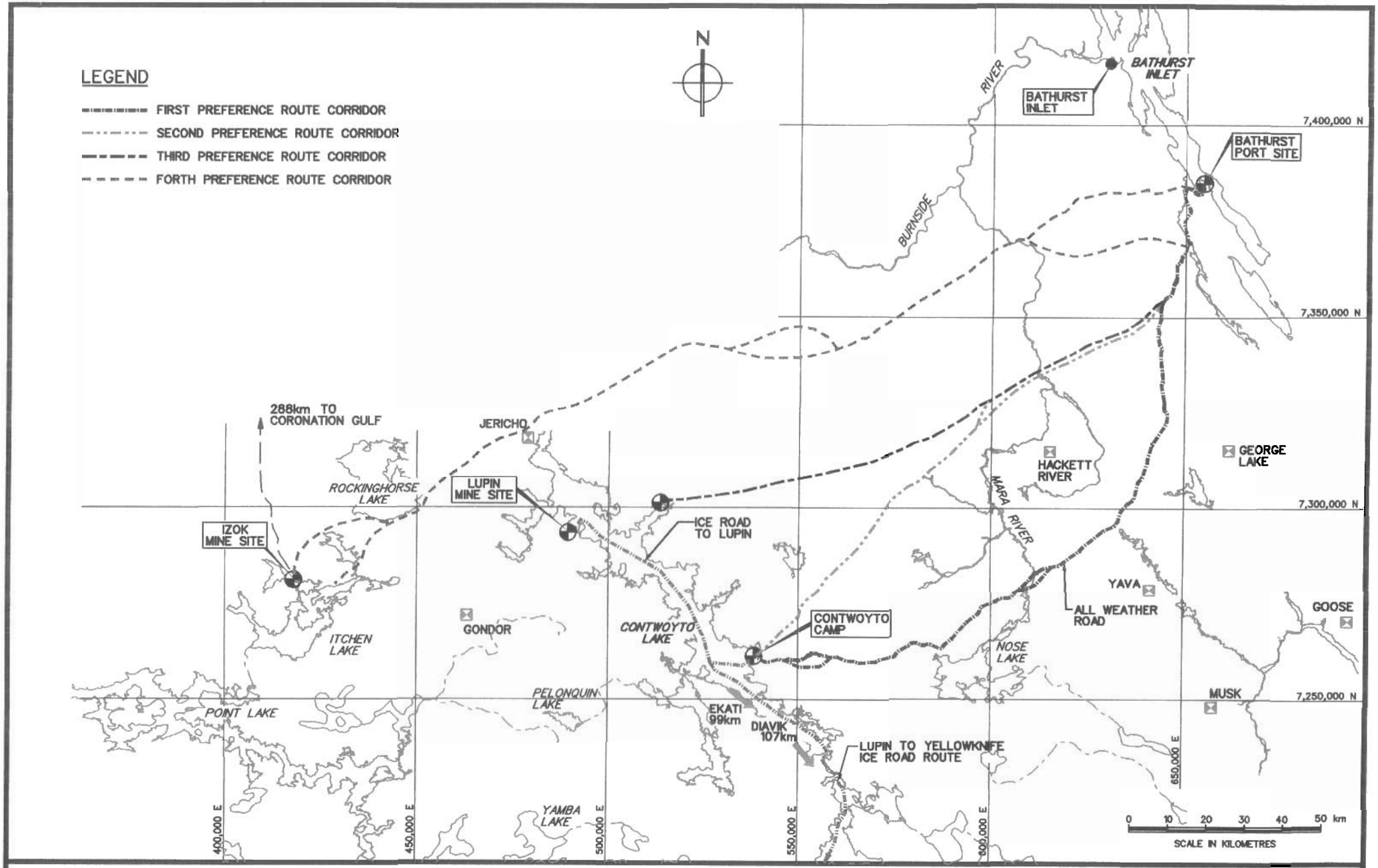


the BATHURST INLET PORT AND ROAD PROJECT

Bathurst Inlet Port and Road Project - Location Map

FIGURE 1

Rescan™



BATHURST INLET PORT & ROAD PROJECT

ROUTE ALTERNATIVES REVIEWED SHOWING LUPIN WINTER ROAD ROUTE IN PROJECT AREA

FIGURE 2

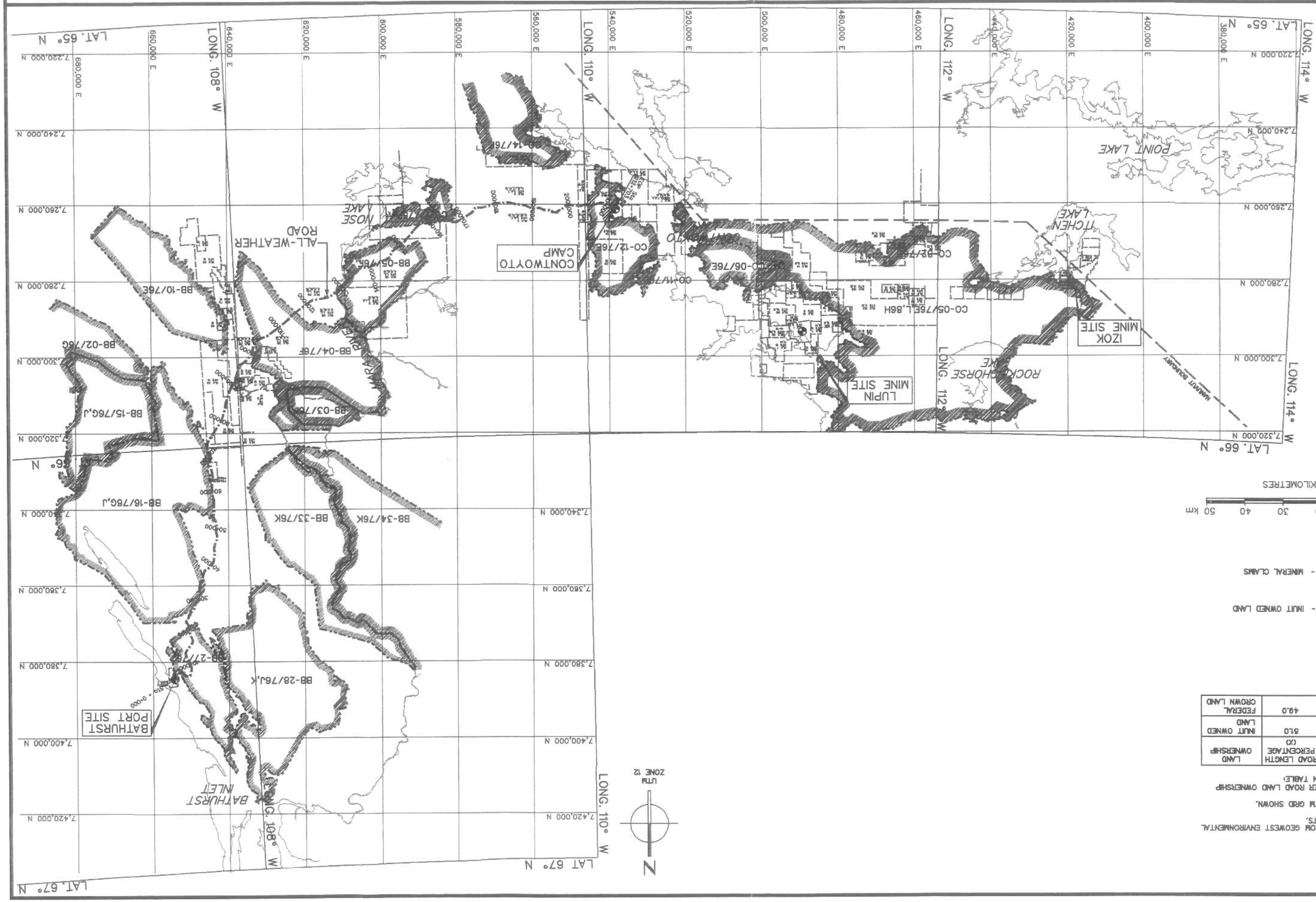
the BATHURST INLET PORT AND ROAD PROJECT

BATHURST INLET
PORT & ROAD PROJECT

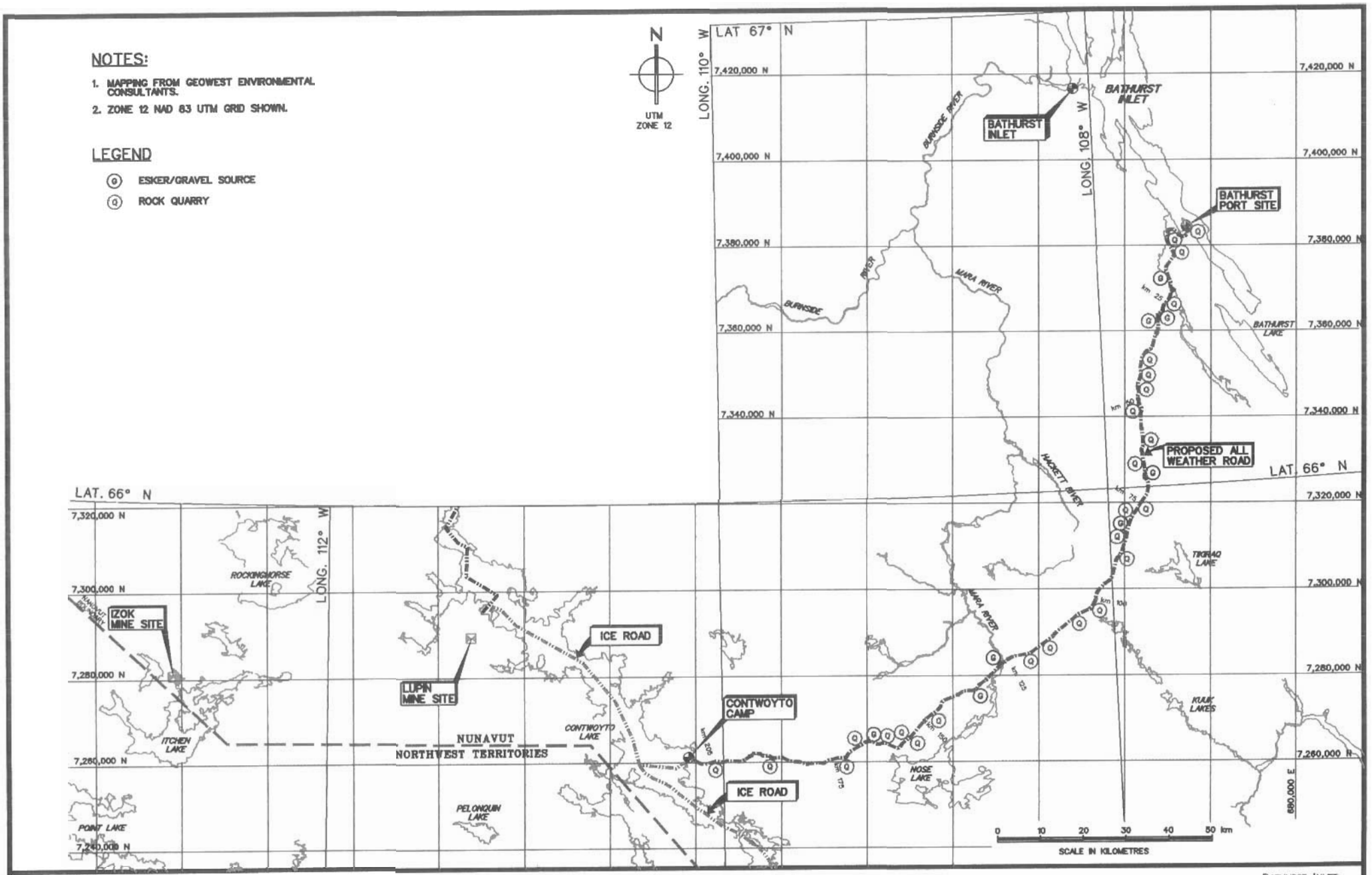
LAND USE AND
OWNERSHIP OF ROAD ALIGNMENT

FIGURE 3

Use BATHURST INLET PORT AND ROAD PROJECT



ROAD LENGTH (km)	ROAD LENGTH PERCENTAGE (%)	LAND OWNERSHIP
147.7	81.0	INUIT OWNED LAND
14.6	49.0	FEDERAL CROWN LAND

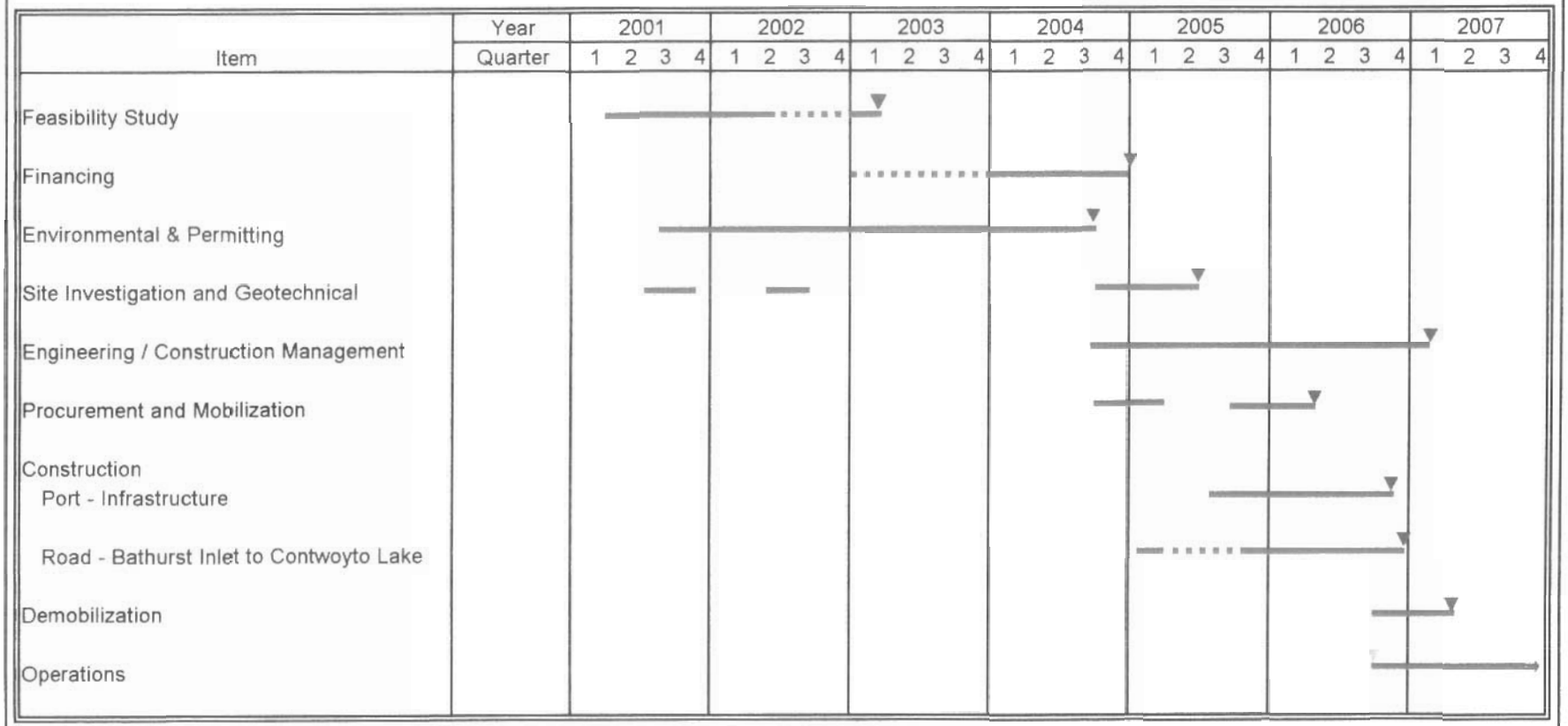


BATHURST INLET PORT & ROAD PROJECT

QUARRY AND BORROW PIT LOCATIONS FOR PROJECT CONSTRUCTION

FIGURE 4

the BATHURST INLET PORT AND ROAD PROJECT

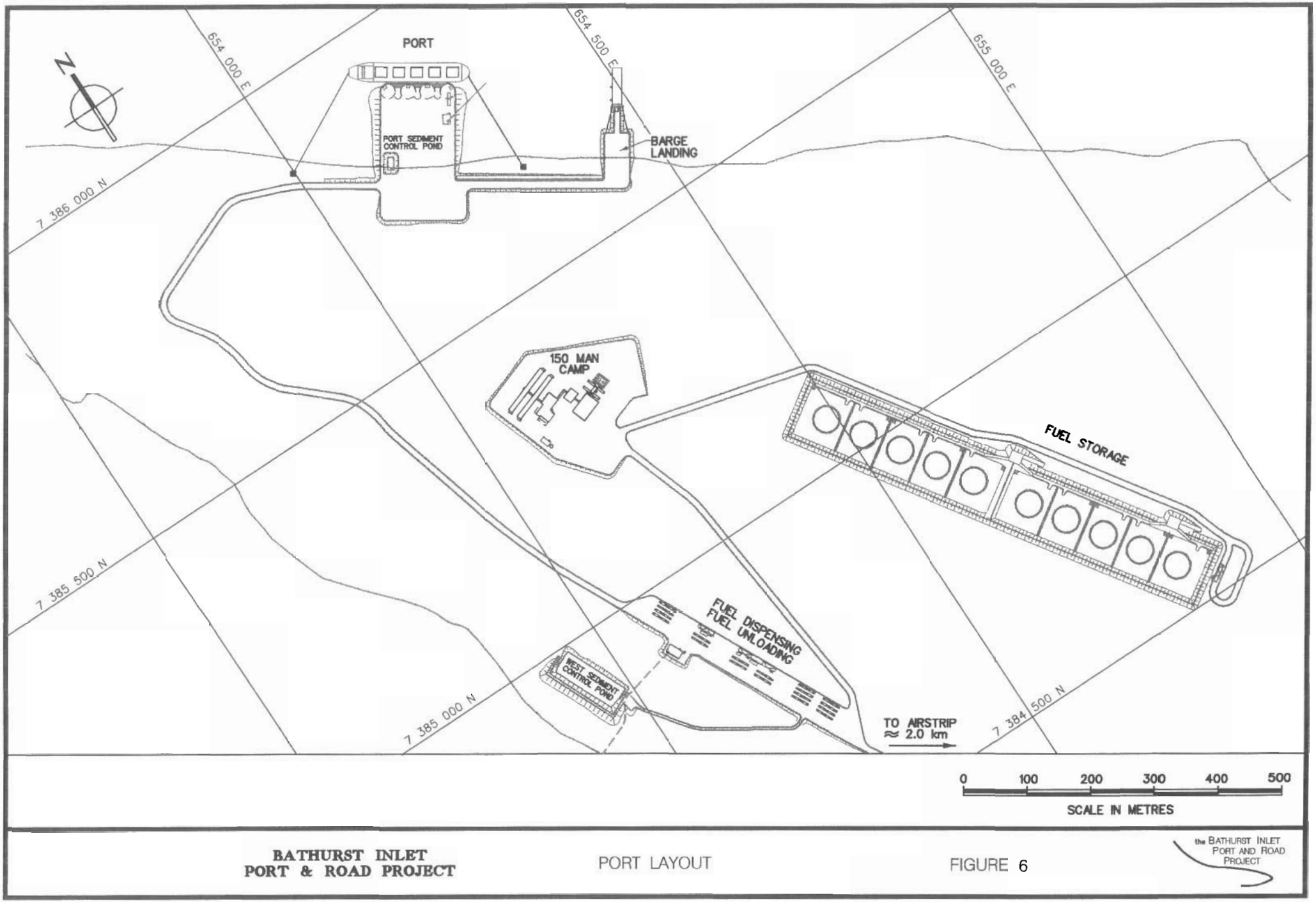


BATHURST INLET
PORT & ROAD FEASIBILITY STUDY

OVERALL PROJECT SCHEDULE

FIGURE 5
(Revised April/03)

the BATHURST INLET PORT AND ROAD PROJECT

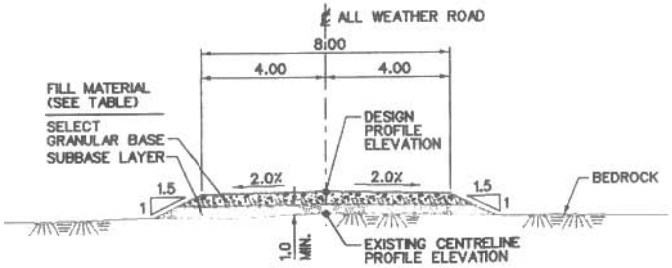


BATHURST INLET PORT & ROAD PROJECT

PORT LAYOUT

FIGURE 6

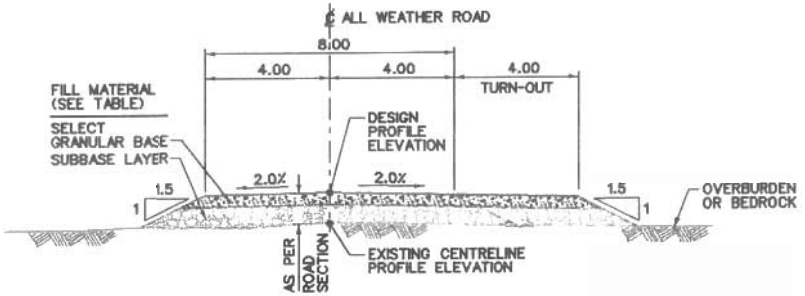
the BATHURST INLET PORT AND ROAD PROJECT



TYPICAL ALL WEATHER ROAD SECTION
ON BEDROCK OR WELL-DRAINED GRANULAR SOILS

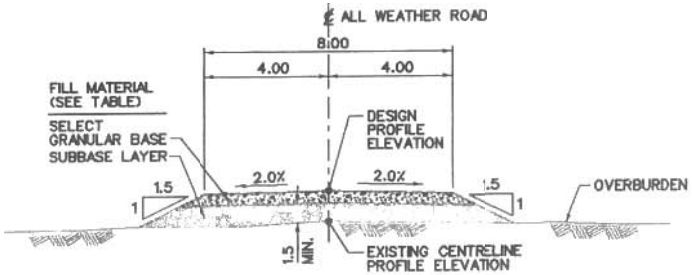
NTS

LAYER	THK.	MATERIAL DESCRIPTION
ALL WEATHER ROAD		
SELECT GRANULAR BASE	300mm	100mm CRUSHED ROCK
SUBBASE	0.6m TO 1.6m	600/900mm ROCK FILL



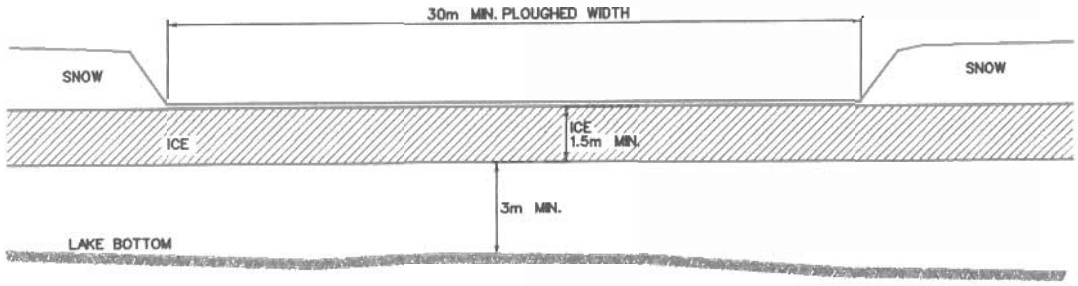
TYPICAL ALL WEATHER ROAD WITH TURN-OUT

NTS



TYPICAL ALL WEATHER ROAD SECTION
ON ICE-RICH SOILS

NTS



ICE ROAD SECTION

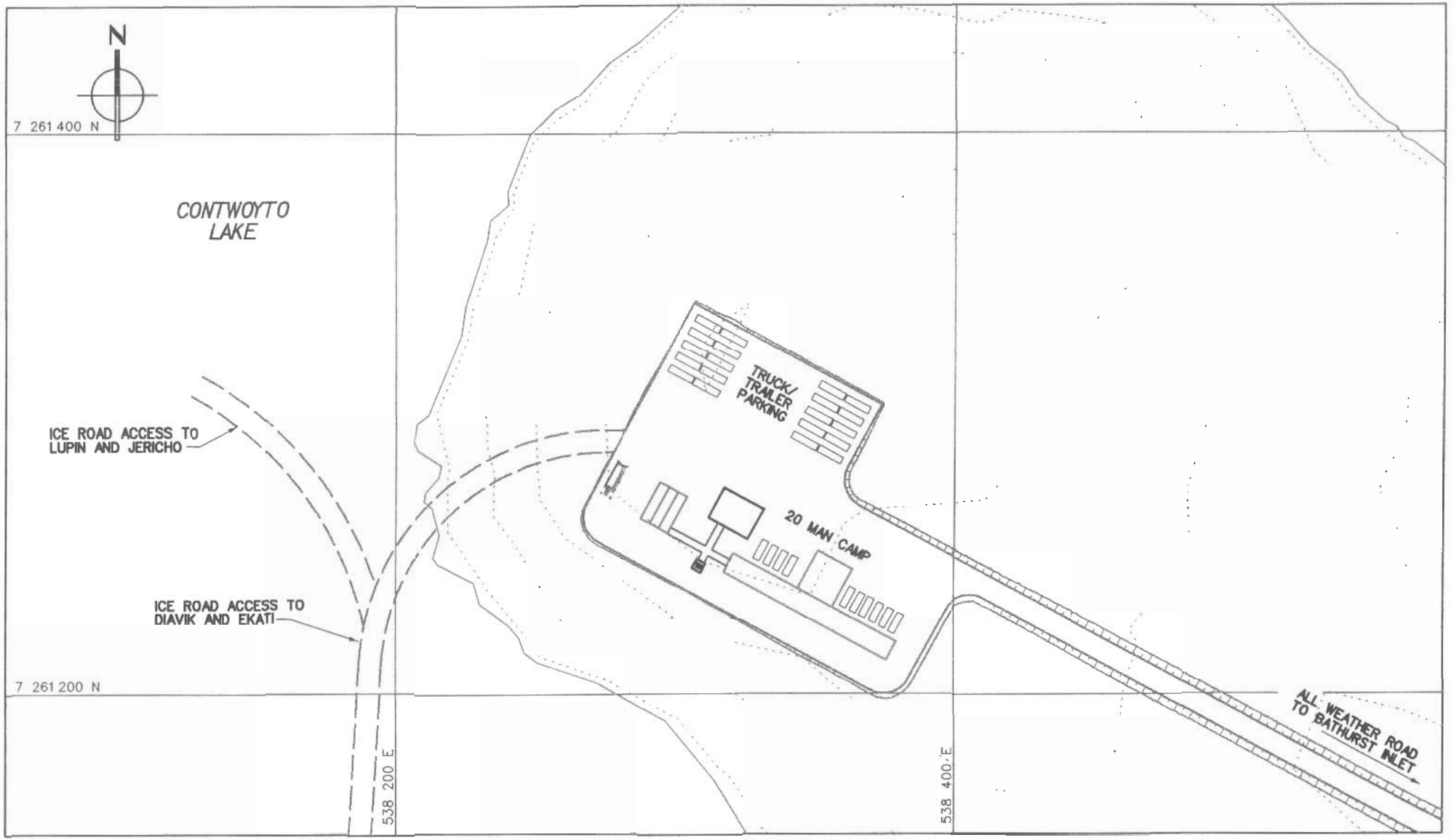
NTS

BATHURST INLET PORT & ROAD PROJECT

TYPICAL CROSS SECTION OF ALL WEATHER ROAD & ICE ROAD

FIGURE 7

the BATHURST INLET PORT AND ROAD PROJECT



BATHURST INLET PORT & ROAD PROJECT

CONTWOYTO CAMP LAYOUT

FIGURE 8

the BATHURST INLET PORT AND ROAD PROJECT