19 MARKET STUDIES AND CONTRACTS

19.1 MARKET STUDIES

No market studies have been performed as part of this Project.

The study assumes that gold doré will be produced from the Goldboro Project. Markets for doré are readily available and the doré bars produced from the Project could be sold on the spot market. Gold markets are considered mature. It is reasonable to assume that the product from the Goldboro Project is saleable. With regards to its current contracts for its existing Point Rousse operations, Anaconda has a refining agreement with the Royal Canadian Mint and a precious metals sales agreement with Auramet International LLC, a metals trader based in Puerto Rico.

A selling price of $1,550/oz. for gold has been used to develop this PEA. At the end of October 2017, the three-year trailing average, as tabulated from public data from the website www.kitco.com, was US$1,217/oz for gold. The spot price at that time was US$1,270/oz. for gold (October 31, 2017 PM). The year to date currency exchange rate was averaging 1 US$: 1.30 CAN$. The selling price used in this PEA is lower compared to current prices and slightly higher than the average price for the past three years.

19.2 CONTRACTS

As part of Anaconda's socio-economic commitment to the region and other local stakeholders, Anaconda's preference is to award contracts to local businesses as well as other businesses in the province of Nova Scotia. Anaconda's objective is to focus on opportunities for the residents and businesses of the region to participate in the Project, thereby establishing a role as an active member of the community and participant in the sustainable development of the region.

There are no sales contracts on the Project.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL ASSESSMENT

An Environmental Assessment (EA) is a comprehensive assessment of an undertaking involving input from many branches of government and the public; it can take more than one year to complete if the project is registered at the production rates below federal assessment levels. Should a federal assessment be required, then the project approval timelines could be extended for an additional year or two.

Anaconda has participated in "One Window Meeting" organized by Nova Scotia Department of the Natural Resources on May 5, 2017 where a general outline of the permitting and approval process was presented to Anaconda. Anaconda also had an opportunity to meet the regulators in person both at the provincial and federal levels. As per directions presented by the regulators, Anaconda has been doing a required work during the spring, summer and fall of 2017 that would form a base for EA document.

In preparation for the EA registration, Anaconda has completed baseline work at the Goldboro Property during spring and summer of 2017 with a winter moose study remaining to be completed during the winter of 2017/2018. Also, Anaconda has initiated First Nations and community engagement early in the spring. Archeological and Mi'kmaq First Nations Ecological studies were also completed in summer/fall 2017. Anaconda plans to file EA registration early in 2018.

An EA for the Property was submitted in 1990 and approved, however, this approval in no longer active.

A historic environmental assessment for a proposed underground mine and mill was prepared in 1990 by Nolan Davis - a local, reputable consultancy (*Nolan Davis, 1990*). The planned production rate was 1,000 tpd. Milling would consist of crushing, grinding, gravity concentration, flotation of a gold/sulphide concentrate, and cyanidation of the flotation concentrate. Tailings would be stored on site.

Potential environmental impacts were investigated and addressed. Nolan Davis concluded that no significant risks existed that could not be mitigated in a straightforward manner, for the following reasons.

- The development area contains no unique or unduly sensitive environmental elements.
- The Property is a 'brownfields' area that has been the subject of previous historical mining activity.
- Surface run-off would be directed to specially constructed settling ponds for treatment.
- Previous mining and dewatering had no impact on the nearest residential wells.
- Noise and airborne dust would be minor.

Anaconda believes that above-mentioned points are still relevant for the Goldboro development and permitting.

Several environmental assessments for natural gas projects have been completed in the area in the recent past. A review of current and past environmental assessments by Parks (2014) showed that the proposed gold project area was included with those EAs, and that all environmental sensitivities or impacts associated with those projects could be mitigated. Parks also found that "The scope of an environmental assessment for a gold project in the area would be less stringent and cover a smaller footprint." (*Parks, 2014*).

20.2 WASTE AND TAILINGS DISPOSAL

Refer to Section 16 for waste rock disposal and to Section 18 for tailings disposal.

20.3 OTHER PERMITTING REQUIREMENTS

As discussed in Section 20.1, an Environmental Assessment would be required. Other permitting requirements for full production are as follows.

- A Water Withdrawal Permit from the provincial department of the environment (Nova Scotia Environment) is required. Baseline water quality measurements and ongoing water quality testing would be required.
- Industrial Approval from Nova Scotia Environment is required before mining operations begin. These approvals are usually valid for 10 years from the date issued, with the possibility of renewal.
- As part of the Industrial Approval process, approval from the Nova Scotia Department of Labour under the Underground Mining Regulations is required before underground work can begin.
- A Mineral Lease from the Nova Scotia Department of Natural Resources (NSDNR) is needed before commercial mining or mineral processing can begin. The waiting period for an initial application is listed as 2 ½ months. Leases are valid for up to 20 years from the date they are issued and can be renewed for another 20 years.
- A reclamation bond would need to be submitted to the provincial government prior to start of mining (refer to Section 20.5).
- A Letter of Authorization is required from the Registrar (NSDNR) for bulk samples ≥100 tonnes.

The permitting process could be completed within 18 to 24 months given favourable results from the environmental baseline studies and environmental assessment approval phases.

20.3.1 BULK SAMPLE PERMITTING

At the end of January 2018, Anaconda submitted permit applications for an underground bulk sample to extract up to 10,000 tonnes of ore utilizing the existing decline in Boston-Richardson zone.

20.4 SOCIAL AND COMMUNITY RELATED REQUIREMENTS

Anaconda has started First Nations and community engagement since the merger with Orex. Those consultations will continue during the Environmental Approval process and Project development and production.

The Project would provide significant direct and indirect employment opportunities for the Eastern Shore area of Nova Scotia. Table 20.1 summarizes the estimated personnel requirements for direct employment for the Project, with an estimated 66 positions initially and an increase to 189 with the expansion in Year 3 (UG development contractor labour not included).

Table 20.1 Estimated Personnel Requirements for the Project, Yr3 (Peak)

	575 tpd
Mine*	141
Mill	35
G&A	13
TOTAL	**189**

** UG development contractor labour not included*

Housing accommodation options for employees could include a combination of onsite camp facilities, rental or purchase of single or multi-unit dwellings in the surrounding area, or rental or purchase of motels in the surrounding area. It is anticipated that during the construction and underground development, there would be close to 200 people working at the site. At full production for the underground operation, only about 80 of the 140 workers would be on site at a given time. It is anticipated that approximately half the personnel will require accommodation arrangements (70 people total, or 35 per rotation).

20.4.1 GOLDBORO ENGAGEMENT

Productive and open relationships with all stakeholders is a key component of Anaconda's corporate culture. Anaconda has opened opportunities for dialogue and engagement with representation from the Nova Scotia Mi'kmaq First Nations, the Municipality of the District of Guysborough, and the general public regarding the Goldboro project.

Anaconda has participated in two meetings thus far with Chief Terry Paul who is the Co-Chair of the Assembly of Mi'kmaq Chiefs for Nova Scotia and is responsible for the Mining portfolio. These meetings included members of Anaconda's Senior Management team including President & CEO Dustin Angelo, COO Gordana Slepcev, VP Public Relations Lynn Hammond, VP Innovation Allan Cramm, and Goldboro Project Manager Iain Smart. Chief Terry Paul was accompanied by representatives of Mi'kmaq Rights Initiative (KMKNO) staff.

Ongoing dialogue and information sharing with the Association of Mi'kmaq Chiefs is maintained by VP Public Relations and Mi'kmaq Rights Initiative (KMKNO) staff. Information shared includes project information, news releases, company job descriptions, etc.

Anaconda has extended an open invitation for Chief Terry Paul and other representatives to visit Anaconda's Point Rousse Project in Baie Verte, Newfoundland.

Anaconda commissioned a Mi'kmaq Ecological Knowledge Study (MEKS) by a company endorsed by KMKNO. Anaconda representatives including the VP Public Relations as well as the Goldboro Project Manager participated in the site visit component of the MEKS study to receive first-hand knowledge shared by a Mi'kmaq Elder from the nearest Mi'kmaq community of Paqtnkek.

On February 2, 2018, VP Public Relations and Goldboro Project Manager presented information about the Goldboro Project to the Benefits Committee of the Assembly of Mi'kmaq Chiefs in Millbrook.

A positive relationship has been established with the Municipality of the District of Guysborough (MODG). In July 2017 Anaconda Senior Management including the President & CEO, the COO, the VP Public Relations, and the Goldboro Project Manager attended a meeting with the full MODG council to provide information about the Company and the Goldboro Project. The Company actively shares new information and engages regularly with MODG Council and staff.

The Company recently provided a full-page update on the Goldboro project for insertion in the MODG quarterly newsletter which will be delivered to every household in the municipality. The Company intends to continue work with MODG to provide the public with a quarterly update in this newsletter.

A meeting was held between Anaconda Senior Management representatives and the Goldboro Economic Development Committee who also maintain responsibility for the community wharf. A number of relationships have also been developed between Anaconda management and staff with members of the Goldboro community.

As required by the Nova Scotia Department of Environment, a Community Liaison Committee (CLC) has been established to ensure information sharing with the community. The goal of the CLC is to maintain good public relations, foster environmental stewardship, and act as a vehicle for transparent and ongoing communications between community, stakeholders, and the Company on matters pertaining to current and planned development. The CLC will meet a minimum of four times per year. As well, the Company hosted an open house in Goldboro with the CLC for the general public on February 27, 2018.

The Company regularly participates in media interviews in Nova Scotia to provide project updates. In November and December 2017, weekly advertising was placed in the Guysborough Journal the local print and online publication, including direct contact information for Anaconda VP Public Relations.

Anaconda will build upon these engagement activities as the Project advances.

20.5 MINE CLOSURE AND RECLAMATION PLAN

A detailed reclamation plan for mine site closure would need to be prepared, submitted to, and approved by the provincial government.

The general concept for reclaiming the Project site is to remove all infrastructure that can be dismantled and return the site to a state that is equal to, or better than, pre-existing condition. Where possible, a progressive reclamation approach will be used to reduce the efforts required at the time of closure and to accelerate the revegetation process.

All non-movable physical aspects including the open pit, surface areas, and waste rock storage piles will be contoured to blend in with the natural landscape, and revegetated. The open pit will be allowed to flood to create a lake with a shallow water wetland border and a viable aquatic habitat.

Removal of facilities and remediation of the site, including revegetation, will take approximately two years. Monitoring of reclaimed site conditions will be done on a quarterly basis for a period specified by NSDNR and NSE with maintenance and remedial action occurring on an as-required basis to ensure that the results of reclamation are sustainable.

The mine would be required to submit a reclamation bond, either in cash or equivalent security, equivalent to the full estimated cost of reclamation. The bond is returned as reclamation is carried out.

21 CAPITAL AND OPERATING COSTS

21.1 INTRODUCTION

The Capital and Operating Costs section of the report is based on preliminary design criteria and engineering performed by various QPs. Each QP contributed the cost information that is pertinent to their work.

The estimates were prepared or advised by the following contributors:

- WSP for mining capital and operating costs, general and administrative operating costs, surface infrastructure capital costs, tailings facility capital costs.
- Thibault for mineral processing capital and operating costs.
- Anaconda for reclamation and closure costs, concentrate transportation costs.

Tables 21.1 and 21.2 summarize the costs estimated for the PEA.

Table 21.1 Summary of Capital and Sustaining Capital Cost

Component	Pre-Production (M $)	Production (Yr1 + Yr2)	Sustaining (Yr3 onward)	Total (M $)
Direct Capital Cost				
Open Pit Mining	0.6	0.4	0.1	1.0
Underground Mining	0.0	32.5	0.0	32.5
Underground Mining – Sustaining	0.0	0.0	37.5	37.5
Process Plant	18.8	0.0	0.0	18.8
Power, Electrical, Instrumentation	3.4	0.0	0.0	3.4
Site Preparation and Infrastructure	3.0	1.7	0.0	4.7
Water Management	0.5	0.2	0.0	0.7
Tailings Management Facilities	4.8	0.0	5.0	9.8
Subtotal	**31.1**	**34.7**	**42.6**	**108.4**
Total Indirect Estimate	7.8	0.5	0.0	8.2
Total Contingency	7.8	6.9	2.8	17.6
Reclamation and Closure	0.0	0.2	4.2	4.4
TOTAL COST	**46.7**	**42.2**	**49.7**	**138.6**

Table 21.2 Summary of Operating Cost

Component	Total LOM (M $)	Unit Cost $/t milled	Unit Cost $/oz Au
Open Pit Mining	36.4	33.85	97
Underground Mining	123.7	91.12	329
Total Mining	*160.1*	*65.80*	*426*
Processing – Onsite	48.6	19.98	129
Processing – Offsite	40.0	4.12	27
Total Processing	*58.7*	*24.10*	*156*
General and Administration	17.4	7.16	46
Transportation Concentrate	9.8	4.01	26
Subtotal	**246.0**	**101.08**	**654**
Selling Costs	2.3	0.9	6
Royalties	5.8	2.4	15
TOTAL COST	**$254.0**	**$104.38**	**$676**

21.2 UNDERGROUND MINING

21.2.1 UNDERGROUND MINING CAPITAL COSTS

A summary of the underground mine project capital estimate is shown in Table 21.3.

Table 21.3 Opinion of Underground Mining Capital Cost

Component	Goldboro Site (CAN$)
Direct Capital Cost	
Mine Development	23.6 M
Mine Infrastructure	680.0 K
Mine Services	90.0 K
Ventilation - Parts and Consumables	220.0 K
Mobile Equipment - Parts and Consumables	7.0 M
Fixed Equipment	90.0 K
Power and Fuel	775.0 K
TOTAL DIRECT CAPITAL COST	**$32.5 M**

Capitalized pre-production expenditures include $23.6M for 4,376 m of contractor capital development and 710 m of ventilation raises, $680K for mine power infrastructure and portable underground refuge and sanitation stations, $90K for underground communications systems and cap lamps, $220K for ventilation infrastructure and auxiliary fan purchases, $7M for company mobile equipment fleet purchases, $90K for mine dewatering equipment and $775K for diesel fuel and mine air heating costs.

21.2.2 UNDERGROUND MINING SUSTAINING CAPITAL COSTS

A summary of the underground mine project sustaining capital estimate is shown in Table 21.4.

Table 21.4 Opinion of Underground Mining Sustaining Capital Cost

Component	Goldboro Site (CAN$)	Unit Cost ($/t PMF)
Direct Capital Cost		
Mine Development	29.5 M	21.76
Mine Infrastructure	1.0 M	0.74
Ventilation - Parts and Consumables	220.0 K	0.16
Mobile Equipment - Parts and Consumables	6.6 M	4.86
Fixed Equipment	105.0 K	0.08
TOTAL SUSTAINING CAPITAL COST	**$37.5 M**	**$27.61**

Sustaining capital expenditures include $29.5M for 6,532 m of contractor capital development and 415 m of ventilation raises, $1M for mine power infrastructure and portable underground refuge and sanitation stations, $220K for ventilation infrastructure and auxiliary fan purchases, $6.6M for company mobile equipment fleet purchases and rebuilds, and $105K for mine dewatering equipment.

21.2.3 UNDERGROUND MINING OPERATING COSTS

A summary of the underground mine project operating cost estimate is shown in Table 21.5.

Table 21.5 Opinion of Underground Mining Operating Cost

Component	Goldboro Site (CAN$)	Unit Cost ($/t PMF)
Direct Capital Cost		
Mine Development	47.0 M	34.66
Stope Production + Backfill	3.6 M	2.67
Staff and Labour	54.9 M	40.41
Mine Infrastructure	793.0 K	0.58
Ventilation - Parts and Consumables	1.4 M	1.06
Mobile Equipment - Parts and Consumables	10.3 M	7.59
Power and Fuel	5.6 M	4.14
TOTAL OPERATING COST	**$123.7 M**	**$91.12**

Underground mine operating expenditures include $47M for 16,976 m of stope sills and accesses, $3.6M for stope production consumables and mine backfill, $54.9M in total mine staff and operating labour costs, $793K on mine infrastructure operating costs, $1.4M in auxiliary mine fan operating costs, $10.3M in mobile mine equipment parts and consumables and $5.6M in diesel fuel and mine air heating costs.

21.3 OPEN PIT MINING

Open pit mining costs assumed a contractor-operated fleet. The costs are presented without any contingency allowance. The cost estimate is estimated within an accuracy of -10%/+35%. These costs have been estimated based on developing costs from first principles and benchmarking with Anaconda's operational experience. The requirements for mobile equipment, manpower levels, services, and supplies were estimated based on the annual production schedule. Unit rates were based on data factored from previous WSP studies and CostMine information.

The following assumptions have been made with regard to the cost estimate.

- Operating costs include pre-production mining costs (estimated at $7.0M).
- Overburden material is free digging and does not require drilling and blasting.
- Explosive costs assumed loading with emulsion type explosive.
- General component includes assumption for contractor management fees.
- The labour cost was based on information provided by Anaconda based on their current labour budget including payroll burden.

A summary of the open pit mine project capital estimate is shown in Table 21.6.

Table 21.6 Opinion of Open Pit Mining Capital Cost

Component	Goldboro Site (K CAN$)
Direct Capital Cost	
Contractor Mobilization / Demobilization	700
Allowance for Miscellaneous Equipment	200
TOTAL DIRECT CAPITAL COST	**$900**

An allowance for water management features around the waste rock stockpile of $106k was included in the pre-production capital cost estimate for water management in Table 21.1.

An allowance for clearing for a waste rock stockpile expansion of $135k has been provided for in the production capital estimate in Table 21.1.

A summary of the open pit mine project operating cost estimate is shown in Table 21.7.

Table 21.7 Opinion of Open Pit Mining Operating Cost

Component	Goldboro Site (K CAN$)	Unit Cost ($/t mined)
Drilling	2,265	0.25
Blasting	3,587	0.40
Loading	2,956	0.33
Hauling	8,159	0.91
Dozing & Grading	4,390	0.49
Support	3,537	0.40
General	10,815	1.21
Stockpile Rehandle	717	0.08
TOTAL COST	**$36,426**	**$4.07**

21.4 SURFACE INFRASTRUCTURE

The capital requirements for the site are based on the site layout as provided in Section 18. Table 21.8 summarizes the cost estimate.

Table 21.8 Opinion of Site Surface Capital Cost

Component	Goldboro Site (CAN$)
Direct Capital Cost	
Power, Electrical, Instrumentation	
Communication for UG	190,190
Cameras & Security System	18,400
Mobilization of Electrical Contractor	35,400
Powerline (realignment)	141,600
Main Substation	2,300,725
Secondary Substation	13,400
Site Distribution Lines	378,700
Material, Electricity Maintenance	50,000
Communications/IT	284,605
Subtotal	**3,412,580**
Site Preparation and Infrastructure	
Access Road (realignment)	35,337
Haul Roads (External to Pit)	121,296
Civil Work, Clearing, Site Prep	230,415
Stockpile Pads	146,757
Gate & Fencing	42,790
Administration Building & Parking	660,428
Maintenance Shop / Warehouse & Laydown Area	1,367,665
Fuel Storage & Station	106,800
Ramp Portal Infrastructure	20,400
Surface Ventilation for Mining	858,720
Mine Compressors	778,240
Exhaust Raise Surface	52,400
Explosive & Cap Magazines	16,800
Fire Protection	250,000
Subtotal	**4,688,047**
Water Management	
General Water Management	3,198
Water Source – Gold Brook Lake	98,683
Water Storage & Distribution Loop	110,966
Sewage System – Septic	160,610
Underground Supply	178,040
Measuring Station	17,900
Subtotal	**569,397**
TOTAL DIRECT CAPITAL COST	**$8,670,025**

Capital cost estimates are based on reference projects of similar size and arrangement.

Earthworks for the existing site and access roads and rehabilitation work with material quantities were estimated based on the general site layout and assuming typical design for pads, foundations stockpile preparations used in similar projects. Unit costs were taken from typical rates for deforestation, removing and stripping, waste manipulation, excavation, trenching and MG-20 gravel.

Concrete material quantities were estimated based on the general site layout and on typical designs used in similar projects. Unit costs were taken from typical current rates based on similar projects.

Architecture costs estimates were based on similar projects or on typical surface unit costs, except for the office/dry for which a scaled factor was used based on a recent quotation for a similar arrangement.

Mechanical and piping costs were estimated based on similar projects. For the fuel station, the tank, the distribution system and control system are considered to be in the fuel supplier package. The explosives storage units are considered to be in the explosives supplier package.

A preliminary load list and single line diagram was prepared for electrical power cost estimates. Powerline and main cable lengths were estimated from the general site layout, while unit costs were taken from similar mining projects.

Water management costs include the water supply from Gold Brook Lake and water distribution and sewage systems. Piping lengths were estimated based on the general site layout and unit costs were taken from similar mining projects.

21.5 OPINION OF PROBABLE MINERAL PROCESSING CAPITAL COSTS

The opinion of probable mineral processing capital costs presented in this section was prepared by Thibault & Associates Inc. The costs presented in this section are for the Base Case processing scenario for a new 800 tpd gravity-flotation concentrator at Goldboro and upgrades for processing concentrates at Pine Cove.

21.5.1 ESTIMATE SCOPE

NEW GRAVITY FLOTATION CONCENTRATOR AT GOLDBORO

The opinion of probable mineral processing capital costs includes direct and indirect costs associated with purchase, delivery and installation of process equipment, process piping and valves, process control systems and field instrumentation, power distribution and electrical wiring, instrumentation wiring, building structure and enclosure, foundations, steel, and building services associated with the installation of a new 800 tonne per day gravity-flotation concentrator at Goldboro. A loader is included for feeding the crusher along with a skid-steer and forklift for concentrator operations. An onsite assay lab is also included.

Battery limits for the opinion of mineral processing capital costs at the Goldboro site are defined as follows.

- Supply of run of mine mineralized material to a surface stockpile adjacent to the crushing facilities.
- Reclaim of process water from Tailings Pond.
- Packaging of gravity concentrate and storage of flotation concentrate to a short-term bulk storage area within new concentrator building (costs for concentrate transport to Pine Cove excluded).

- Delivery of complete flotation tailings stream to concentrator building wall (piping to tailings impoundment area, dewatering or preparation of backfill excluded).
- Supply of reagents in packaging as required to suit process equipment design to point of use within new concentrator building.
- Power supply to new concentrator substation adjacent to concentrator building.

RETROFIT OF EXISTING PINE COVE PROCESS FACILITIES TO PROCESS GOLDBORO CONCENTRATE

The scope of work for the retrofit at the Pine Cove facilities includes receiving and re-slurrying of flotation concentrate for introduction to the existing regrind and leach unit operations, and addition of an arsenic precipitation stage and associated reagent systems for the tailings treatment process.

The opinion of probable mineral processing capital costs for retrofit of the existing Pine Cove facility includes direct and indirect costs associated with purchase, installation and delivery of process equipment, process piping and valves, process control systems and field instrumentation, power distribution and electrical wiring, instrumentation wiring, retrofit or expansion of existing building structure as required, and installation of new process equipment foundations and support structures where required.

Battery limits for the opinion of mineral processing capital costs for the retrofit at Pine Cove are defined as follows.

- Delivery of flotation concentrate to the new bulk concentrate storage bin/feeder system.
- Delivery of re-slurried concentrate at the correct density to the existing concentrate regrind mill.
- Existing cyanide destruction reactor discharge slurry feed to arsenic precipitation.
- Arsenic precipitation discharge transfer to existing tailings discharge pump box.

The scope of work for retrofit of the existing Pine Cove facility is described briefly in the following sections and provides the basis for the opinion of probable cost.

Process Equipment Addition

- Goldboro flotation concentrate storage hopper.
- Flotation concentrate feeder.
- Flotation concentrate re-pulp tank and agitator.
- Flotation concentrate slurry transfer pumps.
- Two arsenic precipitation reaction tanks complete with two agitators.
- Liquid ferric sulphate reagent metering system.

Installation

- Expansion and add-on to existing electrical and controls systems to accommodate the new equipment.
- New process piping, valves, control valves, and instrumentation to tie in the new equipment.
- New foundations, structural steel and building enclosure as required for installation of the new equipment.

21.5.2 ESTIMATE BASIS

The opinion of probable capital cost for mineral processing is based on factored estimating methods for which the process equipment purchase cost is defined by vendor budget quotations on file at Thibault & Associates Inc. and all remaining direct and indirect cost items within the scope of the estimate are derived by applying a factor relative to the process equipment purchase cost. All factors used to define an overall order of magnitude capital cost were based on previous experience with similar metallurgical projects. The mineral processing capital cost estimates summarized in this section do not reflect the total capital costs for this Project.

GENERAL ASSUMPTIONS

- Design processing capacity of 800 tonne per day run-of-mine resource material from the Goldboro deposit.
- The estimate is based on third quarter 2017 costs.
- Marshall and Swift Mine & Mill index for third quarter 2017 is defined as 1,794.7.
- All costs are presented in Canadian dollars.
- Currency exchange rate of $0.80 United States dollar = 1.00 Canadian dollar.
- The estimate is based on procurement of all new process, mechanical and electrical equipment.
- The project will be built in accordance with the work scope, drawings, design criteria, execution plan and schedule as defined by this study.

PROCESS EQUIPMENT PURCHASE, DELIVERY, AND INSTALLATION

Definition of process equipment requirements was based on conceptual process flowsheets and process design criteria as defined in Section 17.

Process equipment costs FOB Factory were derived using recent budget quotes on file from vendors (adjusted to third quarter 2017 purchase cost using Marshall and Swift Mine & Mill Index). Process equipment costing was based on a “purchase cost equation” developed from vendor quotes for varying sizes of each type of equipment.

Delivery and installation of process equipment is a factored cost relative to the total purchase price of process equipment. Detailed estimates of installation man-hours have not been completed for this study. The factors developed were based on installation by local contractors. Installation cost factors include costs for the contractor to set up temporary construction support facilities and storage areas on site.

PROCESS PIPING, PIPE SUPPORT, AND VALVES

The process piping, pipe support and valve cost estimate is not layout specific and a detailed materials take-off has not been completed. A factor relative to the total process equipment procurement cost has been used to estimate the process piping, pipe support and valve cost.

POWER DISTRIBUTION, PROCESS CONTROL SYSTEMS, FIELD INSTRUMENTATION, AND WIRING

All electrical power distribution and instrumentation/controls installation is based on new equipment pricing to assure compliance with current electrical codes and standards. Electrical and controls equipment costing is based on a factor of the process equipment cost and a detailed take-off for equipment and materials has not been completed.

Note: The factored cost is derived based on requirements for power distribution, process control, instrumentation and wiring within the mineral processing sections of the facilities only (i.e. within the battery limits as defined by Section 21.5.1 and includes items such as switchgear, motor control centers, wiring and cable tray. Cost for power transmission to site from utility and substation for site is not included.

BUILDINGS, FOUNDATION, STEEL, ENCLOSURE, AND SERVICES

The cost of constructing and/or retrofitting buildings, foundations and enclosures, including building services (lighting, HVAC, fire protection), is based on a factor of the total purchase cost of the equipment. A similar metallurgical processing facility was used as the basis for selecting an appropriate factor.

ONSITE ASSAY LABORATORY AND OFFICE EQUIPMENT

The cost of a complete turn-key onsite assay laboratory has been included for the gravity-flotation concentrator at Goldboro only based on similar projects. Office equipment as used within the process facilities is also included.

ENGINEERING, PROCUREMENT, AND CONSTRUCTION MANAGEMENT (EPCM)

Costs for plant engineering, equipment procurement and contract management, and construction supervision and field observation costs have been factored relative to the total direct costs for the purchase of process equipment. Indirect costs in this section include only costs for EPCM of mineral processing systems within the battery limits as defined in Section 21.5.1 and specifically exclude EPCM costs associated with mine planning and tailings disposal.

PLANT COMMISSIONING

The cost for start-up and commissioning of the mineral processing equipment within the battery limits defined in Section 21.5.1 is included as a factored cost relative to the total direct cost.

CONTINGENCY

The contingency provides an allowance for unforeseen changes in the mineral processing capital costs within the project work scope as it is presently defined. The contingency is a cost element intended to cover unknown items that are expected to occur within the defined work scope, but which cannot be properly defined at this stage of the project and includes:

- Minor omissions of items of work or equipment; and
- Uncertainty in estimated quantities and unit prices for equipment, labour and materials.

Contingency does not cover additional project costs incurred as a result of work scope changes, project risk factors, project exclusions or project execution strategy changes.

A contingency of 25% has been selected based on experience with similar metallurgical projects and contingency factors are not based on completion of a detailed risk assessment (Monte-Carlo simulation).

ACCURACY

Based on the level of definition of the project, the mineral processing opinion of probable cost is considered to be Class V according to the Association for the Advancement of Cost Engineers (AACE) under guidelines 17R-97 (article AACE 05) with an estimated accuracy in the range of -20% to +40%.

EXCLUSIONS

The following cost items are not included in the mineral processing opinion of probable capital cost.

- Underground mine development costs.
- Mining equipment costs.
- Costs for exploration drilling programs.
- Land acquisition costs.
- Costs for further metallurgical studies or test programs.
- Civil works and site preparation costs for surface infrastructure (e.g. grubbing, excavation, fill, roads, drainage).
- Costs for site infrastructure, site administration offices, miners dry facilities, potable water, domestic wastewater treatment, parking, warehouse and support facilities.
- Costs for refurbishment or expansion of existing building or enclosures, except where specifically noted.
- Costs for all piping outside the Goldboro concentrator building, including tailings line to tailings pond and process water reclaim lines.
- Costs for refurbishment, replacement or expansion to any existing process equipment, electrical equipment, HVAC equipment, piping systems, instrumentation and control systems at the Pine Cove site that are not specifically mentioned in the work scope (see Section 21.5.1).
- Costs for power transmission to site.
- Costs for fire suppression systems and sprinkler piping.
- Costs for tailings disposal or beneficial re-use (e.g. paste backfill) of tailings.
- Closure and reclamation costs.
- Price escalation for materials, equipment or labour.
- Costs for contractor room and board, construction camps, mobilization and demobilization.
- Changes in project work scope definition.
- Interest charges during construction.
- project financing costs
- Currency exchange rate fluctuations.
- Costs for permits and fees.
- Sunk costs.
- Owner's costs (Anaconda's staff wages and office facility costs prior to production).
- Sustaining capital costs.
- Deferred capital costs.
- Working capital costs.
- Taxes and duties.
- Legal fees.

- Project or construction insurance.
- Royalty fees.
- Costs to accelerate work or delays beyond the schedule currently defined for the Project.
- Costs to dispose of hazardous waste, contaminated materials, soil or other substances.
- Costs associated with general or specific project risk factors including adverse weather conditions, force majeure events, delays due to late delivery of equipment or materials, unavailability of labour forces, poor performance of contractors or changes to legislation, political, legal or regulatory risk factors.

21.5.3 MINERAL PROCESSING PRE-PRODUCTION CAPITAL COSTS

A summary of the opinion of probable pre-production capital costs for the Base Case scenario is presented in Table 21.9.

Table 21.9 Base Case Opinion of Capital Cost - Concentrator at Goldboro and Upgrades at Pine Cove

Component	Goldboro Site (CAN$)	Pine Cove Site (CAN$)	Total Both Sites (CAN$)
Direct Capital Cost			
Process equipment	10,642,345	337,900	10,980,246
Installation of process equipment	357,288	48,736	406,024
Process piping, valves and ductwork installed	1,786,439	19,494	1,805,934
Control system, instruments, control valves, wiring installed	1,012,316	12,996	1,025,312
Power distribution, motor control and cabling installed	1,488,700	19,494	1,508,194
Process building, foundation, structure and services	1,786,439	32,490	1,818,930
Analytical / metallurgical laboratory equipment	500,000	0	500,000
Office equipment for processing facilities	50,000	0	50,000
Mobile equipment for processing facilities	700,000	0	700,000
Sub-total direct capital cost	18,323,528	471,111	18,794,639
Contingency (25%)	4,580,882	117,778	4,698,660
Total Direct Capital Cost	**$22,904,410**	**$588,889**	**$23,493,299**
Indirect Capital Cost			
Plant engineering and design	1,906,126	37,689	1,943,814
Procurement and contract management	228,736	11,778	240,514
Construction supervision and field cost	381,225	4,711	385,936
Plant commissioning and operator training	114,368	9,422	123,790
Sub-total indirect capital cost	2,630,454	63,600	2,694,054
Contingency (25%)	657,614	15,900	673,514
Total Indirect Capital Cost	**$3,288,068**	**$79,500**	**$3,367,568**
TOTAL CAPITAL COST (DIRECT AND INDIRECT)	**$26,192,478**	**$668,389**	**$26,860,867**

21.6 OPINION OF PROBABLE MINERAL PROCESSING OPERATING COSTS

The opinion of mineral processing operating costs presented in this section was prepared by Thibault & Associates Inc. The mineral processing operating costs represent a portion of the total operating costs for the project. The opinion of mineral processing operating costs are presented for the Base Case process scenario.

21.6.1 ESTIMATE SCOPE

The opinion of probable mineral processing operating costs includes the cost of reagents, concentrator consumables, electrical power, labour, fuel for process facility mobile equipment, maintenance consumables, onsite assay laboratory operating costs, basic health and safety training and supplies, and technical support for metallurgical and environmental consulting. The operating cost estimate includes mineral processing requirements at the Goldboro and Pine Cove sites for treatment of the Goldboro feedstock only.

The battery limits of the mineral processing opinion of probable operating cost for each facility are the same as defined in Section 21.5.1.

21.6.2 ESTIMATE BASIS

GENERAL ASSUMPTIONS

- Annual operating costs are based on a mineral processing rate of 800 tonne per day of mill feed from Goldboro.
- The operating costs attributed to the Goldboro feedstock at the Pine Cove site assume that an additional 1,280 tonne per day of feed from a deposit other than Goldboro is processed simultaneously at Pine Cove and all existing operating costs at Pine Cove are covered by that other feed source for the entire life of the Goldboro Project. Incremental costs related to processing Goldboro concentrate at Pine Cove have been added, including reagents specifically consumed by the Goldboro concentrate and utilities and maintenance costs for new equipment installed at Pine Cove for treating Goldboro concentrate.
- Mineral processing plant annual availability factor of 92.7%.
- The opinion of probable cost is based on third quarter 2017 costs.
- All costs are presented in Canadian dollars.
- Currency exchange rate not applicable – all costs provided in Canadian dollars.
- The project will be built in accordance with the work scope, drawings, design criteria, execution plan and schedule as defined by this study.

REAGENTS

Reagent consumption rates for the Goldboro Deposit were based on the 2017 bench scale test results as described in this report, with the exception of the Merrill Crowe and refining reagents which were taken to be the same as the current consumption rates at Pine Cove when treating other feed. Reagent costs were based on current delivered prices to site.

PROCESS CONSUMABLES

The cost for wear parts in the mineral processing operations includes periodic replacement of crusher liners, ball mill liners and lifters, ball mill grinding media consumption, filter media for all filters, and miscellaneous sampling consumables. The frequency of replacement of wear parts has been estimated based on mill feed abrasion indices and data from similar operations. Unit prices were based on recent budget quotations.

ELECTRICAL POWER

Electric power consumption at the Goldboro site was based on the motor listing for the new process facility. The average operating electrical load was estimated by defining the fraction of each day that each motor or electrical load operates and the percentage of rated power consumed during operation. The Pine Cove electrical consumption was based on only additional electrical loads for new equipment installed at Pine Cove for processing the Goldboro feed. All of the existing Pine Cove electrical power cost has been assumed to be covered by the co-processing of a feed source other than Goldboro.

The electrical power cost was based on the 2017 industrial power rates from Newfoundland and Labrador and Nova Scotia, including the basic customer charge, demand charge and energy charge.

MOBILE EQUIPMENT

Maintenance and fuel costs associated with the mobile equipment assigned to the mineral process facilities has been included.

LABOUR

The mineral processing labour cost for the Goldboro and Pine Cove operations was based on current staffing levels for the Pine Cove operation plus any increases necessary for the expanded operation. Labour includes management and technical support staff, sampling technicians, process operators (including labourers), and maintenance staff (including tradespersons and labourers). The labour costs were provided by Anaconda based on current labour budget including payroll burden. Labour costs are based on non-unionized personnel employed by Anaconda and not contract labour services. The number of employees required and annual cost to Anaconda for each position is summarized in Table 21.10.

Table 21.10 Labour Personnel - New Gravity-Flotation Concentrator at Goldboro and Process Concentrates at Pine Cove

Personnel	Quantity Goldboro Site	Additional Quantity Pine Cove Site	Annual Cost per Worker (CAN$)
Management, Support, and Technical Staff			
Mill Superintendent	1		107,092
Environmental Coordinator / Laboratory Manager	1		86,374
Mill Clerk	1		53,929
Metallurgist	1		91,553
Technicians / Assayers	2		65,241
Sub-total	6	0	
Operations, Labourers, and Supervision			
Shift Supervisor	4		76,554
Crusher Operators	2		65,241

(table continues on next page)

Personnel	Quantity Goldboro Site	Additional Quantity Pine Cove Site	Annual Cost per Worker (CAN$)
Grinding, Gravity and Flotation Operators	4		65,241
Gravity Concentrate Upgrading Operators	4		65,241
Dewatering Operators	4		65,241
Mobile Equipment / General Laborers	2		53,929
Sub-total	20	0	
Maintenance and Labourers			
Maintenance Supervisor	1		101,912
Millwrights / Mechanics	2		76,554
Electrical and Instrumentation Technicians	2		76,554
Welders	2		76,554
Trades Helper / Labourer	2		53,929
Sub-total	9	0	
TOTAL MINERAL PROCESSING PERSONNEL	35	0	

MAINTENANCE CONSUMABLES

Maintenance consumables include repairs and maintenance for process equipment such as bearings, belt, motors, and pump impeller replacement, etc. Parts used annually for mechanical and controls equipment were estimated as 2.0% of the initial equipment capital cost. Similarly, annual repair parts for process piping, control valves and instruments were estimated as 2.0% of the initial capital cost for these items. An allowance has also been made for grease and lubricants.

SUPPORT LABORATORIES

The cost for assays has been included based an in-house laboratory with an estimated number of assays each year to confirm metallurgical performance and environmental compliance.

CONTINGENCY

A contingency of 10% of the total mineral processing operating cost has been applied to the opinion of probable mineral processing operating costs to allow for uncertainty of estimated quantities, consumption rates and minor changes to unit pricing of consumables. The contingency does not cover additional project operating costs incurred as a result of work scope changes, project risk factors, project exclusions, or project execution strategy changes.

ACCURACY

Based on the level of definition of the project, the mineral processing opinion of probable operating cost is considered to be Class V according to the Association for the Advancement of Cost Engineers (AACE) under guidelines 17R-97 (article AACE 05) with an estimated accuracy in the range of -20% to +40%.

EXCLUSIONS

The following cost items are not included in the mineral processing operating cost estimate.

- Operating costs related to co-processing any other feed sources at Pine Cove other than the Goldboro feedstock.
- Price escalation for reagents, materials, consumables, utilities, equipment or labour
- Changes in project work scope definition.
- Currency exchange rate fluctuations.
- Research and development or exploration expenses.
- Mineral or process technology royalty fees.
- Interest.
- Sales taxes (HST/GST) or duties.
- Property taxes.
- Insurance.
- Technical training costs.
- Marketing and sales costs.
- Smelter or refining fees.
- Packaging and shipping costs between Goldboro and Pine Cove or final doré to refiner.
- Site administration costs.
- Corporate office costs.
- Site security costs.
- Annual environmental and operating permit fees.
- Environmental management program costs.
- Mining operating costs.
- Tailings disposal and backfill operating costs.
- Rental or fuel/maintenance costs for mobile equipment other than that equipment dedicated to the process facility.

21.6.3 MINERAL PROCESSING OPERATING COSTS

The opinion of probable mineral processing operating costs are shown in Table 21.11. The unit costs are presented per tonne of Goldboro resource processed.

Table 21.11 Base Case Operating Cost for Co-processing Goldboro with other Feedstock at Pine Cove - New Gravity-Flotation Concentrator at Goldboro and Process Concentrates at Pine Cove

Cost Category	Goldboro Site Annual Cost (CAN$)	Pine Cove Site Annual Cost (CAN$)	Total Both Sites Annual Cost (CAN$)
Reagents	126,541	961,911	1,088,451
Consumables	444,131	27,081	471,212
Utilities	1,150,551	6,253	1,156,804
Labour	2,465,978	0	2,465,978
Maintenance	322,777	10,478	333,255
Support Laboratories	110,000	8,000	118,000
Health & Safety, Training	70,000	0	70,000
Support Services	75,000	0	75,000
Mobile Equipment & Vehicles	130,192	0	130,192
Contract Crushing or Rock Breaking	26,000	0	26,000
Process OPEX Contingency (10%)	489,517	101,372	590,889
TOTAL PROCESS OPERATING COST	**$5,410,687**	**$1,115,095**	**$6,525,782**
TOTAL PROCESS OPERATING COST PER TONNE OF FEEDSTOCK	**$19.98**	**$4.12**	**$24.10**

***Note**: The operating cost calculated excludes all costs of operating the Pine Cove site, other than the reagents used by Goldboro and utilities/maintenance related to new equipment. The analysis relies on co-processing another feedstock at 1,280 tonnes per day for the life of the project, and all existing costs at the Pine Cove site have been assigned to that other source of mill feed.*

21.7 TAILINGS FACILITIES

Table 21.12 summarizes the estimated costs for the tailings storage facility.

Table 21.12 Tailings Storage Facility Cost Estimate

Cost Category	Stage 1 (K CAN$)	Stage 2 (K CAN$)	Total (K CAN$)
Direct Cost			
Mobilization	156	148	304
Tailings Basin Preparation	294	63	357
Tailings Embankment Construction	3,835	4,440	8,275
Tailings Distribution System	210	110	320
Excess Water Removal System	332	10	342
Subtotal Direct Cost	**4,827**	**4,771**	**9,598**
Indirects	310	244	554
TOTAL COST ESTIMATE	**$5,137**	**$5,015**	**$10,152**

***Note**: Numbers may not sum due to rounding*

- The tailings storage facility will be constructed in stages consisting of a starter dam, during the pre-production period, and subsequent raises as required during the operations.

- The perimeter embankments will consist of zoned earthfill with an upstream liner. Fill material for the embankment will be sourced locally from borrow sources as well as from mine waste rock. The mine waste rock is assumed to be non acid generating. Materials from offsite sources will need to be identified if suitable local fill material is not available.
- Conceptual design consists of a single layer of non-woven geotextile from the basin and embankment cross section. A single layer assumes that suitable materials will be available at the Goldboro site that can be used as cover and ballast material. The material will also need to meet the supplier's technical specifications for installation to ensure that warranties will be valid, if applicable.
- Emergency spillways will be included with each embankment raise.
- Tailings transported to the TSF will be a slurry in an HDPE pipeline. Tailings deposition will consist of the HDPE deposition pipeline with spigots.
- Water reclaim will consist of a reclaim tower and pump, established within the basin, and HDPE pipeline to the plant site.
- Perimeter run-off and seepage collection will be locally contained within a collection pond and pumped into the TSF.
- The requirements for liner protection will be determined from testing and analysis of materials that can be made available for construction and used as fill material, as well as assessing potential processing of materials to try and produce a suitable material for bedding, cover and ballast material. A protection layer would need to be considered if suitable fill materials are not identified as the Project is advanced.

21.8 RECLAMATION AND CLOSURE

Table 21.13 summarizes the reclamation and closure costs.

Table 21.13 Reclamation and Closure Cost Estimate

Cost Category	Cost Estimate (K CAN$)
Demolition & Removal	377
Tailings Facility	1,227
Underground Infrastructure	38
Surface Infrastructure	886
Decommissioning and Remediation	221
Application, Engineering	225
Post Closure Monitoring	150
Contingency (25%)	688
TOTAL COST ESTIMATE	**$3,813**

21.9 INDIRECT CAPITAL AND CONTINGENCY

Indirect capital costs are expected to include engineering, procurement, construction management fees, construction indirect and owner's costs. In addition to the indirect capital estimate described for the processing facility (Section 21.5), the indirect capital estimate was estimated using percentage factors of the direct capital costs estimates for underground mining, open pit mining, and surface infrastructure.

The pre-production indirect cost estimate accounts for 17% of the pre-production capital estimate.

Contingency is defined as additional capital costs allowed for over and above the base estimate to account for unexpected items and unforeseen activities and requirements not anticipated in the cost estimate. In addition to the contingency described for the processing facility (Section 21.5), contingencies were factored from the total direct capital cost estimate for underground mining, open pit mining, tailings facility, and surface infrastructure at 20%.

The pre-production contingency estimate accounts for 17% of the pre-production capital estimate. A 5% contingency was applied to the underground sustaining capital estimate. A total of $17.6 million in contingency was estimated for the PEA.

21.10 GENERAL AND ADMINISTRATIVE

General and administration operating costs shown in Table 21.14 have been estimated based on assumed personnel requirements. The estimated accounted for 13 personnel. The estimate was built up based on labour salaries and burdens provided by Anaconda. The general services include general management (not accounted for in mining and processing), accounting, human resources, purchasing, health and safety, environment, and site power (including underground, excluding process plant). The costs are presented without any contingency allowance.

Table 21.14 General and Administrative Operating Cost Estimate

Component	Production (K CAN$)	Unit Cost ($/t milled)
Labour	7,362	3.02
Services	10,073	4.14
TOTAL COST	**$17,435**	**$7.16**

21.11 CONCENTRATE TRANSPORTATION

Concentrate produced at the Goldboro site would be transported to Anaconda's existing mill facility at Point Rousse, Newfoundland for final processing. The concentrate transport would involve trucking, in containers, to the port at Sidney where the port will load a container on the ferry. The container would be ferried to the Newfoundland side while the truck operator would return to Goldboro. Port authorities would unload container at Port-aux-Basques, NL where another truck would take it to Baie Verte, NL. This option avoids having a person on a ferry both ways but only trucking to loading points. The unit cost was estimated at $82.92/tonne concentrate. Table 21.15 shows the concentrate transport operating cost estimate.

Table 21.15 Concentrate Transport Operating Cost Estimate

Component	Production (K CAN$)	Unit Cost ($/t milled)
Concentrate Transport	9,760	4.01

22 ECONOMIC ANALYSIS

An engineering economic model was prepared for the Project to estimate annual cash flows and assess sensitivities to certain economic parameters. The economic results of this report are based upon the services performed by WSP, Thibault, Mercator, and Anaconda.

The Project includes an open pit and underground mine and associated infrastructure, surface infrastructure to support the mine operations (maintenance and office facilities), water management features, a run-of-mine stockpiling area, processing facility and a tailings storage facility.

The Project indicates an after-tax cash flow of $106 million, after-tax NPV (7%) of $61 million, and after-tax IRR of 25.7%. The Project is most sensitive to commodity prices. Table 22.1 summarizes the Project economics for the selected Base Case.

Table 22.1 Summary of Project Economics, Base Case Scenario

Item	Units	Value
Production		
Project life (from start of pre-production to closure)	years	10
Mine life	years	9
Total Potential Mill Feed Tonnage	M t	2.4
Average Feed Grade, gold	g/t	5.13
Mill recoveries (Avg)	%	93.6%
Payable	%	99.9%
Commodity Prices		
Gold	CAN$/oz	1,550
Project Costs		**CAN$**
Average Mining Cost - OP	$/t milled, OP	33.85
Average Mining Cost - UG	$/t milled, UG	91.12
Average Total Mining Cost	$/t milled	65.80
Average Milling Cost – onsite	$/t milled	19.98
Average Milling Cost - offsite	$/t milled	4.12
Average Total Milling Cost	$/t milled	24.10
Average General & Administrative Cost	$/t milled	7.16
Average Concentrate Transport Costs	$/t milled	4.01
Project Economics		**CAN$**
Gross Revenue	$M	582
Total Selling Cost Estimate	$M	8
Total Operating Cost Estimate	$M	246
Total Sustaining Capital Cost Estimate	$M	50
Total Capital Cost Estimate	$M	89
Taxes	$M	83
Pre-Tax Cash Flow	$M	189
After-Tax Cash Flow	$M	106
Discount Rate		7%
Pre-Tax Net Present Value @ 7%	$M	120
Pre-Tax Internal Rate of Return		38%
Pre-Tax Payback Period	years	2.9
Pre-Tax Net Present Value @ 7%	$M	61
After-Tax Internal Rate of Return		26%
After-Tax payback period	years	3.4

22.1 CAUTIONARY STATEMENT

The results of the economic analysis are based on forward looking information that are subject to a number of known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those presented here.

Forward-looking statements in this section include, but are not limited to, statements with respect to:

- Future prices of gold;
- Currency exchange rate fluctuations;
- Estimated costs and timing of operating and capital expenditures.

This PEA is preliminary in nature. In addition to the Measured and Indicated resources, the mine plan presented in this study includes Inferred mineral resources. Inferred mineral resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral Reserves. There is no certainty that this PEA will be realized.

22.2 PRINCIPAL ASSUMPTIONS

The cash flow estimate includes only revenue, costs, taxes, and other factors applicable to the Project. Corporate obligations, financing costs, and taxes at the corporate level are excluded.

The model was prepared from mining schedules estimated on an annual basis. The cash flow model was based on the following.

- All costs are reported in Canadian dollars (CAN$) and referenced as '$', unless otherwise stated.
- 100% equity ownership.
- No cost escalation beyond 2017.
- No provision for effects of inflation.
- Constant 2017 dollar analysis.
- Exploration costs are deemed outside of the Project.
- Any additional Project study costs have not been included in the analysis.
- Excludes port costs other than material handling operating costs.
- Excludes land acquisition costs.
- Excludes working capital.
- Excludes accommodation costs for labour force.
- Reclamation costs and requirements for a reclamation bond have been included in the economic analysis. A bond would likely be secured with some combination of cash, insurance or similar financial instrument at some annual cost. For the purposes of this PEA study, it has been assumed that the bond would be secured by insurance or similar financial instrument at some annual cost. Costs of financing the bond have been estimated at annual costs of 2% of bond value, taking into account a progressive rehabilitation schedule.
- Annual gross revenue is determined by applying estimated metal prices with payable metal assumption to the annual recovered metal estimated for each operating year.
- As discussed in Section 19, a constant commodity pricing of 1,550 CAN$/oz. was used in the economic analysis.

- It was assumed that another source of feed other than Goldboro is co-processed at Pine Cove at 1,280 tonne per day for the entire life of the Goldboro project. All existing Pine Cove processing costs have been assigned to that other feed source during the processing of Goldboro concentrates at Pine Cove.

22.3 TAXES AND ROYALTIES

22.3.1 TAXES

The Project has been evaluated on an after-tax basis. It must be noted that there are many potential complex factors that affect the taxation of a mining project. The taxes, depletion, and depreciation calculations in the PEA economic analysis are simplified and are intended only to give a general indication of the potential tax implications; like the rest of the PEA economics, they are only preliminary.

The Project will be subject to the following taxes as they relate to the Project:

- Federal income tax rate of 15%.
- Nova Scotia Provincial Tax of 16%.

The following assumptions were used with respect to the Mining Tax:

- The Province of Nova Scotia also imposes a mining tax royalty calculated on the basis of the greater of 2% of net revenue or 15% of net income from the mine operation. Net revenue for the purpose of the 2% royalty is defined as gross revenue less refining and transportation costs. Net income for the purpose of the 15% royalty is defined as net revenue less operating costs, tax depreciation, and an 8% processing allowance, and head office costs directly related to the mine operation.
- The Provincial income tax and mining tax noted above is in addition to the 1% net value gold royalty imposed by the Province of Nova Scotia under the Mineral Resources Act. The 1% royalty is treated as an operating cost in the cash flows of the Goldboro Project.
- It is noted that Orex Exploration Inc., the wholly-owned subsidiary of Anaconda Mining Inc., which owns the Goldboro Project, carries tax pools that have not been incorporated into the asset-level economic analysis; the integration of these losses has the potential to further increase the value of the Goldboro Project.
- The estimated tax loss pools available as at December 31, 2017, provided by Anaconda Mining Inc., are as follows: Non-capital losses of $10.0 million, Cumulative Canadian Exploration Expense of $7.0 million and Cumulative Canadian Development Expenses of $4.5 million.

22.3.2 ROYALTIES

The Project royalties are described in Section 4. The following has been incorporated into the economic analysis:

- The province of Nova Scotia has a 1% royalty on the Net Smelter Return (NSR) of gold sales.

22.4 ECONOMIC RESULTS, BASE CASE

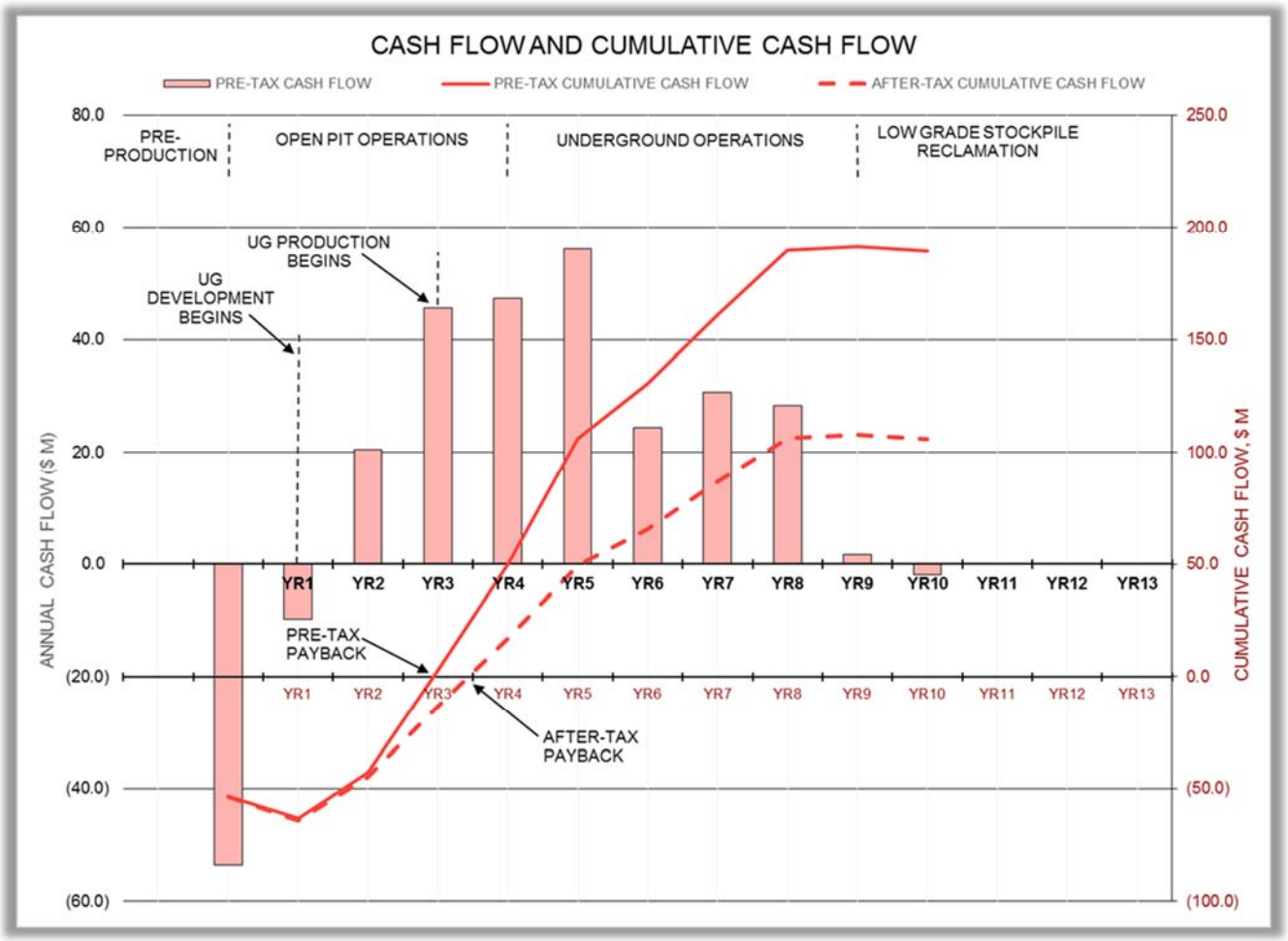
The results are derived from the life-of-mine schedule presented in Section16, the recovery method discussed in Section 17, and Capital and Operating costs presented in Section 21. Table 22.2 summarizes the cost inputs for the economic analysis. Figure 22.1 depicts the cash flow.

Table 22.2 Summary of Cost Inputs, Base Case Scenario

Cost Item / Description	Pre-Production M $	Production / Sustaining M $	Total M $	$/tonne PMF	$/oz
Operating Cost Estimate					
Mining – Open Pit	7.0	29.5	36	33.85*	97
Mining – Underground	0.0	123.7	124	91.12*	329
Milling – Goldboro Site	0.0	48.6	49	19.98	129
Milling – Point Rousse Site	0.0	10.0	10	4.12	27
General and Administration	0.0	17.4	17	7.16	46
Transport of Concentrate	0.0	9.8	10	4.01	26
1 - Subtotal Operating Costs	**7.0**	**239.0**	**246**	**101.08**	**654**
Selling Costs		2.3	2	0.9	6
Royalties		5.8	6	2.4	15
2 - Subtotal Costs	**7.0**	**247.1**	**254**	**104.38**	**676**
(Operating Costs + Refining Charges + Royalties)					
Sustaining Capital Cost Estimate					
Mining Sustaining Capital (UG)	0.0	37.5	38	27.61*	100
Mining Sustaining Capital (OP)	0.0	0.1	0.1	0.13*	
Tailings Facility Expansion	0.0	5.0	5	2.06	13
Contingency – Sustaining Capital	0.0	2.8	3	1.16	8
3 - Subtotal Costs	**7.0**	**292.6**	**300**	**123.07**	**797**
(Operating Costs + Sustaining Capital + Selling Costs + Royalties)					
Capital Cost Estimate					
Open Pit Mining	0.6	0.4	1		
Underground Mining	0.0	32.5	32		
Process Plant	18.8	0.0	19		
Power, electrical & instrumentation	3.4	0.0	3		
Site prep and infrastructure	3.0	1.7	5		
Water management	0.5	0.2	1		
Tailings Facility	4.8	0.0	5		
Reclamation and closure	0.0	4.4	4		
Total Indirect Estimate	7.8	0.5	8		
Contingency	7.8	6.9	15		
4 - Total Capital Costs with Contingency	**46.7**	**46.4**	**93**	**38.26**	**248**
Tax Estimation	0.0	83.5	83	34.30	222

***Note**: * Denotes that denominator is either the Open Pit Potential Mill Feed tonnes or the UG Potential Mill Feed tonnes rather than the Total Potential Mill Feed tonnes*

Figure 22.1 Cash Flow Model Results, Base Case Scenario



The cash flow model is presented in Table 22.3.

Table 22.3 Cash Flow Model, Base Case Scenario

	Total	Units	Pre-production	Production									
				YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	YR10
Mill feed production tonnage	2,434	kT	0	280	280	280	280	280	280	280	280	194	0
Mill feed head grades, gold	5.13	g/t	0.00	3.01	5.47	7.17	6.38	7.38	4.79	5.12	4.22	1.54	0.00
Ounce production	375,931	oz.	0.00	25,333	46,156	60,423	53,780	62,213	40,382	43,120	35,547	8,977	0
Gross revenue	582.1	M $	0.0	39.2	71.5	93.6	83.3	96.3	62.5	66.8	55.0	13.9	0.0
Selling Costs	8.1	M$	0.0	0.5	1.0	1.3	1.2	1.3	0.9	0.9	0.8	0.2	0.0
Operating Costs	246.0	M$	7.0	26.0	30.4	35.9	26.6	24.0	27.3	31.9	25.5	11.4	0.0
Sustaining Capital Costs	45.5	M$	0.0	0.0	0.1	10.7	7.6	14.5	9.6	2.9	0.0	0.0	0.0
Capital Costs	88.8	M$	46.7	22.4	19.3	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0
Reclamation & associated costs	4.4	M$	0.0	0.1	0.1	0.1	0.4	0.4	0.4	0.4	0.4	0.4	1.9
Taxes	83.5	M $	0.0	0.8	1.4	13.7	17.2	23.4	8.6	9.5	8.6	0.3	0.0
Cash flow results													
Pre-tax cash flow	189.5	M$	-53.6	-9.8	20.5	45.6	47.3	56.1	24.4	30.7	28.4	1.7	-1.9
Pre-tax cumulative cash flow		M$	-53.6	-63.4	-42.9	2.7	50.1	106.1	130.5	161.2	189.6	191.4	189.5
After-tax cash flow	106.0	M$	-53.6	-10.5	19.1	31.9	30.1	32.7	15.8	21.1	19.8	1.5	-1.9
After-tax cumulative cash flow		M$	-53.6	-64.2	-45.0	-13.2	16.9	49.7	65.5	86.6	106.4	107.9	106.0

A Net Present Value (NPV) calculation was performed to discount all future years of production to the first year of production. The Internal Rate of Return is defined as the rate at which the net present value of the cash flow equals zero. The payback period of the Project is defined as the point when the cumulative cash flow becomes positive.

Table 22.4 summarizes the economic indicators, both pre-tax and after-tax for the estimated cash flow model presented in Table 22.3.

Table 22.4 Economic Indicators, Base Case Scenario

Economic Indicators	Units	Pre-Tax	After-Tax
Payback Period *(from start of production)*	years	2.9	3.4
Internal Rate of Return, IRR	%	38	26
Net Present Value @ 5%	M$	137	72
Net Present Value @ 7%	M$	120	61
Net Present Value @ 10%	M$	99	46

22.5 SENSITIVITY ANALYSIS

The pre-tax cash flow was evaluated for sensitivity to commodity prices, operating costs, and capital expenditures. All sensitivities were analyzed as mutually exclusive variations.

The Project's pre-tax NPV was most sensitive to the factors impacting revenue, that is, commodity pricing, metal recovery, and currency exchange rate. The Project's pre-tax NPV was equally sensitive to operating and capital expenditures. Figures 22.2 and 22.3, and Tables 22.5 to 22.10 summarize the pre-tax sensitivity results.

Figure 22.2 Pre-Tax Sensitivity Analysis on NPV (7%), Base Case Scenario

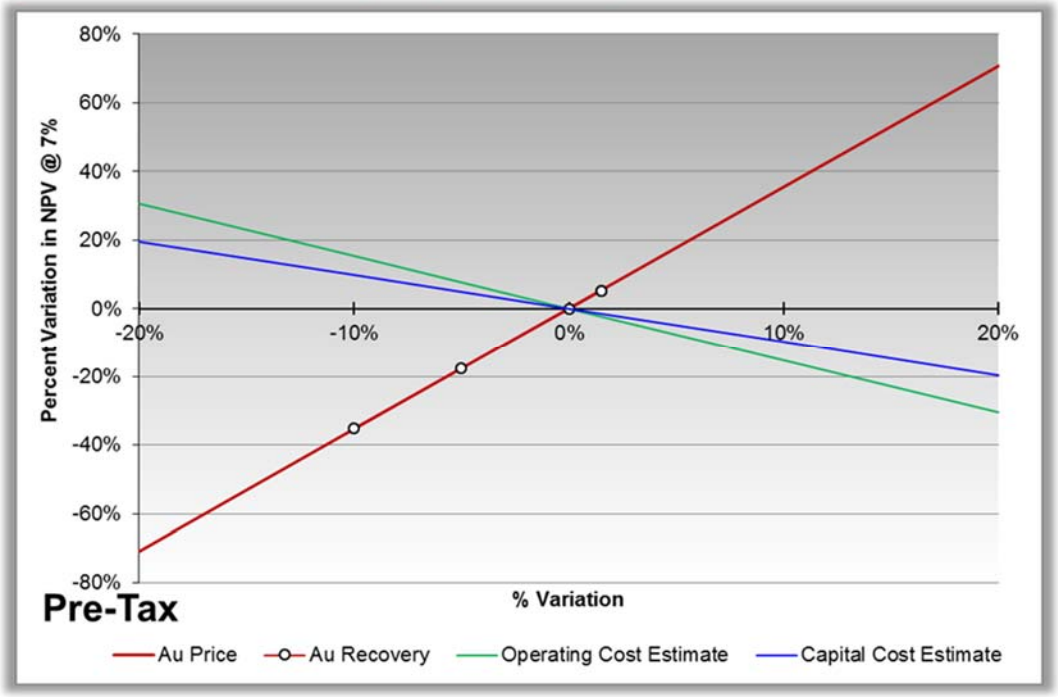


Figure 22.3 Pre-Tax Sensitivity Analysis on IRR, Base Case Scenario

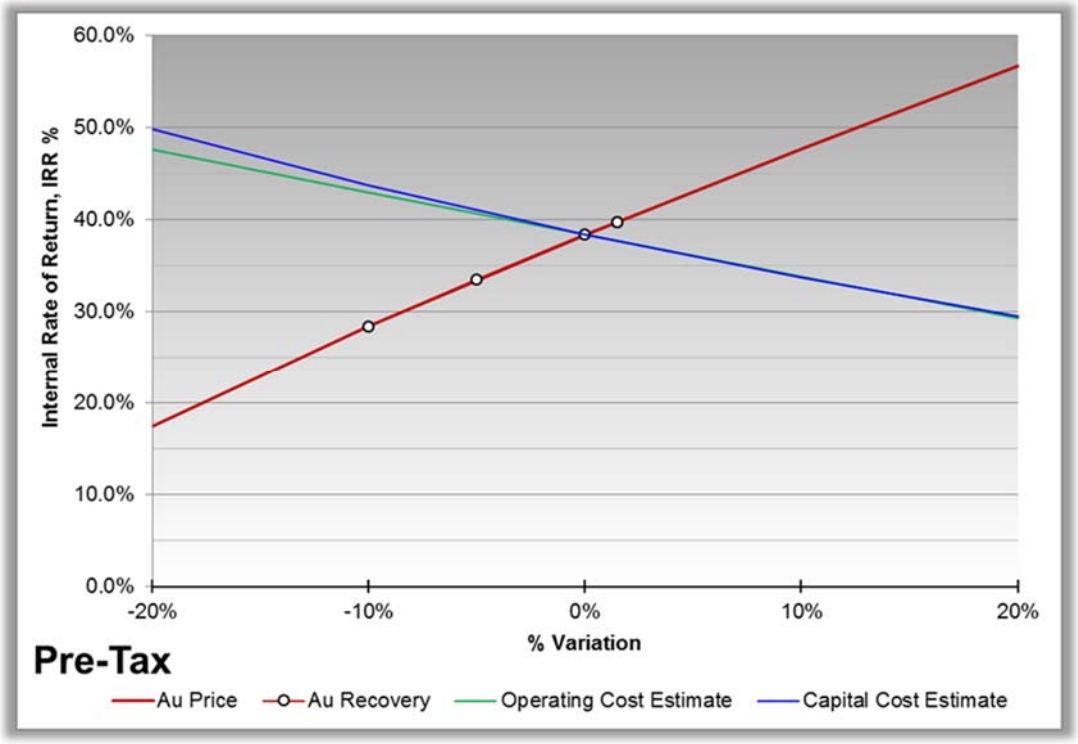


Table 22.5 Pre-Tax Sensitivity on Metal Recovery

Description		Unit	Net Present Value (M $)			
Variation	Percentage	%	-10%	-5.0%	**0%**	1.5%
	Value	%	84.2%	88.9%	**93.6%**	95.0%
Pre-tax						
Discount rate	0%	$M	132.1	160.8	**189.5**	198.1
	5%	$M	91.1	114.1	**137.1**	144.1
	7%	**$M**	**77.9**	**99.1**	**120.4**	**126.7**
	10%	$M	60.9	79.8	**98.6**	104.3
	12%	$M	51.1	68.6	**86.1**	91.4
Internal Rate of Return (IRR)		%	28.4%	33.5%	**38.4%**	39.8%
Payback period		years	3.4	3.2	**2.9**	2.9

Table 22.6 Pre-Tax Sensitivity on Metal Price

Description		Unit	Net Present Value (M $)				
Variation	Percentage	%	-20%	-10.0%	**0%**	10.0%	20.0%
	Value	CA$/oz	1240	1395	**1550**	1705	1860
Pre-tax							
Discount Rate	0%	$M	74.2	131.8	**189.5**	247.1	304.7
	5%	$M	44.6	90.9	**137.1**	183.4	229.7
	7%	**$M**	**35.1**	**77.7**	**120.4**	**163.0**	**205.6**
	10%	$M	22.8	60.7	**98.6**	136.5	174.4
	12%	$M	15.7	50.9	**86.1**	121.3	156.4
Internal Rate of Return (IRR)		%	17.4%	28.4%	**38.4%**	47.7%	56.6%
Payback Period		years	4.2	3.4	**2.9**	2.6	2.3

Table 22.7 Pre-Tax Sensitivity on Total Operating Cost

Description		Unit	Net Present Value ($M)				
Variation	Percentage	%	20%	10.0%	**0%**	-10.0%	-20.0%
	Value	$M	295.2	270.6	**246.0**	221.4	196.8
Pre-tax							
Discount Rate	0%	$M	140.3	164.9	**189.5**	214.1	238.7
	5%	$M	97.4	117.3	**137.1**	157.0	176.9
	7%	**$M**	**83.6**	**102.0**	**120.4**	**138.7**	**157.1**
	10%	$M	65.8	82.2	**98.6**	115.1	131.5
	12%	$M	55.5	70.8	**86.1**	101.4	116.7
Internal Rate of Return (IRR)		%	29.2%	33.8%	**38.4%**	42.9%	47.6%
Payback Period		years	3.4	3.2	**2.9**	2.7	2.6

Table 22.8 Pre-Tax Sensitivity on Total Capital Cost (incl. sustaining capital)

Description		Unit	Net Present Value ($M)				
Variation	Percentage	%	20%	10.0%	**0%**	-10.0%	-20.0%
	Value	$M	166.3	152.5	**138.6**	124.7	110.9
Pre-tax							
Discount Rate	0%	$M	162.6	176.0	**189.5**	202.9	216.3
	5%	$M	112.7	124.9	**137.1**	149.3	161.6
	7%	**$M**	**96.8**	**108.6**	**120.4**	**132.2**	**143.9**
	10%	$M	76.1	87.4	**98.6**	109.9	121.1
	12%	$M	64.3	75.2	**86.1**	97.0	107.9
Internal Rate of Return (IRR)		%	29.6%	33.7%	**38.4%**	43.7%	49.9%
Payback Period		years	3.4	3.2	**2.9**	2.7	2.5

Table 22.9 After-Tax Sensitivity on Metal Price

Description		Unit	Net Present Value (M $)				
Variation	Value	CA$/oz	1,450	1,500	**1,550**	1,600	1,700
After-tax							
Discount Rate	0%	$M	84	95	**106**	117	140
	5%	$M	53	63	**72**	81	99
	7%	**$M**	**44**	**52**	**61**	**69**	**86**
	10%	$M	31	39	**46**	54	69
Internal Rate of Return (IRR)		%	21%	23%	**26%**	28%	33%
Payback Period		years	3.8	3.6	**3.4**	3.3	3.0

Table 22.10 Sensitivity Analysis on Discount Rate

Variable	Pre-Tax ($M)	After-Tax ($M)
NPV @ 0%	189	106
NPV @ 5%	137	72
NPV @ 7%	120	61
NPV @ 10%	99	46
NPV @ 12%	86	38

22.6 ALTERNATIVE SCENARIO ANALYSIS

A number of scenarios were analyzed as part of the PEA.

1. An Underground only scenario at 575 tpd production rate.
2. An Underground only scenario at 800 tpd production rate.
3. An Open Pit and Underground scenario where some of the Open Pit higher grade potential mill feed material is transported to Anaconda's Point Rousse facility in Newfoundland for processing, delaying the construction of facilities at Goldboro. This scenario also incorporates a smaller on land tailings facility.
4. An Open Pit and Underground scenario where mining and processing production rates are at 575 tpd. The Underground development begins in the second year of open pit production.

Table 22.11 presents a comparison of the high-level alternative scenario analysis.

Table 22.11 Alternative Scenario Analysis

	Units	Base Case	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Scenario Description						
Open Pit		575 tpd	None	None	575 tpd	575 tpd
Underground		575 tpd	575tpd	800 tpd	575 tpd	575 tpd
Development starts in		1st yr of OP production			2nd yr of OP production	2nd yr of OP production
Concentrator On site for		800 tpd Year 1	575 tpd Year 1	800 tpd Year 1	575 tpd Start of UG production	575 tpd Year 1
Mill Feed by Source						
Open Pit	k t	1,076	0	0	1,076	1,076
Underground	k t	1,358	1,585	1,585	1,358	1,358
Total	k t	2,434	1,585	1,585	2,434	2,434
	g/t	5.13	6.80	6.80	5.13	5.13
Recovered Ounces	oz	375,931	324,375	324,349	375,432	375,432
Gross Revenue	M$	582	502	502	581	581
Cost Estimates						
Selling Costs	M$	8.1	6.9	6.9	8.0	8.1
Operating Costs						
Mining - OP	M$	36.4	0.0	0.0	36.6	36.6
Mining - UG	M$	123.7	142.0	133.5	123.7	123.7
Processing - Onsite	M$	48.6	39.3	31.7	52.3	60.4
Processing - Offsite	M$	10.0	6.5	6.5	18.4	10.1
General & Administrative	M$	17.4	17.0	12.2	20.1	20.1
Transportation Concentrate	M$	9.8	6.4	6.4	20.7	9.8
Sustaining and Capital Costs						
Open Pit Mining	M$	1.0	0.0	0.0	1.0	1.0
Underground Mining	M$	69.9	70.0	71.2	69.9	69.9
Process Plant	M$	18.8	17.4	18.8	20.0	17.4
Site Preparation and Infrastructure	M$	8.8	8.1	8.1	8.8	8.8
Tailings Facilities	M$	9.6	7.1	7.1	7.2	9.6
Reclamation and Closure	M$	4.4	4.3	4.2	4.5	4.5
Total Indirect & Contingency	M$	26.1	24.5	26.5	25.8	25.5
Mine Life	Years	8.7 (+1 yr pre-prod.)	7.5 (+2 yrs pre-prod.)	5.7 (+2 yrs pre-prod.)	9 (+1 yr pre-prod. +2.8 yrs stpl rehandle)	9 (+1 yr pre-prod. +2.6 yrs stpl rehandle)
Economic Indicators			Note: 1,2	Note: 1,2		
Pre-Tax NPV @ 0%	M$	189.5	152.8	169.2	164.1	176.8
Pre-Tax NPV @ 7%	M$	120.4	92.1	114.1	96.1	104.7
Pre-Tax IRR	%	38%	29%	38%	37%	35%
Pre-Tax Payback	Years	2.9	2.8	2.2	4.0	3.6

Notes:

1. *Potential backfill shortfall for underground at end of mine life in an UG only scenario.*
2. *May need to consider additional costs for sourcing material for tailings embankment (not from open pit waste material).*

23 ADJACENT PROPERTIES

There are no adjacent properties as defined under NI 43-101 that are pertinent to the current mineral resource estimate. Exploration licences along strike of the Anaconda property to the east-southeast are held by Mr. Alex Thompson, and the adjoining licence to the west along strike is held by Mr. Ryan Kalt.

Anaconda does not hold any interest in these licences.

24 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant information that is material to this report.

25 INTERPRETATION AND CONCLUSIONS

25.1 OPPORTUNITIES AND RISKS

As with all mining ventures, a large number of risks and opportunities can affect the outcome of the Project. Most of these risks and opportunities are based on uncertainty, such as lack of scientific information (test results, drill results, etc.) or the lack of control over external factors (metal prices, exchange rates, etc.).

Subsequent higher-level engineering studies would be required to further refine these risks and opportunities, identify new risks and opportunities, and define strategies for risk mitigation or opportunity implementation

The PEA identified a number of principal risks for the Project which are summarized below:

- Geological interpretation and mineral resource classification (27% of the mineral resources used in the mine plan are Inferred mineral resources).
- Due to a relatively small number of metallurgical samples tested, larger variations in mineralogy and metal recovery may exist than have been observed to date.
- Geotechnical and hydrogeological considerations.
- No information on baseline groundwater quality.
- Limited density studies.
- No physical characterization of the tailings material has been done.
- No waste rock characterization has been done.
- Construction management and cost containment during development of the Project.
- High exposure to potential escalation of costs associated with latent ground conditions due to need for dewatering dykes and large, shallow tailings management facility.
- Increased capital cost and/or operating cost.
- Project financing:
  - As with all resource development projects there is an inherent risk that the project will not be able to raise the necessary capital to fund any new construction.
- Precious metal commodity pricing:
  - This project is exposed to commodity pricing on the world markets, and in fact shows its greatest sensitivity to gold pricing. Tight control on capital and operating spending will alleviate some of the sensitivity to gold pricing, but there does exist a risk that under an extended period of depressed gold markets the Goldboro project would be marginal to uneconomical.
- Factors such as the ability to obtain permits to construct and operate a mine, obtain major equipment and skilled labour on a timely basis may impact the ability to achieve the presented production plans and cost estimates, thus causing actual results to differ substantively from those presented in the economic analysis.

Anaconda has completed environmental baseline studies for Goldboro during spring and summer of 2017 with hydrology and hydrogeology studies initiated late in the fall. Geotechnical investigation for underground mine, open pit and dump designs were completed up to the pre-feasibility study levels. This information will be available during the winter of 2018 and would be used in preparation of the Environmental Assessment registration and further engineering studies.

Several potential opportunities to improve the accuracy of the results of the Project contemplated under the PEA have been identified. Examples include, but may not be limited to:

- Expansion of the Goldboro Deposit through drilling. The deposit is open at the depth and along strike and geological and geophysical studies indicate the structure hosting gold mineralization may continue both east and west of the current resource as well as down plunge. Addition of further resources through drilling has the potential to add resources and increase LOM and economics.
- More refined pit optimization parameters could result in better optimized open pit limits than the pit shell selected for the PEA.
- Improved hydrogeological and geotechnical understanding may increase pit slope angles or underground design inputs over those used in the PEA.
- Investigate other mining methods that would lead to a decrease in the underground mine development cost.
- Geotechnical construction fill materials may be sourced locally from the site and will be confirmed with a site investigation geotechnical laboratory program.
- Further metallurgical testing and refining milling processes may result in improved recoveries.
- The potential to upgrade the mineral resource classification of the deposit.
- Tax credits transferred from Orex.

25.2 GEOLOGY AND MINERAL RESOURCE

Mineral resources estimated for the Goldboro project by Mercator at the effective date of December 31, 2017 are reported in Table 25.1, and occur in three spatially contiguous zones along the Upper Seal Harbour anticline. These comprise the total 'Goldboro Deposit' and consist of the Boston-Richardson System, the East Goldbrook System and the West Goldbrook System. Each zone is characterized by stacked, gold-bearing quartz-veined stratigraphic (slate/greywacke) intervals that can be correlated both along strike and down dip. The mineralized zones that comprise the Goldboro deposit are of the turbidite-hosted lode gold class with strong similarities to 'saddle reef' and strata-bound auriferous quartz lode deposits that occur in the Bendigo District of Victoria, southeast Australia.

Block grade, block density, and block volume parameters for the Goldboro deposit were estimated by Mercator using block modeling methods, and results are in accordance with the CIM Standards as well as with disclosure requirements of NI 43-101. As so defined, mineral resources that are not mineral reserves do not have demonstrated economic viability.

Open pit resources referred to in Table 25.1 include all blocks designated as being economically mineable within an optimized pit shell that reflects base case PEA assumptions developed by WSP which are reported elsewhere in this report. Underground mineral resources occur below the optimized pit shell and are defined at a gold cutoff grade of 3.00 g/t. All resources reflect consideration of a base case gold price of CAN$ 1,500 per ounce (~US$ 1,250 per ounce).

The deposit is open at the depth and along strike and geological and geophysical studies indicate the structure hosting gold mineralization may continue both east and west of the current resource as well as down plunge. Addition of further resources through drilling has the potential to add resources and increase LOM and economics.

Table 25.1 Goldboro Project Mineral Resource Statement – Effective December 31, 2017

Boston Richardson Zone Open Pit Mineral Resources Within Optimized Pit at 0.50 g/t Au Cutoff			
Category	**Rounded Tonnes**	**Au g/t**	**Rounded Troy Ounces**
Measured	397,000	2.88	36,800
Indicated	662,000	3.09	65,800
Measured and Indicated	1,059,000	3.01	102,500
Inferred	45,000	2.54	3,700
Combined Boston-Richardson, East Goldbrook, and West Goldbrook Zones Underground Mineral Resources at a 2.0 g/t Au Cut Off			
Category	**Rounded Tonnes**	**Au g/t**	**Rounded Troy Ounces**
Measured	22,000	4.70	3,300
Indicated	2,564,000	5.09	419,600
Measured and Indicated	2,586,000	5.09	422,900
Inferred	2,497,000	4.28	343,600
Combined Total Resources for Boston-Richardson, East Goldbrook, and West Goldbrook Zones			
Category	**Rounded Tonnes**	**Au g/t**	**Rounded Troy Ounces**
Total Measured and Indicated	3,645,000	4.48	525,400
Total Inferred	2,542,000	4.25	347,300

Notes:

1. *Mineral resources were prepared in accordance with NI 43-101 and the CIM Standards (2014).*
2. *Open pit mineral resources are reported at a cutoff grade of 0.5 g/t gold within the WSP base case pit shell and are based on a gold price of CA$1,550 /oz and a gold processing recovery factor of 95%. These include PEA base case open pit resources that have an estimated life of mine strip ratio of 7.3:1 (waste tonnes:PEA tonne).*
3. *Appropriate mining costs, processing costs, metal recoveries and inter ramp pit slope angles were used by WSP to generate the base case pit design.*
4. *Rounding may result in apparent summation differences between tonnes, grade and contained metal content.*
5. *Tonnage and grade measurements are in metric units. Contained gold ounces are in troy ounces.*
6. *Contributing assay composites were capped at 80 g/t gold.*
7. *A density factor of 2.7 g/cm^3 was applied to all blocks.*
8. *Tonnages have been rounded to the nearest 1,000 tonnes; ounces have been rounded to the nearest 100 ounces.*
9. *Mineral resources that are not mineral reserves do not have demonstrated economic viability. This estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.*

25.3 MINING

There are no Mineral Reserves identified for the Project at this time and only resources in the Measured, Indicated, and Inferred categories were used for this PEA.

The pit optimization and mine plans were based on $1,500/oz gold price. The pit limit analysis yielded economic cutoff grade for the Open Pit at 0.8 g/t gold. The underground cutoff grade was estimated at 3.5 g/t gold which provides a LOM plan of approximately 2.4 M tonnes of potential mill feed at an overall grade of 5.13 g/t gold. Table 25.2 summarizes the LOM potential mill feed resource over LOM. The potential mill feed consists of approximately 27% inferred resources.

Table 25.2 Goldboro Life-of-Mine Plan

	Units	Total LOM
Open Pit Mining		
Material Mined	k t	8,951
Strip Ratio	W:PMF	7.3
Waste Rock Mined	k t	7,875
PMF Rock Mined	k t	1,076
LG	k t	578
Gold	g/t	1.16
HG	k t	498
Gold	g/t	5.12
Underground Mining		
PMF Rock Mined	k t	1,358
Gold	g/t	6.83
Mill Feed Plan		
Mill Feed Tonnes	k t	2,434
Head Grade, Gold	g/t	5.13

A narrow vein longhole retreat mining method was selected for the Underground Mine due to the very narrow nature of the majority of the underground mineralization in the orebody and the lower cost and higher productivity of this mining method with respect to mechanized cut and fill methods.

Underground mine backfill will be uncemented and will consist primarily of waste produced during underground development activities. It will be supplemented by open pit waste material.

The LOM plan is based on commencing mining operations with the open pit. The open pit has a mine life of four years, including one year pre-production. The open pit schedule employs mining at an elevated cutoff grade. Lower grade material is intended to be stockpiled for future processing during the underground mine operations. Preliminary development of the underground mine is planned to commence in Year 1 of the overall project schedule while full underground production is planned to commence in Year 3. Underground mine production is expected to last for six years above and beyond the initial two years of pre-production work.

25.4 METALLURGY AND MINERAL PROCESSING

A 2017 bench scale test program on the Goldboro deposit has demonstrated that the mineralization is readily pre-concentrated by gravity separation and flotation, and the resulting concentrates are amenable to cyanide leaching at high recoveries. Bench scale testing of gravity, flotation, intensive cyanide leaching of the gravity concentrate and cyanidation of the flotation concentrate yielded an overall gold recovery of 95.1% to 95.3% for a sample grading 3.44 g/tonne gold. Considering the typical recoveries in the existing Pine Cove facility downstream of the cyanide leach that were not included in the bench scale tests, overall Goldboro gold recoveries to gold doré were based on 92.7% to 93.6% in this study.

A process strategy has been proposed where gravity and flotation concentrate is produced on site at Goldboro, reducing the mass of material to be shipped to Pine Cove for final gold recovery using the existing cyanide leach and Merrill Crowe process. An optional start-up strategy was also assessed where the entire feed is sent to Pine Cove initially for complete processing at that site, before ultimately constructing and transitioning to the gravity-flotation concentrator at Pine Cove.

25.5 INFRASTRUCTURE

The preliminary design and siting of the supporting infrastructure for the Project has been carried out in sufficient detail to arrive at cost estimates of appropriate accuracy for study of this nature. All designs, calculations, and assumptions are based on the limited available data.

Tailings management will utilize an on-land tailings storage facility (TSF) for all of the waste tailings generated during the life of mine. The TSF will be constructed in a staged approach consisting of a starter dam and subsequent embankment raises. Water management will include reclaim from the TSF for use in the processing.

25.6 ECONOMICS

Based on the study results, the conclusions are as follows:

- The overall economic results indicate that the Project will have positive economic returns and generate approximately $106 million net after-tax cash flow ($120 million pre-tax) over the Project's 8.8-year mine life.
- Total capital requirements for the Project have been estimated at approximately $47 million prior to commencement of ounce production, with approximately $42 million required during the underground development years and $50 million as sustaining capital over the life of the Project. These are inclusive of contingency.
- Total operating expenses over the life of the mine are estimated to be approximately $246 million or $101.08 per tonne milled or $654 per ounce of gold.
- At the base case metal prices, the Project's post-tax net present value is estimated at approximately $61 million at a discount rate of 7%. The post-tax IRR is estimated at 25.7% and payback has been calculated at 3.4 years from start of production.
- The project economics are most sensitive to variations in factors impacting revenue such as gold price, gold recovery, and currency exchange rates.

26 RECOMMENDATIONS

26.1 SUMMARY

Table 26.1 summarizes the estimated cost of the recommended future work described in this report. Further economic evaluation beyond a PEA level study will require converting additional Inferred resources to Indicated and/or Measured resource classifications and further exploration of deposit extensions, plus the property in general, is warranted.

The recommendations presented for the Project are mainly concerned with confirming the assumptions used within the PEA study, specifically with respect to mineral processing and recovery, geotechnical, and hydrogeological, resource upgrading, and further property exploration.

Table 26.1 Summary of Recommended Work

Item	Estimated Cost (CAN$)
Exploration	
Phase 1 - Infill and Expansion drilling (4,500 m)	800,000
Phase 2 - Infill and Expansion drilling (25,000 m)	5,000,000
Resource Estimate	200,000
Geotechnical studies for major surface infrastructure including tailings storage facility, waste rock storage areas, mill and administration areas	300,000
Hydrology and Hydrogeological Assessments	120,000
Processing and Plant Design	500,000
Advanced Level Engineering Study	2,500,000
ESTIMATED TOTAL	**$9,420,000**

26.2 GEOLOGY AND MINERAL RESOURCES

26.2.1 RECOMMENDATIONS

Given the positive results of the PEA, a systematic drilling program has been recommended for 2018 with the goals of providing infill drilling to upgrade resources within the Inferred category to Indicated status and to expand the current mineral resource. The deposit is open at the depth and along strike and geological and geophysical studies indicate the structure hosting gold mineralization may continue both east and west of the current resource, as well as down plunge. Exploratory drilling along this trend has potential to add mineral resources, increase LOM and positively influence project economics.

The recommended infill drill program is planned to upgrade Inferred resources of the Goldboro Deposit utilized within the PEA. This resource conversion will help support future pre-feasibility/feasibility studies. In addition, exploration drilling will help expand the East Goldbrook System down-plunge and along strike as well as expand the Boston-Richardson System at depth. The total drill program is presented in two phases, as outlined below.

The Phase 1 drill program comprising 4,500-metres will focus on the East Goldbrook and Boston-Richardson systems and is estimated to cost $800,000.

The Phase 2 drill program comprising 25,000-metres with half of the program focused on infill drilling at a nominal 50 m spacing at the West Goldbrook, Boston-Richardson and East Goldbrook systems, and the remainder directed toward expansion of the deposit along strike and at depth is estimated to cost $5,000,000.

Following the Phase 1 and 2 drill programs, a new mineral resource update should be completed. This is estimated to cost $200,000. Phase 2 work is not entirely contingent on successful completion of Phase 1 but could be modified in consideration of Phase 1 results.

26.3 MINING

26.3.1 OPEN PIT MINING

- Confirm density assumptions for waste rock and overburden.
- Update all mine planning work done for this PEA, incorporating results from this PEA and other studies in progress.
- Review and optimize the open pit to underground transition point.
- Initiate discussions with mining contractors to obtain multiple budget quotes to perform the proposed open pit mining operations and site-wide construction of infrastructure.
- Incorporate results from the initiated hydrology and hydrogeology investigations to assess impact of surface and groundwater on mining operations.
- Obtain geochemical data on acid generating and metal leaching potential of waste rock.
- Undertake material testing to assess suitability of open pit waste rock as construction material.
- Confirm free digging potential of overburden material.
- Undertake drill and blast testing to analyze rock types and assess drill penetration rates and target powder factors.
- Conduct condemnation drilling to facilitate locating waste storage areas and other infrastructure.
- Geotechnical investigation for foundation analysis of potential waste rock storage area.

26.3.2 UNDERGROUND MINING

- Remodel the underground resource using parameters more appropriate for narrow vein mining.
- Replace some or all planned contract development work by Anaconda development crews.
- Investigate the use of cemented backfills to potentially enhance mining recovery.
- Further investigate the use of alternate mining methods for both the narrow vein limb and more massive anticlinal zones to potentially reduce overall capital and/or operating expenses over life-of-mine.
- Investigate increasing total underground production rate to take full advantage of the longhole retreat mining method.
- Fully investigate mining the West Goldboro, East Goldboro, and Boston-Richardson orebodies as two or more separate entities.
- Fully assess the required crown pillar thicknesses over the East and West Goldboro deposits.

26.4 METALLURGY AND MINERAL PROCESSING

- Bench scale testing to date was based on initial scoping tests to assess unit operation and for conceptual process design. As the Project progresses to more detailed stages, additional testing should be conducted to refine the reagent consumptions and operating costs associated with the Goldboro deposit.
- Bench scale testing and trade-off studies are recommended to assess alternative process strategies including gravity separation and leaching of gravity tailings without flotation.
- Variability tests are recommended to characterize the variation of gravity recovery throughout the deposit and to develop a relationship for overall gold recovery with different gold head grades.
- Further assessment of tailings treatment for arsenic removal and its stability in the storage impoundment is required to define any additional treatment steps or management practices required.
- Treatment methods for the gravity concentrate should be assessed in more detail to determine the need for pre-treatment for arsenic removal ahead of refining, or the potential benefits of intensive cyanide leaching.

26.5 INFRASTRUCTURE

- Assessment of process water and tailings solids quality should be a priority. The design currently includes a liner in the basin and upstream slope of the containment dam. If the tailings solids are non-acid generating the water quality is non-impacted the liners and associated costs can be considered for removal from the design.
- The next level of design will need to collect site information related to foundations (geotechnical drilling and lab testing) in the tailings area and also identify potential construction fill materials. Confirm NAG waste rock presence for construction fill.
- Tailings density testing should also be completed at the next level of design (identification of potential in situ density – important for tailings storage volumes).
- Review proposed plan with NS Power to confirm electrical supply and distribution assumptions for next level of study.
- The permitting aspect of the road realignment was not studied as part of this PEA and will require further study in the next level of design.
- Review and refine site layout at the next level of study in order to optimize site plan.

26.6 ENVIRONMENT

- As the Project advances past the PEA stage, the Environmental Assessment should be completed to identify potential impacts and provide methods to avoid or mitigate negative effects on the site and surrounding area. Community and aboriginal consultation should continue throughout the development of the Project.
- An appropriate, detailed reclamation plan needs to be prepared for the Project. Where possible, it is recommended to use a progressive reclamation approach to minimize the size of the disturbed footprint, reduce the required efforts at the time of closure, and accelerate the revegetation process.

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27.4 INFRASTRUCTURE

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27.5 ENVIRONMENT

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28 CERTIFICATES OF QUALIFIED PERSON

Joanne Robinson, P.Eng.

I, Joanne Robinson, P.Eng., of Toronto, Ontario do hereby certify:

- I am a Principal Mining Engineer with WSP Canada Inc. with a business address at 2300 Yonge Street, Toronto, Ontario M4P 1EA.
- This certificate applies to the technical report entitled Goldboro Project Preliminary Economic Assessment, (the 'Technical Report').
- I am a graduate of Queen's University with a Bachelor of Science in Mining Engineering. I am a member in good standing of the Association of Professional Engineers of Ontario (PEO), License Number 100049603 and Professional Engineers of Newfoundland and Labrador (PEGNL), License Number 05208. I have been working as a mining engineer from 1997 to 2000 and 2004 to present. My relevant experience includes 7 years working at various Canadian open pit operations in progressively senior roles doing production engineering, mine design, and mine planning, over 3 years with an open pit mine development project focusing on the pit optimization, mine design, mine planning, cost estimation, and project management, and over 5 years in mine consulting completing the open pit mine design, optimization, planning, mine cost estimation, and cash flow model analyses for a number of technical studies. I am a 'Qualified Person' for the purposes of National Instrument 43-101 (the 'Instrument').
- I have not visited the Property.
- I supervised work on, and am responsible for Sections 1.1, 1.2, 1.9.2, 1.10, 1.12, 1.14, 1.16, 2, 3, 15, 16.1, 16.2, 18.1, 18.19, 19, 21.1, 21.3, 21.7, 21.9, 21.10, 21.11, 22, and 24, 25.1, 25.3, 25.5, 25.6, 26.1, 26.3.1, 26.5, 27.2, and 27.4 of the Technical Report.
- I am independent of Anaconda Mining Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 1st day of March, 2018 at Toronto, Ontario.

Original document signed and stamped by Joanne Robinson, P.Eng.

Joanne Robinson, P.Eng.
Principal Mining Engineer
WSP Canada Inc.

Garth Liukko, P.Eng.

I, Garth Liukko, P.Eng., of Hanmer, Ontario do hereby certify:

- I am a Senior Mining Engineer with WSP Canada Inc. with a business address at 93 Cedar Street, Suite 300, Sudbury, Ontario P3E 1A7.
- This certificate applies to the technical report entitled Goldboro Project Preliminary Economic Assessment, (the 'Technical Report').
- I am a graduate of Laurentian University, Bachelor of Engineering, Mining Engineering, 1991. I am a member in good standing of Professional Engineers Ontario, License #90533399. I have continuously practiced mining engineering since graduation for a total of 27 years in underground operating mines and as a mining consultant. I have read the definition of 'Qualified Person' set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
- I have not visited the Property.
- I am responsible for Sections 16.3, 21.2, 26.3.2 of the Technical Report.
- I am independent of Anaconda Mining Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 1st day of March, 2018 at Sudbury, Ontario.

Original document signed and stamped by Garth Liukko, P.Eng.

Garth Liukko, P.Eng.
Senior Mining Engineer
WSP Canada Inc.

Sébastian Bertelegni, Eng.

I, Sébastian Bertelegni, of Montréal, Québec do hereby certify:

- I am a Director – Mines with WSP Canada Inc. with a business address at 1600 René-Lévesque Boulevard, 16th Floor, Montréal, Québec H3H 1P9.
- This certificate applies to the technical report entitled Goldboro Project Preliminary Economic Assessment, (the 'Technical Report').
- I am a graduate of École de technologie supérieure de Montréal, Bachelor's Degree in Construction Engineering, 2004. I am a member in good standing of Ordre des ingénieurs du Québec, (OIQ License no. 134604) and of PEGNL (License # 08621). My relevant experience includes 14 years of experience in infrastructure engineering, including studies on gold projects. I am a 'Qualified Person' for the purposes of National Instrument 43-101 (the 'Instrument').
- I have not visited the Property.
- I am responsible for Sections 18.2 through 18.18, and 21.4 of the Technical Report.
- I am independent of Anaconda Mining Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 1st day of March, 2018 at Montréal, Québec.

Original document signed and stamped by Sébastian Bertelegni, Eng.

Sébastian Bertelegni, Eng.
Director - Mines
WSP Canada Inc.

J. Dean Thibault, P.Eng.

I, J. Dean Thibault, of Fredericton, New Brunswick do hereby certify:

- I am a Senior Process Chemical Engineer and Principal of Thibault & Associates Inc. with a business address at 330 Alison Blvd., Fredericton, New Brunswick E3C 0A9.
- This certificate applies to the technical report entitled Goldboro Project Preliminary Economic Assessment, (the 'Technical Report').
- I am a graduate of University of New Brunswick, Chemical Engineering, 1981. I am a member in good standing of Professional Engineers and Geoscientists of Newfoundland (Registration #05739) and Professional Engineer of Nova Scotia (Registration #11891. My relevant experience includes 37 years of experience in flowsheet development and design of metallurgical systems operations, including process systems for base metals, speciality metals and precious metals. I am a 'Qualified Person' for the purposes of National Instrument 43-101 (the 'Instrument').
- I have not visited the Property.
- I am responsible for Sections 1.8, 1.11, 13, 17, 21.5, 21.6, 25.4, 26.4, 27.3 of the Technical Report.
- I am independent of Anaconda Mining Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 1st day of March, 2018 at Fredericton, New Brunswick.

Original document signed and stamped by J. Dean Thibault, P.Eng.

J.Dean Thibault, P.Eng.
Principal / Senior Process Chemical Engineer
Thibault & Associates Inc.

Michael P. Cullen, P.Geo

I, Michael P. Cullen, of Halifax, Nova Scotia do hereby certify:

- I am a Chief Geologist with Mercator Geological Services Limited with a business address at 65 Queen Street, Dartmouth, Nova Scotia B2Y 1G4.
- I received a Master Degree in Science (Geology) from Dalhousie University in 1984 and a Bachelor of Science Degree (Honours, Geology) in 1980 from Mount Allison University. I am a registered member in good standing of the Association of Professional Geoscientists of Nova Scotia (Registration Number 064), Newfoundland and Labrador Professional Engineers and Geoscientists (Member Number 05058) and Association of Professional Engineers and Geoscientists of New Brunswick, (Registration Number L4333). I have worked as a geologist in Canada and internationally since graduation.
- I have read the definition of 'qualified person' set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a 'qualified person' for the purposes of NI 43-101.
- I am one of the qualified persons responsible for preparation of the Technical Report titled: Goldboro Project Preliminary Economic Assessment
- I supervised work on, and am responsible for Sections 1.3, 1.4, 1.5, 1.6, 1.7, 1.9.1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 23, 25.2, 26.2, and 27.1 of this Technical Report.
- I have extensive professional experience with respect to geology of the Northern Appalachians and, more specifically, with geology of the Meguma Super Group and gold deposits of Nova Scotia, Canada. I have been responsible for various exploration programs with respect to such deposits and my experience includes responsibility for programs of resource estimation and evaluation, surface and underground exploration, diamond drilling, and bulk sampling.
- I visited the Goldboro property most recently in January of 2010 in the company of Peter Webster, President of Mercator Geological Services Limited. At that time core logging and sampling activities were reviewed, drill core was inspected and field inspections of several drilling sites were completed.
- I am independent of Anaconda, applying all of the tests in section 1.5 of National Instrument 43-101 and National Instrument 43-101 Companion Policy Section 3.5
- I have read National Instrument 43-101, Form 43-101F1 and Companion Policy Section 3.5 and believe that this Technical Report has been prepared in compliance with that instrument and form.
- As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make this report not misleading.

Signed and dated this 1st day of March, 2018 at Dartmouth, Nova Scotia.

Original document signed and stamped by Michael P. Cullen

Michael P. Cullen, P.Geo.
Chief Geologist
Mercator Geological Services Limited

Gordana Slepcev, P.Eng.

I, Gordana Slepcev, P.Eng., of Toronto, Ontario , do hereby certify:

- I am a Chief Operating Officer with Anaconda Mining Inc., with a business address at 150 York Street, Suite 410, Toronto, Ontario M5H 3S5.
- This certificate applies to the technical report entitled Goldboro Project Preliminary Economic Assessment, (the 'Technical Report').
- I am a graduate of the Master's Degree in Mining Engineering from the University of Belgrade, Faculty of Mining and Geological Engineering, Serbia (Europe) in 2007 and I received a Bachelor's Degree in Mining Engineering in 1995 from the University of Belgrade, Faculty of Mining and Geological Engineering, Serbia (Europe). I am a member in good standing of The Newfoundland and Labrador Professional Engineers and Geoscientists (Member Number 07222), a member of Professional Engineers of Ontario (Member Number 81547) and a member of Association of Professional Engineers of Nova Scotia (Member Number 11700). My relevant experience includes 23 years of experience with respect to mining engineering in operations in Canada and elsewhere. I am a 'Qualified Person' for the purposes of National Instrument 43-101 (the 'Instrument').
- My most recent personal inspection of the Property was February 27, 2018 inclusive.
- I am responsible for Sections 1.13, 1.15, 20, 21.8, 26.6, and 27.5 of the Technical Report.
- I am not independent of Anaconda Mining Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 1st day of March, 2018 at Toronto, Ontario.

Original document signed and stamped by Gordana Slepcev, P.Eng.

Gordana Slepcev, P.Eng.
Chief Operating Officer
Anaconda Mining Inc.

APPENDIX

A DRILLING PROGRAM INFORMATION

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
68-01	137.8	607547.00	5006212.00	60	9732.23	6805.71	5000.00	271.06	270	-62
68-02	337.5	607635.00	5006150.00	67	9819.08	6742.08	5007.00	1.06	0	-90
88-U-01	50.91	606527.06	5006438.53	23.13	8716.52	7051.17	4963.13	0	358.94	2
88-U-02	82.93	606527.78	5006430.77	21.42	8717.10	7043.39	4961.42	180	178.94	-30
88-U-03	52.44	606527.80	5006432.43	21.46	8717.15	7045.05	4961.46	180	178.94	-50
88-U-04	47.87	606531.44	5006357.54	20.1	8719.40	6970.10	4960.10	171	169.94	-41
89-U-05	17.68	606573.62	5006398.10	-12.88	8762.33	7009.88	4927.12	180	178.94	20
89-U-06	21.94	606548.56	5006403.17	-12.87	8737.36	7015.41	4927.13	180	178.94	0
89-U-07	26.52	606573.68	5006398.24	-12.06	8762.40	7010.01	4927.94	180	178.94	40
89-U-08	20.73	606548.63	5006403.36	-12.23	8737.45	7015.59	4927.77	180	178.94	20
89-U-09	25.3	606573.58	5006398.90	-9.84	8762.30	7010.67	4930.16	180	178.94	60
89-U-10	36.88	606562.18	5006450.12	-13	8751.86	7062.11	4927.00	360	358.94	0
89-U-11	31.09	606573.63	5006399.44	-9.93	8762.37	7011.21	4930.07	180	178.94	75
89-U-12	27.43	606565.35	5006399.15	-13.34	8754.08	7011.07	4926.66	180	178.94	20
89-U-13	72.25	606573.72	5006403.13	-12.93	8762.53	7014.90	4927.07	360	358.94	0
89-U-14	28.35	606565.40	5006399.58	-12.34	8754.14	7011.51	4927.66	180	178.94	40
89-U-15	70.1	606573.72	5006403.36	-12.5	8762.54	7015.13	4927.50	360	358.94	20
89-U-16	32.01	606565.28	5006400.14	-10.38	8754.04	7012.08	4929.62	180	178.94	60
89-U-17	38.1	606573.73	5006403.56	-11.6	8762.54	7015.34	4928.40	360	358.94	40
89-U-18	42.47	606573.61	5006402.68	-9.25	8762.40	7014.45	4930.75	360	358.94	60
89-U-19	39.02	606565.25	5006400.47	-10.19	8754.01	7012.40	4929.81	180	178.94	75
89-U-20	51.51	606573.60	5006402.24	-9.1	8762.40	7014.01	4930.90	360	358.94	75
89-U-21	29.57	606565.24	5006400.28	-10.26	8754.00	7012.21	4929.74	180	178.94	75
89-U-22	32.93	606499.52	5006416.51	-11.18	8688.58	7029.66	4928.82	180	178.94	0
89-U-23	31.1	606512.70	5006411.44	-11.08	8701.67	7024.34	4928.92	180	178.94	0
89-U-24	28.05	606499.47	5006415.79	-9.36	8688.51	7028.94	4930.64	180	178.94	20
89-U-25	31.1	606512.70	5006411.32	-10.52	8701.66	7024.23	4929.48	180	178.94	20
89-U-26	28.96	606499.47	5006416.82	-9.08	8688.54	7029.97	4930.92	180	178.94	40
90-U-100	32.92	606499.52	5006417.12	-8.88	8688.58	7030.27	4931.12	180	178.94	60
90-U-101	28.96	606523.06	5006409.40	-11.02	8711.98	7022.11	4928.98	180	178.94	40
90-U-102	42.98	606499.50	5006417.52	-8.8	8688.57	7030.67	4931.20	180	178.94	75
90-U-103	40.84	606523.06	5006409.79	-10.33	8712.00	7022.50	4929.67	180	178.94	60
90-U-104	50.6	606523.05	5006410.12	-10.34	8711.99	7022.84	4929.66	180	178.94	75
90-U-105	30.78	606548.71	5006403.30	-10.01	8737.53	7015.54	4929.99	180	178.94	40
90-U-106	27.13	606501.14	5006420.40	-9.92	8690.27	7033.52	4930.08	360	358.94	0
90-U-107	28.65	606548.61	5006403.63	-9.14	8737.42	7015.87	4930.86	180	178.94	60
90-U-108	22.86	606501.07	5006420.14	-9.61	8690.20	7033.27	4930.39	360	358.94	20
90-U-109	24.99	606501.08	5006419.79	-9.16	8690.19	7032.91	4930.84	360	358.94	40
90-U-110	41.76	606548.74	5006404.23	-9.07	8737.57	7016.47	4930.93	180	178.94	75
90-U-111	35.05	606500.98	5006419.33	-8.76	8690.08	7032.46	4931.24	360	358.94	60
90-U-112	28.65	606500.98	5006419.03	-8.76	8690.09	7032.16	4931.24	360	358.94	73
90-U-27	54.86	606512.32	5006419.72	-11.01	8701.44	7032.63	4928.99	360	358.94	0
90-U-28	68	606564.93	5006406.59	-13.63	8753.80	7018.52	4926.37	360	358.94	20
90-U-29	57.91	606512.31	5006419.59	-10.42	8701.42	7032.50	4929.58	360	358.94	20
90-U-30	57.91	606564.90	5006406.46	-12.84	8753.77	7018.39	4927.16	360	358.94	40
90-U-31	45.42	606512.34	5006419.37	-9.45	8701.45	7032.28	4930.55	360	358.94	40
90-U-32	45.12	606564.80	5006405.60	-11.19	8753.66	7017.54	4928.81	360	358.94	60
90-U-33	52.43	606512.23	5006419.31	-8.37	8701.34	7032.22	4931.63	360	358.94	60
90-U-34	56.08	606564.99	5006405.24	-10.96	8753.83	7017.18	4929.04	360	358.94	78
90-U-35	61.87	606512.34	5006418.66	-8.33	8701.44	7031.58	4931.67	360	358.94	75
90-U-36	62.48	606523.02	5006417.63	-11.59	8712.10	7030.35	4928.41	360	358.94	0
90-U-37	64.62	606523.04	5006417.53	-11.46	8712.12	7030.24	4928.54	360	358.94	20
90-U-38	64.31	606481.40	5006439.29	-9.77	8670.88	7052.77	4930.23	360	358.94	0
90-U-39	62.48	606481.47	5006439.33	-9.28	8670.95	7052.82	4930.72	360	358.94	20
90-U-40	53.64	606481.41	5006439.47	-8.25	8670.90	7052.96	4931.75	360	358.94	40
90-U-41	57.61	606523.06	5006417.56	-11.07	8712.13	7030.28	4928.93	360	358.94	40
90-U-42	57.61	606481.44	5006438.80	-8	8670.91	7052.29	4932.00	360	358.94	60
90-U-43	62.48	606523.03	5006416.92	-9.62	8712.10	7029.63	4930.38	360	358.94	60
90-U-44	58.52	606481.38	5006438.61	-7.84	8670.85	7052.10	4932.16	360	358.94	75
90-U-45	53.95	606523.03	5006416.60	-9.62	8712.09	7029.31	4930.38	360	358.94	75
90-U-46	60.05	606482.00	5006434.80	-9.16	8671.39	7048.27	4930.84	180	178.94	20
90-U-47	40.84	606447.09	5006416.48	-9.63	8636.15	7030.60	4930.37	180	178.94	0
90-U-48	47.24	606481.91	5006435.34	-8.23	8671.32	7048.82	4931.77	180	178.94	40
90-U-49	40.54	606447.10	5006416.52	-9.19	8636.16	7030.64	4930.81	180	178.94	20
90-U-50	72.54	606473.46	5006419.86	-9.53	8662.59	7033.49	4930.47	360	358.94	20
90-U-51	46.02	606447.09	5006416.64	-8.66	8636.15	7030.77	4931.34	180	178.94	40
90-U-52	56.99	606482.03	5006435.66	-8.04	8671.44	7049.14	4931.96	180	178.94	60
90-U-53	35.05	606446.98	5006417.20	-7.98	8636.05	7031.32	4932.02	180	178.94	60
90-U-54	79.25	606473.46	5006419.57	-8.93	8662.58	7033.21	4931.07	360	358.94	40
90-U-55	47.85	606481.95	5006436.10	-7.79	8671.37	7049.58	4932.21	180	178.94	75
90-U-56	43.28	606447.08	5006417.51	-7.6	8636.15	7031.64	4932.40	180	178.94	73

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
90-U-57	59.13	606473.51	5006419.21	-8.52	8662.62	7032.84	4931.48	360	358.94	62
90-U-58	74.37	606446.94	5006420.20	-9.2	8636.06	7034.32	4930.80	360	358.94	0
90-U-59	25.91	606536.27	5006406.42	-13.1	8725.14	7018.88	4926.90	180	178.94	0
90-U-60	27.13	606536.29	5006406.43	-12.57	8725.15	7018.89	4927.43	180	178.94	20
90-U-61	29.87	606536.36	5006406.63	-11.64	8725.23	7019.09	4928.36	180	178.94	40
90-U-62	45.72	606536.27	5006407.23	-10.85	8725.16	7019.69	4929.15	180	178.94	75
90-U-63	45.11	606447.00	5006420.18	-8.8	8636.13	7034.30	4931.20	360	358.94	20
90-U-64	57	606473.48	5006418.86	-8.52	8662.58	7032.50	4931.48	360	358.94	75
90-U-65	40.23	606536.21	5006406.78	-10.97	8725.09	7019.25	4929.03	180	178.94	60
90-U-66	46.94	606446.99	5006419.87	-8.51	8636.11	7033.99	4931.49	360	358.94	40
90-U-67	54.25	606446.98	5006419.50	-8.04	8636.09	7033.62	4931.96	360	358.94	60
90-U-68	39.93	606473.91	5006416.10	-10.21	8662.96	7029.73	4929.79	180	178.94	0
90-U-69	57	606446.86	5006419.20	-7.64	8635.97	7033.33	4932.36	360	358.94	75
90-U-70	69.49	606536.13	5006409.89	-12.92	8725.06	7022.37	4927.08	360	358.94	0
90-U-71	38.71	606474.61	5006416.40	-9.49	8663.67	7030.01	4930.51	180	178.94	20
90-U-72	63.7	606536.14	5006409.86	-12.43	8725.07	7022.34	4927.57	360	358.94	20
90-U-73	75.29	606459.94	5006420.09	-10.48	8649.06	7033.97	4929.52	360	358.94	0
90-U-74	39.93	606474.65	5006416.31	-8.83	8663.70	7029.93	4931.17	180	178.94	40
90-U-75	57.91	606536.13	5006409.71	-11.63	8725.06	7022.19	4928.37	360	358.94	40
90-U-76	40.54	606474.67	5006416.90	-8.46	8663.74	7030.51	4931.54	180	178.94	60
90-U-77	51.51	606459.95	5006420.21	-9.99	8649.08	7034.09	4930.01	360	358.94	20
90-U-78	39.93	606459.93	5006419.94	-9.44	8649.05	7033.82	4930.56	360	358.94	40
90-U-79	42.06	606474.59	5006417.39	-8.39	8663.67	7031.00	4931.61	180	178.94	74
90-U-80	54.25	606459.97	5006419.44	-9.13	8649.09	7033.33	4930.87	360	358.94	60
90-U-81	54.86	606537.14	5006408.76	-11.11	8726.06	7021.22	4928.89	360	358.94	60
90-U-82	35.97	606460.07	5006419.06	-8.81	8649.17	7032.95	4931.19	360	358.94	75
90-U-83	57.91	606537.07	5006408.43	-10.99	8725.97	7020.89	4929.01	360	358.94	75
90-U-84	30.48	606484.49	5006415.97	-10.52	8673.54	7029.40	4929.48	180	178.94	0
90-U-85	29.87	606459.48	5006415.99	-10.41	8648.52	7029.88	4929.59	180	178.94	0
90-U-86	28.04	606512.77	5006411.88	-9.71	8701.74	7024.78	4930.29	180	178.94	40
90-U-87	29.57	606459.55	5006416.08	-9.97	8648.60	7029.98	4930.03	180	178.94	20
90-U-88	31.39	606548.29	5006408.33	-13.43	8737.20	7020.58	4926.57	360	358.94	0
90-U-89	45.11	606512.82	5006412.18	-9.17	8701.79	7025.08	4930.83	180	178.94	60
90-U-90	31.7	606548.32	5006408.35	-12.9	8737.22	7020.60	4927.10	360	358.94	20
90-U-91	29.87	606459.53	5006416.28	-9.31	8648.59	7030.17	4930.69	180	178.94	40
90-U-92	34.14	606459.61	5006416.61	-8.76	8648.67	7030.51	4931.24	180	178.94	60
90-U-93	31.09	606548.35	5006408.23	-11.82	8737.25	7020.48	4928.18	360	358.94	40
90-U-94	44.81	606512.55	5006413.01	-9.34	8701.55	7025.93	4930.66	180	178.94	76
90-U-95	39.01	606459.51	5006417.25	-8.81	8648.59	7031.14	4931.19	180	178.94	75
90-U-96	39.93	606548.31	5006407.65	-9.66	8737.20	7019.89	4930.34	360	358.94	60
90-U-97	25.91	606523.03	5006409.11	-11.97	8711.94	7021.82	4928.03	180	178.94	0
90-U-98	29.87	606523.02	5006409.25	-11.46	8711.94	7021.97	4928.54	180	178.94	20
90-U-99	52.73	606548.21	5006405.72	-9.26	8737.06	7017.97	4930.74	360	358.94	75
BR05-001	133.5	606462.53	5006352.54	66.35	8650.40	6966.38	5003.35	0	358.94	-55
BR05-002	96.4	606462.22	5006376.85	65.66	8650.54	6990.69	5002.66	0	358.94	-50
BR05-003	67	606460.92	5006396.67	65.42	8649.61	7010.54	5002.42	0	358.94	-45
BR05-004	145.5	606489.30	5006345.65	65.84	8677.04	6959.00	5002.84	0	358.94	-55
BR05-005	107	606482.57	5006372.04	64.91	8670.80	6985.51	5001.91	0	358.94	-53
BR05-006	65	606486.15	5006397.54	65.09	8674.86	7010.94	5002.09	0	358.94	-60
BR05-007	135.5	606438.58	5006351.49	66.69	8626.43	6965.78	5003.69	0	358.94	-55
BR05-008	86	606439.06	5006375.90	67.09	8627.37	6990.18	5004.09	0	358.94	-55
BR05-009	122.3	606511.54	5006348.34	64.52	8699.33	6961.26	5001.52	0	358.94	-53
BR05-010	81.7	606511.07	5006373.08	63.42	8699.32	6986.01	5000.42	0	358.94	-60
BR05-011	58.8	606511.10	5006401.72	63.91	8699.88	7014.65	5000.91	0	358.94	-75
BR05-012	152	606412.51	5006349.24	66.88	8600.31	6964.01	5003.88	0	358.94	-55
BR05-013	114	606412.15	5006374.12	68.48	8600.43	6988.89	5005.48	0	358.94	-55
BR05-014	125	606536.07	5006338.67	64.23	8723.69	6951.15	5001.23	0	358.94	-55
BR05-015	83	606536.32	5006360.34	62.83	8724.34	6972.80	4999.83	0	358.94	-60
BR05-016	68	606537.70	5006389.23	63.81	8726.26	7001.67	5000.81	0	358.94	-74
BR05-017	118	606498.62	5006353.35	64.4	8686.51	6966.51	5001.40	0	358.94	-55
BR05-018	123	606500.51	5006373.76	63.66	8688.78	6986.90	5000.66	0	358.94	-45
BR05-019	115.6	606555.18	5006337.54	64.14	8742.76	6949.66	5001.14	0	358.94	-57
BR05-020	142	606555.18	5006337.54	64.14	8742.76	6949.66	5001.14	0	358.94	-63
BR05-021	74	606560.73	5006363.77	62.96	8748.80	6975.78	4999.96	0	358.94	-60
BR05-022	59	606562.15	5006401.73	64.48	8750.93	7013.72	5001.48	0	358.94	-90
BR05-023	150	606410.79	5006374.07	68.43	8599.07	6988.87	5005.43	330	328.94	-50
BR08-01	171	606588.89	5006361.39	62.87	8776.93	6972.89	4999.87	0	358.94	-50
BR08-02	220	606588.89	5006361.39	62.87	8776.93	6972.89	4999.87	0	358.94	-75
BR08-03	217	606588.90	5006325.09	63.52	8776.25	6936.59	5000.52	350	348.94	-60
BR08-04	221	606588.90	5006325.09	63.52	8776.25	6936.59	5000.52	15	13.94	-45
BR08-05	233	606608.00	5006308.40	61.35	8795.04	6919.53	4998.35	0	358.94	-65

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
BR08-06	268	606636.40	5006326.79	59.12	8823.78	6937.41	4996.12	0	358.94	-70
BR08-07	281	606636.30	5006307.19	58.58	8823.32	6917.81	4995.58	10	8.94	-50
BR08-08	290	606634.79	5006274.69	57.59	8821.22	6885.34	4994.59	15	13.94	-55
BR08-09	269	606634.79	5006274.69	57.59	8821.22	6885.34	4994.59	25	23.94	-45
BR08-10	332	606631.90	5006254.00	57.69	8817.93	6864.69	4994.69	25	23.94	-55
BR08-11	300	606717.70	5006257.89	57.8	8903.80	6867.00	4994.80	0	358.94	-50
BR08-12	314	606717.70	5006257.89	57.8	8903.80	6867.00	4994.80	10	8.94	-55
BR08-13	350	606767.30	5006268.19	62.75	8953.59	6876.38	4999.75	5	3.94	-65
BR08-14	372	606761.99	5006217.80	59.51	8947.36	6826.08	4996.51	5	3.94	-50
BR08-15	377	606786.60	5006236.89	62.57	8972.31	6844.72	4999.57	5	3.94	-65
BR08-16	395	606619.30	5006402.20	61.51	8808.80	7013.12	4998.51	100	98.94	-45
BR08-17	251	606959.39	5006294.99	61.88	9146.19	6899.61	4998.88	0	358.94	-50
BR08-18	251	607009.59	5006261.70	54.22	9195.77	6865.38	4991.22	0	358.94	-50
BR08-19	251	607014.40	5006194.19	54.46	9199.32	6797.79	4991.46	0	358.94	-50
BR08-20A	249.6	607050.70	5006245.30	53.83	9236.56	6848.21	4990.83	10	8.94	-45
BR08-21	329	607050.70	5006245.30	53.83	9236.56	6848.21	4990.83	10	8.94	-55
BR08-22	251	607152.50	5006246.00	53.8	9338.38	6847.02	4990.80	345	343.94	-45
BR08-23	295	607152.50	5006246.00	53.8	9338.38	6847.02	4990.80	345	343.94	-60
BR08-24	251	607167.20	5006235.09	52.69	9352.87	6835.85	4989.69	355	353.94	-45
BR08-25	285	607167.20	5006235.09	52.69	9352.87	6835.85	4989.69	0	358.94	-55
BR08-26	302	607169.89	5006169.29	52.53	9354.35	6770.00	4989.53	0	358.94	-55
BR08-27	240	607217.19	5006189.60	53.1	9402.03	6789.42	4990.10	0	358.94	-65
BR08-28	308	607214.99	5006141.30	52.36	9398.93	6741.16	4989.37	0	358.94	-70
BR08-29	299	607287.29	5006204.89	52.9	9472.41	6803.42	4989.90	0	358.94	-65
BR08-30	299	607266.90	5006254.19	53.35	9452.93	6853.10	4990.35	0	358.94	-60
BR08-31	302	607319.30	5006207.20	55.07	9504.45	6805.12	4992.07	0	358.94	-65
BR08-32	284	607322.70	5006248.69	55.71	9508.62	6846.56	4992.71	0	358.94	-60
BR08-33	271	606502.90	5006336.19	67.04	8690.46	6949.29	5004.04	0	358.94	-60
BR08-34	247.3	606514.29	5006260.09	64.57	8700.45	6872.98	5001.57	0	358.94	-55
BR08-35	201.6	606511.00	5006183.39	63.06	8695.72	6796.34	5000.06	0	358.94	-55
BR08-36	268	606523.50	5006090.39	60.23	8706.49	6703.11	4997.23	0	358.94	-55
BR08-37	250	606485.29	5006313.40	68.28	8672.44	6926.81	5005.28	0	358.94	-55
BR08-38	259	606460.60	5006307.10	68.29	8647.62	6920.97	5005.29	0	358.94	-55
BR08-39	250	606435.30	5006305.70	66.23	8622.30	6920.04	5003.23	0	358.94	-55
BR08-40	251	606415.59	5006311.69	66.86	8602.71	6926.41	5003.86	0	358.94	-55
BR08-41	251	606388.09	5006281.10	67.4	8574.64	6896.32	5004.40	0	358.94	-55
BR08-42	250	606389.89	5006357.50	68.65	8577.86	6972.69	5005.65	0	358.94	-55
BR08-43	251	606360.00	5006286.50	68.2	8546.64	6902.24	5005.20	0	358.94	-55
BR08-44	257	606366.99	5006352.00	69.18	8554.86	6967.61	5006.18	0	358.94	-55
BR84-01	529.57	607216.68	5006392.91	57.16	9405.29	6992.74	4997.16	187	185.94	-76
BR85-01	31.4	606015.56	5006490.66	74.5	8206.00	7112.80	5014.50	7	5.94	-60
BR85-01A	90.53	606016.16	5006496.45	77.23	8206.70	7118.58	5017.23	7	5.94	-60
BR85-02	78.03	605954.80	5006494.24	75	8145.30	7117.50	5015.00	7	5.94	-55
BR85-03	102.72	606074.00	5006467.45	74	8264.00	7088.50	5014.00	7	5.94	-60
BR85-04	87.18	606141.98	5006466.44	74.98	8331.97	7086.23	5014.98	7	5.94	-55
BR87-01	73.76	607377.59	5006499.41	58.88	9568.18	7096.24	4998.88	180	178.94	-65
BR87-02	501.4	607250.90	5006057.66	50.07	9433.27	6656.87	4990.08	7	5.94	-70
BR87-03	422.45	606963.16	5006171.44	52.56	9147.66	6775.99	4992.57	7	5.94	-65
BR87-04	54.25	607007.46	5006121.13	52.56	9191.03	6724.86	4992.57	7	5.94	-65
BR87-04A	413.92	607007.46	5006121.13	52.56	9191.03	6724.86	4992.57	7	5.94	-65
BR87-05	50.62	607203.13	5006078.28	49.27	9385.89	6678.37	4989.27	7	5.94	-70
BR87-05A	407.82	607203.13	5006078.28	49.27	9385.89	6678.37	4989.27	7	5.94	-70
BR87-06	673	607196.36	5006296.10	49.99	9383.17	6896.31	4989.99	279	277.94	-65
BR87-07	396.54	607197.07	5006295.93	49.77	9383.87	6896.13	4989.77	7	5.94	-90
BR87-08	471.22	607355.69	5006311.33	60	9542.78	6908.58	5000.00	279	277.94	-75
BR87-09	611.73	607355.69	5006311.33	60	9542.78	6908.58	5000.00	327	325.94	-90
BR87-10	153.31	607216.19	5006390.16	57.02	9404.74	6989.99	4997.02	187	185.94	-50
BR87-11	230.73	607216.29	5006390.83	56.92	9404.86	6990.67	4996.92	187	185.94	-70
BR87-12	541.93	607277.17	5006290.26	52.27	9463.87	6888.97	4992.27	307	305.94	-88
BR87-13	282.87	607294.52	5006397.10	55.15	9483.20	6995.48	4995.15	187	185.94	-70
BR87-14	238.67	607294.33	5006396.00	54.99	9482.99	6994.38	4994.99	187	185.94	-50
BR87-15	539.52	607198.65	5006275.04	49.31	9385.06	6875.20	4989.31	279	277.94	-90
BR87-16	380.71	606738.76	5006188.16	57.63	8923.57	6796.87	4997.63	7	5.94	-45
BR87-17	639.19	607281.98	5006481.80	58.88	9472.23	7080.41	4998.88	211	209.94	-70
BR87-18	351.45	606817.75	5006228.79	37.29	9003.31	6836.03	4977.29	7	5.94	-70
BR87-19	198.13	606617.42	5006387.77	58.84	8805.94	6998.73	4998.84	279	277.94	-90
BR87-20	395.34	607131.72	5006330.73	50.23	9319.17	6932.14	4990.23	7	5.94	-90
BR87-21A	226.48	606602.47	5006389.16	60.5	8791.01	7000.40	5000.50	279	277.94	-60
BR87-22	337.43	607129.01	5006327.72	50.29	9316.40	6929.18	4990.29	289	287.94	-62
BR87-23	297.8	606769.37	5006389.30	58.91	8957.91	6997.44	4998.91	277	275.94	-90
BR87-24	383.13	606911.26	5006363.92	60.25	9099.33	6969.42	5000.25	334	332.94	-90

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
BR87-25A	290.79	606767.47	5006385.91	59.05	8955.95	6994.08	4999.05	307	305.94	-60
BR87-26	337.43	606910.44	5006364.09	60.34	9098.51	6969.61	5000.34	292	290.94	-61
BR87-27	267.32	606774.94	5006464.15	56.75	8964.87	7072.18	4996.75	187	185.94	-70
BR87-28	346.59	606986.54	5006351.98	56.89	9174.39	6956.08	4996.89	307	305.94	-90
BR87-29	276.46	606703.06	5006468.13	57.63	8893.07	7077.50	4997.63	187	185.94	-70
BR87-30	270.37	606756.67	5006309.17	58.11	8943.72	6917.54	4998.11	7	5.94	-65
BR87-31	370.96	606705.46	5006391.88	59.7	8894.05	7001.20	4999.70	287	285.94	-90
BR87-32	331.33	606841.39	5006371.92	58.06	9029.61	6978.72	4998.06	357	355.94	-90
BR87-33	297.8	606628.63	5006454.85	58.8	8818.39	7065.60	4998.80	187	185.94	-75
BR87-34	361.81	606545.53	5006407.14	62.05	8734.41	7019.43	5002.05	347	345.94	-90
BR87-35A	320.66	606829.85	5006274.69	58.78	9016.26	6881.70	4998.78	7	5.94	-72
BR87-36	215.5	606544.68	5006405.36	62.12	8733.52	7017.67	5002.12	277	275.94	-65
BR87-37	343.52	606851.77	5006449.87	57.51	9041.44	7056.47	4997.51	187	185.94	-70
BR87-38	241.72	606605.22	5006308.68	58.3	8792.27	6919.87	4998.30	7	5.94	-65
BR88-39	215.5	606681.36	5006311.97	54.81	8868.47	6921.74	4994.81	7	5.94	-65
BR88-40	337.43	606817.23	5006375.81	57.68	9005.52	6983.06	4997.68	7	5.94	-90
BR88-41	306.95	606747.72	5006389.26	60.7	8936.26	6997.80	5000.70	277	275.94	-90
BR88-42	338.65	606851.71	5006449.58	57.26	9041.37	7056.18	4997.26	187	185.94	-81
BR88-43	337.43	606721.68	5006389.88	60.75	8910.23	6998.90	5000.75	7	5.94	-90
BR88-44	337.43	606820.55	5006404.14	37.26	9009.37	7011.32	4977.26	7	5.94	-90
BR88-45	337.43	606720.35	5006414.50	58.2	8909.36	7023.55	4998.20	7	5.94	-90
BR88-46	337.43	606749.68	5006364.45	59.19	8937.76	6972.95	4999.19	337	335.94	-90
BR88-47	329.81	606745.87	5006414.88	58.81	8934.89	7023.45	4998.81	7	5.94	-90
BR88-48	331.33	606470.58	5006404.69	62.09	8659.41	7018.38	5002.09	7	5.94	-90
BR88-49	221.29	606622.05	5006412.58	59.58	8811.03	7023.45	4999.58	7	5.94	-90
BR88-50	197.21	606547.33	5006427.73	62.49	8736.59	7039.99	5002.49	7	5.94	-90
BR88-51	215.5	606497.83	5006400.21	61.77	8686.58	7013.39	5001.77	337	335.94	-90
BR88-52	215.5	606542.46	5006384.82	60.54	8730.92	6997.17	5000.54	7	5.94	-90
BR88-53	245.98	606465.04	5006380.14	62.42	8653.42	6993.93	5002.42	337	335.94	-90
BR88-54	227.69	606422.76	5006405.63	64.61	8611.61	7020.20	5004.61	7	5.94	-90
BR88-55	274.33	606503.83	5006419.73	61	8692.94	7032.80	5001.00	7	5.94	-90
BR88-56	319.14	606641.81	5006387.87	57.95	8830.33	6998.37	4997.95	7	5.94	-90
BR88-57	266.71	606422.44	5006385.53	65.11	8610.92	7000.11	5005.11	7	5.94	-90
BR88-58	258.18	606644.62	5006404.70	57.73	8833.45	7015.15	4997.73	7	5.94	-90
BR88-59	273.42	606397.74	5006398.06	65.84	8586.45	7013.10	5005.84	307	305.94	-90
BR88-60	215.5	606572.31	5006422.24	61.67	8761.47	7034.03	5001.67	7	5.94	-90
BR88-61	242.33	606421.58	5006430.18	63.4	8610.89	7044.77	5003.40	277	275.94	-90
BR88-62	297.8	606522.38	5006409.45	61.49	8711.30	7022.17	5001.49	277	275.94	-90
BR88-63	319.14	606388.36	5006382.40	64.87	8576.78	6997.61	5004.87	307	305.94	-90
BR88-64	228.91	606565.92	5006382.46	60.14	8754.34	6994.37	5000.14	277	275.94	-90
BR88-65	230.74	606558.92	5006404.63	61.63	8747.75	7016.67	5001.63	337	335.94	-90
BR88-66	306.95	606472.89	5006431.13	62.27	8662.21	7044.77	5002.27	337	335.94	-90
BR88-67	306.95	606519.99	5006386.62	60.54	8708.49	6999.39	5000.54	277	275.94	-90
BR88-68	306.95	606522.22	5006428.96	61.61	8711.50	7041.69	5001.61	227	225.94	-90
BR88-69	306.95	606492.33	5006381.84	61.67	8680.74	6995.12	5001.67	337	335.94	-90
BR88-70	252.08	606242.45	5006413.09	69.2	8431.44	7031.01	5009.20	277	275.94	-90
BR88-71	151.49	606245.65	5006433.45	69.03	8435.02	7051.31	5009.03	246	244.94	-90
BR88-72	145.4	606170.05	5006422.80	73.33	8359.22	7042.07	5013.33	157	155.94	-90
BR88-73	96.63	606252.86	5006482.92	71.78	8443.15	7100.65	5011.78	7	5.94	-90
BR88-74	72.24	606178.67	5006471.57	74.16	8368.75	7090.68	5014.16	7	5.94	-88
BR88-75	303.89	606252.98	5006484.44	71.58	8443.31	7102.17	5011.58	7	5.94	-55
BR88-76	307.13	606178.16	5006474.46	74.12	8368.30	7093.59	5014.12	7	5.94	-60
BR88-77	258.94	606256.82	5006507.80	71.53	8447.58	7125.46	5011.53	7	5.94	-90
BR88-78	230.88	606186.44	5006523.13	75.24	8377.49	7142.09	5015.24	7	5.94	-90
BR88-79	316.28	606260.47	5006531.08	70.9	8451.66	7148.68	5010.90	267	265.94	-90
BR88-80	307.13	606186.12	5006522.01	73.91	8377.15	7140.99	5013.91	7	5.94	-60
BR88-81	43.45	606675.40	5006430.81	58.64	8864.72	7040.69	4998.64	180	178.94	-50
BR88-82	108.84	606486.80	5006384.56	61.78	8675.26	6997.94	5001.78	0	358.94	-50
BR89-100	90.22	606009.36	5006560.17	78.27	8201.10	7182.43	5018.27	180	178.94	-45
BR89-101	90.22	605986.19	5006506.08	77.26	8176.92	7128.76	5017.26	360	358.94	-44
BR89-102	90.22	605959.01	5006570.59	78.48	8150.94	7193.79	5018.48	180	178.94	-45
BR89-103	29.87	606009.77	5006531.79	78.17	8200.98	7154.03	5018.17	180	178.94	-85
BR89-104	29.87	606059.31	5006524.28	77.18	8250.38	7145.60	5017.18	360	358.94	-85
BR89-105	29.87	606109.38	5006520.14	75.84	8300.37	7140.54	5015.84	180	178.94	-85
BR89-106	29.87	606208.78	5006497.89	74.94	8399.35	7116.45	5014.94	360	358.94	-85
BR89-107	29.87	606283.24	5006489.70	70.66	8473.66	7106.87	5010.66	360	358.94	-85
BR89-108	29.87	606333.09	5006475.77	68.29	8523.25	7092.01	5008.29	360	358.94	-85
BR89-83	81.68	606158.84	5006504.01	74.94	8349.52	7123.49	5014.94	180	178.94	-65
BR89-84	121.92	606384.19	5006464.50	64.69	8574.15	7079.79	5004.69	180	178.94	-65
BR89-85	178.92	606157.46	5006540.63	74.72	8348.82	7160.13	5014.72	180	178.94	-70
BR89-86	111.86	606207.69	5006529.41	72.53	8398.84	7147.99	5012.53	180	178.94	-70

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
BR89-87	138.99	606364.97	5006422.03	67.91	8554.13	7037.68	5007.91	360	358.94	-70
BR89-88	170.69	606207.41	5006535.87	72.08	8398.68	7154.45	5012.08	180	178.94	-80
BR89-89	187.76	606184.24	5006457.57	72.91	8374.07	7076.57	5012.91	360	358.94	-70
BR89-90	199.95	606305.76	5006561.93	67.86	8497.52	7178.67	5007.87	180	178.94	-70
BR89-91	203	606306.75	5006522.81	67.04	8497.78	7139.55	5007.04	330	178.94	-78
BR89-92	142.34	606232.65	5006479.88	70.52	8422.88	7097.98	5010.52	360	358.94	-80
BR89-93	190.8	606333.01	5006508.52	65.82	8523.78	7124.76	5005.83	180	178.94	-78
BR89-94	55.17	606132.62	5006477.72	75.44	8322.82	7097.68	5015.44	360	358.94	-45
BR89-95	124.05	606283.62	5006455.41	69.46	8473.40	7072.58	5009.46	360	358.94	-70
BR89-96	182.88	606408.55	5006458.52	62.11	8598.38	7073.36	5002.12	184	182.94	-75
BR89-97	90.22	606109.45	5006545.38	75.4	8300.91	7165.77	5015.40	180	178.94	-45
BR89-98	90.22	606083.06	5006487.03	76.45	8273.43	7107.92	5016.45	360	358.94	-45
BR89-99	90.22	606055.48	5006547.44	77.66	8246.97	7168.84	5017.66	180	178.94	-45
BR91-109	149.35	606469.66	5006405.10	62.7	8658.50	7018.80	5002.70	0	358.94	-90
BR91-110	150.87	606522.14	5006406.37	61.5	8711.00	7019.10	5001.50	0	358.94	-90
BR91-111	165.2	606571.74	5006422.59	62	8760.90	7034.40	5002.00	0	358.94	-90
BR91-112	127.1	606829.57	5006275.48	57.5	9016.00	6882.50	4997.50	360	358.94	-72
BR91-113	129.84	606522.23	5006347.47	61	8710.00	6960.20	5001.00	0	358.94	-45
BR93-114	114.9	606511.12	5006407.07	61	8700.00	7020.00	5001.00	0	358.94	-90
BR93-114B	41.4	606520.12	5006407.24	60	8709.00	7020.00	5000.00	0	358.94	-90
BR93-115	163.5	606520.12	5006407.24	60	8709.00	7020.00	5000.00	177	175.94	-70
BR93-116	110	606473.71	5006402.37	63	8662.50	7016.00	5003.00	0	358.94	-90
BR93-116B	58	606473.71	5006402.37	63	8662.50	7016.00	5003.00	0	358.94	-90
BR93-117	105.25	606524.33	5006368.81	62	8712.50	6981.50	5002.00	0	358.94	-45
BR95-119	138	606549.37	5006315.09	61.08	8736.54	6927.31	5001.08	360	358.94	-45
BR95-120	207	606550.19	5006265.19	58.16	8736.43	6877.40	4998.16	360	358.94	-45
BR95-121	132.5	606546.13	5006489.29	61.11	8736.53	7101.57	5001.11	180	178.94	-45
BR95-122	22	606545.31	5006558.71	60	8737.00	7171.00	5000.00	180	178.94	-45
BR95-123	224.43	606545.02	5006559.35	65.27	8736.73	7171.65	5005.27	180	178.94	-45
BR95-124	315	606648.22	5006554.89	60.71	8839.84	7165.27	5000.71	180	178.94	-57
BR95-125	224	606623.70	5006244.07	54.8	8809.55	6854.91	4994.80	4	2.94	-45
GA1-125	21	606528.44	5006389.89	21.5	8717.00	7002.50	4961.50	0	358.94	0
GA1-250	17	606561.48	5006388.00	-13.5	8750.00	7000.00	4926.50	0	358.94	0
GA2-125	17.6	606528.01	5006412.98	22	8717.00	7025.60	4962.00	0	358.94	0
GA2-250	33.5	606561.10	5006408.50	-14	8750.00	7020.50	4926.00	0	358.94	1
GAL125	100.3	606529.39	5006338.71	21.5	8717.00	6951.30	4961.50	0	358.94	1
GAL1-250	70.4	606561.20	5006403.00	-14	8750.00	7015.00	4926.00	180	178.94	0
GAL2-250	40	606561.10	5006408.20	-14	8750.00	7020.20	4926.00	0	358.94	1
OSK10-01	300	606613.15	5006285.34	60.03161	8799.76	6896.38	4997.03	1.06	0	-70
OSK10-02	300	606610.59	5006523.68	66.31356	8801.64	7134.77	5003.31	181.06	180	-65
OSK10-03	304	606588.38	5006285.66	61.36039	8775.01	6897.16	4998.36	1.06	0	-65
OSK10-04	233	605908.08	5006396.99	78.19261	8096.78	7021.12	5015.19	1.06	0	-60
OSK10-05	225	606573.55	5006286.38	61.56217	8760.18	6898.15	4998.56	1.06	0	-55
OSK10-06	150	605909.27	5006548.92	81.48938	8100.80	7173.03	5018.49	181.06	180	-55
OSK10-07	275	606558.25	5006515.04	67.93572	8749.14	7127.10	5004.94	181.06	180	-60
OSK10-08	250	606542.32	5006301.65	63.12842	8729.24	6914.00	5000.13	1.06	0	-65
OSK10-09	227	605911.88	5006598.75	81.79477	8104.33	7222.81	5018.80	181.06	180	-65
OSK10-10	275	606514.38	5006539.65	66.38746	8705.72	7152.52	5003.39	181.06	180	-55
OSK10-11	176	605809.08	5006446.75	79.7571	7998.71	7072.73	5016.76	1.06	0	-50
OSK10-12	303	606487.50	5006322.51	67.40306	8674.81	6935.88	5004.40	1.06	0	-70
OSK10-13	275	606486.76	5006582.72	69.35147	8678.90	7196.10	5006.35	181.06	180	-50
OSK10-14	302	606464.34	5006309.40	68.25099	8651.40	6923.21	5005.25	1.06	0	-65
OSK10-15	251.3	604750.81	5006550.68	51.60592	6942.38	7196.31	4988.61	1.06	0	-45
OSK10-16	300	606435.88	5006312.83	66.39504	8623.01	6927.16	5003.40	1.06	0	-65
OSK10-17	175.6	604747.77	5006672.76	57.99575	6941.60	7318.45	4995.00	1.06	0	-50
OSK10-18	226.5	606434.80	5006550.48	66.8856	8626.34	7164.83	5003.89	181.06	180	-45
OSK10-19	300	606412.74	5006309.24	66.48303	8599.81	6924.00	5003.48	1.06	0	-65
OSK10-20	173	604949.95	5006642.24	64.10039	7143.21	7284.17	5001.10	181.06	180	-55
OSK10-21	245	606410.69	5006555.14	67.39326	8602.32	7169.94	5004.39	181.06	180	-55
OSK10-22	200	606386.28	5006474.68	67.53633	8576.41	7089.93	5004.54	161.06	160	-70
OSK10-23	251	606385.08	5006525.38	66.14888	8576.16	7140.65	5003.15	181.06	180	-70
OSK10-24	150	606361.04	5006424.52	71.48818	8550.25	7040.24	5008.49	1.06	0	-70
OSK10-25	250	606362.98	5006531.79	67.51552	8554.18	7147.47	5004.52	181.06	180	-70
OSK10-26	254	606311.23	5006381.06	70.1188	8499.63	6997.71	5007.12	1.06	0	-65
OSK10-27	151	606307.96	5006531.85	70.43982	8499.16	7148.55	5007.44	181.06	180	-55
OSK10-28	251	606307.10	5006581.83	71.97155	8499.23	7198.55	5008.97	181.06	180	-70
OSK10-29	260	606260.65	5006376.19	71.57029	8448.96	6993.78	5008.57	1.06	0	-60
OSK10-30	182.5	606257.15	5006579.80	73.33872	8449.24	7197.44	5010.34	181.06	180	-50
OSK10-31	250	606257.01	5006580.51	73.44624	8449.11	7198.16	5010.45	181.06	180	-70
OSK10-32	250	606210.39	5006379.17	73.08386	8398.75	6997.69	5010.08	1.06	0	-60
OSK10-33	152	606207.76	5006468.72	76.13621	8397.79	7087.29	5013.14	1.06	0	-55

Hole Number	Depth (m)	East (m) UTM Zone 20 NAD 83	East (m) UTM Zone 20 NAD 83	Elevation (m) ASL	Local Grid East (m)	Local Grid North (m)	Local Grid Elevation (m)	Grid Azimuth	UTM Azimuth	Inclination (Deg.)
OSK10-34	251	606207.50	5006603.57	75.15294	8400.04	7222.14	5012.15	181.06	180	-65
OSK10-35	191	606161.20	5006404.38	75.58188	8350.03	7023.81	5012.58	1.06	0	-65
OSK10-36	152	606160.01	5006457.61	77.2683	8349.83	7077.06	5014.27	1.06	0	-70
OSK10-37	176	606158.45	5006539.17	77.89784	8349.79	7158.65	5014.90	181.06	180	-70
OSK10-38	225.2	606153.45	5006588.70	76.57309	8345.71	7208.27	5013.57	181.06	180	-65
OSK10-39	200	606119.93	5006402.55	76.72908	8308.73	7022.74	5013.73	1.06	0	-60
OSK10-40	75	606111.97	5006477.88	79.32594	8302.17	7098.23	5016.33	1.06	0	-50
OSK10-41	156.2	606105.79	5006554.48	78.83569	8297.41	7174.94	5015.84	181.06	180	-65
OSK10-42	227	606110.38	5006616.83	78.23842	8303.16	7237.20	5015.24	181.06	180	-60
OSK10-43	254	606061.70	5006404.35	77.50739	8250.53	7025.63	5014.51	1.06	0	-65
OSK10-44	150	606059.07	5006477.88	79.80635	8249.27	7099.21	5016.81	1.06	0	-70
OSK10-45	230	606055.15	5006591.88	80.85986	8247.47	7213.28	5017.86	181.06	180	-65
OSK10-46	114	606057.88	5006552.29	80.98583	8249.46	7173.64	5017.99	181.06	180	-70
OSK10-47	225	606039.62	5006397.68	76.99155	8228.33	7019.37	5013.99	1.06	0	-65
OSK10-48	150.1	606009.65	5006474.55	79.4009	8199.79	7096.80	5016.40	1.06	0	-70
OSK10-49	131	606007.98	5006551.96	81.77402	8199.55	7174.24	5018.77	181.06	180	-70
OSK10-50	224	606008.70	5006583.88	81.74077	8200.87	7206.15	5018.74	181.06	180	-65
OSK10-51	249.5	605151.60	5006648.67	76.41309	7344.98	7286.86	5013.41	181.06	180	-60
OSK10-52	301.5	605149.29	5006825.99	80.5908	7345.97	7464.21	5017.59	181.06	180	-60
OSK10-53	253	604950.51	5006846.77	76.27897	7147.58	7488.69	5013.28	181.06	180	-55
OSK10-54	175.5	604949.17	5006645.24	64.20734	7142.49	7287.19	5001.21	1.06	0	-55
OSK10-55	200.1	605032.07	5006502.98	66.21046	7222.74	7143.39	5003.21	1.06	0	-70
OSK10-56	134	604892.30	5006522.40	52.66431	7083.34	7165.40	4989.66	1.06	0	-60
OSK10-57	236	605081.29	5006566.25	67.36056	7273.15	7205.74	5004.36	271.06	270	-65
OSK10-58	243.7	605035.89	5006581.05	69.7649	7228.02	7221.39	5006.77	181.06	180	-83
OSK10-59	200	604892.72	5006594.71	57.11633	7085.10	7237.71	4994.12	181.06	180	-80
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OSK11-02	286	607449.81	5006073.05	58.706	9632.46	6668.57	4995.71	1.06	0	-55
OSK11-03	251	607696.22	5006126.65	67.498	9879.86	6717.59	5004.50	1.06	0	-50
OSK11-04	299	607695.44	5006023.89	65.218	9877.17	6614.85	5002.22	1.06	0	-55
OSK11-05	293	607950.63	5006098.13	70.604	10133.74	6684.35	5007.60	1.06	0	-55
OSK11-06	234	607949.13	5006015.58	69.304	10130.71	6601.83	5006.30	1.06	0	-50
OSK11-07	42.4	605504.01	5006665.74	81.05	7697.70	7297.36	5018.05	181.06	180	-45
OSK11-08	245	605491.22	5006667.16	81.002	7684.94	7299.02	5018.00	181.06	180	-45
OSK11-09	240	605632.73	5006648.70	82.625	7826.10	7277.94	5019.63	181.06	180	-45
OSK11-10	238	605304.63	5006641.98	77.544	7497.89	7277.31	5014.54	181.06	180	-45

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APPENDIX

B RESOURCE ESTIMATE SUPPORT DOCUMENTS

Figure 1 Cumulative Frequency and Distribution Histogram - 1 m Composites within Belts

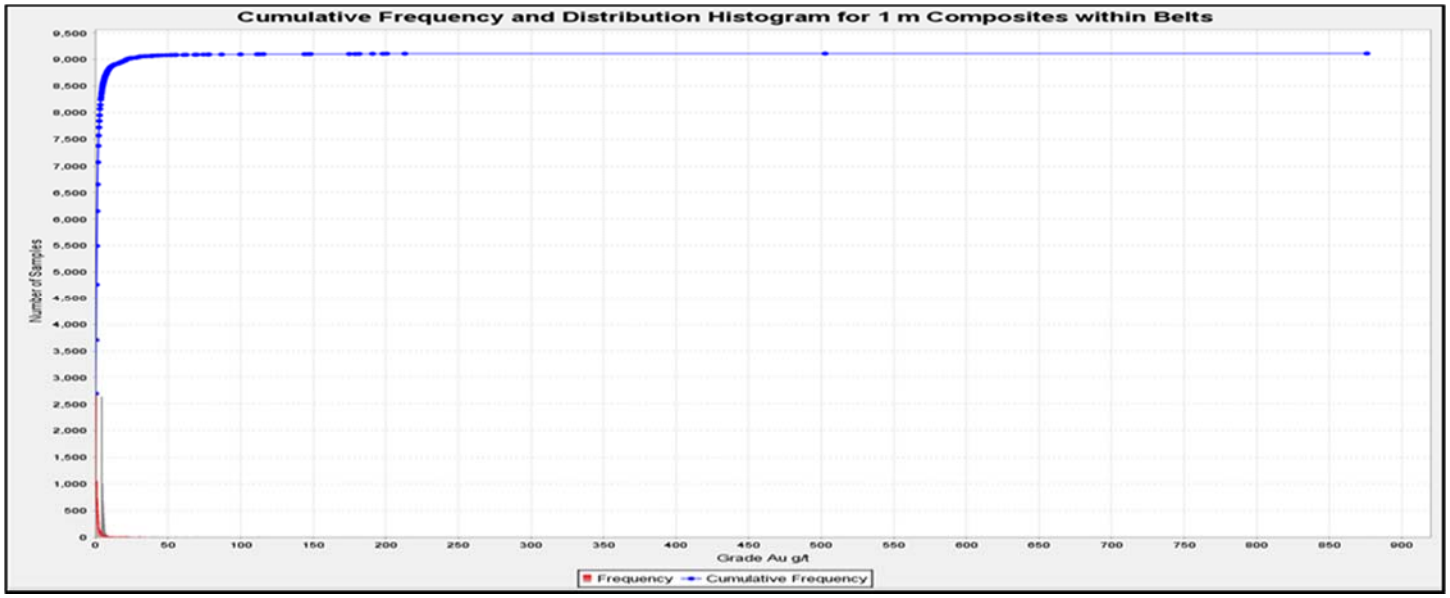


Figure 2 Cumulative Frequency and Distribution Histogram - 1 m 80 g/t Capped Composites

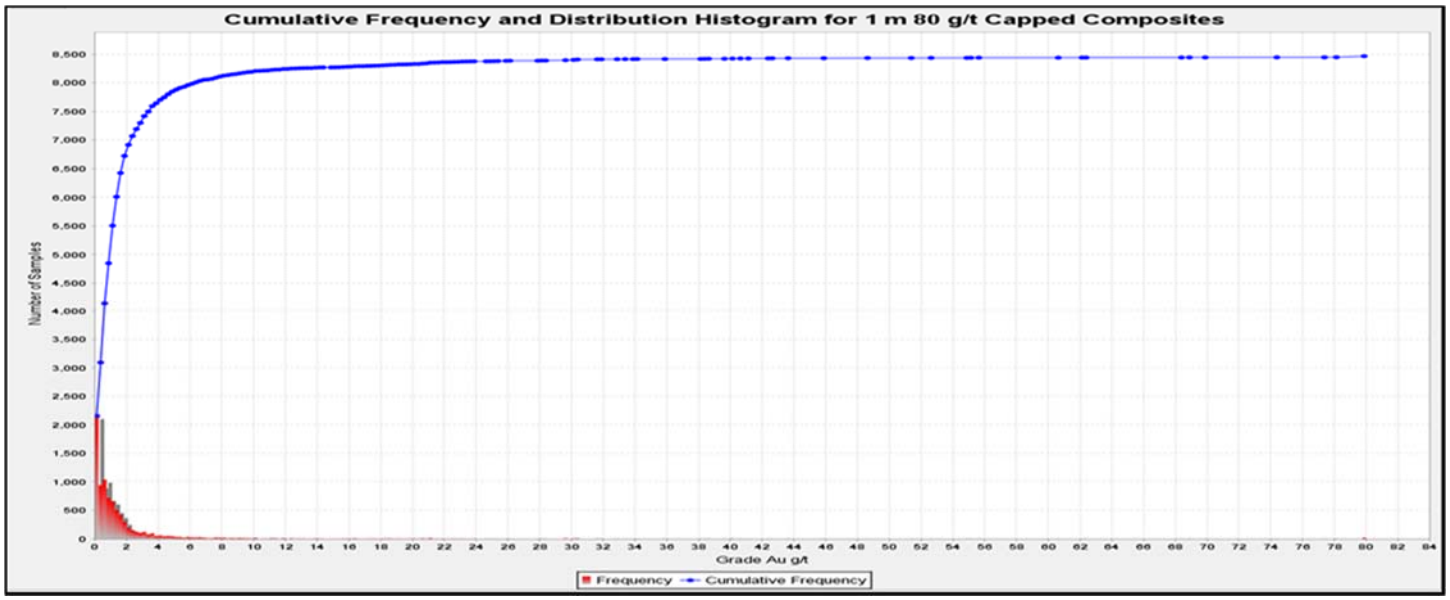


Figure 3 Log Normal Distribution Histogram - 1 m Composites within Belts

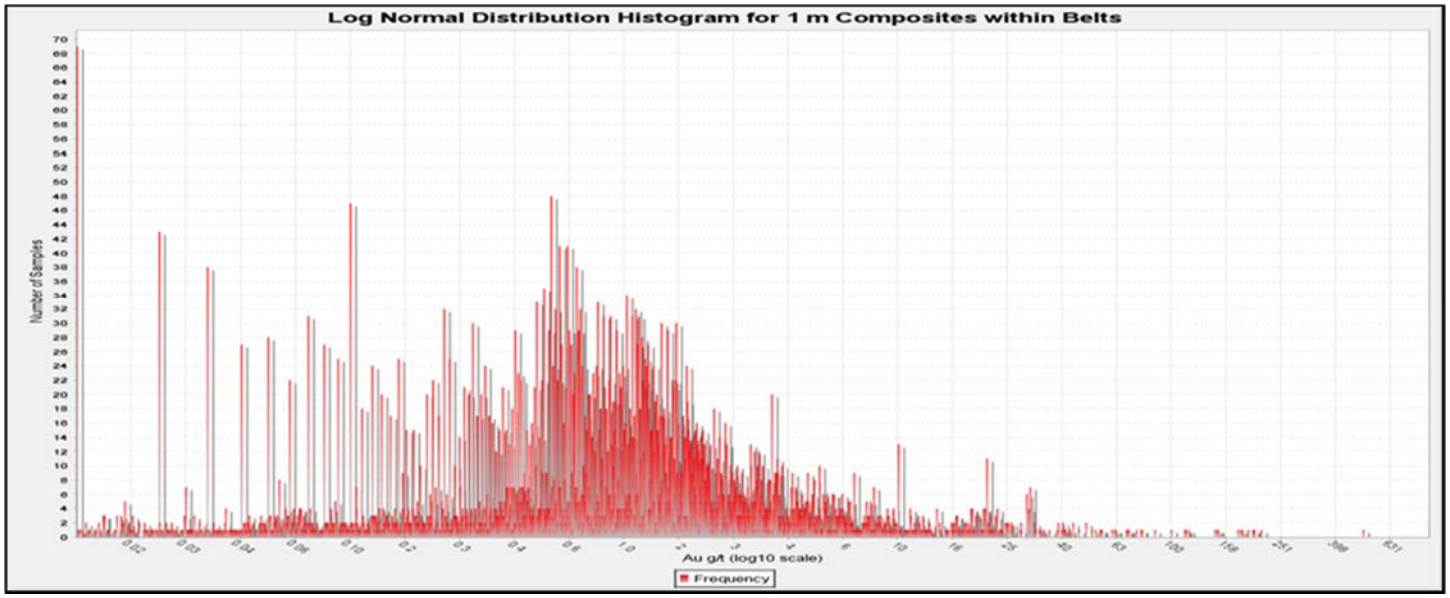


Figure 4 Log Normal Distribution Histogram - 1 m 80 g/t Capped Composites within Belts

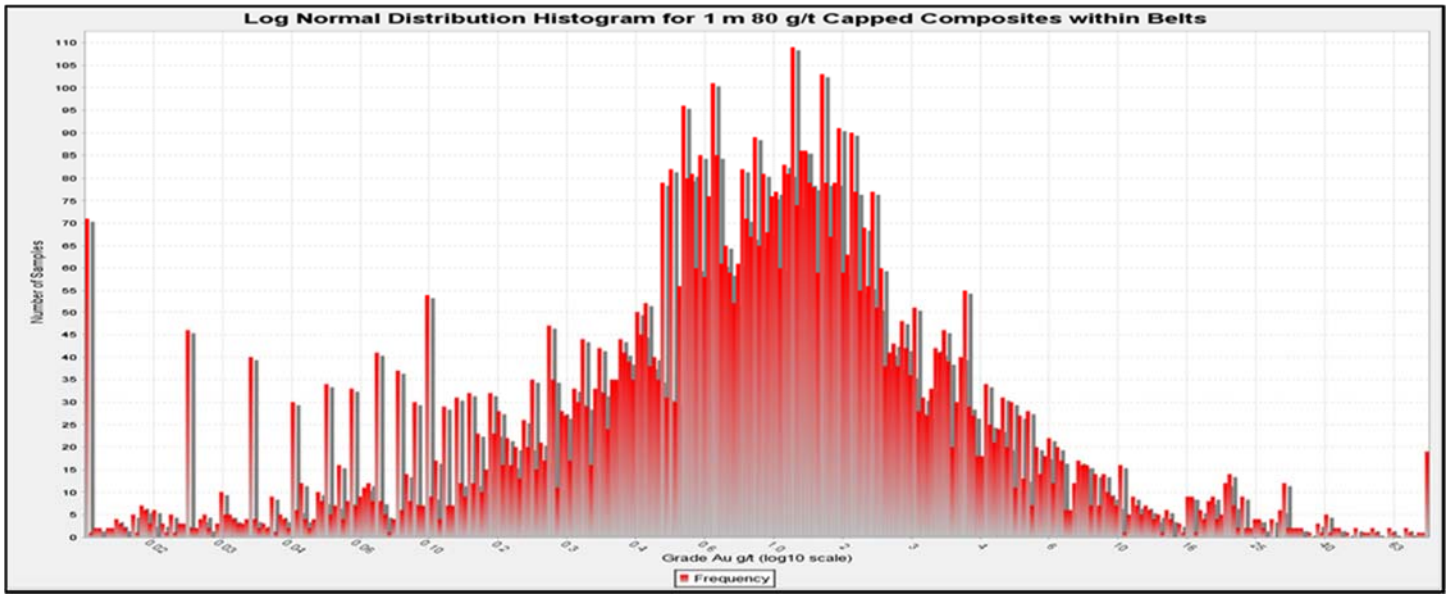


Figure 5 Log Normal Probability Plot - 1 m Composites with Belts

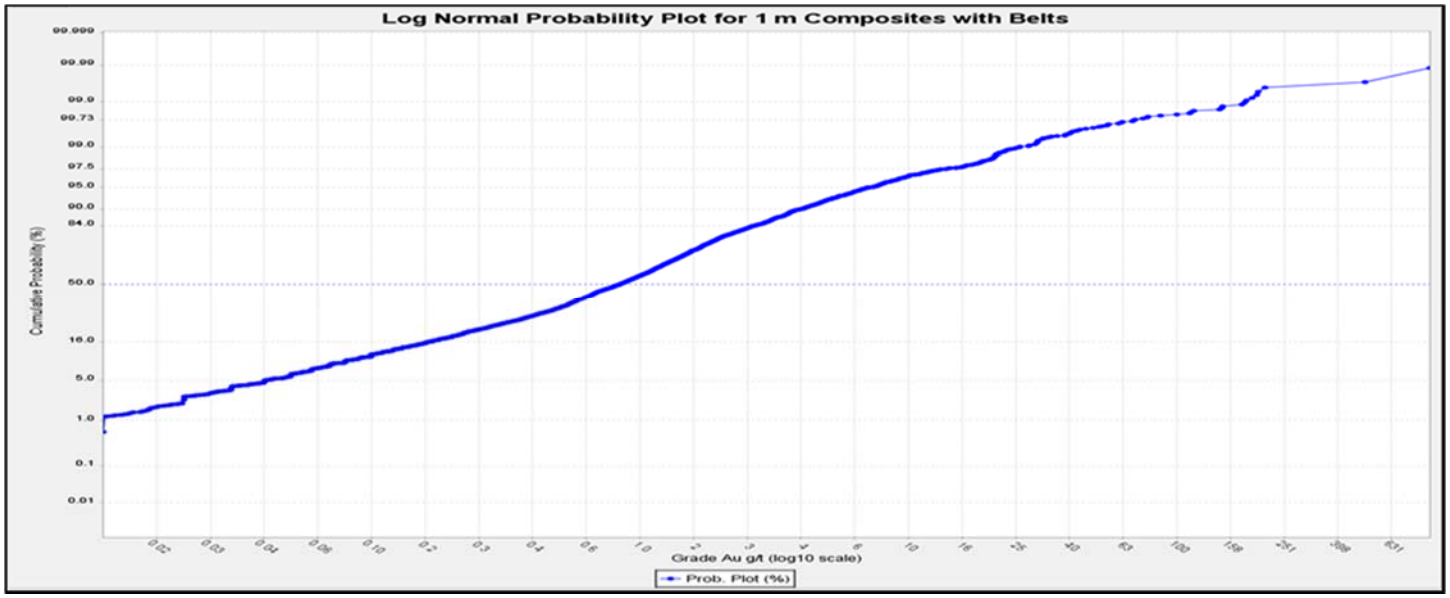
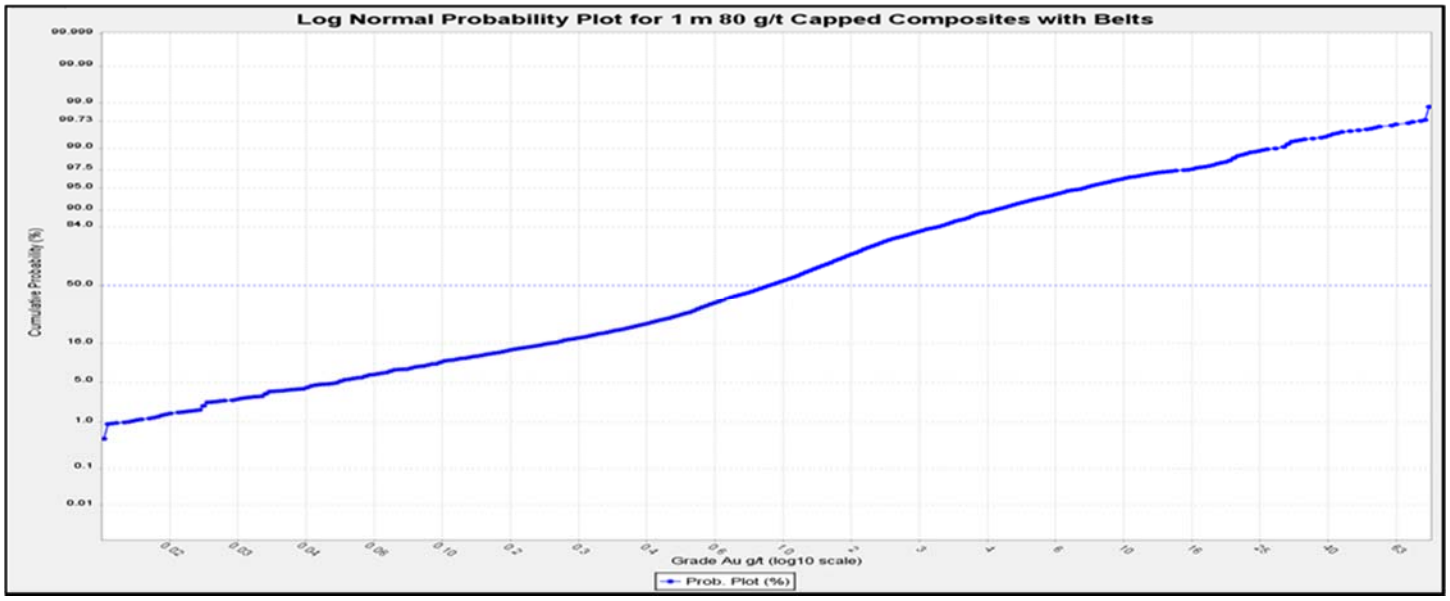


Figure 6 Log Normal Probability Plot - 1 m 80 g/t Capped Composites with Belts



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Goldboro Mine Project:

Archaeological Resource Impact Assessment

HRP# A2017NS034

August 2017

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GOLDBORO MINE PROJECT:
ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT

Heritage Research Permit A2017NS034
Category C

Davis MacIntyre & Associates Limited
Project No.: 17-014.1

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Cover: A historic image of the Boston-Richardson Mine complex from NSDNR's Index of Historical Mining Photography, likely from the 1930s.

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EXECUTIVE SUMMARY

In the summer of 2017, Davis MacIntyre & Associates Limited was contracted by Anaconda Mining to conduct an archaeological resource impact assessment of the proposed Goldboro Project Gold Mine. The assessment included a historic background study as well as a field reconnaissance of all areas to be impacted.

Historic background research has revealed a thriving historic gold mining industry, mainly centred around the Richardson and later Boston-Richardson Mining Company. Mapping evidence has helped to pinpoint areas of activity, and historic photos are readily available to provide a glimpse of the living mine at the turn of the century.

Archaeological field findings during this assessment are consistent with a nineteenth century gold mine, consisting of a key mill complex, a variety of mine shafts and other areas of supporting industrial activity, and some limited domestic activity relating to the mine workers and their families. Although some late twentieth century mining activity is present and has impacted some archaeological features, the isolated nature of the site complex has resulted in relatively good preservation of the archaeological landscape. Dense vegetation throughout poses a difficulty in locating and interpreting archaeological sites, and it appears that vegetation has become much denser than it was during an initial survey in 1988.

The historic mill complex by Gold Brook Lake is the most notable archaeological feature within the study area. This large complex is obviously industrial in nature, and given the size and the known date range of the site, it is unlikely that archaeological testing in this location would be an efficient means of learning more about the site. As such, if soil disturbance – including mechanical clearing of the trees – is proposed within approximately 50m of the provided GPS coordinate for the site, it is required that an archaeologist be contracted to monitor mechanical ground disturbance to ensure that the site is properly mitigated. The same is true of the two stone ramps, which lie approximately 60m northwest of the mill's centre. At the ramp location, a buffer of only 10m is recommended, and if disturbance encroaches upon this buffer, archaeological monitoring is similarly required. The isolated iron object nearby is of unknown function and age. As such it has not been collected for curation, but it would be recommended that prior to ground disturbance this object be more closely examined and the Museum of Industry in Stellarton be consulted to determine if the object is desirable for curation.

It is required that a 20m buffer zone be established around Cellar #1 and Cellar #2, both of which were confirmed as late nineteenth to early twentieth century archaeological features in 1988. If a buffer zone is not feasible, further archaeological testing and recording is recommended to collect valuable information about these features before they are destroyed. This would likely take the form of formal test units (50cm x 50cm) spaced closely around and inside the features, or a series of trench-like excavation units designed to cross-section the features.

Cellars #3 and #4 are smaller and less distinct, and may represent outbuildings or other historic activity of lower significance. As such, archaeological testing at these two locations is recommended prior to ground disturbance within 20m of both features. If these areas will not be impacted by the development, then a 20m buffer would be sufficient to avoid disturbing any archaeological resources that they contain.

The artifact scatter identified near the former office site (gravel pad) does not appear to be associated with any intact archaeological feature. It is possible that a cellar or other feature once existed under the gravel pad, or that the area was simply a semi-modern dump area. As such, it is not currently a location of high concern. However, if during ground disturbance a large quantity of additional artifacts is encountered, it is required that ground disturbance activity should cease and an archaeologist be contracted to assess and possibly monitor the area.

The two depressions of unknown function appear most likely to be related to mining activity, and as such it is unlikely that archaeological testing would be helpful in these locations. As such, it is required that if soil disturbance is likely to take place within 10m of these two depressions, and archaeologist should be contracted to monitor the disturbance and mitigate any significant archaeological resources.

The probable privy associated with Cellar #1 would similarly be unlikely to benefit from archaeological testing unless a test unit was placed directly inside it, which may be a difficult undertaking given the slope of the depression itself. It is therefore required that a 10m buffer be established around this feature, or if this is not possible, professional archaeological monitoring of ground disturbance at this location should b undertaken.

In all five areas identified as having moderate potential for First Nations archaeological resources, archaeological shovel testing should be undertaken to determine whether any archaeological deposits exist at these locations. Testing would consist of a 40cm x 40cm shovel test unit placed every 5m on a grid in areas smaller than 20m x 20m, and every 10m on areas larger than this. As all of these locations border Gold Brook Lake and Gold Brook itself, they may be protected by a buffer zone or set-back area related to other parts of the project's environmental assessment. If this is the case and these areas shall not be disturbed, then testing need not be undertaken.

No mitigation is required for the modern activity areas as indicated in Section 4.0 above.

Finally, in the unlikely event that archaeological resources are encountered that have not been recorded above, it is required that any ground-disturbing activity be halted immediately and the Coordinator of Special Places (902-424-6475) be contacted regarding a suitable method of mitigation.

1.0 INTRODUCTION

In the summer of 2017, Davis MacIntyre & Associates Limited was contracted by Anaconda Mining to conduct an archaeological resource impact assessment of the proposed Goldboro Project Gold Mine. The assessment included a historic background study as well as a field reconnaissance of all areas to be impacted.

This assessment was conducted under Category C (Archaeological Resource Impact Assessment) Heritage Research Permit A2017NS043 issued by the Department of Communities, Culture and Heritage. This report conforms to the standards required by the Culture and Heritage Development Division under the Special Places Protection Act (*R.S., c. 438, s. 1*).

2.0 STUDY AREA

Anaconda Mining has recently acquired the Goldboro Gold Deposit from Orex Exploration Inc. The deposit is located on tidewater at the head of Isaac's Harbour and at the south end of Gold Brook Lake in Goldboro, Guysborough County, where it contains 457,400 Measured and Indicated ounces of Gold and 372,900 Inferred ounces. Anaconda intends to commence mining activities at the site following an environmental assessment and project approval. The area was subjected to previous mining ventures in the nineteenth and twentieth centuries.

The operation will likely consist of a combination of open-pit and underground mining. For the purposes of this archaeological assessment, the archaeological team has assessed approximately 130 hectares of land estimated for the open pits and stockpiles of the mine (Figure 2-1). If only an underground mine is undertaken instead, it is currently understood that a smaller space within this area will be impacted.

The study area is located in the Guysborough Harbours Unit (Theme Region #842) which is part of the Quartzite Headlands district, Atlantic Coast region. This unit extends from Marie Joseph to New Harbour Cove and is characterized by a submerged coastline with drowned estuaries separated by headlands. Movements along the Chedabucto Fault have resulted in long, narrow, relatively straight valleys that have been inundated by the sea and now form long narrow inlets. A thin quartzite till overlays the bedrock in this unit and there are several areas of exposed bedrock. Coastal sediment is limited so that there are few sand beaches and the coastal fringes tend to be rocky or cobbly.[1]

[1] Davis and Browne 1996:207-208.

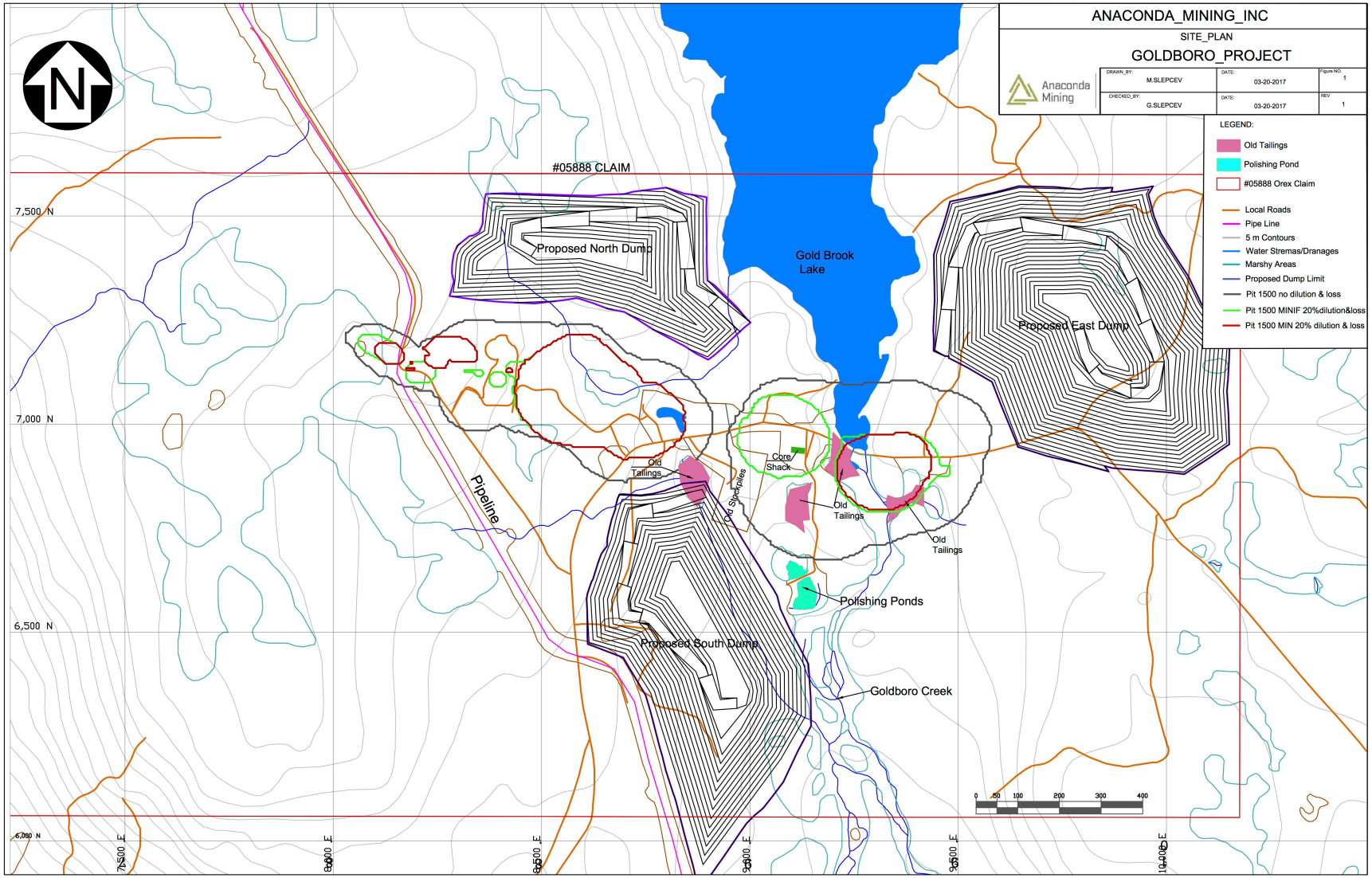

Figure 2-1: A map showing the proposed locations of three dump areas and two mining areas surrounding Gold Brook Lake. Courtesy Anaconda Mining.

Lakes in this unit tend to be oligotrophic meaning they contain relatively few plant nutrients but are high in oxygen at their depths. There are a few small freshwater wetlands and tidal marshes and some eel grass beds can be found. [2]

In better-drained areas, forests are predominantly softwood consisting of White Spruce, Balsam Fir, maple and birch. On wetter soils, Black Spruce, larch, and Balsam Fir predominate. Huckleberry is common on the barren and semi-barren areas. [3]

3.0 METHODOLOGY

A historic background study was conducted by Davis MacIntyre & Associates Limited in June and July 2017. Historical maps and manuscripts and published literature were consulted at the Nova Scotia Archives as well as online. The Maritime Archaeological Resource Inventory, a database of known archaeological resources in the Maritime region, was searched to understand prior archaeological research and known archaeological resources neighbouring the study area. Finally, a field reconnaissance was conducted in order to further evaluate the potential for archaeological resources.

3.1 Maritime Archaeological Resource Inventory

The Maritime Archaeological Resource Inventory, a database of known archaeological sites in the Maritime Provinces, was consulted in July 2017.

Only two archaeological sites are recorded in this area. The first is located within the study area, and includes elements of previous mine activity in the nineteenth and early twentieth centuries (BhCj-2). The second, BhCj-1, is a site of general First Nations activity including ceramic and lithic artifacts located in Isaac's Harbour.

3.2 Historical Background

3.2.1 The Precontact Period

Nova Scotia has been home to the Mi'kmaq and their ancestors for at least 11,500 years. A legacy of experience built over millennia shaped cultural beliefs and practices, creating an intimate relationship between populations and the land itself. The complexity of this history, culturally and ecologically, is still being explored.

[2] Davis and Browne 1996:207-208.
[3] Davis and Browne 1996:207-208.

The earliest period is *Sa'qiwe'k L'nu'k* (the Ancient People) or the Paleo-Indian period (11,500 – 9,000BP). The changing ecology following deglaciation allowed the entrance of large herds of migratory caribou into Nova Scotia, followed by Paleo-Indian groups from the south.[4] Currently, the Debert/Belmont Sites provide the only significant evidence of Paleo-Indian settlement in the province. Commonly believed to be big-game hunters, research is now aimed at exploring the diverse subsistence patterns that may have supported populations, and what adaptations were made when the environment shifted once again in the early Holocene.[5]

Succeeding the *Sa'qiwe'k L'nu'k* is the *Mu Awsami Kejikawe'k L'nu'k* (the Not so Recent People) or the Archaic Period (9,000-3,000 BP). This time saw a reorientation to a more maritime subsistence, with settlement pivoting more towards coastal areas, lakes and bountiful riverine resources.[6] Remnants of these sites along the coast have largely been engulfed by rising seas or battered by wind and wave, though interior sites are increasingly being discovered.[7] Ground stone tools, specialized for wood-working, appear at this time and may have been used to create dug-out canoes. Numerous traditions and distinct technologies have been documented throughout Maine and the Atlantic provinces. A growing catalogue of exotic cultural components demonstrates that groups within Nova Scotia were engaged in spheres of interaction spanning hundreds of kilometers. Unfortunately, a lack of formally excavated sites within Nova Scotia still obscures the degree to which these traditions were present.

By the *Kejikawe'k L'nu'k* (the Recent People) or Woodland/Ceramic period (3,000-500 BP), the Mi'kmaq were a maritime people.[8] Known Woodland/Ceramic sites concentrate along coasts shorelines, and navigable watercourses. Migration of ideas and people introduced new worldviews and technologies from groups originating in places like northern New England and the Great Lakes area, to local populations, including the earliest ceramic forms. Harvesting of marine molluscs and shellfish appears in this period, and substantial shell-middens have gifted archaeologists with well-preserved records of these past lives.[9] Fish weirs populating the province's rivers and streams speak to the importance of migrating fish species to Mi'kmaq life. Terrestrial hunting and foraging was practiced with varying degrees of intensity depending on seasonality and region. A generally stable cultural form is believed to have developed by 2,000 BP, forming the way of life first encountered by Europeans arriving on our shores.[10]

[4] Newby et al. 2005: 151
[5] Lothrop et al. 2011: 562
[6] Tuck 1975
[7] Deal et al. 2006
[8] Davis 1993: 100
[9] Davis 2005: 18
[10] Wicken 2004: 26

Mi'kmaw life was substantially altered in the *Kiskukewe'k L'nu'k* (Today's People) or Contact Period (500 BP- Present). Trade and European settlement introduced change and upheaval to the traditional way of First Nation life. Mobile hunting and gathering still defined Mi'kmaw life, with identity residing within family households.[11] Trading posts and fishing villages became intersections of European and Mi'kmaq interaction, affecting traditional seasonal rounds and access to land. The hunting of fur-bearing mammals intensified to satisfy the mutual exchange of skins for European goods.[12] It is not accurate, however, to say that Mi'kmaq *adopted* European goods and culture, but rather *adapted* it. The Mi'kmaq remained an influential social and political force well into the 18th century, forming a triadic narrative of contention with the English and French. However, disease, conflict, and alienation from the land wreaked a ruinous effect on the Mi'kmaq by the 19th century, pushing people to the margins of colonial society.[13]

Mi'kmaq Period	Archaeological Period	Years
Sa'qewe'l L'nu'k (the Ancient People)	Paleo-Indian	11,500 – 9,000 BP
Mu Awsami Kejihaw'k L'nu'k (the Not so Recent People)	Archaic	9,000 –3,000 BP
Kejihawek L'nu'k (the Recent People)	Woodland/Ceramic Period	3,000 –500 BP
Kiskukewe'k L'nu'k (Today's People)	Contact	500 BP – present

Table 1: Mi'kmaq/Archaeological Cultural Periods

The Mi'kmaq inhabited the territory known as *Mi'kma'ki* or *Megumaage*, which included all of Nova Scotia including Cape Breton, Prince Edward Island, New Brunswick (north of the Saint John River), the Gaspé region of Quebec, part of Maine and southwestern Newfoundland (Figure 3-1). The area of Halifax and Guysborough Counties was known by the Mi'kmaq as *Eskikewa'kik* meaning "skin-dresser's territory."[14] The area surrounding Isaac's Harbour was known as *Anakwe'katik*; "at the flounder place". Nearby Country Harbour was called *Mulapukwek* "gullied and deep place", Country Harbour Head, *Wi'sikk* "shaped like a beaver's den" and Holland Harbour was known as *Wskitiamka'taqnek* "where canoes are carried across the sandbar".[15]

[11] Ibid: 30
[12] Whitehead 1993: 89
[13] Reid 2009
[14] Confederacy of Mainland Mi'kmaq 2007:11.
[15] Ta'n Weji-sqalia'tiek <URL>

The area of Goldboro was the home of at least two known Mi'kmaq encampments before the arrival of the Europeans. One is located at Schoolhouse Brook, which is believed to be a burial ground, and at the head of Issacs's Harbour. Locals have also indicated the possibility of a third encampment at Webb's Cove.

Figure 3-1: Map of the Mi'kmaq districts.[16]

3.2.2 European Settlement

In the seventeenth century, Isaac's Harbour was known to the French as Raspberry Harbour. After 1720, its name was changed to Port Hinchingbrook by the English, named after Viscount Hinchingbrook, Earl of Sandwich.[17] There is no documented European settlement in Port Hitchingbrook prior to 1817.

In 1784, disbanded members of the King's Rangers from the Carolinas settled at Country Harbour to the west. In 1817, the homes and buildings of theses settlers were destroyed in the "August Gale" and many abandoned the settlement, moving further inland or returning to the United States. One Black Loyalist settler, Isaac Web, found himself abandoned by his master and decided to move his family to the east side of Port Hitchingbrook which was unsettled save for a few native encampments. Webb built a large white farmhouse and it is said that his family was "industrious and saving and soon were in prosperous circumstances."[18]

[16] Based upon Confederacy of Mainland Mi'kmaq 2007:11.
[17] Cooke 1976:7; East Chronicle.
[18] Hart 1975: 153.

The name of Port Hinchingbrook was again changed after 1830 when some fishermen from the western end of the province were caught in a storm returning from Labrador. They took shelter in Port Hinchingbrook and there they met Isaac Web who, as the story is often told, welcomed and provided hospitality for anyone in need or want of it.[19] The following spring, these fishermen and their families, along with settlers from Shelburne County and several remaining families of the King's Rangers from Country Harbour began moving to Port Hinchingbrook. The majority of them, it seems, settled on the west side of the harbour. The community became known as Isaac's Harbour after the hospitable pioneer the settlers found there. Several families of the Black Loyalists settled around what is now Webb's Cove. Among them were the Webbs, of course, along with the Clykes, Harrigans, and Parises. Most of the early Black Loyalists were fisherman.[20]

The first settlers were Baptists and their church was built in 1840 on the west side of the harbour. These settlers from the east side travelled to the church by boat. It was not until 1899 that a church was built on the east side of the harbour.[21] Although the Black Loyalist settlers on the east side were originally members of the Baptist church in Isaac's Harbour West, it appears that most, if not all, of them were buried in a cemetery at Red Head on the east side of the harbour rather than in the church cemetery on the west side. No burial records for the Red Head cemetery have been located and only one headstone was ever known in the cemetery, although an archaeological excavation in 2001 resulted in the discovery and removal of 24 burials. The single carved headstone in the cemetery was that of Henry Webb who died in 1935 and was the last surviving descendent of the original settlers remaining in Isaac's Harbour East.[22]

On March 11, 1898 Isaac's Harbour East was renamed "Goldboro" by an act of Legislature, due to the discovery of gold in mid-nineteenth century.[23] This gold was first found in the veins of quartz of the west side of Issacs Harbour's anticline on 14 September, 1861 by amateur prospector Joseph Hines. It was discovered a short time later on the east side of the harbour by two natives, on what became known as the Mulgrave lead. By 1862, several leads had been discovered and were in operation throughout the district including the Mulgrave and Victoria leads in Goldboro. On the Mulgrave lead, 15 shafts were sunk varying from 15 to 60 feet in depth. Three shafts were sunk on the Victoria Lead. In 1866, Gallagher and Company mined the Mulgrave lead and sunk a shaft 230-feet deep and connected it to a 238-foot deep shaft 100 feet to the east. By September of that year, 6,636 ounces of gold had been extracted from Isaac's Harbour, the average yield being two ounces, two pennyweights, and one gram. Issacs's Harbour Company mined two shafts on the Victoria lead until its crusher was

[19] Cooke 1976:9; Jost n.d.:86; MacMillian n.d.:98.
[20] Cooke 1976:9-10, 196; PANS MG 100 Vol.168.
[21] Cooke 1976;43-47; MacMillian n.d.:98.
[22] Niven, et. Al. 2001.
[23] Statutes of Nova Scotia 1898.

lost to fire in 1868 and work was halted. The Mulgrave lead continued to be mined and in 1869, two more shafts were sunk 437 feet south of the Mulgrave lead, 900 feet apart. Southeast of the north Mulgrave lead, a belt 600-feet long was discovered in September and mined. The Mulgrave lead continued to be mine at varying rates and under various management firms well into the twentieth century.[24]

In 1892, Howard Richardson was the first to record the occurrence of gold in the slate belt found within the study area. Later that year, Richardson would develop this belt with the Richardson Mining Company (Figures 3-2 through 3-7). This belt would be named after its founder.[25] The Richardson Gold Mine went into operation in 1893 and was at full capacity in 1896. Ore grades averaged 0.38 ounces of gold per short ton, a gold recovery of 50%-60%. In 1897, three additional shafts were created to recover ore that was located at a depth of 60 meters. By the turn of the century, the main shaft was at a depth of 160 meters, and selective mining facilitated the need for two Wilfley concentrators. By 1901, yield was so great that two more Wilfley tables were employed and a vertical mine shaft was sunk a year later.[26]

Despite the success of the Richardson lead, the Boston-Richardson Mining Company acquired the mine in 1903, and continued to sink the vertical shaft to 122 meters. Lands acquired by Boston-Richardson can be seen on the Land Grant Index, which envelops the study area (Figure 3-8).

On the 23rd of August 1903, a serious cave-in occurred in the upper portions of the old workings, around the north leg of the fold for approximately 300 feet (Figure 3-9). The cause of this cave was suspected to be an insufficient number of pillars. All of the men survived by escaping through other mine shafts. As a result of this cave, an underground watercourse was disrupted, letting in approximately 300 gallons of water a minute, when the workings formally were adapted for only 100 gallons per minute. The workings were later abandoned, including 6,500 tons of broken and unbroken ore, as upgrading the pumping system to accommodate this new flowage would prove to be too costly. Attention was given to the recovery of drills, cars, rails, and other underground equipment, with the recovery efforts halted on the 31st of August.[27]

By 1906, a bromo-cyanide plant was built and subsequently increased gold recovery to 70%. Operations were suspended due to financial difficulties on the 15th of August, 1908. Between 1893 and 1910, 54,871 ounces of gold were recovered from the Boston-Richardson Mine. The mine was then taken over by a third company, New England Mining Co., in 1909. [28]

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[24] Malcolm 1912:97-99.
[25] Bourgoin, 2004:11.
[26] Ibid
[27] Cooke, 1976: 160
[28] Bourgoin, 2004:12.

The East Goldbrook mine, located on the eastern side of Gold Brook Lake, opened with the sinking of its first shaft in 1907 (Figure 3-10). In 1908, three ore belts were explored and work appears to have continued into the 1930s (Figures 3-11 through 3-16). However, little ore was recovered, and work was eventually abandoned. During the 1980's further exploratory drilling into the Boston-Richardson belt was conducted by Patino Mines Ltd. Several other firms from then had attempted to reproduce the earlier success of this belt through into the 1990's, even refurbishing the mineshaft, with little success turning these explorations into full operations.[29]

Historic maps reveal little about the settlement history of the study area, land not having been granted by the province until the nineteenth century. The 1776 Atlantic Neptune does not show any settlement on Isaac's Harbour (Port Hinchingbrook). Nor does the 1834 Great Map of Nova Scotia, although the main road along the shore is shown. Ambrose F. Church's map of Isaac's Harbour, published in 1876, shows several wharves and stores along the shore, along with a lobster factory and mines (Figure 3-17). Homes and a school are also along the shoreline of the Harbour, however no roads are present to the south of Gold Brook Lake (former Seal Harbour Big Lake/ Upper Seal Harbour Lake) suggesting there was little to no historic settlement in the area previous to mining explorations during the late 19th century.

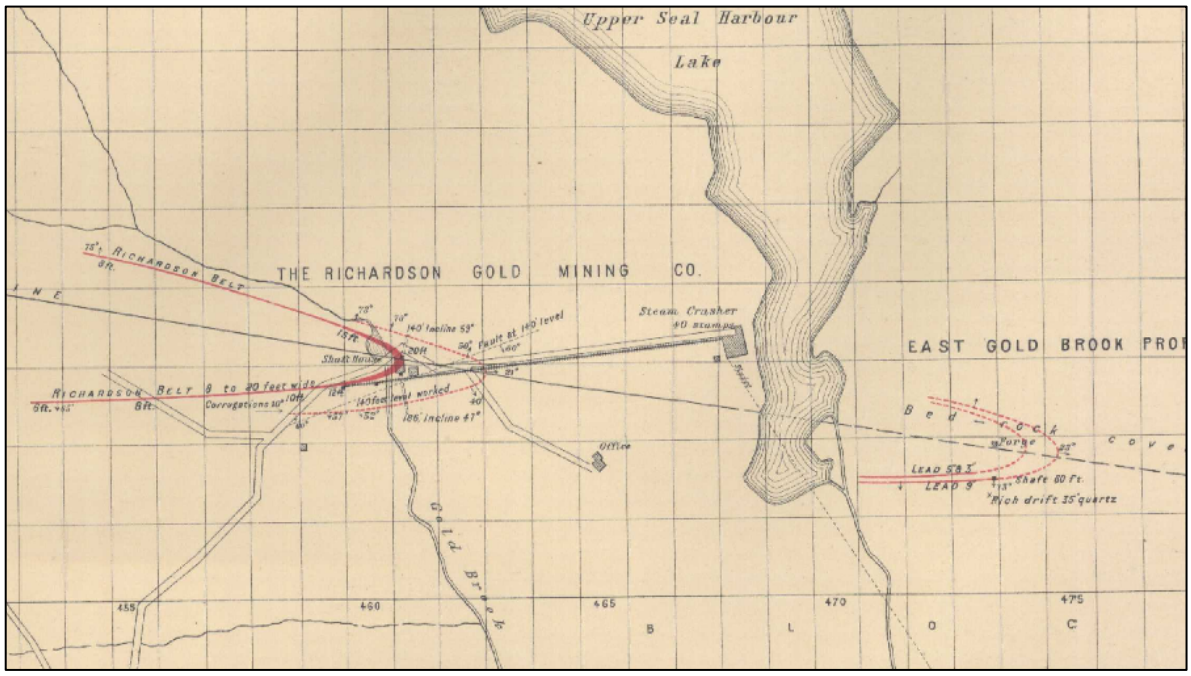

Figure 3-2: Faribault's 1899 Geological Survey of Canada map, Plan and Sections, Upper Seal Harbour, Guysborough County, Nova Scotia, depicting the extent of mining operations at the turn of the 20th century. The causeway across Gold Brook is to access the East Gold Brook operations is not present.

[29] Ibid:13.