Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
2AM-MRY1325
Our file - Notre référence
CIDM#1269902

December 13, 2019

Richard Dwyer
Manager of Licencing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's Reclamation Cost Estimate for the 2020 Annual Security Review for Baffinland Iron Mines Corporation's Mary River Project, Water Licence 2AM-MRY1325 Amendment No. 1

Dear Mr. Dwyer,

Thank you for invitation to participate in the 2020 Annual Security Review (2020 ASR) for the Mary River Project. Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the submissions regarding Baffinland Iron Mines Corporation's (BIMC's) 2020 Work Plan and updates to the reclamation security estimates for the Mary River Project, pursuant to CIRNAC's responsibilities under Part C and Schedule C of the Water Licence 2AM-MRY1325 – Amendment No. 1.

The 2020 ASR differs from past iterations. Due to the ongoing review of BIMC's Application to Amend Water Licence No. 2AM-MRY1325 - Amendment No. 1 for Phase 2 of the Mary River Project (Phase 2), parties were requested to consider the difference between the activities under current licence and the requested amendment during the 2020 ASR process. As such, CIRNAC is submitting two separate cost estimates. The first estimate is provided in Annex A and presents the estimated costs for items listed under the 2020 Work Plan for the approved project as well as some items presented by BIMC to be completed following the issuance of the amended Project Certificate for the Phase 2 Project. The second estimate is provided in Annex B and presents the estimated costs for all items listed under the Phase 2 amendment application.

Estimate for the 2020 Work Plan

CIRNAC has retained the support of SNC-Lavalin Group Inc. to revise its reclamation cost estimate for the Mary River Project using the RECLAIM model produced last year and submitted to the Nunavut Water Board (NWB) on December 20, 2018, to incorporate the

items set out in BIMC's 2020 Work Plan. This estimate is provided as a separate document in Annex A of this submission. This submission includes a 2020 global cost estimate and a 2020 marginal cost estimate. The marginal estimate includes items of the work plan that are approved under the current project, and includes items that require Phase 2 approvals, as presented by BIMC. A reconsideration of the 2019 global estimate was also conducted.

CIRNAC agrees with the recommendation from the NWB to separate items which are approved from items which require approval. However, CIRNAC was unable to create an estimate depicting the 2020 marginal increase that excludes items which require Phase 2 approval based on the information that was provided by BIMC. Although BIMC separated the line items into pre- and post-approvals in the report text, these items were difficult to separate into the same categories using the EBS model. In some cases, the values differed between the EBS model and the text, so in these cases SNC-Lavalin and CIRNAC used the EBS values. Furthermore, CIRNAC disagrees with the pre- and post-approval categorization used by BIMC for some work plan items.

In addition, the 2020 Work Plan includes some items that require modifications under the licence. Though their cost is included in our reclamation estimate, BIMC must present requests to modify the water licence, and be granted approval by the NWB, before they begin to carry out the work.

Documents and files provided by BIMC considered in this review include:

- 2020 Work Plan, dated November 1, 2019
- 2020 Marginal Closure and Reclamation Financial Security Estimate, dated November 1, 2019
- Interim Closure and Reclamation Plan Revision 5, dated October 30, 2018
- Spill Contingency Plan and Emergency Response Plan, both dated September 25, 2018
- 2019 Geotechnical Inspection Report No. 2, (conducted September 2019), dated November 25, 2019

Through the Phase 2 amendment process, CIRNAC has been made aware that an updated Interim Closure and Reclamation Plan and Phase 1 Waste Rock Management Plan are expected to be submitted by BIMC by December, 2019. Neither updated plan was made available prior to this security estimate exercise. Without the details of these management plans, it is difficult to calculate direct costs for closure of the open pit, or for management of water treatment and Acid Rock Drainage/Metal Leaching during interim care and maintenance, closure, and post closure. It is best practice to calculate direct costs for these items, which we are certain will occur; however in our estimate, contingency, which is typically used for unknowns, has been increased this estimate to 20% to account for these activities. With the information contained in the updated management plans, and sufficient time between plan submission and ASR deadlines, CIRNAC and SNC-Lavalin may be able to calculate more accurate direct costs and reduce contingency to 15%. CIRNAC is requesting more information from the licensee to revise

our estimate. A summary what we are requesting can be found in the recommendations section of this letter.

CIRNAC's Global reclamation cost estimate for the 2020 Work Plan is $146,893,961 for the entire project. This sum includes the items requiring Phase 2 approvals which were requested by BIMC to be considered in this review. This review considers the 'global' security which includes the financial liabilities for both land and fresh water for undertakings and related activities covered under the existing water licence 2AM-MRY1325. The breakdown of this cost and comparison to current security held is detailed in Table 1. The splitting of the marginal cost based on land ownership and land-water reclamation activities is detailed in Table 2, and the splitting of the global cost based on land ownership and land-water reclamation activities is detailed in Table 3. The difference between what the Minister currently holds and what CIRNAC estimates the Minister should hold constitutes an increase of $1,764,129.

Table 1: Breakdown of Total Reclamation Cost Estimate by CIRNAC for Approved Project under the 2020 Work Plan

	Amount of Security Currently Held under 2AM-MRY1325	2019 Adjusted Global Estimate	2020 Work Plan Marginal Estimate	2020 Global Estimate
Total Cost	$88,136,459	$123,073,448	$23,820,513	$146,893,961
Crown Liability	$1,448,801	$1,697,324	$1,515,606	$3,212,930
IOL Liability	$86,687,658	$121,376,124	$22,304,907	$143,681,031

Table 2: Splitting of Marginal Reclamation Cost Estimate by CIRNAC for Approved Project under the 2020 Work Plan

Total Cost for Marginal 2020	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$23,820,513	$1,515,606	$22,304,907	$58,383	$23,762,130
Percentage	6.4%	93.6%	0.3%	99.7%

Table 3: Splitting of Total Reclamation Cost Estimate by CIRNAC for Approved Project under the 2020 Work Plan

Total Cost for Global 2020	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$146,893,961	$3,212,930	$143,681,031	$26,527,603	$104,809.595
Percentage	2.2%	97.8%	20.2%	79.8%

Estimate for Phase 2 of the Mary River Project

CIRNAC has retained the support of Arcadis Canada Inc. to revise its reclamation cost estimate for the Mary River Project using the RECLAIM model produced last year and submitted to the Nunavut Water Board (NWB) on December 20, 2018, as part of the Phase 2 application review, to incorporate the items set out in BIMC's Phase 2 Application. It is provided as a separate document in Annex B of this submission. The

submission provided in Annex B includes an adjusted global estimate for 2019 an adjusted marginal cost estimate for those items of the work plan that are approved under the current project in the 2019 Work Plan, and a marginal cost estimate for those items presented in the Phase 2 amendment application which have not yet been approved under the current project. As this estimate was created as part of the Phase 2 Licence Amendment Application Review Process in July, 2019, it considers all the work for Phase 2, without separating the activities proposed for 2020 in the 20202 Workplan.

Documents and files provided by BIMC considered in this review include:

- 2019 Work Plan, dated November 1, 2018
- 2019 Marginal Closure and Reclamation Financial Security Estimate, dated November 1, 2018
- Phase 2 Marginal Closure and Reclamation Security Estimate, prepared by BIMC and dated April 30, 2019
- Interim Closure and Reclamation Plan Revision 5, dated October 30, 2018
- Spill Contingency Plan and Emergency Response Plan, both dated September 25, 2018
- Updated Application to Amend Licence No. 2AM-MRY1335, Submitted to the NWB on May 3, 2019

CIRNAC's global reclamation cost estimate is $180,389,875 for the entire Mary River Project, including all items which require approvals as part of Phase 2. This review considers the 'global' security which includes the financial liabilities for both land and fresh water for undertakings and related activities covered under the existing water licence 2AM-MRY1325. The breakdown of this cost and comparison to current security held is detailed in Table 4. The splitting of the marginal cost for Phase 2 based on land ownership and land-water reclamation activities is detailed in Table 5, and the splitting of the global cost based on land ownership and land-water reclamation activities is detailed in Table 6.

Table 4: Breakdown of Total Reclamation Cost Estimate by CIRNAC for Phase 2 Licence Amendment

	2018 Adjusted Global Estimate	2019 Adjusted Marginal Estimate	Phase 2 Marginal Estimate	Phase 2 Global Estimate
Total Cost	$77,050,618	$38,571,850	$64,767,406	$180,389,875
Crown Liability	$1,403,744	$235,124	$3,014,638	$4,653,506
IOL Liability	$75,646,874	$38,336,726	$61,752,768	$175,736,368

Table 5: Splitting of Phase 2 Marginal Reclamation Cost Estimate by CIRNAC for the Phase 2 Licence Amendment

Total Cost	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$ 64,767,406	$3,014,638	$61,752,768	$1,786,278	$62,981,128
Percentage	4.7%	95.3%	2.8%	97.2%

Table 6: Splitting of Total Reclamation Cost Estimate by CIRNAC for the Phase 2 Licence Amendment

Total Cost	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$180,389,874	$4,653,506	$175,736,368	$25,151,114	$155,238,762
Percentage	2.6%	97.4%	13.9%	86.1%

Recommendations

1. Reclamation Security Costs

Based on the materials provided by BIMC, and CIRNAC review, CIRNAC is of the opinion that a security of $146,893,961 would ensure that the project is secured for the peak-projected reclamation costs for 2020, including those Phase 2 items BIMC proposes for 2020. A security of $180,389,874 would ensure that the project is secured for the peak-projected reclamation costs including all Phase 2 cost, but excluding 2020 work plan items for the currently approved project. If BIMC provides a separation in EBS of 2020 work plan items approved under the current project from those for Phase 2, CIRNAC could better prepare an estimate which would cover all items inclusive of the 2020 work plan and Phase 2.

Presently CIRNAC holds $1,448,801 in financial security for reclamation purposes. CIRNAC recommends that an additional $1,764,129 be added to the amount already held by the Minister for a total of $3,212,930 to cover the Crown portion of reclamation security for 2020.

2. Project Modification Approvals

CIRNAC recommends that BIMC not engage in any work that is secured under the 2020 Work Plan, which may require a modification or an amendment to the licence without obtaining appropriate approvals from the NWB.

3. Information Requests

To assist in refining the security estimates, CIRNAC recommends that BIMC provide:

a) Clarifications requested in Table 5-1 of the SNC-Lavalin report in Annex A;
b) Separation of work plan items which are approved and those which require approval within the EBS model;
c) Updates to the Interim Closure and Reclamation Plan and the Phase 1 Waste Rock Management Plan, with consideration of design amendments as outlined in Table 5-1 of the SNC-Lavalin report in Annex A.

If there are any questions or concerns, please contact me at (867) 975-4282 or bridget.campbell@canada.ca, or Godwin Okonkwo, Manager of Water Resources, at (867) 975-4550 or godwin.okonkwo@canada.ca.

Sincerely,

Bridget Campbell
Water Resource Coordinator

CC:
Assol Kubeisinova, Technical Advisor, Nunavut Water Board
Christopher Murray, Environmental & Regulatory Compliance Manager, Baffinland Iron Mines Corporation
Jared Ottenhof, Director Major Projects, Qikiqtani Inuit Association

Annex A

2020 Reclamation Cost Estimate for the Mary River Project
Water licence 2AM-MRY1325 - Amendment #1
prepared by SNC-Lavalin Inc.

Mary River Project

FINAL 2020 Annual Security Review Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

12 December 2019

Our file: 670026

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List of Revisions

Revision				Revised pages	Remarks
#	Prep.	App.	Date		
00	AL, JC	KT	2019-12-11	All	FINAL
V1	AL, JC	KT	2019-12-12	All	With NT/NU stamp
V2	AL, JC	KT	2019-12-12	All	comments addressed

Notice to Reader

This report has been prepared and the work referred to in this report has been undertaken by the Environment & Geoscience business unit of SNC-Lavalin Inc. (SNC-Lavalin) for the exclusive use of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) (the Client), who has been party to the development of the scope of work and understands its limitations. The methodology, findings, conclusions, and recommendations in this report are based solely upon the scope of work and subject to the time and budgetary considerations described in the proposal and/or contract pursuant to which this report was issued. Any use, reliance on, or decision made by a third party based on this report is the sole responsibility of such third party. SNC-Lavalin accepts no liability or responsibility for any damages that may be suffered or incurred by any third party as a result of the use of, reliance on, or any decision made based on this report.

SNC-Lavalin has, in preparing estimates, as the case may be, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual values will be consistent with the estimate(s). Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers, etc.) upon which SNC-Lavalin's opinion as set out herein are based have not been verified by SNC-Lavalin; SNC-Lavalin makes no representation as to its accuracy and disclaims all liability with respect thereto.

The findings, conclusions, and recommendations in this report (i) have been developed in a manner consistent with the level of skill normally exercised by professionals currently practicing under similar conditions in the area, and (ii) reflect SNC-Lavalin's best judgment based on information available at the time of preparation of this report. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report. The findings and conclusions contained in this report are valid only as of the date of this report and may be based, in part, upon information provided by others. If any of the information is inaccurate, new information is discovered, site conditions change, or applicable standards are amended, modifications to this report may be necessary. The results of this assessment should in no way be construed as a warranty that the subject site is in compliance with regulatory requirements.

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Table of Contents

Tables

Appendices

1. Introduction

SNC-Lavalin Inc. (SNC-Lavalin) has been retained by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to participate in the 2020 Annual Security Review (ASR) process for the Type A Water Licence No. 2AM MRY1325 Mine (CCSM).

This report provides a summary of updated financial security cost estimates using RECLAIM version 7 that incorporate information from the Baffinland Iron Mines Corporation (BIMC) work plan for 2020 and updated unitary rates.

1.1. Background

The Mary River Project (Project) is located in Nunavut, on the northern end of Baffin Island, 160 km south of Pond Inlet. This project is an iron ore mine owned and managed by BIMC. It has been in production since fall 2014, hauling ore from the mine site along the Tote Road to Milne Port, where the first ore shipments were made in summer 2015. BIMC is operating under a Nunavut Impact Review Board project certificate and Nunavut Water Board (NWB) Type A water licence 2AM-MRY1325 amendment #1.

In 2018, BIMC submitted to the Nunavut Planning Commission (NPC) and the Nunavut Impact Review Board (NIRB), the Final Environmental Impact Statement (FEIS) and the Addendum to the FEIS Mary River Project - Phase 2 Development Proposal which includes the following works and activities:

- Increase in iron ore production and transportation via road through Milne Port from current 4.2 Million tonnes per year (Mtpa) to 12.0 Mtpa and through Steensby Port 18.0 Mtpa;
- Construction and operation of a 110 km railway within the Mary River Transportation Corridor between the mine site and Milne Port, generally following the existing Tote Road;
- Expansion and improvement of the Milne Port facilities;
- Modification of the shipping season;
- Expansion of the existing accommodation camp at the Mine site.

CIRNAC Mine Site Reclamation Policy for Nunavut (CIRNAC, 2002) requires that financial security be held for the highest reclamation liability for land and water combined for a mine project. The assumptions for determining the security amount are detailed in the 2002 Policy.

The financial security estimations for the Mary River Project site development and related activities have been completed by the Baffinland Iron Mines Corporation, the Qikiqtani Inuit Associations (QIA), and a third-party contractor hired by CIRNAC. Financial security is held under the above water licence by CIRNAC or the QIA depending on the land ownership where infrastructure and activities are located.

In 2015, CIRNAC retained a third-party contractor to complete an independent evaluation of the reclamation liabilities associated with the Mary River Project to ensure that the requirements of the 2002 Policy were met. The reclamation estimations, prepared for CIRNAC, were made using the RECLAIM v. 7 Model. The estimate was consecutively updated annually since 2016.

1.2. Objective and Scope of Work

The objective of the mine reclamation cost estimate update based on the Request for Proposal was to complete a re-evaluation of the reclamation liabilities associated with the Mary River Project using the CIRNAC RECLAIM v. 7 model reflecting the current state of project development and taking into account BIMC's proposed 2020 Work Plan. The intent is to:

- Calculate the highest reclamation liability of the Mary River Project during the 2020 - 2021 fiscal years;
- Assist the Department in its participation in the Nunavut Water Board's Annual Security Review (ASR) process for the Type A Water Licence 2AM-MRY1325.

The scope of work of this desktop study included the following activities:

- Update the current Mine Reclamation Cost Estimate of the Mary River Project using the RECLAIM model version 7;
- Perform a desktop Review of Baffinland Estimate 2020 Work Plan and 2020 mine reclamation cost estimate;
- Determine whether the 2020 cost estimate is sufficient to ensure appropriate closure and restoration of the site and implementation of any required ongoing measures after site restoration;
- Provide Support to CIRNAC during the ASR Regulatory Proceedings of the NWB.

The following activities are excluded from the Scope of work:

- Site survey, Site audits, field investigation, sample collection or laboratory work;
- Material take-offs;
- Unit rates were reviewed but no new ones developed;
- Only one scenario has been developed in line with the scenario that is in the 2020 ASR submission;
- Phase 2 project elements will not be incorporated into the model, excluding the items already included by Baffinland in their "pre-project certificate approval" calculations.

2. Methodology

2.1. Data Review

To conduct the Annual Security Review (ASR) process, SNC-Lavalin relied on the following documentation:

- 2020 Work Plan - Baffinland Iron Mines Corporation, November 1, 2019;
- 2020 Marginal Closure and Reclamation Financial Security Estimate, Baffinland Iron Mines Corporation, November 1, 2019;
- 2019 Security Estimate and associated RECLAIM Ver7 workbook by CIRNAC for 2019 Security Estimate;
- Mary River Project - Complete Project Security Assessment - Estimate Breakdown Structure, Baffinland Iron Mines Corporation, updated October 31, 2019;
- 2019 Modification Requests for Water Licence 2AM-MRY1325 – Amend. No. 1;
- 702751-000 BIM 2019 Marginal RECLAIM_MODEL_VER_2_SNC.xlsm;
- 2AM-MRY1325 ASR Process Guidance, Nunavut Water board, November 2 2018;
- Interim Closure and Reclamation Plan, Revised Draft Rev. 5, Baffinland Iron Mines Corporation, October 30, 2018;
- Spill Contingency Plan, Rev 4, Baffinland Iron Mines Corporation, September 25, 2018;
- Emergency Response Plan, Rev 4, Baffinland Iron Mines Corporation, September 25, 2018;
- 2018 Geotechnical Site Inspections SNC Lavalin Inc., October 31, 2018.

2.2. Update of the Reclaim (v 7) Model

SNC-Lavalin's 2020 ASR estimate builds on the previous reviews carried out for the Mary River Project on behalf of CIRNAC.

For the 2020 ASR, we have updated the 2018 RECLAIM (Version 7) mine reclamation cost estimate of the Mary River Project (file: 702751-000 2018 Global RECLAIM_MODEL_MERGED_SNC_Global + Marginal 2018 units rate.xlsm, dated December 20, 2018). Our security estimation integrates information from a review of BIMC's 2020 Work Plan dated November 1, 2019.

Two RECLAIM models have been prepared:

- ***Global RECLAIM (Reconciled 2019 RECLAIM Global Estimate)*** – comprising the 2018 Global RECLAIM Estimate (prepared in 2018) combined with the 2019 Marginal Estimate (prepared in 2018). This model has been adjusted with any 2019 reconciled items (identified by BIMC in their 2020 Marginal Closure and Reclamation Financial Security Estimate). This model represents the latest closure estimate as of this year (2019) and does not include any 2020 items.

- ***Marginal RECLAIM (2020 RECLAIM Marginal Estimate)*** – This is the security estimate based on BIMC 2020 Work Plan and represents the security estimate based on BIMC's anticipated 2020 activities only.

The 2020 Global Estimate is the combined cost of these two models (as outlined in Section 4.4). The SNC-Lavalin Reconciled 2019 RECLAIM Global Estimate and 2020 Marginal Estimate is presented respectively in Appendix A and Appendix B.

We have reviewed both the BIMC reports and EBS models and have noted some discrepancies between the two, which are highlighted further in Table 5-2. For the Reclaim models we have used the EBS quantities as the basis. Any discrepancies noted below need to be clarified by BIMC so that they may be adjusted within the Reclaim calculation as well.

The quantities stated by Baffinland for the 2020 activities, have been accepted by SNC-Lavalin in this review as a complete field audit was not included in SNC-Lavalin scope of work. We did a cross-check of the equipment list provided by Baffinland in the 2020 Work Plan and the model. This is further discussed in Section 4.2.3.

3. Overview of BIMC 2020 Marginal, Closure and Reclamation Financial Security Estimate

The 2020 Marginal Closure and Reclamation Financial Security Estimate, Baffinland, November 1, 2019, is included in Appendix B of the BIMC 2020 Work Plan of Mary River Project and provides a summary of the closure and reclamation security estimated to be required for the Mary River Project to meet reclamation objectives as outlined in the Interim Mine Closure and Reclamation Plan presented in Appendix C of the 2020 Work Plan.

The total Global closure and reclamation security estimate takes into consideration planned work in 2020 to be conducted under Type "A" Water Licence 2AM-MRY1325, Amendment No. 1 in addition to previous project closure and reclamation security.

Relevant sections of the BIMC 2020 Marginal Closure and Reclamation Financial Security Estimate are reported in the following sections: 3.1.1 - Closure Scenario, 3.2 - 2020 Planned Activities, 3.3 – 2020 Work Plan Security Estimate Assumptions (Direct and Indirect Costs) and 4. - 2020 Estimate Summary.

The following sections present a summary review of the information, assumptions and costs estimate included in the BIMC 2020 Marginal Closure and Reclamation Financial Security Estimate.

3.1. BIMC Security Estimate Development

The 2020 Marginal Closure and Reclamation Financial Security Estimate (dated Nov. 1, 2019) represents BIMC's proposed annual adjustment to reclamation security for 2020. The approach for developing the estimate follows the same logic as previous years. It is BIMC's position that the aggregate of the 2020 Marginal Closure and Reclamation Financial Security Estimate and the previous 2019 Project closure and reclamation security represent the total global closure and reclamation costs required. The estimate assumes a third-party contractor will perform the work in a worst-case scenario to meet reclamation objectives as outlined in the Interim Mine Closure and Reclamation Plan (BAF-PH1-830-P16-0012). The estimate is intended to address all disturbed areas, project components and project activities existing on the Mary River Project site upon conclusion of the 2020 Work Plan.

These security cost estimates were all developed by BIMC employing Hatch's Estimate Breakdown Structure (EBS) approach. The EBS approach and the unit costs developed are described in 2014 Complete Project Financial Security Assessment Report (H349000-1000-07-126-0018, Rev. 1, October 31, 2014).

The amount of security estimated to be required is based on an estimate of the highest reclamation liability in the upcoming year or "worse case" scenario. The Grand totals are rounded to the nearest '000.

BIMC refers to the unit rates developed in previous Financial Security Assessment Reports (2014), and updated during the 2018-2019 ASR process. The rates used in BIMC 2020 Marginal Closure and Reclamation Financial Security Estimate are included in Appendix A – 2020 Estimated Breakdown Structure (EBS), however, a table showing the unit rates for Direct Costs or Indirect rates used in the 2020 Financial Security Estimate has not been provided. BIMC notes that an arbitration process is

ongoing with QIA regarding the updated unit rates, and as there is no conclusion to that process at this time, the 2020 ASR process is carried forward with the new unit rates.

3.2. BIMC 2019-2020 Annual Security Review Reconciliation

In order for the 2020 Estimate to reflect the total global closure and reclamation security to be required for the Project in 2020, the previous years' project estimates have been reconciled. Activities previously proposed that required reconciliation fall into the following categories:

- Activities that have had security allocated to them that are no longer planned to be conducted;
- Activities that have been conducted but have no security explicitly allocated to them; and
- Materials and equipment that have arrived at the Project on the 2019 sealift and were under or overestimated in 2019.

The 2020 Reconciliation process changed the following items from the 2019 ASR direct cost estimate:

- **Grade and Re-Contour**: the Laydown R3 in the 2019 Work Plan was modified in 2019 during construction and was added to Laydown L2. However, there is no material change as the footprint allocated remained the same.
- **Buildings and Foundations**: The position presented by Baffinland during the 2019 ASR has increased by $ 90,000 based on the erection of four (4) buildings for equipment storage at Milne Port in fall 2020. These include $ 62,882 for the Aecon Workshop, $ 23,820 for the Sana Workshop and $ 3,334 for the Carpenter Workshops.
- **Desalination Plant**: The position presented by Baffinland during the 2019 ASR has decreased by $ 7,925 based on removal of the proposed desalination plant at Milne Port from the proposed scope of work. This cost allocation was based on the unit rate build-up for a potable water plant.
- **Mechanical and Mobile Equipment**: The position presented by Baffinland during previous security estimates was based on the forecasted equipment expected to be delivered to site in 2019. The variation of the actual type and quantity of equipment delivered to site in 2019 is presented in section 2.3.1 of the Baffinland Report and adds to a difference of 81 pieces of equipment with a cost of $ 46,000.

BIMC notes that the inventories and the quantities should be further validated through the ongoing QIA and Baffinland arbitration process and the EBS can be updated accordingly to be consistent with actual quantities on site and a consistent methodology agreed by both parties.

3.3. BIMC 2020 Work Plan Components

BIMC has provided their proposed operation and Work Plan for 2020 in a tabular format broken down by geographic area: Milne Port, Tote Road, Mine Site, Site Wide, and emphasizing changes from the previous year. BIMC has outlined it's work plan in relation to the upcoming Phase 2 development and has grouped work activities as summarized below:

- **Pre-Phase 2 Approvals**: Work consistent with the scope of the Approved Project as described in the Final Environmental Impact Statement (FEIS) and FEIS Addendum for the Early Revenue Phase and are reasonably anticipated to be required during the course of operation of the Project.
- **Post-Phase 2 Project Certificate Amendment**: Work that is described in the Phase 2 Project proposal but does not require a Water Licence Amendment, as it does not result in the use of water or the containment, withholding, diversion or retaining of waters or wastes.
- **Work carried over from 2019 & Prior – Security in Place**: Work that requires a Water Licence Modification but has Security in place.
- **Progressive Reclamation**: Ongoing. No description of effects. Permits or applications N/A.

As reclamation security associated with Phase 2 are being assessed in accordance with the approval process for the Phase 2 Type "A" Water Licence Amendment, BIMC has omitted those from the 2020 Work Plan.

A general listing of activities is provided in the following sections to show new activities in 2020 for the three main areas of the project. This description is extracted from BIMC's 2020 Work Plan Table 3-1: Scope of work for 2020.

3.3.1. New Work for 2020

General Maintenance

BIMC Geotechnical Inspection Report No. 2, September 2019, identifies the implementation of measures recommended in previous geotechnical inspections. The measures are related to repairing minor damages on the liners on berms, reinstate geotextile and soil cover in several areas with minor damages, restoring uninterrupted flow of surface water toward the pond adjacent to the crusher pad and regraded of several areas. These measures have been included by Baffinland in the 2020 Financial Security Estimate were included in the RECLAIM model.

Tote Road

- Development and expansion of quarries, consisting of nineteen (19) new quarries along the Tote Road with 8 m wide access roads.
- Development of twenty six (26) laydowns adjacent to the existing Tote Road for material stockpiling and storage. The laydowns will be constructed of 500 mm thickness quarried rock with granular surfacing, free draining to appropriate ditches and water courses.
- Contractor offices, garages and workshops installed on LD-15.
- Northern Transportation Corridor: Construction of access roads adjacent to rail alignment. This activity includes the grading, levelling and compaction of fill material for the construction of access roads that will connect the rail alignment with the existing Tote Road. Local rock quarries shall be utilized for all base and fill materials. This activity requires Phase 2 Project Certificate.
- Realignment of the Tote Road on eight (8) points, for a safe level crossing point over future rail superstructure.
- Installation of) pre-fabricated explosives magazines to store packaged explosives, detonators and charges. This activity requires Phase 2 Project Certificate.
- Addition of washroom facilities/refuge stations at KM 26 and KM 80 IT towers.

- Continued work to repair and replace culverts along the Tote Road, including those with identified fish passage issues.
- Realignment of the Tote Road for a safe level crossing point over future rail superstructure. This activity requires Phase 2 Project Certificate.

Milne Port

- Installation of One (1) waste incineration unit at Milne Port. To be placed within the laydown of the Potential Development Area.
- New thaw and wash bay facility for mobile vehicle maintenance. Footprint of 1,250 m^2. To be placed within the laydown of the Potential Development Area.
- Warehouse/parts staging area upgrades, including a new seacan ten building with a footprint of 540 m^2. To be placed within the laydown of the Potential Development Area.
- Construction of a waste containment cell exterior to workshop facilities, for temporary storage of materials prior to longer term storage in the Hazardous Waste Berms and eventual backhaul. Port shop – 72 m^2. Lined area on developed laydown within the Potential Development Area.
- Construction of service access road circling around the rail alignment and terminating at KM 0. Levelling and grading within the revised Potential Development Area. This activity requires Phase 2 Project Certificate.
- Foundation excavation for future material handling infrastructure. Car dumper and reclaim tunnel basement with precast concrete footings (2,235 m^2) and a new disturbed area (15,300 m^2) and Conical Stockpile tunnel with precast concrete footings (1,040 m^2) on existing disturbed area. This activity requires Phase 2 Project Certificate.
- Expansion of the explosive magazine storage at Milne Port (27,700 m^2 disturbed).

Mine Site

- Installation of fuel line and associated piping between the mine site fuel storage areas and gensets. Total of 250m pipe.
- Installation of a mine dry facility at the Sailivik Camp.
- Installation of one (1) new waste incineration unit.
- Construction of a new sedimentation pond at the Waste Rock Facility. Pond will be lined and have an approximate footprint of 50,000 m^2.
- Expansion of the Waste Rock Facility Water Treatment Plant to include an additional geotube settling containment area. Total footprint of new lined area is 3,000 m^3.
- Installation of a hard line for transfer of water from Deposit 1 to the Waste Rock Facility sedimentation pond. Hard line will replace current use of layflat hose. Total length of line is 3,500 m.
- Construction of a sedimentation pond at the Mine Haul Road to manage surface water runoff. Pond will be lined and have a footprint of 10,000 m^2.
- Implementation of a water management plan for Deposit 1, including berms and ditching to manage surface water.
- Construction of concrete pad apron exterior to the HD Shop. Total footprint of 1,020 m^2.
- Expansion of the area east of the Mine Site workshops and mine haul road for improved traffic management. Additional footprint of 18,000 m^2.

- Expansion of the explosive magazines storage area at Km 104 (8,000 m^2) and heated storage facilities (400 m^2 each) for emulsion truck parking at Mine Site (1,600 m2 disturbed).
- Construction of a waste containment cells exterior to workshop facilities, for temporary storage of materials prior to longer term storage in the Hazardous Waste Berms and eventual backhaul. HD Shop - 72 m^2, MR Shop - 120 m^2, Wash Bay - 120 m^2, 110 Laydown - 144 m^2.
- Additional maintenance facilities at the KM110 laydown to support maintenance of Deposit 1 equipment. Facilities include two heated structures for mobile equipment storage (60 m^2 and 120 m^2), a concrete pad for tire maintenance (60 m^2), and welding shop (540 m^2).
- Installation of new trailers/offices and environmental lab in camp area, and new trailer/Dry in crushing area.
- Expansion of the warehouse laydown area for additional storage of seacans and equipment. Total area of 3,200 m^2.
- Installation of permanent lighting for port and logistics. Total of 600 m of electrical cabling.
- Construction of one (1) arctic diesel fuel tank (Tk6) with 15ML capacity, and associated fuel piping. The fuel tank will be constructed on a pad within the existing Mine Site fuel storage facility. This activity requires Phase 2 Project Certificate.

3.4. Summary of 2020 Marginal Closure and Reclamation Estimate

Table 3-1 below presents the consolidation of the marginal closure cost estimates that BIMC presents in the 2020 Marginal Closure and Reclamation Financial Security Estimate sections 2 and 3. The estimated costs for the items presented by BIMC for activities associated with Phase 2 Post-Project Certificate Approval have been highlighted for clarity, however, some activities requiring this approval could not be separated as these elements appear as blended with other operational activities associated with the current development phase.

Table 3-1 Summary of the BIMC 2020 Work Plan Marginal Increases

Activity	Cost ($)
Direct Cost	
Buildings and Foundations	429,000
Buildings and Foundation areas **(Post-Project Certificate Phase 2)**	167,000
Mechanical and Mobile Equipment	1,488,000
Grade and Re-contour of disturbed areas	5,980,000
Grade and Re-contour of disturbed areas **(Post-Project Certificate Phase 2)**	826,000
Storage Tanks	43,000
Storage Tanks – **(Post-Project Certificate Phase 2)**	137,000
Culverts removal	199,000
Cabling	12,750
Fill Application	200,750
Indirect Cost	
On-Site Fuel Demobilization and Reclamation Fuel Mobilization	1,078,000
Off-Site Disposal of Hazardous and Non-Hazardous Waste	2,858,000
Mobilization of Workers Required for Reclamation	618,000
Worker Accommodation & Camp Operation	1,694,000
Mobilization and Demobilization of Equipment and Materials	948,000
Post Closure Monitoring	Excluded
Contaminated Soil treatment	Excluded
Supervision, Project Management and Contract Administration	891,000
Engineering Fees	370,000
Contingency	1,593,000
2019 Reconciliation (Marginal increase in Buildings and foundations $90,000 + Mechanical and Mobile Equipment $46,000)	136,000
Grand total Addition of amounts carried in Tables 3-1 to 3-9 and sections 3.3.1 and 3.3.2 of the 2020 Marginal Closure and Reclamation Financial Security	**19,668,500**
Amount carried in Table 4-1 under column D of the 2020 Marginal Closure and Reclamation Financial Security	**19,532,000**

BIMC has not provided the distribution of the liabilities presented in Table 3-1 according to land ownership.

There is a difference of $136,500 in the Grand total presented in BIMC's Table 4-1 of the 2020 Marginal Closure and Reclamation Financial Security, this amount may correspond to the 2019 Reconciliation costs of the same amount. This may be a copy error during the reporting. BIMC should review their

Table 4-1 vs those items reported in sections 2 and 3 and reconcile the final amount of the 2020 marginal closure cost which includes the 2019 reconciliation.

The accuracy of the numbers indicated in Table 3-1 could not be cross checked within Baffinland's EBS model as the logic to developing these sums is not provided within the excel file received from the proponent. It is recommended that for future reviews CIRNAC request the full EBS model from BIMC.

3.5. BIMC 2020 Global Security Estimate

BIMC does not discuss details of any changes to their Global Security Estimate. The estimate is based on the proposed unit rates in 2018. As presented in Table 4-1 of the 2020 Marginal Closure and Reclamation Financial Security, the total posted Global Security Estimate as July 2019 under the Type A (2AM-MRY1325) Licence is $ 106,136,459.

The aggregate of the Global Estimate from 2020 including 2019 Reconciliation, and Total "Global" estimated Security for 2020 is valued by BIMC at $ 117,772,000.

The distribution of liabilities by land ownership land use is tabulated below:

Table 3-2 Summary of Total "Global" estimated Security for 2020

Authorization	Liability	Total "Global" estimated Security for 2020 ($)
Type A2AM-MRY1325	IOL	114,493,000
	Crown	3,279,000
	Water	1,387,000
	Land	116,395,878
Sub-total Type A (IOL + Crown)		**117,772,000**

The Sub-total Type A amount is shown under Column E of Table 4-1 of the 2020 Marginal Closure and Reclamation Financial Security Estimate and in Table 9-2 of the 2020 Work Plan included in Appendix C.

Table 4-1 does not appear to be correct in Baffinland 2020 Marginal Closure and Reclamation Financial Security Estimate and the 2019 Marginal Closure and Reclamation Financial Security Estimate. The Grand Total summary for the 2020 estimate in column "C" and "F" are identical to totals from the 2019 estimate and appear to be an error as the numbers above the line have changed.

4. Reclaim Model Results

4.1. Unit Rates Review

BIMC has revised the unit rates applied to the closure costing in 2018 and continued to carry it forward into the 2019-2020 assessment. It is understood that BIMC is currently in arbitration with QIA regarding the revision of these rates.

SNC-Lavalin reviewed the unit rates proposed by BIMC in 2018 and has further assessed these rates against market conditions for the 2020 ASR process and is providing the following analysis of these rates.

In general, unit hours from the 2014 Complete Project Financial Security Assessment (2014 estimate) for closure activities were estimated at approximately 30% of installation hours. This basis was used for all dismantling, demolition, reclamation and like activities in the 2014 estimate and appears unchanged in the 2018 and 2019 estimates. Typically, these activities are estimated at 50% of installation hours when considering new-build mining construction projects as related dismantling work is selective, restrictive and minimal in nature respective to the new-build. In the case of the Financial Security Assessment estimates the scope of work is for a full mine closure and thus non-selective, larger in scale and there are no restrictions with access.

It was found that estimated productivity factors were generally only provided for earthwork activities and for the majority of other activities the unit hours developed considered estimated productivity losses within the derived base hours. For this reason, there is no base hours multiplied by a productivity factor either globally or per discipline. The basis for unit hours, both labour and equipment appear to be unchanged since the 2014 estimate.

Evaluation of labour and equipment rates were carried out by BIMC to reflect the current market rates. Labour rates derived in the 2014 estimate was $100/hour based on an average from three (3) different third-party Contractors for personnel skilled in a number of occupations required to carry out the reclamation activities identified. In 2018 BIMC completed an assessment of five (5) different third-party Contractors, including both contractors from outside Nunavut and those registered in Nunavut. The revised labour rate based on updated 2018 contractor input was $75/hour.

It is not clear to SNC-Lavalin what is included in the labour rates from the five third-party contractors that were consulted for the 2018 estimate. From the 2014 estimate the work week is assumed to be 7 days a week, 10 hours a day for a 21-day duration followed by a rest period. The exact worker days-on and days-off rotation cycle is not explicitly stated within the 2014 estimate. It should be noted that the 2018 estimate did mention a 14 day-on and 14-day off worker rotation cycle, but it was unclear that this was the actual basis of the estimates.

In the 2014 estimate the blended labour only rate was $100/hour and included applicable base wage, fringe benefits and burdens, small tools, consumables, personal protective equipment (PPE) and overhead and profit. Also mentioned was “Head office operations” which is assumed to be contractor indirect personnel, or any non-direct craft required to support the direct craft workforce. It is unclear if scheduled overtime is included within the all-in rates, given the work week is 70 hours, overtime paid at an overtime rate would be expected. Recommended, is a confirmatory check that the 2018 estimate

labour rate is inclusive of the items described above and included in the 2014 estimate, otherwise the labour rate is considered low compared with the 2014 estimate. Additionally, equipment, mobilization, demobilization, turnaround and camp costs including camp maintenance and catering are excluded from any of the labour rates.

The 2014 estimate utilized a blended equipment rate of $150/hour, representative of the variety of equipment required to implement the reclamation activities and includes the cost to operate and maintain the equipment, but exclusive of contractor labour and mobilization/demobilization costs. The 2014 blended equipment rate was calculated based on actual equipment rates from three (3) different contractors. In 2018, BIMC completed an assessment of three different third-party contractors, including both contractors from outside Nunavut and those registered in Nunavut. Subsequently, BIMC revised the equipment rates based on the contractor equipment rates obtained to $125/hour. The revised equipment rates obtained are provided in Appendix C of the 2018 estimate and assumes equipment to be utilized 8 hours per day, 20 days per month at 160 hours per month. This does not align with the assumed work week and rotation from the 2014 estimate. The contractor equipment rates also show what appears to be three contractors that each would provide different classes (heavy/light) and types of equipment which does not lend itself to making a comparison. A comparison of individual equipment for heavy equipment reveals that for a 988 loader, the hourly rate obtained for the 2018 estimates is approximately 6% higher than the 2014 estimate. The hourly average rate of the excavators is approximately the same for both estimates.

There are currently many items which are unclear to SNC-Lavalin, such as work week, overtime assumptions, quality and completeness of the contractor unit labour and equipment rates obtained for the 2018 estimate used to adjust the 2018 rates. It is unclear if the labour rates from the 2018 estimate constituted an all-in labour rate comparable to the 2014 estimate before BIMC took the decision to reduce the rate in the 2018 estimate. The reduction in equipment requires clear understanding of the assumptions which were made, as the rates provided by the contractors in Appendix C of their 2018 estimate don't reflect a corresponding rate reduction. There is no mention of BIMC having changed assumptions on equipment utilization ratios, productivity, or equipment hours within the rates, only the equipment rate itself. For reasons mentioned above SNC-Lavalin is more aligned with the 2014 estimate unit rates which were comprised of a $100/hour labour rate and $150/hour equipment rate. In order to accept the rates proposed by BIMC in 2018, BIMC should provide the following:

- Labour rate:
    - BIMC to provide what items it has carried forward from into the labour rate development provided by the five third-party contractors.
    - BIMC to provide clarification regarding the assumed work week in the 2018 estimate as well as the rotation schedule and how this was applied to the actual basis of the estimates.
    - BIMC to provide how it has carried into it's estimate the scheduled overtime, given the work week is proposed to be 70 hours and overtime paid at an overtime rate would be expected.
    - It is recommended that BIMC carries out a confirmatory check that the 2018 estimate labour rate is inclusive of all the items described in the 2014 estimate, otherwise the labour rate is considered low compared with the 2014 estimate.

- Equipment rate:
    - BIMC to provide clarification on how they revised equipment rates based on those received from their consultation with contractors in 2018 including any assumptions of equipment to be utilized (e.g. Hr/day, days/month) and how this aligns with the assumed work week and rotation schedule of workers.
    - BIMC to clarify the types of equipment considered in their assessment of the rates including how they carried these into their blended rate calculation.
    - BIMC to provide information on assumptions on equipment utilization ratios, productivity, or equipment hours within the rates.

As a result of our analysis, we used the 2014 unit rates in the Reclaim Models, until such time that further clarification is provided by BIMC.

4.2. Direct Cost Updates

The following sub-sections are divided into the respective work groupings used in the RECLAIM models. The quantities used within the respective worksheets are based on information provided by BIMC and SNC-Lavalin review of existing information.

Unless otherwise noted in the following section, except the unit rates, the assumptions and conclusions outlined in the BIMC 2020 Marginal Closure and Reclamation Financial Security Estimate remain valid for the purposes of this assessment and as such the quantities and activities provided have been used in the revised RECLAIM models.

4.2.1. Open Pit

Global RECLAIM

Uncertainties related to the open pit mine workings include whether or not there is potential for the generation of ML/ARD from the contact of water with the final pit. It is currently anticipated that the discharge from the open pit will not require treatment (AMEC 2010); however, there is uncertainty. The mining plan and the ongoing geochemical characterization plan will inform the prediction modelling for mine pit water quality at the end of mine life as presented in the Life-of-Mine Waste Rock Management Plan. Deposit 1 remains a hilltop outcrop, and development of the pit was projected to occur after 10 years of full production for the Approved Project. BIMC has proposed an increased mining rate in both their Phase 2 Project description and as part of the 2020 ASR process from the original approval project. With the increasing production rate, it is expected that the timeframe for open pit development would be sooner than the 10 years indicated previously.

Two options for reclamation through pit filling have been presented by BIMC:

- Allowing the pit to fill from natural sources (estimated timeline is 85 to 150 years);
- An enhanced pit filling alternative with active pumping (estimated timeline is 2 to 53 year). As referenced in the July 15, 2019, Technical Review of the Mary River Project, Water Licence 2AM-MRY1325 – Amendment No. 1.

BIMC has committed to reclamation research through the most recent revision of the ICRP (2018) so that prior models on pit flooding, geochemistry and ARD/ML potential presented in the FEIS can be validated with observations from active mining of the deposit and further assessment of local hydrology. BIMC should indicate the new timeframe of open pit development and their approach to updating the ICRP to address pit filling options. Results from the geochemistry and reclamation research programs should be incorporated into future versions of the ICRP and the costs for these items should be validated, and added to the security estimate.

A cost for pumping and potential ARD management has not been provided for directly in the EBS model given that there is no open pit at this time, however these costs need to be defined once the timeframe for open pit development is known.

4.2.2. Waste Rock Pile

Global RECLAIM

The 2018 Global evaluation notes the overall footprint of the waste rock dump that will be required to be graded and re-contoured is 190,000 m^2. The 2020 Work Plan outlines an increase in the volume of ore to be mined, contingent on the approval of the Phase 2 Project; however, the overall footprint of the Waste Rock Facility has not increased. It has been assumed that the 190,000 m^2 footprint is the ultimate end-of-life footprint and already incorporates the proposed increase in mined volume. If this is not the case, the quantity should be updated to reflect the new footprint.

According to the interim closure plan (Baffinland, 2018) the waste rock stockpile should be monitored during operations for acid rock drainage and metal leaching (ARD/ML). Ongoing geochemical investigation (to become available December 31, 2019) should confirm ARD/Metals leaching potential of waste rocks in regards of the latest results of low pH from the rock pile observed since 2017. Geology (geological lithology) from the open pit should be compared and validated with the initial geochemical database. Closure cost should be based on other reclamation concept (as a cover) until Baffinland could validate that they could manage ARD and metals leaching with their waste rock management plan. The implications to the closure plan and accompanying costs should be reviewed and adjusted accordingly.

As noted in our 2018 ASR review report, based on our experiences and similar project, cost to reclaim similar materials (potentially ARD waste rock) in a permafrost environment could represent $ 100 000 to $ 300 000 per hectare. As a minimum, cost for studies and instrumentation should be included in the Security estimates

Furthermore, the rate of oxidation of waste rock resulting in an increase in metal concentrations could increase or bring cost for water treatment in the short, middle and long term, as there may be a need to

treat water post closure. This should be reviewed and if required, water treatment should be included for a minimum of 5 to 10 years in Security cost estimates.

Given the ongoing assessment by BIMC to define the issues at site, a direct cost has not been incorporated into Reclaim for ARD/ML managements; however a contingency cost was added to the overall estimate see section 4.3).

It is expected that BIMC's submission of the revised Waste Rock Management plan will provide more information regarding the ARD/ML management and associated costs for closure requirements and may inform the ASR process on the distribution of direct costs associated with the management of any ARD/ML liability.

4.2.3. Building and Equipment

Marginal RECLAIM

There is a discrepancy in the numbers of mobile and mechanical equipment to be delivered to the Mary River Project in 2020 between what has been reported in the text in Section 3.3.1.2 of the 2020 Marginal Closure and Reclamation Financial Security Estimate (57 additional pieces of equipment) and Table 3-3 of the same document (154 additional pieces of equipment). The Estimate Breakdown Structure (raw data) provided by BIMC matches the equipment count of Table 3-3, so these values have been used in the Marginal RECLAIM model.

4.2.4. Interim Care and Maintenance

Global RECLAIM

BIMC is currently carrying the costs of 18 months for interim care and maintenance; however, CIRNAC guidelines requires 5 years to be allocated. The 2019 Global RECLAIM has been modified to reflect 5 years, including the costs of three caretakers inclusive of travel and camp accommodations.

4.3. Indirect Cost

The indirect costs include the cost related to post-closure monitoring and maintenance, mobilization and demobilization, as well as some cost factors such as contingency, engineering, project management, health and safety/QA-QC/engagement costs, bonding/insurance and contingency.

4.3.1. Post-Closure Monitoring and Maintenance

Global RECLAIM

In the 2016 Marginal Closure and Reclamation Financial Security Estimate a total of $3,766,000 was allocated for Post Closure Monitoring cost. Following discussions with QIA, regarding the ICRP and the uncertainty items, the amount was updated in 2018.

The Post Closure Monitoring has no changes and no updates for year 2020; however, the revised total estimate as presented in BIMC's 2019 Marginal Financial Security Estimate Table 4-8 increased to $ 4,990,000. CIRNAC's guidance recommends 11 sampling events be carried out over a 25 year period rather than the 8 sampling events over 15 years that is currently being allocated by BIMC. The 2019 Global RECLAIM has been modified to reflect this change by pro-rating BIMC's 2019 Marginal Financial Security Estimate for the additional sampling events (i.e. from 8 to 11). It should be noted that a discount rate has not been applied when calculating the Net Present Value of the future annual monitoring and maintenance cost.

The site also has a known and suspected ARD issues, therefore more frequent sampling in the first 5 years (and baseline year 0) a long with increasing the post-monitoring timeframe would help to determine the stability of the site.

4.3.2. Engineering

BIMC has indicated that engineering costs are 3.9% of total direct costs in their 2020 Marginal Estimate. A detail of costs or assumptions included in this percentage has not been provided. SNC-Lavalin has carried out a cursory estimate of Engineering costs considering the level of effort including: 1 Engineer Manager, 1 Engineer Coordinator, 2 Environmental Engineers and 2 Designers, at $150/hour for one year; plus 25 % of the engineering fees for travel and disbursements. The total estimate for engineering costs was in the range of $ 2,300,000 and $ 2,500,000, within a 15% accuracy. This amount is in line with the $ 2,662,595 calculated by SNC-Lavalin in RECLAIM using the 3.9% of direct costs (showed in Table 4-3), which validates that the percentage used by Baffinland is appropriate.

BIMC does not report the overall engineering costs as part of their global estimate or how this percentage is derived, therefore we are unable to provide a comparison of the Reclaim costs for engineering and that presented in the EBS. It is recommended that BIMC provides this item and the assumptions for it within their report.

4.3.3. Project Management

BIMC in the 2020 Marginal estimate used a proportion of 9.4% of direct costs for project supervision, management and contract administration. SNC-Lavalin verified the estimated amount of Project Management costs considering the level of effort including the following staff: 1 Project Manager, 2 Project Coordinators, 3 Superintendents, 1 Scheduler, 1 Cost Controller, 1 Document Controller, 1 QA/QC and 4 administrative support at $150/hour for one year; plus 25 % of the project management fees for travel and disbursements. The total estimate for project management costs was in the range of $ 5,460,000 and $ 6,300,000, within a 15% accuracy. This amount is in line with the $ 6,417,536 calculated by SNC-Lavalin in RECLAIM using the 9.4% of direct costs (showed in Table 4-3), which validates that the percentage used by Baffinland is appropriate.

BIMC does not report the overall project management costs as part of their global estimate or how this percentage is derived, therefore we are unable to provide a comparison of the Reclaim costs for project management and that presented in the EBS. It is recommended that BIMC provides this item and the assumptions for it within their report.

4.3.4. Bonding/Insurance

While these items do not appear to have been carried by BIMC, SNC-Lavalin will continue to use 2% of direct costs for bonding and insurance fees.

4.3.5. Contingency

The BIMC Marginal Estimate 2020 includes a 12.5% of the total direct and indirect costs Contingency for the Marginal security evaluation. In the latest BIMC Global and Marginal Estimates as well as in Arcadis (2018) report the contingency was increased to 15%. Given the level of uncertainty around ARD/ML issues the contingency has been maintained at 20%.

4.3.6. Market Factor Adjustment

BIMC did not provide any market factor adjustment in the 2020 financial security estimate. SNC-Lavalin has applied the 2014 unit rates in our analysis and no further market factor were incorporated. In part this was to allow for a better comparison of the costs that BIMC is presenting to those in the Reclaim model. However, in our assessment a 2% annual increase to the labour rates would be reasonable in in future analysis, however BIMC have not indicated how they are adjusting the unit rates for this factor year over year. It is recommended that the proponent indicate how they intend to adjust their unit rates year over year to reflect market factors.

4.4. Summary of Costs

The updated Reconciled 2019 Global estimate and 2020 estimate are summarized in Table 4-1 and Table 4-2, showing a comparison to the BIMC costs. Refer to Appendix B for the RECLAIM spreadsheets, presenting the detailed breakdown of closure costs by mine components. A summary of the 2020 Marginal and Global Estimate and the new 2020 Security Estimate is shown in Table 4-3.

Table 4-1 Summary of 2020 Marginal Increases (RECLAIM)

Cost Item	Security Estimate using SNC Recommended Unit Rates (based on 2014 rates)	Security Estimate using BIMC Rates as per 2020 Work Plan Estimate
Direct Costs		
Open pit	$5,773,031	See Table 3.1 for cost breakdown by activity.
Quarries	$5,773,031	
Underground Mine		
Tailings Facility		
Rock Pile		
Buildings and Equipment	$5,768,460	
Mine Site	$2,249,926	
Milne Port	$1,276,828	
Tote Road	$2,241,706	
Chemicals and Contaminated Soil Management	$2,858,000	
Surface and Groundwater Management		
Interim Care and Maintenance		
Subtotal Direct Costs	**$14,399,492**	**$9,482,500**
Indirect Costs		
Mobilization/Demobilization	$4,338,000	See Table 3.1 for cost breakdown by activity.
Post-Closure Monitoring and Maintenance		
Engineering (3.9%)	$561,580	
Project Management (9.4%)	$1,353,552	
Health and Safety Plans/Monitoring, QA/QC and Engagement Costs (0%)		
Bonding/Insurance (2%)	$287,990	
Contingency (20%)	$2,879,898	
Market Price Factor Adjustment (0%)		
Subtotal Indirect Costs	**$9,421,021**	**$10,186,000**
GRAND TOTAL	**$23,820,513**	**$19,668,500**

Table 4-2 Summary of Reconciled 2019 Global Costs (RECLAIM)

Cost Item	Security Estimate using SNC Recommended Unit Rates (based on 2014 rates)	Security Estimate shown in BIMC 2020 Marginal Closure and Reclamation Financial Security Estimate
Direct Costs		
Open pit	$9,872,490	
Mary River Mine Pit/ Quarries	$9,872,490	
Underground Mine	$0	
Tailings Facility	$0	
Rock Pile	$343,900	
Buildings and Equipment	$29,636,176	
Mine Site	$16,854,993	
Milne Port	$8,899,850	
Tote Road	$3,053,256	
Project Wide	$828,077	
Chemicals and Contaminated Soil Management	$6,409,346	
Surface and Groundwater Management	$1,563,115	
Interim Care and Maintenance	$6,047,145	
Subtotal Direct Costs	**$53,872,172**	
Indirect Costs		
Mobilization/Demobilization	$43,323,149	
Post-Closure Monitoring and Maintenance	$6,861,250	
Engineering (3.9%)	$2,101,015	
Project Management (9.4%)	$5,063,984	
Health and Safety Plans/Monitoring, QA/QC and Engagement Costs (0%)	$0	
Bonding/Insurance (2%)	$1,077,443	
Contingency (20%)	$10,774,434	
Market Price Factor Adjustment (0%)	$0	
Subtotal Indirect Costs	**$69,201,276**	
GRAND TOTAL	**$123,073,448**	**$98,240,000***

*Taken from Table 4-1 of the 2020 Marginal Closure and Reclamation Financial Security Estimate. Subtotal Type A values only. Note, the estimate does not include 2019 reconciliation costs ($136,000).

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Table 4-3 Summary of Security Estimate (RECLAIM)

		Reconciled 2019 Global (2020 SNC Recommended Rates)			Marginal 2020 (2020 SNC Recommended Rates)			2020 Global Estimate (Global 2019 + Marginal 2020) (2020 SNC Recommended Rates)		
		Total	IOL Liability	Crown Liability	Total	IOL Liability	Crown Liability	Total	IOL Liability	Crown Liability
CAPITAL COSTS										
OPEN PIT	Mary River Mine Pit	$9,872,490	$9,731,636	$140,854	$5,773,031	$4,940,296	$832,736	$15,645,522	$14,671,932	$973,590
BUILDINGS AND EQUIPMENT	Mine Waste Rock Pile	$343,900	$343,900	$0	$0	$0	$0	$343,900.00	$343,900.00	$0
	Mine Site	$16,854,993	$16,854,993	$0	$2,249,926	$2,249,926	$0	$19,104,919	$19,104,919	$0
	Milne Port	$8,899,850	$8,899,850	$0	$1,276,828	$1,276,828	$0	$10,176,678	$10,176,678	$0
	Tote Road	$3,053,256	$2,644,498	$408,759	$2,241,706	$2,022,239	$219,467	$5,294,962	$4,666,737	$628,225
	Project Wide	$828,077	$828,077	$0	$0	$0	$0	$828,077	$828,077	$0
CHEMICALS ANC CONTAMINATED SOIL MANAGEMENT		$6,409,346	$6,320,954	$88,392	$2,858,000	$2,858,000	$-	$9,267,346	$9,178,954	$88,392
SURFACE AND GROUND WATER MANAGEMENT		$1,563,115	$1,541,558	$21,557	$0	$0	$0	$1,563,115	$1,541,558	$21,557
INTERIM CARE AND MAINTENANCE		$6,047,145	$5,963,748	$83,397	$0	$0	$0	$6,047,145	$5,963,748	$83,397
SUB-TOTAL		**$53,872,172**	**$53,129,213**	**$742,959**	**$14,399,492**	**$13,347,290**	**$1,052,203**	**$68,271,664**	**$66,476,503**	**$1,795,162**
PERCENT OF SUB-TOTAL			98.6%	1.4%		92.7%	7.3%		97.3%	2.7%
INDIRECT COSTS										
MOBILIZATION/DEMOBILIZATION		$43,323,149	$42,725,673	$597,476	$4,338,000	$4,338,000	$0	$47,661,149	$47,063,673	$597,476
POST-CLOSURE MONITORING AND MAINTENANCE		$6,861,250	$6,766,625	$94,625	$0	$0	$0	$15,125,000	$14,916,409	$208,591
ENGINEERING	3.9%	$2,101,015	$2,072,039	$28,975	$561,580	$510,383	$51,198	$2,662,595	$2,582,422	$80,173
PROJECT MANAGEMENT	9.4%	$5,063,984	$4,994,146	$69,838	$1,353,552	$1,230,153	$123,399	$6,417,536	$6,224,299	$193,237
BONDING/INSURANCE	2%	$1,077,443	$1,062,584	$14,859	$287,990	$261,735	$26,255	$1,365,433	$1,324,319	$41,114
CONTINGENCY	20%	$10,774,434	$10,625,843	$148,592	$2,879,898	$2,617,347	$262,552	$13,654,333	$13,243,190	$411,143
SUBTOTAL		**$69,201,276**	**$68,246,911**	**$954,365**	**$9,421,021**	**$8,957,617**	**$463,403**	**$78,622,297**	**$77,204,528**	**$1,417,768**
TOTAL COST (direct and indirect)		**$123,073,448**	**$121,376,124**	**$1,697,324**	**$23,820,513**	**$22,304,907**	**$1,515,606**	**$146,893,961**	**$143,681,031**	**$3,212,930**
Total "Global" estimated Security for 2020 as per BIMC (direct and indirect)								$117,772,000	$114,493,000	$3,279,000

4.4.1. Major Cost Factors

The following Table 4-4 summarizes the major factors that have increased the 2020 Global Estimate.

Table 4-4 Summary of Major Factors Influencing the 2020 Global Estimate

Cost Item	Change to Global Estimate (rounded to the nearest 000)	
Adjusting Unit Rates to Recommended 2020 Rates	Direct Cost	$4,665,000
	Indirect Cost	$1,410,000
	Total Cost	**$6,075,000**
Increasing Contingency from 15% to 20%	Indirect Cost	**$2,695,000**
Increasing Interim Care and Maintenance to 5 Years	Direct Cost	**$3,255,000**
GRAND TOTAL		**$12,025,000**

5. Findings and Recommendations

A Table including the Unit Rates for Direct Costs and Indirect Costs used by Baffinland for the preparation of the 2020 Marginal Closure and Reclamation Financial Security Estimate should be presented in their annual report. Based on our review of the rates that are used in the EBS model, we noted that we cannot determine the justification for rate reductions as BIMC has not provided the full rationale for what is included into the unit rates. Until such time that these can be reviewed and in line with our experience working in this setting we have incorporated the unit rates established in 2014.

There appears to be an error in Table 4.1 of the Baffinland 2020 Marginal Closure and Reclamation Financial Security Estimate and the 2019 Marginal Closure and Reclamation Financial Security Estimate. The Grand Total summary for the 2020 estimate in column “C” and “F” are identical to totals from the 2019 ASR estimate and appear to be an error as the numbers above the line have changed.

The Interim Closure and Reclamation Plan (BAF-PH1-830-P16-0012) Rev 5, October 30, 2018, submitted in the BIMC 2020 Work Plan, is the same document submitted with the BIMC 2019 Work Plan, therefore many comments provided to the last year document by SNC-Lavalin are valid for this review also. In terms of mine reclamation, land and site will return to the community, as such BIMC Interim Closure and Reclamation Plan and financial security estimate should reflect design criteria of the waste rock facility by incorporating the following:

- A contingency reflecting the risk of not completing progressive reclamation of the waste rocks facility during the operation include, but not limited, to increase of the rate of dissolution and/or oxidation of waste rocks (already in progress) resulting in increase in metal concentrations and cost for water treatment in the short, middle and long term;
- Waste rock management plan and operations should promptly be reviewed and validated to minimize the time of waste rock exposure and oxidation according to the results of the waste rock analysis to be available on December 31, 2019;
- Closure cost should be based on other reclamation concept (as a cover) until BIMC could validate that they could manage ARD/ML issues with their waste rock management plan. Validate geology and geochemistry of waste rocks and rock pile closure design (based on permafrost), taking into account the updated thermal model;
- Review long-term design criteria of BIMC according to state-of-the art and other mine sites in permafrost conditions, and/or regarding ARD/ML characterization;
- Cost for studies and instrumentation not in place yet or needed at the end of mine operations at Baffinland site should be added to the security estimate;
- Financial Security should be adjusted for waste rock pile as long as BIMC could prove the viability of their concept.

The BICM 2020 Work Plan includes several activities that require a Project Certificate approval for Phase 2 of the project. BIMC indicates that these works are planned based on anticipated approval of Phase 2, but that will not proceed until the relevant approvals are obtained. These activities have been highlighted in Section 3 and where costs were presented by BIMC, these were identified in Table 3-1. It is however difficult to separate all costs that BIMC has carried that relate to Phase 2 activities, as BIMC presented costs as a blend between those elements that are common to both Phase 1 and Phase 2 project development. It is recommended that BIMC present these items separately so that CIRNAC may assess the cost implications more clearly for the elements that are strictly associated with Phase 2.

5.1. CIRNAC Previous Comments related to the security review process in the 2018 – 2019 period

The items listed below have relevance to the 2020 ASR process. These items were indicated to BIMC over the 2018-2019 period and may have been associated with other review processes.

- During the Security Review for year 2019, First submission (December 3, 2018) CIRNAC recommended that BIMC not engage in any work that is secured under the 2019 Work Plan, which may require a modification to the licence without obtaining appropriate approvals first. 181203 2AM-MRY1325 CIRNAC 2019 ASR Estimate First Submission-ILAE.pdf.
- In the July 15, 2019, Technical Review of the Mary River Project, Water Licence 2AM-MRY1325 – Amendment No. 1, CIRNAC emphasizes that the timeframe of 3 years for Closure and 15 years for Post-Closure monitoring proposed by Baffinland in the IRCP security calculations, may be an optimistic schedule and too short a timeframe, particularly given uncertainties such as ARD/ML and need for pit water treatment. In CIRNAC TR# 8 - Security Estimate Calculations in Relation to the ICRP, CIRNAC suggests the timeframe of post-closure monitoring should be extended to 25 years, and the timeframe of interim care and maintenance be extended to 5 years (This suggestion was also made in the CIRNAC 2019 ASR final submission). 190715 2AM-MRY1325_CIRNA_TECHNICAL_COMMENTS-IMLE.pdf..
- CIRNAC also identified that the Reclamation criteria were not reflected in BIMC's estimate such as: need for validation studies for reclamation, mitigation for dust emission.
- During the Phase 2 EIA Addendum review process, CIRNAC has also expressed concern regarding the ARD/ML issue encountered on site that were unforeseen by predictive modelling during the original EIA approval phase. This issue still remains to be resolved. BIMC is currently undertaking investigation to better understand the cause of the issue and management strategy to mitigate ARD/ML. The results of this investigation are expected to be included into the forthcoming updated Phase 1 Waste Rock Management Plan in December, 2019, and the next version of the Interim Closure and Reclamation Plan. The results of this should provide additional information that will need to be considered in adjusting the security estimates for the project.

5.2. Cost reconciliation -BIMC's EBS model and RECLAIM model

It was noted that "Short Term Temporary Care and Maintenance Program" as well as Year 0 and Year 1 should be considered in the Interim Care and Maintenance (ICM) cost instead of in Post-Closure Monitoring and Maintenance cost. ICM should be separated from Post-closure cost as it is in the RECLAIM worksheet for better evaluation and understanding.

As mentioned above, Interim care and maintenance should be increased to 5 years, and post-closure cost to 25 years according to CIRNAC guidance for duration of interim care & maintenance and post-closure monitoring in the mine site closure & reclamation plan cost estimate.

SNC-Lavalin maintained the increase to 20% contingency in the Marginal cost to address the uncertainty associated with ARD/ML at the waste rock pile and other outstanding items for Closure and Post-Closure. Best practice would be to add those elements to the direct cost of the Security estimate instead of increasing the contingency.

BIMC does not provide details of the calculation for Indirect cost of 3.9% for engineering and 9,4% for Project Management. Should BIMC provide the information regarding these costs, SNC-Lavalin will be able to validate them.

The need to adjust closure cost in a different model year over year may introduce many errors in the Security estimate as such it would be preferred that Baffinland present their closure estimate including the items of RECLAIM format as per CIRNAC guidelines. The current approach used my BIMC is onerous to track changes and makes it difficult to identify if previous closure items are still applicable. Furthermore, the EBS model provided by BIMC does not contain the logic based on which the different cost summaries are presented within the annual report, therefore making it very difficult for the reviewer to establish the accuracy or consistency between the report and model throughout the assessment process.

We recognize that EBS provides specific closure activities by type, cost, year, etc; however, it is difficult to follow the flow of progression from one year to the next and how specific changes tie into the overall closure planning. It is difficult to assess if key items within the closure plan have been assessed without going through each line item. It would be useful to perhaps have a separate sorting function that catalogues each closure item both by location and key closure category (i.e. water treatment, post closure monitoring) so that at a quick review all the "key / typical" closure items have been assessed.

Table 5-1 presents a summary of items that require clarification from BIMC.

Table 5-1 Summary of clarifications to be requested to BIMC

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
In 2018 BIMC completed an assessment of five different third-party contractors, including both contractors from outside Nunavut and those registered in Nunavut. The revised labour rate based on updated 2018 contractor input was $75/hour.	Labour rates derived in the 2014 estimate was $100/hour based on an average from three different third-party contractors for personnel skilled in several occupations required to carry out the reclamation activities identified.	BIMC to confirm what costs were included in the labour rates from the five third party contractors that were consulted for the 2018 estimate.	
The 2018 estimate mentions a 14 day-on and 14 day-off worker rotation cycle but the actual basis of the estimates are unclear.	The 2014 estimate work week is assumed to be 7 days a week, 10 hours a day for a 21-day duration followed by a rest period.	BIMC to confirm 2018 estimate work week cycle and schedule.	
The 2018 labour rate is low compared to 2014 estimate.	The 2014 estimate has a blended labour rate of $100/hour and included applicable base wage, fringe benefits and burdens, small tools, consumables, personal protective equipment (PPE) and overhead and profit. It is unclear if scheduled overtime is included within all-in rates, given the work week is 70 hours, overtime paid at an overtime rate would be expected.	Complete a confirmatory check that the 2018 estimate labour rate is inclusive of the items listed in the issue description and included in the 2014 estimate.	
In 2018 BIMC assessed three different third-party contractors and revised the equipment rates based on contractor equipment rates obtained to $125/hour. This rate assumes equipment to be utilized 8 hours per day, 20 days per month at 160 hours per month. This does not align with the assumed work week and rotation from the 2014 estimate.	The 2014 estimate utilized a blended equipment rate of $150/hour, representative of the variety of equipment required to implement the reclamation activities and includes the cost to operate and maintain the equipment, but exclusive of contractor labour and mobilization/demobilization costs. The 2014 estimate blended equipment rate was calculated based on actual equipment rates from three different contractors. A comparison of individual equipment for heavy equipment reveals that for a 988 loader, the hourly rate obtained for the 2018 estimates is	BIMC to clarify the type of equipment considered in the estimate and to provide information on assumptions on equipment utilization ratios, productivity, or equipment hours within the rates.	

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
	approximately 6% higher than the 2014 estimate.		
Error in Table 4.1 of the Baffinland 2020 Marginal Closure and Reclamation Financial Security Estimate and the 2019 Marginal Closure and Reclamation Financial Security Estimate.	The grand total summary for the 2020 estimate in column "C" and "F" are identical to totals from the 2019 ASR estimate and appear to be an error that does not includes the updated sub totals.	Correct the grand total summaries of Table 4.1 of the Baffinland 2020 Marginal Closure and Reclamation Financial Security Estimate and the 2019 Marginal Closure and Reclamation Financial Security Estimate.	
There is difficulty involved with separating the costs that BIMC presented as a blend of elements common to Phase 1 and Phase 2 project development.	The BIMC 2020 Work Plan includes several activities that require a Project Certificate and will be performed after Post-Project Certificate for Phase 2. Those works are planned based on anticipated approval of Phase 2, but this will not proceed until all relevant approvals are obtained.	It is recommended that BIMC present the Phase 2 items separately so that CIRNAC may assess the cost implications more clearly.	
BIMC has listed an indirect cost of 3.9% for engineering costs, this should be validated due to the stage of project.	It is unclear at what costs have been considered or included in this 3.9%.	It is recommended that BIMC provide a detail of the items included in the engineering costs.	
BIMC has listed an indirect cost of 9.4% for Project management costs, this should be validated due to the stage of project.	It is unclear at what costs have been considered or included in this 9.4%.	It is recommended that BIMC provide a detail of the items included in the Project Management costs.	
BIMC currently adjusts their closure costs in a different model annually.	The EBS model provided by BIMC does not contain the logic based on which the different cost summaries are presented within the annual report. This makes the process difficult for the reviewer to establish accuracy or consistency throughout the assessment process.	It is preferred that BIMC present their closure estimate following the items in RECLAIM format for improved accuracy and clarity.	

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
Waste Pile Rock Design Amendments			
Geochemical tests ongoing for evaluation of Waste Rock pile	Geochemical results will be available on December 31st, 2019.	Waste rock management plan and operations should promptly be reviewed and validated to minimize the time of waste rock exposure and oxidation according to the results of the waste rock analysis to be available on December 31, 2019.	✔
Waste Rock Management Plan and ICRP have not been updated	Closure cost should be based on other reclamation concepts (as a cover) until the Baffinland mine could validate that they could manage ARD and metals leaching with their waste rock management plan. Validate geology and geochemistry of waste rocks and rock pile closure design (based on permafrost), considering the updated thermal model.	The Waste Rock Management Plan and the ICRP should be updated according to Geotechnical and Geochemical results to became available on December 31st 2019.	✔
Prevention of Fugitive dust	Fugitive dust settling must be prevented as a minimum for site reclamation and a cover layer should be validated as well and included in closure cost.	Update this item in the ICRP and include in the cost estimate.	✔
Long term criteria for permafrost conditions	Review long term design criteria of BIMC according to state of the art and other mine sites in permafrost conditions, and/or regarding ARD characterization.	Update these items in the ICRP and include in the cost estimate.	✔
Studies and instrumentation	Cost for studies and instrumentation not in place yet or needed at the end of mine operations at Baffinland site should be added to the security estimate.	Include cost for studies and instrumentation at the end of mine operations	✔
Rock pile footprint	It has been assumed that 190,000 m^2 footprint is the ultimate end-of-life footprint and already incorporates the proposed increase in mined volume. If this is not the case, the quantity should be updated to reflect the new footprint.	Confirm or update the assumed end-of-life rock pile footprint.	✔

Table 5-2 summarizes the inconsistencies and items listed in the Report and not identified in the EBS model presented by Baffinland in the 2020 Marginal Closure and Reclamation Financial Security Estimate.

Table 5-2 Summary of inconsistencies in BIMC 2020 Marginal Financial Security Estimate

BIMC Report Reference	Item Description	Discrepancy between Report and EBS	Comment
Table 2-4	Screen Metso FS353	BIMC Report Quantity: -1 EBS 2020-R Quantity: 2	EBS quantity carried to RECLAIM. BIMC to clarify.
	D8T Dozer	BIMC Report Quantity: 3 EBS 2020-R Quantity: 1	EBS quantity carried to RECLAIM. BIMC to clarify.
	Genie Manlift z60	BIMC Report Quantity: -2 EBS 2019 Quantity: 2	Estimate quantity not represented in EBS for 2020/2020-R. BIMC to clarify.
	Genie Manlift s135x	BIMC Report Quantity: -3 EBS 2019 Quantity: 3	Estimate quantity not represented in EBS for 2020/2020-R. BIMC to clarify.
	Light Plants	BIMC Report Quantity: -21 EBS 2020 Quantity: 19	Estimate quantity not represented in EBS for 2020/2020-R. BIMC to clarify.
	Generator/Air Compressor	BIMC Report Quantity: -1 EBS 2019 Quantity: 2	Estimate quantity not represented in EBS for 2020/2020-R. BIMC to clarify.
	3rd Party Heavy Mobile Equipment	BIMC Report Quantity: -11	Estimate quantities not represented in EBS for 2020/2020-R. BIMC to clarify.
	3rd Party Medium Mobile Equipment	BIMC Report Quantity: -6	
	3rd Party Light Mobile Equipment	BIMC Report Quantity: -31	
Table 3-3	The quantities for 3rd Party Heavy Mobile Equipment and 3rd Party Light Mobile Equipment are the opposite of what is reported in the EBS.	In BIMC Report: 3rd Party Heavy: 265 3rd Party Light: 109 In EBS Work Plan 2020: 3rd Party Heavy: 109 3rd Party Light: 265	The EBS numbers were used in the RECLAIM model. BIMC to confirm quantity value to be carried into RECLAIM.
Table 3-4	Quarry PQ14B	BIMC Report Quantity: 110,000 m2 EBS 2020 Quantity: 111,000 m2	The EBS numbers were used in the RECLAIM model. BIMC to confirm quantity value to be carried into RECLAIM.

BIMC Report Reference	Item Description	Discrepancy between Report and EBS	Comment
Table 3-6	Light Tank	BIMC Report Quantity: 4 EBS 2020 Quantity: -4	The EBS numbers were used in the RECLAIM model. BIMC to confirm quantity value to be carried into RECLAIM.
Table 3-9	Fill Application for 2020 Estimate	BIMC Report Quantity: 5170 EBS 2020 Quantity: 5951	The EBS numbers were used in the RECLAIM model. BIMC to confirm quantity value to be carried into RECLAIM.

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6. Closure

This report has been prepared by Adriana Lafleur, Jonathan Cooper, with contribution by Bhavesh Mistry. The report was reviewed by Karola Tóth. The Reclaim model update was reviewed by Alain Lebel.

We trust that this report is to your satisfaction and we will be available to discuss if you have any question regarding this report.

Prepared by:

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7. References

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APPENDIX A

SNC-Lavalin Reconciled 2019 RECLAIM Global Estimate Costs

670026- Appendix A - 000 2019 Global RE

Project Name: *Baffinland Iron Mine*

Reclaim Model - Overview of Program

All users are urged to read the Reclaim Model User Manual - Scroll down for overview description of program.

Important! Reclaim 7.0 works better with no other excel files open.
If other excel files are open ignore run time error and proceed

Reclaim Menu

The default Excel menu bar has an additional tab labelled "Add-Ins" that provides options specific to the Reclaim Model.

Clear	This option deletes all input data, deletes any duplicated elements and blanks out the project name. It also allows for segregation into land costs vs water costs if required.
Duplicate	This option Duplicates components of the project. E.g. if there is more than one Open Pit, use duplicate to add a second Open Pit. Quantities for the new Open Pit are erased, but the Activities and Cost Codes are carried over from the original Open Pit. The new Open Pit subtotal is added to the Summary page.
Unit Costs	This option opens a window of unit costs to provide easy reference. NOTE: the unit cost table has a filter in the 'UNITS' column. You can select to only see a particular unit (eg km) or multiple units (km and m3) or all units.
Print All	This option prints the Summary Worksheet, Unit Cost Worksheet, and the individual component worksheets having non-zero balances. Individual worksheets can be printed directly using standard printing methods, such as Ctl - P.
Quit	Select Quit to exit the program
Help	Redirects user to Instructions worksheet.

WorkSheets

Summary	This worksheet contains a cumulative summary of costs for each component of the project. Associated costs such as engineering and project management are added as a percentage of the component costs.
Components	Costs are derived for individual closure and reclamation activities by multiplying a "quantity" of activity by a "unit cost". An activity can be edited, added, or deleted from worksheet. However, care should be taken not to modify cells that are defined and used elsewhere in the program. ***Do not change the content or column width of the first column of each component worksheet.***
Unit Costs	This worksheet contains a look up table with costs for typical work associated with each closure and reclamation activity

Limitations

The Reclaim Program will NOT work if the worksheets are changed such that the following requirements are not met. Please review the following prior to modifiying worksheets.

WorkSheet Names	*The names of the worksheets must not be changed.*
Defined Names	Certain cells have defined names, which must not be changed. Where the cell is named, the name will appear in the "Name Box" to the left of the formula bar.
First line of data	The first line of data for any component worksheet starts on line 4. ***Do not change the first line of a component worksheet, ie the component name.***
Cell A1	Cell A1 on the component sheet MUST always contain the count of that component for the duplicate function to operate. ***DO NOT CHANGE.***
Adding Lines	You can add lines to components and the unit cost table, as long as they are not the last lines. The last line might fall outside the named ranges. You can check the size of the named range by selecting the name from the drop down box at the top left of the sheet. Usually this box has a cell reference, or a name.
Printing	A component will only be printed if its sub-total is greater than zero. In addition, a component and the summary sheet cannot be printed if there is an error. Printing has been set to print 1 page per component.

Conditions of Use

The Reclamation Cost Estimating Model was prepared to serve as a guide for Government Agencies, mining companies, and others to estimate the cost of mine reclamation. This model is not intended to replace reclamation planning or to be used to determine the activities required to reclaim a site or to dictate how much should be spent on reclamation.

Reclaim was prepared by Brodie Consulting Ltd. on behalf of AANDC. AANDC and Brodie Consulting Ltd. are not responsible for the completeness or accuracy of any reclamation estimate made using this model. The user agrees to check and take responsibility for all aspects of any cost estimate made using this model.

The following table provides guidance as to whether water management and treatment is considered short term or long term. Short term closure activities may be costed within a component (eg 'Open Pit' or 'Rock Pile') or 'Water Management'. Long term or post-closure water treatment is costed in 'Water Treatment'.

		Short Term/ Capital Ex	Long term/ NPV
Open Pit	flood pit - install/operate pumping system	x	
	construct diversion ditches	x	
	treat 1st filling	x	
	install pump/decant system	x	
	passive/biological treatment	x	
	overflow treatment		x
Rock Pile/Heap Leach Facility	construct diversion ditches	x	
	install groundwater collection system	x	
	install toe seepage collection system	x	
	collect and treat groundwater		x
	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
	operate and maintain passive treatment system		x
	operate pump and detoxify heap leach pile (cyanide destruction)	x	
Tailings Facility	construct diversion ditches	x	
	pump supernatant (to pit, U/G)	x	
	treat supernatant	x	
	install toe seepage collection system	x	
	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
	operate and maintain passive treatment system		x
U/G Mine	accelerate flooding	x	
	install seepage collection system	x	
	install dewatering/pumping system	x	
	operate seepage/dewatering system (ARD/ML)		x
Water Management	refill lakes		
	redirect creeks/streams	x	
	stabilize water management ponds	x	
	stabilize/close sediment ponds	x	
	fresh water supply - breach embankment	x	
	fresh water supply - remove piping system	x	
	construct water treatment plant	x	
	construct sludge pond	x	
	water control in reclamation quarry	x	
	operate/maintain water treatment plant		x

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL	LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$9,872,490	$8,285,663	$1,586,827		$9,731,636	$140,854
UNDERGROUND MINE		$0	$0	$0		$0	$0
TAILINGS FACILITY		$0	$0	$0		$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$343,900	$343,900	$0		$343,900	$0
BUILDINGS AND EQUIPMENT	Mine Site	$16,854,993	$16,566,531	$288,462		$16,854,993	$0
	Milne Port	$8,899,850	$8,818,349	$81,501		$8,899,850	$0
	Tote Road	$3,053,256	$1,739,157	$1,314,099		$2,644,498	$408,759
	Project Wide/Other	$828,077	$828,077	$0		$828,077	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$6,409,346	$6,409,346	$0		$6,320,954	$88,392
SURFACE AND GROUNDWATER MANAGEMENT		$1,563,115	-	$1,563,115		$1,541,558	$21,557
INTERIM CARE AND MAINTENANCE		$6,047,145	-	$6,047,145		$5,963,748	$83,397
	SUBTOTAL: Capital Costs	**$53,872,172**	**$42,991,023**	**$10,881,149**		**$53,129,213**	**$742,959**
	PERCENT OF SUBTOTAL		**79.8%**	**20.2%**		**98.6%**	**1.4%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL	LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$43,323,149	$34,572,701	$8,750,448		$42,725,673	$597,476
POST-CLOSURE MONITORING AND MAINTENANCE		$6,861,250	$5,475,409	$1,385,841		$6,766,625	$94,625
ENGINEERING	3.9%	$2,101,015	$1,676,650	$424,365		$2,072,039	$28,975
PROJECT MANAGEMENT	9.4%	$5,063,984	$4,041,156	$1,022,828		$4,994,146	$69,838
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0.0%	$0	$0	$0		$0	$0
BONDING/INSURANCE	2.0%	$1,077,443	$859,820	$217,623		$1,062,584	$14,859
CONTINGENCY	20.0%	$10,774,434	$8,598,205	$2,176,230		$10,625,843	$148,592
MARKET PRICE FACTOR ADJUSTMENT	0.0%	$0	$0	$0		$0	$0
	SUBTOTAL: Indirect Costs	**$69,201,276**	**$55,223,941**	**$13,977,335**		**$68,246,911**	**$954,365**
TOTAL COSTS		**$123,073,448**	**$98,214,965**	**$24,858,484**		**$121,376,124**	**$1,697,324**

Open Pit Name: **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
STABILITY STUDY									
STABILIZE SLOPES									
COVER/CONTOUR SLOPES									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SPILLWAY									
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
P10 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P13 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P14 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P15 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P5 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P6 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P7 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
P8 Borrow Source	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
PQ2a Quarry	2019 Marginal	m2	345500	20GCS	$1.81	$625,355		$0	$625,355
PQ4a Quarry	2019 Marginal	m2	105000	20GCS	$1.81	$190,050		$0	$190,050
PQ6a Quarry	2019 Marginal	m2	194000	20GCS	$1.81	$351,140		$0	$351,140
PQ12a Quarry	2019 Marginal	m2	232200	20GCS	$1.81	$420,282		$0	$420,282
Q13 Quarry	2017 Work Plan addendum	m2	31350	20GCS	$1.81	$56,744	100%	$56,744	$0
Q14 Quarry	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
Q15 Quarry	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
Q16A Quarry	In 2016 Work Plan but deferred to 2017	m2	11240	20GCS	$1.81	$20,344	100%	$20,344	$0
Q9 Quarry	2016/2017 ASR Reconciliation	m2		20GCS	$1.81	$0		$0	$0
D1Q2 Quarry	2016 Work Plan	m2	109807	20GCS	$1.81	$198,751	100%	$198,751	$0
Q1 Quarry	2017 work plan addendum marginal increase Add 50000 m2. 2017 Actual add 824,500 m2. 2019 work plan add 226000 m2	m2	1170700	20GCS	$1.81	$2,118,967	100%	$2,118,967	$0
Q5 Quarry	2018 work plan see table 3-3 off marginal estimate. 2019 work plan add 1,225,587 m	m2	1240587	20GCS	$1.81	$2,245,462	100%	$2,245,462	$0
Q11 Quarry	2017 work plan marginal increase Add 2000 m2	m2	52433	20GCS	$1.81	$94,904	100%	$94,904	$0
Q18 Quarry (on Crown Land)	**2017 Work Plan new quarry Add 2000 m2 (100% Crown Land)**	**m2**	**2000**	**20GCS**	$1.81	**$3,620**	**100%**	**$3,620**	**$0**
Q19 Quarry		m2	18760	20GCS	$1.81	$33,956	100%	$33,956	$0
Q7 Quarry	2017 work plan marginal increase Add 2000 m2	m2	55050	20GCS	$1.81	$99,641	100%	$99,641	$0
QMR2 Quarry	2017 work plan addendum marginal increase Add 50000 m2	m2	314580	20GCS	$1.81	$569,390	100%	$569,390	$0
Pit 1		m2	55000	20GCS	$1.81	$99,550	100%	$99,550	$0
Pit 1 marginal increase		m2	214450	20GCS	$1.81	$388,155	100%	$388,155	$0
P1 Borrow Source (on Crown Land)	**100% on Crown Land**	**m2**	**75820**	**20GCS**	$1.81	**$137,234**	**100%**	**$137,234**	**$0**
Km 2 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2	42795	20GCS	$1.81	$77,459	100%	$77,459	$0
Borrow Development Areas		m2	42080	20GCS	$1.81	$76,165	100%	$76,165	$0
Unidentified Borrow Sources		m2	697910	20GCS	$1.81	$1,263,217	100%	$1,263,217	$0
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
Km 97 Borrow Source	2017 work plan marginal increase Add 1000 m2No 2018 unit rate availabe	m2	158012	20GCDS	$2.72	$429,793	100%	$429,793	$0
Type A Quarry	No 2018 unit rate availabe	m2	136880	20GCDS	$2.72	$372,314	100%	$372,314	$0
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$9,872,490		$8,285,663	$1,586,827
					% of Total			84%	16%

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
Install permanent instrumentation		allow		#N/A	$0.00	$0		$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
Grade and Contour Waste Rock dump		m2	190000	18GCS	$1.81	$343,900	100%	$343,900	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$343,900		$343,900	$0
					% of Total			100%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Chemicals/Soil Area Name:

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
Contaminated Soil Treatment	No 2018 unit rate availabe	m3	16164	15CSTS	$14.78	$238,904	100%	$238,904	$0
Contaminated Soil Treatment (2017 Work Plan)	Marginal increase associated with 2017 Work Plan. Spill 16-283 at Milne Port Bulk Fuel Tank Farm. No 2018 unit rate availabe	m3	8464	15CSTS	$14.78	$125,098	100%	$125,098	$0
Excavate and transport		m3		#N/A	$0.00	$0		$0	$0
Manage hydrocarbon remediation		m3		#N/A	$0.00	$0		$0	$0
Reagents/stabilizing agent		m2		#N/A	$0.00	$0		$0	$0
Excavate and transport to offsite facility		m3		#N/A	$0.00	$0		$0	$0
Contour decontaminated area		m3		#N/A	$0.00	$0		$0	$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material	2019 estimate (See section 3.3.2.2 of 2019	m3	12143	16AN1S	$358.00	$4,347,194	100%	$4,347,194	$0
Pre-package explosive:		kg	716519	16AN2S	$2.37	$1,698,150	100%	$1,698,150	$0
				#N/A	$0.00	$0		$0	$0
					Total	$6,409,346		$6,409,346	$0
					% of Total			100%	0%

Building / Equip Name: **Mine Site** **Bldg / Equip #: 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). 2017 Work Plan add 6 units. Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 30 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2 2019 estimate (add 2 from reconciliation, add 33 from Marginal Increase and add 61 from 3rd Party)	each	554	20MOLS	$941.09	$521,363	95%	$495,295	$26,068
Medium Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Ref 1, pg 24-25). 2017 Work Plan add 10 units. Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 40 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2 2019 estimate (add 14 from reconciliation, add 13 from Marginal Increase and add 49 from 3rd Party)	each	482	20MOMS	$1,494.13	$720,172	98%	$705,769	$14,403
Heavy Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). 2017 Work Plan add 21 units. Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 92 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2 2019 estimate (add 13 from reconciliation, add 33 from Marginal Increase and add 34 from 3rd Party)	each	469	20MOHS	$2,618.87	$1,228,252	98%	$1,203,687	$24,565
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). 2017 Work Plan add 20 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2019 estimate (add 29 from Marginal Increase)	each	120	20LMES	$1,980.80	$237,696	98%	$232,942	$4,754
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). 2017 Work Plan add 2 units. Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 12 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2019 estimate (add 1 from Marginal Increase)	each	121	20MMES	$4,261.34	$515,622	100%	$515,622	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). 2017 Work Plan add 1 unit (Truck Wash system). Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 4 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2 2019 estimate (add 14 from reconciliation and add 8 from Marginal Increase)	each	60	20MEHS	$41,205.45	$2,472,327	100%	$2,472,327	$0
	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 26).	each	6	20TLS	$2,148.33	$12,890	0%	$0	$12,890

Building / Equip Name: **Mine Site** **Bldg / Equip #: 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate). (see Tables 3-4 of 2019 Marginal Estimate).	each	13	20TLS	$2,148.33	$27,928	100%	$27,928	$0
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 26).	each	12	20MTS	$7,387.31	$88,648	100%	$88,648	$0
	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	2	20MTS	$7,387.31	$14,775	100%	$14,775	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	5	20LiDTS	$3,693.66	$18,468	100%	$18,468	$0
	Small fuel tanks (10,000-20,000L) 2017 actual not previously allocated (see Tables 2-4 & 3-4 of 2018 Marginal Estimate) (see Table 3-4 of 2019 Marginal Estimate)	each	15	20LiDTS	$3,693.66	$55,405	100%	$55,405	$0
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 27).	each	11	20MDTS	$16,166.40	$177,830	100%	$177,830	$0
	Medium fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Tables 2-4 & 3-4 of 2018 Marginal Estimate). (Table 3-4 of 2019 Marginal Estimate).	each	12	20MDTS	$16,166.40	$193,997	100%	$193,997	$0
Large Diesel Tanks	Large fuel tanks (3ML-15ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 27).	each	2	20LDTS	$106,338.74	$212,677	100%	$212,677	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured i other unit costs (Ref 1, pg 42).	Lot	0	20MEIS	$529.83	$0	100%	$0	$0
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000 L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L). See table 3-4 of 2018 marginal Estimate	each	18	20MMFTS	$10,481.05	$188,659	100%	$188,659	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	Trailers and Pre-fabricated buildings 2017 Work Plan Addendum includes 800 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port 2018 Work Plan see table 3-1	m2	23461	20RBMS	$59.38	$1,393,226	89%	$1,239,971	$153,255
	2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	1032	20RBMS	$59.38	$61,285	89%	$54,544	$6,741
Fold Away Buildings		m2	709	20RBFS	$41.57	$29,473	100%	$29,473	$0
Soft-Walled	2017 Work Plan Addendum soft Walled Buildings includes 50 person camp and 35 person Norse mai style camp at Mine Site only	m2	7917	20RBSS	$47.51	$376,119	100%	$376,119	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	30	20RBIS	$29.69	$891	100%	$891	$0
Office/washcars	2017 Actual work not previously allocated. See Table 2-4 of 2018 Marginal Estimate. No 2018 unit rate availabe	m2	576	20RBMS	$59.38	$34,206	89%	$30,443	$3,763
Water and Wastewater Treatment Facilities	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20WWTS	$11,035.58	$22,071	0%	$0	$22,071
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2	3112	20RCBMS	$143.42	$446,317	100%	$446,317	$0
Fold Away Buildings	2017 Work Plan add 1500 m2 Truck wash Building 2018 Work Plan see table 3-1 add 4230 m2 2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	16029	20RCBFS	$142.41	$2,282,680	100%	$2,282,680	$0
Soft-Walled	2017 Work Plan Addendum Maintenance Garage a Mine Site	m2	2046	20RCBSS	$148.35	$303,520	100%	$303,520	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	2017 Work Plan add 500 m2 Tire Shop	m2	604	20RCBIS	$143.42	$86,625	100%	$86,625	$0
Temporary Construction Warehouse and Office Allow	No 2018 unit rate availabe	m2	1	20RCBTS	$25,000.00	$25,000	100%	$25,000	$0
BREAK FOUNDATIONS									

Building / Equip Name: **Mine Site** **Bldg / Equip #: 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34). Add 2017 Work Plan Truck Wash Building foundation of 1500 m2. Add 2017 Work Plan addendum 800 person temp hard walled camp at mine 4333 m2.	m2	13357	20FCS	$38.47	$513,805	100%	$513,805	$0
Slab on Grade	Includes perforating the concrete slabs on grade Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Mine Site 2046 m2	m2	17750	20FSS	$33.11	$587,777	100%	$587,777	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2	1102	20TCS	$20.78	$22,905	100%	$22,905	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	m2 Removed in 2018 Work Plan for Mine Site (reconciliation of 2017 work plan addendum) - 15000m2 2018 Work Plan See Table 3-3 in Marginal Estimate 11400 m2 2017 Actual work not previously allocated (laydown 1, 2A and 2B) 44250 m2	m2	162843	20GCS	$1.81	$294,794	100%	$294,794	$0
	Expansion of 800 camp	m2	12000	20GCS	$1.81	$21,724	100%	$21,724	$0
	Water Treatment Plant 2019	m2	3500	20GCS	$1.81	$6,336	100%	$6,336	$0
	Km 107.5, Km 110, Km 107 stockplile	m2	404400	20GCS	$1.81	$732,083	100%	$732,083	$0
	mine site fuel tank foot print	m2	21620	20GCS	$1.81	$39,139	100%	$39,139	$0
	Crusher Pad expansion pad	m2	12000	20GCS	$1.81	$21,724	100%	$21,724	$0
Culvert Removal	on mine site 2019 estimate	m	285	15CRS	$1,094.48	$311,927	100%	$311,927	$0
Grade and contour building footprints		m2	223	20GCS	$1.81	$404	100%	$404	$0
Grade and contour infrastructure pads	Add 2017 Work Plan Addendum - Camp pad 45000	m2	202201	20GCS	$1.81	$366,044	100%	$366,044	$0
Aerodome Facilities		m2	5776	20GCS	$1.81	$10,456	100%	$10,456	$0
Road		m2	121619	20GCS	$1.81	$220,166	100%	$220,166	$0
Stockpiles	Add 2017 Work Plan Increase in Crusher Pad Storage Area - Ph 1: 8,200m2 & Ph 2: 17,500m2	m2	30800	20GCS	$1.81	$55,757	100%	$55,757	$0
Truck weigh facility distributed area		m2	13000	20GCS	$1.81	$23,534	100%	$23,534	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Waste Disposal		m2	900	20GCLS	$5.31	$4,777	100%	$4,777	$0
Fuel tank farm dyke		m2	1911	20GCLS	$5.31	$10,144	100%	$10,144	$0
Hazardous waste berm		m2	2106	20GCLS	$5.31	$11,179	100%	$11,179	$0
Bulk fuel storage facility (Bladder Farm)		m2	5788	20GCLS	$5.31	$30,724	100%	$30,724	$0
Crusher Pad Sedimentation Pond	2018 Work Plan See Table 3-3 in Marginal Estimate Add 2000 m2 from 2019 Plan	m2	6500	20GCLS	$5.31	$34,504	100%	$34,504	$0
Mine Site Fuel Tank, Farm containment Area	2019 marginal	m2	12000	20GCLS	$5.31	$63,700	100%	$63,700	$0
Hazardous waste berm	2019 marginal	m2	360	20GCLS	$5.31	$1,911	100%	$1,911	$0
Other	New PWSP 2019	m2	4180	20GCLS	$5.31	$22,189	100%	$22,189	$0
	Landfarm	m2	9000	20GCLS	$5.31	$47,775	100%	$47,775	$0
	KM107 Sedimentation Pond	m2	7400	20GCLS	$5.31	$39,281	100%	$39,281	$0
Mine Site Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	20GCLS	$5.31	$10,861	100%	$10,861	$0
Other		m2	5812	20GCLS	$5.31	$30,852	100%	$30,852	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). For 2018 work plan see table 3-9 in the Marginal estimate for quantity and 2017 Work Plan Addendum Table 3-8 Add 8948 m2.	m2	20068	20PFS	$44.37	$890,417	100%	$890,417	$0
	2019 marginal	m2	2664	20PFS	$44.37	$118,202	100%	$118,202	$0
SPECIALIZED ITEMS									
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). 2017 Work Plan add 3500 m of cable.	m	19700	20ECS	$26.49	$521,879	100%	$521,879	$0
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20FIS	$9,975.93	$19,952	100%	$19,952	$0
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20PWS	$9,975.93	$19,952		$0	$19,952
					Total	$16,854,993		$16,566,531	$288,462
					% of Total			98%	2%

Building / Equip Name: **Milne Port** **Bldg / Equip #: 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). 2017 Work Plan add 6 units.	each	104	20MOLS	$941.09	$97,873	98%	$95,916	$1,957
Medium Mobile Equipment	Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Re 1, pg 24-25).	each	48	20MOMS	$1,494.13	$71,718	95%	$68,133	$3,586
Heavy Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). 2017 Work Plan add 4 units.	each	63	20MOHS	$2,618.87	$164,989	100%	$164,989	$0
Other (reclaim conveyor)	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Conveyors have been classified as large mobile equipment, with the exception of th reclaim conveyor (850m in length). (Ref 1, pg 40). For 2017 Work Plan add 0.1667 units for for cross conveyor which is 1/6th of Reclaim Conveyor length. 2017 Work Plan Addendum this work was remove	each	1.1667	20MORS	$1,329,441.31	$1,551,059	100%	$1,551,059	$0
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). 2017 Work Plan add 20 units.	each	58	20LMES	$1,980.80	$114,886	98%	$112,589	$2,298
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). 2017 Work Plan add 16 units.	each	19	20MMES	$4,261.34	$80,965	100%	$80,965	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). 2017 Work Plan add 1 unit (Cone Crusher).	each	4	20MEHS	$41,205.45	$164,822	100%	$164,822	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 26).	each	3	20TLS	$2,148.33	$6,445	0%	$0	$6,445
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 26).	each	0	20MTS	$7,387.31	$0	0%	$0	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	1	20LiDTS	$3,693.66	$3,694	100%	$3,694	$0
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	20MDTS	$16,166.40	$16,166	100%	$16,166	$0
Large Diesel Tanks	Large fuel tanks (3ML-5ML). The cleaning, pluggin disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	20LDTS	$106,338.74	$106,339	100%	$106,339	$0
Largest Diesel Tanks	Largest fuel tanks (>5ML-15ML). The cleaning plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1 pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Por	each	1	20XLDTS	$171,468.15	$171,468	100%	$171,468	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured i other unit costs (Ref 1, pg 42).	each	0	20MEIS	$529.83	$0	100%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29). Add 2017 Work Plan 49-person Camp (ATCO, not soft-walled, 950 m2) Add 2017 Work Plan Addendum includes 380 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port10936m2 Add 2018 Work Plan see table 3-1 1218m2 2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	19130	20RBMS	$59.38	$1,136,030	100%	$1,136,030	$0

Building / Equip Name: **Milne Port** **Bldg / Equip #: 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Fold Away Buildings		m2	1525	20RBFS	$41.57	$63,393	100%	$63,393	$0
Soft-Walled		m2	5392.34	20RBSS	$47.51	$256,178	100%	$256,178	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	15	20RBIS	$29.69	$445	100%	$445	$0
Water and Wastewater Treatment Facilities	2015 Security Assessment pg 39 Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20WWTS	$11,035.58	$22,071	0%	$0	$22,071
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2	1171	20RCBMS	$143.42	$167,943	85%	$142,751	$25,191
Fold Away Buildings		m2	3194	20RCBFS	$142.41	$454,856	100%	$454,856	$0
Soft-Walled	Add 2017 Work Plan Addendum Maintenance Garage at Milne Port 2046m2	m2	4177	20RCBSS	$148.35	$619,649	100%	$619,649	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	134	20RCBIS	$143.42	$19,218	100%	$19,218	$0
Temporary Construction Warehouse and Office Allow	No 2018 unit rate availabe	m2	1	15RCBTS	$25,000.00	$25,000	100%	$25,000	$0
BREAK FOUNDATIONS									
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34).	m2	3513	20FCS	$38.47	$135,135	100%	$135,135	$0
Slab on Grade	Includes perforating the concrete slabs on grade Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Milne Site Add 10046 m2	m2	11812	20FSS	$33.11	$391,145	100%	$391,145	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2	732	20TCS	$20.78	$15,214	100%	$15,214	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	Removed in 2017 Work Plan addendum for Milne Port -150000 m2 In 2017 Work Plan Addendum - Milne Port add 150000 m2 2018 Work Plan See Table 3-3 in Marginal Estimate add 308000 m2 2017 actual work not previously allocated (W1,W3,W6, W7, W10B, W11, W14 AND W15) see table 2-2 of 2018 work plan add 81730 m2	m2	702651	20GCS	$1.81	$1,272,006	100%	$1,272,006	$0
	Laydown LP2	m2	30000	20GCS	$1.81	$54,309	100%	$54,309	$0
	Laydown LP1	m2	0	20GCS	$1.81	$0	100%	$0	$0
Grade and contour building footprints		m2	14306	20GCS	$1.81	$25,898	100%	$25,898	$0
Grade and contour infrastructure pads		m2	66536	20GCS	$1.81	$120,450	100%	$120,450	$0
Road		m2	12149	20GCS	$1.81	$21,993	100%	$21,993	$0
Stockpiles	Add 2017 Work Plan Increase in Ore Stockpile Storage Area - Ph 1: 36,900m2 & Ph 2: 45,100m2 Ore Stockpile expansion 2019	m2	356046	20GCS	$1.81	$644,548	100%	$644,548	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks on site for bulk fuel storage		m2		#N/A	$0.00	$0		$0	$0
Fire Protection pumping station		m2		#N/A	$0.00	$0		$0	$0
Worker Dry		m2		#N/A	$0.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		#N/A	$0.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		#N/A	$0.00	$0		$0	$0
Other		ha		scfyl	$4,300.00	$0		$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Ore Stockpile Sedimentation		m2	15000	20GCLS	$5.31	$79,624	100%	$79,624	$0
Ore Stockpile Sedimentation Pond 2a		m2	4400	20GCLS	$5.31	$23,356	100%	$23,356	$0
contaminated dump		m2	2700	20GCLS	$5.31	$14,332	100%	$14,332	$0
Hazardous waste berm	New hazardous waste berm (2019 breakdown)	m2	4777	20GCLS	$5.31	$25,358	100%	$25,358	$0
Milne Port Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	20GCLS	$5.31	$10,861	100%	$10,861	$0
Weatherhaven genset fuel bladder berm		m2	500	20GCLS	$5.31	$2,654	100%	$2,654	$0
Storage Area		m2	1971	20GCLS	$5.31	$10,463	100%	$10,463	$0
Fuel tank farm dyke		m2	25893	20GCLS	$5.31	$137,448	100%	$137,448	$0
Landfarm		m2	14083	20GCLS	$5.31	$74,757	100%	$74,757	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	2017 Work Plan Addendum	m2	2218	20PFS	$44.37	$98,413	100%	$98,413	$0
SPECIALIZED ITEMS									
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). 2017 Work Plan add 3500 m of cable.	m	14600	20ECS	$26.49	$386,774	100%	$386,774	$0
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20FIS	$9,975.93	$19,952	100%	$19,952	$0

Building / Equip Name: **Milne Port** **Bldg / Equip #: 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	20PWS	$9,975.93	$19,952	$0	$19,952
					Total	$8,899,850	$8,818,349	$81,501
					% of Total		99%	1%

1 **Building / Equip Name:** **Tote Road** **Bldg / Equip #:** 3

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular		m2	0	20RBMS	$59.38	$0	89%	$0	$0
Fold Away Buildings		m2	0	20RBFS	$41.57	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	Assume 7% on Crown Land 2017 Actual work not previously allocated (see Table 2-3 of 2018 Marginal cost) Add 1050 m2	m2	1273	20RBIS	$29.69	$37,798	100%	$37,798	$0
Water and Wastewater Treatment Facilities		each	0	20WWTS	$11,035.58	$0	0%	$0	$0
Power Plant		m2		brs1h	$65.00	$0		$0	$0
Communication Tower		m2		brs1h	$65.00	$0		$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
AN Storage Facility		m2		brs1s	$128.00	$0		$0	$0
Warehouse, Shops and Other		m2		brs1l	$45.00	$0		$0	$0
Storage Facility at Laydown/Airstrip		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks		m2		brs1h	$65.00	$0		$0	$0
Fire Protection pumping station		m		brs1h	$65.00	$0		$0	$0
Freshwater intake		m2		brs1l	$45.00	$0		$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0		$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, electrician		mandays		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, mechanical		mandays		#N/A	$0.00	$0		$0	$0
Break foundation slabs		m2		brcs	$6.00	$0		$0	$0
Consolidate & dump boneyard debris		allow		brs1l	$45.00	$0		$0	$0
Worker Dry		m2		brs1l	$45.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		brs1l	$45.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		brs1l	$45.00	$0		$0	$0
Water Intake		m2		brcs	$6.00	$0		$0	$0
Other		m2		bdcs	$12.63	$0		$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2	0	20RCBMS	$143.42	$0	100%	$0	$0
Fold Away Buildings	Mobile Maintenance Depot (100% on Crown Land)	m2	682	20RCBFS	$142.41	$97,123	100%	$97,123	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	20RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2	0	18RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade	Mobile Maintenance Depot (100% on Crown Land)	m2	682	20FSS	$33.11	$22,584	100%	$22,584	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing. Assume 7% on Crown Land	m2	59	20TCS	$20.78	$1,226	100%	$1,226	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Culvert Removal		m	80	15CRS	$1,094.48	$87,558		$0	$87,558
Grade and contour laydown areas	In 2017 Actual work not previous allocated - IT tower upgrades KM7, KM26,KM40, KM49, KM69, KM80 & KM88 (see table 2-2 of 2018 Marginal Estimate)	m2	33900	20GCS	$1.81	$61,369	100%	$61,369	$0
	Laydown 2, 4, 7, 9, 10, 13 (2019 marginal)	m2	285000	20GCS	$1.81	$515,934	100%	$515,934	$0
Grade and contour building footprints	Assume 7% on Crown Land	m2	13040	20GCS	$1.81	$23,606	100%	$23,606	$0
Grade and contour infrastructure pads	Assume 7% on Crown Land	m2	6760	20GCS	$1.81	$12,238	100%	$12,238	$0
Aerodome Facilities		m2	0	20GCS	$1.81	$0	100%	$0	$0
Road	Assume 7% on Crown Land	m2	533000	20GCS	$1.81	$964,887	100%	$964,887	$0
Stockpiles		m2		20GCS	$1.81	$0	100%	$0	$0
Remove Liner	Mobile Maintenance Depot (100% on Crown Land)	m2	683		$3.50	$2,391	100%	$2,391	$0
Grade and Contour Significant Disturbed Areas		m2		20GCDS	$2.72	$0	100%	$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		AE	$8.47	$0		$0	$0
Fuel tanks on site for bulk fuel storage		m2		AE	$8.47	$0		$0	$0
Fire Protection pumping station		m2		AE	$8.47	$0		$0	$0
Worker Dry		m2		AE	$8.47	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		AE	$8.47	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		AE	$8.47	$0		$0	$0
Other		ha		scfyl	$4,300.00	$0		$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
RECLAIM ROADS									
Remove bridges (IOL)	The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Re 1, pg 36).	each	3	20BRS	$201,838.77	$605,516	0%	$0	$605,516
Remove bridges (CROWN)	The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Re 1, pg 36).	each	1	20BRS	$201,838.77	$201,839	0%	$0	$201,839
Remove Culverts (IOL)	The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Ref 1, pg 21).	each	372	15CRS	$1,094.48	$407,147	0%	$0	$407,147
Remove Culverts (CROWN)	The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Ref 1, pg 21).	each	11	15CRS	$1,094.48	$12,039	0%	$0	$12,039
Scarifying and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Scarifying Airstrip		ha		#N/A	$0.00	$0		$0	$0
Scarifying Laydown Areas		ha		#N/A	$0.00	$0		$0	$0
vegeation		ha		#N/A	$0.00	$0		$0	$0
Other		ha		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
					Total	$3,053,256		$1,739,157	$1,314,099
					% of Total			57%	43%

Note:

1 **Building / Equip Name:** **Project Wide/Other** **Bldg / Equip #:** ***4***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	Includes drill and blasting of material aggregated crushing, excavation of fill material, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth of 1.5m over 6m of demolition waste (Ref 1, pg 17). 2017 Work Plan and BIMC Nov. 24 EBS revision add 1192 m2 for disposal of 2017 mobile and mechanical equipment (107 units in total)	m2	18663	20PFS	$44.37	$828,077	100%	$828,077	$0
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	$828,077		$828,077	$0
					% of Total			100%	0%

Note:

Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
Place soil cover		m3		#N/A	$0.00	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0
Vegetate spread material		ha		#N/A	$0.00	$0
Rip rap in channel base		each		#N/A	$0.00	$0
Grade and Contour with liner	Includes liner removal and disposal (Ref 1, pg 21) and backfill, compaction and scarifcation with a dozer (Ref 1, pg 19).	m2	49636.2	20GCLS	$5.31	$263,484
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
BREACH DITCHES						
DECOMISSION FRESH WATER SUPPLY						
WATER CONTROL IN RECLAMATION QUARRY						
REMOVE PIPELINES						
Remove pipes	The unit cost includes the cleaning, plugging, disassembly, loading, hauling and disposal of piping (Ref 1, pg 41).	m	19623	20RPS	$66.23	$1,299,631
Concrete plug deep pipes		m3		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
					Total	$1,563,115

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

1 **Interim Care and Maintenance (5 Year duration)**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker	Three caretakers for 60 months (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 120 days of travel for each caretaker over 60 months. 10-hr days.	hr	34800	20BLS	$100.00	$3,480,000
extra personnel	Assume crew of 15 people for 56, 10-hr days, to stabalize site and equipment at both the Mine Site, and Milne Port. Blended unit rate is used to allow for different skill levels that would make up the crew.	hr	8400	20BLS	$100.00	$840,000
-electrician		manmonths	0	elech	95	$0
-mechanic		manmonths	0	mechh	72.85	$0
annual fuel		litre	0	fcdh	1.39	$0
Mobilization of Workers Required for Stabilization Period (from northern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	252	20NWS	$75.00	$18,900
Mobilization of Workers Required for Stabilization Period (from southern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	588	20SWS	$85.45	$50,245
Camp accomodations- stabilization period	15 workers for 56 days	person-days	840	20WACS	$225.00	$189,000
Camp accomodations for caretakers	60 month duration full time	person-days	5,400	20WACS	$225.00	$1,215,000
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr	560	20BES	$150.00	$84,000
misc. supplies		allow		accmh	0	$0
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow	0	#N/A	0	$0
SNP/AEMP water sampling & reporting		each	3	15MCWL	$30,000.00	$90,000
geotechnical assessment		each	3	15GTS	$20,000.00	$60,000
environmental assessment	Assumes spending 1st year budget for this type of activity for interim care	each	1	RPTH	$20,000.00	$20,000
interim water treatment				#N/A		$0
other		each		#N/A	0	$0
					60 Month Interim C&M Cost	$6,047,145
Number of years of ICM		years	5		**Total**	$6,047,145

1 **Post-Closure Monitoring & Maintenance:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	Assume 2 geotech inspections are specified at year 4 and 8 (Ref 2, pg 81).	each	2	15GTS	$20,000.00	$40,000
	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$200,000.00	$200,000
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*	Annual reporting over 8 years. Unit rate from RECLAIM.	each	8	RPTL	$10,000.00	$80,000
Site water monitoring (AEMP and SNP)	Annual reporting over 8 years. Unit rate from RECLAIM.	each	16	15MCWL	$30,000.00	$480,000
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Air Quality Monitoring Program (AQMP)	Assume 3 sampling events specified at year 2, year 4 and year 7 (Ref 2, pg 81). Unit rate from RECLAIM.	each	3	RPTH	$20,000.00	$60,000
	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$210,000.00	$210,000
Wildlife Effects Monitoring Program (WEMP)	Assume 2 sampling events specified at year 5 and year 7 (Ref 1, pg 81). Unit rate from RECLAIM.	each	2	RPTH	$20,000.00	$40,000
	2019 Marginal. Assume sampling events specified year 1 to 5.	each	0	#N/A	$40,625.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Project Environmental Assessment	Assume carried once (1x) during closure/post closure period year 4; at Mine site, Tote Road and Milne Port (Ref 2, pg 81). Unit rate from RECLAIM.		3	RPTH	$20,000.00	$60,000
	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$240,000.00	$240,000
Short Term Temporary Care and Maintenance Program	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$200,000.00	$200,000
Permitting	2020 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$220,000.00	$220,000
Socio-economic Reporting	2021 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$320,000.00	$320,000
Aquatic Monitoring Program	2022 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$450,000.00	$450,000
Environmental Effects Monitoring Program	2023 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$285,000.00	$285,000
Post-Closer Fauna and Flora Monitoring, Terrestrial Program	2024 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$1,000,000.00	$1,000,000
Marine Monitoring	2025 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$120,000.00	$120,000
Safety Compliance Inspection	2026 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$185,000.00	$185,000
COVER MAINTENANCE						
Maintenance Allowance	According to the PDW closure plan, maintenance costs are estimated at $100,000 per year (Ref 1, pg 103).This allowance expected to cover all maintenance activities at the sites.	allow	8	15MCAL	$100,000.00	$800,000
Repair erosion - infill gullies		allow		#N/A	$0.00	$0
Repair erosion - upgrade diversion ditches		allow		#N/A	$0.00	$0
Remove problem vegetation		allow		#N/A	$0.00	$0
Repair animal damage		allow		#N/A	$0.00	$0
Repair/upgrade access controls		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
POST-CLOSURE WATER TREATMENT						
water treatment - refer to water treatment tab			1	wt tab	$0.00	$0
Total						$4,990,000
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity (11 sampling events over a 25 year period)				11	Sampling Events	
Present Value of payment stream						$6,861,250

*Regulatory costs - annual reporting, management plans, progress reports etc.

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
MOBILIZE MISC. EQUIPMENT						
	2019 estimate (See section 3.3.2.5 of 2019 Marginal Estimate) Assumed 10% of marginal 2019 Estimate Direct costs	LS	1		$1,066,166	$1,066,166
Mobilization and Demobilization of Equipment and Materials Required for Reclamation (2019)	2019 estimate (Phase 2 Expansion Project Materials and Equipment see table 3-7 of 2019 Marginal Estimate)	LS	1		$15,592,000	$15,592,000
	2019 estimate (Demob. Of hazardous waste materials associated with the Water Treatment Plant at the WRF)	LS	1		$13,300	$13,300
Mobilization and Demobilization of Equipment and Materials by Sealift		LS	1		2180000	$2,180,000
Mobilization and Demobilization of Equipment and Materials for 2017 Work Plan addendum	Assumed 10% of marginal 2017 Work Plan Addendum Direct costs(minus Soil and Water management and ICM components) i.e., $5,554,000 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	555400	$555,400
Mobilization and Demobilization of Equipment and Materials for 2018 Work Plan	Assumed 10% of marginal 2018 Work Plan Direct costs(minus Soil and Water management and ICM components) i.e., $2,600,700 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	260070	$260,070
Off-site Disposal of Waste	Ref 1 pg 59	m3	5500	15ODS	358	$1,969,000
Consumables (2017 Work Plan marginal increase)	Cost to remove additional 49 bed spaces delivered to site in 2017 Work Plan. 2017 Work Plan addendum (table 3-7) increases this to a 800 person and 50 person camp structures at the Mine Site and a 380 person camp at Milne Port Add 1230	Ea	1279	15CONS	700.8	$896,323
Consumables	Cost to remove consumables delivered to site in 2015 (lubricants, grease, detergents, boosters, EZ Dets, dry goods, food, household supplies, etc.) (2015 Security Assessment, pg 18).	Ea	550	15CONS	700.8	$385,440
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities, 2019 Work Plan)	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days	1594	20NWS	75	$119,550
Mobilization of Workers Required for Reclamation (from southern communities, 2019 Work Plan)	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days	3719	20NWS	85.45	$317,789
Mobilization of Workers Required for Reclamation (from northern communities, 2018 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	957	20NWS	75	$71,775
Mobilization of Workers Required for Reclamation (from southern communities, 2018 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	2233	20SWS	85.45	$190,810
Mobilization of Workers Required for Reclamation (from northern communities, 2017 Work Plan Addendum)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	644	20NWS	75	$48,300
Mobilization of Workers Required for Reclamation (from southern communities, 2017 Work Plan Addendum)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	1502	20SWS	85.45	$128,346
Mobilization of Workers Required for Reclamation (from northern communities, 2017 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	155	20NWS	75	$11,625
Mobilization of Workers Required for Reclamation (from southern communities, 2017 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	362	20SWS	85.45	$30,933
Mobilization of Workers Required for Reclamation (from northern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	937	20NWS	75	$70,275

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Mobilization of Workers Required for Reclamation (from southern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	2185	20SWS	85.45	$186,708
Mobilization of Workers Required for Reclamation (2014 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	man hours	7921		82.32	$652,057
Mobilization of Workers Required for Reclamation (2015 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	559		82.32	$46,017
Mobilization of Workers Required for Reclamation (2015 A Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	207		82.32	$17,040
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation	2019 estimate (See section 3.3.2.4 of 2019 Marginal Estimate)	person-days	16,498	15WACS	225	$3,712,050
Worker Accommodation & Camp Operation	For the Post-Closure Monitorong and Reporting System (from 2016 Work Plan)	person-days	216	15WACS	225	$48,600
Worker Accommodation & Camp Operation (2017 Work Plan)	For marginal reclamation activities (517 person-days) associated with 2017 Work Plan. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	517	15WACS	225	$116,325
Worker Accommodation & Camp Operation (2018 Work Plan)	For marginal reclamation activities (3190 person-days) associated with 2018 Work Plan (Page 13 of Marginal Estimate). Includes maintenance, catering,, housekeeping & fuel costs.	person-days	3,190	15WACS	225.5	$719,345
Worker Accommodation & Camp Operation (2017 Work Plan addendum)	For marginal reclamation activities (2145 person-days) associated with 2017 Work Plan addendum. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	2,145	15WACS	225.5	$483,698
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	0	$0
MOBILIZE FUEL						
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents the fuel mobilization cost associated with the 2014 Work Plan as provided in Oct 30, 2015 EBS	$	2,888,000	#N/A	1	$2,888,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 provided in Oct 30, 2015 EBS	$	30,000	#N/A	1	$30,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for the 2015 Addendum provided in September 23rd, 2015 EBS	$	9,000	#N/A	1	$9,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 R provided in September 23rd, 2015 EBS	$	203,000	#N/A	1	$203,000
Fuel Required for Reclamation (2016 Work Plan)	Ref 1, pg 61	litre	35,435	15MF1S	0.4	$14,174
Fuel Required for Reclamation (2017 Work Plan)	2017 Work Plan, Appendix B, pg 9. Mobilize 50% of fuel required. Reclamation activities in Nov. 24, 2016 EBS = 90,987L. Heat & power = 116L per 517 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	74,480	15MF1S	0.4	$29,792

1 Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Fuel Required for Reclamation (2017 Work Plan Addendum)	2017 Work Plan Addendum page 8. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 1,144,276L. Heat & power = 116L per 2145 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation. Correction made to $1,213,000 per EBS not $1,216,000 as noted in the addendum. BIMC information does not clarify how the volume of fuel was derived so cost provided used to back out a volume of fuel	litre	3,032,500	15MF1S	0.4	$1,213,000
Fuel Required for Reclamation (2018 Work Plan)	**2018 Work Plan page 13**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 638,170L. Heat & power = 116L per 3190 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	504,105	15MF1S	0.4	$201,642
Fuel Required for Reclamation (2019 Work Plan)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre	614,000	15MF1S	0.4	$245,600
WINTER ROAD						
DEMOBILIZE HEAVY EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob)						
Crushing Module	2018 Work Plan (see Table 3-6 in Marginal Estimate)	lot	1	EBS	1500000	$1,500,000
Screening Module		lot	1	EBS	1400000	$1,400,000
Car Dumper Module		lot	1	EBS	2200000	$2,200,000
BMH Conveyors		lot	1	EBS	1500000	$1,500,000
Rail Construction Materials		lot	1	EBS	500000	$500,000
Excavators		km		mherh	10.25	$0
Dump trucks		km		mherl	3.4	$0
Dozers		km		mherh	10.25	$0
Demolition shears		km		mherh	10.25	$0
Crane		km		mherh	10.25	$0
Loader		km		mherh	10.25	$0
Compactor		each		#N/A	0	$0
Light duty vehicles		km		mherl	3.4	$0
Other		km		#N/A	0	$0
DEMOBILIZE FUEL						
Fuel Required for Reclamation (2019)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre	15000000	15MF1S	0.1	$1,500,000
DEMOBILIZE CAMP						
DEMOBILIZE WORKERS						
WINTER ROAD						
					Total	**$43,323,149**

1 **Underground Mine Name** **UG Mine # *1***

ACTIVITY/MATERIAL	Notes	Unit	Qty	Code	Unit Cost	Cost Land	Land Cost	Water Cost
CONTROL ACCESS								
REMOVE HAZARDOUS MATERIALS								
INSTALL BULKHEADS								
FLOOD MINE								
INSTALL GROUNDWATER COLLECTION SYSTEM								
SPECIALIZED ITEMS								
					Total	$0	$0	$0
					% of Total		0%	0%

1 **Tailings Impoundment Name:** **Pond # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
CONTROL ACCESS								
STABILIZE EMBANKMENT(S)								
COVER TAILINGS								
BURY PAG ROCK								
STABILIZE DECANT SYSTEM								
REMOVE TAILINGS DISCHARGE								
CONSTRUCT DIVERSION DITCHES								
FLOOD TAILINGS								
UPGRADE SPILLWAY								
CONSTRUCT SEEPAGE COLLECTION POND								
INSTALL GROUNDWATER COLLECTION SYSTEM								
SPECIALIZED ITEMS								
TREAT SEEPAGE - see "Water Management" and "Water Treatment"								
TREAT SUPERNATANT								
					Annual treatment costs	$0		
Number of years of treatment		years						
					Total treatment costs	$0		$0
					Total	$0	$0	$0
					% of Total		0%	0%

* for construction of passive treatment system refer to "Water Management'

1 **Post Closure Water Treatment - Identified as long term/post-closure in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
ADDITION OF REAGENTS TO WTP						
LABOUR AND SUPPLIES						
WATER MANAGEMENT						
WTP WATER SAMPLING AND ANALYSES						
SITE ACCESS						
					Annual water treatment costs	$0
Number of years of water treatment		years	25			
					Total	$0

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $
Accomodation						
		ACCM	manday	100.00	175.00	
Buildings - Decontaminate						
	Asbestos	BDA	m2	25.60	51.20	
Buildings - Remove						
	Wood	BRW	m2	27.50	41.00	
	Concrete	BRC	m2	40.00	65.00	6.00
	Steel - teardown	BRS1	m2	45.00	65.00	
	Steel - for salvage	BRS2	m2	67.00	100.00	
Concrete work						
	Small pour	CSF	m3	426.50	639.75	
	Large pour	CLF	m3	353.50	530.25	2,130.00
Contaminated Soils						
	ESA Phase 1	CS1	each	7500.00		
	ESA Phase 1	CS2	each	50000.00		
	Remediate on site	CSR	m3	47.00	146.00	
Dozing						
	doze rock piles	DR	m3	1.05	2.40	
	doze overburden/soil piles	DS	m3	0.95	3.80	
Excavate Rock; Low Spec's and QA/QC						
	drill/blast/load/short haul	RB1	m3	11.40	17.05	
	drill/blast/load/long haul	RB2	m3	12.05	17.80	
	RB1 + spread and compact	RB3	m3	12.05	17.80	
	RB2 + spread and compact	RB4	m3	12.50	30.75	
	Specified activity	RBS	m3			
Excavate Rock; High Spec's and QA/QC						
	drill/blast/load/short haul	RC1	m3	12.05	17.80	
	drill/blast/load/long haul	RC2	m3	12.70	18.40	
	RC1 + spread and compact	RC3	m3	12.70	18.40	
	RC2 + spread and compact	RC4	m3	13.50	19.20	
	Specified activity	RCS	m3			175.00
Excavate Rip Rap						
	drill/blast/load/short haul/place	RR1	m3	13.50	17.75	
	drill/blast/load/long haul/place	RR2	m3	14.20	20.65	
	source is waste dump/short haul	RR3	m3	7.00		
	source is waste dump/long haul	RR4	m3	7.60		
	Specified activity	RRS	m3			

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Excavate Soil; Low Spec's and QA/QC					
clear & grub	SBC	m2	3.40	5.00	
excavate/load/short haul	SB1	m3	4.30	5.90	
excavate/load/long haul	SB2	m3	4.60	7.30	
SB1 + spread and compact	SB3	m3	5.10	8.90	
SB2 + spread and compact	SB4	m3	5.50	11.00	
Specified activity	SBS	m3	3.20	6.30	
Tailings	SBT	m3	1.35	3.70	15.50
Excavate Soil, High Spec's and QA/QC					
excavate/load/short haul	SC1	m3	6.80	9.30	
excavate/load/long haul	SC2	m3	7.10	11.75	
SC1 + spread and compact	SC3	m3	8.90	14.20	
SC2 + spread and compact	SC4	m3	9.30	23.20	
Specified activity	SCS	m3			18.80
Fence					
	FNC	m	13.55	203.00	
Fuel and Electricity					
Fuel cost - gas	FCG	litre	1.05	1.40	
Fuel cost - diesel	FCD	litre	0.99	1.39	
Fuel mobilization	FCM	litre	0.22	0.42	
Electricity	FCE	kW-h	0.17	0.19	0.49
Geo-Synthetics					
geotextile	GST	m2	3.44		
geogrid	GSG	m2	5.75		
liner, HDPE	GSHDPE	m2	7.95		
liner, ES3	GSES3	m2	20.20		
geosynthetic installation	GSI	m2	3.16	14.00	
bentonite soil ammendment	GSBA	tonne	308.30	348.50	
Grouting (/m3 of rock grouted)					
	grout	m3	236.55	286.75	
Labour & Equipment Rates					
Site manager	sman	$/hr	125.00	152.00	
Supervisor	super	$/hr	52.00	91.84	
Registered engineer	eng	$/hr	95.00	220.00	
Environmental coordinator	envco	$/hr	74.16	130.00	
Evironmental technologist	envtech	$/hr	36.00		
Electrician	elec	$/hr	74.00	95.00	
Journeyman - various	journey	$/hr	44.00	71.79	
Labour - skilled	lab-s	$/hr	41.00	49.60	120.00
Labour - unskilled	lab-us	$/hr	31.00	43.98	

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Equipment operator	oper	$/hr	41.00	65.00
Heavy duty mechanic	mech	$/hr	49.00	72.85
Water treatment plant operator	oper-wt	$/hr	41.00	59.86
Security / first aid	safety	$/hr	36.00	66.97
Administative staff	admin	$/hr	38.00	57.89
Equipment rates include operator and fuel				
Loader - 4 cu.yd (3.06m3)	load-s	$/hr	175.00	
Loader - 7 cu.yd (5.35m3)	load-l	$/hr	315.00	
Excavator - 26.76-30.84 tonnes	exc-s	$/hr	190.00	
Excavator - 68.95+tonnes	exc-l	$/hr	420.00	
Grader	grad	$/hr	190.00	
Dump truck off hwy 30-50 tonnes	truck-s	$/hr	225.00	
Dump truck off hwy 55-75 tonnes	truck-l	$/hr	300.00	
dozer, small	dozers	$/hr	205.00	260.00
dozer, large	dozerl	$/hr	490.00	565.00
smooth drum compactor	comp	$/hr	155.00	
scooptram, 6 yd3 bucket	scoop	$/hr	170.00	
flat bed truck with hiab	hiab	$/hr	155.00	
fuel truck	ftruck	$/hr	150.00	
water truck	wtruck	$/hr	58.00	150.00
Mobilize Heavy Equipment				
Road access	MHER	kmtonne	3.40	10.25
Air access	MHEA	kmtonne	12.00	
Mobilize Camp				
Road access	MCR	each	50000.00	
Mobilize Workers				
flight	MW	each	4500.00	9100.00
Oil Removal				
oil removal	OR	litre	0.43	1.20
PCB Removal				
Remove from site	PCBR	litre	40.20	46.90
Pipes, small (<6in dia.)				
remove/dispose on site	PSR	m	1.00	24.00
supply	PSS	m	6.10	11.10
install	PSI	m	25.00	
Pipes, large (>6in dia.)				
remove/dispose on site	PLR	m	22.00	72.00
supply	PLS	m	129.00	143.00

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

install	PLI	m	50.00		
Power Lines					
remove/dispose on site	POWR	m	25.50		
Process Chemicals					
Remove from site	PCR	kg	0.45	2.50	
Pumps					
Pump capital cost	PC	each	########		
Pump shipping	PS	each	2500.00		
Pump operating cost	POC	m3	0.12		
Pump maintenance	PM	allow	25000.00		
Pump sand BackFill					
	PBF	m3	85.00	300.00	
Scarify - road/mine site					
	SCFY	ha	4300	6030	2150
Shaft, Raise & Portal Closures					
Shaft & Raises	SR	m2	645.00	2132.00	
Portals	POR	m3	18.80	250.00	1200.00
Site Inspection Report					
	RPT	each	10000.00	20000.00	
SpillWay - Clear					
	SW	each	3000.00	7000.00	
Survey/Instrumentation					
	SI	each	1800.00	3600.00	
Treatment Plant - Construct					
Small (< 1000 m3/d)	TPS	lump sum	9000000	15000000	
Large (> 1000 m3/d)	TPL	lump sum	15000000	46000000	
Constructed Wetland	CWTS	ha	200000	300000	
Treatment Plant - Operate					
	TPO	m3	0.35	2.00	
Treatment Chemicals					
ferric sulphate	ferric	kg	1.19		
ferrous sulphate	ferrous	kg	1.32		
lime	lime	kg	0.56		
hydrogen peroxide, 35%	hperox	kg	1.50		
Sodium Metabisulfate	Nametab	kg	1.18		
Caustic soda, 50%	caustic	kg	0.74		
Sulfuric acid, 93%	sulfuric	kg	0.31		
flocculant	flocc	kg	6.00		
copper sulphate	copper	kg			

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

shipping	shipping	kg	0.20		
Vegetation					
Hydroseed, Flat	VHF	ha	4000.00		
Hydroseed, Sloped	VHS	ha	4500.00		
Veg. blanket/erosion mat	VB	ha	13000.00		
Tree planting	VT	ha	2600.00	6000.00	
Wetland species	VW	ha			47.72
Water Sampling/Analysis/Reporting					
	WS	each	7000.00	10000.00	
Winter Road					
Construction	WRC	km	2000.00	11500.00	
Usage	WRU	kmtonne	0.29		
Unit Rates as per 2015 EBS					
Grade and Contour	15GC	m2			$1.81
Grade and Contour With Liner	15GCL	m2			$5.31
Grade and Contour Significant Disturbed Areas	15GCD	m2			$2.72
Fill Application	15PF	m2			$44.37
Cost for On-Site Disposal of Equipment:					
Light Mobile Equipment	15MOL	Ea			941.1
Medium Mobile Equipment	15MOM	Ea			1,494.1
Heavy Mobile Equipment	15MOH	Ea			2,618.9
Other mobile equipment (reclaim conveyor)	15MOR	Ea			1,329,441.3
Light mechanical equipment - Decon	15LME	Ea			1,980.8
Medium mechanical equipment - De	15MME	Ea			4,261.3
Heavy mechanical equipment - Decc	15MEH	Ea			41,205.4
Light Tanks	15TL	Ea			2,148.3
Medium Tanks	15MT	Ea			7,387.3
Light Diesel Tanks	15LiDT	Ea			3,693.7
Medium Diesel Tanks	15MDT	Ea			16,166.4
Large Diesel Tanks	15LDT	Ea			106,338.7
Largest Diesel Tanks	15XLDT	Ea			171,468.2
Misc Items (Minor)	15MEI	Ea			529.8
Fuel tanks - Medium Mobile Diesel T	15MMFT	Ea			$10,481.05
Removal of Contaminated Buildings					
fold away	15RCBF	m2			$142.41
ISO Shipping Container	15RCBI	m2			$143.42
modular	15RCBM	m2			$143.42
soft walled	15RCBS	m2			$148.35
Temporary construction warehouses	15RCBT	m2			$25,000.00
Removal of Buildings					
fold away	15RBF	m2			$41.57
modular	15RBM	m2			$59.38
ISO Shipping Container	15RBI	m2			$29.69

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

soft walled	15RBS	m2			$47.51
water and wastewater treatment facil	15WWT	Ea			$11,035.58
Foundations					
Precast concrete	15FC	m2			$38.47
Slab on grade	15FS	m2			$33.11
Timber cribbing	15TC	m2			$20.78
Reclaim roads					
Remove bridges	15BR	Ea			$201,838.77
Remove culverts	15CR	Ea			$1,094.48
Specialized Items					
Power distribution - electrical cable	15EC	m			$26.49
Electrical Cable	15EC	m			26.5
Incinerator	15FI	Ea			9,975.9
Potable Water	15PW	Ea			9,975.9
Consumables	15CON	Bed space			701
Mobilization					
Mobilization and Demobilization of Equipment and Materials by Sealift	15SL	Ea			$2,572,000.00
Demobilization of Existing Fuel	15MF1	L			$0.10
Fuel Required for Reclamation	15MF2	L			$0.40
Offsite disposal of waste and materia	15OD	m3			$358.00
Worker accomodation and camp ope	15WAC	person-day			$225.00
Northern worker mobilization	15NW	person-day			$75.00
Southern worker mobilization	15SW	person-day			$85.45
Blended Labour and Equip Rates (2015)					
Blended labour rate	15BL	hr			$100.00
Blended equipment rate	15BE	hr			$150.00
Water management					
Remove pipes	15RP	m			$66.23
Reclaim roads					
Remove bridges	15BR	Ea			$201,838.77
Remove culverts	15CR	Ea			$1,094.48
Chemicals					
Contaminated soil treatment	15CST	m3			$14.78
Ammonium nitrate (explosive)	15AN	kg			$2.37
Unit Rates as per 2016 EBS/ Other communication from Baffinland					
Chemicals					
Ammonium nitrate (explosive)	16AN1	m3			$358.00
Pre-packaged explosives	16AN2	kg			$2.37
Other Unit Rates					
Monitoring					
SNP/AEMP water sampling & reporti	15MCW	each	$30,000	$36,000	
Envrionmental site assessment	15EA	each			$18,000
Geotechnical assessment	15GT	each			$20,000
Maintenance allowance	15MCA	each	$100,000	$150,000	

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Unit Rates as per table 1-2 in 2019 Marginal closure and Reclamation Finalcial Sec			
Grade and Contour	18GC	m2	$1.49
Grade and Contour With Liner	18GCL	m2	$4.99
Fill Application	18PF	m2	$38.83
Cost for On-Site Disposal of Equipment:			
Light Mobile Equipment	18MOL	Ea	876.9
Medium Mobile Equipment	18MOM	Ea	1,378.6
Heavy Mobile Equipment	18MOH	Ea	2,310.9
Other mobile equipment (reclaim conveyor)	18MOR	Ea	1,136,232.9
Light mechanical equipment - Decon	18LME	Ea	1,707.5
Medium mechanical equipment - De	18MME	Ea	3,714.6
Heavy mechanical equipment - Decc	18MEH	Ea	35,507.5
Light Tanks	18TL	Ea	1,872.4
Medium Tanks	18MT	Ea	6,386.3
Light Diesel Tanks	18LiDT	Ea	3,193.2
Medium Diesel Tanks	18MDT	Ea	13,928.0
Large Diesel Tanks	18LDT	Ea	91,285.2
Largest Diesel Tanks	18XLDT	Ea	147,297.9
Misc Items (Minor)	18MEI	Ea	452.8
Fuel tanks - Medium Mobile Diesel T	18MMFT	Ea	$9,031.52
Removal of Contaminated Buildings			
fold away	18RCBF	m2	$122.25
ISO Shipping Container	18RCBI	m2	$123.02
modular	18RCBM	m2	$123.02
soft walled	18RCBS	m2	$127.32
Removal of Buildings			
fold away	18RBF	m2	$35.53
modular	18RBM	m2	$50.75
ISO Shipping Container	18RBI	m2	$25.38
soft walled	18RBS	m2	$40.60
water and wastewater treatment facil	18WWT	Ea	$9,649.58
Foundations			
Precast concrete	18FC	m2	$32.88
Slab on grade	18FS	m2	$33.11
Timber cribbing	18TC	m2	$17.76
Reclaim roads			
Remove bridges	18BR	Ea	$172,505.43
Specialized Items			
Power distribution - electrical cable	18EC	m	$22.64
Electrical Cable	18EC	m	26.5
Incinerator	18FI	Ea	8,743.9
Potable Water	18PW	Ea	8,743.9
Blended Labour and Equip Rates (2018)			
Blended labour rate	18BL	hr	$75.00
Blended equipment rate	18BE	hr	$125.00
Water management			

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Remove pipes	18RP	m	$56.60
Reclaim roads			
Remove bridges	18BR	Ea	$172,505.43
Unit Rates as per table 1-2 in 2020 BIMC Marginal Closure and Reclamation FSE (2			
Grade and Contour	20GC	m2	$1.81
Grade and Contour With Liner	20GCL	m2	$5.31
Fill Application	20PF	m2	$44.37
Cost for On-Site Disposal of Equipment:			
Light Mobile Equipment	20MOL	Ea	941.1
Medium Mobile Equipment	20MOM	Ea	1,494.1
Heavy Mobile Equipment	20MOH	Ea	2,618.9
Other mobile equipment (reclaim conveyor)	20MOR	Ea	1,329,441.3
Light mechanical equipment - Decon	20LME	Ea	1,980.8
Medium mechanical equipment - De	20MME	Ea	4,261.3
Heavy mechanical equipment - Decc	20MEH	Ea	41,205.4
Light Tanks	20TL	Ea	2,148.3
Medium Tanks	20MT	Ea	7,387.3
Light Diesel Tanks	20LiDT	Ea	3,693.7
Medium Diesel Tanks	20MDT	Ea	16,166.4
Large Diesel Tanks	20LDT	Ea	106,338.7
Largest Diesel Tanks	20XLDT	Ea	171,468.2
Misc Items (Minor)	20MEI	Ea	529.8
Fuel tanks - Medium Mobile Diesel T	20MMFT	Ea	$10,481.05
Removal of Contaminated Buildings			
fold away	20RCBF	m2	$142.41
ISO Shipping Container	20RCBI	m2	$143.42
modular	20RCBM	m2	$143.42
soft walled	20RCBS	m2	$148.35
Removal of Buildings			
fold away	20RBF	m2	$41.57
modular	20RBM	m2	$59.38
ISO Shipping Container	20RBI	m2	$29.69
soft walled	20RBS	m2	$47.51
water and wastewater treatment facil	20WWT	Ea	$11,035.58
Foundations			
Precast concrete	20FC	m2	$38.47
Slab on grade	20FS	m2	$33.11
Timber cribbing	20TC	m2	$20.78
Reclaim roads			
Remove bridges	20BR	Ea	$201,838.77
Specialized Items			
Power distribution - electrical cable	20EC	m	$26.49
Electrical Cable	20EC	m	26.5
Incinerator	20FI	Ea	9,975.9
Potable Water	20PW	Ea	9,975.9
Water management			

Unit Cost Table (for refining unit costs see "Estimator" worksheet)

Filter by unit

Remove pipes	20RP	m	$66.23
Mobilization			
Mobilization and Demobilization of Equipment and Materials by Sealift	20SL	Ea	$2,572,000.00
Demobilization of Existing Fuel	20MF1	L	$0.10
Fuel Required for Reclamation	20MF2	L	$0.40
Offsite disposal of waste and materia	20OD	m3	$358.00
Worker accomodation and camp ope	20WAC	person-day	$225.00
Northern worker mobilization	20NW	person-day	$75.00
Southern worker mobilization	20SW	person-day	$85.45
Blended Labour and Equip Rates (2015)			
Blended labour rate	20BL	hr	$100.00
Blended equipment rate	20BE	hr	$150.00

Unit Cost Estimator

1 Equipment Productivity Figures and Graphs have been reproduced from Caterpillar Performance Handbook - Edition 42

EXCAVATION

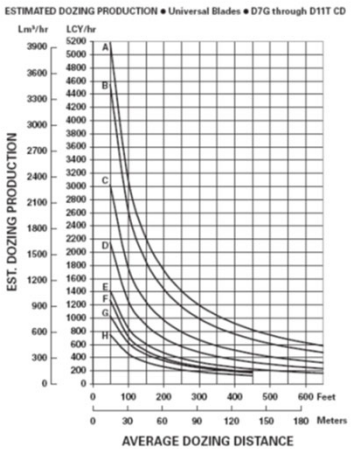
Productivity		
Machine Cat 336EL		
bucket capacity	3.16	m3
fill factor	75%	%
cycle time	45	seconds
operator skill	80%	%
machine availability	83%	%
altitude adjustment	100%	%
Hourly productivity	125.89	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$180.00	$/hr
Excavation cost - contractor rate	1.43	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Excavation cost - owner rate	$0.00	$/m3
Excavation cost - select contractor or owner rate (D22 or D31)		$/m3

HAUL AND DUMPING

Productivity		
Machine Cat 770		
truck capacity	25.1	m3
fill factor	80%	%
load time	6.0	min.
haul distance	1.5	km
average velocity	20.0	km/hr
haul time + return time	9.0	min.
wait time	0.5	min.
dump time	1.0	min.
cycle time	16.5	min.
machine availability	83%	%
altitude adjustment	100%	%
	13.7	/e. min/cycle
Hourly productivity	88.0	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$225.00	$/hr
Haul and Dump - contractor rate	2.56	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Haul/Dumping Cost - owner rate	$0.00	$/m3
Haul/Dumping Cost - select contractor or owner rate (I22 or I31		$/m3

SPREADING/DOZING

Productivity		
Machine Cat D8		
Estimate production using example curves provided or	600	m3/hr
equivalent from other supplier		
Correction factors (see table provided)		
operator skill	0.75	
material type, see table	0.80	
slot dozing	1.00	
side by side dozing	1.00	
visibility	1.00	
job efficiency	0.83	
altitude adjustment	1.00	
slope adjustment	1.00	
Hourly productivity	298.8	m3/hr
Operating Costs		
- Contractor		
Hourly rate - contractor supplied	$260.00	$/hr
Dozing - contractor rate	0.87	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	
Spreading/Dozing Cost - owner rate	$0.00	$/hr
Spreading/Dozing Cost - select contractor or owner rate (N22 or N31)		$/m3



KEY
A — D11T CD
B — D11T
C — D10T
D — D9T
E — D8T
F — D7E
G — D7R Series 2
H — D7G

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Excavator

	Cat 320	Cat 325B	Cat 375
heaped bucket capacity, m3	1.5	2.2	5.4
	Typical Cycle Times (seconds)		
easy digging, shallow digging, small swing angle	16	18	20
med. to hard digging, rocky soil, swing angle to 90 deg.	23	23	25
tough digging, sandstone, caliche, at max. machine depth, swing angle > 120 deg.	27	29	35

Material	Fill Factor (% of heaped bucket capacity
Moist loam or sandy clay	100 - 110
sand and gravel (not till)	95 - 110
hard tough clay	80 - 90
rock - will blasted	60 - 75
rock - poorly blasted	40 -60

Operator Skill	poor	average	good
Correction factor	0.6	0.75	1

Machine availability	poor	average	good
Correction factor	0.9	0.95	1

Trucking

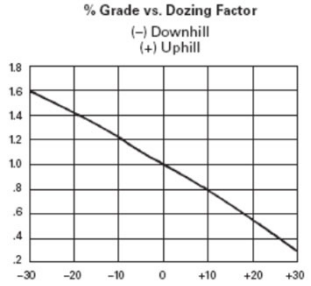
	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

Dozing

JOB CONDITION CORRECTION FACTORS

	TRACK-TYPE TRACTOR
OPERATOR —	
Excellent	1.00
Average	0.75
Poor	0.60
MATERIAL —	
Loose stockpile	1.20
Hard to cut; frozen —	
with tilt cylinder	0.80
without tilt cylinder	0.70
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60-0.80
SLOT DOZING	1.20
SIDE BY SIDE DOZING	1.15-1.25
VISIBILITY —	
Dust, rain, snow, fog or darkness	0.80
JOB EFFICIENCY —	
50 min/hr	0.83
40 min/hr	0.67
BULLDOZER*	
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.	
GRADES — See following graph.	

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 60-75% of straight blade production.



APPENDIX B

SNC-Lavalin 2020 RECLAIM Marginal Estimate

670026 - Appendix B - 2020 Marginal (with

Project Name: *nd Iron Mine (Bas*

Reclaim Model - Overview of Program

All users are urged to read the Reclaim Model User Manual - Scroll down for overview description of program.

Important! Reclaim 7.0 works better with no other excel files open.
If other excel files are open ignore run time error and proceed

Reclaim Menu	The default Excel menu bar has an additional tab labelled "Add-Ins" that provides options specific to the Reclaim Model.
Clear	This option deletes all input data, deletes any duplicated elements and blanks out the project name. It also allows for segregation into land costs vs water costs if required.
Duplicate	This option Duplicates components of the project. E.g. if there is more than one Open Pit, use duplicate to add a second Open Pit. Quantities for the new Open Pit are erased, but the Activities and Cost Codes are carried over from the original Open Pit. The new Open Pit subtotal is added to the Summary page.
Unit Costs	This option opens a window of unit costs to provide easy reference. NOTE: the unit cost table has a filter in the 'UNITS' column. You can select to only see a particular unit (eg km) or multiple units (km and m3) or all units.
Print All	This option prints the Summary Worksheet, Unit Cost Worksheet, and the individual component worksheets having non-zero balances. Individual worksheets can be printed directly using standard printing methods, such as Ctl - P.
Quit	Select Quit to exit the program
Help	Redirects user to Instructions worksheet.

WorkSheets	
Summary	This worksheet contains a cumulative summary of costs for each component of the project. Associated costs such as engineering and project management are added as a percentage of the component costs.
Components	Costs are derived for individual closure and reclamation activities by multiplying a "quantity" of activity by a "unit cost". An activity can be edited, added, or deleted from worksheet. However, care should be taken not to modify cells that are defined and used elsewhere in the program. ***Do not change the content or column width of the first column of each component worksheet.***
Unit Costs	This worksheet contains a look up table with costs for typical work associated with each closure and reclamation activity

Limitations	***The Reclaim Program will NOT work if the worksheets are changed such that the following requirements are not met. Please review the following prior to modifiying worksheets.***
WorkSheet Names	*The names of the worksheets must not be changed.*
Defined Names	Certain cells have defined names, which must not be changed. Where the cell is named, the name will appear in the "Name Box" to the left of the formula bar.
First line of data	The first line of data for any component worksheet starts on line 4. ***Do not change the first line of a component worksheet, ie the component name.***
Cell A1	Cell A1 on the component sheet MUST always contain the count of that component for the duplicate function to operate. ***DO NOT CHANGE.***
Adding Lines	You can add lines to components and the unit cost table, as long as they are not the last lines. The last line might fall outside the named ranges. You can check the size of the named range by selecting the name from the drop down box at the top left of the sheet. Usually this box has a cell reference, or a name.
Printing	A component will only be printed if its sub-total is greater than zero. In addition, a component and the summary sheet cannot be printed if there is an error. Printing has been set to print 1 page per component.

Conditions of Use	The Reclamation Cost Estimating Model was prepared to serve as a guide for Government Agencies, mining companies, and others to estimate the cost of mine reclamation. This model is not intended to replace reclamation planning or to be used to determine the activities required to reclaim a site or to dictate how much should be spent on reclamation. Reclaim was prepared by Brodie Consulting Ltd. on behalf of AANDC. AANDC and Brodie Consulting Ltd. are not responsible for the completeness or accuracy of any reclamation estimate made using this model. The user agrees to check and take responsibility for all aspects of any cost estimate made using this model.

The following table provides guidance as to whether water management and treatment is considered short term or long term. Short term closure activities may be costed within a component (eg 'Open Pit' or 'Rock Pile') or 'Water Management'. Long term or post-closure water treatment is costed in 'Water Treatment'.

		Short Term/ Capital Ex.	Long term/ NPV
Open Pit	flood pit - install/operate pumping system	x	
	construct diversion ditches	x	
	treat 1st filling	x	
	install pump/decant system	x	
	passive/biological treatment	x	
	overflow treatment		x
Rock Pile/Heap Leach Facility	construct diversion ditches	x	
	install groundwater collection system	x	
	install toe seepage collection system	x	
	collect and treat groundwater		x
	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
	operate and maintain passive treatment system		x
	operate pump and detoxify heap leach pile (cyanide destruction)	x	
Tailings Facility	construct diversion ditches	x	
	pump supernatant (to pit, U/G)	x	
	treat supernatant	x	
	install toe seepage collection system	x	
	collect and treat seepage (ARD/ML)		x
	install passive treatment system	x	
	operate and maintain passive treatment system		x
U/G Mine	accelerate flooding	x	
	install seepage collection system	x	
	install dewatering/pumping system	x	
	operate seepage/dewatering system (ARD/ML)		x
Water Management	refill lakes		
	redirect creeks/streams	x	
	stabilize water management ponds	x	
	stabilize/close sediment ponds	x	
	fresh water supply - breach embankment	x	
	fresh water supply - remove piping system	x	
	construct water treatment plant	x	
	construct sludge pond	x	
	water control in reclamation quarry	x	
	operate/maintain water treatment plant		x

Mary River Mine

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$5,773,032	$5,773,032	$0	$4,940,296	$832,736
UNDERGROUND MINE		$0	$0	$0	$0	$0
TAILINGS FACILITY		$0	$0	$0	$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$0	$0	$0	$0	$0
BUILDINGS AND EQUIPMENT	Mine Site	$2,249,926	$2,222,725	$27,202	$2,249,926	$0
	Milne Port	$1,276,828	$1,278,875	$2,047	$1,276,828	$0
	Tote Road	$2,241,706	$2,231,568	$10,138	$2,022,239	$219,467
					$0	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMENT		$2,858,000	$2,858,000	$0	$2,858,000	$0
SURFACE AND GROUNDWATER MANAGEMENT		$0	-	$0	$0	$0
INTERIM CARE AND MAINTENANCE		$0	-	$0	$0	$0
	SUBTOTAL: Capital Costs	**$14,399,492**	**$14,364,200**	**$35,292**	**$13,347,290**	**$1,052,203**
	PERCENT OF SUBTOTAL		**99.8%**	**0.2%**	**90.88%**	**9.12%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$4,338,000	$4,327,368	$10,632	$4,338,000	$0
POST-CLOSURE MONITORING AND MAINTENANCE		$0	$0	$0	$0	$0
ENGINEERING	3.9%	$561,580	$560,204	$1,376	$510,383	$51,198
PROJECT MANAGEMENT	9.4%	$1,353,552	$1,350,235	$3,317	$1,230,153	$123,399
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0%	$0	$0	$0	$0	$0
BONDING/INSURANCE	2%	$287,990	$287,284	$706	$261,735	$26,255
CONTINGENCY	20.0%	$2,879,898	$2,872,840	$7,058	$2,617,347	$262,552
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$9,421,021**	**$9,397,930**	**$23,090**	**$8,957,617**	**$463,403**

TOTAL COSTS	**$23,820,513**	**$23,762,130**	**$58,383**	**$22,304,907**	**$1,515,606**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
STABILITY STUDY									
STABILIZE SLOPES									
COVER/CONTOUR SLOPES									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SPILLWAY									
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
P10 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P13 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P14 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P15 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P5 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P6 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P7 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
P8 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
PQ2a Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
PQ4a Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
PQ6a Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
PQ12a Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q9 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
D1Q2 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q1 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q11 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q18 Quarry (on IOL)	2020 estimate add 2,729,000 from 2020 Plan (varous Tote Road quarries)	m2	2,729,000	20GCS	$1.81	$4,940,296	100%	$4,940,296	$0
Q18 Quarry (on Crown Land)	2020 estimate add 11,500 from 2020 Plan (Q27, PQ9a, PQ9b, PQ6B)	m2	460,000	20GCS	$1.81	$832,736	100%	$832,736	$0
Q19 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q5 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Q7 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
QMR2 Quarry		m2		20GCS	$1.81	$0	100%	$0	$0
Pit 1		m2		20GCS	$1.81	$0	100%	$0	$0
P1 Borrow Source (on Crown Land)	**100% on Crown Land**	**m2**		**20GCS**	$1.81	**$0**	**100%**	**$0**	**$0**
Km 2 Borrow Source		m2		20GCS	$1.81	$0	100%	$0	$0
Borrow Development Areas		m2		20GCS	$1.81	$0	100%	$0	$0
Unidentified Borrow Sources		m2		20GCS	$1.81	$0	100%	$0	$0
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
FLOOD PIT-Captital									
FLOOD PIT-Annual Cost									
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$5,773,032		$5,773,032	$0
					% of Total			100%	0%

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$0		$0	$0
					% of Total			0%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material)	2019 estimate (See section 3.3.2.2 of 2019 Marginal Estimate)	m3		16AN1S	$358.00	$0	100%	$0	$0
Ammonium nitrate (explosive material)	2020 estimate (Ammonium Nitrate (explosive material)	LS	1		$2,858,000.00	$2,858,000	100%	$2,858,000	$0
Pre-package explosives		kg		16AN2S	$2.37	$0	100%	$0	$0
				#N/A	$0.00	$0		$0	$0
					Total	$2,858,000		$2,858,000	$0
					% of Total			100%	0%

Building / Equip Name: **Mine Site** **Bldg / Equip #:** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 30 units.	each		20MOLS	$941.09	$0	95%	$0	$0
	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20MOLS	$941.09	$0	95%	$0	$0
	2018 Work Plan see Table 3-2	each		20MOLS	$941.09	$0	95%	$0	$0
	2020 estimate, add 265 from 2020 Work Plan, add 52 and remove 1 from 2020-R	each	319	20MOLS	$941.09	$300,207	98%	$294,203	$6,004
Medium Mobile Equipment	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 40 units.	each		20MOMS	$1,494.13	$0	98%	$0	$0
	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20MOMS	$1,494.13	$0	98%	$0	$0
	2018 Work Plan see Table 3-2	each		20MOMS	$1,494.13	$0	98%	$0	$0
	2020 estimate, add 230 from 2020 Work Plan, add 63 (zoom boom 12,000 lbs) from 2020-R	each	293	20MOMS	$1,494.13	$437,781	100%	$437,781	$0
Heavy Mobile Equipment	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 92 units.	each		20MOHS	$2,618.87	$0	98%	$0	$0
	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20MOHS	$2,618.87	$0	98%	$0	$0
	2018 Work Plan see Table 3-2	each		20MOHS	$2,618.87	$0	98%	$0	$0
	2020 estimate, add 109 from 2020 Work Plan, add 55 from 2020-R	each	164	20MOHS	$2,618.87	$429,495	100%	$429,495	$0
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site		each		20LMES	$1,980.80	$0	98%	$0	$0
Light mechanical equipment - Decontaminate and dispose on-site	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20LMES	$1,980.80	$0	98%	$0	$0
	2019 estimate (add 29 from Marginal Increase)	each		20LMES	$1,980.80	$0	98%	$0	$0
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 12 units.	each		20MMES	$4,261.34	$0	100%	$0	$0
	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20MMES	$4,261.34	$0	100%	$0	$0
	2019 estimate (add 1 from Marginal Increase)	each		20MMES	$4,261.34	$0	100%	$0	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-5 4 units.	each		20MEHS	$41,205.45	$0	100%	$0	$0
	2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each		20MEHS	$41,205.45	$0	100%	$0	$0
	2018 Work Plan see Table 3-2	each		20MEHS	$41,205.45	$0	100%	$0	$0
	2020-R Work Plan (add 2)	each	2	20MEHS	$41,205.45	$82,411	100%	$82,411	$0
Light Tanks	2020 estimate (from 2020-R: remove water tank 15,000 L)	each	-4	20TLS	$2,148.33	($8,593)	100%	($8,593)	$0
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (3-4 of 2019 Marginal Estimate).	each		20MTS	$7,387.31	$0	100%	$0	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) 2017 actual not previously allocated (see Table 3-4 of 2019 Marginal Estimate)	each		20LiDTS	$3,693.66	$0	100%	$0	$0
Medium Mobile Diesel Tank	Medium fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Table 3-4 of 2019 Marginal Estimate).	each		#N/A	$0.00	$0	100%	$0	$0
Medium Diesel Tanks		each		20MDTS	$16,166.40	$0	100%	$0	$0

Building / Equip Name: **Mine Site** **Bldg / Equip #:** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
Large Diesel Tanks	2020 estimate (add 1 large tank for arctic diesel)	each	1	20LDTS	$106,338.74	$106,339	100%	$106,339	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	Lot		20MEIS	$529.83	$0	100%	$0	$0
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000 L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L). See table 3-4 of 2019 marginal Estimate	each		20MMFTS	$10,481.05	$0	100%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	2017 Work Plan Addendum includes 800 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port	m2		20RBMS	$59.38	$0	89%	$0	$0
	2020 Estimate add 1,200 for prefabricated special modular and 144 for single trailers (modular)	m2	1344	20RBMS	$59.38	$79,813	89%	$71,034	$8,779
Fold Away Buildings		m2		20RBFS	$41.57	$0	100%	$0	$0
Fold Away Buildings	2020 Estimate add 180 from 2020 Plan	m2	180	20RBFS	$41.57	$7,482	100%	$7,482	$0
Soft-Walled	2017 Work Plan Addendum soft Walled Buildings includes 50 person camp and 35 person Norse man style camp at Mine Site only	m2		20RBSS	$47.51	$0	89%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2		20RBIS	$29.69	$0	100%	$0	$0
Office/washcars		m2		20RBIS	$29.69	$0	89%	$0	$0
Water and Wastewater Treatment Facilities	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each		20WWTS	$11,035.58	$0	0%	$0	$0
Power Plant		m2		brs1h	$65.00	$0		$0	$0
Power Distribution System	Remove cable added to 2020 plan	m	600	20ECS	$26.49	$15,895	100%	$15,895	$0
Communication Tower		m2		brs1h	$65.00	$0		$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
AN Storage Facility		m2		brs1s	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		brs1l	$45.00	$0		$0	$0
Storage Facility at Laydown/Airstrip		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks		m2		brs1h	$65.00	$0		$0	$0
Fire Protection pumping station		m		brs1h	$65.00	$0		$0	$0
Freshwater intake		m2		brs1l	$45.00	$0		$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0		$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, electrician		mandays		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, mechanical		mandays		#N/A	$0.00	$0		$0	$0
Break foundation slabs		m2		brcs	$6.00	$0		$0	$0
Consolidate & dump boneyard debris		allow		brs1l	$45.00	$0		$0	$0
Worker Dry		m2		brs1l	$45.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		brs1l	$45.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		brs1l	$45.00	$0		$0	$0
Water Intake		m2		brcs	$6.00	$0		$0	$0
Other		m2		#N/A	$0.00	$0		$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2		20RCBMS	$143.42	$0	100%	$0	$0
Fold Away Buildings	2020 Work Plan (400)	m2	400	20RCBFS	$142.41	$56,964	100%	$56,964	$0
Soft-Walled		m2		20RCBSS	$148.35	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	**2017 Work Plan add 500 m2 Tire Shop**	m2		20RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2		#N/A	$0.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Precast Foundations	2019	m2		20FCS	$38.47	$0	100%	$0	$0
Slab on Grade	2020 estimate add 1,.080 from 2020 Plan	m2	1080	20FSS	$33.11	$35,763	100%	$35,763	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
	Expansion of 800 camp	m2		20GCS	$1.81	$0	100%	$0	$0
	Water Treatment Plant 2019	m2		20GCS	$1.81	$0	100%	$0	$0
	Km 107.5, Km 110, Km 107 stockplile	m2		20GCS	$1.81	$0	100%	$0	$0
	mine site fuel tank foot print	m2		20GCS	$1.81	$0	100%	$0	$0
Grade and contour laydown areas		m2		20GCS	$1.81	$0	100%	$0	$0
		m2		20GCS	$1.81	$0	100%	$0	$0

Building / Equip Name: **Mine Site** **Bldg / Equip #:** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
		m2		20GCS	$1.81	$0	100%	$0	$0
		m2		20GCS	$1.81	$0	100%	$0	$0
		m2		20GCS	$1.81	$0	100%	$0	$0
	2020 estimate add 12,800 from 2020 Plan	m2	12800	20GCS	$1.81	$23,172	100%	$23,172	$0
Crusher Pad expansion pad		m2		20GCS	$1.81	$0	100%	$0	$0
Culvert Removal	on mine site 2019 estimate	m		#N/A	$0.00	$0	100%	$0	$0
Grade and contour infrastructure pads	In 2017 Work Plan Addendum - Camp pad	m2		20GCS	$1.81	$0	100%	$0	$0
		m2		20GCS	$1.81	$0	100%	$0	$0
Aerodome Facilities		m2		20GCS	$1.81	$0	100%	$0	$0
Road		m2		20GCS	$1.81	$0	100%	$0	$0
Stockpiles		m2		20GCS	$1.81	$0	100%	$0	$0
Truck weigh facility distributed area		m2		20GCS	$1.81	$0	100%	$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks on site for bulk fuel storage		m2		#N/A	$0.00	$0		$0	$0
Fire Protection pumping station		m2		#N/A	$0.00	$0		$0	$0
Worker Dry		m2		#N/A	$0.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		#N/A	$0.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		#N/A	$0.00	$0		$0	$0
Other		ha		scfyl	$4,300.00	$0		$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Waste Disposal		m2		20GCLS	$5.31	$0	100%	$0	$0
Fuel tank farm dyke		m2		20GCLS	$5.31	$0	100%	$0	$0
Hazardous waste berm		m2		20GCLS	$5.31	$0	100%	$0	$0
Bulk fuel storage facility (Bladder Farm)		m2		20GCLS	$5.31	$0	100%	$0	$0
Waste Rock Pond	2020 estimate add 63,456 from 2020 Plan	m2	63456	20GCLS	$5.31	$336,843	100%	$336,843	$0
Mine Site Fuel Tank, Farm containment Area	Mine Site Fuel Tank, Farm Containment Area	m2		20GCLS	$5.31	$0	100%	$0	$0
Hazardous waste berm	Hazardous Waste Berm	m2		20GCLS	$5.31	$0	100%	$0	$0
Other	New PWSP 2019	m2		20GCLS	$5.31	$0	100%	$0	
Other	Landfarm	m2		20GCLS	$5.31	$0	100%	$0	
Other	KM107 Sedimentation Pond	m2		20GCLS	$5.31	$0	100%	$0	
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). For 2018 work plan see table 3-9 in the Marginal estimate for quantity and 2017 Work Plan Addendum Table 3-8, 2018 Breakdown. Fill application for 2018 Estimate Addendum see table 3-6.	m2		20PFS	$44.37	$0	100%	$0	$0
Place fill material over demolition waste	Assumes 1/3 of 2020 Work Plan Fill Application applies to Mine Site	m2	1,984	20PFS	$44.37	$88,015	100%	$88,015	$0
SPECIALIZED ITEMS									
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). **2017 Work Plan add 3500 m of cable.**	m		20ECS	$26.49	$0	100%	$0	$0
Incinerator	2020 estimate (add 1 incinerator; waste management)	each	1	20FIS	$9,975.93	$9,976	100%	$9,976	$0
Remove Piping	2020 estimate (3,750 m of piping from waste rock fa	each	3750	20RPS	$66.23	248362.5	95%	235944.375	12418.125
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each		20PWS	$9,975.93	$0		$0	$0
					Total	$2,249,926		$2,222,725	$27,202
					% of Total			99%	1%

Building / Equip Name: **Milne Port** **Bldg / Equip #:** **2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	2020 estimate, add 50 from 2020 Work Plan, 2020-R remove 6 Frost Fighter Heater add 1 Rescue Boat and Trailer	each	45	20MOLS	$941.09	$42,349	98%	$41,502	$847
Medium Mobile Equipment	2020 estimate, add 37 from 2020 Work Plan, 2020-R add 4 units	each	41	20MOMS	$1,494.13	$61,259	95%	$58,197	$3,063
Heavy Mobile Equipment	2020 estimate, add 27 from 2020 Work Plan, remove 2 from 2020-R (ore reclaim system) remove additonal 12	each	13	20MOHS	$2,618.87	$34,045	100%	$34,045	$0
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site		each		20LMES	$1,980.80	$0	98%	$0	$0
	2020 estimate add 19 units from 2020 Plan	each	19	20LMES	$1,980.80	$37,635	98%	$36,882	$753
Medium mechanical equipment - Decontaminate and dispose on-site		each		20MMES	$4,261.34	$0	100%	$0	$0
	2020 estimate add 9 units from 2020 Plan	each	9	20MMES	$4,261.34	$38,352	100%	$38,352	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). **2017 Work Plan add 1 unit (Cone Crusher).**	each		20MEHS	$41,205.45	$0	100%	$0	$0
Heavy mechanical equipment	2020 estimate add 12 units from 2020 Plan for Power Distribution System Heavy Equipment, add 2020-R (1 Generator Set, remove 2 Bucket Wheel Stacker Reclaimer)	each	11	20MEHS	$41,205.45	$453,260	100%	$453,260	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each		20TLS	$2,148.33	$0	0%	$0	$0
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each		20MTS	$7,387.31	$0	0%	$0	$0
Light Diesel Tanks	2020-R	each	-3	20LiDTS	$3,693.66	($11,081)	100%	($11,081)	$0
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port , 2019 breakdowm	each		20MDTS	$16,166.40	$0	100%	$0	$0
Large Diesel Tanks	Large fuel tanks (3ML-5ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port , 2019 breakdowm	each		20LDTS	$106,338.74	$0	100%	$0	$0
Largest Diesel Tanks	Largest fuel tanks (>5ML-15ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port , 2019 breakdowm	each		20LDTS	$106,338.74	$0	100%	$0	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	each		20MEIS	$529.83	$0	100%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	2017 Work Plan Addendum includes 380 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port 2019 breakdowm	m2		20RBMS	$59.38	$0	89%	$0	$0
	2018 Work Plan see table 3-1	m2		20RBMS	$59.38	$0	89%	$0	$0
	2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2		20RBMS	$59.38	$0	89%	$0	$0
	2020-R Double Trailer (2 or more) - Sana Workshop)	m2	500	20RBMS	$59.38	$29,692	89%	$26,426	$3,266
Fold Away Buildings	2020-R Carpenter Workshop	m2	100	20RBFS	$41.57	$4,157	100%	$4,157	$0
Soft-Walled	2020-R Aecon Workshop	m2	1650	20RBSS	$47.51	$78,388	100%	$78,388	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2		20RBIS	$29.69	$0	100%	$0	$0
Water and Wastewater Treatment Facilities	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each		20WWTS	$11,035.58	$0	0%	$0	$0
Power Plant		m2		brs1h	$65.00	$0		$0	$0
Communication Tower		m2		brs1h	$65.00	$0		$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
AN Storage Facility		m2		brs1s	$128.00	$0		$0	$0
Warehouse, Shops and Other		m2		brs1l	$45.00	$0		$0	$0
Storage Facility at Laydown/Airstrip		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks		m2		brs1h	$65.00	$0		$0	$0
Fire Protection pumping station		m		brs1h	$65.00	$0		$0	$0
Freshwater intake		m2		brs1l	$45.00	$0		$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0		$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, electrician		mandays		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, mechanical		mandays		#N/A	$0.00	$0		$0	$0
Break foundation slabs		m2		brcs	$6.00	$0		$0	$0
Consolidate & dump boneyard debris		allow		brs1l	$45.00	$0		$0	$0
Worker Dry		m2		brs1l	$45.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		brs1l	$45.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		brs1l	$45.00	$0		$0	$0
Water Intake		m2		brcs	$6.00	$0		$0	$0
Other		m2		bdcs	$12.63	$0		$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2		20RCBMS	$143.42	$0	85%	$0	$0
Fold Away Buildings		m2		20RCBFS	$142.41	$0	100%	$0	$0
	2020 estimate add 1,250 from 2020 Plan for Thaw and Wash Bay for Mobile Maintenance	m2	1250	20RCBFS	$142.41	$178,012	100%	$178,012	$0
Soft-Walled	2017 Work Plan Addendum Maintenance Garage at Milne Port ,2019 breakdowm	m2		20RCBSS	$148.35	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2		20RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2		#N/A	$0.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Precast Foundations	2020 Work Plan add: - 2,235 (Car Dumper and reclaim tunnel basement foundation, precast concrete block) - 1,040 (Conical stockpile tunnel foundation, precast concrete block)	m2	3275	20FCS	$38.47	$125,980	100%	$125,980	$0
Slab on Grade	Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Milne Site 2019 breakdowm	m2		20FSS	$33.11	$0	100%	$0	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2		20TCS	$20.78	$0	100%	$0	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	2020 Work Plan add: - 15,300 (Car Dumper basement disturbed area) - 21,500 (Service Access Rd for Rail Alignment at KM0) - 27,700 (New laydown and access road for heated explosives facility)	m2	64,500	20GCS	$1.81	$116,764	100%	$116,764	$0
	Laydown LP1	m2		20GCS	$1.81	$0	100%	$0	$0
	2018 Work Plan See Table 3-3 in Marginal Estimate	m2		20GCS	$1.81	$0	100%	$0	$0
	2017 actual work not previously allocated (W1,W3,W6, W7, W10B, W11, W14 AND W15) see table 2-2 of 2018 work plan	m2		20GCS	$1.81	$0	100%	$0	$0
		m2		20GCS	$1.81	$0	100%	$0	$0
Grade and contour building footprints		m2		20GCS	$1.81	$0	100%	$0	$0
Grade and contour infrastructure pads		m2		20GCS	$1.81	$0	100%	$0	$0
Road		m2		20GCS	$1.81	$0	100%	$0	$0
Stockpiles		m2		20GCS	$1.81	$0	100%	$0	$0
U/G Heating Plant		m2		20GCS	$1.81	$0	100%	$0	$0
Emulsion Plant		m2		20GCS	$1.81	$0	100%	$0	$0
Warehouse, Shops and Other		m2		20GCS	$1.81	$0	100%	$0	$0
Fuel tanks on site for bulk fuel storage		m2		20GCS	$1.81	$0	100%	$0	$0
Fire Protection pumping station		m2		20GCS	$1.81	$0	100%	$0	$0
Worker Dry		m2		20GCS	$1.81	$0	100%	$0	$0
WTP & Fresh Water Pumping Station		m2		20GCS	$1.81	$0	100%	$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		20GCS	$1.81	$0	100%	$0	$0
Other		m2		20GCS	$1.81	$0	100%	$0	$0
	2019 ajusted	m2		20GCS	$1.81	$0	100%	$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Ore Stockpile Sedimentation		m2		20GCLS	$5.31	$0	100%	$0	$0
Ore Stockpile Sedimentation Pond 2a		m2		20GCLS	$5.31	$0	100%	$0	$0
contaminated dump		m2		20GCLS	$5.31	$0	100%	$0	$0
New hazardous waste berm	2019 breakdown	m2		20GCLS	$5.31	$0	100%	$0	$0
Landfarm		m2		20GCLS	$5.31	$0	100%	$0	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	Fill Appplication; assumes 1/3 of 2020 Work Plan Fill Application applies to Milne Port	m2	1,984	20PFS	$44.37	$88,015	100%	$88,015	$0
SPECIALIZED ITEMS									
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). **2017 Work Plan add 3500 m of cable.**	m		20ECS	$26.49	$0	100%	$0	$0
Incinerator	2020 estimate (add 1 incinerator; waste management)	each	1	20FIS	$9,975.93	$9,976	100%	$9,976	$0
Potable Water	2020-R (remove Desalination Plant)	each	-1	20PWS	$9,975.93	($9,976)		$0	-$9,976
					Total	$1,276,828		$1,278,875	($2,047)
					% of Total			100%	0%

Building / Equip Name: **Tote Road** **Bldg / Equip #:** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment		each		15MOLS	$941.09	$0	95%	$0	$0
Medium Mobile Equipment		each		15MOMS	$1,494.13	$0	98%	$0	$0
Heavy Mobile Equipment		each		15MOHS	$2,616.87	$0	98%	$0	$0
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions.Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). 2017 Work Plan add 20 units.	each		15LMES	$1,980.80	$0	98%	$0	$0
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). 2017 Work Plan add 2 units.	each		15MMES	$4,261.34	$0	100%	$0	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). 2017 Work Plan add 1 unit (Truck Wash system).	each		15MEHS	$41,205.45	$0	100%	$0	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each		15TLS	$2,148.33	$0	0%	$0	$0
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each		15MTS	$7,387.31	$0	0%	$0	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each		15LiDTS	$3,693.66	$0	100%	$0	$0
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each		15MDTS	$16,166.40	$0	100%	$0	$0
Misc. Items	On-site disposal. Miscellaneous (minor) items were defined as any item less than 200 kg not captured in other unit costs (Ref 1, pg 42).	Lot		15MEIS	$529.83	$0	100%	$0	$0
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000 L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L).	each		15MMFTS	$10,481.05	$0	100%	$0	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular - **100% on IOL**	2020 estimate add 72 units from 2020 Plan (Washrooms at KM26 and KM 60 IT Towers)	m2	72	20RBMS	$59.38	$4,276	100%	$4,276	$0
Modular - **100% on Crown Land**	2020 estimate add 140 units from 2020 Plan (Contractor offices and Garages on LD-14	m2	140	20RBMS	$59.38	$8,314	100%	$8,314	$0
Fold Away Buildings		m2		20RBFS	$41.57	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	2017 Actual work not previously allocated (see Table 2-3 of 2018 Marginal cost)	m2		20RBIS	$29.69	$0	100%	$0	$0
Water and Wastewater Treatment Facilities		each		20WWTS	$11,035.58	$0	0%	$0	$0
Power Plant		m2		brs1h	$65.00	$0		$0	$0
Communication Tower		m2		brs1h	$65.00	$0		$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
AN Storage Facility		m2		brs1s	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		brs1l	$45.00	$0		$0	$0
Storage Facility at Laydown/Airstrip		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks		m2		brs1h	$65.00	$0		$0	$0
Fire Protection pumping station		m		brs1h	$65.00	$0		$0	$0
Freshwater intake		m2		brs1l	$45.00	$0		$0	$0
Reclaim pumps		m2		#N/A	$0.00	$0		$0	$0
Outfall & Diffuser		m2		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, electrician		mandays		#N/A	$0.00	$0		$0	$0
Airstrip lighting, navigation, mechanical		mandays		#N/A	$0.00	$0		$0	$0
Break foundation slabs		m2		brcs	$6.00	$0		$0	$0
Consolidate & dump boneyard debris		allow		brs1l	$45.00	$0		$0	$0
Worker Dry		m2		brs1l	$45.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		brs1l	$45.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		brs1l	$45.00	$0		$0	$0
Water Intake		m2		brcs	$6.00	$0		$0	$0
Other		m2		#N/A	$0.00	$0		$0	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular - **100% on IOL**	2020 estimate add 576 units from 2020 Plan (Explosives Magazines (144m2 x 4) - Demolish and Decontaminate Building - Trailer)	m2	576	20RCBMS	$143.42	$82,609	100%	$82,609	$0
Fold Away Buildings	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**		**20RCBFS**	**$142.41**	**$0**	**100%**	**$0**	**$0**
ISO Shipping Containers (Shelters, Comm. Facilities)		m2		20RCBIS	$143.42	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2		20RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade	**Mobile Maintenance Depot (100% on Crown Land)**	m2		20FSS	$33.11	$0	100%	$0	$0
Timber Cribbing	Includes disassembly load and transport of the timber cribbing. Assume 7% on Crown Land	m2		20TCS	$20.78	$0	100%	$0	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Culvert Removal		m		20CRS	$1,094.48	$0	100%	$0	$0
Grade and contour laydown areas - **100% on IOL**	2020 estimate add 318,075 from 2020 Plan (Laydown Area 1, 5-11, 13, 20-32, R3 expansion). Additional Explosive magazine pads along Tote Road - 32,628 (Km 13 - 19,619 (Km 52) - 27,646 (Km 59.3) - 10,867 (Km 76.7)	m2	609,225	20GCS	$1.81	$1,102,877	100%	$1,102,877	$0
Grade and contour laydown areas - **100% on Crown Land**	2020 estimate add 100,600 from 2020 Plan (Laydown Area 14, 15, 17, 19)	m2	100,600	20GCS	$1.81	$182,116	100%	$182,116	$0
Grade and contour Rail Access Roads - **100% on IOL**	2020 estimate add 313,908 from 2020 Plan	m2	313,908	20GCS	$1.81	$568,266	100%	$568,266	$0
Grade and contour Rail Access Roads - **100% on Crown Land**	2020 estimate add 1,370 from 2020 Plan	m2	1,370	20GCS	$1.81	$2,480	100%	$2,480	$0
Grade and contour Tote Road Level Crossing - **100% on IOL**	2020 estimate add 98,000 from 2020 Plan	m2	98,000	20GCS	$1.81	$177,409	95%	$168,538	$8,870
Grade and contour Tote Road Level Crossing - **100% on Crown Land**	2020 estimate add 14,000 from 2020 Plan	m2	14,000	20GCS	$1.81	$25,344	95%	$24,077	$1,267
Grade and contour building footprints	**Assume 7% on Crown Land**	**m2**		**20GCS**	$1.81	**$0**	**100%**	**$0**	**$0**
Grade and contour infrastructure pads	**Assume 7% on Crown Land**	**m2**		**20GCS**	$1.81	**$0**	**100%**	**$0**	**$0**
Aerodome Facilities		m2		20GCS	$1.81	$0	100%	$0	$0
Road	**Assume 7% on Crown Land**	**m2**		**20GCS**	$1.81	**$0**	**100%**	**$0**	**$0**
Stockpiles		m2		20GCS	$1.81	$0	100%	$0	$0
Remove Liner	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**			**$3.50**	**$0**	**100%**	**$0**	**$0**
Grade and Contour Significant Disturbed Areas		m2		#N/A	$0.00	$0	100%	$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		#N/A	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		#N/A	$0.00	$0		$0	$0
Fuel tanks on site for bulk fuel storage		m2		#N/A	$0.00	$0		$0	$0
Fire Protection pumping station		m2		#N/A	$0.00	$0		$0	$0
Worker Dry		m2		#N/A	$0.00	$0		$0	$0
WTP & Fresh Water Pumping Station		m2		#N/A	$0.00	$0		$0	$0
WRSF Pond and Attenuation Pond Pumphouses		m2		#N/A	$0.00	$0		$0	$0
Other		ha		scfyl	$4,300.00	$0		$0	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
Road to Tote Rd Landfill for Demolition Waste	Assumes 1/3 of 2020 Work Plan Fill Application applies to Tote Road	m2	1,984	20PFS	$44.37	$88,015	100%	$88,015	$0
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	$2,241,706		$2,231,568	$10,138
					%of Total			100%	0%

Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
BREACH DITCHES						
DECOMISSION FRESH WATER SUPPLY						
WATER CONTROL IN RECLAMATION QUARRY						
REMOVE PIPELINES						
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
					Total	$0

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

Interim Care and Maintenance (5 Month duration)

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
Number of years of ICM		years	5		**Total**	$0

Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Short Term Temporary Care and Maintenance Program		LS		#N/A	$200,000.00	$0
Annual geotechnical inspection		LS		#N/A	$200,000.00	$0
Permitting		LS		#N/A	$220,000.00	$0
Socio-economic reporting		LS		#N/A	$320,000.00	$0
Aquatic monitoring Program	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS		#N/A	$450,000.00	$0
Environmental Effects Monitoring Program		LS		#N/A	$285,000.00	$0
Post-Closure fauna and Flora monitoring. Terrestrial Program		LS		#N/A	##########	$0
Marine Monitoring		LS		#N/A	$120,000.00	$0
Air Quality Monitoring Program (AQMP)		LS		#N/A	$210,000.00	$0
Wildlife Effects Monitoring Program (WEMP)	Assume sampling events specified year 1 to 5.	each		RPTH	$40,625.00	$0
Safety compliance inspection		LS		#N/A	$185,000.00	$0
Project Environmental Assessment	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS		#N/A	$240,000.00	$0
COVER MAINTENANCE						
SPILLWAY MAINTENANCE						
CWTS MAINTENANCE						
POST-CLOSURE WATER TREATMENT						
Subtotal, Annual post-closure costs						$0
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity					years	
Present Value of payment stream						$0

*Regulatory costs - annual reporting, management plans, progress reports etc.

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
MOBILIZE MISC. EQUIPMENT						
	2019 estimate (See section 3.3.2.5 of 2019 Marginal Estimate) Assumed 10% of marginal 2019 Estimate Direct costs	LS		#N/A	1439949.226	$0
Mobilization and Demobilization of Equipment and Materials Required for Reclamation (2019)	2019 estimate (Phase 2 Expansion Project Materials and Equipment see table 3-7 of 2019 Marginal Estimate)	LS		#N/A	15592000	$0
	2019 estimate (Demob. Of hazardous waste materials associated with the Water Treatment Plant at the WRF)	LS		#N/A	13300	$0
Mobilization and Demobilization of Equipment and Materials by Sealift	2020 estimate from 2020 Plan	LS	1		948000	$948,000
Mobilization and Demobilization of Equipment and Materials for 2018 Work Plan addendum	Assumed 10% of marginal 2017 Work Plan Addendum Direct costs(minus Soil and Water management and ICM components) i.e., $5,554,000 from BIMC 2018 Marginal Summary Worksheet.	LS		#N/A	555400	$0
Mobilization and Demobilization of Equipment and Materials for 2018 Work Plan	Assumed 10% of marginal 2018 Work Plan Direct costs(minus Soil and Water management and ICM components) i.e., $2,600,700 from BIMC 2018 Marginal Summary Worksheet.	LS		#N/A	260070	$0
Off-site Disposal of Waste	Ref 1 pg 59	m3		15ODS	$358.00	$0
Consumables (**2018 Work Plan** marginal increase)	2018 Work Plan addendum (table 3-7) increases this to a 800 person and 50 person camp structures at the Mine Site and a 380 person camp at Milne Port	Ea		15CONS	$700.80	$0
Consumables	Cost to remove consumables delivered to site in 2015 (lubricants, grease, detergents, boosters, EZ Dets, dry goods, food, household supplies, etc.) (2015 Security Assessment, pg 18).	Ea		15CONS	$700.80	$0
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation	2020 estimate from 2020 Plan	LS	1		618000	$618,000
Mobilization of Workers Required for Reclamation (from northern communities, **2018 Work Plan**	Person-hours required to complete direct cost reclamation activities (10-h person-days)	person-days		15NWS	$75.00	$0
Mobilization of Workers Required for Reclamation (from southern communities, **2018 Work Plan**	Person-hours required to complete direct cost reclamation activities (10-h person-days)	person-days		15SWS	$85.45	$0
Mobilization of Workers Required for Reclamation (from northern communities,	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days		15NWS	$75.00	$0
Mobilization of Workers Required for Reclamation (from southern communities,	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days		15SWS	$85.45	$0
Mobilization of Workers Required for Reclamation (from northern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days		15NWS	$75.00	$0
Mobilization of Workers Required for Reclamation (from southern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days		15SWS	$85.45	$0
Mobilization of Workers Required for Reclamation (2014 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	man hours			82.32	$0
Mobilization of Workers Required for Reclamation (2015 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each			82.32	$0
Mobilization of Workers Required for Reclamation (2015 A Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each			82.32	$0
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation	2020 estimate from 2020 Plan	LS	1		1694000	$1,694,000
Worker Accommodation & Camp Operation	For the Post-Closure Monitorong and Reporting System (from 2016 Work Plan)	person-days		15WACS	$225.00	$0
Worker Accommodation & Camp Operation (**2018 Work Plan**)	For marginal reclamation activities (3190 person-days) associated with **2018 Work Plan (Page 13 of Marginal Estimate)**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days		15WACS	$225.00	$0
Worker Accommodation & Camp Operation (**2017 Work Plan addendum**)	For marginal reclamation activities (2145 person-days) associated with **2017 Work Plan addendum**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days		15WACS	$225.00	$0
Long term reclamation activities (eg pump flooding)		person-days		15WACS	$225.00	$0
Worker Accommodation & Camp Operation (**2019 Marginal estimate**)	Page 16 in FSE	person-days		15WACS	$225.00	$0
MOBILIZE FUEL						

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents the fuel mobilization cost associated with the 2014 Work Plan as provided in Oct 30, 2015 EBS	$		#N/A	1	$0
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 provided in Oct 30, 2015 EBS	$		#N/A	1	$0
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for the 2015 Addendum provided in September 23rd, 2015 EBS	$		#N/A	1	$0
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 R provided in September 23rd, 2015 EBS	$		#N/A	1	$0
Fuel Required for Reclamation (2016 Work Plan)	Ref 1, pg 61	litre		15MF1S	0.4	$0
Fuel Required for Reclamation **(2017 Work Plan Addendum)**	**2017 Work Plan Addendum page 8**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 1,144,276L. Heat & power = 116L per 2145 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation. Correction made to $1,213,000 per EBS not $1,216,000 as noted in the addendum. BIMC information does not clarify how the volume of fuel was derived so cost provided used to back out a volume of fuel.	litre		15MF1S	0.4	$0
Fuel Required for Reclamation (2018 Work Plan)	**2018 Work Plan page 13**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 638,170L. Heat & power = 116L per 3190 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre		15MF1S	0.4	$0
Fuel Required for Reclamation (2019)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre		15MF1S	0.4	$0
Fuel Required for Reclamation (2020)	2020 estimate	LS	1	#N/A	$1,078,000.00	$1,078,000
WINTER ROAD DEMOBILIZE HEAVY EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob) DEMOBILIZE FUEL						
Fuel Required for Reclamation (2019)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre		15MF1S	0.1	$0
DEMOBILIZE CAMP DEMOBILIZE WORKERS WINTER ROAD						
					Total	**$4,338,000**

Underground Mine Name **UG Mine #** *1*

ACTIVITY/MATERIAL	Notes	Unit	Qty	Code	Unit Cost	Cost Land	Land Cost	Water Cost
CONTROL ACCESS								
REMOVE HAZARDOUS MATERIALS								
INSTALL BULKHEADS								
FLOOD MINE								
INSTALL GROUNDWATER COLLECTION SYSTEM								
SPECIALIZED ITEMS								
					Total	$0	$0	$0
					% of Total		0%	0%

Tailings Impoundment Name: **Pond # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
STABILIZE EMBANKMENT(S)									
COVER TAILINGS									
BURY PAG ROCK									
STABILIZE DECANT SYSTEM									
REMOVE TAILINGS DISCHARGE									
CONSTRUCT DIVERSION DITCHES									
FLOOD TAILINGS									
UPGRADE SPILLWAY									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
SPECIALIZED ITEMS									
TREAT SEEPAGE - see "Water Management" and "Water Treatment"									
TREAT SUPERNATANT									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
					Total	$0		$0	$0
					% of Total			0%	0%

* for construction of passive treatment system refer to "Water Management"

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	COMMENTS
Accomodation							
		ACCM	manday	100.00	175.00		
Buildings - Decontaminate							
	Asbestos	BDA	m2	25.60	51.20		Low: removal of asbestos siding & flooring; High: re
Buildings - Remove							Unit costs are based on 3m high, single storey build
	Wood	BRW	m2	27.50	41.00		
	Concrete	BRC	m2	40.00	65.00	6.00	Specified: puncture concrete foundation slabs
	Steel - teardown	BRS1	m2	45.00	65.00		
	Steel - for salvage	BRS2	m2	67.00	100.00		
Concrete work							
	Small pour	CSF	m3	426.50	639.75		Low: YK; High=1.5xLow
	Large pour	CLF	m3	353.50	530.25	2,130.00	Specified: concrete crown pillar
Contaminated Soils							
	ESA Phase 1	CS1	each	7500.00			Low: small, "clean" site
	ESA Phase 1	CS2	each	50000.00			Low: small, "clean" site
	Remediate on site	CSR	m3	47.00	146.00		
Dozing							
	doze rock piles	DR	m3	1.05	2.40		Low cost: doze crest off dump
	doze overburden/soil piles	DS	m3	0.95	3.80		High cost: push up to 300 m
Excavate Rock; Low Spec's and QA/QC							
	drill/blast/load/short haul	RB1	m3	11.40	17.05		Low:quarry operations for bulk fill
	drill/blast/load/long haul	RB2	m3	12.05	17.80		
	RB1 + spread and compact	RB3	m3	12.05	17.80		
	RB2 + spread and compact	RB4	m3	12.50	30.75		
	Specified activity	RBS	m3				
Excavate Rock; High Spec's and QA/QC							(e.g. ditch/spillway excavation)
	drill/blast/load/short haul	RC1	m3	12.05	17.80		Low:foundation excavation;High:spillway excavatio
	drill/blast/load/long haul	RC2	m3	12.70	18.40		
	RC1 + spread and compact	RC3	m3	12.70	18.40		e,g, cover construction
	RC2 + spread and compact	RC4	m3	13.50	19.20		e,g, cover construction
	Specified activity	RCS	m3			175.00	Specified-drift excavation
Excavate Rip Rap							
	drill/blast/load/short haul/place	RR1	m3	13.50	17.75		High: quarry & place rip rap in channel
	drill/blast/load/long haul/place	RR2	m3	14.20	20.65		
	source is waste dump/short haul	RR3	m3	7.00			cost includes sorting
	source is waste dump/long haul	RR4	m3	7.60			
	Specified activity	RRS	m3				
Excavate Soil; Low Spec's and QA/QC							
	clear & grub	SBC	m2	3.40	5.00		
	excavate/load/short haul	SB1	m3	4.30	5.90		
	excavate/load/long haul	SB2	m3	4.60	7.30		
	SB1 + spread and compact	SB3	m3	5.10	8.90		Low: non-engineered; High:engineered
	SB2 + spread and compact	SB4	m3	5.50	11.00		Low: non-engineered; High:engineered
	Specified activity	SBS	m3	3.20	6.30		Low: rehandle waste rock dump by dozing; High:rel
	Tailings	SBT	m3	1.35	3.70	15.50	High:contour surface - wet or frozen; Specified:hau
Excavate Soil, High Spec's and QA/QC							
	excavate/load/short haul	SC1	m3	6.80	9.30		
	excavate/load/long haul	SC2	m3	7.10	11.75		
	SC1 + spread and compact	SC3	m3	8.90	14.20		Low: non-engineered; High:engineered
	SC2 + spread and compact	SC4	m3	9.30	23.20		Low: non-engineered; High:engineered (e.g. compl
	Specified activity	SCS	m3			18.80	Backfill adit with waste rock
Fence							
		FNC	m	13.55	203.00		
Fuel and Electricity							
	Fuel cost - gas	FCG	litre	1.05	1.40		
	Fuel cost - diesel	FCD	litre	0.99	1.39		
	Fuel mobilization	FCM	litre	0.22	0.42		High: winter road usage
	Electricity	FCE	kW-h	0.17	0.19	0.49	Low and High:Yellowknife; Specified:diesel generat
Geo-Synthetics							

Filter by unit

geotextile	GST	m2	3.44			Supply and install
geogrid	GSG	m2	5.75			
liner, HDPE	GSHDPE	m2	7.95			Supply and install; large quantity
liner, ES3	GSES3	m2	20.20			FOB Yellowknife
geosynthetic installation	GSI	m2	3.16	14.00		Low:geotextile; High:ES3 or HDPE
bentonite soil ammendment	GSBA	tonne	308.30	348.50		FOB Edmonton, add shipping & mixing
Grouting (/m3 of rock grouted)						
	grout	m3	236.55	286.75		High: cement, FOB Yellowknife
Labour & Equipment Rates						
Site manager	sman	$/hr	125.00	152.00		
Supervisor	super	$/hr	52.00	91.84		
Registered engineer	eng	$/hr	95.00	220.00		
Environmental coordinator	envco	$/hr	74.16	130.00		
Evironmental technologist	envtech	$/hr	36.00			
Electrician	elec	$/hr	74.00	95.00		
Journeyman - various	journey	$/hr	44.00	71.79		
Labour - skilled	lab-s	$/hr	41.00	49.60	120.00	
Labour - unskilled	lab-us	$/hr	31.00	43.98		
Equipment operator	oper	$/hr	41.00	65.00		
Heavy duty mechanic	mech	$/hr	49.00	72.85		
Water treatment plant operator	oper-wt	$/hr	41.00	59.86		
Security / first aid	safety	$/hr	36.00	66.97		
Administative staff	admin	$/hr	38.00	57.89		
Equipment rates include operator and fuel						
Loader - 4 cu.yd (3.06m3)	load-s	$/hr	175.00			
Loader - 7 cu.yd (5.35m3)	load-l	$/hr	315.00			
Excavator - 26.76-30.84 tonnes	exc-s	$/hr	190.00			
Excavator - 68.95+tonnes	exc-l	$/hr	420.00			
Grader	grad	$/hr	190.00			
Dump truck off hwy 30-50 tonnes	truck-s	$/hr	225.00			
Dump truck off hwy 55-75 tonnes	truck-l	$/hr	300.00			
dozer, small	dozers	$/hr	205.00	260.00		
dozer, large	dozerl	$/hr	490.00	565.00		
smooth drum compactor	comp	$/hr	155.00			
scooptram, 6 yd3 bucket	scoop	$/hr	170.00			
flat bed truck with hiab	hiab	$/hr	155.00			
fuel truck	ftruck	$/hr	150.00			
water truck	wtruck	$/hr	58.00	150.00		
Mobilize Heavy Equipment						
Road access	MHER	kmtonne	3.40	10.25		
Air access	MHEA	kmtonne	12.00			cargo rate>500lb
Mobilize Camp						
Road access	MCR	each	50000.00			refurbish existing camp
Mobilize Workers						
flight	MW	each	4500.00	9100.00		Low:e.g. 8 passenger; High: Dash 7
Oil Removal						
oil removal	OR	litre	0.43	1.20		Low:waste oil heater; High: ship offsite
PCB Removal						
Remove from site	PCBR	litre	40.20	46.90		Low: shipping, handling & disposal from Yellowknif
Pipes, small (<6in dia.)						
remove/dispose on site	PSR	m	1.00	24.00		Low: remove/dispose on site; High: remove/re-use
supply	PSS	m	6.10	11.10		Low:supply; High:supply and ship
install	PSI	m	25.00			
Pipes, large (>6in dia.)						
remove/dispose on site	PLR	m	22.00	72.00		Low: remove/dispose on site; High: remove/re-use
supply	PLS	m	129.00	143.00		Low:supply; High:supply and ship
install	PLI	m	50.00			
Power Lines						
remove/dispose on site	POWR	m	25.50			
Process Chemicals						
Remove from site	PCR	kg	0.45	2.50		Low: shipping, handling & disposal from Yellowknif

Filter by unit

Pumps						
Pump capital cost	PC	each	195000.00			
Pump shipping	PS	each	2500.00			
Pump operating cost	POC	m3	0.12			pump operating costs should be calculated based c
Pump maintenance	PM	allow	25000.00			
Pump sand BackFill						
	PBF	m3	85.00	300.00		
Scarify - road/mine site						
	SCFY	ha	4300	6030	2150	
Shaft, Raise & Portal Closures						
Shaft & Raises	SR	m2	645.00	2132.00		Low:pre-cast concrete slabs, little site prep. Area=s
Portals	POR	m3	18.80	250.00	1200.00	Low:unit cost code SCS;High:excavate & backfill c
Site Inspection Report						
	RPT	each	10000.00	20000.00		
SpillWay - Clear						
	SW	each	3000.00	7000.00		
Survey/Instrumentation						
	SI	each	1800.00	3600.00		2 person crew
Treatment Plant - Construct						
Small (< 1000 m3/d)	TPS	lump sum	9000000	15000000		
Large (> 1000 m3/d)	TPL	lump sum	15000000	46000000		
Constructed Wetland	CWTS	ha	200000	300000		
Treatment Plant - Operate						
	TPO	m3	0.35	2.00		
Treatment Chemicals						
ferric sulphate	ferric	kg	1.19			
ferrous sulphate	ferrous	kg	1.32			
lime	lime	kg	0.56			
hydrogen peroxide, 35%	hperox	kg	1.50			
Sodium Metabisulfate	Nametab	kg	1.18			
Caustic soda, 50%	caustic	kg	0.74			
Sulfuric acid, 93%	sulfuric	kg	0.31			
flocculant	flocc	kg	6.00			
copper sulphate	copper	kg				
shipping	shipping	kg	0.20			
Vegetation						
Hydroseed, Flat	VHF	ha	4000.00			
Hydroseed, Sloped	VHS	ha	4500.00			
Veg. blanket/erosion mat	VB	ha	13000.00			
Tree planting	VT	ha	2600.00	6000.00		
Wetland species	VW	ha			47.72	Specified= /m3, Wetland Growth Media Substrate r
Water Sampling/Analysis/Reporting						
	WS	each	7000.00	10000.00		
Winter Road						
Construction	WRC	km	2000.00	11500.00		
Usage	WRU	kmtonne	0.29			
Unit Rates as per 2015 EBS						
Grade and Contour	15GC	m2			$1.81	
Grade and Contour With Liner	15GCL	m2			$5.31	
Grade and Contour Significant Disturbed Areas	15GCD	m2			$2.72	
Fill Application	15PF	m2			$44.37	
Cost for On-Site Disposal of Equipment:						
Light Mobile Equipment	15MOL	Ea			941.1	
Medium Mobile Equipment	15MOM	Ea			1,494.1	
Heavy Mobile Equipment	15MOH	Ea			2,618.9	
Other mobile equipment (reclaim conveyor)	15MOR	Ea			1,329,441.3	
Light mechanical equipment - Deco	15LME	Ea			1,980.8	
Medium mechanical equipment - De	15MME	Ea			4,261.3	
Heavy mechanical equipment - Dec	15MEH	Ea			41,205.4	
Light Tanks	15TL	Ea			2,148.3	
Medium Tanks	15MT	Ea			7,387.3	
Light Diesel Tanks	15LiDT	Ea			3,693.7	

Filter by unit

Medium Diesel Tanks	15MDT	Ea			16,166.4
Large Diesel Tanks	15LDT	Ea			106,338.7
Largest Diesel Tanks	15XLDT	Ea			171,468.2
Misc Items (Minor)	15MEI	Ea			529.8
Fuel tanks - Medium Mobile Diesel	15MMFT	Ea			$10,481.05
Removal of Contaminated Buildings					
fold away	15RCBF	m2			$142.41
ISO Shipping Container	15RCBI	m2			$143.42
modular	15RCBM	m2			$143.42
soft walled	15RCBS	m2			$148.35
Temporary construction warehouse	15RCBT	m2			$25,000.00
Removal of Buildings					
fold away	15RBF	m2			$41.57
modular	15RBM	m2			$59.38
ISO Shipping Container	15RBI	m2			$29.69
soft walled	15RBS	m2			$47.51
water and wastewater treatment fac	15WWT	Ea			$11,035.58
Foundations					
Precast concrete	15FC	m2			$38.47
Slab on grade	15FS	m2			$33.11
Timber cribbing	15TC	m2			$20.78
Reclaim roads					
Remove bridges	15BR	Ea			$201,838.77
Remove culverts	15CR	Ea			$1,094.48
Specialized Items					
Power distribution - electrical cable	15EC	m			$26.49
Electrical Cable	15EC	m			26.5
Incinerator	15FI	Ea			9,975.9
Potable Water	15PW	Ea			9,975.9
Consumables	15CON	Bed space			701
Mobilization					
Mobilization and Demobilization of Equipment and Materials by Sealift	15SL	Ea			$2,572,000.00
Demobilization of Existing Fuel	15MF1	L			$0.10
Fuel Required for Reclamation	15MF2	L			$0.40
Offsite disposal of waste and materi	15OD	m3			$358.00
Worker accomodation and camp op	15WAC	person-day			$225.00
Northern worker mobilization	15NW	person-day			$75.00
Southern worker mobilization	15SW	person-day			$85.45
Blended Labour and Equip Rates (2015)					
Blended labour rate	15BL	hr			$100.00
Blended equipment rate	15BE	hr			$150.00
Water management					
Remove pipes	15RP	m			$66.23
Reclaim roads					
Remove bridges	15BR	Ea			$201,838.77
Remove culverts	15CR	Ea			$1,094.48
Chemicals					
Contaminated soil treatment	15CST	m3			$14.78
Ammonium nitrate (explosive)	15AN	kg			$2.37
Unit Rates as per 2016 EBS/ Other communication from Baffinland					
Chemicals					
Ammonium nitrate (explosive)	16AN1	m3			$358.00
Pre-packaged explosives	16AN2	kg			$2.37
Other Unit Rates					
Monitoring					
SNP/AEMP water sampling & repor	15MCW	each	$30,000	$36,000	
Envrionmental site assessment	15EA	each			$18,000
Geotechnical assessment	15GT	each			$20,000
Maintenance allowance	15MCA	each	$100,000	$150,000	
Unit Rates as per table 1-2 in 2019 BIMC Marginal Closure and Reclamation FSE					
Grade and Contour	18GC	m2			$1.49
Grade and Contour With Liner	18GCL	m2			$4.99
Fill Application	18PF	m2			$38.83
Cost for On-Site Disposal of Equipment:					
Light Mobile Equipment	18MOL	Ea			876.9
Medium Mobile Equipment	18MOM	Ea			1,378.6
Heavy Mobile Equipment	18MOH	Ea			2,310.9
Other mobile equipment (reclaim conveyor)	18MOR	Ea			1,136,232.9
Light mechanical equipment - Deco	18LME	Ea			1,707.5

Filter by unit

Medium mechanical equipment - De	18MME	Ea	3,714.6
Heavy mechanical equipment - Dec	18MEH	Ea	35,507.5
Light Tanks	18TL	Ea	1,872.4
Medium Tanks	18MT	Ea	6,386.3
Light Diesel Tanks	18LiDT	Ea	3,193.2
Medium Diesel Tanks	18MDT	Ea	13,928.0
Large Diesel Tanks	18LDT	Ea	91,285.2
Largest Diesel Tanks	18XLDT	Ea	147,297.9
Misc Items (Minor)	18MEI	Ea	452.8
Fuel tanks - Medium Mobile Diesel -	18MMFT	Ea	$9,031.52
Removal of Contaminated Buildings			
fold away	18RCBF	m2	$122.25
ISO Shipping Container	18RCBI	m2	$123.02
modular	18RCBM	m2	$123.02
soft walled	18RCBS	m2	$127.32
Removal of Buildings			
fold away	18RBF	m2	$35.53
modular	18RBM	m2	$50.75
ISO Shipping Container	18RBI	m2	$25.38
soft walled	18RBS	m2	$40.60
water and wastewater treatment fac	18WWT	Ea	$9,649.58
Foundations			
Precast concrete	18FC	m2	$32.88
Slab on grade	18FS	m2	$33.11
Timber cribbing	18TC	m2	$17.76
Reclaim roads			
Remove bridges	18BR	Ea	$172,505.43
Specialized Items			
Power distribution - electrical cable	18EC	m	$22.64
Electrical Cable	18EC	m	26.5
Incinerator	18FI	Ea	8,743.9
Potable Water	18PW	Ea	8,743.9
Blended Labour and Equip Rates (2018)			
Blended labour rate	18BL	hr	$75.00
Blended equipment rate	18BE	hr	$125.00
Water management			
Remove pipes	18RP	m	$56.60
Unit Rates as per table 1-2 in 2020 BIMC Marginal Closure and Reclamation FSE (2020 Unit Rates)			
Grade and Contour	20GC	m2	$1.81
Grade and Contour With Liner	20GCL	m2	$5.31
Fill Application	20PF	m2	$44.37
Cost for On-Site Disposal of Equipment:			
Light Mobile Equipment	20MOL	Ea	941.1
Medium Mobile Equipment	20MOM	Ea	1,494.1
Heavy Mobile Equipment	20MOH	Ea	2,618.9
Other mobile equipment (reclaim conveyor)	20MOR	Ea	1,329,441.3
Light mechanical equipment - Deco	20LME	Ea	1,980.8
Medium mechanical equipment - De	20MME	Ea	4,261.3
Heavy mechanical equipment - Dec	20MEH	Ea	41,205.4
Light Tanks	20TL	Ea	2,148.3
Medium Tanks	20MT	Ea	7,387.3
Light Diesel Tanks	20LiDT	Ea	3,693.7
Medium Diesel Tanks	20MDT	Ea	16,166.4
Large Diesel Tanks	20LDT	Ea	106,338.7
Largest Diesel Tanks	20XLDT	Ea	171,468.2
Misc Items (Minor)	20MEI	Ea	529.8
Fuel tanks - Medium Mobile Diesel -	20MMFT	Ea	$10,481.05
Removal of Contaminated Buildings			
fold away	20RCBF	m2	$142.41
ISO Shipping Container	20RCBI	m2	$143.42
modular	20RCBM	m2	$143.42
soft walled	20RCBS	m2	$148.35
Removal of Buildings			
fold away	20RBF	m2	$41.57
modular	20RBM	m2	$59.38
ISO Shipping Container	20RBI	m2	$29.69
soft walled	20RBS	m2	$47.51
water and wastewater treatment fac	20WWT	Ea	$11,035.58
Foundations			
Precast concrete	20FC	m2	$38.47
Slab on grade	20FS	m2	$33.11

Filter by unit

Timber cribbing	20TC	m2	$20.78
Reclaim roads			
Remove bridges	20BR	Ea	$201,838.77
Specialized Items			
Power distribution - electrical cable	20EC	m	$26.49
Electrical Cable	20EC	m	26.5
Incinerator	20FI	Ea	9,975.9
Potable Water	20PW	Ea	9,975.9
Blended Labour and Equip Rates (2018)			
Blended labour rate	20BL	hr	$100.00
Blended equipment rate	20BE	hr	$150.00
Water management			
Remove pipes	20RP	m	$66.23
Reclaim roads			
Remove bridges	20BR	Ea	$201,838.77
Remove culverts	20CR	Ea	$1,094.48

Post Closure Water Treatment - Identified as long term/post-closure in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
ADDITION OF REAGENTS TO WTP						
LABOUR AND SUPPLIES						
WATER MANAGEMENT						
WTP WATER SAMPLING AND ANALYSES						
SITE ACCESS						
CONSTRUCT WATER TREATMENT PLANT						
					Annual water treatment costs	$0
Number of years of water treatment		years	25			
					Total	$0

Reclaim Project:

1 Equipment Productivity Figures and Graphs have been reproduced from Caterpillar Performance Handbook - Edition 42

EXCAVATION

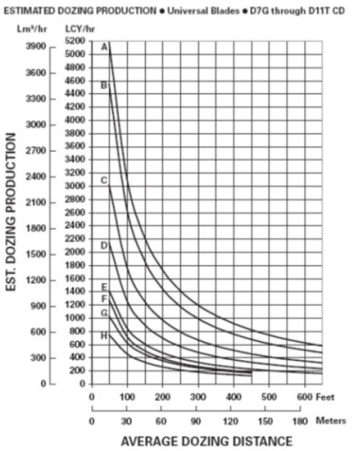
Productivity		
Machine Cat 336EL		
bucket capacity	3.16	m3
fill factor	75%	%
cycle time	45	seconds
operator skill	80%	%
machine availability	83%	%
altitude adjustment	100%	%
Hourly productivity	125.89	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$180.00	$/hr
Excavation cost - contractor rate	1.43	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Excavation cost - owner rate	$0.00	$/m3
Excavation cost - select contractor or owner rate (D22 or D31)		$/m3

HAUL AND DUMPING

Productivity		
Machine Cat 770		
truck capacity	25.1	m3
fill factor	80%	%
load time	6.0	min.
haul distance	1.5	km
average velocity	20.0	km/hr
haul time + return time	9.0	min.
wait time	0.5	min.
dump time	1.0	min.
cycle time	16.5	min.
machine availability	83%	%
altitude adjustment	100%	%
	13.7	/e. min/cycle
Hourly productivity	88.0	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$225.00	$/hr
Haul and Dump - contractor rate	2.56	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	$/hr
Haul/Dumping Cost - owner rate	$0.00	$/m3
Haul/Dumping Cost - select contractor or owner rate (I22 or I31		$/m3

SPREADING/DOZING

Productivity		
Machine Cat D8		
Estimate production using example curves provided or	600	m3/hr
equivalent from other supplier		
Correction factors (see table provided)		
operator skill	0.75	
material type, see table	0.80	
slot dozing	1.00	
side by side dozing	1.00	
visibility	1.00	
job efficiency	0.83	
altitude adjustment	1.00	
slope adjustment	1.00	
Hourly productivity	298.8	m3/hr
Operating Costs		
- Contractor		
Hourly rate - contractor supplied	$260.00	$/hr
Dozing - contractor rate	0.87	$/m3
- Owner		
ownership, daily		$/day
maintenance		$/hr
fuel		$/hr
consumables (cutters, tires)		$/hr
operator		$/hr
Owner hourly rate	$0.00	
Spreading/Dozing Cost - owner rate	$0.00	$/hr
Spreading/Dozing Cost - select contractor or owner rate (N22 or N31)		$/m3



KEY
A — D11T CD
B — D11T
C — D10T
D — D9T
E — D8T
F — D7E
G — D7R Series 2
H — D7G

NOTE: This chart is based on numerous field studies made under varying job conditions. Refer to correction factors following these charts.

Excavator

	Cat 320	Cat 325B	Cat 375
heaped bucket capacity, m3	1.5	2.2	5.4
	Typical Cycle Times (seconds)		
easy digging, shallow digging, small swing angle	16	18	20
med. to hard digging, rocky soil, swing angle to 90 deg.	23	23	25
tough digging, sandstone, caliche, at max. machine depth, swing angle > 120 deg.	27	29	35

Material	Fill Factor (% of heaped bucket capacity
Moist loam or sandy clay	100 - 110
sand and gravel (not till)	95 - 110
hard tough clay	80 - 90
rock - will blasted	60 - 75
rock - poorly blasted	40 -60

Operator Skill	poor	average	good
Correction factor	0.6	0.75	1

Machine availability	poor	average	good
Correction factor	0.9	0.95	1

Trucking

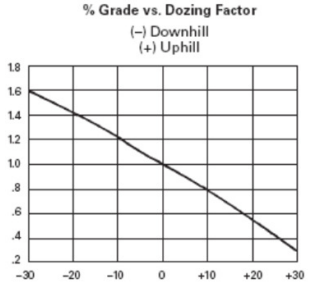
	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

Dozing

JOB CONDITION CORRECTION FACTORS

	TRACK-TYPE TRACTOR
OPERATOR —	
Excellent	1.00
Average	0.75
Poor	0.60
MATERIAL —	
Loose stockpile	1.20
Hard to cut; frozen —	
with tilt cylinder	0.80
without tilt cylinder	0.70
Hard to drift; "dead" (dry, non-cohesive material) or very sticky material	0.80
Rock, ripped or blasted	0.60-0.80
SLOT DOZING	1.20
SIDE BY SIDE DOZING	1.15-1.25
VISIBILITY —	
Dust, rain, snow, fog or darkness	0.80
JOB EFFICIENCY —	
50 min/hr	0.83
40 min/hr	0.67
BULLDOZER*	
Adjust based on SAE capacity relative to the base blade used in the Estimated Dozing Production graphs.	
GRADES — See following graph.	

*NOTE: Angling blades and cushion blades are not considered production dozing tools. Depending on job conditions, the A-blade and C-blade will average 60-75% of straight blade production.



APPENDIX C

Baffinland Iron Mines Corporation
2020 Work Plan

2020 Work Plan_Final_1Nov2019_(

2020 Marginal Reclamation Security_

Annex B

Phase 2 Reclamation Cost Estimate for the Mary River Project
Water licence 2AM-MRY1325 - Amendment #2
prepared by Arcadis Canada Inc.

ARCADIS Design & Consultancy for natural and built assets

CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA

RECLAIM ESTIMATE FOR 2019 ANNUAL SECURITY REVIEW WITH PHASE 2 PROGRAM MARY RIVER MINE

Water Licence Application
2AM-MRY1325

July 15, 2019

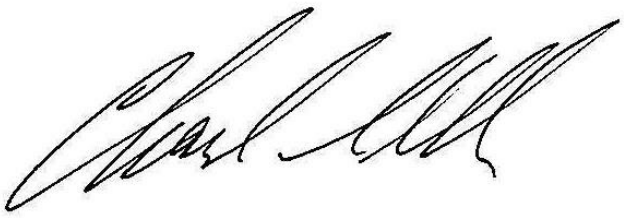
351455-000

RECLAIM ESTIMATE FOR 2019 PHASE 2 ANNUAL SECURITY REVIEW

MARY RIVER MINE

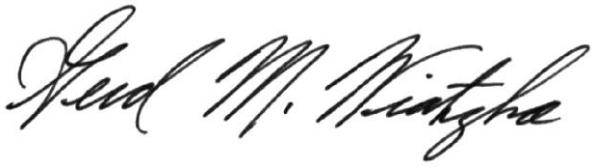
Water Licence Application

2AM-MRY1325



Charles Gravelle, M.Sc.E., P.Eng.

Principal Engineer



Gerd Wiatzka, P.Eng.

Project Lead

Prepared for:

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Our Ref.:

351455-000

Date:

July 15, 2019

VERSION CONTROL

Issue	Revision No	Date Issued	Page No	Description	Reviewed by
Draft	0	3 July 2019	33	2019 Quantum of Security Estimate including Phase 2 Program Mary River Mine Project	Gerd Wiatzka
Draft	1	11 July 2019	33	2019 Quantum of Security Estimate including Phase 2 Program Mary River Mine Project	Gerd Wiatzka
Final	2	15 July 2019	71	2019 Quantum of Security Estimate including Phase 2 Program Mary River Mine Project	Gerd Wiatzka

CONTENTS

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Arcadis	Arcadis Canada Inc.
ASR	Annual Security Review
BIMC	Baffinland Iron Mine Corporation
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
EBS	Estimate Breakdown Structure
ESA	Environmental Site Assessment
ICRP	Interim Closure and Reclamation Plan
IOL	Inuit Owned Lands
MCR	Marginal Closure and Reclamation
NIRB	Nunavut Impact Review Board
NPAG	Non-Potentially Acid Generating
NWB	Nunavut Water Board
PAG	Potential Acid Generating
QIA	Qikiqtani Inuit Association
SNC	SNC-Lavalin Inc.
TSF	Tailings Storage Facility
WRSF	Waste Rock Storage Facility

EXECUTIVE SUMMARY

Further to the request of CIRNAC, Arcadis was retained to complete an independent quantum of security estimate for the closure and reclamation works required as part of BIMC's request for an amendment to the existing Type A Water Licence (No. 2AM-MRY1325 for the Mary River Mine Project) to accommodate their proposed Phase 2 Mine Development Program. This RECLAIM estimate update addressed both the 2019 Work Plan and the Phase 2 Work Program as proposed by BIMC in late 2018.

In order to prepare the quantum of security estimate, Arcadis reviewed the following documents:

- 2019 Marginal Closure and Reclamation Financial Security Estimate, prepared by BIMC and dated 20 December 2018 Revision 1;
- 2019 ASR Estimate Breakdown Structure (EBS);
- 2019 Work Plan, prepared by BIMC and dated 1 November 2018;
- Phase 2 Marginal Closure and Reclamation Financial Security Estimate, prepared by BIMC and dated 30 April 2019;
- BIMC Mary River Project - Phase 2 Proposal, as prepared by Knight Piesold, and dated 26 September 2018;
- other supporting documentation provided by BIMC with the above reference estimate;
- 2019 Annual Security Review prepared by SNC-Lavalin for CIRNAC dated 20 December 2018; and
- NWB Licence No. 2AM-MRY1325, Part C and Schedule C, Baffinland Iron Mines Corporation Type "A" Water Licence, Mary River Iron Mine Project: Direction from Nunavut Water Board for the Annual Security Review Associated with the 2019 Work Plan, dated 11 April 2019.

In preparing the estimate, Arcadis used the latest version of the RECLAIM model as provided by CIRNAC. In general, the material, equipment and labour quantities, and reclamation activities outlined in the EBS document prepared by BIMC, in conjunction with their consultants, were used in preparing this quantum of security estimate. Furthermore, the unit rates for the various work activities included as part of the 2019 work plan and Phase 2 program reflect recent amendments to ASR task rates as discussed between the project stakeholders during the preparation of the 2019 MCR financial security estimate.

A summary of the direct and indirect costs with a comparison to the updated BIMC 2019 Global ASR Closure and Reclamation Security Estimate is provided in Table 1. Based on the outcome of the Arcadis review, it is recommended that the security estimate for the current operations plus

the proposed Phase 2 Work Plan (includes the 2018Global + Marginal 2019 Work Plan + Marginal Phase 2 Work Plan) should be set at $180,389,875.

Table 1 Summary of Costs

Liability	BIMC 2019 Global Security	Arcadis 2019 Global Security
Land Ownership		
IOL	$140,277,000	$175,736,369
Crown	$17,064,000	$4,653,506
Total Security Amount	$156,341,000	$180,389,875
Liability Split		
Water Allocation	$2,811,000	$25,151,114
Land Allocation	$153,530,000	$155,238,762

Arcadis 2019 Global security meaning the sum of the 2018 BIMC Global Estimated security, the 2019 MCR adjustment and the 2019 Phase 2 MCR.

1.0 INTRODUCTION

1.1 General

Arcadis was retained by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to complete a quantum of security evaluation for the Mary River Mine Project. The security estimate was prepared based on information provided by Baffinland Iron Mines Corporation (BIMC) as part of their Phase 2 amendment application which included an annual security review submission as allowed under the existing water licence for the site.

1.2 Background

The Mary River Project is located in Nunavut, on the northern end of Baffin Island, 160 km south of Pond Inlet. This project is an iron ore mine owned and managed by BIMC. It has been in production since the Fall of 2014. Ore is hauled from the mine site along the Tote Road to Milne Port. The first ore shipments were made in the Summer of 2015. BIMC is operating under a Nunavut Impact Review Board Project Certificate and NWB Type A Water Licence (2AM-MRY1325 Amendment #1). The Type A water licence is required for project construction and operations.

CIRNAC's Mine Site Reclamation Policy for Nunavut (CIRNAC, 2002) requires that financial security be held for the highest reclamation liability for both land and water for a mine project. The assumptions for determining the security amount are detailed in the 2002 Policy.

For the Mary River Project, the financial security estimate for site development and related activities was previously completed by BIMC, the QIA and SNC-Lavalin (working on behalf of CIRNAC). Financial security for the undertakings permitted under the Project Water Licence is held by either the QIA (IOL liabilities) or CIRNAC (Crown liabilities), as a function of land ownership and activity type.

On 10 January 2018, BIMC filed information for the 2018 ASR with the NWB in accordance with relevant sections of Schedule C, Item 2 of the Type A Water Licence. The 2018 ASR, provided by BIMC, builds upon commentary provided on earlier ASR submissions and provides a step by step summary of the works planned and allowed for under the Type A Water Licence in relation to previously planned work (i.e., 2017 workplan) that was not completed in 2017 but is still planned for 2018. More details on the BIMC's Phase 2 Program estimate along with amendments to 2018/19 ASR are discussed herein as applicable to this estimate update in the following sections.

1.3 Scope of Work

The scope of work (SOW) developed by CIRNAC for the quantum of security evaluation is outlined in Section 2 of this report. In general, the SOW for this task was to review existing documentation on the closure and reclamation of the Mary River Mine Project and prepare a quantum of security estimate based on the RECLAIM Version 7.0 model for the costing of mine reclamation programs.

2.0 METHODOLOGY

2.1 General Approach

Arcadis' approach to this quantum of security review consisted of the following:

- review of the Mary River EBS and Project Description as prepared by BIMC and its consultants (includes the overall reclamation program as initially derived in 2014 to execute the objectives outlined in the Interim Mine Closure Reclamation Plan (BAF-PH1-830-P16-0012));
- review of the 2018/19 ASR Reconciliation prepared by BIMC;
- review of the 2019 Work Plan Security Estimate prepared by BIMC;
- review of the 2019 ASR completed by SNC-Lavalin for CIRNAC;
- review of the Phase 2 Marginal Closure and Reclamation Security Estimate;
- review of the RECLAIM Version 7.0 Manual; and
- CIRNAC Guidelines for duration of Interim Care & Maintenance and Post-Closure monitoring in Mine Site Closure & Reclamation Plan Costs Estimates for Nunavut.

The security review was completed considering the application of the financial security provisions of the Mine Site Reclamation Policy for Nunavut (CIRNAC, 2002) summarized as follows:

- Total financial security for final reclamation should be equal to the total outstanding reclamation liability for land and water combined. The financial security should be sufficient to cover the highest liability over the applicable time period.
- Reclamation cost estimates for financial security should be based on the cost of having the reclamation work completed by a third-party contractor if the operator defaults.
- Estimates should include a contingency that is appropriate to the particular work to be undertaken.
- A recognized methodology such as RECLAIM or some other appropriate model should be used to calculate reclamation costs.
- Consideration should be given to alternate or innovative forms of security.
- Financial security requirements should be clearly set out in water licences, land leases and other regulatory instruments. Alternatively, the security requirements can be specified within a separate agreement if this approach is more applicable.
- Mine operators should be credited for approved progressive reclamation, and the value of financial security required should be adjusted in a timely fashion.

For additional reference, specific notes on basis of information and assumptions used are provided in association with various calculations where appropriate within the electronic workbooks and in hardcopy in Appendix A.

2.2 Limitations

The quantum of security estimate is based on the information provided by CIRNAC to Arcadis and, as such, the assessment is primarily based on the EBS/ASR and Phase 2 Program documents prepared by, or by others for, BIMC as well as the 2019 ASR prepared by SNC Lavalin for the Mary River Mine program. Should any of the underlying assumptions outlined in the EBS or ASR documents change over the lifetime of the mine site or if there an errors or omissions therein, then the quantum of security estimate should be reviewed in light of any new information.

It is understood that for this particular program annual updates to the quantum of security are required under the licence, and as such, the proponent has been amending the quantum of security based on changes to the site works and infrastructure as well as progressive reclamation works on an ongoing basis.

3.0 FINDINGS

3.1 General

The RECLAIM worksheets detailing the direct and indirect costs used to develop the quantum of security estimate are provided in Appendix A. A summary of the security estimate as prepared by BIMC and presented in their 2019 Marginal Closure and Reclamation Financial Security Estimate and their Phase 2 Marginal Closure and Reclamation Financial Security Estimate are provided in Appendix B. Further discussion on each major cost item, organized based on the RECALIM 7.0 layout developed and used by CIRNAC is provided in the following sections.

3.2 BIMC Security Estimate Development

The 2019 and Phase 2 Marginal Closure and Reclamation Financial Security Estimates provided by BIMC represents BIMC's proposed annual adjustment to the reclamation security for 2019.

It is BIMC's position that the aggregate of the 2019 and Phase 2 Marginal Closure and Reclamation Financial Security Estimates combined with the previous 2018 Project Closure and Reclamation Security represents the Total Global Closure and Reclamation costs required under the potential Licence amendment. The estimate is intended to address all disturbed areas, project components and project activities existing on the Mary River Mine Project site upon conclusion of the planned 2019 and Phase 2 Work Plans.

BIMC's security cost estimates were all developed by BIMC using Hatch Engineering's Estimate Breakdown Structure (EBS) approach. The EBS and unit rates developed therein are described in the 2014 Complete Project Financial Security Assessment Report (H349000-1000-07-126-0018, Rev.1, October 31, 2014) and form the starting point for all subsequent ASR Closure and Reclamation Financial Security Estimates as amended pursuant to unit rate adjustments completed during the development of the initial 2019 Marginal Closure and Reclamation Financial Security Estimate in December 2018.

3.2.1 BIMC 2018 Global Security Estimate

As presented in BIMC December 2018 Table 4-1 of the 2019 Marginal Closure and Reclamation Financial Security (copy provided in Appendix B.1), the total BIMC Global Security Estimate from the 2018 ASR under the Type A (2AM-MRY1325) Licence is $70,031,000.

In addition to the security associated with the Type A Licence, BIMC has three other forms of security associated within this project. A summary of all the security held for this project along with a distribution of the security amounts as a function of land use and liability type are tabulated below in Table 2.

Table 2 Summary of Global Estimates from 2018 ASR

Authorization	Liability	Global Estimate from 2018 ASR ($)
Type A 2AM-MRY1325	IOL	68,835,000
	Crown	1,196,000
	Water	1,714,000
	Land	68,316,878
Sub-total Type A		70,031,000
Type B Exploration 2BE-MRY 1421	IOL	165,000
	Crown	1,082,000
	Water	18,000
	Land	1,229,000
Sub-total Type B		1,247,000
DFO Security Associated with the Ore Dock	IOL	0
	Crown	563,000
	Water	563,000
	Land	0
Sub-total DFO		563,000
CIRNAC Land Lease 47H/16-1-2	IOL	0
	Crown	4,975,000
	Water	0
	Land	4,975,000
Sub-total CIRNAC Land Lease		4,975,000
Grand Total		76,816,000

3.2.2 BIMC 2018 Annual Security Review Reconciliation

Further to the initial 2019 Marginal Closure and Reclamation Financial Security submission an amendment was made to the Global Estimate provided in Section 3.2.1 above. The amendment was based on the reconciliation of activities planned and executed in 2018. As reported in the December 2018 BIMC submission there were three components to the quantum of security liability assessment reconciliation, namely:

- activities with Security Allocated, but no longer planned to be executed;
- activities with Security Allocated and planned to be conducted, but have not occurred; and
- activities executed but with no security explicitly allocated to them.

Additionally, as noted previously, the unit rates for labour and equipment were updated to reflect current contractor rates in comparison to the rates used in the 2014 Complete Project Financial Security Estimate. The outcome of this update resulted in a $7,901,000 reduction in the Global Security Estimate.

Under Bullet 1 above, BIMC noted that some of the 2018 Sea Lift Materials changed between planned and actual; however, the net result has no impact on the current 2018 Global Security amount.

Under Bullet 2 above, BIMC reduced the quantity of work activities related to the grading and re-contouring of the Laydown LP1 my 13,000 m^2 at a rate of $1.49/$m^2$ for a total of $19,000. This amendment has been accounted for in the 2019 MCR financial security estimate and as such is not reflected in the 2018 Global ASR.

Under Bullet 3 above, BIMC assigned a security amount of $89,000 for the constructed new building to contain the concrete batch plant. This amount is identified in the 2019 MCR and not as an adjustment to the 2018 ASR liability.

The amendment to the 2018 Global ASR is therefore equal to $7,901,000 as presented below in Table 3 and shown in Table 4-1 in Appendix B.1. All other adjustments are reflected in the 2019 MCR.

Table 3 Summary of Unit Rate Adjustments to 2018 Global ASR

Authorization	Liability	2018 Unit Rate Adjustment to 2018 Global ASR ($)
Type A 2AM-MRY1325	IOL	-7,754,000
	Crown	-147,000
	Water	-338,000
	Land	-7,563,000
Sub-total Type A		-7,901,000

3.2.3 BIMC 2019 Work Plan Components

As outlined in the December 2018 submission of the BIMC 2019 MCR, the scope of work items that are considered approved under the Type A Water Licence and Project Certificate have been included in the assessment of securities for works to be executed in 2019.

Work items that require a modification to the Water Licence (i.e. Phase 2 Program) are outlined below in Section 3.2.4 of this report. Other work items which have not been fully assessed or have been deferred for future consideration by BIMC, have not been included in this evaluation of security. The respective components of the work are summarized in Table 4 below.

Table 4 Summary of 2019 MCR Work Plan Security Review

Activity	Cost ($)
Direct Cost	
Buildings and Foundations	254,000
Mechanical and Mobile Equipment	593,000
Site Works	5,076,000
Storage Tanks	358,000
Culverts	18,250
Desalination Plant	7,925
Fill Application	98,000
Indirect Cost	
On-Site Fuel Demobilization and Reclamation Fuel Mobilization	1,737,000
Off-site Disposal of Hazardous and Non-Hazardous Waste	3,508,000
Mobilization of Workers	441,000
Worker Accommodation & Camp Operation	1,207,000
Mobilization and Remobilization of Equipment & Materials	684,656
Demobilization of Phase 2 Expansion Project Materials	15,592,000
Demobilization of Hazardous Waste associated with Water Treatment Plant at the Waste Rock Facility	13,300
Post-Closure Monitoring	1,712,000
Supervision, Project Management and Contract Administration	805,000
Engineering Fees	267,000
Contingency (12.5% of Direct and all other Indirect Costs)	3,310,000
Amount carried in Table 4-1 under Column E	36,110,000

The split in security amounts been IOL and Crown are $35,357,000 and $753,000 respectively while the Water/Land Usage Liability split is $11,000 and $36,099,000 respectively.

3.2.4 BIMC Phase 2 Work Plan Components

As outlined in Appendix I of the May 2019 ICRP, the BIMC Phase 2 Program MCR submission the scope of work items that are under consideration for approval under the Type A Water Licence and Project Certificate have been included in the assessment of securities for works to be

executed in 2019. The respective components of the work and associated liabilities are summarized in Table 5 below.

Table 5 Summary of Phase 2 MCR Work Plan Security Review

Activity	Cost ($)
Direct Cost	
Buildings and Foundations	229,000
Mechanical and Mobile Equipment	9,974,000
Site Works	5,723,000
Storage Tanks	275,000
Culverts	316,000
Bridges	648,000
Railway Infrastructure	29,130,000
Fill Application	625,000
Indirect Cost	
On-Site Fuel Demobilization and Reclamation Fuel Mobilization	2,657,000
Mobilization of Workers	2,017,000
Worker Accommodation & Camp Operation	5,452,500
Mobilization and Remobilization of Equipment & Materials	4,679,000
Demobilization of Phase 2 Expansion Project Materials[1]	-15,592,000
Post-Closure Monitoring[2]	0
Supervision, Project Management and Contract Administration	4,559,000
Engineering Fees	1,825,000
Contingency (12.5% of Direct and all other Indirect Costs)	5,641,000
Amount carried in Table 4-1 under Column E	58,101,000

Note 1 – BIMC had previously included the costs associated with the demobilization of the modules in their global 2018 and marginal 2019 ASR however BIMC considers the security to be no longer required as the materials and equipment will be constructed as part of the Phase 2 work.

Note 2 – cost for post-closure monitoring considered by BIMC to be included in the 2019 MRC ASR with no incremental work required to address Phase 2 construction elements.

The split in security amounts as reported by BIMC for IOL and Crown is $43,839,000 and $15,262,000 respectively, while the Water/Land Usage Liability split is $1,424,000 and $56,677,000 respectively.

3.2.5 Total Global Estimated Security for 2018/19

The aggregate of the 2018 Global ASR, 2019 MCR Work Plan and the Phase 2 Work Plan is valued by BIMC at $156,341,000. The distribution of liabilities by land ownership land use is tabulated below:

Table 6 Summary of Total Global Estimates from 2018/19 ASR

Authorization	Liability	Global Estimate from 2018/19 ASR ($)
Type A 2AM-MRY1325	IOL	140,277,000
	Crown	17,064,000
	Water	2,811,000
	Land	153,530,000
Sub-total Type A		156,341,000

Note that the IOL/Crown distribution does not balance with the Sub-total

This amount is shown under Column F of Table 4-1 in Appendix B.2.

3.3 Arcadis RECLAIM Estimate – Direct Costs

3.3.1 Overview

The Direct Costs for the Arcadis RECLAIM estimate are provided in the RECLAIM worksheets found in Appendix A. For the purposes of this evaluation, Arcadis has:

- reviewed the EBS and SNC-Lavalin Global Estimates from 2018/19 ASR;
- reviewed the BIMC 2019 MCR Financial Security Estimate for the 2019 Work Plan dated 20 December 2018);
- reviewed the BIMC Phase 2 MCR Financial Security Estimate (Appendix I of the ICRP);
- prepared a stand-alone RECLAIM Global Estimate (see Appendix A.1);
- prepared an update to the Marginal 2019 Work Plan MCR RECLAIM Model Estimate using the quantities and information provided by BIMC in their 2019 Work Plan (see Appendix A.2); and

- prepared a Marginal Phase 2 Program MCR RECLAIM Model Estimate using the quantities and information provided by BIMC in their Phase 2 MCRs (see Appendix A.3).

The Land and Water Liability costs are also presented in these worksheets.

In summary, the Land Liability (Global + 2019 Work Plan MCR Marginal + Phase 2 Program Marginal) has been calculated to be $83,716,160 while the Water Liability has been calculated to be $13,112,881. Given that the site almost entirely contained within the IOL lands, the majority of the liability has been assigned to the IOL (95.25%) while the balance or 4.75% has been assigned to the Crown. These percentages translate to $93,746,264 for the IOL and $3,082,777 for the Crown.

The following sections are divided into the respective work groupings used in the RECLAIM model. The quantities used within the respective worksheets are based on information provided by BIMC, as well as information provided in the December 2018 SNC Lavalin quantum of security report for 2019 which does not include the Phase 2 program liabilities. Unit rates for the work are generally consistent with the rates provided in the EBS. Some differences where noted in the various BIMC submissions; however, for the purposes of this evaluation the rates provided in the 2019 portion of the SNC report have been used in completing this evaluation.

3.3.2 Open Pit

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

The work outlined in the BIMC 2019 and Phase 2 MCR Estimates includes:

- the work proposed in the 2019 Work Plan for the PQ2a, PQ4a, PQ6a and PQ12a quarries located along the Tote Road; and
- the work proposed in the 2019 Work Plan for the Q5 Quarry Expansion work.

The unit rates used by BIMC are sufficiently conservative and have been used by Arcadis in the RELCAIM assessment (see Appendix A.2).

Marginal Phase 2 Program RECLAIM

No open pit work was included in the Phase 2 Program.

3.3.3 Underground Mine

Not applicable to this water licence application.

3.3.4 Tailings Facility

Not applicable to this water licence application.

3.3.5 Waste Rock Pile

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

No costs have been carried in the Marginal 2019 RECLAIM model for work related to the management of waste rock and associated water. Costs associated with the management of the waste rock pile are cover under the Global security which has been amended under the Water Treatment/Post-Closure portions of the RECLAIM model to reflect concerns relating to the potential for acid rock drainage and associated metal leaching. See Sections 3.4.3 Post-Closure Monitoring and Maintenance and 3.4.8 Contingency for more details. Furthermore, in the absence of any additional design information, Arcadis has increased the Contingency (based on direct costs only) from 15 to 20% to cover the liabilities that would be associated with the mobilization and decommissioning of a water treatment plant which would be required to mitigate any ARD/ML issues as they arise during the life of the mine.

It is understood that the future security estimate will be amended at a later date once the extent of the ARD/ML concern is better understood and an appropriate water treatment plan designed.

Marginal Phase 2 Program RECLAIM

See above under Marginal 2019 Work Plan RECLAIM.

3.3.6 Buildings and Equipment

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

The work outlined in the BIMC 2019 MCR Estimate includes:

- Mobilization of various mobile and mechanical equipment per the 2019 Work Plan;
- Installation of bulk fuel tanks at both the Milne Port and Mine Site;
- Preparation of laydown areas for the camp expansion, water treatment plant, ore stockpiles, bulk fuel storage, crusher pads as well as other miscellaneous pads applicable at the Mine Site and Milne Port;
- Preparation of sedimentation and containment ponds for crusher pads and bulk fuel tank farms, hazardous material storage, landfarm expansion, and polishing waste stabilization pond (PWSP) as applicable at the Mine Site and Milne Port;
- Expansion of the ore stockpile area at Milne Port; and
- Expansion of the landfill.

Details on the work being completed are outlined in the RECLAIM worksheets provided in Appendix A.2 for the Milne Port, Mine Site and Tote Road work areas. In general, the quantities of work are consistent with the information provided in the BIMC 2019 MCR Estimate and the unit rates derived previously by SNC are sufficiently conservative such that they have been used by Arcadis in the RELCAIM assessment (see Appendix A.2). Where new unit rates were introduced by BIMC or SNC, Arcadis has reviewed the rates and used the more appropriate rate based on reviews for of similar work within the security estimate.

Marginal Phase 2 Program RECLAIM

The work outlined in the BIMC Phase 2 MCR Estimate includes:

- Mobilization of various mobile and mechanical equipment per the 2019 Phase 2 Program;
- Installation of bulk fuel tanks at both the Milne Port and Mine Site;
- Reclaim conveyors at both the Milne Port and Mine Site as well as Shiploader No.2 at the Milne Port;
- Foundation removal for Car Dumper building, Crushing building, Screening building located at Milne Port;
- Preparation of laydown areas for the camp expansion, water treatment plant, ore stockpiles, bulk fuel storage, crusher pads as well as other miscellaneous pads applicable at the Mine Site and Milne Port;
- Preparation of laydown areas and quarries along the Northern Transportation Corridor;
- Preparation of sedimentation and containment ponds for crusher pads and bulk fuel tank farms, hazardous material storage, landfarm expansion, and polishing waste stabilization pond (PWSP) as applicable at the Mine Site and Milne Port;

- Expansion of the ore stockpile area at Milne Port;
- Expansion of the landfill; and
- Culvert and bridge removal associated with the expansion of site access roads as well as the construction of the Northern Transportation Corridor.

Details on the work being completed are outlined in the RECLAIM worksheets provided in Appendix A.3 for the Milne Port, Mine Site and Tote Road work areas. In general, the quantities of work are consistent with the information provided in the BIMC 2019 Phase 2 MCR Estimate and the unit rates derived previously by SNC are sufficiently conservative such that they have been used by Arcadis in the RECLAIM assessment (see Appendix A.3). Where new unit rates were introduced by BIMC or SNC, Arcadis has reviewed the rates and used the more appropriate rate based on reviews for of similar work within the security estimate.

3.3.7 Chemicals and Contaminated Soil Management

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

The work outlined in the BIMC 2019 MCR Estimate only includes for the increased amount of ammonium nitrate that needs to be managed per the quantity outlined in the 2019 Work Plan. Arcadis has used the quantity provided by BIMC at the rate previously used by SNC to evaluate the security associated with this topic (see Appendix A.2).

Marginal Phase 2 Program RECLAIM

The work outlined in the BIMC 2019 Phase 2 Program MCR did not include any incremental security in relation to the Phase 2 MCR work. Arcadis believes that incremental security should be carried for quarry development as part of Phase 2 program however in the absence of specific quantities has assumed the contingency amount will be sufficient to mitigate any security risk with this task.

3.3.8 Surface and Groundwater Management

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

As noted in the section for Waste Rock, the results of recent site inspections have identified some surface water containment structures that require repair and observations relating to the pH of the water within the containment structures confirmed that, going forward, there will be a requirement to treatment water in order to comply with the site water licence requirements. In order to address these concerns Arcadis has increased the contingency on the Global ASR from 15 to 20% to address this concern pending BIMC providing more design information relating to its proposed method to mitigate the issues relating to ARD/ML from the waste rock stockpile. In light of the above Arcadis has not assigned any marginal incremental security for this task.

Marginal Phase 2 Program RECLAIM

See above. No incremental cost has been carried herein for this activity.

3.3.9 Interim Care and Maintenance

Global 2018 RECLAIM

For the purposes of the 2019 RECLAIM model, the assumptions used to prepare the 2018 ASR have been amended to reconcile with CIRNAC guidance documents in this regard and as such Arcadis has amended the interim care and maintenance (ICM) period from 18-months to five years. Changes to the tasks and unit rates, as amended, have been reflected in the RECLAIM worksheet attached in Appendix A.1 interim care and maintenance period outlined therein.

The ICM security is based on carrying costs associated with:

- care and maintenance costs based on BIMCs model prorated down to an annual cost;
- Geotechnical/Environmental/SNP/AEMP assessments as prescribed under the Water Licence; and
- a provisional allowance for water treatment based on BIMC's discussions with QIA and included in their 2019 Marginal security estimate.

Marginal 2019 Work Plan RECLAIM

Given the nature of the work outlined in the 2019 MCR Estimate no Interim Care and Maintenance costs have been applied to the marginal 2019 RECLAIM model.

Marginal Phase 2 Program RECLAIM

Similar to above, given the nature of the work outlined in the Phase 2 MCR Estimate no Interim Care and Maintenance costs have been applied to the Phase 2 MCR RECLAIM model.

3.3.10 Summary of Direct Cost Estimate

The net result of the Arcadis 2018 Global RECLAIM assessment was a total capital or direct cost of $39,008,678 as compared to a cost of $34,236,000 reported by BIMC for the Global Estimate. The $4,772,678 difference is primarily due to the extension of the ICM period from 18 months to 5 years, as well as the difference between how the EBS and RECLAIM models work. In general, the work prescribed in the Global Estimate are based on the Interim Closure and Reclamation and Phase 2 programs proposed by BIMC and the overall security will need to be increased to cover the shortfall identified to mitigate concerns relating to interim care and maintenance.

The net result of the Arcadis MCR RECLAIM assessment (sum of both the 2019 Work Plan and the Phase 2 Program) was a total capital or direct cost of $57,820,363 ($10,633,279 + $47,187,084) as compared to a cost of $53,227,175 reported by BIMC for the Marginal Estimate. The main reason for the difference between the RECLAIM and EBS estimate relates to work items within the estimate where the unit rate used by BIMC to cost their work does not exactly match with the rates used by CIRNAC's consultants in the preparation of the RECLAIM estimates. For example, the unit rate for the grading and liner removal work has been set at $4.99/$m^3$ as compared to $4.12/$m^3$ and similarly the unit rate of $50/m used by BIMC for culvert removal versus $91.21/m used by Arcadis. The balance of the difference between the EBS and RECLAIM model costs are not related to quantity or unit rate concerns but simply how the two costs roll up.

3.4 Arcadis RECLAIM Estimate - Indirect Costs

3.4.1 Overview

The Indirect Costs for the Arcadis Global and MRC (2019 and Phase 2) RECLAIM estimates are provided in the RECLAIM worksheets found in Appendix A.

For the purposes of this evaluation, we have reviewed the EBS and SNC-Lavalin Global Estimates from 2018 ASR and have prepared; 1) a stand-alone RECLAIM Global Estimate (see Appendix A.1), 2) a Marginal 2019 Work Plan RECLAIM Model Estimate using the quantities and information provided by BIMC in their 2019 Work Plan (see Appendix A.2), and a Marginal Phase 2 Program RECLAIM Model Estimate (see Appendix A.3). The Land and Water Liability costs are presented in these worksheets.

In summary, total Indirect costs have been calculated at $83,560,835 of which the Land Liability (Global + 2019 Work Plan Marginal + Phase 2 Marginal) has been calculated to be $71,522,602 while the Water Liability has been calculated to be $12,038,233. Given that the site almost entirely contained within the IOL lands the majority of the liability has been assigned to the IOL (98.12%) while the balance or 1.88% has been assigned to the Crown. These percentages translate to $81,990,105 for the IOL and $1,570,729 for the Crown.

As noted for the Direct Costs, the work groupings provided in the RECLAIM model have been used for the respective section headings herein.

3.4.2 Mobilization and Demobilization

Global 2018 RECLAIM

The assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein with the exception of an amendment to account for the removal of demobilization costs associated with rail corridor materials which no longer will apply. The modules no longer accounted for under the Global 2018 RECLAIM now have work elements included in the Phase 2 program. For more details see the Global cost estimate in Appendix A.1.

Of note – in the Phase 2 MCR BMIC has removed the mobilization costs associated with the respective “modules” to be mobilized to site. While Arcadis concurs that under the 2019 Work Plan and Phase 2 MCR the associated security costs will net out, there still remains the need to demobilize these large modules post production and as such, with the exception of the rail corridor materials, thus the $5.43 million dollar assigned under the Global security remains in the security for the Mary River mine development program.

Marginal 2019 Work Plan RECLAIM

The work outlined in the BIMC 2019 MCR Estimate includes the actual areas of work undertaken in 2018 not previously included in the Marginal Estimate. Details of what has been included are provided in Appendix A.2. In general, the quantities of work are consistent with the information provided in the BIMC 2019 Work Plan MCR Estimate and the unit rates derived by SNC are sufficiently conservative such that they have been used by Arcadis in the RELCAIM assessment (see Appendix A.2).

The only discrepancy relates to the mobilization of fuel. There was some rounding used by BIMC in their estimate. Arcadis has used the quantities and rate provided by BIMC to calculate the costs associated with the disposal of residual fuels during closure works. The difference in the BIMC vs Arcadis cost for fuel management is $236,200 (i.e.$1,737,000 vs $1,973,200).

In the BIMC 2019 Work Plan MCR the costs associated with the mobilization of the “Modules” (i.e. the Rail Construction Materials, BMH Conveyors, Car Dumper Module, Screening Module, Shiploader Module and Crusher Module) were included therein (see Appendix A.2). Note that the security associated with the modules has also been carried in the Global Security (as an estimated amount) but has been amended as noted above under the Global 2018 RECLAIM Section.

Marginal Phase 2 Program RECLAIM

The work included under this activity is outlined in the BIMC Phase 2 program. Details of what has been included in the Phase 2 MCR are provided in Appendix A.3. In general, the quantities of work are consistent with the information provided in the BIMC Phase 2 MCR Estimate and the

unit rates derived by SNC are sufficiently conservative such that they have been used by Arcadis in the RELCAIM assessment (see Appendix A.3).

The only discrepancy relates to the mobilization of fuel. There was some rounding used by BIMC in their estimate. Arcadis has used the quantities and rate provided by BIMC to calculate the costs associated with the disposal of residual fuels during closure works. The difference in the BIMC vs Arcadis cost for Phase 2 fuel management is $1,157,400 ($2,657,000 vs $3,814,400).

Per the Phase 2 MCR the costs associated with the mobilization of the “Modules” (i.e. the Rail Construction Materials, BMH Conveyors, Car Dumper Module, Screening Module, Shiploader Module and Crusher Module) were removed from the marginal cost; however, as noted above under the Global 2018 RECLAIM the cost remains within the 2018 Global ASR in order to cover the costs associated with the demobilization of the units in the event the Crown has to complete site reclamation works.

3.4.3 Post-Closure Monitoring and Maintenance

Global 2018 RECLAIM

With the exception of changing the number of monitoring events from 25 over a 25 year period to 11 over the same period, the assumptions and conclusions outlined in the SNC-Lavalin evaluation dated 20 December 2018 remain valid for the purposes of this assessment and as such the costs provided in the 2018 ASR RECLAIM model for the Global security have been used herein.

Marginal 2019 Work Plan RECLAIM

For the purposes of the MRC incremental security the program outlined in the 2019 BIMC work plan has been applied herein within the exception that the duration of the post-closure monitoring has been extended out to 25 years post mine closure representing 11 monitoring events. The number of monitoring events is based on annual inspections Year 0 to Year 5 (6 events), and subsequent inspections in Year 7, 10, 15, 20 and 25 (5 events). Details on what has been included under this task are provided in Appendix A.2.

Note while the BIMC 2019 Work Plan security estimate did include for water treatment related to the waste rock facility, Arcadis has chosen to change the contingency percentage in the 2018 Global ASR to cover the uncertainties relating to the issue of ARD/ML from water coming off the waste rock storage facility. As such no additional security was added to this particular line item in the ACI 2019 Work Plan MCR RECLAIM security estimate.

Marginal Phase 2 Program RECLAIM

Given the nature of the work included under the Phase 2 Program MRC incremental security estimate, no additional Post-Closure Monitoring and Maintenance was considered necessary over and above what had been already included in the Marginal 2019 Work Plan MCR. Arcadis has not carried any additional security for this activity.

3.4.4 Engineering

The amount of engineering work required to implement the closure and reclamation plan as set out by BIMC for both the Global and MCR Cost estimates is minimal given the amount of plant and infrastructure that will be on site during operations. Furthermore, BIMC has committed to carry out research closure planning during operations which will form the underpinning for final closure planning. For this reason, the use of 3.9% of direct costs, as used by BIMC, is considered acceptable. This is also consistent with the approach taken by Arcadis in the Global and MCR RECLAIM estimates.

3.4.5 Project Management

Given the relatively minimal amount of work required to reclaim this site a project management percentage of 9.4%, as used by BIMC for both the Global and MCR Estimates, is reasonable. This level of effort was also used by Arcadis in the Global and MCR RECLAIM estimates.

3.4.6 Health and Safety Plans/Monitoring and QA/QC

Given the amount of security being held for this project, in particular under Engineering and Project Management, Arcadis has assumed for the purposes of the RECLAIM estimates that these costs have already been carried under Engineering and Project Management.

3.4.7 Bonding/Insurance

The percentage used by Arcadis in the RECLAIM models for bonding and insurance is 2%. While this amount has not been explicitly carried by BIMC, the assigning of contingency across all Direct and most of the Indirect Cost elements provides sufficient security to cover the amount of bonding and insurance derived by Arcadis using the RECLAIM model which only assigns contingency across Direct Costs.

3.4.8 Contingency

In the development of the initial 2019 financial security estimate by others it was agreed by the program stakeholders that the contingency amounts for the 2018 Global ASR would remain at 15% of direct costs and that the 2019 MCR estimates would use a contingency of 20% to cover the uncertainties associated with the work prescribed for the 2019 period.

However, given the early stages of mine development and the remaining uncertainties with respect to the ARD/ML potential and long-term management of contact water associated with the Waste Rock storage facility and open pit waters, as well as uncertainties associated with pit filling, and long term physical stabilization, and final land form design, Arcadis recommends increasing the Global contingency percentage to 20% of Direct Costs consistent with the percentage currently used for the MCR calculations.

This is consistent with the approach used at other mines in Nunavut which are in a similar stage of development.

3.4.9 Market Factor Adjustment

No market factor adjustment was used in the Arcadis estimate. This is consistent with the approach used by BIMC.

3.4.10 Summary of Indirect Cost Review

The net result of the Arcadis assessment was a total (Global and MRCs) indirect cost of $83,560,834 as compared to a cost of $84,001,108 reported by BIMC. The relatively minor difference relates primarily due to how the respective estimates were prepared (i.e., mobilization of the modules post-mine production) and costs associated with a longer post-closure monitoring program period (i.e. extended out to 25 years post mine closure) effectively netting out.

4.0 CONCLUSIONS AND RECOMMENDATIONS

On the basis of the review completed by Arcadis, the quantum of security measured as the aggregate of the RECLAIM Global ASR, the 2019 RECLAIM MRC and the Phase 2 RECLAIM MRC has been assessed to be $183,786,274. This estimate is approximately $27 M higher than the BIMC estimate and by extension is much higher than the value of the security BIMC is proposing to post based on the calculations in Table 4-1 of their 2019 MCR Financial Security Estimate. Note BIMC has yet to provide Phase 2 MCR Financial Security. A comparison of the EBS based ASR evaluation completed by BIMC and the RECLAIM estimates (Global and Marginal) is provided in Table 7.

A comparison of the Arcadis evaluation of the 2018 Global ASR to that prepared by SNC shows that the Global ASR has increased from $69.35M to $80.45M (e.g. $11.1M) as a result of the following:

- ICM costs increased by $6.2 M to account for the extension from 18 months to 5 years.
- Post-Closure Monitoring increased by $1.5 M to account for the extension in the monitoring period from 8 to 25 years (11 events over 25 years).
- Mobilization decreased by $-1.67M as a result of changes to the demobilization costs using the updated Module costs provided in the 2019 work plan and Phase 2 program.
- Contingency increased by $2.7 M to account for the change from 15% to 20% to account for the uncertainty relating to ARD and ML concerns with the waste rock stockpile runoff.
- Minor adjustments were also reported which result from changes direct costs as they are based on a percentage of direct costs (i.e., Engineering and Project Management support).

Note that the Arcadis 2018 Global ASR ($77.05M) is compared to the BIMC 2018 Global ASR post adjustment for changes to labour and equipment rates ($62.13M as per the 2019 MCR December 2018 report) for a net difference of $14.9M. The additional $7.2M between the SNC and BIMC Global estimate was explained and outlined in the 2019 Work Plan ASR evaluation done by SNC in December 2018 and as such not repeated herein.

A comparison of the 2019 and Phase 2 MCR security estimates as prepared by BIMC ($94M i.e.$36M from 2019 Work Plan and $58M from Phase 2 program) shows the Arcadis MCR estimate ($103.3M) is $9.3M more for the following reasons:

- Contingency is $11.56M vs $8.9M for a net difference of $2.66M.
- Bonding is $1.16M vs $0 for a net difference of $1.16M.
- Project Management is $5.45M vs $5.35M for a net difference of $0.1M.
- Engineering is $2.25M vs $2.1M for a net difference of $0.15M.
- Post Closure is $3.9M vs $1.7 for a net difference of $2.2M.

- Mobilization is $20.77 vs $30.1M for a net difference of $-9.33M.
- Direct Costs $57.8M vs $38.1M for a net difference of $19.7M.
- Other Indirect Costs $0 vs $7.9M for a net difference of $-7.9M.
- Balance of differences relate to minor differences in unit rates or quantity tracking between the Global quantities and Marginal incremental work quantities between BIMC and Arcadis estimate.

On the basis of the information provided to date, the quantum of security to be provided by BIMC is no longer adequate to cover the liabilities identified on site now and in the near future should the Phase 2 program move forward as planned.

It is understood that as the concerns relating to ARD/ML from the waste rock pile and pit water quality, etc. are better defined the security amounts for water treatment and contingency percentages may be amended to address associated environmental management needs and liabilities expected to be encountered during the life of mine and post-closure periods.

Table 7 Summary of Costs BIMC ASR vs Arcadis ASR

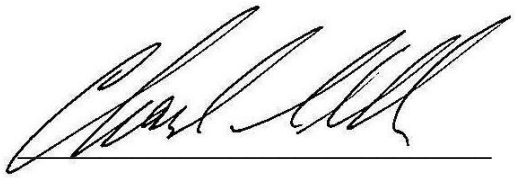
	A	B	C	D	E	F	G	H
	Authorization	Liability	BMIC ASR		Arcadis 2019 RECLAIM ASR			
			Total Global Estimate from 2019[1]	Total Posted Security[2]	2018 Global ASR	2019 Work Plan MCR	Phase 2 ASR	Total RECLAIM 2018/2019 ASR
1	Type A 2AM-MRY1325	IOL	$ 140,277,000	$ 86,687,658	$ 75,646,874	$ 38,336,726	$ 61,752,768	$ 175,736,369
2		Crown	$ 17,064,000	$ 1,448,801	$ 1,403,744	$ 235,124	$ 3,014,638	$ 4,653,506
3		Water	$ 2,811,000		$ 23,288,822	$ 76,014	$ 1,786,278	$ 25,151,114
4		Land	$ 153,530,000		$ 53,761,796	$ 38,495,838	$ 62,981,128	$ 155,238,762
5	**Total Type A**		**$ 156,341,000**	**$ 88,136,459**	**$ 77,050,618**	**$ 38,571,850**	**$ 64,767,406**	**$ 180,389,875**

Note 1 – includes both the 2019 Global ASR and Phase 2 MCR as per Table 4-1 Col E in Appendix I of ICRP dated May 2019.

Note 2 – includes the posted security per the 11 April 2019 NWB document.

5.0 CLOSURE

We trust the information provided herein meets your current needs. Should you require any additional information please do not hesitate to contact us.



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Principal Engineer

APPENDIX A

Arcadis RECLAIM Worksheets

Appendix A.1 – Global Estimate from 2018/2019 ASR

Appendix A.2 – Marginal Estimate for the 2019 Work Plan

Appendix A.3 – Marginal Estimate for Phase 2 Program

APPENDIX A

Arcadis RECLAIM Worksheets

Appendix A.1 – Global Estimate from 2018/2019 ASR

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$4,808,916	$4,808,916	$0	$4,692,698	$116,218
ROCK PILE	Mine Site Waste Rock Pile	$328,552	$328,552	$0	$328,552	$0
BUILDINGS AND EQUIPMENT	Mine Site	$11,886,072	$11,627,717	$258,354	$11,886,072	$0
	Milne Port	$5,880,585	$5,809,459	$71,126	$5,880,585	$0
	Tote Road	$2,127,100	$1,017,892	$1,109,208	$1,774,085	$353,015
	Project Wide/Other	$724,684	$724,684	$0	$724,684	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$2,900,946	$2,900,946	$0	$2,848,095	$52,851
SURFACE AND GROUNDWATER MANAGEMENT		$1,358,346	-	$1,358,346	$1,333,599	$24,747
INTERIM CARE AND MAINTENANCE		$8,993,477	-	$8,993,477	$8,829,629	$163,847
	SUBTOTAL: Capital Costs	**$39,008,678**	**$27,218,167**	**$11,790,511**	**$38,298,000**	**$710,678**
	PERCENT OF SUBTOTAL		**69.8%**	**30.2%**	**98.2%**	**1.8%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$21,603,276	$15,073,610	$6,529,667	$21,209,698	$393,578
POST-CLOSURE MONITORING AND MAINTENANCE		$2,668,600	$1,862,006	$806,594	$2,619,982	$48,618
ENGINEERING	4%	$1,521,338	$1,061,509	$459,830	$1,493,622	$27,716
PROJECT MANAGEMENT	9%	$3,666,816	$2,558,508	$1,108,308	$3,600,012	$66,804
BONDING/INSURANCE	2%	$780,174	$544,363	$235,810	$765,960	$14,214
CONTINGENCY	20%	$7,801,736	$5,443,633	$2,358,102	$7,659,600	$142,136
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$38,041,940**	**$26,543,629**	**$11,498,311**	**$37,348,874**	**$693,066**
TOTAL COSTS		**$77,050,618**	**$53,761,796**	**$23,288,822**	**$75,646,874**	**$1,403,744**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	
CONTROL ACCESS										
STABILITY STUDY										
STABILIZE SLOPES										
COVER/CONTOUR SLOPES										
CONSTRUCT DIVERSION DITCHES										
CONSTRUCT SPILLWAY										
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)										
Q13 Quarry	2017 Work Plan addendum	m2	31350	18GCS	$1.49	$46,819	100%	$46,819	$0	
Q16A Quarry	In 2016 Work Plan but deferred to 2017	m2	11240	18GCS	$1.49	$16,786	100%	$16,786	$0	
D1Q2 Quarry	2016 Work Plan	m2	109807	18GCS	$1.49	$163,988	100%	$163,988	$0	
Q1 Quarry	2017 work plan addendum marginal increase Add 50000 m2. 2017 Actual add 824,500 m2	m2	944700	18GCS	$1.49	$1,410,834	100%	$1,410,834	$0	
Q5 Quarry	2018 work plan see table 3-3 off marginal estimate	m2	15000	18GCS	$1.49	$22,401	100%	$22,401	$0	
Q11 Quarry	2017 work plan marginal increase Add 2000 m2	m2	52433	18GCS	$1.49	$78,305	100%	$78,305	$0	
Q18 Quarry (on Crown Land)	**2017 Work Plan new quarry Add 2000 m2 (100% Crown Land)**	**m2**	**2000**	**18GCS**	**$1.49**	**$2,987**	**100%**	**$2,987**	**$0**	
Q19 Quarry		m2	18760	18GCS	$1.49	$28,017	100%	$28,017	$0	
Q7 Quarry	2017 work plan marginal increase Add 2000 m2	m2	55050	18GCS	$1.49	$82,213	100%	$82,213	$0	
QMR2 Quarry	2017 work plan addendum marginal increase Add 50000 m2	m2	314580	18GCS	$1.49	$469,800	100%	$469,800	$0	
Pit 1		m2	55000	18GCS	$1.49	$82,138	100%	$82,138	$0	
Pit 1 marginal increase		m2	214450	18GCS	$1.49	$320,264	100%	$320,264	$0	
P1 Borrow Source (on Crown Land)	**100% on Crown Land**	**m2**	**75820**	**18GCS**	**$1.49**	**$113,231**	**100%**	**$113,231**	**$0**	
Km 2 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2	42795	18GCS	$1.49	$63,911	100%	$63,911	$0	
Borrow Development Areas		m2	42080	18GCS	$1.49	$62,843	100%	$62,843	$0	
Unidentified Borrow Sources		m2	697910	15GCS	$1.49	$1,042,273	100%	$1,042,273	$0	
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)										
Km 97 Borrow Source	2017 work plan marginal increase Add 1000 m2. No 2018 unit rate availabe	m2	158012	15GCDS	$2.72	$429,793	100%	$429,793	$0	No 2018 unit rate availabe
Type A Quarry	No 2018 unit rate availabe	m2	136880	15GCDS	$2.72	$372,314	100%	$372,314	$0	No 2018 unit rate availabe
FLOOD PIT-Captital										
FLOOD PIT-Annual Cost										
Other				#N/A	$0.00	$0		$0	$0	
					Annual pumping costs	$0				
Number of years of pump flooding		years								
					Total pumping costs	$0		$0	$0	
					Total	$4,808,916		$4,808,916	$0	
					% of Total			100%	0%	

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
Grade and Contour Waste Rock dump	Golder Fig 3 Interim WRMP March 2019	m2	220000	18GCS	$1.49	$328,552	100%	$328,552	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$328,552		$328,552	$0
					% of Total			100%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	
HAZARDOUS MATERIALS AUDIT										
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS										
HAZARDOUS MATERIALS REMOVAL										
HAZARDOUS MATERIALS										
CONTAMINATED SOILS										
CONTAMINATED SOIL REMOVAL										
Contaminated Soil Treatment	No 2018 unit rate availabe	m3	16164	15CSTS	$14.78	$238,904	100%	$238,904	$0	No 2018 quantities availabe
Contaminated Soil Treatment (2017 Work Plan)	Marginal increase associated with 2017 Work Plan. Spill 16-283 at Milne Port Bulk Fuel Tank Farm. No 2018 unit rate availabe	m3	8464	15CSTS	$14.78	$125,098	100%	$125,098	$0	No 2018 quantities availabe
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER										
OTHER										
Ammonium nitrate (explosive material)		m3	2343	16AN1S	$358.00	$838,794	100%	$838,794	$0	
Pre-package explosives		kg	716519	16AN2S	$2.37	$1,698,150	100%	$1,698,150	$0	
				#N/A	$0.00	$0		$0	$0	
					Total	$2,900,946		$2,900,946	$0	
					% of Total			100%	0%	

1 **Building / Equip Name:** **Mine Site** **Bldg / Equip #:** 1

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light Mobile Equipment	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). 2017 Work Plan add 6 units. Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-5 30 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2	each	417	18MOLS	$876.92	$365,676	95%	$347,392	$18,284	
Medium Mobile Equipment	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Ref 1, pg 24-25). 2017 Work Plan add 10 units. Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-5 40 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2	each	435	18MOMS	$1,378.63	$599,704	98%	$587,710	$11,994	
Heavy Mobile Equipment	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions.Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). 2017 Work Plan add 21 units. Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-5 92 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate 2018 Work Plan see Table 3-2	each	375	18MOHS	$2,310.87	$861,955	98%	$844,715	$17,239	
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions.Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). 2017 Work Plan add 20 units. 2017 Actual work as outlined in Table 2-4 of 2018	each	91	18LMES	$1,707.45	$155,378	98%	$152,270	$3,108	
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes aerodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). 2017 Work Plan add 2 units. Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-5 12 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	120	18MMES	$3,714.64	$445,757	100%	$445,757	$0	
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quantities updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). 2017 Work Plan add 1 unit (Truck Wash system). Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-5 4 units. 2017 Actual work as outlined in Table 2-4 of 2018 Marginal Estimate	each	36	18MEHS	$35,507.45	$1,349,283	100%	$1,349,283	$0	
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	6	18TLS	$1,872.41	$11,234	0%	$0	$11,234	
	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	7	18TLS	$1,872.41	$13,107	100%	$13,107	$0	
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	12	18MTS	$6,386.31	$76,636	100%	$76,636	$0	
	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	2	18MTS	$6,386.31	$12,773	100%	$12,773	$0	
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	5	18LIDTS	$3,193.16	$15,966	100%	$15,966	$0	
	Small fuel tanks (10,000-20,000L) 2017 actual not previously allocated (see Tables 2-4 & 3-4 of 2018 Marginal Estimate)	each	10	18LIDTS	$3,193.16	$31,932	100%	$31,932	$0	
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	4	18MDTS	$13,928.01	$55,712	100%	$55,712	$0	
	Medium fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Tables 2-4 & 3-4 of 2018 Marginal Estimate).	each	5	18MDTS	$13,928.01	$69,640	100%	$69,640	$0	
Fuelk tanks - On-site disposal of medium mobile fuel tanks (3,000 to 500,000L)	On-site disposal of medium-mobile fuel tanks (3,000 to 500,000L). See table 3-4 of 2018 marginal Estimate	each	18	18MMFTS	$9,031.52	$162,567	100%	$162,567	$0	
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport										
Modular	Trailers and Pre-fabricated buildings 2017 Work Plan Addendum includes 800 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port 2018 Work Plan see table 3-1	m2	23461	18RBMS	$59.38	$1,393,114	89%	$1,239,872	$153,243	
Fold Away Buildings		m2	709	18RBFS	$41.57	$29,473	100%	$29,473	$0	
Soft-Walled	2017 Work Plan Addendum soft Walled Buildings includes 50 person camp and 35 person Norse man style camp at Mine Site only	m2	7205	18RBSS	$40.60	$321,430	100%	$321,430	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	30	18RBIS	$25.38	$761	100%	$761	$0	
Office/washcars	2017 Actual work not previously allocated. See Table 2-4 of 2018 Marginal Estimate. No 2016 unit rate availabe	m2	576	15RBIS	$102.05	$58,781	89%	$52,315	$6,466	No 2016 unit rate availabe
Water and Wastewater Treatment Facilities	Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each		18WWTS	$9,649.58	$19,299	0%	$0	$19,299	
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport										
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29)	m2	3112	18RCBMS	$123.02	$382,838	100%	$382,838	$0	
Fold Away Buildings	**2017 Work Plan add 1500 m2 Truck wash Building 2018 Work Plan see table 3-1 add 4230 m2**	m2	14457	18RCBFS	$122.25	$1,767,368	100%	$1,767,368	$0	
Soft-Walled	2017 Work Plan Addendum Maintenance Garage at Mine Site	m2	2046	18RCBSS	$127.32	$260,497	100%	$260,497	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)	**2017 Work Plan add 500 m2 Tire Shop**	m2	604	18RCBIS	$123.02	$74,304	100%	$74,304	$0	No 2016 unit rate availabe
Temporary Construction Warehouse and Office Allowan	No 2016 unit rate availabe	m2	1	18RCBTS	$25,000.00	$25,000	100%	$25,000	$0	No 2016 unit rate availabe
BREAK FOUNDATIONS										
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34). **Add 2017 Work Plan Truck Wash Building foundation of 1500 m2. Add 2017 Work Plan addendum 800 person temp hard walled camp at mine 4333 m2.**	m2	13357	18FCS	$32.88	$439,178	100%	$439,178	$0	
Slab on Grade	Includes perforating the concrete slabs on grade Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast concrete foundation and Maintenance Garages at Mine Site 2046 m2	m2	17750	18FSS	$33.11	$587,703	100%	$587,703	$0	
Timber Cribbing	Includes disassembly load and transport of the timber cribbing	m2	1102	18TCS	$17.76	$19,572	100%	$19,572	$0	
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrification with a dozer										
Grade and contour laydown areas	In 2017 Work Plan Addendum - Mine Site 60000 m2 Removed in 2018 Work Plan for Mine Site (reconciliation of 2017 work plan addendum) - 15000m2 2018 Work Plan See Table 3-3 in Marginal Estimate 11400 m2 2017 Actual work not previously allocated (laydown 1, 2A and 2B) 44250 m2	m2	162843	18GCS	$1.49	$243,193	100%	$243,193	$0	
Grade and contour building footprints		m2	223	18GCS	$1.49	$333	100%	$333	$0	
Grade and contour infrastructure pads	Add 2017 Work Plan Addendum - Camp pad 45000m	m2	202201	18GCS	$1.49	$301,971	100%	$301,971	$0	
Aerodome Facilities		m2	5776	18GCS	$1.49	$8,626	100%	$8,626	$0	
Road		m2	121619	18GCS	$1.49	$181,628	100%	$181,628	$0	
Stockpiles	**Add 2017 Work Plan Increase in Crusher Pad Storage Area - Ph 1: 6,280m2 & Ph 2: 17,500m2 - 5,100 m2 to account for updated quantity in Phase 2 Program.**	m2	25300	18GCS	$1.49	$37,784	100%	$37,784	$0	
Truck weigh facility distributed area		m2	13000	18GCS	$1.49	$19,414	100%	$19,414	$0	
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrification with a dozer										
Waste Disposal		m2	900	18GCLS	$4.99	$4,491	100%	$4,491	$0	
Fuel tank farm dyke		m2	1911	18GCLS	$4.99	$9,536	100%	$9,536	$0	
Hazardous waste berm		m2	2106	18GCLS	$4.99	$10,509	100%	$10,509	$0	
Bulk fuel storage facility (Steddie Farm)		m2	5788	18GCLS	$4.99	$28,882	100%	$28,882	$0	
Crusher Pad Sedimentation Pond	2018 Work Plan See Table 3-3 in Marginal Estimate	m2	4500	18GCLS	$4.99	$22,455	100%	$22,455	$0	
Mine Site Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	18GCLS	$4.99	$10,210	100%	$10,210	$0	
Other		m2	5812	18GCLS	$4.99	$29,002	100%	$29,002	$0	
LANDFILL FOR DEMOLITION WASTE										
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). For 2018 work plan see table 3-9 in the Marginal estimate for quantity and 2017 Work Plan Addendum Table 3-8 Add 8948 m2	m2	20056	18PFS	$44.37	$890,417	100%	$890,417	$0	
SPECIALIZED ITEMS										
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41) **2017 Work Plan add 3500 m of cable.**	m	19700	18ECS	$22.64	$446,008	100%	$446,008	$0	
Incinerator	Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	18FIS	$8,743.93	$17,488	100%	$17,488	$0	
Potable Water	Equipment quantities updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	18PWS	$8,743.93	$17,488		$0	$17,488	
					Total	$11,886,072		##########	$258,354	
					% of Total			98%	2%	

Note:

1 **Building / Equip Name:** **Milne Port** **Bldg / Equip #:2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost Land	% Land	Land Cost	Water Cost	
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes forklifts, picks up, vehicles around five (5) tonnes and under, scissor lift, man lifts, and small garbage bins (Ref 1, pg 24-25). **2017 Work Plan add 6 units.**	each	104	18MOLS	$876.92	$91,200	98%	$89,376	$1,824	
Medium Mobile Equipment	Includes vehicles around 10 tonnes, trailers, buses, tow trucks, large garbage bins and water trucks (Ref 1, pg 24-25).	each	48	18MOMS	$1,378.63	$66,174	95%	$62,866	$3,309	
Heavy Mobile Equipment	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Includes vehicles over 10 tonnes, boom trucks, large front end loaders, dump trucks, graders and cranes (Ref 1, pg 24-25). **2017 Work Plan add 4 units.**	each	63	18MOHS	$2,310.87	$145,585	100%	$145,585	$0	
Other (reclaim conveyor)	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Conveyors have been classified as large mobile equipment, with the exception of the reclaim conveyor (850m in length). (Ref 1, pg 40). **For 2017 Work Plan add 0.1667 units for for cross conveyor which is 1/6th of Reclaim Conveyor length.** **2017 Work Plan Addendum this work was removed** and as such the security amount has been removed.	each	0	18MORS	$1,136,232.91	$0	100%	$0	$0	As observed by SNC this additional work never happened and as such is being removed from the Global Estimate
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill										
Light mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Light equipment includes pumps, fuel dispenser, laboratory equipment, and sample bins (Ref 1, pg 23). **2017 Work Plan add 20 units.**	each	58	18LMES	$1,707.45	$99,032	98%	$97,051	$1,981	
Medium mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Medium equipment includes serodrome equipment, generators, shop / maintenance equipment, screens, and chutes (Ref 1, pg 23). **2017 Work Plan add 16 units.**	each	19	18MMES	$3,714.64	$70,578	100%	$70,578	$0	
Heavy mechanical equipment - Decontaminate and dispose on-site	Equipment quanties updated to reflect BIMC Nov. 24 EBS revisions. Heavy equipment includes crusher, feeder, power plant generators, large screens, conveyors, and stackers (Ref 2, pg 23). **2017 Work Plan add 1 unit (Cone Crusher).**	each	4	18MEHS	$35,507.45	$142,030	100%	$142,030	$0	
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	3	18TLS	$1,872.41	$5,617	0%	$0	$5,617	
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).	each	0	15MTS	$6,386.31	$0	0%	$0	$0	
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27)	each	1	18LIDTS	$3,193.16	$3,193	100%	$3,193	$0	
Medium Diesel Tanks	Medium fuel tanks (500,000-750,000L). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	18MDTS	$13,928.01	$13,928	100%	$13,928	$0	
Large Diesel Tanks	Large fuel tanks (3ML-5ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	18LDTS	$91,285.24	$91,285	100%	$91,285	$0	
Largest Diesel Tanks	Largest fuel tanks (>5ML-15ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27). Add a tank from the 2017 Work Plan Addendum - Milne Port	each	1	18LDTS	$147,297.85	$147,298	100%	$147,298	$0	
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport										
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29). **Add 2017 Work Plan 49-person Camp (ATCO, not soft-walled, 950 m2)** **Add 2017 Work Plan Addendum includes 380 person temp hardwall camp , construction offices, lunch rooms and washcars at both Mine Site and Milne Port10936m2** **Add 2018 Work Plan see table 3-1 1218m2**	m2	18625	18RBMS	$50.75	$945,219	100%	$945,219	$0	
Fold Away Buildings		m2	1525	18RBFS	$35.53	$54,183	100%	$54,183	$0	
Soft-Walled		m2	5392.34	18RBSS	$40.60	$218,929	100%	$218,929	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	15	18RBIS	$25.38	$381	100%	$381	$0	
Water and Wastewater Treatment Facilities	2015 Security Assessment pg 39 Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	18WWTS	$9,649.58	$19,299	0%	$0	$19,299	
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport										
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).	m2	1171	18RCBMS	$123.02	$144,056	85%	$122,448	$21,608	
Fold Away Buildings		m2	3194	18RCBFS	$122.25	$390,467	100%	$390,467	$0	
Soft-Walled	Add 2017 Work Plan Addendum Maintenance Garage at Milne Port 2046m2	m2	4177	18RCBSS	$127.32	$531,816	100%	$531,816	$0	
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	134	18RCBIS	$123.02	$16,485	100%	$16,485	$0	
Temporary Construction Warehouse and Office Allowan	No 2018 unit rate availabe	m2	1	15RCBTS	$25,000.00	$25,000	100%	$25,000	$0	No 2018 unit rate availabe
BREAK FOUNDATIONS										
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34).	m2	3513	18FCS	$32.88	$115,507	100%	$115,507	$0	
Slab on Grade	Includes perforating the concrete slabs on grade Includes perforating the concrete slabs on grade 2017 Work Plan Addendum for pre-cast conrete foundation and Maintenance Garages at Milne Site Add 10046 m2	m2	11812	18FSS	$33.11	$391,095	100%	$391,095	$0	
Timber Cribbing	Includes disassemby load and transport of the timber cribbing	m2	732	18TCS	$17.76	$13,000	100%	$13,000	$0	
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer										
Grade and contour laydown areas	Removed in 2017 Work Plan addendum for Milne Port -150000 m2 In 2017 Work Plan Addendum - Milne Port add 150000 m2 2018 Work Plan See Table 3-3 in Marginal Estimate add 308000 m2 2017 actual work not previously allocated (W1,W3,W6, W7, W10B, W11, W14 AND W15) see table 2-2 of 2018 work plan add 81730 m2	m2	702651	18GCS	$1.49	$1,049,353	100%	$1,049,353	$0	
Grade and contour building footprints		m2	14306	18GCS	$1.49	$21,365	100%	$21,365	$0	
Grade and contour infrastructure pads		m2	66536	18GCS	$1.49	$99,366	100%	$99,366	$0	
Road		m2	12149	18GCS	$1.49	$18,144	100%	$18,144	$0	
Stockpiles	**Add 2017 Work Plan Increase in Ore Stockpile Storage Area - Ph 1: 36,900m2 & Ph 2: 45,100m2- 45100m2 as it is a double count with Phase 2 MCR**	m2	170946	18GCS	$1.49	$255,294	100%	$255,294	$0	
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer										
Hazardous waste berm		m2	4417	18GCLS	$4.99	$22,041	100%	$22,041	$0	
Milne Port Soft Wall Maintenance Garages	2017 Work Plan Addendum	m2	2046	18GCLS	$4.99	$10,210	100%	$10,210	$0	
Weatherhaven genset fuel bladder berm		m2	500	18GCLS	$4.99	$2,495	100%	$2,495	$0	
Storage Area		m2	1971	18GCLS	$4.99	$9,835	100%	$9,835	$0	
Fuel tank farm dyke		m2	25893	18GCLS	$4.99	$129,206	100%	$129,206	$0	
Landfarm		m2	14083	18GCLS	$4.99	$70,274	100%	$70,274	$0	
LANDFILL FOR DEMOLITION WASTE										
Place fill material over demolition waste	2017 Work Plan Addendum	m2	2218	18PFS	$38.83	$86,125	100%	$86,125	$0	
SPECIALIZED ITEMS										
Electrical Cable	Includes the removal, loading, hauling and disposal of cable (Ref 1, pg 41). **2017 Work Plan add 3500 m of cable.**	m	14600	18ECS	$22.64	$330,544	100%	$330,544	$0	
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	18FIS	$8,743.93	$17,488	100%	$17,488	$0	
Potable Water	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.	each	2	18PWS	$8,743.93	$17,488		$0	$17,488	
					Total	$5,880,585		$5,809,459	$71,126	
					% of Total			99%	1%	

Note:

1 **Building / Equip Name:** **Tote Road** **Bldg / Equip #: 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	Crown Land Cost	
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill											0.07
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill											
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport											
ISO Shipping Containers (Shelters, Comm. Facilities)	Assume 7% on Crown Land 2017 Actual work not previously allocated (see Table 3 of 2018 Marginal cost) Add 1050 m2	m2	1273	18RBIS	$25.38	$32,309	100%	$32,309	$0		
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport											
Fold Away Buildings	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**	**682**	**18RCBFS**	**$122.25**	**$83,375**	**100%**	**$83,375**	**$0**		**$83,375**
BREAK FOUNDATIONS											
Slab on Grade	**Mobile Maintenance Depot (100% on Crown Land)**	m2	682	18FSS	$33.11	$22,581	100%	$22,581	$0		$22,581
Timber Cribbing	Includes disassemby load and transport of the timber cribbing. Assume 7% on Crown Land	m2	59	18TCS	$17.76	$1,048	100%	$1,048	$0		$73.35
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer											
Grade and contour laydown areas	In 2017 Actual work not previous allocated - IT tower upgrades KM7, KM26,KM40, KM49, KM69, KM80 & KM88 (see table 2-2 of 2018 Marginal Estimate)	m2	33900	18GCS	$1.49	$50,627	100%	$50,627	$0		
Grade and contour building footprints	**Assume 7% on Crown Land**	**m2**	**13040**	**18GCS**	$1.49	**$19,474**	**100%**	**$19,474**	**$0**		$1,363.19
Grade and contour infrastructure pads	**Assume 7% on Crown Land**	**m2**	**6760**	**18GCS**	$1.49	**$10,096**	**100%**	**$10,096**	**$0**		$706.69
Aerodome Facilities		m2	0	15GCS	$1.81	$0	100%	$0	$0		$0.00
Road	**Assume 7% on Crown Land**	**m2**	**533000**	**18GCS**	$1.49	**$795,993**	**100%**	**$795,993**	**$0**		$55,719.51
Stockpiles		m2		15GCS	$1.81	$0	100%	$0	$0		
Remove Liner	**Mobile Maintenance Depot (100% on Crown Land)**	**m2**	**683**		**$3.50**	**$2,391**	**100%**	**$2,391**	**$0**		**$2,391**
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer											
LANDFILL FOR DEMOLITION WASTE											
RECLAIM ROADS											
Remove bridges (IOL)	The unit cost is inclusive of the demolition and remova of a bridge. Assumed not contaminated (Ref 1, pg 36).	each	3	18BRS	$172,505.43	$517,516	0%	$0	$517,516		
Remove bridges (CROWN)	**The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Ref 1, pg 36).**	**each**	**1**	**18BRS**	**$172,505.43**	**$172,505**	**0%**	**$0**	**$172,505**		**$172,505**
Remove Culverts (IOL)	The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose culvert and the removal of the culvert material (Ref 1, pg 21).	each	372	15CRS	$1,094.48	$407,147	0%	$0	$407,147		
Remove Culverts (CROWN)	**The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Ref 1, pg 21).**	**each**	**11**	**15CRS**	**$1,094.48**	**$12,039**	**0%**	**$0**	**$12,039**		**$12,039**
SPECIALIZED ITEMS											
					Total	$2,127,100		$1,017,892	$1,109,208		$350,753.47
					% of Total			48%	52%		

Note:

1 **Building / Equip Name:** **Project Wide/Other** **Bldg / Equip #:** 4

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste	Includes drill and blasting of material aggregated crushing, excavation of fill material, load and haul o fill material, backfill and compact source of material and fill application. Assumes avg fill depth of 1.5m over 6m of demolition waste (Ref 1, pg 17). **2017 Work Plan and BIMC Nov. 24 EBS revision add 1192 m2 for disposal of 2017 mobile and mechanical equipment (107 units in total)**	m2	18663	18PFS	$38.83	$724,684	100%	$724,684	$0
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	$724,684		$724,684	$0
					% of Total			100%	0%

Note:

1 **Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
Grade and Contour with liner	Includes liner removal and disposal (Ref 1, pg 21) and backfill, compaction and scarifcation with a dozer (Ref 1, pg 19).	m2	49636.2	18GCLS	$4.99	$247,685
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
BREACH DITCHES						
DECOMISSION FRESH WATER SUPPLY						
WATER CONTROL IN RECLAMATION QUARRY						
REMOVE PIPELINES						
Remove pipes	The unit cost includes the cleaning, plugging, disassembly, loading, hauling and disposal of piping (Ref 1, pg 41).	m	19623	18RPS	$56.60	$1,110,662
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
					Total	$1,358,346

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

1 **Interim Care and Maintenance (60 Month duration)**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	
INTERIM CARE & MAINTENANCE							
on-site caretaker	Three caretakers for 12 months (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 36 days of travel for each caretaker over 12-months.10-hr days.	hr	7080	15BLS	100	$708,000	assumes year round C & M
extra personnel	Assume crew of 10 people for 56, 10-hr days, to stabalize site and equipment at both the Mine Site, and Milne Port. Blended unit rate is used to allow for different skill levels that would make up the crew.	hr	5600	15BLS	100	$560,000	assumes summer C& M
Mobilization of Workers Required for Stabilization Period (from northern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	168	15NWS	$75.00	$12,599	
Mobilization of Workers Required for Stabilization Period (from southern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days	392	15SWS	$85.45	$33,497	
Mobilization of caretakers	Assume mobilize from the north	person-days	-	15NWS	$75.00	$0	included above
Camp accomodations- stabilization period	10 workers for 56 days	person-days	560	15WACS	$225	$126,000	
Camp accomodations for caretakers	12 month duration full time	person-days	720	15WACS	$225	$162,000	
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr	560	15BES	$150	$84,000	
SNP/AEMP water sampling & reporting		each	1	15MCWL	$ 50,000	$50,000	
geotechnical assessment		each	1	15GTS	$ 20,000	$20,000	
environmental assessment	Assumes spending 1st year budget for this type of activity for interim care	each	1	RPTH	$ 20,000	$20,000	
interim water treatment		annum	22600	BIMC	$ 1	$22,600	
other		each		#N/A	0	$0	
					12 Month Interim C&M Cost	$1,798,695	
Number of years of ICM		years	5		**Total**	$8,993,476.54	

1 **Post Closure Water Treatment - Identified as long term/post-closure in 'Instructions' worksheet**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
ADDITION OF REAGENTS TO WTP						
H2O2		kg		#N/A	$0.00	$0
lime		kg		#N/A	$0.00	$0
ferric sulphate		kg		#N/A	$0.00	$0
ferrous sulphate		kg		#N/A	$0.00	$0
flocculents		kg		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
LABOUR AND SUPPLIES						
Annual fuel		litres		#N/A	$0.00	$0
Annual power		kW-h		#N/A	$0.00	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0
Misc. supplies, hoses, tools		allow		#N/A	$0.00	$0
Communications		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
WATER MANAGEMENT						
Water Treatment (reagents, equip Op. labour)		allowar	22600	BIMC	$1.00	$22,600
Water pumping from sumps and ponds to treatment plant		allow		AE	$29,367.83	$0
Annual Treatment Plant Servicing		manhours		lab-ss	$120.00	$0
Treatment Plant Servicing Travel Allowance		visit		AE	$4,000.00	$0
Other				#N/A	$0.00	$0
WTP WATER SAMPLING AND ANALYSES						
Sampling equipment		allow		#N/A	$0.00	$0
Analyses		allow		#N/A	$0.00	$0
Shipping to laboratory		allow		#N/A	$0.00	$0
Reporting		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SITE ACCESS						
Road maintenance (incl. snow removal)		allow		AE	$50,000.00	$0
Winter road tariff		allow		#N/A	$0.00	$0
Truck rental		allow		#N/A	$0.00	$0
Air support		allow		#N/A	$0.00	$0
					Annual water treatment costs	$22,600
Number of years of water treatment		years	25			
					Total	$565,000

1 **Post-Closure Monitoring & Maintenance:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	~~Assume 2 geotech inspections are specified at year 4 and 8 (Ref 2, pg 81).~~ Superceded by annual monitoirng over and above that required in 2019 marginal costs	each	1	15GTS	$20,000.00	$20,000
Regulatory costs*	Annual reporting over 25 years. Unit rate from RECLAIM.	each	1	RPTL	$10,000.00	$10,000
Site water monitoring (AEMP and SNP)	~~Two sampling events per year for 8 years, at 20 sample locations.~~ Supercede by single annual sampling event supplemented by the cost for this work under the 2019 Marginal Costs	each	1	15MCWL	$30,000.00	$30,000
Air Quality Monitoring Program (AQMP)	~~Assume 3 sampling events specified at year 2, year 4 and year 7 (Ref 2, pg 81).~~ Supercede by single annual sampling event supplemented by the cost for this work under the 2019 Marginal Costs. Unit rate from RECLAIM.	each	1	RPTH	$20,000.00	$20,000
Wildlife Effects Monitoring Program (WEMP	~~Assume 2 sampling events specified at year 5 and year 7 (Ref 1, pg 81).~~ Supercede by single annual sampling event supplemented by the cost for this work under the 2019 Marginal Costs. Unit rate from RECLAIM.	each	1	RPTH	$20,000.00	$20,000
Project Environmental Assessment	~~Assume carried once (1x) during closure/post-closure period year 4; at Mine site, Tote Road and Milne Port (Ref 2, pg 81).~~ Supercede by single annual sampling event supplemented by the cost for this work under the 2019 Marginal Costs. Unit rate from RECLAIM.		1	RPTH	$20,000.00	$20,000
COVER MAINTENANCE						
Maintenance Allowance	According to the PDW closure plan, maintenance costs are estimated at $100,000 per year (Ref 1, pg 103).This allowance expected to cover all maintenance activities at the sites.	allow	1	15MCAL	$100,000.00	$100,000
CWTS MAINTENANCE POST-CLOSURE WATER TREATMENT						
Subtotal, Annual post-closure costs						$242,600
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				11	events over a 25 year period	
Present Value of payment stream						$2,668,600

For Marginal Cost Estimate we have 11 sample events over a 25 year period.

*Regulatory costs - annual reporting, management plans, progress reports etc.

1 **Mobilization/Demobilization:**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
MOBILIZE MISC. EQUIPMENT						
Mobilization and Demobilization of Equipment and Materials by Sealift		LS	1		2180000	$2,180,000
Mobilization and Demobilization of Equipment and Materials for 2017 Work Plan addendum	Assumed 10% of marginal 2017 Work Plan Addendum Direct costs(minus Soil and Water management and ICM components) i.e., $5,554,000 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	555400	$555,400
Mobilization and Demobilization of Equipment and Materials for 2018 Work Plan	Assumed 10% of marginal 2018 Work Plan Direct costs(minus Soil and Water management and ICM components) i.e., $2,600,700 from BIMC 2018 Marginal Summary Worksheet.	LS	1	#N/A	260070	$260,070
Off-site Disposal of Waste	Ref 1 pg 59	m3	5500	15ODS	358	$1,969,000
Consumables (**2017 Work Plan** marginal increase)	Cost to remove additional 49 bed spaces delivered to site in **2017 Work Plan**. 2017 Work Plan addendum (table 3-7) increases this to a 800 person and 50 person camp structures at the Mine Site and a 380 person camp at Milne Port Add 1230	Ea	1279	15CONS	700.8	$896,323
Consumables	Cost to remove consumables delivered to site in 2015 (lubricants, grease, detergents, boosters, EZ Dets, dry goods, food, household supplies, etc.) (2015 Security Assessment, pg 18).	Ea	550	15CONS	700.8	$385,440
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities, **2018 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	957	15NWS	75	$71,775
Mobilization of Workers Required for Reclamation (from southern communities, **2018 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 13 of Marginal Estimate).	person-days	2233	15SWS	85.45	$190,810
Mobilization of Workers Required for Reclamation (from northern communities, **2017 Work Plan Addendum**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	644	15NWS	75	$48,300
Mobilization of Workers Required for Reclamation (from southern communities, **2017 Work Plan Addendum**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	1502	15SWS	85.45	$128,346
Mobilization of Workers Required for Reclamation (from northern communities, **2017 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	155	15NWS	75	$11,625
Mobilization of Workers Required for Reclamation (from southern communities, **2017 Work Plan**)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	362	15SWS	85.45	$30,933
Mobilization of Workers Required for Reclamation (from northern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	937	15NWS	75	$70,275
Mobilization of Workers Required for Reclamation (from southern communities, 2016 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1).	person-days	2185	15SWS	85.45	$186,708
Mobilization of Workers Required for Reclamation (2014 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	man hours	7921		82.32	$652,057
Mobilization of Workers Required for Reclamation (2015 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	559		82.32	$46,017
Mobilization of Workers Required for Reclamation (2015 A Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (pg 63, Ref 1). Based on a blended unit rate of $82.315, which assumes 70% of hires from southern communities at a rate of $85.45/ person-day, and 30% from northern communities at $75/ person-day.	each	207		82.32	$17,040
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation		person-days	11,186	15WACS	225	$2,516,850
Worker Accommodation & Camp Operation	For the Post-Closure Monitorong and Reporting System (from 2016 Work Plan)	person-days	216	15WACS	225	$48,600
Worker Accommodation & Camp Operation (**2017 Work Plan**)	For marginal reclamation activities (517 person-days) associated with **2017 Work Plan**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	517	15WACS	225	$116,325
Worker Accommodation & Camp Operation (**2018 Work Plan**)	For marginal reclamation activities (3190 person-days) associated with **2018 Work Plan (Page 13 of Marginal Estimate)**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	3,190	15WACS	225.5	$719,345
Worker Accommodation & Camp Operation (**2017 Work Plan addendum**)	For marginal reclamation activities (2145 person-days) associated with **2017 Work Plan addendum**. Includes maintenance, catering,, housekeeping & fuel costs.	person-days	2,145	15WACS	225.5	$483,698
MOBILIZE FUEL						
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents the fuel mobilization cost associated with the 2014 Work Plan as provided in Oct 30, 2015 EBS	$	2,888,000	#N/A	1	$2,888,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 provided in Oct 30, 2015 EBS	$	30,000	#N/A	1	$30,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for the 2015 Addendum provided in September 23rd, 2015 EBS	$	9,000	#N/A	1	$9,000
Demobilization of Existing Fuel and/or Fuel Required for Reclamation	Represents marginal increase in fuel for 2015 R provided in September 23rd, 2015 EBS	$	203,000	#N/A	1	$203,000
Fuel Required for Reclamation (2016 Work Plan)	Ref 1, pg 61	litre	35,435	15MF1S	0.4	$14,174
Fuel Required for Reclamation (**2017 Work Plan**)	**2017 Work Plan**, Appendix B, pg 9. Mobilize 50% of fuel required. Reclamation activities in Nov. 24, 2016 EBS = 90,987L. Heat & power = 116L per 517 person days x$0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	74,480	15MF1S	0.4	$29,792
Fuel Required for Reclamation (**2017 Work Plan Addendum**)	**2017 Work Plan Addendum page 8**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 1,144,276L. Heat & power = 116L per 2145 person days x$0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation. Correction made to $1,213,000 per EBS not $1,216,000 as noted in the addendum. BIMC information does not clarify how the volume of fuel was derived so cost provided used to back out a volume of fuel.	litre	3,032,500	15MF1S	0.4	$1,213,000
Fuel Required for Reclamation (2018 Work Plan)	**2018 Work Plan page 13**. Mobilize 50% of fuel required. Reclamation activities for Marginal increase = 638,170L. Heat & power = 116L per 3190 person days x $0.40/L for mobilization. Fuel cost be captured under Worker Accom. & Camp Operation.	litre	504,105	15MF1S	0.4	$201,642
WINTER ROAD						
DEMOBILIZE HEAVY EQUIPMENT						
Crushing Module	2018 Work Plan (see Table 3-6 in Marginal Estimate) amended to reflect that rail construction materials will no longer be demobilized from site. 2019 and Phase 2 MCRs net out for this related work so the costs have not been double counted	lot	1	EBS	1483420	$1,483,420
Screening Module		lot	1	EBS	2262904	$2,262,904
Car Dumper Module		lot	1	EBS	1683408	$1,683,408
BMH Conveyors		lot	0	EBS	3391024	$0
Rail Construction Materials		lot	0	EBS	1235696	$0
Shiploader Module		lot	0	EBS	5535200	$0
DEMOBILIZE CAMP						
DEMOBILIZE WORKERS						
WINTER ROAD						
					Total	**$21,603,276**

APPENDIX A

Arcadis RECLAIM Worksheets

Appendix A.2 – Marginal Estimate for the 2019 Work Plan

Mary River Mine

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$3,477,131	$3,477,131	$0	$3,477,131	$0
UNDERGROUND MINE		$0	$0	$0	$0	$0
TAILINGS FACILITY		$0	$0	$0	$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$0	$0	$0	$0	$0
BUILDINGS AND EQUIPMENT	Mine Site	$2,845,952	$2,828,998	$16,955	$2,845,952	$0
	Milne Port	$372,171	$372,171	$0	$372,171	$0
	Tote Road	$429,625	$425,625	$4,000	$429,625	$0
					$0	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEI		$3,508,400	$3,508,400	$0	$3,364,415	$143,985
SURFACE AND GROUNDWATER MANAGEMENT		$0	-	$0	$0	$0
INTERIM CARE AND MAINTENANCE		$0	-	$0	$0	$0
	SUBTOTAL: Capital Costs	**$10,633,279**	**$10,612,324**	**$20,955**	**$10,489,294**	**$143,985**
	PERCENT OF SUBTOTAL		**99.8%**	**0.2%**	**100.00%**	**0.00%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$20,289,024	$20,249,041	$39,984	$20,289,024	$0
POST-CLOSURE MONITORING AND MAINTENANCE		$3,896,000	$3,888,322	$7,678	$3,804,861	$91,139
ENGINEERING	3.9%	$414,698	$413,881	$817	$414,698	$0
PROJECT MANAGEMENT	9.4%	$999,528	$997,558	$1,970	$999,528	$0
BONDING/INSURANCE	2%	$212,666	$212,246	$419	$212,666	$0
CONTINGENCY	20.0%	$2,126,656	$2,122,465	$4,191	$2,126,656	$0
	SUBTOTAL: Indirect Costs	**$27,938,571**	**$27,883,514**	**$55,059**	**$27,847,432**	**$91,139**

TOTAL COSTS		**$38,571,850**	**$38,495,838**	**$76,014**	**$38,336,726**	**$235,124**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost	
CONTROL ACCESS										
STABILITY STUDY										
STABILIZE SLOPES										
COVER/CONTOUR SLOPES									$91,139	
CONSTRUCT DIVERSION DITCHES										
CONSTRUCT SPILLWAY										
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)										
PQ2a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	345500	18GCS	$1.49	$515,977	100%	$515,977	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
PQ4a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	105000	18GCS	$1.49	$156,809	100%	$156,809	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
PQ6a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	194000	18GCS	$1.49	$289,724	100%	$289,724	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
PQ12a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	232200	18GCS	$1.49	$346,772	100%	$346,772	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
Q1 Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	226000	18GCS	$1.49	$337,513	100%	$337,513	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
Q5 Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2	1225600	18GCS	$1.49	$1,830,336	100%	$1,830,336	$0	Also recorded in BMIC 2019 Marginal Cost Table 3-3 20 December 2018
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)										
FLOOD PIT-Captital										
FLOOD PIT-Annual Cost										
					Annual pumping costs	$0				
Number of years of pump flooding		years								
					Total pumping costs	$0		$0	$0	
					Total	$3,477,131		$3,477,131	$235,124	
					% of Total			100%	7%	

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$0		$0	$235,124
					% of Total			0%	############

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material)	2019 estimate (See section 3.3.2.2 of 2019 Marginal Estimate)	m3	9800	16AN1S	$358.00	$3,508,400	100%	$3,508,400	$0
					Total	$3,508,400		$3,508,400	$235,124
					% of Total			100%	7%

Building / Equip Name: Mine Site **Bldg / Equip #:** 1

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	2019 estimate (add 2 from reconciliation, add 33 from Marginal Increase, add 61 from 3rd Party for 2019 work plan)	each	96	18MOLS	$876.92	$84,184	95%	$79,975	$4,209
Medium Mobile Equipment	2019 estimate (add 14 from reconciliation, add 13 from Marginal Increase, add 49 from 3rd Party 2019 work plan)	each	76	18MOMS	$1,378.63	$104,776	98%	$102,680	$2,096
Heavy Mobile Equipment	2019 estimate (add 13 from reconciliation, add 33 from 2019 Work Plan Marginal Increase, add 34 from 3rd Party for 2019 work plans)	each	80	18MOHS	$2,310.87	$184,870	98%	$181,172	$3,697
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light mechanical equipment - Decontaminate and dispose on-site	2019 estimate (add 29 from Marginal Increase)	each	29	18LMES	$1,707.45	$49,516	98%	$48,526	$990
Medium mechanical equipment - Decontaminate and dispose on-site	2019 estimate (add 1 from 2019 Work Plan Marginal Increase)	each	1	18MMES	$3,714.64	$3,715	100%	$3,715	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	2019 estimate (add 14 from reconciliation, add 8 from 2019 Work Plan)	each	22	18MEHS	$35,507.45	$781,164	100%	$781,164	$0
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (see Tables 3-4 of 2019 Marginal Estimate).	each	6	18TLS	$1,872.41	$11,234	100%	$11,234	$0
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) 2017 actual not previously allocated (see Table 3-4 of 2019 Marginal Estimate)	each	5	18LiDTS	$3,193.16	$15,966	100%	$15,966	$0
Medium Mobile Diesel Tank	Medium fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Table 3-4 of 2019 Marginal Estimate).	each	7	18MMMTS	$13,928.01	$97,496	100%	$97,496	$0
Large Diesel Tanks	Large fuel tanks (3ML-15ML). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 27).	each	2	18LDTS	$147,297.85	$294,596	100%	$294,596	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	1068	18RBMS	$50.75	$54,201	89%	$48,239	$5,962
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Fold Away Buildings	2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	1572	18RCBFS	$122.25	$192,177	100%	$192,177	$0
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	Expansion of 800 camp	m2	12000	18GCS	$1.49	$17,921	100%	$17,921	$0
	Water Treatment Plant 2019	m2	3500	18GCS	$1.49	$5,227	100%	$5,227	$0
	Km 107.5, Km 110, Km 107 stockplile	m2	404400	18GCS	$1.49	$603,939	100%	$603,939	$0
	mine site fuel tank foot print	m2	21620	18GCS	$1.49	$32,288	100%	$32,288	$0
Crusher Pad expansion pad		m2	12000	18GCS	$1.49	$17,921	100%	$17,921	$0
Culvert Removal	on mine site 2019 estimate	m	285		$50.00	$14,250	100%	$14,250	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Crusher Pad Sedimentation Pond	Crusher pad sedimentation pond	m2	2000	18GCLS	$4.99	$9,980	100%	$9,980	$0
Mine Site Fuel Tank, Farm containment Area	Mine Site Fuel Tank, Farm Containment Area	m2	12000	18GCLS	$4.99	$59,880	100%	$59,880	$0
Hazardous waste berm	Hazardous Waste Berm	m2	360	18GCLS	$4.99	$1,796	100%	$1,796	$0
Other	New PWSP 2019	m2	4180	18GCLS	$4.99	$20,858	100%	$20,858	
Other	Landfarm	m2	9000	18GCLS	$4.99	$44,910	100%	$44,910	
Other	KM107 Sedimentation Pond	m2	7400	18GCLS	$4.99	$36,926	100%	$36,926	
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). For 2018 work plan see table 3-9 in the Marginal estimate for quantity and 2017 Work Plan Addendum Table 3-8, 2018 Breakdown. Fill application for 2019 MCR Estimat Table 3-6.	m2	2734	18PFS	$38.83	$106,161	100%	$106,161	$0
SPECIALIZED ITEMS									
					Total	$2,845,952		$2,828,998	$252,079
					% of Total			99%	9%

Building / Equip Name: **Milne Port** **Bldg / Equip #: 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular Buildings	2019 estimate (See table 3-1 of 2019 Marginal Estimate)	m2	505	18RBMS	$50.75	$25,629	100%	$25,629	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	Laydown LP2	m2	30,000	18GCS	$1.49	$44,803	100%	$44,803	$0
	Laydown LP1	m2	-13000	18GCS	$1.49	($19,414)	100%	($19,414)	$0
Stockpiles	Ore Stockpile expansion 2019	m2	140000	18GCS	$1.49	$209,079	100%	$209,079	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Ore Stockpile Sedimentation New for 2019		m2	15000	18GCLS	$4.99	$74,850	100%	$74,850	$0
Ore Stockpile Sedimentation Pond 2a		m2	4400	18GCLS	$4.99	$21,956	100%	$21,956	$0
contaminated dump		m2	2700	18GCLS	$4.99	$13,473	100%	$13,473	$0
New hazardous waste berm	2019 breakdown	m2	360	18GCLS	$4.99	$1,796	100%	$1,796	$0
LANDFILL FOR DEMOLITION WASTE									
SPECIALIZED ITEMS									
					Total	$372,171		$372,171	$235,124
					% of Total			100%	63%

Building / Equip Name: **Tote Road** **Bldg / Equip #:** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	Laydown 2, 4, 7, 10, 13	m2	192,500	18GCS	$1.49	$287,483	100%	$287,483	$0
Grade and contour laydown areas	Laydown 9	m2	92500	18GCS	$1.49	$138,141	100%	$138,141	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
RECLAIM ROADS & RAILWAYS									
Remove Road Culverts (IOL)		m	80		$50.00	$4,000	0%	$0	$4,000
Scarifying and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Scarifying Airstrip		ha		#N/A	$0.00	$0		$0	$0
Scarifying Laydown Areas		ha		#N/A	$0.00	$0		$0	$0
vegeation		ha		#N/A	$0.00	$0		$0	$0
Other		ha		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
					Total	$429,625		$425,625	$239,124
					% of Total			99%	56%

Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
BREACH DITCHES						
DECOMISSION FRESH WATER SUPPLY						
WATER CONTROL IN RECLAMATION QUARRY						
REMOVE PIPELINES						
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant		LS		#N/A	$0.00	$0
Treatment	Based on BIMC cubic metre rate	m3	0	SNC	$1.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	$0

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

Interim Care and Maintenance (18 Month duration)

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker	Three caretakers for 6 months a year (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 36 days of travel for each caretaker over 6-months.10-hr days.	hr		15BLS	75	$0
extra personnel	Assume crew of 15 people for 56, 10-hr days, to stabalize site and equipment at both the Mine Site, and Milne Port. Blended unit rate is used to allow for different skill levels that would make up the crew.	hr		15BLS	75	$0
-electrician		manmonths	0	elech	95	$0
-mechanic		manmonths	0	mechh	72.85	$0
annual fuel		litre	0	fcdh	1.39	$0
Mobilization of Workers Required for Stabilization Period (from northern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days		15NWS	$75.00	$0
Mobilization of Workers Required for Stabilization Period (from southern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days		15SWS	$85.45	$0
Mobilization of caretakers	Assume mobilize from the north	person-days		15NWS	$75.00	$0
Camp accomodations- stabilization period	15 workers for 56 days	person-days		15WACS	$225	$0
Camp accomodations for caretakers	18 month duration full time	person-days		15WACS	$225	$0
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr		15BES	$125	$0
misc. supplies		allow		accmh	0	$0
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow		#N/A	0	$0
SNP/AEMP water sampling & reporting		each		15MCWL	30000	$0
geotechnical assessment		each		15GTS	20000	$0
environmental assessment	Assumes spending 1st year budget for this type of activity for interim care	each		RPTH	20000	$0
interim water treatment		allow		#N/A	25000	$0
other		each		#N/A	0	$0
				18 Month Interim C&M Cost		$0
Number of years of ICM		years	5		**Total**	$0

Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Short Term Temporary Care and Maintenance Program		LS	0	#N/A	$200,000.00	$0
Annual geotechnical inspection		LS	1	#N/A	$25,000.00	$25,000
Permitting		LS	1	#N/A	$17,500.00	$17,500
Socio-economic reporting		LS	1	#N/A	$25,000.00	$25,000
Aquatic monitoring Program	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$75,000.00	$75,000
Environmental Effects Monitoring Program		LS	1	#N/A	$40,000.00	$40,000
Post-Closure fauna and Flora monitoring. Terrestrial Program		LS	1	#N/A	$50,000.00	$50,000
Marine Monitoring		LS	1	#N/A	$37,500.00	$37,500
Air Quality Monitoring Program (AQMP)		LS	1	#N/A	$17,000.00	$17,000
Wildlife Effects Monitoring Program (WEMP	Assume sampling events specified year 1 to 5.	each		RPTH	$40,625.00	$0
Safety compliance inspection		LS	1	#N/A	$11,500.00	$11,500
Project Environmental Assessment	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate)	LS	1	#N/A	$17,500.00	$17,500
COVER MAINTENANCE						
SPILLWAY MAINTENANCE						
CWTS MAINTENANCE						
POST-CLOSURE WATER TREATMENT						
Subtotal, Annual post-closure costs						$316,000
POST-CLOSURE TOTE ROAD MAINTENANCE (YEAR 4 POST CLOSURE)						
Tote Road Maintenance		LS	1	#N/A	$420,000.00	$420,000
Discount rate for calculation of net present value of post-closure cost, %			0.00%			
Number of years of post-closure activity	Equivalent to 11 events over a 25 year period (Years 0 to 5 annually, Year 7, 10, 15, 20 and 25 there after)		11	no. of events over a 25 year periods		
Present Value of payment stream						$3,896,000

*Regulatory costs - annual reporting, management plans, progress reports etc.

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
MOBILIZE MISC. EQUIPMENT						
Mobilization and Demobilization of Equipment and Materials Required for Reclamation (2019)	2019 Total Mob Estimate (See section 3.3.2.5 of 2019 Work Plan MCR Estimate and section 3.3.2.4 Phase 2 Work Plan) Assumed 10% of marginal 2019 Estimate Direct costs	LS	1	#N/A	1,063,327.9	$1,063,328
	2019 estimate (Phase 2 Expansion Project Materials and Equipment see table 3-7 of 2019 Marginal Estimate)	LS	1	#N/A	15592000	$15,592,000
	2019 estimate (Demob. Of hazardous waste materials associated with the Water Treatment Plant at the WRF)	LS	1	#N/A	13300	$13,300
MOBILIZE CAMP						
MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities,	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days	1606	15NWS	75	$120,450
Mobilization of Workers Required for Reclamation (from southern communities,	2019 estimate (See section 3.3.2.3 of 2019 Marginal Estimate)	person-days	3746	15SWS	85.45	$320,096
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation	2019 estimate (See section 3.3.2.4 of 2019 Marginal Estimate)	person-days	5,351	15WACS	225.50	$1,206,651
MOBILIZE FUEL						
Fuel Required for Reclamation (2019)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre	1,183,000	15MF1S	0.4	$473,200
WINTER ROAD						
DEMOBILIZE HEAVY EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob)						
DEMOBILIZE FUEL						
Fuel Required for Reclamation (2019)	2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre	15,000,000	15MF1S	0.1	$1,500,000
DEMOBILIZE CAMP						
DEMOBILIZE WORKERS						
WINTER ROAD						
					Total	**$20,289,024**

APPENDIX A

Arcadis RECLAIM Worksheets

Appendix A.3 – Marginal Estimate for Phase 2 Program

Mary River Mine

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$0	$0	$0	$0	$0
BUILDINGS AND EQUIPMENT	Mine Site	$10,926,399	$10,914,718	$11,681	$10,926,399	$0
	Milne Port	$203,986	$186,867	$17,119	$203,986	$0
	Tote Road	$36,056,699	$34,784,084	$1,272,615	$33,828,585	$2,228,114
					$0	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEI		$0	$0	$0	$0	$0
SURFACE AND GROUNDWATER MANAGEMENT		$0	-	$0	$0	$0
INTERIM CARE AND MAINTENANCE		$0	-	$0	$0	$0
	SUBTOTAL: Capital Costs	**$47,187,084**	**$45,885,669**	**$1,301,415**	**$44,958,970**	**$2,228,114**
	PERCENT OF SUBTOTAL		**97.2%**	**2.8%**	**95.28%**	**4.72%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$923,282	$897,818	$25,464	$923,282	$0
POST-CLOSURE MONITORING AND MAINTENANCE		$0	$0	$0	$0	$0
ENGINEERING	3.9%	$1,840,296	$1,789,541	$50,755	$1,753,400	$86,896
PROJECT MANAGEMENT	9.4%	$4,435,586	$4,313,253	$122,333	$4,226,143	$209,443
BONDING/INSURANCE	2%	$943,742	$917,713	$26,028	$899,179	$44,562
CONTINGENCY	20.0%	$9,437,417	$9,177,134	$260,283	$8,991,794	$445,623
	SUBTOTAL: Indirect Costs	**$17,580,323**	**$17,095,459**	**$484,863**	**$16,793,798**	**$786,524**

TOTAL COSTS	**$64,767,406**	**$62,981,128**	**$1,786,278**	**$61,752,768**	**$3,014,638**

1 **Open Pit Name:** **Mary River Mine Pit** **Pit # *1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
STABILITY STUDY									
STABILIZE SLOPES									
COVER/CONTOUR SLOPES									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SPILLWAY									
RECLAIM QUARRIES (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
PQ2a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
PQ4a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
PQ6a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
PQ12a Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
Q1 Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
Q5 Quarry	Qty from BIMC Table 3-1 Scope of Work for 2019	m2		18GCS	$1.49	$0	100%	$0	$0
GRADING AND CONTOURING SIGNIFICANTLY DISTURBED AREAS (the unit cost is inclusive of backfill, compaction and scarification with a dozer)									
FLOOD PIT-Captital									
FLOOD PIT-Annual Cost									
					Annual pumping costs	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$0		$0	$0
					% of Total			0%	0%

1 **Rock Pile Name:** **Mine Site Waste Rock Pile**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
COVER ROCK PILE									
VERY LOW PERMEABILITY COVER (in addition to above)									
CONSTRUCT DIVERSION DITCHES									
CONSTRUCT SEEPAGE COLLECTION POND									
INSTALL GROUNDWATER COLLECTION SYSTEM									
RELOCATE DUMPS									
SPECIALIZED ITEMS									
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
					Annual treatment costs	$0			
Number of years of treatment		years							
					Total treatment costs	$0			$0
HEAP LEACH SEEPAGE TREATMENT - ARD/ML**									
Upgrade/modify pumping system - report to WTP		allow		#N/A	$0.00	$0			$0
					Total	$0		$0	$0
					% of Total			0%	0%

* For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

**Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

1 **Chemicals/Soil Area Name:**

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
HAZARDOUS MATERIALS REMOVAL									
HAZARDOUS MATERIALS									
CONTAMINATED SOILS									
CONTAMINATED SOIL REMOVAL									
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
OTHER									
Ammonium nitrate (explosive material)	2019 estimate (See section 3.3.2.2 of 2019 Marginal Estimate)	m3		16AN1S	$358.00	$0	100%	$0	$0
					Total	$0		$0	$0
					% of Total			0%	0%

Building / Equip Name: **Mine Site** **Bldg / Equip #:** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Mobile Equipment	2019 estimate (5 from 3rd party for Phase 2 work)	each	5	18MOLS	$876.92	$4,385	95%	$4,165	$219
Medium Mobile Equipment	2019 estimate (add 14 from reconciliation, add 13 from Marginal Increase, add 49 from 3rd Party 2019 work plan and add 0 from Phase 2 work plan)	each		18MOMS	$1,378.63	$0	98%	$0	$0
Heavy Mobile Equipment	2019 estimate (16 non-rail, 9 locomotives and 212 rail from BIMC Phase 2 work plan, and 11 from 3rd Party for Phase 2 work plan)	each	248	18MOHS	$2,310.87	$573,096	98%	$561,634	$11,462
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Medium mechanical equipment - Decontaminate and dispose on-site	2019 estimate (13 from Phase 2 work Plan)	each	13	18MMES	$3,714.64	$48,290	100%	$48,290	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	2019 estimate (11 from Phase 2 work plan Marginal Increase)	each	11	18MEHS	$35,507.45	$390,582	100%	$390,582	$0
Reclaim Conveyors	Phase 2 work including Stockpile No2 (3 units) and Car Dumper to crushing (I unit) conveyors	each	4	BIMC	$1,066,410.00	$4,265,640	100%	$4,265,640	$0
Shiploader No. 2	Phase 2 work plan (1.5 units)	each	1.5	BIMC	$3,070,200.00	$4,605,300	100%	$4,605,300	$0
Large Diesel Tanks	Two large fuel tanks (15ML each). The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Phase 2 Work Plan Table 3-4).	each	2	18LDTS	$147,297.85	$294,596	100%	$294,596	$0
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Crusher Pad Relocation	Phase 2 work	m2	50000	18GCS	$1.49	$74,671	100%	$74,671	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Crusher Pad Sedimention Pond	Phase 2 Amendment	m2	9000	18GCLS	$4.99	$44,910	100%	$44,910	$0
LANDFILL FOR DEMOLITION WASTE									
Place fill material over demolition waste (Mine Site Landfill)	Includes drill and blasting of material aggregated crushing, excavation of fill, load and haul of fill material, backfill and compact source of material, and fill application. Assumes avg fill depth 1.5m over 6m of demolition waste (Ref 1, pg 17). Fill application for 2019 MCR Phase 2 work plan is per Table 3-8.	m2	16094	18PFS	$38.83	$624,930	100%	$624,930	$0
SPECIALIZED ITEMS									
					Total	$10,926,399		$10,914,718	$11,681
					% of Total			100%	0%

Building / Equip Name: **Milne Port** **Bldg / Equip #: *2***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
New Phase 2 Structures	includes for the removal of Car Dumper, Crushing and Screening Buildings (replaces modular bldgs originally planned in 2019 Work Plan)	LS	3	BIMC	$51,875.00	$155,625	89%	$138,506	$17,119
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
Car Dumper Building	Remove foundation (Table 3-1 of Phase 2 Work Plan)	m2	320	18FSS	$33.11	$10,595	100%	$10,595	$0
Crushing Building	Remove foundation (Table 3-1 of Phase 2 Work Plan)	m2	400	18FSS	$33.11	$13,244	100%	$13,244	$0
Screening Building	Remove foundation (Table 3-1 of Phase 2 Work Plan)	m2	400	18FSS	$33.11	$13,244	100%	$13,244	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
crushing feed sedimentation pond	Phase 2 work	m2	500	18GCLS	$4.99	$2,495	100%	$2,495	$0
Fines Stockpile Sedimentation Pond	Phase 2 work	m2	60	18GCLS	$4.99	$299	100%	$299	$0
Western Berm Settling Ditch	Phase 2 work	m2	1700	18GCLS	$4.99	$8,483	100%	$8,483	$0
LANDFILL FOR DEMOLITION WASTE									
SPECIALIZED ITEMS									
					Total	$203,986		$186,867	$17,119
					% of Total			92%	8%

Building / Equip Name: **Tote Road** **Bldg / Equip #:** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transport									
Modular	Soft-walled modular Bldg (not contaminated) Per Table 3-1 of Phase 2 Work Plan	m2	1000	15RBMS	$59.38	$59,380	89%	$52,848	$6,532
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour quarry areas along Northern Transportation Corridor	Quarries Q4, Q6,Q10, Q11, Q13, Q16, Q19, Q21, Q23,Q24, Q27, Q42, PQ5A, PQ9A, PQ9B, PQ10B, PQ13, PQ14B, PQ15A, PQ15B, PQ4B, PQ5BPQ6B, PQ10A, PQ12B, PQ14A, PQ2B, Rail Sand Pit and Rail Access Roads	m2	3,428,111	18GCS	$1.49	$5,119,611	100%	$5,119,611	$0
Grade and contour laydown areas	LD -1 to -19	m2	322,498	18GCS	$1.49	$481,625	100%	$481,625	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
LANDFILL FOR DEMOLITION WASTE									
RECLAIM ROADS & RAILWAYS									
Remove Railway bridges (IOL)	The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Phase 2 Work only).	each	3	15BRS	$172,505.43	$517,516	0%	$0	$517,516
Remove Railway bridges (CROWN)	The unit cost is inclusive of the demolition and removal of a bridge. Assumed not contaminated (Phase 2 Work only).	**each**	**1**	**15BRS**	**$172,505.43**	**$172,505**	**0%**	**$0**	**$172,505**
Remove Railway Culverts (IOL)	The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Phase 2 work plan).	each	6135	15CRS	**$91.21**	$559,553	0%	$0	$559,553
Remove Railway Culverts (CROWN)	**The unit cost is inclusive of the travel time to and from the culvert location, the earthwork necessary expose a culvert and the removal of the culvert material (Phase 2 work plan).**	**each**	**181**	**15CRS**	**$91.21**	**$16,508**	**0%**	**$0**	**$16,508**
Reclamation of the Northern Railway Line	Removal of rails and ties (assumes 50% of the construction costs per the assumption prepared by BIMC in this regard)	LS	1		$29,130,000.00	$29,130,000	100%	$29,130,000	$0
Scarifying and install water breaks		ha		#N/A	$0.00	$0		$0	$0
Scarifying Airstrip		ha		#N/A	$0.00	$0		$0	$0
Scarifying Laydown Areas		ha		#N/A	$0.00	$0		$0	$0
vegeation		ha		#N/A	$0.00	$0		$0	$0
Other		ha		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
					Total	$36,056,699		$34,784,084	$1,272,615
					% of Total			96%	4%

Capital Expenditures and Short Term Water Treatment identified in 'Instructions' worksheet

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
BREACH DYKE EMBANKMENT						
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
BREACH DITCHES						
DECOMISSION FRESH WATER SUPPLY						
WATER CONTROL IN RECLAMATION QUARRY						
REMOVE PIPELINES						
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant		LS		#N/A	$0.00	$0
Treatment	Based on BIMC cubic metre rate	m3	0	SNC	$1.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	$0

For cost of long-term/post-closure water treatment see "WATER TREATMENT" Worksheet"

Interim Care and Maintenance (18 Month duration)

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker	Three caretakers for 6 months a year (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 36 days of travel for each caretaker over 6-months.10-hr days.	hr		15BLS	75	$0
extra personnel	Assume crew of 15 people for 56, 10-hr days, to stabalize site and equipment at both the Mine Site, and Milne Port. Blended unit rate is used to allow for different skill levels that would make up the crew.	hr		15BLS	75	$0
-electrician		manmonths	0	elech	95	$0
-mechanic		manmonths	0	mechh	72.85	$0
annual fuel		litre	0	fcdh	1.39	$0
Mobilization of Workers Required for Stabilization Period (from northern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days		15NWS	$75.00	$0
Mobilization of Workers Required for Stabilization Period (from southern communities)	Assume two rotations per worker, 30% from northern communities and 70% from southern communities. Mobilization from the south is $85.45/person days on site, and from the north $75/person-days on site (Ref 1).	person-days		15SWS	$85.45	$0
Mobilization of caretakers	Assume mobilize from the north	person-days		15NWS	$75.00	$0
Camp accomodations- stabilization period	15 workers for 56 days	person-days		15WACS	$225	$0
Camp accomodations for caretakers	18 month duration full time	person-days		15WACS	$225	$0
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr		15BES	$125	$0
misc. supplies		allow		accmh	0	$0
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow		#N/A	0	$0
SNP/AEMP water sampling & reporting		each		15MCWL	30000	$0
geotechnical assessment		each		15GTS	20000	$0
environmental assessment	Assumes spending 1st year budget for this type of activity for interim care	each		RPTH	20000	$0
interim water treatment		allow		#N/A	25000	$0
other		each		#N/A	0	$0
				18 Month Interim C&M Cost		$0
Number of years of ICM		years	5		**Total**	$0

Post-Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Short Term Temporary Care and Maintenance Program		LS	0	#N/A	$200,000.00	$0
Annual geotechnical inspection		LS	0	#N/A	$25,000.00	$0
Permitting		LS	0	#N/A	$17,500.00	$0
Socio-economic reporting		LS	0	#N/A	$25,000.00	$0
Aquatic monitoring Program	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate). No Phase 2 cost increment as the cost under the 2019 MCR is considered adequate.	LS	0	#N/A	$75,000.00	$0
Environmental Effects Monitoring Program		LS	0	#N/A	$40,000.00	$0
Post-Closure fauna and Flora monitoring. Terrestrial Program		LS	0	#N/A	$50,000.00	$0
Marine Monitoring		LS	0	#N/A	$37,500.00	$0
Air Quality Monitoring Program (AQMP)		LS	0	#N/A	$17,000.00	$0
Wildlife Effects Monitoring Program (WEMP	Assume sampling events specified year 1 to 5.	each		RPTH	$40,625.00	$0
Safety compliance inspection		LS	0	#N/A	$11,500.00	$0
Project Environmental Assessment	2019 estimate (See section 3.3.2.6 of 2019 Marginal Estimate) No allowance provided for Phase 2 Program. Costs considered to be captured in 2019 MCR.	LS	0	#N/A	$17,500.00	$0
COVER MAINTENANCE						
SPILLWAY MAINTENANCE						
CWTS MAINTENANCE						
POST-CLOSURE WATER TREATMENT						
Subtotal, Annual post-closure costs						$0
POST-CLOSURE TOTE ROAD MAINTENANCE (YEAR 4 POST CLOSURE)						
Tote Road Maintenance	Not included in Phase 2 as cost is captured in 2019 MCR	LS	0	#N/A	$420,000.00	$0
Discount rate for calculation of net present value of post-closure cost, %			0.00%			
Number of years of post-closure activity	Equivalent to 11 events over a 25 year period (Years 0 to 5 annually, Year 7, 10, 15, 20 and 25 there after)		11	events over a period of 25 years		
Present Value of payment stream						$0

*Regulatory costs - annual reporting, management plans, progress reports etc.

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT MOBILIZE MISC. EQUIPMENT						
Mobilization and Demobilization of Equipment and Materials Required for Reclamation (2019)	2019 Total Mob Estimate (See section 3.3.2.5 of 2019 Work Plan MCR Estimate and section 3.3.2.4 Phase 2 Work Plan) Assumed 10% of marginal 2019 Estimate Direct costs	LS	1	#N/A	4,718,708.4	$4,718,708
	Phase 2 Removal of Security for Material and Equipment modules noted in 2019 Marginal Estimate as these costs are covered under Bldgs and Equipment cost items	LS	1	#N/A	-15592000	($15,592,000)
MOBILIZE CAMP MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation (from northern communities, Phase 2 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (Phase 2 work plan).	person-days	7351	15NWS	75	$551,325
Mobilization of Workers Required for Reclamation (from southern communities, Phase 2 Work Plan)	Person-hours required to complete direct cost reclamation activities (10-h person-days) (Phase 2 work plan).	person-days	17151	15SWS	85.45	$1,465,553
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation	For the Post-Closure Monitorong and Reporting System (from Phase 2 Work Plan)	person-days	24,500	15WACS	225.50	$5,524,750
MOBILIZE FUEL						
Fuel Required for Reclamation (2019 Phase 2)	Phase 2 estimate (See section 3.3.2.1)	litre	5,786,000	15MF1S	0.4	$2,314,400
WINTER ROAD DEMOBILIZE HEAVY EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob) DEMOBILIZE FUEL						
Fuel Required for Reclamation (2019 Phase 2)	Phase 2 2019 estimate (See section 3.3.2.1 of 2019 Marginal Estimate)	litre	15,000,000	15MF1S	0.1	$1,500,000
DEMOBILIZE CAMP DEMOBILIZE WORKERS WINTER ROAD						
					Total	**$923,282**

6.0 APPENDIX B

BIMC Summary Worksheets

Appendix B.1 - Summary of Baffinland 2019 Marginal Closure and Reclamation Financial Security Estimate (Table 4-1)

Appendix B.2 – Summary of Baffinland Phase 2 Marginal Closure and Reclamation Financial Security Estimate (Table 4-1)

Appendix B.1 Summary of Baffinland 2019 Marginal Closure and Reclamation Financial Security Estimate (Table 4-1 from 20 December 2018 version of report)

Table 4-1: Mary River Project 'Global' Closure and Reclamation Security Summary[1] – 2019 Work Plan

	A	B	C	D	E	F	G	H
	Authorization	Liability	Global Estimate from 2018 Addendum Estimate ($)	2018 Unit Rate Adjustment ($)	2019 Estimate, Including 2018 Reconciliation ($)	Total 'Global' Estimated Security for 2018 ($)	Total Posted as of July 2018 ($)	Marginal Adjustment to be Posted ($)
						C + D + E		F - G
1	Type A 2AM-MRY1325	IOL[2]	68,835,000	-7,754,000	35,357,000	96,438,000	73,829,771	22,608,229
2		Crown	1,196,000	-147,000	753,000	1,802,000	1,298,555	503,445
3		Water	1,714,000	-338,000	11,000	1,387,000	-	-
4		Land	68,316,878	-7,563,000	36,099,000	96,852,878	-	-
5	*Subtotal Type A*		*70,031,000*	*-7,901,000*	*36,110,000*	*97,258,000*	*75,128,326*	*23,111,674*
6	Type B Exploration2BE-MRY1421[3]	IOL	165,000	-	-	165,000	-	165,000
7		Crown	1,082,000	-	-	1,082,000	1,250,000	-168,000
8		Water	18,000	-	-	18,000	-	-
9		Land	1,229,000	-	-	1,229,000	-	-
10	*Subtotal Type B Exploration*		*1,247,000*	-		*1,247,000*	*1,250,000*	*-3,000*
11	DFO Security Associated with Ore Dock	IOL[2]	-	-	-	-	-	-
12		Crown	563,000	-	-	563,000	563,000	-
13		Water	563,000	-	-	563,000	563,000	-
14		Land	-	-	-	-	-	-
15	*Subtotal DFO*		*563,000*	-		*563,000*	*563,000*	-
16	AANDC Land Lease 47H/16-1-2[4]	IOL[2]	-	-	-	-	-	-
17		Crown	4,975,000	-	-	4,975,000	4,975,000	-
18		Water	-	-	-	-	-	-
19		Land	4,975,000	-	-	4,975,000	4,975,000	-
20	*Subtotal AANDC Land Lease*		*4,975,000*	-	-	*4,975,000*	*4,975,000*	-
21	**GRAND TOTAL**		**76,816,000**			**105,025,000**	**81,916,326**	

NOTES:

1) Totals rounded to nearest '000 in CAD

2) Security relating to IOL held by Qikiqtani Inuit Association (QIA) under Commercial Lease No. Q13C301

3) As per Mary River Exploration Project Closure and Reclamation Plan (BAF-PH1-830-P16-0038, Rev 1)

4) As per Closure and Reclamation Strategy and Financial Security Estimate for Nunavut Lease #47H/16-1-2 (H349001-2000-07-126-0001, Rev.0)

Appendix B.2 Summary of Baffinland Phase 2 Marginal Closure and Reclamation Financial Security Estimate (Table 4-1 from 30 April 2019 version of report)

Phase 2 Estimate Summary

Table 4-1: Mary River Project 'Global' Closure and Reclamation Security Summary[1]

	A	B	C	D	E
	Authorization	Liability	Global Estimate from 2019 ASR ($)	Phase 2 Estimate Marginal ($)	Total 'Global' Estimated Security for 2018 ($)
					C + D = E
1	Type A 2AM-MRY1325	IOL[2]	96,438,000	43,839,000	140,277,000
2		Crown	1,802,000	15,262,000	17,064,000
3		Water	1,387,000	1,424,000	2,811,000
4		Land	96,853,000	56,677,000	153,530,000
5	*Subtotal Type A*		*98,240,000*	*58,101,000*	*156,341,000*
6	Type B Exploration2BE-MRY1421 [3]	IOL	165,000	-	165,000
7		Crown	1,082,000	-	1,082,000
8		Water	18,000	-	18,000
9		Land	1,229,000	-	1,229,000
10	*Subtotal Type B Exploration*		*1,247,000*		*1,247,000*
11	DFO Security Associated with Ore Dock	IOL[2]	-	-	-
12		Crown	563,000	-	563,000
13		Water	563,000	-	563,000
14		Land	-	-	-
15	*Subtotal DFO*		*563,000*		*563,000*
16	AANDC Land Lease 47H/16-1-2 [4]	IOL[2]	-	-	-
17		Crown	4,975,000	-	4,975,000
18		Water	-	-	-
19		Land	4,975,000	-	4,975,000
20	*Subtotal AANDC Land Lease*		*4,975,000*	-	*4,975,000*
21	**GRAND TOTAL**		**105,025,000**		**163,126,000**

TES:

1) Totals rounded to nearest '000 in CAD
2) Security relating to IOL held by Qikiqtani Inuit Association (QIA) under Commercial Lease No. Q13C301
3) As per Mary River Exploration Project Closure and Reclamation Plan (BAF-PH1-830-P16-0038, Rev 1)
4) As per Closure and Reclamation Strategy and Financial Security Estimate for Nunavut Lease #47H/16-1-2 (H349001-2000-07-126-0001, Rev.0)

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