HOPE BAY JOINT VENTURE

2CH005.02

HOPE BAY PROJECT
PRELIMINARY ASSESSMENT
DORIS NORTH TRIAL OPERATION
NUNAVUT, CANADA

SRK Consulting

Engineers and Scientists

2CH005.02

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NUNAVUT, CANADA

Prepared for:

HOPE BAY JOINT VENTURE

A 50:50 Joint Venture Between

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EXECUTIVE SUMMARY

The Hope Bay Project is located in Nunavut Territory and comprises in excess of 1,000 km^2 of mineral rights that encompass almost all of an Archean greenstone belt. The property is owned by Miramar Hope Bay Ltd. and Hope Bay Gold Corp as to 50% each. The property has been the subject of extensive exploration since 1992 and, to date, three mineralized deposits have been discovered on the belt: Boston, Doris and Madrid.

In October 2001, the Hope Bay Joint Venture commissioned a Preliminary Assessment, or scoping study, (the "Study") to benchmark the current project status and to evaluate options for the development of a commercial operation at Hope Bay. As the Study progressed, it became apparent that the stand alone development of the high grade, near surface Doris Hinge Zone could provide a compelling alternative for a lower capital cost, rapid payback operation that could generate significant cash flow to continue the development of the full potential of the Hope Bay belt. Independent consultants, SRK Consulting and Bateman Engineering, in conjunction with Nuna Logistics, completed the Study. Since the Study incorporates inferred resources in addition to those defined as measured and indicated, the Study will be characterized as a Preliminary Assessment under National Instrument 43-101. National Instrument 43-101 requires that the following disclaimer accompany disclosure of a Study that includes an economic evaluation that uses inferred mineral resources: ***This Study is preliminary in nature. It includes inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the results of the Study will be realized.***

As contemplated in the Study, the development of the Doris Hinge Zone will commence with a small open pit followed by ramp access and underground mining of the majority of the

Hinge Zone resources. In addition, approximately 9,000 tonnes of higher grade material stockpiled at Boston will be hauled to the mill for processing. To minimize capital costs, mining and ore haulage is proposed to be undertaken by a contractor and the Boston camp will be moved to Doris and the site cleaned up to reduce the current level of bonding. Due to the relatively large dimensions of the Hinge Zone, mining will be by lower cost bulk mining techniques such as room and pillar or bench and fill. Ore will be delivered to a crusher that will feed a modular mill pre-constructed off site and located adjacent to the portal. Due to the modularized nature of the mill, it requires no foundations but would be set on compacted fill and covered with a sprung structure similar to those used at a number of other arctic locations. The ore will undergo conventional crushing and grinding with an integral gravity gold recovery circuit followed by flotation and cyanidation, with gold dore produced on site.

Waste rock would largely be used for civil construction projects such as an access road to a barge unloading facility on the coast 3.7 km to the north, an airstrip, and for tailings dam construction. Tailings are proposed to be deposited in a tailings impoundment east of the Doris Hinge area, utilizing a small lake for deposition.

As contemplated in the Study, all equipment, bulk supplies and materials are proposed to be moved to site by barge from Hay River. Other supplies and personnel will be transported to and from site by aircraft. Up to 100 personnel are anticipated to be employed on site on a fly in, fly out basis, with hiring anticipated from the local communities in the Kitikmeot region and from Yellowknife.

The principal parameters related to the development of the Doris Hinge Zone are as set out in the table below.

Summary of Preliminary Assessment on Doris Hinge Zone, Hope Bay Project

Assumptions	
Gold price (US$/oz)	$280
Exchange Rate (C$/US$)	1.57
Gold Price (C$/oz)	$440
Production	
Ore Milled (tonnes)	471,600
Daily Throughput (tonnes/day)	600
Operating Life (years)	2.1
Diluted Grade (g/t gold)	18.5
Recovery (%)	97%
Total Gold Recovered (oz)	271,724
Cash Operating Cost (US$/oz)	***$114***
Total Cost (US$/oz)	***$177***
Capital Costs (C$000's)	(26,685)
NET CASH FLOW (C$000's)	**44,786**
Rate of Return on Investment	83.4%
NPV @ 5% Discount Rate (C$000's)	$38,365
Payback (months)	13

1. INTRODUCTION AND TERMS OF REFERENCE

In October, 2001 the Hope Bay Joint Venture (HBJV) requested proposals for engineering services to complete an Engineering Study for a "Doris North Trial Operation" at its Hope Bay Project located approximately 160 km southwest of Cambridge Bay in the Kitikmeot region of Nunavut in northern Canada. The Hope Bay Project is a joint venture between Miramar Hope Bay Ltd., a wholly subsidiary of Miramar Mining Corporation and Hope Bay Gold Corporation

This Preliminary Assessment Report has been prepared in response to the RFP from Hope Bay Joint Venture requesting the following:

- An Engineering Study: the purpose of this study is to develop a project description of suitable definition to support the creation of a "Preliminary Plan of Operation" for submission to the Nunavut Impact Review Board.
- The study must use the existing mineral resources including those currently categorized as inferred, as such the contents of this document could be used to prepare a "Preliminary Assessment" as defined by National Policy 43-101.
- The study must develop sufficiently detailed capital and operating costs for mining, milling, site infrastructure, and administration to provide an indicative economic evaluation of the project.

National Policy 43-101 allows an issuer to disclose a preliminary assessment that includes an economic evaluation which uses inferred mineral resources, provided certain conditions are satisfied, including (but not limited to) the following:

- a proximate statement that the preliminary assessment is preliminary in nature, that it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized, and
- the basis for the preliminary assessment and any qualifications and assumptions made by the qualified person

In this report, the term "study resources" is used instead of reserves. "Study resources" are the Doris North mineral (gold) resources of all classifications proposed to be extracted with estimated dilution and mining recovery factors applied. The sources of information for this preliminary assessment are:

- Existing reports prepared for, or by HBJV describing the mineral property, the geology, mineralization, exploration and existing infrastructure. Refer to the list of references included with this report.
- Estimates of mineral resources prepared by HBJV, including 3D Gemcom block models of mineralized solids with tonnes and grades.
- Estimates of mining manpower, mining costs, and production schedules prepared by contractors Nuna Logistics.
- Estimates for process capital and operating costs prepared by Bateman Engineering.
- Estimates for general and administrative costs developed by the Hope Bay Joint Venture.
- In-house data and estimates prepared by SRK Consulting concerning planned mine development, production, infrastructure and waste management.

"Certificate and Consent" forms for the qualified persons responsible for this preliminary assessment are included in Appendix H. HBJV qualified persons are responsible for geology, mineralization and resources, and they have had extensive field involvement. Qualified persons of SRK Consulting and Bateman Engineering have not visited the project site.

This report considers the economics of extracting the Hope Bay, Doris North resources that comprise of three deposits, including Doris Hinge, Central Vein and Lakeshore Vein.

2. PROPERTY DESCRIPTION AND LOCATION

2.1 Location

The Hope Bay Project is situated approximately 685 km northeast of Yellowknife and 160 km southwest of Cambridge Bay within the Territory of Nunavut (see Figure 2.1). The centre of the project is approximately 160 km north of the Arctic Circle at latitude 67^0 30' N and longitude 107^0 W. The nearest communities are Umingmaktok, located 65 km to the west and Kingauk (Bathurst Inlet), located 110 km southwest.

2.2 Area of Property

The entire land package at Hope Bay was maintained in good standing throughout 2001. A summary of the current land status at Hope Bay is shown in Table 2.2 and a detailed claim status report, as of December 31, 2001 is tabulated in Appendix F. The Hope Bay Property comprises an area of 1,078 km^2 and forms one large contiguous block that is approximately 70 km by 30 km in size.

Four new claims were staked in the Hope Bay belt during 2001: three claims to secure the south-eastern extension of the greenstone belt (BOSTON 18, 19 and 20 claims), and one claim (HEKU 5) area to cover a greenstone outlier at the southwest end of the Hope Bay belt. These claims were submitted to the Mining Recorder in August were approved by the Mining Recorder in mid-December 31. These new claims cover approximately 4,800 acres and assessment work totalling $19,200 must be completed before August 2003.

TABLE 2.2
Summary of Current Land Status

Tenure Type	No. Title	Area (ha)	Area (acres)
Federal Mineral Claims	54	35,701	88,215
Federal Mining Leases and Leases Pending	19	16,150	39,906
Inuit Exploration Agreements	7	55,976	138,317
Total	80	107,827	266,438

3. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

3.1 Topography, Elevation and Vegetation

This information is covered in other sections of this report.

3.1 Property Access

The primary access route to the property for fuel, equipment and supplies will be via sea barges from Hay River during the summer month of August when the ice conditions allow for passage. The barges will land at the southernmost tip of Roberts Bay where off-loading will be done (see Figure 3.2(a)). Details on the ice-conditions for the shipping route as well as bathymetric surveys of Roberts Bay are reported in the "Boston Gold Project Scoping Study" (BHP World Minerals, 1995 and in the EBA Engineering Consultants Ltd report dated October 1997.

After the initial off-loading, all equipment will remain on the shoreline until such time as a winter road can be constructed to the mine site. Upon completion of the winter road, mining of the Open Pit will commence and the permanent all-weather access road between the Mill and Roberts Bay will be constructed starting at the Mill location.

From the barge landing site a 750 m all-weather access road will join up with the 1,800 m Class 3D airstrip. Beyond the southern end of the airstrip, a 2,050 m all-weather access road will be constructed to the Mill site. This combination road/airstrip will be the primary access route for fuel, supplies and equipment to the site. Personnel and additional supplies will be flown in using up to a Hercules size aircraft in reasonable weather conditions. During the winter larger planes can be landed on a prepared airstrip on Doris Lake. All the mine access, haul, and service roads as well as the permanent airstrip locations are marked on Figure 3.2(a). The sections below describe each road type and the airstrip in greater detail.

3.1.1 All-Weather Roads

The all-weather roads will be constructed with a minimum fill thickness of the pad required to cover micro-relief and protect permafrost. The soil type and ground ice conditions should dictate the thickness required for protection. For planning purposes constant thicknesses of all roadways have been assumed as indicated in Figure 3.1.1.1, however further site specific investigation will be required to confirm the suitability of these thicknesses. Some additional guidelines are provided in EBA Engineering Consultants Ltd, October 1993. If possible all roadways will be constructed in the winter to ensure the integrity of the permafrost, however should summer construction be necessary appropriate geotextiles will be used in the construction. All roadway fill will be from the overburden waste rock in the Open Pit. Prior to using this material appropriate testing will be conducted to ensure that it is geochemically stable. Fill will be crushed to the required size fraction on site, using a 30" x 48" Jaw crusher and a 4.25' Cone Plant.

3.1.1.1 Access/Haul Roads

There will be two sections of roadway that will serve as primary site access road. Furthermore, there will be one section of road that will primarily serve as a haul road. The details of these road segments are described below, and are illustrated in Figure 3.2(a).

Access road #1: 750 m long road starting at the southernmost tip of Roberts Bay at the barge landing site. This road will follow in a south-easterly direction towards the northern tip of the airstrip.

Access road #2: 2,050 m long road starting at the southern tip of the airstrip. This roadway will continue in a southerly direction for approximately 1,000 m before turning south-east towards the Mill site location.

Haul road #1: 650 m long road between the Mill site location and the Waste Rock Disposal area via the Open Pit. This road follows a north-easterly route parallel to the Doris Lake shoreline.

A typical cross section through these roadways is illustrated in Figure 3.1.1.1. The road surface will be 10 m wide with 50% (26.6°) side slopes. Roadway drainage will be via 1.5% surface grading in both directions from the centerline of the roadway. The pad will consist of a minimum of 200 mm thick surfacing grade layer overlying a 300 mm thick select grade layer overlying a 600 mm thick subgrade layer. There will be no surface preparation for winter construction. For summer construction a heavy grade woven geotextile will be placed directly on top of the surface prior to placing the pad.

3.1.1.2 Service Road

Tailings deposition will be in Tails Lake (see Figure 3.2(a)) and a 4,600 m long service road will be constructed to maintain and inspect the tailings facility. The road will start at the Waste Rock Disposal site and follow a north-easterly direction towards the northern end of Doris Lake (250 m). At this location a bridge will be constructed to cross a small seasonal stream. The road will then turn south-east and will hug the shore of Tails Lake towards a junction where the tailings dam embankment will be constructed (1,250 m) (see Figure 3.2(a)). A short 300 m road section will extend in a south-west direction to allow access to the tailings dam wall. The road will then continue 2,800 m in a southern direction along the Tails Lake shoreline to the southernmost tip of the lake.

This roadway will only be wide enough for single lane traffic of light trucks for service and maintenance purposes of the tailings facility. Turn-out sections that will allow for vehicles to pass or turn around will be provided at approximately 1,500 m intervals (10 m wide x 25 m long).

A typical cross section through this roadway is illustrated in Figure 3.1.1.2. The road surface will be 5 m wide with 50% (26.6o) side slopes. Roadway drainage will be via 1.0% surface grading across the road surface. The pad will consist of a minimum of 200 mm thick surfacing grade layer overlying a 600 mm thick select layer. There will be no surface preparation for winter construction. For summer construction a heavy grade woven geotextile will be placed directly on top of the surface prior to placing the pad.

3.1.2 Airstrip

The airstrip design is based on the type of aircrafts anticipated to use the facility. The primary aircraft that will be used for the project is expected to be Lockheed C-130 Hercules, and Boeing 737 along with a variety of smaller turbo-prop aircraft. Further, the airstrip is assumed to have a non-instrument approach. The proposed runway design for this project is according to the Transport Canada class 3D runway requirements. A detailed description of these requirements is provided in EBA Engineering Consultants Ltd., December 1997.

The 1,680 m long x 45 m wide runway (1,800 m long overall length with 60 m approach strip at either end) lies in a predominantly north-south direction as illustrated in Figure 3.2(a). A 200 m x 150 m apron for turning airplanes is located east of the runway, 200 m north of the southern end of the runway.

A typical cross section through the airstrip is illustrated in Figure 3.1.2(a). The airstrip will be 45 m wide with 40% (21.8°) side slopes. Airstrip drainage will be via 1.5% surface grading either side of the airstrip centre line. The pad will consist of a minimum of 200 mm thick surfacing grade layer overlying a 300 mm thick select layer, overlying a 600 mm thick subgrade layer. There will be no surface preparation for winter construction. For summer construction a heavy grade woven geotextile will be placed directly on top of the surface prior to placing the pad.

The typical cross-section through the apron is illustrated in Figure 3.1.2(b). The pad construction and side slope configuration will be identical to that for the airstrip. Apron drainage will be via 0.5% surface grading.

3.1.3 Construction Quantities for Roads/Airstrip

An estimate of the required construction quantities for all the access, haul, and service roads as well as the airstrip are listed in Table 3.1.3. These quantities are based on the simple cross-sections presented in Figures 3.1.1.1, 3.1.1.2, 3.1.2(a) & (b). The volumes are based on a rock density of 2,900 kg/m3 and a bulking factor of 1.5.

TABLE 3.1.3

Construction Quantities For The All-Weather Roads And Airstrip

Material	Geotextile	Sub grade (1000 mm max.)	Select Grade (200 mm max.)	Surfacing grade (38 mm max.)
Access road #1 (750 m)	10,800 m^2	5,940 m^3	2,906 m^3	1,500 m^3
Access road #2 (2,050 m)	29,520 m^2	16,236 m^3	7,944 m^3	4,100 m^3
Haul road #1 (650 m)	9,360 m^2	5,148 m^3	2,519 m^3	1,300 m^3
Service road #1 (4,600 m)	37,720 m^2	-	23,966 m^3	4,600 m^3
Airstrip (1,800 m)	90,900 m^2	52,920 m^3	39,094 m^3	16,200 m^3
Apron (150 m x 200 m)	30,413 m^2	18,585 m^3	24,891 m^3	6,000 m^3
Sub-totals	208,713 m^2	98,829 m^3	101,319 m^3	33,700 m^3
Total fill required	233,848 m^3 (452,106 tonnes)			

3.2 The proximity of the Property to a Population Centre, and the Nature of Transport

The Hope Bay Project is situated approximately 685 km northeast of Yellowknife and 165 km southwest of Cambridge Bay within the Territory of Nunavut. The centre of the project is approximately 160 km north of the Arctic Circle at latitude 67^0 30' N and longitude 107^0 W. The nearest communities are Umingmaktok, located 65km to the west and Kingauk (Bathurst Inlet), located 110 km southwest. There are no permanent transportation routes connecting the site to these communities. The only transportation from these locations to the project is by air or, in winter, by skidoo or cat train.

3.3 The climate and the length of the operating season

The region experiences long cold winters and brief cool summers. Temperatures in January are often below –30°C while the mean annual precipitation is less than 150 mm. Snow accumulation and freeze-up of lakes begin in mid to late September and remain into June. Prevailing winds are strong and steady from the northwest. Due to its location above the Arctic Circle, the property experiences 24-hour sunlight in midsummer and 24-hour darkness in midwinter. It is an area of Arctic tundra with continuous permafrost. BHP's work at Boston shows that permafrost persists to depths of as much as 500 m. Exploration activities take place primarily in two seasons: between late February and June when lakes are frozen, and July through October when lakes are clear of ice. Break-up and freeze-up periods are preferably avoided. However, a permanent airstrip will allow year round access and operation.

3.4 Surface Mining Rights and Permitting

The Territory of Nunavut was created on April 1, 1999, with the sitting of its first *Legislative Assembly*. Four resource management boards have operated since July 1996; the Nunavut Water Board ("NWB"), the Nunavut Impact Review Board ("NIRB"), the Nunavut Wildlife Management Board ("NWMB") and the Nunavut Planning Commission ("NPC").

Receiving overall project approval and operating permits will be dependent upon an environmental assessment process coupled with community consultation and, in the case of major developments, the successful negotiation of an acceptable Inuit Impact and Benefit Agreement made under the Nunavut Land Claims Agreement. It is expected that between 18 and 24 months may be required to obtain approvals and licenses for construction and operation of a mine. To date, there has been no precedent case to assess the time or efficiency of the process in Nunavut. One issue is the method in which cumulative impacts of mineral development are assessed.

Any use of Inuit surface land requires a land use permit, licence or lease. Such permits are issued and administered by the Kitikmeot Inuit Association ("KIA"). The KIA, NIRB and local communities, any one of which can attach specific conditions to the permit, review applications. Land-use licenses are valid for up to three years. Amendments describing proposed work must be submitted on an annual basis and are subject to local community review.

Any water use on Inuit lands requires permitting. The NWB issues all water licenses and permits within Nunavut subject to a review by NIRB, which provides recommendations to the Nunavut Water Board respecting permit issuances.

3.5 Availability and Sources of power

3.5.1 Electrical Load

The total annual property power consumption is estimated at 12.5 GWH. Of this approximately 70% is required in the process area. The remainder is evenly divided between the mine and surface camp. Peak demand is projected at 2.6 MW with a constant load of 1.4 MW.

3.5.2 Power Plant

A package made up of four generators complete with a synchronized load distribution center, will provide between 2.4 and 3.3 MW of electric power to the Mill, shop, camp, underground mining operation, and all other areas. These generators will be complete with jacket water heat recovery systems. Only two of the generators will be required on site prior to the start of Mill operations.

3.5.3 Waste Heat Recovery

Waste heat will be recovered from the generators using a glycol heat exchange system. Waste heat will be used primarily in the mill enclosures.

3.6 Availability and Sources of Water

3.6.1 Fresh Water Supply

The source of fresh water to the project will be Doris Lake (see intake location on Figure 3.2(a)). Fresh water will be used only for potable requirements and mill gland water.

3.6.2 Return Water

All mill process water will be recycled from Tails Lake, the repository for mill tailings (see tailings and return water lines on Figure 3.2(a)).

3.6.3 Water Storage and Distribution

Separate storage and distribution systems will be provided for fresh/fire water, potable water and return water.

3.6.4 Fresh/Fire Water

The 76 m^3 fresh water tank at the Mill receives water from Doris Lake for distribution throughout the project site. Potable water will be provided from this supply by chlorination and storage in a potable water storage tank of 24 m^3. Potable water will be distributed for domestic use in the accommodations, mill area and service buildings.

The fire water reservoir will be contained in the lower 60% of the fresh water tank. The fire water system will be sized to provide in excess of two hours emergency supply. The system will include a fire water pump station comprising two electric pumps, one emergency diesel pump, plus a jockey pump. An internal ring main will supply the buildings complex, with wall hydrants at access doors and a fire alarm system. The power house will be protected by wheeled dry chemical extinguishers and inert gas portable fire extinguishers. Portable fire extinguishers will be located at all electrical rooms and at strategic locations throughout the surface facilities.

Automatic sprinkler systems will be provided in the accommodations and service building.

3.6.5 Emergency Overflow Sump

An emergency overflow sump will be constructed adjacent to the mill with a holding capacity of 2000 m^3. The sump will be excavated into the ground and lined with a 1.5 mm thick HDPE liner (see Figure 3.6.5 for a typical cross section). The estimated volume of excavation is 1,300 m^3 and the required fill volume is 1,180 m^3. The estimated area of liner required is 1,840 m^2.

3.7 Availability and sources of mining personnel

It is estimated that at peak operation, a total of 100 employees will be required to perform all operating duties. As part of the permitting process in Nunavut an Inuit Impact and Benefits agreement must be concluded. A key element of this agreement will be local job creation and training opportunities. Mining activities are completed using a mining contractor and as such personnel will primarily be drawn from the contractor's existing labour pool. This will be supplemented where practical with local hiring. Surface operations, including the process plant will offer the greatest local employment opportunities with potential employees being drawn from various communities within the Kitikmeot region of Nunavut.

In addition Miramar Hope Bay Limited has access to a well trained workforce at operations within Yellowknife to provide key staff positions, mine and process personnel.

3.8 Tailings Storage Area

600 tonnes/day of ore will be processed in the Mill. All tailings will be mixed to a 35% solids ratio and will be pumped to Tails Lake for deposition. The pumping distance is 5,250 m with a maximum head of 10 m.

Tailings will be deposited into the southern end of Tails Lake via an insulated and trace heated pipeline. The pipeline will follow the Tails Lake access road route (see Figure 3.2(a)) and will be placed on surface. Deposition will be via end-pipe discharge and a beach will be allowed to form. The discharge will be periodically relocated to allow a gradual beach that moves north towards the dam wall. Return water will be pumped from immediately upstream of the dam wall via a heated and insulated pipeline with a barge pump. Discharge from Tails Lake will be via a controlled siphon

outlet, and discharge will be into the river downstream of Doris Lake. No discharge will be into Doris Lake at any time.
The tailings deposited into Tails Lake will be contained by constructing a dam across the northern end of the Lake. Since deposition will be in the southern Lake end, the tailings will settle in the lake and clarified water will be allowed to decant to the downstream receiving environment. Decant to the receiving environment will mainly occur during storm flow events and the annual snowmelt season. For the remainder of the time the Mill water balance will require that the Tails Lake water balance be negative. This would ensure that maximum control is maintained over the containment of the deposited Tailings.

A typical cross-section through the tailings impoundment wall is illustrated in Figure 3.8. The dam core is rockfill that is dumped systematically from the east shore and as the fill daylights and becomes a trafficable surface construction towards the opposite bank commences. Upon completion of placing the rockfill core the substrata will be densified in-situ. A slurry trench will then be constructed through the dam centerline through the substrata to a founding rock layer. If necessary grouting into the fractured rock foundation will be done to ensure a good seal of the dam.

The freeboard height of the slurry wall will be 1 m, with an additional 1.2 m freeboard distance to the final crest level. The core sideslopes will be 33.3% (10.4^{o}). The final crest width of the dam will be 6 m wide with a 1.5% surface drainage slope.

3.9 Waste Disposal Areas

A total of 375,000 tons of waste rock will be produced from the Open Pit, and 7,500 tons from the underground mining operations. Driving the access ramp into the Open Pit will produce an additional 125,000 tons of waste rock, for an overall total of 507,500 tons. The waste rock will be used as construction material for the roads, airstrip, apron, foundation pads etc., provided geochemical testing confirms its suitability.

Any excess waste rock and/or temporary storage will be in a demarcated area north of the Open Pit. The haul distance from the Open Pit to the dump area is 200 m. The waste rock will be end dumped in rows over demarcated areas. Upon completion of a single dumping zone a grader will be used to level the surface and a subsequent lift of end dumping will commence. No compaction of the waste rock other than self compaction by vehicle traffic will be performed. Final dump side slopes will be at angle of repose.

3.10 Processing Plant Site

The processing plant will be founded on a rock foundation. The plant will be sited south-west of the open pit (see Figures 3.2(a) and (b)), in close proximity to all the other surface facilities.

3.11 Administration and Service Complex

3.11.1 Mine Equipment Maintenance & Machine Shop

A 12 m x 24 m fold-away machine and maintenance shop will be erected on site. The shop will be supplied with all tools and equipment required for service and maintenance of both the Open Pit and underground contractors fleets. The shop will be heated.

3.11.2 Offices

A single office trailer will be supplied on site for use by the mining contractors as well as the Hope Bay Joint Venture personnel. This office will be fully equipped with electrical and communication outlets.

3.11.3 Change Rooms

A portable dry facility will be provided on site that would accommodate the 60 man camp.

3.12 Accommodation

The 60 man camp is a combination of 12 x 54 ft trailers, which will arrive on site intact. The individual trailers currently exist at the Boston project site and will be relocated to the Doris site.

3.13 Sewage Treatment

Sewage treatment will be via a package biological treatment plant that will be brought to site fully assembled within a skid mounted container. The treatment plant will have a treatment capacity of 23 m^3/day, which is sufficient capacity for a fully manned 74 man camp. The camp wastewater is collected in a grinder pump lift station and discharged to the solids settling tank within the skid mounted container. Clarified raw sewage overflows to the equalizing tanks that feed the extended aeration bioreactors. Each bioreactor consists of an aerated primary side and a clarifier cone. Wastewater enters the primary aerated side and is mixed with the existing water by means of an extremely efficient fine bubble aeration system.

The clarification zone separates developed solids from the treated wastewater, allowing solids to settle back into the aerated side of the tank. This action reduces the value of total solids and improves treatment.

Treated effluent is collected in a discharge/recycle tank for delivery to the disposal field or the recycle line. Discharge is to a surface field using perforated pipes to disperse treated effluent. The discharge pipes are covered with wood chips and loose fill to encourage horizontal dispersion and soil infiltration, even in winter.

Prior to discharge the treated sewage will have achieved the required operating environmental standards.

3.14 Fuel Storage

3.14.1 Barge Landing Site

A 6 million liter capacity fuel tank farm will be established at the barge landing site on the southern shore of Roberts Bay (see Figure 3.2(a)). The tank farm will be in an engineered containment area consisting of a lined and bounded facility. The tank farm will be located a minimum distance of 150 m from the maximum annual high water level on the shoreline. Fuel off-loading will be via floating fuel line from the barges during the summer shipping season.

3.14.2 Mill Site

A 21 day fuel storage supply will be maintained at the Mill location. This fuel will be stored in 6 x 70 m3 and 2 x 50 m3 Enviro-Tanks. Fuel will be transported between the barge landing site and the Mill and any areas of use with a Fuel truck.

3.15 Communications Systems

Off-site communications (2 voice & 1 data line) will be via satellite channels. Short-wave radios will be used for on-site communications.

4. HISTORY

In 1962 the Geological Survey of Canada geologists carried out the first geological reconnaissance of the Hope Bay Belt as part of "Operation Bathurst". Exploration for gold and base metal deposits in the Hope Bay Greenstone Belt was started in 1965 by Roberts Mining Company and by 1973, the company was operating two small silver mines on the Arctic Coast. During the late 1970s and early 1980s, Noranda Exploration Company ("Noranda") explored the area for volcanogenic massive sulphide ("VMS") deposits. In 1987, Abermin Corporation staked claims in the vicinity of Spyder Lake and Doris Lake and completed some reconnaissance exploration.

In 1991, BHP Minerals Canada Ltd. ("BHP") acquired a contiguous block of claims covering approximately 1,016 km^2 and carried out systematic exploration airborne and ground geophysical surveys, geological mapping and prospecting, overburden drilling and over 177,000 m of diamond drilling. In 1996 and 1997 BHP also carried out 2,300m of underground development, underground exploration and a 27,000 tonne bulk sampling of the Boston deposit. From 1991 to 1998, BHP spent approximately $85 million in exploring the entire Hope Bay Greenstone Belt and initiating preliminary metallurgical and scoping studies and environmental baseline studies.

In December 1999 the Hope Bay Project was purchased from BHP by the HBJV. The HBJV spent an additional $17 million in exploration and supplies at Hope Bay in the 2000 program. The 2000 program included 309 surface and underground drillholes for 43,70 m and surface mapping and geochemical programs. In 2001, the HBJV completed a 40,000 m surface drilling and 6,000 m of reverse circulation (RC) drilling with an approved budget of $16.4 million. This drill program consisted of infill drilling at Boston South and Doris Connector with the objective of upgrading a portion of the current defined resource to indicated category and peripheral drilling to expand the resource. Significant drilling occurred at recent discoveries Naartok, Suluk and South Patch and new resource estimates were released in January 2002.

5. GEOLOGICAL SETTING

The Slave Structural Province is a geological sub-province of the Canadian Shield and comprises an Archean-aged granite-greenstone terrane. The late Archean Hope Bay Greenstone Belt lies entirely within the fault-bounded Bathurst Block that forms the northeast portion of the Slave Structural Province. Hope Bay is a typical Archean greenstone belt comparable to the Yellowknife, Kirkland Lake and other such belts; it extends over 80 km in a north-south direction and is between 7 and 20 km wide. The belt comprises mafic meta-volcanic (mainly meta-basalts) and meta-sedimentary rocks that are bound by Archean granite intrusives and gneisses. The greenstone package has been deformed during multiple events and is transected by major north-south trending shear zones that appear to exert a significant control on the occurrence of mineralization, particularly where major flexures are apparent and coincident with antiforms. Similar features are the locus for major gold deposits in other Archean greenstone gold camps (e.g. Kirkland Lake).

6. DEPOSIT TYPES

The Doris deposit is typical of the "Archean lode" or "greenstone-hosted" deposit style. It consists of a steeply dipping, over 3 km long quartz vein system in folded and metamorphosed pillow basalts and is situated on an inferred inflexion in the regional Hope Bay Break. At the north end, the veins are folded over to create a high-grade anticlinal hinge zone lying close to surface (Doris North). As part of the same vein system, 1.2 km to the south, an intersection of two structures creates a high-grade zone (Doris Central). The (Doris Connector) zone spans approximately 500 m in strike extent, between the Doris Central and Doris North resource areas. Alteration is defined by iron-carbonate, paragonite, pyrite and sericite. Gold is found at quartz vein and wall rock contacts and is associated with dark-coloured tourmaline-pyrite septa or ribbons.

7. MINERALIZATION

The Doris vein system is characterized by a series of north-south striking, sub-vertical, gold- bearing, ductile-brittle structures, that commonly host wide, stylolitic, ribboned bull quartz-veins. Host rocks are variably carbonate (dolomite) altered and deformed basalts with lesser gabbro. Gold-bearing structures have been traced by diamond drilling for over 2,300 m, and from surface to a depth of 400 m. Within the vein, gold is commonly associated with narrow tourmaline-chlorite septa oriented parallel to and along the vein margins. Gold is also associated with disseminated sulphides at the margins of the quartz veins, or with sulphide clusters within the vein. Occasionally, gold is present within brecciated zones adjacent to the quartz veins. Sulphide mineralization consists of trace to 2% pyrite, trace chalcopyrite, rare sphalerite and pyrrhotite.

The deposit comprises three veins, the folded Doris Vein with its Central (east) and Lakeshore (west) limbs, the Island Vein and the West Valley Wall Vein. The Doris vein system has also been subdivided into the Doris North and Doris Central resource areas, which are separated by the Connector Zone (Figure 7). At least four sub-parallel structures have been identified within the Doris vein system. From west to east, these include: the West Valley Wall (WVW) set, C2/Stringer structure, Central (CV), Lakeshore (LV), and Island Veins (IV).

7.1 Lakeshore Vein

The Lakeshore Vein is the most continuous and robust structure in the Doris system, with variable gold mineralization, locally within shoots. With local exceptions, the vein occurs along the sub-vertical eastern contact between the Fe and Mg rich tholeiites, and extends for over 2,300 m along strike and has been traced over 500 m down-dip. The Lakeshore Vein varies from over 20 m to less than 1 m in true thickness, and averages between four and five metres wide.

At Doris Central, the Lakeshore Vein is variable in both thickness and gold content. The thickest and highest-grade section (greater than 100 gram-metres) appears to have a sub-vertical plunge with a strike extent of 40 m and a down-dip extent of 180 m. Gold is distributed throughout the Lakeshore Vein, but is usually concentrated near the footwall (eastern) side of the vein, where visible gold is relatively common.