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#1291635

January 4, 2021

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 Annual Security Review for Baffinland Iron Mines Corporation's Updated 2021 Work Plan for the Mary River Project, Water Licence 2AM-MRY1325 Amendment No. 1

Dear Mr. Dwyer,

Thank you for invitation to participate in the 2021 Annual Security Review (2021 ASR) concerning the Mary River Project, operated by Baffinland Iron Mines Corporation (BIMC). Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the submissions regarding BIMC's 2021 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 2021 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). BIMC has included items intended for Phase 2 in the 2021 work plan, but has not attached a cost to these items as they are being covered in the Phase 2 Amendment Review Process. CIRNAC is also reviewing the costs associated with Phase 2 separately as part of the Phase 2 Amendment Process.

Estimate for the 2021 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 February 7, 2020, to incorporate the scope of BIMC's 2021 Work Plan. This estimate is provided as a separate document in Annex A of this submission. This submission includes a 2021 global cost estimate and a

2021 marginal cost estimate. A reconsideration of the 2019 and 2020 global estimates was also conducted based on the outcomes of the arbitration process.

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

- Updated 2021 Work Plan, dated November 6, 2020, which includes:
  - Appendix A: 2021 Work Plan Site Layouts
  - Appendix B: 2021 Marginal Closure And Reclamation Financial Security Estimate
  - Appendix C: Interim Closure And Reclamation Plan
  - Appendix D: Emergency Response Plan
  - Appendix E: Spill Contingency Plan

The marginal estimate includes items of the work plan that are approved under the current project, and includes items that require modifications under the licence, or Amendments to the Project Certificate No. 005, as presented by BIMC in the revised 2020 Work Plan. Items requiring approval of the Type 'A' Water Licence 2AM-MRY1325 as a result of the Phase 2 Project are excluded. Though the costs of these items are included in the CIRNAC 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.

Interim Closure and Reclamation Plan

Through the Phase 2 Amendment Process, an updated Interim Closure and Reclamation Plan (ICRP) and Phase 1 Waste Rock Management Plan (Phase 1 WRMP) were submitted by BIMC in December, 2019. The approved ICRP from October, 2018 was submitted by BIMC as part of the Annual Security Review, rather than the 2019 version of the ICRP which is currently under review. In last year's ASR Teleconference, it was agreed by all parties that the most recently approved ICRP would be the basis for the estimate until such a time that the plan is updated and approved. Therefore, the closure schedule as set out in the approved ICRP was used (i.e. interim care and maintenance at 3 years and post closure monitoring at 15 years), though CIRNAC recommends that these lengths of time be extended to 5 and 25 years, respectively in the next iteration.

Further, the approved ICRP does not include details of the recently updated Phase 1 WRMP. CIRNAC has argued that without the details of these management plans, it will be difficult to calculate direct costs for closure of the open pit, or for management of water treatment and Acid Rock Drainage/Metal Leaching (ARD/ML) 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, remains at 20% to account for these activities, because there is a lack of details on how they will be carried out. CIRNAC recommends that the ICRP be updated with details of the Phase 1 WRMP and that BIMC calculate these contingencies as direct costs, and that contingency be set at 15% in future iterations. CIRNAC notes numerous recommendations for changes to the ICRP in Section 5 of the

report attached in Annex A, which will be carried into the Phase 2 Application Process, in which the 2019 version of the ICRP is currently under review.

Unit Rates

The BIMC 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 the 2014 Complete Project Financial Security Assessment Report (H349000-1000-07-126-0018, Rev. 1, October 31, 2014). BIMC originally used the unit rates developed in 2014 to form their estimate, and then updated the unit costs in 2018. In 2019, CIRNAC retained the support of SNC-Lavalin to verify the BIMC 2018 rates; SNC-Lavalin noted that the methodology for adjusting the unit rates was not clear and developed recommended rates which CIRNAC used in our 2020 estimate. In their 2021 ASR security estimate submission, BIMC used the rates that were produced from the arbitration process between BIMC and the Qikiqtani Inuit Association (QIA) (Arbitration rates) in 2020 to form their 2020 security estimate.

This year, SNC-Lavalin conducted a preliminary comparison of the SNC developed unit rates and the unit rates according to the Arbitration Outcome Reconciliation. Based on this comparison, CIRNAC used the SNC recommended unit rates to form our 2021 estimates. The difference between the SNC developed rates and those from the arbitration outcome results in an overall increase of Reconciled 2020 Global Costs to the Crown (using the SNC rates) of approximately $500,000 (direct and indirect costs) and an increase of approximately $35,000 for 2021. While the summary of arbitration proceedings (Global Reclamation Security Update: Post Arbitration – 2019 Work Plan Reconciliation) presents some rationale behind the unit rates, the information does not provide an updated version of the Basis of the Estimate originally developed in 2014. Before CIRNAC is prepared to use the Arbitration rates, we request additional information to assess their applicability. The report attached as Annex A outlines the specific information that we are requesting from BIMC.

Engineering and Project Management Costs

BIMC has listed an indirect cost of 3.9% for engineering costs and an indirect cost of 9.4% for project management costs. SNC-Lavalin verified the estimated amount of project management costs and CIRNAC finds the project management costs used by BIMC appropriate, but it remains unclear to CIRNAC what costs have been considered or included in the engineering costs. Without this information CIRNAC could not validate the indirect cost of 3.9%. Therefore, CIRNAC has maintained the 3.9% indirect cost for engineering in our security estimate. During the 2020 ASR, CIRNAC recommended that Baffinland validate this cost due to the stage of project, and that these rates be considered for review at the 2021 ASR. CIRNAC did not find information to validate this cost and continues to recommend that this information be provided.

Cost Breakdown

CIRNAC's global reclamation cost estimate for the 2021 Work Plan is $130,002,508. 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 $1,719,611.

Table 1: Breakdown of Total Reclamation Cost Estimate by CIRNAC for the 2021 Work Plan

	Amount of Security Currently Posted under 2AM-MRY1325	2020 Adjusted Global Estimate	2021 Work Plan Marginal Estimate	2021 Global Estimate
Total Cost	$106,278,658	$128,384,046	$1,618,462	$130,002,508
Crown Liability	$1,591,000	$3,028,875	$281,737	$3,310,611
IOL Liability	$104,687,658	$125,335,171	$1,326,993	$126,682,163

Table 2: Splitting of Marginal Reclamation Cost Estimate by CIRNAC for the 2021 Work Plan

Total Cost for Marginal 2020	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$1,618,462	$281,737	$1,326,993	$63,884	$1,552,536
Percentage	17.4%	82.6%	4.0%	96.0%

Table 3: Splitting of Total Reclamation Cost Estimate by CIRNAC for the 2021 Work Plan

Total Cost for Global 2020	Crown land Liability	Inuit-owned land Liability	Water Liability	Land Liability
$130,002,508	$3,310,611	$126,682,163	$28,762,197	$101,238,269
Percentage	2.5%	97.5%	22.1%	77.9%

Recommendations

1. Reclamation Security Costs

Based on the materials provided by BIMC, and CIRNAC review, CIRNAC is of the opinion that a security of $130,002,508 would ensure that the project is secured for the peak-projected reclamation costs for 2021. Presently CIRNAC holds $1,591,000 in financial security for reclamation purposes. CIRNAC recommends that an additional $1,719,611 be added to the amount already held by the Minister for a total of $3,310,611 to cover the Crown portion of reclamation security for 2021.

2. Project Modification Approvals

CIRNAC recommends that BIMC not engage in any work that is secured under the 2021 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 for future iterations of the ASR, CIRNAC recommends that BIMC provide the following, as outlined in the SNC-Lavalin Report in Annex A:

a) The outstanding clarifications requested in Table 5-1; and
b) Updates to the Interim Closure and Reclamation Plan, as outlined in Section 5.

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 Resources 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

2021 Reclamation Cost Estimate for the Mary River Project
Water licence 2AM-MRY1325 - Amendment #1
prepared by SNC-Lavalin Inc.

SNC·LAVALIN

Mary River Project

FINAL Rev.1

2020-2021 Annual Security Review Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

January 04, 2021 Our file: 678509

List of Revisions

Revision				Revised pages	Remarks
#	Prep.	App.	Date		
PA	AL, JC	KT	2020-12-03	All	DRAFT
Final	AL, JC	KT	2020-12-18	All	FINAL
Final Rev.1	AL, JC	KT	2021-01-04	All	FINAL Rev.1

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.

This report must be read as a whole, as sections taken out of context may be misleading. If discrepancies occur between the preliminary (draft) and final versions of this report, it is the final version that takes precedence. Nothing in this report is intended to constitute or provide a legal opinion.

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Table of Contents

Tables

Appendices

SNC·LAVALIN

1. Introduction

SNC-Lavalin Inc. (SNC-Lavalin) has been retained by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to participate in the 2021 Annual Security Review (ASR) process for the Type A Water Licence No. 2AM-MRY1325 for the Mary River Mine M.

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) 2021 Work Plan, issued by Baffinland Iron Mines Corporation on November 6, 2020.

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. 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), Arktis Solutions, third party contractor from 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.

On August 10, 2020, Baffinland and QIA concluded the Reclamation Security Arbitration Agreement Final Award, regarding the 2019 Work Plan and associated estimate including nine (9) items of high uncertainty, where parties differed in position or methodology. The present Global Reclamation Security considers the outcome of the Post Arbitration - 2019 Work Plan Reconciliation.

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 considering BIMC's proposed 2021 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.

As per CIRNAC's Statement of Work dated November 05, 2020 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 2021 Work Plan and 2021 mine reclamation cost estimate;
- Determine whether the 2021 cost estimate is enough to ensure appropriate closure and restoration of the site and implementation of any required ongoing measures after site restoration including post-abandonment interim care cost for a five (5) year period between the hypothetical abandonment of the site and the beginning of reclamation work; the Estimate used 3 years as per the approved ICRP (2018);
- Include post-closure monitoring costs for a twenty-five (25) year period; the Estimate used 15 years as per the approved ICRP (2018);
- Include an environmental contingency for potential future liabilities related to remediation costs;
- 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;
- Review of Environmental Management Plans;
- Development of new Unit rates;
- Phase 2 project elements will be listed as presented by Baffinland, but cost will not be incorporated into the model.

2. Methodology

2.1. Data Review

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

- A 2021 Work Plan, and associated Estimate Breakdown Structure (EBS) workbook, to be submitted after October 2020, by Baffinland Iron Mines Corporation for 2021 Security Estimate. The actual date this will be available is to be announced.
- Most up to date Interim Closure and Reclamation Plan, to be provided by the departmental contact.
- Submissions and correspondence from 2019 for Changes to Security, which can be found on the following Nunavut Water Board Website: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/2%20SECURITY%20(C)/2019/.
- Submissions and correspondence for the Annual Security Review in 2019, which can be found on the following Nunavut Water Board Website: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/2%20SECURITY%20(C)/2020/.
- The 2020 Security Estimate and associated RECLAIM Ver7 workbook by CIRNAC for 2020 Security Estimate, to be provided by the Departmental Representative.
- The 2020 Work Plan and associated Estimate Breakdown Structure (EBS) workbook by Baffinland Iron Mines Corporation for 2020 Security Estimate, to be provided by the Departmental Representative.
- Construction plans for infrastructure on site are available from the NWB ftp site (the company has offered to provide AUTOCAD versions of the drawings where required): ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/5%20CONSTRUCTION%20(D)/.
- Baffinland internal Geotechnical Inspection Report No. 1, as submitted on September 8, 2020, from the following folder on the NWB ftp site: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/5%20CONSTRUCTION%20(D)/D%2018%20&%2019%20Geotech%20Insp/.
- Inspection Reports from CIRNAC Field Operations for 2019 and 2020, if available, from the following folder on the NWB ftp site: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/0%20SCOPE%20ENFORCE%20(A)/1%20INSPECTION/.

- 2020 Modification Requests for Water Licence 2AM-MRY1325 – Amend. No. 1, if available, from the following folder on the NWB ftp site: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MRY1325%20BIMC/3%20TECH/6%20MODIFICATIONS%20(G)/.

- CIRNAC's Mine Site Reclamation Policy for Nunavut (CIRNAC, 2002): https://www.rcaanc-cirnac.gc.ca/DAM/DAM-CIRNAC-RCAANC/DAM-NTHAFF/STAGING/texte-text/recpolnuna_1100100036043_eng.pdf.

- Any other documents deemed relevant through the duration of the contract.

2.2. Update of the Reclaim (v 7) Model

SNC-Lavalin's 2021 ASR estimate builds on the previous reviews carried out for the Mary River Project on behalf of CIRNAC.

For the 2021 ASR, we have updated the RECLAIM mine reclamation cost estimate of the Mary River Project. Our security estimation integrates information from a review of BIMC's 2021 Work Plan dated November 6, 2020.

Two RECLAIM models have been prepared:

- ***Global RECLAIM (Reconciled 2020 RECLAIM Global Estimate)*** – comprising the 2019 Global RECLAIM Estimate (prepared in 2019) combined with the 2020 Marginal Estimate (prepared in 2019). This model has been adjusted with any 2020 reconciled items (identified by BIMC in their 2021 Marginal Closure and Reclamation Financial Security Estimate), as well as the arbitration outcome between Baffinland and QIA. This model represents the latest closure estimate as of this year (2020) and does not include any 2021 items.

- ***Marginal RECLAIM (2021 RECLAIM Marginal Estimate)*** – This is the security estimate based on BIMC 2021 Work Plan and represents the security estimate based on BIMC's anticipated 2021 activities only. This model has also been adjusted based on the reported arbitration outcome between Baffinland and QIA.

The **2021 Global Estimate is the combined cost of these two models** (as outlined in Section 4.3). The SNC-Lavalin Reconciled 2020 RECLAIM Global Estimate and 2021 Marginal Estimate is presented respectively in Appendix A and Appendix B.

The quantities stated by Baffinland for the 2021 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 2021 Work Plan and the model. This is further discussed in Section 4.1.1.

3. Overview of BIMC 2021 Marginal, Closure and Reclamation Financial Security Estimate

The 2021 Marginal Closure and Reclamation Financial Security Estimate, Baffinland, November 06, 2020, is included in Appendix B of the BIMC 2021 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 approved Interim Mine Closure and Reclamation Plan Rev.5, dated October 30, 2018, presented in Appendix C of the 2021 Work Plan.

The total Global closure and reclamation security estimate takes into consideration planned work in 2021 to be conducted under Type "A" Water Licence 2AM-MRY1325, Amendment No. 1 in addition to previous project closure and reclamation security estimates. Relevant sections of the BIMC 2021 Marginal Closure and Reclamation Financial Security Estimate are reported in the following sections: 3.1 Arbitration Outcome Reconciliation, 4.1.1 - Closure Scenario, 4.2 - 2020 Planned Activities, 4.3 – 2021 Work Plan Security Estimate Assumptions (Direct and Indirect Costs) and 5. - 2021 Estimate Summary.

The following sections present a summary review of the information, assumptions and costs estimate included in the BIMC 2021 Marginal Closure and Reclamation Financial Security Estimate, November 06, 2020.

3.1. BIMC Security Estimate Development

The 2021 Marginal Closure and Reclamation Financial Security Estimate (dated November 06, 2020) represents BIMC's proposed annual adjustment to reclamation security for 2021. The approach for developing the estimate follows the same logic as previous years; however, it includes an additional section on the Baffinland and QIA arbitration process in 2020. It is BIMC's position that the aggregate of the 2021 Marginal Closure and Reclamation Financial Security Estimate and the previous 2020 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 2021 Work Plan.

The BIMC 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). Baffinland updated the unit costs according to the Arbitration Outcome Reconciliation. An Arbitration Summary document is presented in Appendix A of the 2021 Marginal Closure and Reclamation Financial Security Estimate.

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.

The Arbitration between Baffinland and QIA regarding the 2019 Work Plan sought to resolve areas of "High Uncertainty" and discrepancy between the respective estimates, including the unit rates to be

applied. Based on the direction from the Final Award, Baffinland's unit rates as presented in the 2019 Estimate were updated. As a result, Baffinland has continued to utilize the established methodology from the 2014 Complete Project Financial Security Assessment, with the updated contractor rates included in the 2019 Work Plan. Further discussion on the outcomes of the arbitration is provided in Section 2 of the 2021 Marginal Closure and Reclamation Financial Security Estimate.

The 2021 Estimate was developed by applying the direct cost unit rates to quantities of functional units of each activity or project component proposed/changed under the 2021 Estimate, unless indicated otherwise by Baffinland.

3.2. BIMC 2021 Annual Security Review Reconciliation

For the 2021 Estimate to reflect the total global closure and reclamation security, the previous years' project estimates have been reconciled. Activities previously proposed that required reconciliation fall into the following categories:

- Revisions to the Global Estimate relative to the 2020 Work Plan according to the Outcomes of the Arbitration between Baffinland and QIA;
- 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 2020 sealift and were under or overestimated in 2020 or were backhauled from the project on the 2020 sealift.

3.2.1. 2019 Work Plan Reconciliation

For the 2021 Estimate to accurately reflect the total 'global' closure and reclamation security estimated to be required for the Project in 2021, the Outcomes of the Arbitration between Baffinland and QIA was reconciled and a revised Global Estimate relative to the 2019 Work Plan was established. These outcomes are addressed in the 2021 Marginal Closure and Reclamation Financial Security Estimate Section 2.0 and Appendix A of that document.

In summary the outcomes that have changed methodology that would impact the 2020 ASR are predominantly tied to indirect costs. As a result of 3rd Party Equipment costs moving to an indirect cost, the direct costs were reduced and associated indirect costs based on those costs were revised. The total Global value of reclamation security for the 2019 Work Plan adjusted with Arbitration Outcome is **$115,385,000.** This amount was reviewed during the arbitration process therefore it was accepted by both QIA and Baffinland in the 2021 Marginal Closure and Reclamation Financial Security Estimate Section 2.0. However, the review using the SNC-Lavalin unit cost from 2019, show a different total amount as presented in Section 4.4 of this report.

3.2.2. 2020 Work Plan Arbitration Outcome Reconciliation

The position presented by Baffinland during the 2020 ASR requires updating to reflect the outcomes of the Arbitration between Baffinland and QIA on the 2019 Work Plan. These outcomes are addressed in Section 2.0 and Appendix A of Baffinland Work Plan. Table 3.1 below shows the items and costs from the 2020 Estimate that were revised.

Table 3-1 Reconciliation of 2020 Work Plan Estimate adjustment for Arbitration Outcome

Activity	Cost ($) difference
Direct Cost sub-total	**618,717**
Indirect Cost	
3rd Party Equipment (as Indirect Cost)	1,377,000
Fuel	30,000
Mobilization of Workers required for Reclamation	28,000
Worker Accommodation and Camp Operation	76,000
Mobilization and Demobilization of Equipment and Materials	62,000
Supervision, Project Management and Contract Administration	58,000
Engineering Fees	24,000
Contingency	124,000
Indirect Costs Sub-total	**1,779,000**
TOTAL	**2,398,000**
Inflation	31,480
TOTAL COSTS	**2,429,480**

3.2.3. 2020 Work Plan Reconciliation

- **Grade and Re-Contour**: The Proposed Disturbed Areas are representative of work yet to be completed from the 2014 Work Plan through to the current 2021 Work Plan. The result is a reduction in the value for grade and contour, and grade and contour with a liner totalling **$-372,000**.
- **Mechanical and Mobile Equipment:** The position presented by Baffinland during previous security estimates was based on the forecasted equipment expected to be delivered to site in 2020. The variation of the actual type and quantity of equipment delivered to site in 2020 is presented in section 3.2.2 of the Baffinland Report and adds to a difference of 40 pieces of equipment with a cost of **$-115,000**. A negative value is the result of less equipment arriving to the site than what was forecasted for 2020. In addition, 3rd Party Equipment was reconciled from the value presented in the 2020 ASR and is considered an indirect cost using rates established by QIA, representing 49 pieces of equipment with a cost of **$-308,000.** This value was moved from direct costs and included into indirect costs as a result of the Arbitration. The pieces of equipment were considered in the Reclaim model with the SNCL unit rates as per Section 4.4 of this report.

3.3. 2021 Work Plan

A detailed description of the work activities captured in the Baffinland 2021 Work Plan Security Estimate are described in the Baffinland 2021 Work Plan assuming that all planned activities for 2021 have taken place on site and all material/consumables (excluding fuel) at site are in full inventory. All other assumptions related to direct or indirect costs are consistent with the assumptions established in the 2014 Complete Project Financial Security Assessment and previous ASR documentation unless noted otherwise. The planned activities for 2021 are summarized below.

Direct Costs Assumptions

- **Buildings and Foundations**: The position presented by Baffinland in the 2021 Work Plan account for an amount of **$593,000** for buildings plus proportional cover material application costs.
- **Mechanical and Mobile Equipment**: The Work Plan allocates **$108,000** to account for mobile equipment plus indirect costs. This cost allocation is based on an additional 76 pieces of Baffinland owned mechanical or mobile equipment to be mobilized to site in 2021.
- **Site Works:** The 2021 Work Plan allocates **$505,000** for a marginal increase of disturbed areas totalling 338,680 m^2 that would have to be graded and re-contoured.
- **Cabling:** The amount of **$19,000** was assigned for the installation of 900 m of cabling at the Mine Site and Milne Port areas.
- **Desalination Plant**: Baffinland assigned **$8,000** plus cover material application costs for the closure and reclamation of the 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.
- **Fill Application**: The 2021 Estimate allocates an additional **$51,000** to account for application of cover material due to the marginal increase of demolition materials to be disposed on-site.

Indirect Costs Assumptions

The following activities have been included in the 2021 Marginal Closure and Reclamation Financial Security Estimate. Details of costs are presented in Section 4.3.2 and Appendix C of the mentioned document.

- **On-Site Fuel Demobilization and Reclamation Fuel Mobilization:** The Work Plan assigns an amount of **$49,000** for the demobilization of fuel stored on Site, assuming that the tanks will be full at closure.
- **Mobilization of Workers Required for Reclamation**: The 2021 Estimate allocates an additional **$40,000** for worker mobilization.
- **Worker Accommodation & Camp Operation**: The 2021 Estimate allocates an additional **$110,000** for worker accommodation and camp operation during marginal reclamation activities.
- **Mobilization and Demobilisation of Equipment and Materials**: The 2021 Estimate allocates an additional **$86,000** to account for mobilization and demobilization of equipment and materials.
- **Demobilization of 3rd Party Equipment**: The 2021 Estimate allocates an additional **$77,000** to account for the demobilization of 3rd Party Equipment from the Site.
- **Supervision, Project Management and Contract Administration**: The 2021 Estimate includes a project supervision, management and contract administration indirect cost allowance of **$97,000** or 9.4% of total direct costs, contaminated soil treatment costs and care and maintenance costs, and closure monitoring/reporting costs.

- **Engineering Fees**: The 2021 Estimate includes an engineering, design and execution planning indirect cost allowance of **$40,000** or 3.9% of the total direct costs.

- **Contingency**: The 2021 Estimate includes an additional contingency of **$210,000** or 20% of the total of direct costs, contaminated soil treatment costs, care and maintenance costs and closure monitoring/reporting costs.

- **Inflation**: As a result of the Arbitration, Baffinland is directed to apply inflation in years when unit rate costs have not been updated. In order to calculate the rate of inflation to be applied in a given year, Baffinland utilizes the Consumer Price Index (CPI) for Iqaluit (not seasonally adjusted) for the month of September in a given year.

The unit costs applied by BIMC to each item are according to the QIA and Baffinland arbitration and the EBS is consistent with the actual methodology agreed by both parties.

3.4. Summary of 2020 Marginal Closure and Reclamation Estimate

Table 3-2 below shows the consolidation of the marginal closure cost estimates that BIMC presents in the 2021 Marginal Closure and Reclamation Financial Security Estimate, sections 3 to 5.

Table 3-2 Summary of the BIMC 2021 Work Plan Marginal Increases of items described in Sections 4.3.1 and 4.3.2 of that report

Activity	Cost ($)
Direct Cost	
Buildings and Foundations	593,000
Mechanical and Mobile Equipment	108,000
Grade and Re-contour of disturbed areas	505,000
Cabling	19,000
Desalination Plant	8,000
Fill Application	51,000
Total Direct Costs	**1,284,000**
Indirect Cost	
On-Site Fuel Demobilization and Reclamation Fuel Mobilization	49,000
Mobilization of Workers Required for Reclamation	40,000
Worker Accommodation & Camp Operation	110,000
Demobilization 3rd Party Equipment	77,000
Mobilization and Demobilization of Equipment and Materials (10% of total direct costs)	86,000
Post Closure Monitoring	Excluded
Contaminated Soil treatment	Excluded

Activity	Cost ($)
Supervision, Project Management and Contract Administration (9.4% of direct costs)	97,000
Engineering Fees (3.9% of direct costs)	40,000
Contingency (20% of direct costs)	210,000
Total Indirect Costs	**709,000**
Inflation	8,945
Grand total	**2,001,945**

It should be noted that the costs of each item in Table 3-2 are the values presented by BIMC in the text of Sections 4.3.1 and 4.3.2 of the 2021 Marginal Closure and Reclamation Financial Security Estimate. However, the addition of the Total Direct and Indirect Costs show some differences with the one presented by BIMC in Table 5.3 that require clarification in the text and/or adjustment of the Tables as needed.

3.4.1. Exclusions

Additional costs have not been included in the 2021 Work Plan Security Estimate on the basis that it is Baffinland's position that the 2021 Work Plan activities do not warrant additional cost allocations for the following activities:

- Closure & Post Closure Monitoring – No changes to Closure Plan and no updates to Post Closure Monitoring completed in the ICRP in 2020.
- Contaminated Soil Treatment. BIMC considered the allocation was enough for 2020.
- Explosives (Ammonium Nitrate). BIMC considered the allocation was enough for 2020.
- Off-Site Disposal of Hazardous and Non-Hazardous Waste. BIMC considered the allocation was enough for 2020.

It is recommended to include the 5 years for Closure and 25 years for Post Closure Monitoring in the next ICRP update. Allocations for Contaminated Soil Treatment, Explosives and Off-Site Disposal of Hazardous and Non-Hazardous Waste to be updated next year.

3.5. BIMC 2021 Global Security Estimate

The total posted Global Security Estimate as October 2020 under the Type A (2AM-MRY1325) Licence is $ 106,278,658.

Total “Global” Estimated Security for 2021 is valued by BIMC at $ 119,270,419 including the following: Global Estimate from 2019 with Arbitration Outcome, 2020 Marginal Estimate Adjusted for Arbitration, 2021 Marginal Estimate for including 2020 Reconciliation

The distribution of liabilities by land ownership land use is tabulated in Table 3.3 below:

Table 3-3 Summary of Total “Global” estimated Security for 2021

Authorization	Liability	Total “Global” estimated Security for 2021 ($)
Type A2AM-MRY1325	IOL	116,941,485
	Crown	2,328,934
	Water	2,128,923
	Land	117,141,496
Sub-total Type A (IOL + Crown)		**119,270,419**

The Sub-total Type A amount is shown under Column F of Table 5-4 of the 2021 Marginal Closure and Reclamation Financial Security Estimate and in Table 9-2 of the 2021 Work Plan included in Appendix C.

Table 5-4 does not appear to be correct in Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate. The Grand Total summary for the 2021 estimate in column “C” does not account for all the sub-totals. It appears that the subtotal for “DFO Security Associated with freight Dock” is not included in Column “C”. However, the other columns “D”, “E and “F” include the correct figures. Grand Total of Column “C” should be revised. This will not affect the other totals.

4. Reclaim Model Results

The unit costs developed by SNC-Lavalin in 2019 have been used in the security analysis (further discussed in 4.4).

4.1. 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, the assumptions and conclusions outlined in the BIMC 2021 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.

4.1.1. Building and Equipment

Global RECLAIM

As of this year, Baffinland has consolidated their list of mobile and mechanical equipment into a new section (Baffinland Owned Equipment). This included equipment mobilized under previous work plans for various locations. The Global Reclaim model has been adjusted accordingly and has been adjusted as per the outcome of the Arbitration between Baffinland and QIA.

Marginal RECLAIM

Marginal RECLAIM model has also included Baffinland Owned Equipment.

4.1.2. Disturbed Areas

Marginal RECLAIM

Recently obtained imagery was analyzed by Baffinland staff and Geographic Information Systems (GIS) coordinator to determine the extent of disturbed areas, including infrastructure that was previously planned for construction but has yet to be completed. The outcomes of the Disturbed Areas Analysis adjust the area of previously reported disturbed areas for work yet to be completed from the 2014 Work Plan through to the current 2021 Work Plan. A review of this imagery was not carried out by SNC.

The disturbed areas analysis resulted in a reduction of disturbed area. As noted by BIMC, the disturbed area is split between IOL and crown land and in some cases according to work area (i.e. Milne Port, Tote Road and Mine Site).

The readjustment and corrections based on the aerial imaging review has resulted in a negative value in the 2021 Global Estimate (as outlined in Table 4-3).

4.2. 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.

A summary of indirect costs is outlined in the 2021 Marginal Closure and Reclamation Financial Security Estimate (Table 5.2 - Summary of 2020 Work Plan Marginal Increase - Adjustment for Arbitration Outcomes). The following lump sum items were noted in the report but were not located in the EBS model:

- Fuel - $30,000
- Mobilization of Workers Required for Reclamation - $28,000
- Workers Accommodation & Camp Operation - $76,000
- Demobilization of 3rd Party Equipment – $62,000
- Engineering Fess – $58,000
- Supervision, Project Management & Contract Administration - $24,000
- Contingency - $124,000

When these items were considered in the RECLAIM, the overall marginal 2021 security estimate was similar to that of BIMC. It is believed that these may have been inadvertently omitted from the EBS; however, the overall security estimate reported by BIMC has included them.

4.2.1. 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.

4.2.2. Market Factor Adjustment

BIMC did not provide any market factor adjustment in the 2020 financial security estimate; however, as an outcome of the arbitration process, inflation was applied. Inflation was calculated relative to the last year in which unit rates were updated (for the 2020 workplan, the base year was 2018). SNC-Lavalin has applied the same inflation approach, utilizing BIMC consumer price index.

4.3. Summary of Costs

The 2021 Marginal Estimate and the updated 2020 Reconciled 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 new 2021 Global Estimate is shown in Table 4-3.

Table 4-1 Summary of 2021 Marginal Estimate (RECLAIM)

Cost Item	Security Estimate using SNC Recommended Unit Rates	Security Estimate using BIMC Rates as per 2021 Work Plan Estimate
Direct Costs		
Open pit	$0	See Table 3.1 for cost breakdown by activity.
Quarries	$0	
Underground Mine		
Tailings Facility		
Rock Pile		
Buildings and Equipment	$1,123,333	
Mine Site	$1,242,288	
Milne Port	$4,429,396	
Tote Road	$2,326,878	
Baffinland Owned Equipment	$263,103	
Chemicals and Contaminated Soil Management	$49,000	
Surface and Groundwater Management		
Interim Care and Maintenance		
Subtotal Direct Costs	**$1,172,333**	**$1,028,296**
Indirect Costs		
Mobilization/Demobilization	$22,563	See Table 3.1 for cost breakdown by activity.
Post-Closure Monitoring and Maintenance		
Engineering (3.9%)	$45,721	
Project Management (9.4%)	$110,199	
Health and Safety Plans/Monitoring, QA/QC and Engagement Costs (0%)		
Bonding/Insurance (2%)	$23,447	
Contingency (20%)	$234,467	
Market Price Factor Adjustment (0%)	$9,732.81	
Subtotal Indirect Costs	**$446,129**	**$419,000**
GRAND TOTAL	$1,618,462	$1,455,939

Table 4-2 Summary of 2020 Reconciled Estimate (RECLAIM)

Cost Item	Security Estimate using SNC Recommended Unit Rates	Security Estimate using BIMC Rates as per 2021 Work Plan Estimate
Direct Costs		
Open pit	$7,811,942	
Mary River Mine Pit/ Quarries	$7,811,942	
Underground Mine	$0	
Tailings Facility	$0	
Rock Pile	$663,600	
Buildings and Equipment	$26,014,430	
Mine Site	$10,480,551	
Milne Port	$6,231,978	
Tote Road	$2,848,409	
Project Wide	$786,645	
BIMC Owned Equipment	$5,666,846	
Chemicals and Contaminated Soil Management	$6,731,196	
Surface and Groundwater Management	$1,446,327	
Interim Care and Maintenance	$3,862,345	
Subtotal Direct Costs	**$46,529,839**	
Indirect Costs		
Mobilization/Demobilization	$60,297,213	
Post-Closure Monitoring and Maintenance	$4,366,250	
Engineering (3.9%)	$1,814,664	
Project Management (9.4%)	$4,373,805	
Health and Safety Plans/Monitoring, QA/QC and Engagement Costs (0%)	$0	
Bonding/Insurance (2%)	$930,597	
Contingency (20%)	$9,305,968	
Market Price Factor Adjustment (0%)	$765,710	
Subtotal Indirect Costs	**$81,854,207**	
GRAND TOTAL	**$128,384,046**	**$115,385,000**

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Table 4-3 Summary of 2021 Global Estimate (RECLAIM)

		2020 Reconciled Estimate (SNCL Recommended Unit Rates)			2021 Marginal Estimate (SNCL Recommended Unit Rates)			2021 Global Estimate (Global 2019 + Marginal 2020) (SNCL Recommended Unit Rates)		
		Total	IOL Liability	Crown Liability	Total	IOL Liability	Crown Liability	Total	IOL Liability	Crown Liability
CAPITAL COSTS										
OPEN PIT	Mary River Mine Pit	$7,811,942	$7,681,204	$130,738	$0	$0	$0	$7,811,942	$7,681,204	$130,738
BUILDINGS AND EQUIPMENT	Mine Waste Rock Pile	$663,600	$663,600	$0	$0	$0	$0	$663,600	$663,600	$0
	Mine Site	$10,480,551	$10,480,551	$0	-$1,242,288	-$1,242,288	$0	$9,238,263	$9,238,263	$0
	Milne Port	$6,231,978	$6,025,353	$206,625	$4,429,396	$4,842,597	-$413,201	$10,661,374	$10,867,950	-$206,576
	Tote Road	$2,848,409	$2,468,143	$380,267	-$2,326,878	-$2,930,304	$603,426	$521,531	-$462,161	$983,693
	Project Wide	$786,645	$786,645	$0	$0	$0	$0	$786,645	$786,645	$0
	BIMC Owned	$5,666,846	$5,666,846	$0	$263,103	$263,103	$0	$5,929,949	$5,929,949	$0
CHEMICALS ANC CONTAMINATED SOIL MANAGEMENT		$6,731,196	$6,590,104	$141,091	$49,000	$49,000	$0	$6,780,196	$6,639,104	$141,091
SURFACE AND GROUND WATER MANAGEMENT		$1,446,327	$1,410,317	$36,010	$0	$0	$0	$1,446,327	$1,410,317	$36,010
INTERIM CARE AND MAINTENANCE		$3,862,345	$3,766,181	$96,163	$0	$0	$0	$3,862,345	$3,766,181	$96,163
	SUB-TOTAL	**$46,529,839**	**$45,538,945**	**$990,894**	**$1,172,333**	**$982,108**	**$190,225**	**$47,702,172**	**$46,521,053**	**$1,181,119**
	PERCENT OF SUB-TOTAL		97.9%	2.1%		96.1%	3.8%		97.5%	2.6%
INDIRECT COSTS										
MOBILIZATION/DEMOBILIZATION		$60,297,213	$58,795,952	$1,501,261	$22,563	$22,563	$0	$60,319,776	$58,818,515	$1,501,261
POST-CLOSURE MONITORING AND MAINTENANCE		$4,366,250	$4,257,540	$90,848	$0	$0	$0	$4,366,250	$4,257,540	$90,848
ENGINEERING	5.0%	$1,814,664	$1,769,483	$37,758	$45,721	$35,611	$10,110	$1,860,385	$1,805,094	$47,868
PROJECT MANAGEMENT	9.4%	$4,373,805	$4,264,907	$91,005	$110,199	$85,831	$24,369	$4,484,004	$4,350,738	$115,374
BONDING/INSURANCE	2%	$930,597	$907,427	$19,363	$23,447	$18,262	$5,185	$954,044	$925,689	$24,548
CONTINGENCY	20%	$9,305,968	$9,074,271	$193,628	$234,467	$182,618	$51,848	$9,540,435	$9,256,889	$245,476
INFLATION	0.6%	$765,710	$746,646	$19,064	$9,732.81	$0	$0	$775,443	$746,646	$19,064
SUBTOTAL		**$81,854,207**	**$79,816,226**	**$2,037,980**	**$446,129**	**$344,884**	**$91,512**	**$82,300,336**	**$80,161,110**	**$2,129,492**
TOTAL COST (direct and indirect)		**$128,384,046**	**$125,335,171**	**$3,028,875**	**$1,618,462**	**$1,326,993**	**$281,737**	**$130,002,508**	**$126,682,163**	**$3,310,611**
Total "Global" estimated Security for 2020 as per BIMC (direct and indirect)[1]								**$119,270,419**	**$116,941,485**	**$2,328,934**

[1] Taken from Table 5.4 of the 2021 Marginal Closure and Reclamation Financial Security Estimate. Subtotal Type A values only.

4.4. Unit Rates

It is understood that the security estimates presented by BIMC are based on unit rates have been adjusted according to the arbitration outcome with QIA. In 2019, SNC-Lavalin carried out an assessment of unit rates against market conditions, from which, recommend unit rates were developed.

SNC-Lavalin conducted a preliminary comparison of the SNC developed unit rates and the unit according to the Arbitration Outcome Reconciliation. The difference in unit rates are shown in Table 4-4.

Table 4-4 Comparison of SNC unit rates and Arbitration Outcome Rates

	SLI Evaluated Unit Rate ($/unit)	2020 Arbitration Rate ($/unit)	Difference ($/unit)	% Difference
Fill Application	42.15	38.83	3.32	8.6%
Grade & Re-Contour	1.68	1.49	0.19	12.8%
Grade & Re-Contour Significant Disturbed Areas	5.28	4.12	1.16	28.2%
Culvert Removal	1,184.00	862.50	321.50	37.3%
Liner Removal	3.73	2.60	1.13	43.5%
Open Pit Stabilization	5.93	5.49	0.44	8.0%
Light Mechanical Equipment	1,829.00	1,583.75	245.25	15.5%
Medium Mechanical Equipment	4,002.00	3,392.50	609.50	18.0%
Heavy Mechanical Equipment	38,025.00	32,950.00	5,075.00	15.4%
Light Mobile Equipment	977.00	729.20	247.80	34.0%
Medium Mobile Equipment	1,528.00	1,162.50	365.50	31.4%
Heavy Mobile Equipment	2,506.00	2,075.00	431.00	20.8%
Light Tanks	2,017.00	1,710.42	306.58	17.9%
Medium Tanks	6,851.00	5,900.00	951.00	16.1%
Light Diesel Tanks	3,425.00	2,950.00	475.00	16.1%
Medium Mobile Diesel Tanks	9,794.00	8,381.30	1,412.70	16.9%
Medium Diesel Tanks	14,914.00	12,928.50	1,985.50	15.4%
Large Diesel Tanks	97,559.00	85,157.50	12,401.50	14.6%
Largest Diesel Tanks	157,480.00	137,277.50	20,202.50	14.7%
Modular Building Not Contaminated	54.11	47.64	6.47	13.6%
Modular Building Contaminated	131.00	114.88	16.12	14.0%
Fold Away Building Not Contaminated	37.88	33.34	4.54	13.6%
Fold Away Building Contaminated	131.00	114.04	16.96	14.9%
Soft Walled Building (tent) Not Contaminated	43.29	38.10	5.19	13.6%

	SLI Evaluated Unit Rate ($/unit)	2020 Arbitration Rate ($/unit)	Difference ($/unit)	% Difference
Soft Walled Building (tent) Contaminated	136.00	128.90	7.10	5.5%
ISO Container	27.06	23.80	3.26	13.7%
Timber Cribbing	18.94	16.70	2.24	13.4%
Precast Concrete Foundations	35.06	30.86	4.20	13.6%
Slab on Grade	34.98	30.00	4.98	16.6%
Bridge Removal	183,924.00	161,904.80	22,019.20	13.6%
Incinerator	9,448.00	7,925.00	1,523.00	19.2%
Potable Water	9,448.00	7,925.00	1,523.00	19.2%
Sewage Treatment Plant	10,414.00	8,775.00	1,639.00	18.7%
Ship Loader	3,632,108.00	3,070,200.00	561,908.00	18.3%
Waste Rock Facility Water Treatment Plan	72,422.00	61,750.00	10,672.00	17.3%
Reclaim Conveyor	1,211,444.00	1,066,410.00	145,034.00	13.6%
Piping	60.35	53.13	7.22	13.6%
Cabling	24.14	21.25	2.89	13.6%
Miscellaneous Items (Major)	483.00	425.00	58.00	13.6%
Removal of Airstrip Lighting	24.14	22.64	1.50	6.6%

4.4.1. Effect of Unit Rates on Overall Security

Table 4-5 shows the 2020 Reconciled Global Costs (RECLAIM) using BIMC rates as per 2021 work plan estimate and illustrates the key unit rates that are driving the change in security.

Table 4-5 Effect of Unit Rates on Overall Security

Cost Item	Security Estimate using SNC Recommended Unit Rates	Security Estimate BIMC rates as per 2021 work plan estimate	Difference	% Difference	Key Unit Rate Effecting Difference
Direct Costs					
Open pit					
Mary River Mine Pit/ Quarries	$7,811,942	$7,106,570	$705,371	9%	Grade & Recontour
Rock Pile	$663,600	$588,550	$75,050	11%	
Buildings and Equipment					
Mine Site	$10,480,551	$9,245,697	$1,234,854	12%	Removal of Building Grade & Recontour Removal of Foundations Removal of Tanks
Milne Port	$6,231,978	$5,591,197	$640,781	10%	
Tote Road	$2,848,409	$2,575,368	$273,041	10%	
Project Wide	$724,684	$724,684	$61,961	8%	
BIMC Owned Equipment	$5,666,846	$4,781,030	$885,816	16%	On-Site Disposal of Equipment
Chemicals and Contaminated Soil Management	$6,731,196	$6,731,196	-		
Surface and Groundwater Management	$1,446,327	$1,247,071	$199,256	14%	
Interim Care and Maintenance	$3,862,345	$3,425,185	$437,160	11%	Blended Labour Rate
Subtotal Direct Costs	**$46,529,839**	**$42,016,548**	**$4,513,291**	**10%**	
Indirect Costs					
Mobilization/Demobilization	$60,297,213	$60,168,395	$128,818	0.4%	Blended Labour Rate
Post-Closure Monitoring and Maintenance	$4,366,250	$4,366,250	$0		
Engineering (3.9%)	$1,814,664	$1,638,645	$176,018	10%	
Project Management (9.4%)	$4,373,805	$3,949,556	$424,249	10%	
Health and Safety Plans/Monitoring, QA/QC and Engagement Costs (0%)	$0	$0	-	-	
Bonding/Insurance (2%)	$930,597	$840,331	$90,266	10%	
Contingency (20%)	$9,305,968	$8,403,310	$902,658	10%	
Market Price Factor Adjustment (0%)	$765,710	$728,298	$37,412	6%	
Subtotal Indirect Costs	**$81,854,207**	**$80,094,785**	**$1,759,421**	**3%**	
GRAND TOTAL	**$128,384,046**	**$122,111,334**	**$6,272,712**	**6%**	

The difference between the SNC developed rates and those from the Arbitration outcome results in an overall increase of Reconciled 2020 Global Costs to the Crown (using the SNC rates) of approximately $500,000 (direct and indirect costs) and a 2021 Marginal increase of approximately $35,000.

While the summary of arbitration proceedings (Global Reclamation Security Update: Post Arbitration – 2019 Work Plan Reconciliation) presents some rational behind the unit rates, the information does not provide an updated version of the 2014 Basis of the Estimate.

In order to assess the applicability of the new unit rates additional information would be needed, in particular for those key items that are driving the difference within the two estimates present. It is recommended that additional information be obtained pertaining to the assumptions and basis for the following rates:

- Removal of Buildings (fold away, iso shipping container, modular, soft walled);
- Removal of Contaminated Buildings (fold away, iso shipping container, modular, soft walled);
- On-Site Disposal of Equipment (light mobile, medium mobile, heavy mobile);
- On-Site Disposal of Equipment – Decontaminate (medium mechanical, heavy mechanical;
- Grade & Recontour (including with Liner); and
- Blended labour rate.

5. Findings and Comments

This section highlights the findings and comments identified during the review of the documents presented by Baffinland listed in Section 2.1 of this report.

The BIMC 2021 Estimate is based in the Interim Closure and Reclamation Plan (BAF-PH1-830-P16-0012) Rev 5, October 30, 2018, submitted in the BIMC 2021 Work Plan, is the same document submitted with the BIMC 2019 Work Plan. The issues regarding the generation of acid rock drainage (ARD) and metal leaching (ML) have been addressed separately through the revised Phase 1 Waste Rock Management Plan (WRMP) issued in June 2020 and approved by the NWB on August 17, 2020. The ICRP should be updated based on this newly approved WRMP and in consideration of the ongoing monitoring program.

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.

The disturbed area is split according to work within the Milne Port, Tote Road and Mine Site as noted by BIMC; however, several areas were only split between IOL and crown land. It is not clear the criteria used by Baffinland to split IOL and Crown land.

Table 5.3 of the Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate shows the following inconsistencies with the items and costs detailed in Sections 4.3.1 and 4.3.2 presented by BIMC in the same report. It is required clarification of the following:

- The Total Direct Costs in Table 5.3 does not detail the items included in the addition. According to the text presented in Section 4.3.1 the Total Direct Cost is $1,284,000. However, Table 5.3 Summary Marginal increase shows Total Direct Costs $1,028,296.
- The Indirect Costs detailed by Baffinland in Section 4.3.2.4 Mobilization and Demob of Equipment and Materials allocates $86,000. Table 5.3 shows $103,000 for the Global Estimate and $86,000 for IOL.
- Baffinland Section 4.3.2.5 and table 4.5 - Demob of 3rd Equipment allocates additional $77,000. Table 5.3 shows a decrease -$230,000 for this item. It is requested that Baffinland clarifies the costs of this item and adjust the table as needed.
- Baffinland Section 4.3.4, the total inflation adjustment represents an increase of $8,945.17 based on a total cost of $1,448,000, but the total presented in Table 5.3 Total cost is $1,447,000.
- Inflation amount in the text is $8,945.17 but in Table 5.3 is $8,939.
- Table 5.3 Summary Marginal Increase Shows: Total 1,455,939, in text Estimate is $1,456,945. These amounts may change after clarification of the items listed above.

BIMC considers 20% Contingency. It would be preferable to include 15% contingency and the uncertainties associated with the Waste Rock Pile and the Open Pit be calculated as a direct cost. Since BIMC has not completed all the studies for the waste rock to provide a closure option for the pit. It is recommended that those costs be calculated directly by BIMC and be included in the next updated ICRP.

There appears to be an error in Table 5.4 Project Total Closure and Reclamation Security Summary of the Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate and same Table 9.2 in 2021 Work Plan. The Grand Total summary for the 2021 estimate in column “C” does not account for all the sub-totals. It appears that the subtotal for “DFO Security Associated with freight Dock” is not included in Column “C” However, the other columns “D”, “E and “F” include the correct figures. Grand Total of Column “C” shall be revised.

The Reclaim Model has applied the unit costs that were previously assessed by SNC-Lavalin. Before applying the new rates, it is recommended that the assumptions and basis for the Arbitration Outcome unit rates be obtained, specifically for:

- Removal of Buildings (fold away, iso shipping container, modular, soft walled);
- Removal of Contaminated Buildings (fold away, iso shipping container, modular, soft walled);
- On-Site Disposal of Equipment (light mobile, medium mobile, heavy mobile);
- On-Site Disposal of Equipment – Decontaminate (medium mechanical, heavy mechanical;
- Grade & Recontour (including with Liner); and
- Blended labour rate.

Table 5-1 below presents a summary of the findings or clarifications to be requested to BIMC

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

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
Table 5.4 of the Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate shows an error in addition of totals in Column “C”.	The grand total summary for the 2021 estimate in column "C" does not account for all the sub-totals. It appears that the subtotal $4.250,000 for DFO Security associated with freight dock is not added. However, the other columns “D”, “E and “F” include all the figures and the Total Global estimate in column “F” is correct. Grand Total of Column “C” shall be revised.	Correct the grand total summaries column “C” of Table 5.4 of the Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate and Table 9.2 of the 2021 Work Plan (same table).	
Table 5.3 of the Baffinland 2021 Marginal Closure and Reclamation Financial Security Estimate shows the following inconsistencies with the	Details of difference is discussed above in this Section 5.	Revise and clarify the costs of items included in Table 5.3 and Sections 4.3.1 and 4.3.2 of the 2021 Marginal Closure and Reclamation Financial Security Estimate.	

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
items and costs detailed in Sections 4.3.1 and 4.3.2 of that document.			
Items of Indirect Costs outlined in the 2021 Marginal Closure and Reclamation Financial Security Estimate (Table 5.2) not found on the EBS.	A summary of indirect costs is outlined in the 2021 Marginal Closure and Reclamation Financial Security Estimate (Table 5.2 - Summary of 2020 Work Plan Marginal Increase - Adjustment for Arbitration Outcomes). The following items were noted in the report but were not able to be located in the EBS model: • Fuel - $30,000 • Mobilization of Workers Required for Reclamation - $28,000 • Workers Accommodation & Camp Operation - $76,000 • Demobilization of 3rd Party Equipment – $62,000 • Engineering Fess – $58,000 • Supervision, Project Management & Contract Administration - $24,000 Contingency - $124,000.	Please revise / confirm / adjust the items not found in the EBS.	
It is not clear the criteria used by Baffinland to split IOL and Crown land.	The disturbed area is split according to work within the Milne Port, Tote Road and Mine Site as noted by BIMC; however, several areas were only split between IOL and crown land. It is not clear the criteria used by Baffinland to split IOL and Crown land.	Please provide the criteria used to split IOL and Crown land.	
BIMC included 20% Contingency	BIMC considers 20% Contingency. It would be preferable to include 15% contingency and the uncertainties associated with the Waste Rock Pile and the Open Pit be calculated as a direct cost.	It is recommended that the Waste Rock Pile and Open Pit closure costs be calculated directly by BIMC and be included in the next updated ICRP.	

Issue/Discrepancy	Description	Recommendations/Requests to BIMC	Issue identified by CIRNAC in previous reviews
ICRP Rev.5, has 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 and considering the updated thermal model.	The ICRP should be updated according to the updated Waste Rock Management Plan approved by NWB.	✓
BIMC estimate considers 3 years for Closure and 15 years for Post-Closure monitoring.	According to CIRNAC guidance for duration of interim care & maintenance and post-closure monitoring in the mine site closure & reclamation plan cost estimate. CIRNAC recommended to include 5 years for Closure and 25 years for Post-Closure monitoring.	Interim care and maintenance should be increased to 5 years, and post-closure cost to 25 years	✓
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.	✔
Engineering Fees	Engineering Fees does not describe which costs have been considered to calculate the fees.	BIMC to re-visit which costs have been considered or included in Engineering Fees	✔
Arbitration Outcome unit rates.	There remains a difference between the EBS unit rates and those developed by SNC-Lavalin. Key unit rates appear to be driving the security estimate.	Assumptions and basis for the key Arbitration Outcome unit rates should be obtained for review and verification.	

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6. Closure

This report has been prepared by Adriana Lafleur and Jonathan Cooper. The report was reviewed by Karola Tóth.

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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7.1. Guidelines

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APPENDIX A

SNC-Lavalin 2020 Reconciled Global RECLAIM MODEL

Project Name:

ffinland 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 SNC Rates 2019 Rates	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$7,811,942	$6,339,086	$1,472,856	$7,681,204	$130,738
UNDERGROUND MINE		$0	$0	$0	$0	$0
TAILINGS FACILITY		$0	$0	$0	$0	$0
ROCK PILE	Mine Site Waste Rock Pile	$663,600	$663,600	$0	$663,600	$0
BUILDINGS AND EQUIPMENT	Mine Site	$10,480,551	$10,287,569	$192,981	$10,480,551	$0
	Milne Port	$6,231,978	$6,178,221	$53,758	$6,025,353	$206,625
	Tote Road	$2,848,409	$1,605,969	$1,242,440	$2,468,143	$380,267
	Project Wide/Other	$786,645	$786,645	$0	$786,645	$0
	BIMC Owned Equipment	$5,666,846	$5,556,511	$110,335	$5,666,846	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMENT		$6,731,196	$4,711,196	$2,020,000	$6,590,104	$141,091
SURFACE AND GROUNDWATER MANAGEMENT		$1,446,327	-	$1,446,327	$1,410,317	$36,010
INTERIM CARE AND MAINTENANCE		$3,862,345	-	$3,862,345	$3,766,181	$96,163
	SUBTOTAL: Capital Costs	**$46,529,839**	**$36,128,797**	**$10,401,042**	**$45,538,945**	**$990,894**
	PERCENT OF SUBTOTAL		**77.6%**	**22.4%**	**97.9%**	**2.5%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL LIABILITY	LIABILITY
MOBILIZATION/DEMOBILIZATION		$60,297,213	$46,818,683	$13,478,531	$58,795,952	$1,501,261
POST-CLOSURE MONITORING AND MAINTENANCE		$4,366,250	$3,390,241	$976,009	$4,257,540	$108,710
ENGINEERING	3.9%	$1,814,664	$1,409,023	$405,641	$1,769,483	$45,181
PROJECT MANAGEMENT	9.4%	$4,373,805	$3,396,107	$977,698	$4,264,907	$108,898
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0.0%	$0	$0	$0	$0	$0
BONDING/INSURANCE	2.0%	$930,597	$722,576	$208,021	$907,427	$23,170
CONTINGENCY	20.0%	$9,305,968	$7,225,759	$2,080,208	$9,074,271	$231,697
MARKET PRICE FACTOR ADJUSTMENT / INFLATION	0.60%	$765,710	$594,547	$171,163	$746,646	$19,064
	SUBTOTAL: Indirect Costs	**$81,854,207**	$63,556,936	$18,297,271	$79,816,226	$2,037,980
TOTAL COSTS		**$128,384,046**	**$99,685,733**	**$28,698,313**	**$125,355,171**	**$3,028,875**

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		m2	395000	20GCS	$1.68	$663,600	100%	$663,600	$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	$663,600		$663,600	$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

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	2019 Marginal	m2	345500	20GCS	$1.68	$580,440		$0	$580,440
PQ4a Quarry	2019 Marginal	m2	105000	20GCS	$1.68	$176,400		$0	$176,400
PQ6a Quarry	2019 Marginal	m2	194000	20GCS	$1.68	$325,920		$0	$325,920
PQ12a Quarry	2019 Marginal	m2	232200	20GCS	$1.68	$390,096		$0	$390,096
Q13 Quarry	2017 Work Plan addendum	m2	31350	20GCS	$1.68	$52,668	100%	$52,668	$0
Q16A Quarry	In 2016 Work Plan but deferred to 2017	m2	11240	20GCS	$1.68	$18,883	100%	$18,883	$0
Q9 Quarry	2016/2017 ASR Reconciliation	m2		20GCS	$1.68	$0		$0	$0
D1Q2 Quarry	2016 Work Plan	m2	109807	20GCS	$1.68	$184,476	100%	$184,476	$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	$1.68	$1,966,776	100%	$1,966,776	$0
Q5 Quarry	2018 work plan see table 3-3 off marginal estimate. 2019 work plan add 1,225,58	m2	1240587	20GCS	$1.68	$2,084,186	100%	$2,084,186	$0
Q11 Quarry	2017 work plan marginal increase Add 2000 m2	m2	52433	20GCS	$1.68	$88,087	100%	$88,087	$0
Q18 Quarry (on Crown Land)	**2017 Work Plan new quarry Add 2000 m2 (100% Crown Land)**	**m2**	**2000**	**20GCS**	$1.68	**$3,360**	**100%**	**$3,360**	**$0**
Q19 Quarry		m2	33927	20GCS	$1.68	$56,997	100%	$56,997	$0
Q7 Quarry	2017 work plan marginal increase Add 2000 m2	m2	55510	20GCS	$1.68	$93,257	100%	$93,257	$0
QMR2 Quarry	2017 work plan addendum marginal increase Add 50000 m2	m2	258580	20GCS	$1.68	$434,414	100%	$434,414	$0
Pit 1		m2	55000	20GCS	$1.68	$92,400	100%	$92,400	$0
Pit 1 marginal increase		m2	214450	20GCS	$1.68	$360,276	100%	$360,276	$0
P1 Borrow Source (on Crown Land)	**100% on Crown Land**	**m2**	**75820**	**20GCS**	$1.68	**$127,378**	**100%**	**$127,378**	**$0**
Km 2 Borrow Source	2017 work plan marginal increase Add 1000 m2	m2	1000	20GCS	$1.68	$1,680	100%	$1,680	$0
Borrow Development Areas		m2	42080	20GCS	$1.68	$70,694	100%	$70,694	$0
Unidentified Borrow Sources		m2		20GCS	$1.68	$0	100%	$0	$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.	m2	158012	20GCDS	$2.72	$429,793	100%	$429,793	$0
Type A Quarry		m2	136880	20GCDS	$2.00	$273,760	100%	$273,760	$0
					$72.00	$0			
Number of years of pump flooding		years							
					Total pumping costs	$0		$0	$0
					Total	$7,811,942		$6,339,086	$1,472,856
					% of Total			81%	19%

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
Hazardous Substances	2020 Arbitration Outcome	m3	5500		$358.00	$1,969,000		$0	$1,969,000
Fuel	2020 Revised Workplan	LS	1	EBS	$21,000.00	$21,000		$0	$21,000
	2020 Abritration outcome	LS	1	EBS	$30,000.00	$30,000		$0	$30,000
					Total	$6,731,196		$4,711,196	$2,020,000
					% of Total			70%	30%

Building / Equip Name:	Mine Site
ACTIVITY/MATERIAL	**Notes**
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site di	
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-	
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26). 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). 2020 Revised Work (net zero) 2020-R: - Water Tank 15,000L (1) - Water Tank 1,000L (3)
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26). 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).
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27) 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)
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). 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).
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).
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).
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
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transpor	
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 2019 estimate (See table 3-1 of 2019 Marginal Estimate) 2020 Revised Work: - add Sailivik (800p) Camp Mine Dry - Crusher Dry Trailer - Environmental Trailer
Fold Away Buildings	
Soft-Walled	2017 Work Plan Addendum soft Walled Buildings includes 50 person camp and 35 person Norse man style camp at Mine Site only
ISO Shipping Containers (Shelters, Comm. Facilities)	
Office/washcars	2017 Actual work not previously allocated. See Table 2-4 of 2018 Marginal Estimate. No 2018 unit rate availabe
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.
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, de	
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).
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)
Soft-Walled	2017 Work Plan Addendum Maintenance Garage at Mine Site
ISO Shipping Containers (Shelters, Comm. Facilities)	2017 Work Plan add 500 m2 Tire Shop
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.
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
Timber Cribbing	2020 Revised Workplan: - Concrete Pad for tire maintenance at 110 Laydown Includes disasemby load and transport of the timber cribbing
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dc	
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 2019: - Expansion of 800 camp - Water Treatment Plant 2019 - Km 107.5, Km 110, Km 107 stockplile - mine site fuel tank foot print - Crusher Pad expansion pad - on mine site 2019 estimate 2020 Revised Workplan: - Warehouse laydown pad expansion
Grade and contour building footprints	
Grade and contour infrastructure pads	Add 2017 Work Plan Addendum - Camp pad 45000m2
Aerodome Facilities	
Road	
Stockpiles	Add 2017 Work Plan Increase in Crusher Pad Storage Area - Ph 1: 8,200m2 & Ph 2: 17,500m2
Truck weigh facility distributed area	
Other	
Fill Application	2020 Revised Workplan 2020-AR
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and	
Waste Disposal	
Fuel tank farm dyke	
Hazardous waste berm	2020 Revised Workplan: - Geotube Settling Pond - Mine Haul Road Sedimentation Pond - Hazardous Waste Berm Containment Facilities
Bulk fuel storage facility (Bladder Farm)	
Crusher Pad Sedimentation Pond	2018 Work Plan See Table 3-3 in Marginal Estimate Add 2000 m2 from 2019 Plan
Mine Site Fuel Tank, Farm containment Area	2019 marginal
Hazardous waste berm	2019 marginal New PWSP 2019, landfarm, KM107 Sediment Pond
Other	
Mine Site Soft Wall Maintenance Garages	2017 Work Plan Addendum
Other	
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. 2019 marginal
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. 2020 Revised Workplan: - Cabling for Lighting at Mine Site Warehouse
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site. 2020 Revised Workplan
Remove Piping	2020 Revised Workplan: - Trasfer line for Deposit 1 to Waste Rock Facility - Fuel Line from new (2019) bulk fuel storage facility to existing bulk fuel storage facility estimate
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.

Building / Equip Name:	Milne Port
ACTIVITY/MATERIAL	**Notes**
DISPOSE MOBILE EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site di	
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-	
Light Tanks	Light non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26). 2020 Revised Workplan
Medium Tanks	Medium non- fuel storage tanks. The cleaning, plugging, disassembly and removal of all associated pipeline infrastructure is included (Ref 1, pg 26).
Light Diesel Tanks	Small fuel tanks (10,000-20,000L) (Ref 1, pg 27) 2020-R: -Diesel Tank 1,000L (-2) -Diesel Tank 9,000L (-1)
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
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
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
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).
REMOVE BUILDINGS - Unit Costs include disassembling, removing or securing all items and load and transpo	
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) 2020 Revised Workplan: - Double Trailer (2 or more): - Sana Workshop - Crusher services trailer 2020-R: - Sana Workshop
Fold Away Buildings	2020 Revised Workplan: - Carpenter Workshop 2020-R: -Carpenter Workshop
Soft-Walled	2020-R: - Aecon Workshop
ISO Shipping Containers (Shelters, Comm. Facilities)	
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.
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, de	
Modular	Trailers and pre-fabricated buildings. (Ref 1, pg 29).
Fold Away Buildings	
Soft-Walled	Add 2017 Work Plan Addendum Maintenance Garage at Milne Port 2046m2
ISO Shipping Containers (Shelters, Comm. Facilities)	
BREAK FOUNDATIONS	
Precast Foundations	Includes load and transport of precast concrete foundations (Ref 1, pg 34).
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
Timber Cribbing	Includes disassemby load and transport of the timber cribbing
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dc	
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 Laydown LP2
Grade and contour building footprints	
Grade and contour infrastructure pads	
Road	
Stockpiles	Add 2017 Work Plan Increase in Ore Stockpile Storage Area - Ph 1: 36,900m2 & Ph 2: 45,100m2 Ore Stockpile expansion 2019
Fill Application	2020-AR
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction anc	
Ore Stockpile Sedimentation	
Ore Stockpile Sedimentation Pond 2a	
contaminated dump	
Hazardous waste berm	New hazardous waste berm (2019 breakdown) 2020 Revised Workplan: - New Hazardous Waste containment facilities Port Shop
Milne Port Soft Wall Maintenance Garages	2017 Work Plan Addendum
Weatherhaven genset fuel bladder berm	
Storage Area	
Fuel tank farm dyke	
Landfarm	
LANDFILL FOR DEMOLITION WASTE	
Place fill material over demolition waste	2017 Work Plan Addendum
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.
Incinerator	Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site. 2020 Revised Workplan Equipment quanties updated to reflect 2017 Work Plan addendum Table 3-6 2 units one at Milne Port and one at Mine Site.
Potable Water	2020 Revised Workplan (remove Desalination Plant) 2020-R (Desalination Plant)

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	$54.11	$0	89%	$0	$0
Modular **- 100% on IOL**	2020 Revised Workplan: - Washrooms at KM26 and KM 80 IT Towers	m2	72	20RBMS	$54.11	$3,896	100%	$3,896	$0
Modular **- 100% on Crown Land**	2020 Revised Workplan	m2	0	20RBMS	$54.11	$0	100%	$0	$0
Fold Away Buildings	Assume 7% on Crown Land	m2	0	20RBFS	$37.88	$0	100%	$0	$0
ISO Shipping Containers (Shelters, Comm. Facilities)	2017 Actual work not previously allocated (see Table 2-3 of 2018 Marginal cost) Add 1050 m2	m2	1273	20RBIS	$27.06	$34,447	100%	$34,447	$0
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular		m2	0	20RCBMS	$131.00	$0	100%	$0	$0
Fold Away Buildings	Mobile Maintenance Depot (100% on Crown Land)	m2	682	20RCBFS	$131.00	$89,342	100%	$89,342	$0
ISO Shipping Containers (Shelters, Comm. Facilities)		m2	0	20RCBIS	$131.00	$0	100%	$0	$0
Temporary Construction Warehouse and Office Allowance		m2	0	20RCBTS	$25,000.00	$0	100%	$0	$0
BREAK FOUNDATIONS									
Slab on Grade	Mobile Maintenance Depot (100% on Crown Land)	m2	682	20FSS	$34.98	$23,856	100%	$23,856	$0
Timber Cribbing	Includes disassemby load and transport of the timber cribbing. Assume 7% on Crown Land	m2	59	20TCS	$18.94	$1,117	100%	$1,117	$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	$1.68	$56,952	100%	$56,952	$0
	Laydown 2, 4, 7, 9, 10, 13 (2019 marginal)	m2	285000	20GCS	$1.68	$478,800	100%	$478,800	$0
Grade and contour building footprints	Assume 7% on Crown Land	m2	13040	20GCS	$1.68	$21,907	100%	$21,907	$0
Grade and contour infrastructure pads	Assume 7% on Crown Land	m2	6760	20GCS	$1.68	$11,357	100%	$11,357	$0
Aerodome Facilities		m2	0	20GCS	$1.68	$0	100%	$0	$0
Road	Assume 7% on Crown Land	m2	533000	20GCS	$1.68	$895,440	100%	$895,440	$0
Remove Liner	Mobile Maintenance Depot (100% on Crown Land)	m2	683	20GCLS	$5.28	$3,606	100%	$3,606	$0
Fill Application	2020-AR	m2	-350	20PFS	$42.15	($14,753)	100%	($14,753)	$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 (Ref 1, pg 36).	each	3	20BRS	$183,924.00	$551,772	0%	$0	$551,772
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	20BRS	$183,924.00	$183,924	0%	$0	$183,924
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
SPECIALIZED ITEMS									
					Total	$2,848,409		$1,605,969	$1,242,440
					% of Total			56%	44%

Note:

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	2020 Revised Workplan	each	21	20MOLS	$977.00	$20,517	98%	$20,107	$410
	2020-R	each	-24	20MOLS	$977.00	($23,448)	98%	($22,979)	-$469
	Arbitration Reconciliation for 2020 Work Plan	each	-34	20MOLS	$977.00	($33,218)	98%	($32,554)	-$664
	2020Arbitration Outcome	each	297	20MOLS	$977.00	$290,169	98%	$284,366	$5,803
Medium Mobile Equipment	2020 Revised Workplan	each	77	20MOMS	$1,528.00	$117,656	98%	$115,303	$2,353
	2020-R	each	0	20MOLS	$977.00	$0	98%	$0	$0
	2020Arbitration Outcome	each	326	20MOMS	$1,528.00	$498,128	98%	$488,165	$9,963
	Arbitration Reconciliation for 2020 Work Plan	each	-61	20MOLS	$977.00	($59,597)	98%	($58,405)	-$1,192
Heavy Mobile Equipment	2020 Revised Workplan	each	41	20MOHS	$2,506.00	$102,746	98%	$100,691	2054.92
	2020-R	each	-17	20MOLS	$977.00	($16,609)	98%	($16,277)	-$332
	2020Arbitration Outcome	each	312	20MOHS	$2,506.00	$781,872	98%	$766,235	$15,637
	Arbitration Reconciliation for 2020 Work Plan	each	-49	20MOLS	$977.00	($47,873)	98%	($46,916)	-$957
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	2020 Revised Workplan	each	-12	20LMES	$1,829.00	($21,948)	98%	($21,509)	-$439
	2020Arbitration Outcome	each	220	20LMES	$1,829.00	$402,380	98%	$394,332	$8,048
	2020-R	each	-22	20LMES	$1,829.00	($40,238)	98%	($39,433)	-804.76
Medium mechanical equipment - Decontaminate and dispose on-site	2020Arbitration Outcome	each	183	20MMES	$4,002.00	$732,366	98%	$717,719	$14,647
	2020 Revised Workplan	each	9	20MMES	$4,002.00	$36,018	100%	$36,018	$0
Heavy mechanical equipment - Decontaminate and dispose on-site	2020-R	each	-2	20MEHS	$38,025.00	($76,050)	100%	($76,050)	$0
	2020 Revised Workplan	each	5	20MEHS	$38,025.00	$190,125	100%	$190,125	$0
	2020Arbitration Outcome	each	74	20MEHS	$38,025.00	$2,813,850	98%	$2,757,573	$56,277
					Total	$5,666,846		$5,556,511	$110,335
					% of Total			98%	2%

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	$42.15	$786,645	100%	$786,645	$0
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	$786,645		$786,645	$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						
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	$5.28	$262,079
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	$60.35	$1,184,248
GROUNDWATER COLLECTION SYSTEM						
CONSTRUCT CONTAMINATED WATER STORAGE POND						
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
CONSTRUCT WATER TREATMENT PLANT						
					Total	$1,446,327

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

1 **Interim Care and Maintenance (3 Year duration)**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker	Three caretakers for 36 months (assume 2 at 3w/1w and 1 at 2w/2w rotation). Assume 72 days of travel for each caretaker over 60 months. 10-hr days.	hr	20880	20BLS	$90.00	$1,879,200
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	$90.00	$756,000
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	20NWSS	$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	20SWSS	$85.45	$50,245
Camp accomodations- stabilization period	15 workers for 56 days	person-days	840	20WACSS	$225.00	$189,000
Camp accomodations for caretakers	36 month duration full time	person-days	3,240	20WACSS	$225.00	$729,000
Equipment - site stabilizaiton	Assume 1 dozer, 56 days, 10 hr/day	hr	560	20BES	$125.00	$70,000
misc. supplies		allow		accmh	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
					60 Month Interim C&M Cost	$3,862,345
Number of years of ICM		years	3		**Total**	$3,862,345

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 (7 sampling events over a 15 year period)			7	Sampling Events		
Present Value of payment stream						$4,366,250

*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							
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	EBS	$25,185,000	$25,185,000	$15,592,000
	Phase 2 Equipment Demobilization						
	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	Sea Containers	LS	1		714000	$714,000	
	2020 Revised Workplan	LS	1	EBS	86000	$86,000	
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		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		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	Demobilzation Calcium Chloride	Ea	1	EBS	3668000	$3,668,000	
Mobile Light Equipment	2020 Revised Workplan: -Frost Fighter Heater	Ea	-6	20MOLS	977.00	($5,862)	
3rd Party Heavy Mobile Equiment	2020 Arbitration Outcome	each	188		15964.53	$3,001,332	
3rd Party Medium Mobile Equiment	2020 Arbitration Outcome	each	156		8202.67	$1,279,617	
3rd Party Light Mobile Equiment	2020 Arbitration Outcome	each	183		2785.99	$509,836	
Demobilization of 3rd Party Equipment	2020 Arbitration Outcome	LS	1	EBS	62000.00	$62,000	
MOBILIZE CAMP F							
Mobilization of Workers Required for Reclamation	2020 Revised Workplan	LS	1	EBS	42000	$42,000	
	2020 Arbitration Outcome	LS	1	EBS	28000	$28,000	
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	20SWS	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	
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		90	$712,890	
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		90	$50,310	
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		90	$18,630	
WORKER ACCOMODATIONS							
	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	2020 Revised Workplan	LS	1	EBS	115000	$115,000	
	2020 Arbitration Outcome	LS	1	EBS	76000	$76,000	
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					
MOBILIZE FUEL							
Fuel Required for Reclamation	2020 Arbitration Outcome	litre	6,172,000	20MF1S	0.4	$2,468,800	
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	
DEMOBILIZE FUEL							
Demobilization of Existing Fuel	2020 Arbitration Outcome	litre	48,500,000	20MF1S	0.1	$4,850,000	
					Total	**$60,297,213**	

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 $
SLI Evaluated Unit Rate ($/unit) (2019)						
	Grade and Contour	20GC	m2			$1.68
	Grade and Contour With Liner	20GCL	m2			$5.28
	Grade and Contour Disturbed Area	20GCD	m2			
	Fill Application	20PF	m2			$42.15
Cost for On-Site Disposal of Equipment:						
	Light Mobile Equipment	20MOL	Ea			977.0
	Medium Mobile Equipment	20MOM	Ea			1,528.0
	Heavy Mobile Equipment	20MOH	Ea			2,506.0
	Other mobile equipment (reclaim conveyor)	20MOR	Ea			
	Light mechanical equipment - Decor	20LME	Ea			1,829.0
	Medium mechanical equipment - De	20MME	Ea			4,002.0
	Heavy mechanical equipment - Dec	20MEH	Ea			38,025.0
	Light Tanks	20TL	Ea			2,017.0
	Medium Tanks	20MT	Ea			6,851.0
	Light Diesel Tanks	20LiDT	Ea			3,425.0
	Medium Diesel Tanks	20MDT	Ea			14,914.0
	Large Diesel Tanks	20LDT	Ea			97,559.0
	Largest Diesel Tanks	20XLDT	Ea			157,480.0
	Misc Items (Minor)	20MEI	Ea			
	Fuel tanks - Medium Mobile Diesel T	20MMFT	Ea			$8,381.30
Removal of Contaminated Buildings						
	fold away	20RCBF	m2			$131.00
	ISO Shipping Container	20RCBI	m2			$131.00
	modular	20RCBM	m2			$131.00
	soft walled	20RCBS	m2			$136.00
		20RCBT	m2			
Removal of Buildings						
	fold away	20RBF	m2			$37.88
	modular	20RBM	m2			$54.11
	ISO Shipping Container	20RBI	m2			$27.06
	soft walled	20RBS	m2			$43.29
	water and wastewater treatment faci	20WWT	Ea			
Foundations						
	Precast concrete	20FC	m2			$35.06
	Slab on grade	20FS	m2			$34.98
	Timber cribbing	20TC	m2			$18.94
Reclaim roads						
	Remove bridges	20BR	Ea			$183,924.00
Specialized Items						
	Power distribution - electrical cable	20EC	m			24.1
	Electrical Cable	20EC	m			24.1
	Incinerator	20FI	Ea			9,448.0
	Potable Water	20PW	Ea			9,448.0
Blended Labour and Equip Rates (2018)						
	Blended labour rate	20BL	hr			$90.00
	Blended equipment rate	20BE	hr			$125.00
		20NWS	hr			$75.00
		20SWS	hr			$85.45
		20WACS	person-days			$225.00
Water management						
	Remove pipes	20RP	m			$60.35

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

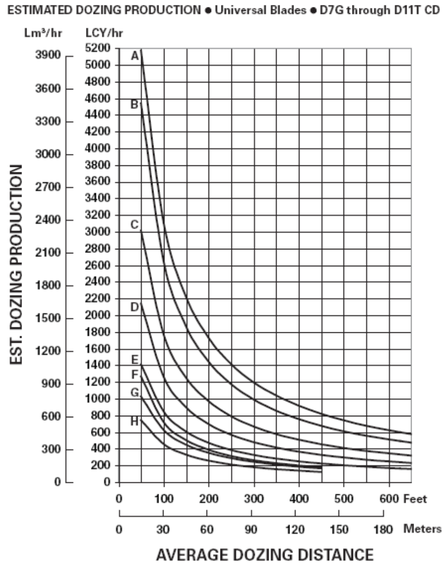
Productivity		
Machine Cat 770		
truck capacity	25.1	m3
fill factor	80%	%
load time	6.0	min.
haul distance	1.5	km
average velocity	20.0	km/hr
haul time + return time	9.0	min.
wait time	0.5	min.
dump time	1.0	min.
cycle time	16.5	min.
machine availability	83%	%
altitude adjustment	100%	%
	13.7	ıve. min/cycle
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 equivalent from other supplier	600	m3/hr
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

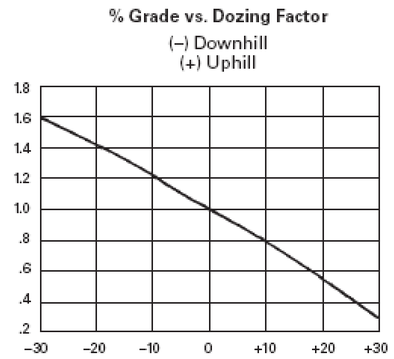
	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

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 50-75% of straight blade production.



Description	Unit	2014 Unit Rate ($/unit)	2018 Unit Rate ($/unit)	2020 Unit Rate ($/unit)		Dec-20 SLI Suggested Unit Rate ($/unit)
					33%	
Fill Application	m2	44.37	38.83	38.83	14%	44.37
Grade & Re-Contour	m2	1.81	1.49	1.49	21%	1.81
Grade & Re-Contour Significant Disturbed Areas	m2	5.31	4.99	4.12	6%	5.31
Culvert Removal	Ea	1,094.48	1,094.48		0%	1,094.48
Liner Removal	m2	3.50	3.50		0%	3.50
Open Pit Stabilization	Ea	6.22	5.49		13%	6.22
Light Mechanical Equipment	Ea	1,980.80	1,707.45	1,583.75	16%	1,980.80
Medium Mechanical Equipment	Ea	4,261.34	3,714.64	3,392.50	15%	4,261.34
Heavy Mechanical Equipment	Ea	41,205.45	35,507.45	32,950.00	16%	41,205.45
Light Mobile Equipment	Ea	941.09	876.92	729.17	7%	941.09
Medium Mobile Equipment	Ea	1,494.13	1,378.63	1,162.50	8%	1,494.13
Heavy Mobile Equipment	Ea	2,618.87	2,310.87	2,075.00	13%	2,618.87
Light Tanks	Ea	2,148.33	1,872.41	1,710.42	15%	2,148.33
Medium Tanks	Ea	7,387.31	6,386.31		16%	7,387.31
Light Diesel Tanks	Ea	3,693.66	3,193.16	2,950.00	16%	3,693.66
Medium Mobile Diesel Tanks	Ea	10,481.05	9,031.52		16%	10,481.05
Medium Diesel Tanks	Ea	16,166.40	13,928.01		16%	16,166.40
Large Diesel Tanks	Ea	106,338.74	91,285.24		16%	106,338.74
Largest Diesel Tanks	Ea	171,468.15	147,297.85	137,277.50	16%	171,468.15
Modular Building Not Contaminated	m2	59.38	50.75	47.64	17%	59.38
Modular Building Contaminated	m2	143.42	123.02	114.89	17%	143.42
Fold Away Building Not Contaminated	m2	41.57	35.53	33.34	17%	41.57
Fold Away Building Contaminated	m2	142.41	122.25	114.04	16%	142.41
Soft Walled Building (tent) Not Contaminated	m2	47.51	40.60		17%	47.51
Soft Walled Building (tent) Contaminated	m2	148.35	127.32		17%	148.35
ISO Container	m2	29.69	25.38		17%	29.69
Timber Cribbing	m2	20.78	17.76		17%	20.78
Precast Concrete Foundations	m2	38.47	32.88	30.86	17%	38.47
Slab on Grade	m2	33.11	33.11	30.00	0%	33.11
Bridge Removal	Lot	201,838.77	172,505.43		17%	201,838.77
Incinerator	Ea	9,975.93	8,743.93	7,925.00	14%	9,975.93
Potable Water	Ea	9,975.93	8,743.93	7,925.00	14%	9,975.93
Sewage Treatment Plant	Ea	11,035.58	9,649.58		14%	11,035.58
Ship Loader	Lot	3,827,468.53	3,271,220.53		17%	3,827,468.53
Waste Rock Facility Water Treatment Plan	Lot	77,500.00	67,350.00		15%	77,500.00
Reclaim Conveyor	Lot	1,329,441.31	1,136,232.91		17%	1,329,441.31
Piping	m	66.23	56.60	53.13	17%	66.23
Cabling	m	26.49	22.64	21.25	17%	26.49
Miscellaneous Items (Major)	Ea	529.83	452.83		17%	529.83
Removal of Airstrip Lighting	m	26.49	22.64		17%	26.49

Feb-20 SLI Evaluated Unit Rate ($/unit)	2018 Unit Rate ($/unit)	SLI Suggested Unit Rate ($/unit)
42.15	38.83	9%
5.28	4.99	6%
5.28	4.99	6%
1,184.00	1,094.48	8%
3.73	3.50	7%
5.93	5.49	8%
1,829.00	1,707.45	7%
4,002.00	3,714.64	8%
38,025.00	35,507.45	7%
977.00	876.92	11%
1,528.00	1,378.63	11%
2,506.00	2,310.87	8%
2,017.00	1,872.41	8%
6,851.00	6,386.31	7%
3,425.00	3,193.16	7%
9,794.00	9,031.52	8%
14,914.00	13,928.01	7%
97,559.00	91,285.24	7%
157,480.00	147,297.85	7%
54.11	50.75	7%
131.00	123.02	6%
37.88	35.53	7%
131.00	122.25	7%
43.29	40.60	7%
136.00	127.32	7%
27.06	25.38	7%
18.94	17.76	7%
35.06	32.88	7%
34.98	33.11	6%
183,924.00	172,505.43	7%
9,448.00	8,743.93	8%
9,448.00	8,743.93	8%
10,414.00	9,649.58	8%
3,632,108.00	3,271,220.53	11%
72,422.00	67,350.00	8%
1,211,444.00	1,136,232.91	7%
60.35	56.60	7%
24.14	22.64	7%
483.00	452.83	7%
24.14	22.64	7%

Unit Rates	Unit	2014 $ 100.00 Labour Unit Rate	2014 $ 150.00 Equip Unit Rate	2014 Total Unit Cost	2014 Variance (Fuel / other misc. adder)	2014 Variance % (of Equip)	2014 to 2018 rate discrepancy
Fill Application	m2	22.15	22.21	44.37	0.01	0%	-
Grade & Re-Contour	m2	1.27	0.40	1.81	0.14	35%	-
Grade & Re-Contour Significant Disturbed	m2	1.90	0.59	2.72	0.23	39%	- 2.59
Culvert Removal	Ea	599	450	1,094	45	10%	-
Liner Removal	m2	1.54	0.15	1.69	-	0%	- 1.81
Open Pit Stabilization	Ea	2.93	3.29	6.22	-	0%	-
Light Mechanical Equipment	Ea	809	1,065	1,981	107	10%	-
Medium Mechanical Equipment	Ea	1,918	2,130	4,261	213	10%	-
Heavy Mechanical Equipment	Ea	16,785	22,200	41,205	2,220	10%	-
Light Mobile Equipment	Ea	666	250	941	25	10%	-
Medium Mobile Equipment	Ea	999	450	1,494	45	10%	-
Heavy Mobile Equipment	Ea	1,299	1,200	2,619	120	10%	-
Light Tanks	Ea	966	1,075	2,148	108	10%	-
Medium Tanks	Ea	3,097	3,900	7,387	390	10%	-
Light Diesel Tanks	Ea	1,549	1,950	3,694	195	10%	-
Medium Diesel Tanks	Ea					#DIV/0!	- 10,481.05
Medium Diesel Tanks	Ea	6,573	8,721	16,166	872	10%	-
Large Diesel Tanks	Ea	41,824	58,650	106,339	5,865	10%	-
Largest Diesel Tanks	Ea	67,881	94,170	171,468	9,417	10%	-
Modular Building Not Contaminated	m2	22.40	33.63	59.38	3.35	10%	-
Modular Building Contaminated	m2	56	84	143	3	4%	-
Fold Away Building Not Contaminated	m2	15.68	23.54	41.57	2.35	10%	-
Fold Away Building Contaminated	m2	56	84	142	2	3%	-
Soft Walled Building (tent) Not Contaminate	m2	17.92	26.90	47.51	2.69	10%	-
Soft Walled Building (tent) Contaminated	m2	58	87	148	3	3%	-
ISO Container	m2	11.20	16.81	29.69	1.68	10%	-
Timber Cribbing	m2	7.84	11.77	20.78	1.17	10%	-
Precast Concrete Foundations	m2	14.51	21.78	38.47	2.18	10%	-
Slab on Grade	m2	12.49	18.75	33.11	1.87	10%	-
Bridge Removal	Lot	76,124	114,286	201,839	11,429	10%	-
Incinerator	Ea	4,696	4,800	9,976	480	10%	-
Potable Water	Ea	4,696	4,800	9,976	480	10%	-
Sewage Treatment Plant	Ea	5,096	5,400	11,036	540	10%	-
Ship Loader	Lot	2,405,914	3,612,000	3,827,468	- 2,190,446	-61%	- 0.53
Waste Rock Facility Water Treatment Plan	Lot				-	#DIV/0!	- 77,500.00
Reclaim Conveyor	Lot	501,405	752,760	1,329,441	75,276	10%	-
Piping	m	24.98	37.50	66.23	3.75	10%	-
Cabling	m	9.99	15.00	26.49	1.50	10%	-
Miscellaneous Items (Minor)	Ea	200	300	530	30	10%	-
Removal of Airstrip Lighting	m	9.99	15.00	26.49	1.50	10%	-

Hrs derived from 2014 Basis Unit Lab Hrs	Unit Equip Hrs
0.222	0.148
0.013	0.003
0.019	0.004
5.995	3.000
0.015	0.001
0.029	0.022
0.093	7.100
19.183	14.200
167.855	148.000
6.661	1.667
9.991	3.000
12.989	8.000
9.668	7.167
30.973	26.000
15.487	13.000
-	-
65.733	58.140
418.237	391.000
678.812	627.800
0.224	0.224
0.560	0.560
0.157	0.157
0.560	0.560
0.179	0.179
0.582	0.583
0.112	0.112
0.078	0.078
0.145	0.145
0.125	0.125
761.245	761.905
46.959	32.000
46.959	32.000
50.956	36.000
24,059.142	24,080.000
-	-
5,014.053	5,018.400
0.250	0.250
0.100	0.100
1.998	2.000
0.100	0.100

2018 Unit Rate Check $ 75.00 Labour Unit Rate	$ 125.00 Equip Unit Rate	Total Unit Cost	Variance (Fuel / other misc. adder)	Variance % (of Equip)
16.61	18.51	38.83	3.71	20%
0.95	0.33	1.49	0.20	61%
1.43	0.49	4.99	3.07	625%
449.61	375.00	1,094.48	269.87	72%
1.16	0.13	3.50	2.22	1776%
2.20	2.74	5.49	0.55	20%
606.98	887.50	1,707.45	212.98	24%
1,438.76	1,775.00	3,714.64	500.89	28%
12,589.09	18,500.00	35,507.45	4,418.36	24%
499.57	208.33	876.92	169.02	81%
749.35	375.00	1,378.63	254.28	68%
974.15	1,000.00	2,310.87	336.72	34%
724.37	895.83	1,872.41	252.20	28%
2,322.98	3,250.00	6,386.31	813.33	25%
1,161.50	1,625.00	3,193.16	406.67	25%
-	-	9,031.52	9,031.52	#DIV/0!
4,929.98	7,267.50	13,928.01	1,730.54	24%
31,367.81	48,875.00	91,285.24	11,042.44	23%
50,910.86	78,475.00	147,297.85	17,911.99	23%
16.80	28.03	50.75	5.93	21%
41.99	70.05	123.02	10.98	16%
11.76	19.62	35.53	4.15	21%
41.99	70.05	122.25	10.21	15%
13.44	22.42	40.60	4.74	21%
43.67	72.86	127.32	10.79	15%
8.40	14.01	25.38	2.97	21%
5.88	9.81	17.76	2.07	21%
10.88	18.15	32.88	3.85	21%
9.37	15.63	33.11	8.12	52%
3,521.95	4,000.00	8,743.93	1,221.98	31%
3,521.95	4,000.00	8,743.93	1,221.98	31%
3,821.69	4,500.00	9,649.58	1,327.90	30%
1,804,435.66	3,010,000.00	3,271,220.53	- 1,543,215.13	-51%
-	-	67,350.00	67,350.00	#DIV/0!
376,053.98	627,300.00	1,136,232.91	132,878.93	21%
18.74	31.25	56.60	6.62	21%
7.49	12.50	22.64	2.65	21%
149.87	250.00	452.83	52.96	21%
7.49	12.50	22.64	2.65	21%

SLI 2020 90.00 Unit Lab Rate	125.00 Unit Equip Rate	Equip Adder	Unit Rate 2020	SLI vs. 2014 Unit Rate	SLI vs. 2018 Unit Rate
19.94	18.51	3.71	42.15	95%	109%
1.14	0.33	0.20	1.68	93%	113%
1.71	0.49	3.07	5.28	194%	106%
539.53	375.00	269.87	1,184.40	108%	108%
1.39	0.13	2.22	3.73	221%	107%
2.64	2.74	0.55	5.93	95%	108%
728.37	887.50	212.98	1,828.85	92%	107%
1,726.51	1,775.00	500.89	4,002.39	94%	108%
15,106.91	18,500.00	4,418.36	38,025.27	92%	107%
599.48	208.33	169.02	976.83	104%	111%
899.22	375.00	254.28	1,528.50	102%	111%
1,168.98	1,000.00	336.72	2,505.70	96%	108%
869.25	895.83	252.20	2,017.28	94%	108%
2,787.58	3,250.00	813.33	6,850.91	93%	107%
1,393.79	1,625.00	406.67	3,425.46	93%	107%
		9,031.52	9,794.33	93%	108%
5,915.97	7,267.50	1,730.54	14,914.01	92%	107%
37,641.37	48,875.00	11,042.44	97,558.80	92%	107%
61,093.04	78,475.00	17,911.99	157,480.02	92%	107%
20.16	28.03	5.93	54.11	91%	107%
50.39	70.05	10.98	131.42	92%	107%
14.11	19.62	4.15	37.88	91%	107%
50.39	70.05	10.21	130.65	92%	107%
16.13	22.42	4.74	43.29	91%	107%
52.41	72.86	10.79	136.05	92%	107%
10.08	14.01	2.97	27.06	91%	107%
7.06	9.81	2.07	18.94	91%	107%
13.06	18.15	3.85	35.06	91%	107%
11.24	15.63	8.12	34.98	106%	106%
68,512.03	95,238.09	20,173.98	183,924.10	91%	107%
4,226.34	4,000.00	1,221.98	9,448.32	95%	108%
4,226.34	4,000.00	1,221.98	9,448.32	95%	108%
4,586.02	4,500.00	1,327.90	10,413.92	94%	108%
2,165,322.79	3,010,000.00	- 1,543,215.13	3,632,107.66	95%	111%
-	-	67,350.00	72,422.18	93%	108%
451,264.78	627,300.00	132,878.93	1,211,443.71	91%	107%
22.48	31.25	6.62	60.35	91%	107%
8.99	12.50	2.65	24.14	91%	107%
179.85	250.00	52.96	482.80	91%	107%
8.99	12.50	2.65	24.14	91%	107%

For Equipment Assessment	Equip to Lab unit Hrs	Approx Eq $ less mob & fule	
FALSE	67%	70.00	104.72
FALSE	21%	70.00	333.38
FALSE	21%	70.00	338.14
FALSE	50%	70.00	139.88
FALSE	6%	70.00	1,078.00
FALSE	75%	70.00	93.51
FALSE	88%	70.00	79.79
FALSE	74%	70.00	94.57
FALSE	88%	70.00	79.39
FALSE	25%	70.00	279.76
FALSE	30%	70.00	233.13
FALSE	62%	70.00	113.65
FALSE	74%	70.00	94.34
FALSE	84%	70.00	83.39
FALSE	84%	70.00	83.39
TRUE	#DIV/0!	70.00	#DIV/0!
FALSE	88%	70.00	79.14
FALSE	93%	70.00	74.88
FALSE	92%	70.00	75.69
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.95
FALSE	100%	70.00	69.93
FALSE	100%	70.00	69.96
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.95
FALSE	100%	70.00	69.94
FALSE	100%	70.00	69.94
FALSE	68%	70.00	102.72
FALSE	68%	70.00	102.72
FALSE	71%	70.00	99.08
FALSE	100%	70.00	69.94
TRUE	#DIV/0!	70.00	#DIV/0!
FALSE	100%	70.00	69.94
FALSE	100%	20.00	19.98
FALSE	100%	10.00	9.99
FALSE	100%	15.00	14.99
FALSE	100%	15.00	14.99

** Blanks not identified in 2020 Baffinland EBS

APPENDIX B

SNC-Lavalin 2021 Marginal Estimate RECLAIM MODEL

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

CAPITAL COSTS	COMPONENT NAME	COST SNC Rates 2019 Rates	LAND LIABILITY	WATER LIABILITY	IOL	LIABILITY	CROWN LIABILITY
OPEN PIT	Mary River Mine Pit	$0	$0	$0		$0	$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	($1,242,288)	($1,242,830)	$541		($1,242,288)	$0
	Milne Port	$4,429,396	$4,387,446	$41,950		$4,842,597	($413,201)
	Tote Road	($2,326,878)	($2,326,878)	$0		($2,930,304)	$603,426
	BIMC Owned	$263,103	$257,841	$3,783		$263,103	$0
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$49,000	$49,000	$0		$49,000	$0
SURFACE AND GROUNDWATER MANAGEMENT		$0	-	$0		$0	$0
INTERIM CARE AND MAINTENANCE		$0	-	$0		$0	$0
	SUBTOTAL: Capital Costs	**$1,172,333**	**$1,124,580**	**$46,275**		**$982,108**	**$190,225**
	PERCENT OF SUBTOTAL		**95.9%**	**3.9%**		**108.47%**	**22.11%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY	IOL	LIABILITY	CROWN LIABILITY
MOBILIZATION/DEMOBILIZATION		$22,563	$21,644	$891		$22,563	$0
POST-CLOSURE MONITORING AND MAINTENANCE		$0	$0	$0		$0	$0
ENGINEERING	3.9%	$45,721	$43,859	$1,805		$35,611	$10,110
PROJECT MANAGEMENT	9.4%	$110,199	$105,710	$4,350		$85,831	$24,369
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	0%	$0	$0	$0		$0	$0
BONDING/INSURANCE	2%	$23,447	$22,492	$925		$18,262	$5,185
CONTINGENCY	20.0%	$234,467	$224,916	$9,255		$182,618	$51,848
MARKET PRICE FACTOR ADJUSTMENT / INFLATION	0.61%	$9,733	$9,336	$384		$0	$0
	SUBTOTAL: Indirect Costs	**$446,129**	**$427,957**	**$17,610**		**$344,884**	**$91,512**
TOTAL COSTS		**$1,618,462**	**$1,552,536**	**$63,884**		**$1,326,993**	**$281,737**

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)								
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				
Number of years of pump flooding		years						
				Total pumping costs		100%	$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									
Fuel	2021 Workplan	LS	1		$49,000.00	$49,000	100%	$49,000	$0
					Total	$49,000		$49,000	$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									
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	2021 Workplan: - Quonset hut structure at the Aerodrome - New offices/trailers at the OHT Laydown	m2	500	20RBMS	$54.11	$27,055	98%	$26,514	$541
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Modular Building Contaminated	2021 Workplan: - Washcar - Seacan tent structure at the aerodrome for freight and equipment sorting	m2	1163	20RCBMS	$131.00	$152,312	100%	$152,312	$0
Fold Away Building Contaminated	2021 Workplan: - Heated Maintenance shops (2) for pit equipment at KM110.5 laydown	m2	180	20RCBFS	$131.00	$23,580	100%	$23,580	$0
BREAK FOUNDATIONS									
	2021 Workplan: - Concrete pad apron for exterior of HD Shop - Concrete Pad for tire maintenance and welding shop at 110 Laydown	m2	1620	20FSS	$34.98	$56,668	100%	$56,668	$0
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and contour laydown areas	2021 Workplan - Mine Site workshops & and crushing area expansion - MSC laydown expansion - Laydown areas road aggregate storage (Km 106, 107 & 108) - Explosives plant secondary storage - Waste Rock Facility - Expansion	m2	338680	20GCS	$1.68	$568,982	100%	$568,982	$0
Grade and Re-Contour Reconciliation **(on IOL)**	2020-R: - Actual Disturbed Area Reconciliation - 2020 Satellite Image - Proposed Disturbed Area - 2021 Work Plan and Prior - Reconciled EBS Input 2014-2021	m2	-1160363	20GCS	$1.68	($1,949,410)	100%	($1,949,410)	$0
Grade and Re-Contour Reconciliation **(on Crown Land)**	2020-R: - Reconciled EBS Input 2014-2021 - Actual Disturbed Area - 2020 Satellite Image - Proposed Disturbed Area - 2021 Work Plan and Prior		0	20GCS	$1.68	$0	100%	$0	$0
Fill application		m2	431	20PFS	$42.15	$18,167	100%	$18,167	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Grade and Re-Contour with Liner Reconciliation **(on IOL**	2020-R: - Actual Lined Disturbed Area - 2020 Satellite Image - Proposed Lined Disturbed Area - 2021 Work Plan and Prior - Reconciled EBS Input 2014-2021 - Lined	m2	-30105	20GCLS	$5.28	($158,954)	100%	($158,954)	$0
LANDFILL FOR DEMOLITION WASTE									
SPECIALIZED ITEMS									
Electrical Cable	2021 Workplan: - Power Distribution System - Electrical Cable Installation - Mary River Powerhouse to Dyno Nobel explosives facility (500 m), and Mary River E-House 3 to KM 104 laydown (300 m)	m	800	20ECS	$24.14	$19,312	100%	$19,312	$0
					Total	($1,242,288)		($1,242,830)	$541
					% 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									
Modular	2021 Workplan: - Quonset hut structure at Milne Port Firehall	m2	100	20RBMS	$54.11	$5,411	90%	$4,870	$541
REMOVE CONTAMINATED BUILDINGS - Unit Costs include disassembling, removing or securing all items, decontamination and load and transport									
Fold Away Building	2021 Workplan: - Fold Away Building Contaminated (480 ft2)	m2	1250	20RCBFS	$131.00	$163,750	90%	$147,375	$16,375
Modular	2021 Workplan: - Washcar for Ore Pad - New warehouse (seacan tent) on laydown LP2 - Parts/staging area (seacan tent structure) - Offices /workshops at the stockpile and shiploader	m2	1911	20RCBMS	$131.00	$250,341	90%	$225,307	$25,034
BREAK FOUNDATIONS									
GRADE AND CONTOUR, GENERAL - Unit costs are inclusive of backfill, compaction and sacrfication with a dozer									
Grade and Re-Contour Reconciliation **(on IOL)**	2021-R - Actual Disturbed Area - 2020 Satellite Image - Proposed Disturbed Area - 2021 Work Plan and Prior - Reconciled EBS Input 2014-2021	m2	2454393	20GCS	$1.68	$4,123,380	100%	$4,123,380	$0
Grade and Re-Contour Reconciliation **(on Crown Land)**	2021-R - Reconciled EBS Input 2014-2021 - Actual Disturbed Area - 2020 Satellite Image - Proposed Disturbed Area - 2021 Work Plan and Prior		-245953	20GCS	$1.68	($413,201)	100%	($413,201)	$0
Fill application		m2	431	20PFS	$42.15	$18,167	100%	$18,167	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Grade and Re-Contour with Liner Reconciliation **(on IOL**	2021-R: - Actual Lined Disturbed Area - 2020 Satellite Image - Proposed Lined Disturbed Area - 2021 Plan & Prior - Reconciled EBS Input 2014-2021 - Lined	m2	51077	20GCLS	$5.28	$269,687	100%	$269,687	$0
LANDFILL FOR DEMOLITION WASTE SPECIALIZED ITEMS									
Potable Water	2021 Workplan: - Desalination Plant	each	1	20PWS	$9,448.00	$9,448	100%	$9,448	$0
Electrical Cable	2021 Workplan: - Power Distribution System - Electrical Cable Installation - Milne Port 'Steensby Camp' power line (100 m)	m	100	20ECS	$24.14	$2,414	100%	$2,414	$0
					Total	$4,429,396		$4,387,446	$41,950
					% of Total			99%	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									
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 Re-Contour Reconciliation **(on IOL)**	2021-R: - Actual Disturbed Area - 2020 Satellite Image - Proposed Disturbed Area - 2021 Plan & Prior - Reconciled EBS Input 2014-2021	m2	-1410503	20GCS	$1.68	($2,369,645)	100%	($2,369,645)	$0
Grade and Re-Contour Reconciliation **(on Crown Land)**	2021-R: - Reconciled EBS Input 2014-2021 - Actual Disturbed Area - 2020 Satellite Image - Proposed Disturbed Area - 2021 Plan and Prior		359182	20GCS	$1.68	$603,426	100%	$603,426	$0
Fill application		m2	431	20PFS	$42.15	$18,167	100%	$18,167	$0
GRADE AND CONTOUR, WITH LINER - Unit costs include liner removal and disposal, backfill, compaction and sacrfication with a dozer									
Grade and Re-Contour with Liner Reconciliation **(on IOL)**	2021-R: - Actual Lined Disturbed Area - 2020 Satellite Image - Proposed Lined Disturbed Area - 2021 Plan & Prior - Reconciled EBS Input 2014-2021 - Lined	m2	-109626	20GCLS	$5.28	($578,825)	100%	($578,825)	$0
LANDFILL FOR DEMOLITION WASTE									
RECLAIM ROADS									
SPECIALIZED ITEMS									
					Total	($2,326,878)		($2,326,878)	$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	2021 Workplan	each	24	20MOLS	$977.00	$23,448	98%	$22,979	$469
	2021-R	each	-7	20MOLS	$977.00	($6,839)	98%	($6,702)	-$137
Medium Mobile Equipment	2021 Workplan	each	21	20MOMS	$1,528.00	$32,088	98%	$31,446	$642
	2021-R	each	-13	20MOMS	$1,528.00	($19,864)	98%	($19,467)	-$397
Heavy Mobile Equipment	2021 Workplan	each	28	20MOHS	$2,506.00	$70,168	98%	$68,765	$1,403
	2021-R	each	-10	20MOHS	$2,506.00	($25,060)	98%	($24,559)	-$501
DISPOSE MECHANICAL EQUIPMENT - Unit Costs includes disassembly and decontamination required for on-site disposal, load and transport to landfill									
Light Equipment - Decontaminate and dispose on-site	2021 Workplan: - Water Jet - Ceramic Cutting	each	1	20LMES	$1,829.00	$1,829	98%	$1,792	$37
	2021-R: - Light Plants	each	-7	20LMES	$1,829.00	($12,803)	98%	($12,547)	-$256
Medium Equipment - Decontaminate and dispose on-site	2021 Workplan: - 1500 kW Alternators	each	2	20MMES	$4,002.00	$8,004	98%	$7,844	$160
	2021-R	each	-9	20MMES	$4,002.00	($36,018)	98%	($35,298)	-$720
Heavy Equipment - Decontaminate and dispose on-site	2021-R	each	6	20MEHS	$38,025.00	$228,150	98%	$223,587	$4,563
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									
SPECIALIZED ITEMS									
					Total	$263,103		$257,841	$3,783
					% of Total			98%	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						
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						
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						
Mobilization and Demobilization of Equipment and Materials by Sealift	2021 Workplan	LS	1		103000	$103,000
MOBILIZE CAMP MOBILIZE WORKERS						
Mobilization of Workers Required for Reclamation	2020 Workplan	LS	1		40000	$40,000
WORKER ACCOMODATIONS						
Worker Accommodation & Camp Operation	2021 Workplan	LS	1		110000	$110,000
MOBILIZE FUEL WINTER ROAD DEMOBILIZE EQUIPMENT (includes disassembly, demob as well as worker accommodations and mob/demob)						
Mobile and Demobilization Heavy Equipment	2021-R: Heavy 3rd Party Equipment Demob	ea	-6	EBS	$15,964.53	($95,787)
Mobile and Demobilization Medium Equipment	2020 Workplan	ea	5	EBS	$8,202.67	$41,013
	2021-R: Medium 3rd Party Equipment Demob	ea	-17	EBS	$8,202.67	($139,445)
Mobile and Demobilization Light Equipment	2020 Workplan	ea	13	EBS	$2,785.99	$36,218
	2021-R: Light 3rd Party Equipment Demob	ea	-26	EBS	$2,785.99	($72,436)
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	**$22,563**

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"

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

Filter by unit

ITEM	Detail	COST CODE	UNITS	LOW $	HIGH $	SPECIFIED $	COMMENTS
SLI Evaluated Unit Rate ($/unit) (2019)							
	Grade and Contour	20GC	m2			$1.68	
	Grade and Contour With Liner	20GCL	m2			$5.28	
	Fill Application	20PF	m2			$42.15	
Cost for	On-Site Disposal of Equipment:						
	Light Mobile Equipment	20MOL	Ea			977.0	
	Medium Mobile Equipment	20MOM	Ea			1,528.0	
	Heavy Mobile Equipment	20MOH	Ea			2,506.0	
	Other mobile equipment (reclaim conveyor)	20MOR	Ea				
	Light mechanical equipment - Decont	20LME	Ea			1,829.0	
	Medium mechanical equipment - Dec	20MME	Ea			4,002.0	
	Heavy mechanical equipment - Decor	20MEH	Ea			38,025.0	
	Light Tanks	20TL	Ea			2,017.0	
	Medium Tanks	20MT	Ea			6,851.0	
	Light Diesel Tanks	20LiDT	Ea			3,425.0	
	Medium Diesel Tanks	20MDT	Ea			14,914.0	
	Large Diesel Tanks	20LDT	Ea			97,559.0	
	Largest Diesel Tanks	20XLDT	Ea			157,480.0	
	Misc Items (Minor)	20MEI	Ea			425.0	
	Fuel tanks - Medium Mobile Diesel T	20MMFT	Ea			$8,381.30	
Removal of	Contaminated Buildings						
	fold away	20RCBF	m2			$131.00	
	ISO Shipping Container	20RCBI	m2			$131.00	
	modular	20RCBM	m2			$131.00	
	soft walled	20RCBS	m2			$136.00	
Removal of	Buildings						
	fold away	20RBF	m2			$37.88	
	modular	20RBM	m2			$54.11	
	ISO Shipping Container	20RBI	m2			$27.06	
	soft walled	20RBS	m2			$43.29	
	water and wastewater treatment facili	20WWT	Ea			$8,775.00	
Foundations							
	Precast concrete	20FC	m2			$35.06	
	Slab on grade	20FS	m2			$34.98	
	Timber cribbing	20TC	m2			$18.94	
Reclaim	roads						
	Remove bridges	20BR	Ea			$183,924.00	
Specialized	Items						
	Power distribution - electrical cable	20EC	m			24.1	
	Electrical Cable	20EC	m			24.1	
	Incinerator	20FI	Ea			9,448.0	
	Potable Water	20PW	Ea			9,448.0	
Blended Labour and Equip Rates (2018)							
	Blended labour rate	20BL	hr			$90.00	
	Blended equipment rate	20BE	hr			$125.00	
	Northern worker mobilization	20NWS	hr			$75.00	
	Southern worker mobilization	20SWS	hr			$85.45	
	Worker accomodation and camp ope	20WACS	person-days			$225.00	
Water	management						
	Remove pipes	20RP	m			$53.13	

Reclaim Project:

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

EXCAVATION

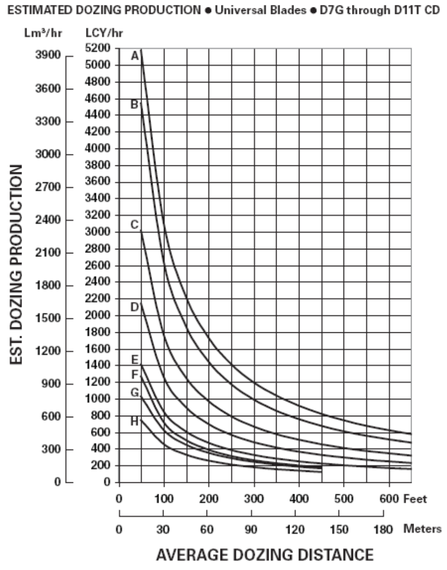
Productivity		
Machine Cat 336EL		
bucket capacity	3.16	m3
fill factor	75%	%
cycle time	45	seconds
operator skill	80%	%
machine availability	83%	%
altitude adjustment	100%	%
Hourly productivity	125.89	m3/hr
Operating Costs		
- Contractor		
Contractor hourly rate	$180.00	$/hr
Excavation cost - contractor 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	ıve. 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 equivalent from other supplier	600	m3/hr
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

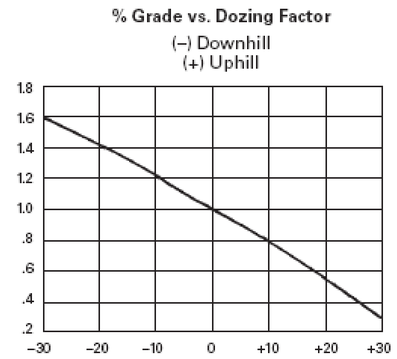
	Cat 771 D	Cat 777D	Cat 789C
Truck capacity - heaped, m3	27.5	60.5	137

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 50-75% of straight blade production.



APPENDIX D

Baffinland Iron Mines Corporation - 2021 Marginal Reclamation Security Estimate

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