Baffinland Iron Mines LP
Mary River Expansion Stage 3

Definitive Study Report

Section 12 – Capital Costs

2017-05-01	0	Approved for Use	R. Villeneuve	A. Brathwaite	N. Mason	BIM
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12. Executive Summary

This section outlines the estimate basis for the Definitive Study – Stage III capital cost estimate (CAPEX). This section is to be read in conjunction with the complete study report in preparation for onsite execution of additional facilities, rail, equipment and the transport infrastructure from the Mine to the Port.

A complete Basis of Estimate can be found in Appendix A12-1 of this document.

12.1 Capital Cost Estimate Summary Level 1

The total installed cost summary for the Definitive Study – Stage III is included in 12.1. The estimate meets the requirements of an AACE Class 3 capital cost estimate.

Table 12-1: Total Installed Cost (TIC) by WBS and Cost Type (USD Millions)

	Equipment	Material	Labour	Freight	Sub-Contract	Total	% of TIC
1000 - Mine	17.8	1.2	1.3	0.0	23.1	43.4	5%
2000 - Iron Ore Process Plant And Onsite Infrastructure	31.9	1.5	0.1	0.0	6.2	39.7	4%
3000 - Rail	30.9	0.0	0.3	0.3	251.3	282.8	30%
4000 - Port	79.1	13.7	65.7	0.1	95.2	253.8	27%
5000 - Other Off Site Infrastructure	0.0	0.0	0.0	0.0	0.0	0	0%
Direct	**159.7**	**16.4**	**67.4**	**0.4**	**375.8**	**619.7**	**66%**
6000 - Construction Facilities And Support	4.4	4.1	5.0	80.7	105.4	199.6	21%
7000 - Implementation Contractor's Services	0.2	0.0	3.5	0.0	43.8	47.5	5%
Indirect	**4.6**	**4.1**	**8.5**	**80.7**	**149.2**	**247.1**	**26%**
8000 - Owner's Cost	0.0				**29.6**	**29.6**	**3%**
9000 - Contingency / Escalation / Risk	0.0				**40.3**	**40.3**	**4%**
Total	**164.3**	**20.5**	**75.9**	**81.1**	**594.9**	**936.7**	**100%**

A copy of the detailed estimate can be found as Appendix A of the final Basis of Estimate, which is Appendix A12.1 of this Section.

12.2 Capital Cost Estimate Summary by Package

The following table outlines the capital value of packages sorted by highest value.

Table 12-2: Total Installed Cost (TIC) by Package

Package	Feasibility Total
CM001 - Bulk Materials Handling & Processing	$ 228,295,587
CC002 - Earthworks North	$ 109,585,963
CC003 - Earthworks South	$ 109,566,643
TR001 - Rail System	$ 107,370,507
YH002 - EPCM Services Execution	$ 40,109,474
CG001 - Ore Dock	$ 37,724,550
ZF001 - Fuel Supply	$ 30,033,985
TX001 - Const. Accommodation Camp and Services	$ 29,773,064
ZL001 - Sea Lift Standard Freight	$ 26,698,650
PR001 - Locomotives	$ 18,600,417
PM100 - Mobile Equipment-Mine Production	$ 17,545,775
PR002 - Ore Wagons	$ 13,749,904
TX003 - Workshops	$ 12,723,348
TX002 - Permanent Accommodation Camp	$ 12,214,800
ZX004 - Air Services Passenger	$ 10,904,723
CX001 - Wrap Around MEIP	$ 10,786,271
ZX005 - Air Services Freight	$ 8,116,529
ZX009 - Air Services - Passenger from regional airports to Mirabel	$ 6,695,668
TM001 - Fuel Storage	$ 5,252,968
CC001 - Early Earthworks	$ 5,229,654
PE002 - Power Generation	$ 4,935,000
ZL004 - Consolidation Hub	$ 4,417,307
ZG001 - Site Survey	$ 3,734,148
ZX992 - Capital Spares	$ 3,564,376
YH003 - EPCM Office Supplies and Consumables	$ 2,514,833
PC001 - Pre-Cast Concrete	$ 2,216,004
BE001 - Power Cables	$ 1,714,883
ZX006 - Communications and Data Services	$ 1,331,391
YE999 - Third Part Vendor and Pre-Assembly Yard QA-QC	$ 1,152,000
PM201 - EPCM Trucks	$ 1,076,220
PM200 - Mobile Equipment-Other	$ 894,127
PM007 - Jaw Crusher Upgrade	$ 823,614
ZX011 - Transport of HME from Milne Port	$ 591,441

YH001 - EPCM Services-Early Works	$	381,421
ZX010 - Early Works Camp Cost	$	341,346
PE001 - Power Distribution E-Houses	$	233,275

12.3 Estimate Parameters

- The capital estimate is compliant with both the Estimating Plan, as well as the Capital Cost Estimating Guidelines Document as provided by BIM. The estimate meets the requirements of an AACE Class 3 capital cost estimate.
- Estimate was assembled in Source Currency, and is reported in USD Dollars.
- Forex rates provided by BIM as outlined in Section 12.4.
- All dimensions and commodities were measured in metric units.
- An estimate base date of Q2 2017.
- All applicable taxes are included in the estimate, except for value added taxes.

12.3 Purpose

This section describes the estimating guidelines and basis used to compile the estimate and inputs into the Definitive Study Estimate for the Mary River Expansion Study – Stage III. The estimate has been compiled utilizing information from the project team, the client, suppliers, contractors, and sub consultants. The practices and procedures outlined in this document were used to create a consistent understanding of:

- Estimate Definitions and Structure.
- Estimate Assumptions.
- Methodology used to produce the estimate.
- The deliverables required to support the estimate.

12.4 Foreign Exchange

The estimate is based on foreign exchange rates as supplied by BIM is summarized in Table 12-3.

Table 12-3: Foreign Exchange Rates Applied to the Estimate

Currency Code	Origin	Conversion Rate	Inverse Rate
USD	United States Dollar	1	1
CAD	Canada Dollar	0.7355	1.36
EUR	European Euro	1.0867	0.92

The foreign currency exposure for the estimate are broken down as follows:

Table 12-4: Foreign Currency Cost Exposure

Currency Code	Currency	Total (USD Millions)	% of TIC
USD	United States Dollar	144.21	15%
CAD	Canada Dollar	724.08	77%
EUR	European Euro	68.55	7%
TOTAL		**936.84**	**100%**

It is assumed that TR001 although estimated in USD will be awarded in CAD. As most of the costs will be in CAD it is assumed that contingency will be in CAD as well.

12.5 Basis of Capital Cost Estimate

12.5.1 Estimate Terminology

The capital cost estimate consists of four major cost groupings; Direct Costs, Indirect Costs, Contingency and Owner's costs. The overall estimate is based on FS level project definition. Each of these cost grouping are summarized in the sub-sections which follow.

12.5.2 Direct Costs

Direct costs include the cost of all equipment and materials, together with construction and installation costs for all permanent facilities. This includes:

- Supply, assembly and installation of equipment.
- Supply, fabrication and installation of bulk materials.
- Supplemental resources for equipment and bulk material installation, such as labour and, consumables.
- General construction plant and equipment.
- Construction distributable cost such as contractor Indirects.
- Further details are provided in Section 12.6 of this Section.

12.5.3 Indirect Costs

Indirect costs include items that are necessary for the completion of the project, but are not directly related to the direct construction costs. Further details are provided in Section 10.

12.5.4 Owner's Costs

The Owner's Cost estimate covers the period from approval to proceed with project execution, through to project handover to the operations group and close out. Further details are provided in Section 12.23.

12.5.5 Contingency and Other Provisions

Contingency included in the capital cost estimate is an allowance for normal and expected items of work which have to be performed within the defined scope of work covered by the estimate, but which could not be explicitly foreseen or described at the time the estimate was prepared. Further details are provided in Section 21 of the report.

12.6 Direct Cost Basis

Direct costs are generally quantity based and include all of the permanent equipment, materials and labour associated with the physical construction of the permanent process facility.

This section describes the methodology for estimating the direct costs. The direct cost is summarized in Table 12-5 below.

Table 12-5: Direct Cost Summary by WBS Level 2

Description	WBS	USD Millions	% of Direct Cost	% of TIC
Mine	**1000**	**43**	**7%**	**5%**
Site Development	1500	4.5	1%	0%
Services & Utilities	1600	1.4	0%	0%
Mobile Equipment	1700	10.1	2%	1%
Mine Ancillary Facilities	1800	17.1	3%	2%
Mine Materials Handling	1900	10.3	2%	1%
Iron Ore Process Plant And Onsite Infrastructure	**2000**	**40**	**6%**	**4%**
Process Plant	2300	36.3	6%	4%
Utilities & Onsite Infrastructure	2800	0.7	0%	0%
Process Ancillary Facilities	2900	2.8	0%	0%
Rail	**3000**	**283**	**46%**	**30%**
Terminals / Yards	3100	35.7	6%	4%
Mainline CN 2.80 km to 90.00 km	3200	152.8	25%	16%
Mainline Ch 90.00 km to CH 106.00 km	3300	33.4	5%	4%
Sidings	3400	2.9	0%	0%
Bridges	3500	21.0	3%	2%
Locomotives & Rolling Stock	3600	29.7	5%	3%
Services & Utilities	3700	0.0	0%	0%
Rail Ancillary Facilities	3900	7.1	1%	1%
Port	**4000**	**254**	**41%**	**27%**
Port terminal	4100	80.6	13%	9%

Description	WBS	USD Millions	% of Direct Cost	% of TIC
Ore Handling	4200	62.2	10%	7%
Wharf & Marine Structures	4600	34.2	6%	4%
Loadout	4700	44.3	7%	5%
Utilities & On-site Infrastructure	4800	32.6	5%	3%
Port Ancillary Facilities	4900	0.0	0%	0%
Total Direct Costs		**620**	**100%**	**66%**

12.7 Formal Procurement Bid Process

In supporting the intended level of accuracy for the feasibility study, the Procurement Team solicited bid pricing as per the Procurement Package Register (PPR), ensuring alignment in both technical compliance with the scope, as well as commercial compliance with the anticipated terms and conditions of the project.

The procurement team adjudicated and analyzed the bids for recommendations and inclusion into the capital estimate identifying the cost recommendation, including cost additions that may have aligned for scope adjustments, additional costs required associated with identified gaps and exclusions, including appropriate cost growth as applied.

The bid recommendation identified the preferred choice based on the preliminary evaluation completed, and were ready for further negotiation and award by BIM.

Detailed basis of assumptions for all bid packages received can be found in the final Basis of Estimate, which is Appendix 12.1 of this Section.

The following table outlines the packages that received market solicitation that were supported by market price solicitation, and the anticipated commercial model at execution.

Table 12-6: Package Estimated Values

Package	Type	Total Package Cost USD
BE001 - Power Cables	Lump Sum	$ 1,714,883
CC001 - Early Earthworks	T&M	$ 5,229,654
CC002 - Earthworks North	Fixed Unit Rate	$ 109,585,963
CC003 - Earthworks South	Fixed Unit Rate	$ 109,566,643
CG001 - Ore Dock	Fixed Unit Rate	$ 37,724,550
CM001 - Bulk Materials Handling & Processing	Lump Sum	$ 228,295,587
CX001 - Wrap Around MEIP	Other	$ 10,786,271
PC001 - Pre-Cast Concrete	Fixed Unit Rate	$ 2,216,004
PE001 - Power Distribution E-Houses	Lump Sum	$ 233,275
PE002 - Power Generation	Lump Sum	$ 4,935,000

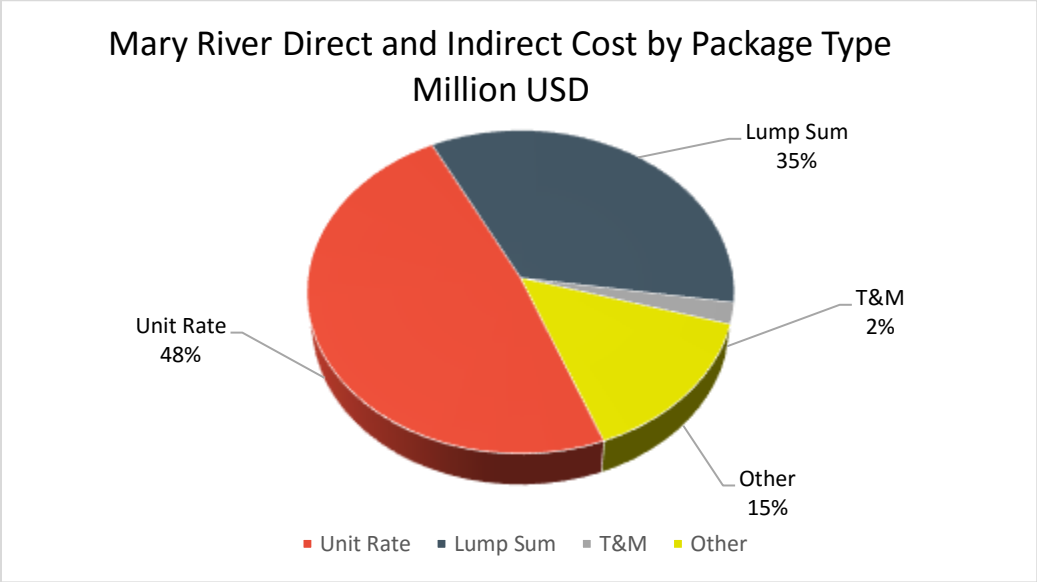
Package	Type	Total Package Cost USD
PM007 - Jaw Crusher Upgrade	Lump Sum	$ 823,614
PM100 - Mobile Equipment-Mine Production	Lump Sum	$ 17,545,775
PM200 – Mobile Equipment-Other	Other	$ 894,127
PM201 – EPCM Trucks	Other	$ 1,076,220
PR001 - Locomotives	Lump Sum	$ 18,600,417
PR002 - Ore Wagons	Lump Sum	$ 13,749,904
TM001 - Fuel Storage	Lump Sum	$ 5,252,968
TR001 - Rail System	Other	$ 107,370,507
TX001 – Const. Accommodation Camp and Services	Fixed Unit Rate	$ 29,773,064
TX002 - Permanent Accommodation Camp	Lump Sum	$ 12,214,800
TX003 - Workshops	Other	$ 12,723,348
YE999 - Third Part Vendor and Pre-Assembly Yard QA-QC	Other	$ 1,152,000
YH001 - EPCM Services-Early Works	Unit Rate	$ 381,421
YH002 – EPCM Services Execution	Unit Rate	$ 40,109,474
YH003 – EPCM Office Supplies and Consumables	T&M	$ 2,514,833
ZF001 - Fuel Supply	Fixed Unit Rate	$ 30,033,985
ZG001 - Site Survey	Fixed Unit Rate	$ 3,734,148
ZL001 - Sea Lift Standard Freight	Fixed Unit Rate	$ 26,698,650
ZL004 - Consolidation Hub	Fixed Unit Rate	$ 4,417,307
ZX004 - Air Services Passenger	Fixed Unit Rate	$ 10,904,723
ZX005 - Air Services Freight	Fixed Unit Rate	$ 8,116,529
ZX006 - Communications and Data Services	Fixed Unit Rate	$ 1,331,391
ZX009 - Air Services - Passenger from regional airports to Mirabel	Fixed Unit Rate	$ 6,695,668
ZX010 - Early Works Camp Cost	Fixed Unit Rate	$ 341,346
ZX011 - Transport of HME from Milne Port	Other	$ 591,441
ZX992 - Capital Spares	Other	$ 3,564,376
Total		**$ 870,899,866**

The following tables outlines the mix of cost types used to assemble the cost estimate.

Table 12-7:Package Type Mix in CAPEX

Package Type	Direct and Indirect USD (M)	% of Direct
Fixed Unit Rate	$ 422	48%
Lump Sum	$ 303	35%
T&M	$ 19	2%
Other	$ 127	15%
Total	**$ 871**	**100%**

Figure 12-1: Pricing Mix for Estimate



12.8 Bottoms Up Estimating - Engineering Development

Contract CX001 captures the wrap around work required to integrate the major contracts comprising the Project. The brownfield nature of this package necessitated a bottoms up estimating methodology be applied to this package. The sections that follow outlines the process taken to develop the cost estimate for contract CX001.

The following outlines the strategy in capturing the Material Take Offs (MTOs) for package CX001 (MEIP) and any identified gaps between the remaining packages in ensuring a complete scope within the estimate.

All equipment pricing (mechanical, electrical, instrumentation and piping) was reviewed to ensure the following criteria were addressed, and taken into consideration where necessary:

The following table outlines the Package Strategy that supported first principle estimating for CX001.

Table 12-8: Basis of Estimate

Commodity	Basis of MTOs
Civil	• Earthwork requirements were quantified based on G/A drawings. • Costs were estimated utilizing civil unit rates (CC002 & CC003) for equipment usage. Manual labour costs were estimated by evaluating required labour hours multiplied by labour rate and productivity.
Mechanical	• For minor equipment, prices were obtained from budget quotations, or from the current Hatch database and/or factored pricing based on historical data. • Installation costs for the identified equipment was captured from the Estimating Team's Standard Man-hour Manual or extracted from historical information.
Electrical	• HV/LV distribution was based on Single Line Diagrams and MTOs from plant layout and cable schedules. • Equipment list for all field devices. • Estimated costs for major electrical equipment were based on budget quotations derived from vendors using project specific specifications and data sheets, and/or factored pricing based on historical data from the Hatch database. • For minor equipment prices were obtained from budget quotations, or pricing based on historical data from the Hatch database, and adjusted as required for project and area-specific requirements. • Installation unit rates were estimated from first principles. • Major cabling and trays were identified as MTOs and costed from the recent electrical cost database from North America.
Instrumentation	• MTOs from Instrument list and based on P&ID's, layouts, specifications, data sheets and cable schedules. • Unit costs for instruments include all wrap around costs such as stands, cables, tubing etc., and were priced from recent in-house data from recent projects. • Automated valves costing supported from budgetary quotations or in-house historical data. • Allowances were inserted for secondary requirements by area. • Installation unit rates based on Hatch database, and adjusted to reflect project and area specific requirements.

Commodity	Basis of MTOs
	• Factored costs where data and information may not be available.
Piping	• Lengths of pipe >6 inch diameter were taken off layout drawings. • MTOs for valve count and length of runs only. • Complexities of lines were identified. An allowance for each identified complexity will include for all fittings, bolt-ups, gaskets, etc. • Recently quoted budget unit prices for piping material and valves based on preliminary specifications. Installation unit rates were based on Estimating Team database adjusted to reflect project and area specific requirements.

12.9 Cost Growth, Design Growth and Waste Allowances

12.9.1 Cost Growth

A cost growth allowance when required, was an amount added the packages received to account for the level of accuracy of the budgetary quotes and/or bids received, or the expected increase in costs where uncertainties are identified through the review process.

The evaluation and application of cost growth was done on a case by case basis during the package review process.

Any Cost Growth applied to the bid packages are documented within the Basis of Estimate (ref. Appendix A12-1, Appendix A).

12.10 Design Growth

Experience tells us that there is a gap between what is known and identified during the estimating process and what is expected during the execution or construction phase.

Material take-off growth allowances are intended to capture the anticipated design growth from Feasibility Study to final design from the neat quantities developed by the engineering disciplines.

Any Design Growth applied to the bid packages are documented within the Basis of Estimate (ref Appendix A12-1, Appendix A).

12.11 Installation Costs

12.11.1 Labour Hours, Rates and Productivity

In recognizing that a significant amount of the capital cost values were captured through the firm bid market solicitation process, and that any ancillary work identified through the MTOs will be of minimal capital value, it was intended that the required labour rate assumptions identified for this work be estimated in consideration of historical rates, and adjusted for project specific requirements.

The final labour rate assumptions are aligned with historical site labour rates, and escalated at 2% per annum.

The following table outlines the final labour rates assumed in the estimate for CX001:

Table 12-9: Labour Rates

Trade Code	Trade	All In Rate (4x2)
C	Concrete	$ 140.33
F	Architectural	$ 150.50
G	Marine Works	$ 134.76
L	Electrical	$ 165.25
M	Mechanical	$ 160.35
N	Platework & Tanks	$ 162.10
P	Pipework & Fittings	$ 160.90
S	Structural Steel	$ 160.84
W	Wire & Cable	$ 163.76
X	Site Services Crew	$ 128.31

Installation base man-hours were based on North American and in-house databases for similar projects. Labour man-hours were then adjusted by a productivity multiplier to take into account project specific requirements.

The base labour productivity factor took into account issues that affect labour hours regardless of the environment where the work is being completed. This productivity looked at the break walk times, tool box meetings, clean up, etc.

In alignment with historical information, the following outlines the labour productivity assumption associated with package CX001.

Table 12-10: Productivity Rates

Contractor Location	Productivity Factor (PF)
US Gulf Coast	1
Southern Ontario (labour pool)	1.3
Extended Shift Productivity Impact	1.3
Site Location Impact (10%-30%)	1.8 to 2.2
Selected Site Productivity	**1.8**

12.12 Contractor Indirect Costs

Contractor's indirect costs are execution costs which are related to the contractor's costs of executing the project on site, but which cannot easily be allocated to any particular part or are

not part of the permanent works. For the purposes of these capital cost estimates, these costs are made of multiple resource types and are effectively direct costs, and will include the following:

- Contractor's mobilization and demobilization, including establishment and later removal and making good, of site offices, storage and other construction facilities, plant and equipment.
- Contractor's site supervision.
- QA/QC.
- Site Support Personnel.
- Contractor vehicles, cell phones.
- Contractor's financing costs, insurances and bonds.
- Contractor's profit and overheads.
- Site office operations.
- Contractor's manual indirect and non-productive labour, including time spent in inductions, training, toolbox meetings, clean-ups, bus drivers, crane and truck operators and storemen.
- Major scaffolding, safety equipment, fire watch, personal protection equipment.
- Special construction equipment and special temporary works.
- Trade permits, fees and testing.
- For the purpose of this estimate, contractor indirects for package CX001 were factored at 15 % of TIC.

12.13 Major and Heavy Lift Cranes

Major and heavy-lift cranes, are scope-specific and captured as part of the firm bid contract pricing related to said scope.

All general crane usage up to 90 tonne is allocated within the site service agreement packages (CC002/CC003), and will be provided on a "as-required" basis to all contractors.

12.14 Site Service Agreement

In recognizing common scope requirements that cross all anticipated Construction Contract Packages as identified, a site service scope and agreement package was captured and estimated separately in order to ensure all gaps and required scope are captured and costed accordingly. These costs were provided as part of the bids received for CC002/CC003

12.15 Freight

For any freight requirements not covered as part of the bid packages, additional costs for freight were identified and estimated.

The following outlines the identified freight costs.

Table 12-11: Freight Costs

Freight Type	Freight Cost (USD Millions)
Contractor Freight	41.3
ZL001 - Sea Lift Standard Freight	26.7
ZL004 - Consolidation Hub	4.4
ZX005 - Air Services Freight	8.1
ZX011 - Transport of HME from Milne Port	0.6
Total	**81.1**

12.16 Indirect Costs

Indirect costs include items that are necessary for the completion of the project, but are not directly related to the direct construction costs.

These cost as detailed in the section below were generated by the project management and engineering team with input from estimating & construction.

The following table outlines the cost summary of Project Indirects

Table 12-12: Indirect Cost Summary by WBS

Description	WBS	USD Millions	% of Indirect Cost	% of TIC
Construction Facilities And Support	**6000**	**200**	**63%**	**21%**
Construction Facilities	6100	4.9	2%	1%
Construction Support	6200	36.6	12%	4%
Construction Equipment, Tools And Supplies	6300	31.1	10%	3%
Material Transportation to Site (if not included in the direct costs)	6400	80.8	25%	9%
Project Accommodation	6700	46.2	15%	5%
Implementation Contractor's Services	**7000**	**48**	**15%**	**5%**
EPCM - Labour & Expenses	7100	47.5	15%	5%
Owner's Cost	**8000**	**30**	**9%**	**3%**
Owner's Cost During Implementation Phase	8100	29.6	9%	3%
Contingency / Escalation / Risk	**9000**	**40**	**13%**	**4%**

Contingency / Escalation / Risk	9100	40.29	13%	4%
Total Indirects, Owner's Cost, Contingency		**317**	**100%**	**34%**

12.17 Implementation Contractor (EPCM)

The cost for the implementation contractor were based on the Hatch bottoms-up services bid submitted mid-March 2017.

12.18 Temporary Construction Facilities and Services

Temporary offices, sheds, furniture; connection, reticulation and consumption of power, sewage and water; staff, communications, first aid, site security, catering, construction camp, site vehicles, parking and lay-down areas were identified and quantified according to the requirements of the construction and manning schedules.

The capital cost estimate include the calculated costs of establishment and later removal (as required) of the site compound, support facilities and services, and the operating costs of these facilities and utilities during the construction phase and the required commissioning period.

12.19 First Fills and Oils

First fills and oils typically include for the following:

- Oils, lubricants and fluids.
- Specific reagents (if required).

For the purpose of this estimate, requirements for first fills and oils are captured under the received bid packages.

12.20 Spares

Major requirements and costs associated with spares were captured as part of the bid solicitation. The Capital Spares value from the PFS was included in the FS as an allowance.

Operation spares are excluded from the estimate as they are assumed to be covered by site operations.

12.21 Third Party Services and Consulting

An allowance was inserted into the estimate for additional requirements of Third Party Services and Pre-assembly Yard QA/QC not covered under the received bid packages.

12.22 Vendor’s Representatives

Vendor representative requirements to supervise the installation of equipment or to conduct a checkout of the equipment prior to start-up and associated costs were captured as part of the bid solicitation for major equipment, or as part of the bid packages received.

12.23 Owner’s Costs

Estimate of Owner’s Cost were derived and provided by BIM, and issued to the Hatch team for insertion into the final estimate.

12.24 Quarry Royalties

The quarry royalties costs are captured as part of Owner's Costs and were calculated using:

- Total earthworks borrow source quantities required for all project areas.
- Quarry royalties rate of CAD 2.50/m3 assuming a new rate is negotiated by Baffinland as per client direction received during the previous Option Study.

12.25 Operational Readiness

Costs for Operational Readiness were based on a first principle estimate evaluating the anticipated staffing, procedures, manuals, and training required to prepare the site for maintenance and operational strategies. These costs are captured under the project Owner's Costs.

For a detailed breakdown of assumptions, please refer to Section 23 of this report.

12.26 Quantitative Risk Analysis

12.26.1 Introduction

A Quantitative Risk Analysis (QRA) was completed to determine Capital and Schedule Risk Profiles for the project. The resulting levels of accuracy were influenced by the level of engineering completed to support the study, and by the inputs provided to the estimate.

The QRA assessed the level of cost performance variability in the project to establish an appropriate level of contingency to be applied/carried to the cost estimates at the stage of the project development that are congruent with the risk appetite provided as P75.

12.26.2 Results

The following table outlines the results of the ranging exercise and indicates that to achieve a 75% probability of underrun, a contingency level of 4.49% is required.

Table 12-13: QRA Results

@ Risk Summary Page				Notes:	Iterations
Capital Risk					5,000
PROJECT:	Mary River Mine Expansion			PREP	Camelia Bucur
					4/26/2017 17:02
CLIENT:	BIM				
DESCRIPTION		Estimate	Risk Mean	Contingency @ Mean $	Contingency @ Mean %
Estimate Labour		$ 72,512,726	$ 71,126,699	$ (1,386,027)	-1.9%
Estimate Direct Non-Labour		$ 624,505,546	$ 620,187,949	$ (4,317,597)	-0.7%
Estimate Indirect		$ 199,528,570	$ 189,507,611	$ (10,020,959)	-5.0%
Total Risk Profile		$ 896,546,842	$880,822,259	$ (15,724,583)	-1.75%
		Risk Value	Contingency $	Contingency %	
	P30	$835,148,833	($61,398,009)	-6.85%	
	P40	$857,918,312	($38,628,530)	-4.31%	
	P50	$879,027,581	($17,519,261)	-1.95%	
	P60	$902,890,161	$6,343,319	0.71%	
	P70	$925,467,108	$28,920,266	3.23%	
	P75	$936,837,568	$40,290,726	4.49%	
		P10	P90		
Estimate Accuracy for 80% CI		-11.6%	12.2%		
		P5	P95		
Estimate Accuracy for 90% CI		-14.3%	15.6%		

12.26.3 Level of Accuracy

The level of accuracy of the estimate is reported below and is comparable to the ArcelorMittal Guidelines of +10%/-15%.

- +12.2%/
- -11.6%

12.27 Escalation

The base cost estimate is expressed in terms of value at a stated base date of Q2, 2017, with no escalation beyond that date.

12.28 Estimate Reviews

12.28.1 Estimate Assembly Reviews

Once all internal and peer reviews were completed, a management review of the estimate was completed.

To ensure consistency of the information transfer and overall estimate assembly, the following checkpoints and estimate reviews were performed prior to the final issuance of the Capital Estimate.

Table 12-14: Estimate Reviews

Review	Responsibility	Checklist
Discipline Review	Discipline Leads	Completeness, Accuracy
Engineering Review	Engineering Manager	Battery limits, Duplications, Gaps
Interdisciplinary Review	Discipline Leads, Engineering Manager	Transfer of information, Battery limits, Duplications, Gaps
Management Team Review	Estimating Lead, Project Management Team	Completeness, Accuracy, Battery limits, Duplications, Gaps, Indirects
Hatch Peer Review	Project Management Team	Complete Estimate Review
Client Review	Project Management Team	Estimate Presentation and Review

12.29 Estimate Clarifications

The following costs are not included in the capital cost estimate, and are identified as exclusions:

- Value added taxes.
- 800 man camp shipping and costs in excess of $12.2M USD by Operations
- Cost of iron ore to fill the base of lump stock pile.
- Demolition of camps
- Further permit delays
- Development costs (sunk costs)
- Operating spares
- Forward escalation, forex variation
- Schedule delays and/or associated costs, such as those caused by:

- Unexpected site conditions.
- Unidentified ground conditions.
- Labour disputes.
- Force majeure.
- Permit applications.
- Weather delays not included as part of the bid packages

- Development fees and approval costs.
- Cost of any disruption to normal operations.
- Foreign currency changes from project exchange rates.
- Forward Escalation.
- Environmental bonding costs.

12.30 Reference Documents

Document Number	Title	Revision	Date	Appendix Number
H3533004-00000-621-610-0003	Basis of Capital Estimate	0		A12-1