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Qikiqtani Inuit Association

ᑎᑎᕆᑲᑲᔪᐃᖅ P.O. Box 1340
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Resolute Bay

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Sanikiluaq

December 20, 2018

Christopher Murray
Environmental & Regulatory Compliance Manager
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1Jo

Re: Licence No. 2AM-MRY1325 Type "A"; Mary River Project, Baffinland Iron Mines Corporation, Annual Security Review Associated with 2019 Work Plan

Pursuant to Section 9 of the Qikiqtani Inuit Association (QIA) – Baffinland Iron Mines Corporation (Baffinland) Commercial Lease Q13C301[1] dated September 6, 2013, and at the request of the Nunavut Water Board (NWB), QIA completed a review of Baffinland's 2019 Marginal Closure and Reclamation Financial Security Estimate Rev. 0 (Baffinland's Estimate), 2019 Work Plan, and Baffinland's response[2] to QIA's initial submission.[3] The QIA provides the attached report that provides QIA's written submission regarding Baffinland's Estimate, which can be summarized in the following table.

	Baffinland	QIA	Difference
2018 Security Held by QIA	$73,829,771	$73,829,771	$0
2019 Total Security Estimate	$95,480,000	$123,084,600	($27,604,600)
2019 Security Increase	$21,650,229	**$49,254,829**	**($27,604,600)**

QIA and Baffinland had preliminary discussions about presenting a joint submission on the total value of security for Inuit Owned Land to the NWB. These discussions are to be finalized when QIA staff return from holidays in January 2019. It is anticipated that a joint submission will be presented to the NWB for consideration ahead of it's January 18, 2019 ASR decision

[1] QIA and Baffinland (2013). Commercial Lease No. Q13C301. September 6, 2013.
[2] Baffinland (2018). Responses to Intervener Submissions, 2019 Work Plan Annual Security Review Mary River Project, Type A Water Licence No. 2AM-MRY1325. January 10, 2018 (submitted December 10, 2018).
[3] QIA (2018). Licence No. 2AM-MRY1325 Type "A"; Mary River Project, Baffinland Iron Mines Corporation, Annual Security Review Associated with 2019 Work Plan. December 3, 2018.

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Qikiqtani Inuit Association

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X0A 0H0

advising Baffinland and interested parties of the total financial security required to be posted prior to commencement of the 2019 Work Plan.

QIA looks forward participating in the next steps for this Annual Security Review process.

Sincerely,

Fai Ndofor
Regulatory Manager

Attachment: ARKTIS (2018). 2019 Mary River Reclamation Security Report. December 17, 2018.

2019 MARY RIVER RECLAMATION SECURITY REPORT

December 17, 2018

Nick Jewitt
ARKTIS Solutions Inc.
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Phone: 867.446.4129
Facsimile: 866.475.1147

www.arktissolutions.com

December 17, 2018

Qikiqtani Inuit Association
P.O. Box 1340
Iqaluit, NU, X0A 0H0

ATTENTION: Fai Ndofor, Regulatory Manager

RE: 2019 MARY RIVER RECLAMATION SECURITY REPORT

ARKTIS Solutions Inc. is pleased to provide the 2019 Mary River Reclamation Security Report that was completed on behalf of the Qikiqtani Inuit Association under the terms of the Commercial Lease No.: Q13C301 with Baffinland Iron Mines Corporation.

We trust that the information presented in this report satisfies the requirements of the project; however, as noted in the 2018 Environmental Audit[1] and the 2018 Draft Annual Security Review Information Request[2] additional information may reduce the use of assumptions herein. The assumptions on High Uncertainty items and action items is being updated from previous correspondence and will be provided under separate cover.[3, 4] Please do not hesitate to contact the undersigned if there are any questions or comments regarding this report.

Sincerely,

ARKTIS Solutions Inc.

Nick Jewitt, M.A.Sc.,
Environmental Specialist

[1] QIA (2018). 2018 Environmental Audit Report. November 22, 2018

[2] ARKTIS (2018). 2019 Mary River Reclamation Security Report – Draft. November 30, 2018.

[3] Baffinland (2018). 180201-Lease Security High Uncertainty Memo (BIM). February 1, 2018.

[4] ARKTIS (2018). October 17, 2018 Record of Meeting – High Uncertainty Items. November 7, 2018.

TABLE OF CONTENTS

1 Introduction 1
2 Methodology 2
2.1 Unit Rate Update 3
2.1.1 Reclaim Conveyor 7
2.1.2 Waste Rock Facility Water Treatment Plant 8
2.2 SEA CONTAINERS 8
2.3 Culverts 8
2.4 ASSESSMENT OF DISTURBED AREAS 9
2.5 Contingency 9
3 Security Reconciliation 10
3.1 UNIT RATE UPDATE 10
3.2 BUILDINGS AND FOUNDATIONS 10
3.3 Site Works 11
3.4 MECHANICAL AND MOBILE EQUIPMENT 11
4 Direct Costs Analysis 15
4.1 BUILDINGS AND FOUNDATIONS 15
4.2 MECHANICAL AND MOBILE EQUIPMENT 16
4.3 SITE WORKS 19
4.4 STORAGE TANKS 20
4.5 CULVERTS 21
4.6 FILL APPLICATION 21
4.7 CONTAMINATED SOIL REMOVAL 22
5 Indirect Costs Analysis 23
5.1 CONTAMINATED SOIL TREATMENT 23
5.2 EXPLOSIVES 23
5.3 HAZARDOUS SUBSTANCES 23
5.4 SEA CONTAINERS 24
5.5 3RD PARTY OWNED EQUIPMENT 24
5.6 WORKER MOBILIZATION AND CAMP ACCOMMODATIONS 25
5.7 FUEL 26
5.8 SHORT-TERM CARE AND MAINTENANCE, CLOSURE MONITORING AND REPORTING 26
5.9 MOBILIZATION AND DEMOBILIZATION OF EQUIPMENT AND MATERIALS 27
5.10 CONTINGENCY 28
5.11 SUPERVISION, PROJECT MANAGEMENT AND CONTRACT ADMINISTRATION 29
5.12 ENGINEERING FEES 29
6 Recommendations 30
7 Closure 31
Appendix A – Summary of Direct Cost Adjustments 32
Appendix B – Summary of Indirect Cost Adjustments 36
Appendix C – Short-Term Care and Maintenance 37
Appendix D– General Terms and Conditions 39

LIST OF TABLES

Table 2-1: Nunavut Cost Index – labour rates comparison. 4
Table 2-2: Nunavut Cost Index – equipment rates comparison. 5
Table 2-3: 2018 RS Means unit rates converted to Nunavut CDN$/hour. 6
Table 2-4: Summary of Reclaim Conveyor unit rate calculation. 7
Table 2-5: Summary of Reclaim Conveyor unit rate calculation. 8
Table 3-1: Summary of changes to global reclamation estimate based on Unit Rate Update. 10
Table 3-2 Summary of buildings and foundations reconciliation. 10
Table 3-3 Summary of grade and re-contour reconciliation. 11
Table 3-4 Summary of Mechanical and Mobile Equipment not previously allocated security reconciliation. 12
Table 3-5 Mechanical and Mobile Equipment not previously allocated security comparison, no longer on-site. 14
Table 3-6 3rd party mobile equipment Direct Cost reconciliation. 14
Table 4-1 Buildings and foundations security comparison. 15
Table 4-2 Mechanical and mobile equipment security estimate comparison. 16
Table 4-3 3rd party mobile equipment security estimate comparison. 18
Table 4-4 Site works security estimate comparison. 19
Table 4-5 Storage tanks security estimate comparison. 21
Table 4-6 Culvert security estimate comparison. 21
Table 4-7 Fill application security estimate comparison. 22
Table 4-8 Contaminated soil removal security estimate comparison. 22
Table 5-1 QIA's contaminated soil treatment security estimate. 23
Table 5-2 Demobilization of Ammonium Nitrate security estimate comparison. 23
Table 5-3 Hazardous Substances security estimate comparison. 24
Table 5-4 Sea Containers security estimate comparison. 24
Table 5-5 3rd party owned security estimate comparison. 25
Table 5-6 Worker mobilization and camp accommodations security estimate comparison. 26
Table 5-7 Fuel security estimate comparison. 26
Table 5-8 Phase 2 Expansion project equipment demobilization security estimate comparison. 28
Table 5-9 Phase 2 Expansion project equipment demobilization security. 28
Table 6-1 Summary of recommendations. 30

1 INTRODUCTION

ARKTIS Solutions Inc. (ARKTIS) submits this 2019 Mary River Security Report (Report) to the Qikiqtani Inuit Association (QIA) that summarizes Baffinland's 2019 Marginal Closure and Reclamation Financial Security Estimate Rev. 0[5] (Baffinland's Estimate) for the Mary River Project (Project) and recommendations for QIA's reclamation security. Adjustments to Baffinland's annual reclamation security, are required as per Section 9.2, Item (d), of the Lease[6] as well as by the Nunavut Water Board (NWB) for Baffinland's Type 'A' Water Licence No. 2AM-MRY1325.[7]

The structure of this Report is as follows:

Section 2.0 outlines the methodology and assumptions used in the analysis.

Section 3.0 presents the Direct Costs to be reconciled from previous work plans.

Section 4.0 presents the Direct Costs in the reclamation security estimate.

Section 5.0 presents the Indirect Costs in the reclamation security estimate.

Section 6.0 provides a summary of recommendations.

Section 7.0 provides a disclaimer and a closure of the document.

Appendix A presents a summary table of the Direct Cost line items added.

Appendix B presents a summary table of the Indirect Cost line items added.

Appendix C presents an updated security estimate table for short-term care and maintenance, closure monitoring and reporting and sample calculations.

Appendix D presents the general terms and conditions.

[5] Baffinland (2018). 2019 Marginal Closure and Reclamation Financial Security Estimate Rev. 0. November 1, 2018.

[6] QIA and Baffinland (2013). Commercial Lease No. Q13C301. September 6, 2013.

[7] NWB (2015). Type 'A' Water Licence No.: 2AM-MRY1325, Amendment No. 1. July 31, 2015.

2 METHODOLOGY

The evaluation of reclamation security for the Project continued to use the methodologies detailed in the QIA 2014 Comprehensive Security Estimate, [8] the QIA Abandonment and Reclamation Policy,[9] and generally applies the principles outlined by Indigenous and Northern Affairs Canada (INAC).[10] Any updates to the assumptions or methods are described in this section. The resultant change in reclamation security is presented in Sections 3-5. Note that security line items may have minor rounding inconsistencies due to the reclamation security model using additional digits to calculate reclamation security. ARKTIS has shown reclamation security to the $0.01 to maintain consistency with Baffinland's approach. [11]

The reclamation security estimate incorporates information from previous QIA reclamation security estimates (2014,[8] 2015,[12] 2015 Addendum[13], 2016[14], 2016 Update[15], 2017[16], 2017 Addendum[17], 2018[18], 2018 Addendum[19]), and an analysis of the changes to planned activities as listed in Baffinland's Estimate[5] and corresponding response to QIA's Submission.[11]

The reclamation security does not include activities on Crown Lands (e.g., Steensby Inlet, Ore dock), nor does it address the Type 'B' Exploration Water Licence No. 2BE-MRY1421.[20] It is ARKTIS' understanding that QIA does not evaluate liability on behalf of other landowners, nor does QIA intend to take a position on whether the amount of security held by other parties is adequate to fulfill their interests.

For 2019 activities, Baffinland's quantities for each reclamation line, except where noted, were adopted by ARKTIS as QIA is unable to complete an audit on future works. Quantity values may be reconciled in future security reports. As such, differences in Direct Costs between Baffinland and QIA are typically a result of differences in unit rates applied by each party.

[8] ARKTIS (2014). QIA 2014 Comprehensive Security Estimate. December 12, 2014.

[9] QIA (n.d.) Abandonment and Reclamation Policy for Inuit Owned Lands. V. 2.0.

[10] INAC (2002) Mine Site Reclamation Policy for Nunavut.

[11] Baffinland (2018). Responses to Intervener Submissions, 2019 Work Plan Annual Security Review Mary River Project, Type A Water Licence No. 2AM-MRY1325. January 10, 2018 (submitted December 10, 2018).

[12] ARKTIS (2014). QIA 2015 Comprehensive Security Estimate. December 5, 2014.

[13] ARKTIS (2015). QIA Revised 2015 Comprehensive Security Estimate. January 13, 2015.

[14] ARKTIS (2015). QIA 2016 Comprehensive Security Estimate. December 2, 2015.

[15] ARKTIS (2016). 2016 Comprehensive Security Estimate Update. January 8, 2016.

[16] ARKTIS (2016). QIA 2017 Comprehensive Security Estimate. December 2, 2016.

[17] ARKTIS (2017). Baffinland Iron Mines Corporation, Mary River Project, QIA 2017 Addendum Reclamation Security Update Draft. July 19, 2017.

[18] ARKTIS (2018). QIA 2018 Mary River Reclamation Security Report. February 1, 2018

[19] ARKTIS (2018). QIA 2018 Mary River Reclamation Security Report Addendum. July 18, 2018

[20] NWB (2014). Type 'B' Water Licence No.: 2BE-MRY-1421. April 17, 2014.

As directed by QIA, ARKTIS has updated the quantities for select reclamation items based on the 2018 Environment Audit[1] and subsequent meetings (e.g., High Uncertainty Meetings[4] and relevant correspondences[21]). Direction provided by QIA during these meetings is referenced throughout this Report.

2.1 Unit Rate Update

As directed by QIA,[21] ARKTIS has updated reclamation unit rates from 2014 to 2018 values. ARKTIS generally followed the same methodology used in QIA's 2014 Comprehensive Security Report for the majority of the unit rates. This being;

1. Acquiring RS Means contractor data and unit rates;
2. Converting US$/hour RS Means unit rates to Ottawa index CDN$/hour using the Ottawa City Cost Index from RS Means; and,
3. Using known contractor unit rates in Nunavut to calculate a Nunavut Cost Index to convert from Ottawa index CDN$/hour to Nunavut index CDN$/hour.

The Nunavut Cost Index was calculated by comparing contractor data to that of RS Means. A factor required to convert the RS Means data to represent Nunavut rates was calculated and termed the Nunavut Location Factor. The average of the calculated Nunavut Location Factors is the Nunavut Cost Index. The Nunavut Cost Index was then applied to all unit rates. Table 2-1 and Table 2-2 show the values used to calculate the Nunavut Cost Index for labour and equipment rates respectively.

The exception to this methodology is that where QIA had Nunavut Contractor data for RS Means equipment, the Nunavut Contractor rate was used. Additionally, it was found that the calculated unit rate for the smaller dozer and hydraulic excavator was greater than that of the Nunavut Contractor Rate for the larger piece of equipment. In this case, the Nunavut Contractor Rate was applied up to the equipment size Nunavut Contractor rate was obtained for. This application was agreed to by QIA. Table 2-3 summarizes the values used in this methodology, including the final rate per labour or equipment item. Uncertainty could be further reduced given additional Nunavut Contractor data for both labour and equipment.

Dissimilar to QIA's 2014 Comprehensive Security Report, where ARKTIS used internal procurement unit rates, the Nunavut contractor data for the 2018 update was provided by QIA. The contractor's name is withheld as directed by QIA. The unit rates provided by Baffinland and not originally calculated by ARKTIS but were previously accepted by QIA are further described in Sections 2.1.1 and 2.1.2.

[21] QIA (2018). RE: DELIVERABLE:1801016-QIA-UncertaintyItems-ENG DRAFT V1.pptx. November 15, 2018. Email from Fai Ndofor to Nick Jewitt.

Table 2-1: Nunavut Cost Index – labour rates comparison.

ITEM NAME	2018 RS Means U.S. Avg. (US$/Hour) [a]	Ottawa City Cost Index	Ottawa CDN$/Hour	Nunavut Market Rates: Equipment Fees 2016-2017 (CDN$/hr) [a]	Nunavut Reference	Nunavut Location Factor
50' Air Hoses, 3"	$5.940	1.216	$7.22	$14.00	3/4 x 50' Air Hose	1.938
Flatbed Trailer, 25 Ton	$18.288	1.216	$22.24	$ 69.00	30 Ton Lowboy	3.103
Hydraulic Excavator, 3.5 C.Y.	$301.750	1.216	$366.93	$299.00	320C & 330 Hydraulic Ex	0.815
Air Compressor, 600 cfm	$57.365	1.216	$69.76	$173.00	Air Compressor, 750 cfm	2.480
Light Equipment (Backhoe Loader, 48 H.P)	$42.960	1.216	$52.24	$196.00	Caterpillar CA305 Hydraulic Backhoe-Ripper	3.752
Dozer, 300 H.P.	$251.488	1.216	$305.81	$250.00	D8T - net power 312 hop	0.818
Tank Trailer, 5000 Gal. + Truck Tractor, 6x4, 450 H.P.	$344.705	1.216	$419.16	$334.00	Ford 8000L Water Truck	0.797
Truck Tractor, 6x4, 380 H.P.	$65.478	1.216	$79.62	$167.00	Kenworth Tractor	2.097
Medium Equipment (F.E. Loader, W.M., 1.5 C.Y)	$47.140	1.216	$57.32	$150.00	Loader John Deere 544B Loader	2.617
Dump Trailer, 20 C.Y.	$20.295	1.216	$24.68	$121.00	Raglan Tandem Axel (26 m3)	4.903
Ripper, Beam & 1 Shank	$12.073	1.216	$14.68	$58.00	ripper for 320 Excavator	3.951
					Average	**2.48**

[a] inclusive of overhead and profit

Table 2-2: Nunavut Cost Index – equipment rates comparison.

ITEM NAME	2018 RS Means U.S. Avg. (US$/Hour) [a]	Ottawa City Cost Index	Ottawa CDN$/Hour	Nunavut Market Rates: Labour Fees 2016-2017, (CDN$/hr.) [a]	Nunavut Reference	Nunavut Location Factor
Skilled Worker	$80.15	1.144	$91.69	$70.19	Labourer (skilled)	0.766
Pipe Fitter	$94.90	1.144	$108.57	$94.00	Pipe Fitter	0.866
Equip. Oper. (light)	$77.35	1.144	$88.49	$79.00	Equip. Oper. (light)	0.893
Equip. Oper. (medium)	$81.05	1.144	$92.72	$80.00	Equip. Oper. (medium)	0.863
Labourer (mid-level)	$60.70	1.144	$69.44	$64.30	Labourer (mid-level)	0.926
Equipment Operator (oiler)	$73.30	1.144	$83.86	$85.00	excavator, dozer, loader operator	1.014
Skilled Worker Foreman (outside)	$83.20	1.144	$95.18	$137.00	Skilled Worker Foreman (outside)	1.439
Labour Foreman (outside)	$63.75	1.144	$72.93	$118.00	Labour Foreman (outside)	1.618
Driller	$60.70	1.144	$69.44	$122.00	Driller & blaster	1.757
Blast Foreman (outside)	$63.75	1.144	$72.93	$130.00	Foreman (Drill and Blast)	1.783
					Average	**1.19**

[a] inclusive of overhead and profit

Table 2-3: 2018 RS Means unit rates converted to Nunavut CDN$/hour.

Equipment or Labour Item	2018 RS Means US$/Hour	Ottawa City Cost Index	Ottawa CDN$/Hour	Nunavut Cost Index	Nunavut CDN$/Hour
Labour					
Blast Foreman (outside)	$63.75	1.144	$72.93	1.19	$86.79
Driller	$60.70	1.144	$69.44	1.19	$82.63
Equipment Operator (light)	$77.35	1.144	$88.49	1.19	$105.30
Equipment Operator (medium)	$81.05	1.144	$92.72	1.19	$110.34
Equipment Operator (crane)	$84.60	1.144	$96.78	1.19	$115.17
Equipment Operator (oiler)	$73.30	1.144	$83.86	1.19	$99.79
Labour Foreman (outside)	$63.75	1.144	$72.93	1.19	$86.79
Labourer	$60.70	1.144	$69.44	1.19	$82.63
Pipe Fitter	$94.90	1.144	$108.57	1.19	$129.19
Skilled Worker	$80.15	1.144	$91.69	1.19	$109.11
Skilled Worker Foreman (outside)	$83.20	1.144	$95.18	1.19	$113.27
Structural Steel Foreman (outside)	$92.60	1.144	$105.93	1.19	$126.06
Structural Steel Worker	$89.35	1.144	$102.22	1.19	$121.64
Truck Driver (light)	$67.00	1.144	$76.65	1.19	$91.21
Equipment					
50' Air Hoses, 3"					$14.00
Air Compressor, 600 cfm					$173.00
Air Track Drill, 4"	$136.593	1.216	$166.10	2.48	$411.92
Backhoe Loader, 48 H.P.					$196.00
Crane, Flatbed Mounted, 3 Ton	$32.423	1.216	$39.43	2.48	$97.78
Crawler Loader, 3 C.Y.	$165.550	1.216	$201.31	2.48	$499.25
Cutting Torches	$1.733	1.216	$2.11	2.48	$5.22
Dozer, 105 H.P.					$250.00
Dozer, 200 H.P.					$250.00
Dozer, 300 H.P.					$250.00
Dump Trailer, 20 C.Y.					$121.00
Dump Truck, 8 C.Y., 220 H.P.	$46.558	1.216	$56.61	2.48	$140.40
Dump Truck, Off Hwy., 50 Ton	$228.525	1.216	$277.89	2.48	$689.16
Dump Trucks, 12 C.Y., 400 H.P.	$74.635	1.216	$90.76	2.48	$225.08
F.E. Loader, W.M.,2.5 C.Y.					$150.00
Flatbed Trailer, 25 Ton					$69.00
Flatbed Trailer, 40 Ton	$24.750	1.216	$30.10	2.48	$74.64
Flatbed Truck, Gas, 3 Ton	$32.725	1.216	$39.79	2.48	$98.69
Hydraulic Crane, 12 Ton	$68.200	1.216	$82.93	2.48	$205.67

Equipment or Labour Item	2018 RS Means US$/Hour	Ottawa City Cost Index	Ottawa CDN$/Hour	Nunavut Cost Index	Nunavut CDN$/Hour
Hydraulic Crane, 12 Ton (Daily)	$86.433	1.216	$105.10	2.48	$260.65
Hydraulic Crane, 25 Ton	$81.208	1.216	$98.75	2.48	$244.90
Hydraulic Excavator, 1.5 C.Y.					$299.00
Hydraulic Excavator, 3.5 C.Y.					$299.00
Lattice Boom Crane, 90 Ton	$231.963	1.216	$282.07	2.48	$699.52
Light Equipment (Backhoe Loader, 48 H.P)					$196.00
Medium Equipment (F.E. Loader, W.M., 1.5 C.Y)					$150.00
Ripper, Beam & 1 Shank					$58.00
Sets of Gases	$23.100	1.216	$28.09	2.48	$69.66
Tank Trailer, 5000 Gal.	$20.295	1.216	$24.68	2.48	$61.20
Tank Trailer, 5000 Gal. + Truck Tractor, 6x4, 450 H.P.					$334.00
Truck Tractor, 6x4, 380 H.P.					$167.00
Truck Tractor, 6x4, 450 H.P.	$80.218	1.216	$97.54	2.48	$241.91
Vibrating Roller, Towed, 12 Ton	$80.380	1.216	$97.74	2.48	$242.40

2.1.1 Reclaim Conveyor

The reclaim conveyor was initially included in QIA's 2014 Comprehensive Financial Security Estimate. The unit rate of $1,329,441.31/reclaim conveyor was selected to align with the number presented by Baffinland. The 2014 assessment was based on requiring 5,109 person and equipment hours, using ARKTIS' labour costs of $115.00/person-hour and for ease of calculation, Baffinland's blended equipment rate of $150.00/equipment-hour. As this method was used as a simple check of the cost used by Baffinland to confirm the order of magnitude, ARKTIS has reevaluated to maintain consistency with the updated unit rate.

The 2018 average Nunavut Contractor labour and equipment costs of $104.28/hr and equipment rate of $219.52/hr were used to assess the reclaim conveyor. ARKTIS estimates the cost to decommission and dispose of the reclaim conveyor is $1,654,294.20. This is 37% difference compared to Baffinland's adjusted unit rate of $1,136,232.91 for the reclaim conveyor that is no longer close to the ~2% difference in original cost nor does the given contingency cover the uncertainty. Therefore, ARKTIS has used the unit cost of **$1,654,294.20/reclaim conveyor** within this estimate.

Table 2-4: Summary of Reclaim Conveyor unit rate calculation.

	Hours	Nunavut Blended Rate	Total
Labour	5,109	$104.28	$532,766.52
Equipment	5,109	$219.52	$1,121,527.68
		Total	**$1,654,294.20**

2.1.2 Waste Rock Facility Water Treatment Plant

The Waste Rock Facility was initially included in QIA's 2018 Work Plan Addendum Security Estimate. QIA accepted Baffinland's proposed unit rate as it provided a sufficiently conservative approximation. As this approximation utilized Baffinland's approach, ARKTIS has updated the unit rates to be reflective of QIA labour and equipment rates. Based on the labour and equipment hours from the 2018 Work Plan Addendum of 340 person-hours and 290 equipment-hours at 2018 Nunavut Contractor updated labour and equipment costs of $104.28/hr and equipment rate of $219.52/hr respectively, QIA's updated unit rate for the Waste Rock Facility Water Treatment Plant is **$99,116.00/unit**.

Table 2-5: Summary of Reclaim Conveyor unit rate calculation.

	Hours	Nunavut Blended Rate	Total
Labour	340	$104.28	$35,455.20
Equipment	290.0	$219.52	$63,660.80
		Total	**$99,116.00**

2.2 SEA CONTAINERS

QIA has directed ARKTIS to increase reclamation security to account for the maximum number of sea containers observed in 2018.[1] This is a change to the assumption described in QIA's 2014 Comprehensive Reclamation Security Estimate.[8]

In 2014, 1,158 Twenty Equivalent Units (TEU) of sea containers were observed on-site.[8] Baffinland considered this number to be an extreme case, stating Baffinland would not operate with such a high level of TEUs on-site. Thus, QIA accepted reclamation security with the assumption that half of the observed sea containers would be on-site. This agreement was made on the basis that Baffinland would implement an enterprise level accounting system to supply sufficient data to determine an average number of sea containers at any time. Since then, Baffinland has not provided an average count of sea containers nor provided evidence that an enterprise level accounting system has been implemented. The 2018 Environmental Audit identified the amount of sea containers has increased from the maximum observed in 2014 and that an enterprise level accounting system has yet to be implemented.[1]

QIA has therefore taken the position that 50% of the sea containers observed on Site in 2014 is not sufficient to cover reclamation security. QIA will be updating reclamation security to the maximum sea containers observed in 2018, where further reconciliation for total sea containers and how to factor in contaminated sea containers will be considered in the 2019 Environmental Audit.

2.3 Culverts

QIA has directed ARKTIS to use a unit rate of $50/m of culvert for all new culverts included in this reclamation security estimate, which is consistent with the Baffinland Estimate. However, QIA may l update the unit rate for culverts on a $/m basis once the 2019 Annual Security Review Process is completed to ensure actual culvert length is accounted for in assessing security. As agreed between QIA and Baffinland at the October 17, 2018 High Uncertainty Items Meeting[4] all previous calculations for existing culverts would not be updated.

2.4 ASSESSMENT OF DISTURBED AREAS

QIA and Baffinland have agreed to acquire annual satellite surveys of the mine. An objective of these satellite surveys is to assess the actual disturbed area at the mine for use in updating the reclamation costs for the following locations:

1. Area of waste rock facility to quantify cover extents to manage potentially acid generating (PAG) rock;
2. Mine site raw water intake;
3. Crusher maintenance building;
4. Tote Road abandoned road areas;
5. Tote Road current road areas;
6. Tote Road reclamation of historical borrow areas;
7. Tote Road permitted quarries and borrows; and,
8. Tote Road laydowns.

Baffinland has provided[22] 2018satellite imagery of Site to be used to assessed disturbed areas. The assessment of the surveys will not be completed in time for the 2019 Annual Security Review process, therefore, associated changes in reclamation security resulting from this assessment will be determined at a future date. [1]

2.5 Contingency

Contingency was selected based on QIA's Abandonment and Reclamation Policy as well as QIA's 2014 Comprehensive Security Estimate which presents the estimate type and the associated appropriate contingency. In general, the more detailed of an estimate, the lower the contingency. The Baffinland estimate is considered at this time to be between a "feasibility or advance conceptual type" to "pre-feasibility, conceptual type" and therefore would have a contingency range between 20 and 25%. A 20% contingency was applied in the estimate; this is an increase in contingency from previous ARKTIS estimates.

As agreed by QIA, a 20% contingency is warranted because "as-built" documentation is limited for the Mine site which results in uncertainty regarding existing conditions. Additionally, no for-construction reclamation designs are complete currently, rather closure planning has only been advance to qualitative descriptions with limited to no detailed engineering complete. Further, a 20% contingency is more typical of the contingency applied to other northern mining security estimate.

[22] Baffinland (2018). Baffinland – 2018 Satellite Photography. November 13, 2018. Email from Andrew Vermeer to Fai Ndofor.

3 SECURITY RECONCILIATION

Baffinland's Estimate includes a list of items that are to be reconciled as a result of items that have either been removed from their previous work plans or previously omitted. All costs presented are Direct Costs

The associated Indirect Costs based on security reconciliation have been included the changes from Security Reconciliation in the calculated Indirect Costs presented in Section 5. The following sub-sections describe the items to be reconciled in during the 2019 Annual Security Review Process.

3.1 UNIT RATE UPDATE

QIA and Baffinland have agreed to update their respective unit rates from 2014 to 2018 values. The methods used are detailed in Section 2.1. Table 3-1 summarizes the update to historical aggregate security up to and including the 2018 Work Plan Addendum. The decrease in aggregate security estimate can be attributed to the general decrease in unit rates.

Table 3-1: Summary of changes to global reclamation estimate based on Unit Rate Update.

	Revised Estimate		Direct ($)		Indirect ($)	
	Baffinland	QIA	Baffinland	QIA	Baffinland	QIA
Global Estimate from the 2018 Work Plan Addendum	$70,031,000	$84,175,000	$35,844,000	$41,472,000	$34,187,000	$42,703,000
Adjusted Global Estimate based on revised unit rates (up to 2018 Work Plan Addendum)	$62,130,000	$74,595,000	$29,538,000	$34,533,000	$32,591,000	$40,062,000
Difference	$7,901,000	$9,580,000	$6,306,000	$6,939,000	$1,596,000	$2,641,000

3.2 BUILDINGS AND FOUNDATIONS

Table 3-2 shows a summary of QIA's estimate for reclamation security for buildings and foundations. The Concrete Batch Plant was identified by QIA in their information requests where Baffinland confirmed[11] the omission. Baffinland has yet to provide a reclamation security estimate for the Concrete Batch Plant. ARKTIS refrained from projecting Baffinland's security estimate.

Table 3-2 Summary of buildings and foundations reconciliation.

Description	Quantity (m^2)	Unit Rate ($)		Direct Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Concrete Batch Plant	780		123.27		$96,152	($96,152)

3.3 Site Works

Table 3-3 compares the reclamation security for Laydown LP1, the only site works included in Baffinland's Estimate. As ARKTIS has used Baffinland's estimated quantity, the difference in Direct Cost is attributed to the difference in Unit Rate.

Table 3-3 Summary of grade and re-contour reconciliation.

Description	Quantity (m^2)	Unit Rate ($)		Direct Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Laydown LP1	-13,000	1.49	1.65	($19,434)	($21,450)	$2,016

3.4 MECHANICAL AND MOBILE EQUIPMENT

The development of an inventory or tracking system has been an item of high uncertainty between QIA and Baffinland since 2016. Baffinland's Estimate includes list of mechanical equipment brought to Site but not previously allocated. In addition to this mechanical equipment, the 2018 Environmental Audit identified discrepancies between the draft inventory of mechanical equipment provided by Baffinland and QIA's historical security estimate. Baffinland identified further discrepancies between QIA's historical security estimate, the preliminary inventory, and Baffinland's estimate breakdown structure. Considering these three items should have identical quantities for mechanical and mobile equipment, Baffinland and QIA aimed to discuss a path forward. ARKTIS verbally communicated to Baffinland and QIA the position that reclamation security should be maintained for the highest determined value of mechanical and mobile equipment on site. QIA has not directed a different course of action.[23]

Table 3-4 shows a summary of Baffinland's Estimate for mechanical equipment brought to Site but not previously allocated. Generally, ARKTIS has used Baffinland's quantities so the difference in cost is associated with differences in unit rates. The Western Star Ore Truck has been removed from QIA's direct cost as Baffinland has indicated it was misrepresented[11] as Baffinland owned when it is 3rd Party Owned.

It is ARKTIS' opinion that 3rd Party Equipment at the Project cannot be landfilled in a reclamation scenario as it is not the property of Baffinland. It is assumed that only items with "3rd party" in the description of the equipment is not owned by Baffinland. Therefore, ARKTIS has included the Western Star Ore Truck in Section 5.5 as ARKTIS considers the demobilization of 3rd Party Equipment as an Indirect Cost.

ARKTIS has increased inventory for mechanical and mobile equipment based on discrepancies in QIA's security estimate, inventory presented by Baffinland during QIA's Environmental Audit, and Baffinland's response[11] to information requests.[2] ARKTIS has added line items to increase mechanical and mobile equipment to be the same as the highest reported value in Baffinland's response, whether from QIA's security estimate, the preliminary inventory, or the EBS.

[23] In-person meeting held between QIA, supported by ARKTIS, and Baffinland on December 13, 2018.

Table 3-4 Summary of Mechanical and Mobile Equipment not previously allocated security reconciliation.

Description	Unit Rate Type	Quantity (pcs)	Unit Rate ($/pcs)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Used conveyors	Heavy Equipment	4	$32,950	$36,627.91	$131,800	$146,500.00	($14,700)
Used conveyors	Heavy Equipment	4	$32,950	$36,627.91	$131,800	$146,500.00	($14,700)
Grizzly unit 11-0702	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
Concrete Batch Plant	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
Hydraulic Rock Crusher - Tramac	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
Grizzly unit 11-0702	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
Jaw Crusher 11-0701	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
Screener Unit 10-0701	Heavy Equipment	1	$32,950	$36,627.91	$32,950	$36,627.91	($3,678)
1 X D65 ATLAS COPCO DRILL S/N TMG185ED00269	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
30000 L Fuel Tanker Trailer	Medium Mobile Fuel Tanks	1	$1,163	$9,068.71	$1,163	$9,267.80	($8,105)
1988 MACK Service Truck	Medium Mobile Equipment	1	$1,456	$1,456.15	$1,456	$1,478.68	($23)
345 D Excavator	Heavy Mobile Equipment	2	$2,075	$2,090.32	$4,150	$4,180.63	($31)
PV-271 Drill	Heavy Mobile Equipment	2	$2,075	$2,090.32	$4,150	$4,180.63	($31)
Cat 793 Mining Truck	Heavy Mobile Equipment	2	$2,075	$2,090.32	$4,150	$4,180.63	($31)
Kubota RTV-X1100c	Light Mobile Equipment	2	$729	$852.05	$1,458	$1,749.16	($291)
Used Light Plant	Light Mobile Equipment	2	$729	$852.05	$1,458	$1,749.16	($291)
Western Star Ore Haul Truck	Heavy Mobile Equipment	11	$2,075		$22,825		$22,825
Side Dumper Lead or trailer	Medium Mobile Equipment	19	$1,456	$1,456.15	$22,088	$27,666.89	($5,579)
2018 Audit Inventory Discrepancies	Heavy Equipment	30		$2,090.32		$62,709.46	($62,709)

Description	Unit Rate Type	Quantity (pcs)	Unit Rate ($/pcs)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
2018 Audit Inventory Discrepancies	Medium Equipment	40		$3,860.22		$154,408.86	($154,409)
2018 Audit Inventory Discrepancies	Light Equipment	42		$1,666.54		$69,994.67	($69,995)
2018 Audit Inventory Discrepancies	Heavy Mobile Equipment	30		$2,090.32		$62,709.46	($62,709)
2018 Audit Inventory Discrepancies	Medium Mobile Equipment	24		$1,456.15		$34,947.65	($34,948)
2018 Audit Inventory Discrepancies	Light Mobile Equipment	581		$852.05		$495,042.52	($495,043)
Total		**804**			**$526,273**	**$1,449,123.97**	**($922,851)**

Table 3-5 compares QIA and Baffinland's Estimate for mechanical equipment no longer at Site. ARKTIS has moved Backhaul Kenworth Unit and Backhaul Western Star Unit to Section 5.5 as Baffinland corrected[11] the description to be 3rd Party Equipment and has been included in Section 5.

There is no Direct Cost associated with 3rd party owned mobile equipment in this estimate because 3rd Party Equipment is considered an Indirect Cost, associated with demobilization, and is discussed in Section 5.5. Table 3-6 shows the summary of Baffinland's Estimate of Direct Cost reconciliation for 3rd party equipment. ARKTIS has included the 3rd party owned mobile equipment reconciliation with the Indirect Cost update in Section 5.5.

Table 3-5 Mechanical and Mobile Equipment not previously allocated security comparison, no longer on-site.

Description	Unit Rate Type	Quantity (pcs)	Unit Rate ($/pcs)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Backhaul deloupe float trailer	Medium Mobile Equipment	-1	$1,163	$1,456	($1,163)	($1,456)	$293
Backhaul Ford Pickup	Light Mobile Equipment	-1	$729	$852	($729)	($852)	$123
Backhaul GMC Sierra	Light Mobile Equipment	-1	$729	$852	($729)	($852)	$123
Backhaul Kenworth Unit	Medium Mobile Equipment	-2	$1,163		($2,325)		($2,325)
Backhaul Western Star Unit	Medium Mobile Equipment	-3	$1,163		($3,488)		($3,488)
745C Rock Truck	Heavy Mobile Equipment	-5	$2,075	$2,090	($10,375)	($10,452)	$77
TOTAL		**-13**			**($18,809)**	**($13,612)**	**($5,197)**

Table 3-6 3rd party mobile equipment Direct Cost reconciliation.

Description	Quantity (pcs)	Unit Rate ($/pcs)		Direct Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
3rd Party Heavy Mobile Equipment (make up for typical)	16	$2,075	-	$33,200	-	$33,200
3rd Party Medium Mobile Equipment (make up for typical)	-30	$1,163	-	($34,875)	-	($34,875)
3rd Party Light Mobile Equipment (make up for typical)	41	$729	-	$29,896	-	$29,896
TOTAL	**27**			**$28,221**		**$28,221**

4 DIRECT COSTS ANALYSIS

The following subsections describe in detail, by reclamation activity, changes to Direct Costs resulting from Baffinland's Estimate. A summary of all Direct Costs by line item is presented in Appendix A.

4.1 BUILDINGS AND FOUNDATIONS

Table 4-1 shows a summary of Baffinland's Estimate for Buildings and Foundations. Baffinland's Estimate identified new E-Houses requiring the unit rate for modular building not contaminated. Historically, E-houses have been considered to be contaminated[13] or were considered to be heavy equipment with a unit rate per item.[16] ARKTIS has maintained E-house as the historical unit rate of modular building teardown - contaminated.

Table 4-1 Buildings and foundations security comparison.

Item	Location	Quantity (m^2)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Modular Building Not Contaminated							
Office trailers (2 x 36 m2)	Milne Port	72	$48	$60.52	$3,430	$4,357.08	($927)
Office trailers (2 x 36 m2)	Milne Port	72	$48	$60.52	$3,430	$4,357.08	($927)
Crusher services trailer (2 x 36 m2)	Milne Port	72	$48	$60.52	$3,430	$4,357.08	($927)
Site Construction Office (2 x 36 m2)	Milne Port	72	$48	$60.52	$3,430	$4,357.08	($927)
Offices and Lunchrooms (5x36m2)	Milne Port	180	$48	$60.52	$8,574	$10,892.71	($2,319)
Quonset hut	Mine Site	100	$48	$60.52	$4,764	$6,051.51	($1,288)
Contractor lunchroom	Mine Site	36	$48	$60.52	$1,715	$2,178.54	($464)
Contractor office	Mine Site	36	$48	$60.52	$1,715	$2,178.54	($464)
Rail Operations offices (2 x 36 m2)	Mine Site	72	$48	$60.52	$3,430	$4,357.08	($927)
Office Trailer (60 x 60)	Mine Site	334	$48	$60.52	$15,910	$20,212.03	($4,302)
Office Trailer (24 x 60)	Mine Site	132	$48	$60.52	$6,288	$7,987.99	($1,700)
Office Trailer (12 x 60)	Mine Site	66	$48	$60.52	$3,144	$3,993.99	($850)
Lunchtrailer (44 x 10)	Mine Site	40	$48	$60.52	$1,905	$2,420.60	($516)
Container lunchroom (2 x 36 m2)	Mine Site	72	$48	$60.52	$3,430	$4,357.08	($927)
Container Office (4 x 36 m2)	Mine Site	144	$48	$60.52	$6,860	$8,714.17	($1,854)
Lunchroom	Mine Site	36	$48	$60.52	$1,715	$2,178.54	($464)
Modular Building Contaminated							
Washroom facility for Tote Road	Mine Site	36	$115	$181.55	$4,100	$6,535.63	($2,436)
Washcar	Mine Site	36	$115	$181.55	$4,100	$6,535.63	($2,436)
E-House	Milne Port	37	$48	$181.55	$1,771	$6,717.17	($4,946)
Fold Away Building Contaminated							
Heated Maintenance shop for pit equipment at KM110.5 laydown	Mine Site	1500	$114	$123.27	$171,067	$184,907.59	($13,841)
TOTAL		**3,145**			**$254,200**	**$297,647.14**	**($43,400)**

4.2 MECHANICAL AND MOBILE EQUIPMENT

Table 4-2 shows a comparison of QIA and Baffinland's Estimate for mechanical and mobile equipment reclamation security. ARKTIS has used Baffinland's provided quantities so differences are based on differences in unit rates.

Table 4-2 Mechanical and mobile equipment security estimate comparison.

Item	Unit Rate Type	Quantity (pcs)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Bucket Wheel Stacker Reclaimer	Heavy Equipment	2	$32,950	$36,627.91	$65,900	$73,255.82	($7,356)
Generator Sets	Heavy Equipment	4	$32,950	$36,627.91	$131,800	$146,511.63	($14,712)
Screen Metso FS353	Heavy Equipment	2	$32,950	$36,627.91	$65,900	$73,255.82	($7,356)
30,000 L Fuel Tanker Truck	Heavy Mobile Equipment	12	$2,075	$2,090.32	$24,900	$25,083.79	($184)
374 Excavator	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
740B ARTICULATING WATER TRUCK	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
745C Rock Truck	Heavy Mobile Equipment	2	$2,075	$2,090.32	$4,150	$4,180.63	($31)
793 Haul Truck	Heavy Mobile Equipment	3	$2,075	$2,090.32	$6,225	$6,270.95	($46)
922K Wheel Loader	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
950M Loader	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
CONVEYING - Conveyor Feeder	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
CONVEYING - Jump Conveyor	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
D10 Dozer	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Excavator - cat 349	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Feeder Dolly	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Fines Mobile Stacker	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)

Item	Unit Rate Type	Quantity (pcs)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Fuel Tanker and tractor	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Fuel/Lube Truck	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Heavy Duty Shunt Truck Heavy Mobile Equipment	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Jet A Truck	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
MOBILE EQUIPMENT - MINE SITE WHEEL DOZER - CAT 824H	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Mobile Primary Crusher Unit	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Pumper fire truck	Heavy Mobile Equipment	1	$2,075	$2,090.32	$2,075	$2,090.32	($15)
Generator/Air Compressor	Light Equipment	2	$1,584	$1,666.54	$3,168	$3,333.08	($165)
Light Plant	Light Equipment	27	$1,584	$1,666.54	$42,761	$44,996.58	($2,236)
F250 Passenger Van	Light Mobile Equipment	1	$729	$852.05	$729	$852.05	($123)
Frost Fighter Heater	Light Mobile Equipment	7	$729	$852.05	$5,104	$5,964.37	($860)
Genie Manlift s135x	Light Mobile Equipment	3	$729	$852.05	$2,188	$2,556.16	($368)
Light ERT utility vehicle	Light Mobile Equipment	1	$729	$852.05	$729	$852.05	($123)
Off Road Tracked Rescue Vehicle	Light Mobile Equipment	1	$729	$852.05	$729	$852.05	($123)
Pickup truck (F350 or similar)	Light Mobile Equipment	15	$729	$852.05	$10,938	$12,780.79	($1,843)
Portable water pump	Light Mobile Equipment	2	$729	$852.05	$1,458	$1,704.11	($246)
Skid Steer, Cat 247B or 275D	Light Mobile Equipment	1	$729	$852.05	$729	$852.05	($123)
Genie Manlift z60	Light Mobile Equipment	2	$729	$852.05	$1,458	$1,704.11	($246)
Generator (medium)	Medium Equipment	1	$3,393	$3,860.22	$3,393	$3,860.22	($467)

Item	Unit Rate Type	Quantity (pcs)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
4x4 hotseating bus	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Boom Truck	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Freightliner Highway Truck	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Passenger Bus	Medium Mobile Equipment	4	$1,163	$1,456.15	$4,650	$5,824.61	($1,175)
Pressure washing truck	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Telehandler	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Telehandler	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Tri-Trombone flat trailer	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
Zoom Boom 12,000 lbs	Medium Mobile Equipment	1	$1,163	$1,456.15	$1,163	$1,456.15	($293)
TOTAL		**117**			**$420,600**	**$461,781.94**	**($41,200)**

Table 4-3 shows Baffinland's summary of Direct Costs for 3rd party equipment. It is ARKTIS' opinion that 3rd Party Equipment at the Project cannot be landfilled in a reclamation scenario as it is not the property of Baffinland. It is assumed that only items with "3rd party" in the description of the equipment is not owned by Baffinland.

There is no Direct Cost associated with 3rd party owned mobile equipment in this estimate because 3rd Party Equipment is considered an Indirect Cost, associated with demobilization 3rd Party Equipment is discussed in Section 5.5.

Table 4-3 3rd party mobile equipment security estimate comparison.

Item	Quantity (pcs)	Unit Cost		Direct Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
3rd Party Heavy Mobile Equipment (make up for 'typical' fleet)	34	2,075		$70,550		
3rd Party Light Mobile Equipment (make up for 'typical' fleet)	49	729		$44,479		
3rd Party Medium Mobile Equipment (make up for 'typical' fleet)	61	1,163		$56,963		
TOTAL				**$172,000**		

4.3 SITE WORKS

Table 4-4 shows a comparison of QIA and Baffinland's grade and re-contour reclamation security estimate. As directed by QIA, there has been the addition of 2,850 m^2 of grade and re-contour for the Milne Port Camp Pad Natural Stream Diversion included in Table 4-4.[1] ARKTIS has used the Unit Rate Grade and Recontour for the quarries and quarry expansion proposed, consistent with previous reclamation security estimates. Baffinland's Estimate has proposed a 2,000 m^2 expansion of the crusher maintenance shop laydown area for sea containers and rebuilt equipment storage, stating no security adjustment is needed as it is an existing disturbed area. ARKTIS has increased security for this expansion that may be reconciled using satellite surveys. Note that rounding inconsistencies are greater in Table 4-4 due to the large quantities, specifically for Q5 Quarry Expansion. ARKTIS has maintained the calculated value to represent the true cost. The unit rate used for grade and recontour is $1.65010204701725.

Table 4-4 Site works security estimate comparison.

Item	Location	Quantity (m^2)	Unit Rate ($/$m^2$)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Laydown LP2	Milne Port	30,000	$1.49	$1.65	$44,847	$49,503.06	($4,656)
Ore Stockpile Pad Expansion 2019	Milne Port	140,000	$1.49	$1.65	$209,287	$231,014.29	($21,727)
Q1 Quarry (additional marginal increase in 2019)	Milne Port	226,000	$1.49	$1.65	$337,849	$372,923.06	($35,074)
Laydown 2 - 2019	Tote Road	55,800	$1.49	$1.65	$83,333	$92,075.69	($8,743)
Laydown 4 - 2019	Tote Road	66,300	$1.49	$1.65	$99,014	$109,401.77	($10,388)
Laydown 7 - 2019	Tote Road	28,900	$1.49	$1.65	$43,160	$47,687.95	($4,528)
Laydown 9 - 2019	Tote Road	92,500	$1.49	$1.65	$138,141	$152,634.44	($14,493)
Laydown 10 - 2019	Tote Road	34,500	$1.49	$1.65	$51,523	$56,928.52	($5,406)
Laydown 13 - 2019	Tote Road	7,000	$1.49	$1.65	$10,454	$11,550.71	($1,097)
PQ2a quarry	Tote Road	345,500	$1.49	$1.65	$516,491	$570,110.26	($53,619)
PQ4a quarry	Tote Road	105,000	$1.49	$1.65	$156,965	$173,260.71	($16,296)
PQ6a quarry	Tote Road	194,000	$1.49	$1.65	$290,012	$320,119.80	($30,108)
PQ12a quarry	Tote Road	232,200	$1.49	$1.65	$347,118	$383,153.70	($36,036)
Q5 Quarry Expansion 2019	Tote Road	1,225,587	$1.49	$1.65	$1,832,140	$2,022,343.62	($190,204)
Expansion of 800p camp laydown	Mine Site	12,000	$1.49	$1.65	$17,939	$19,801.22	($1,862)
WRF Water Treatment plant laydown 2019	Mine Site	3,500	$1.49	$1.65	$5,232	$5,775.36	($543)
KM107.5 Laydown for haul road parking	Mine Site	91,000	$1.49	$1.65	$136,037	$150,159.29	($14,122)
Km107 Stockpile and access Road	Mine Site	133,400	$1.49	$1.65	$199,421	$220,123.61	($20,703)
Mine Site Fuel Tank Farm 2019 Footprint	Mine Site	21,620	$1.49	$1.65	$32,288	$35,675.21	($3,387)

Item	Location	Quantity (m^2)	Unit Rate ($/m^2)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Ore Stockpile Sedimentation - New 2019	Milne Port	15,000	$4.12	$4.68	$62,134	$70,171.65	($8,038)
Ore Stockpile Sedimentation Pond 2a	Milne Port	4,400	$4.12	$4.68	$18,226	$20,583.68	($2,358)
Contaminated Snow dump/oily water containment - new 2019	Milne Port	2,700	$4.12	$4.68	$11,116	$12,630.90	($1,515)
New Hazardous Waste Berm 2019	Milne Port	360	$4.12	$4.68	$1,482	$1,684.12	($202)
KM110.5 Laydown for Mine Ops	Mine Site	180,000	$1.49	$1.65	$269,084	$297,018.37	($27,934)
New PWSP 2019	Mine Site	4,180	$4.12	$4.68	$17,209	$19,554.50	($2,345)
Crusher Pad Expansion 2019	Mine Site	12,000	$1.49	$4.68	$17,939	$56,137.32	($38,198)
KM107 Sedimentation Pond	Mine Site	7,400	$4.12	$4.68	$30,653	$34,618.01	($3,965)
Crusher Pad Sedimentation Pond 2019	Mine Site	2,000	$4.12	$4.68	$8,285	$9,356.22	($1,071)
Landfarm	Mine Site	9,000	$4.12	$4.68	$37,280	$42,102.99	($4,823)
Hazardous Waste Berm - New 2019	Mine Site	360	$4.12	$4.68	$1,482	$1,684.12	($202)
Fuel Tank Containment Area	Mine Site	12,000	$4.12	$4.68	$49,707	$56,137.32	($6,430)
Milne Port Camp Pad Natural Stream Diversion	Milne Port	2,850		$1.65		$4,702.79	($4,703)
Crusher Maintenance Shop Laydown Area Expansion	Mine Site	2,000		$1.65		$3,300.20	($3,300)
TOTAL		**3,294,207**			**$5,075,848**	**$5,653,924.44**	**($578,100)**

4.4 STORAGE TANKS

Table 4-5 shows a comparison of QIA and Baffinland's storage tanks security estimate. Baffinland quantities were used, therefore differences are based on differing unit rates.

Table 4-5 Storage tanks security estimate comparison.

Description	Quantity (ea)	Unit Rate ($/ea)		Direct Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Water Tanks – Light Tank	6	$1,710	$2,500.84	$10,263	$15,005.04	($4,742)
Fuel Tanks – Light Diesel Tank	5	$2,950	$3,155.52	$14,750	$15,777.61	($1,028)
Fuel Tanks – Medium Mobile Diesel Tank	7	$8,381	$9,068.71	$58,669	$63,480.99	($4,812)
Fuel Tanks – Largest Diesel Tank	2	$137,278	$156,275.82	$274,555	$312,551.64	($37,997)
TOTAL				**$358,237**	**$406,815.28**	**($48,578)**

4.5 CULVERTS

Table 4-6 shows a comparison of QIA and Baffinland's culvert reclamation security estimate. As identified in the 2018 Environmental Audit,[5] there are culverts on Site that have been modified that QIA does not maintain security for. The 2017 – NWB Annual Report[24] described the following culverts as being modified: BG01, BG03, BG04, BG11, BG11-B&C, BG14-B, BG14-C, BG17, BG19, BG19-B-DS, BG19-C-DS, BG25 (A&B), and BG27. As-builts for these culverts have not been provided. Previously culverts BG01, BG04, BG29, BG32, CV049 A&B, CV099, CV106, CV112, CV186, CV187, and CV224 were listed in a security estimate.[16] QIA has directed ARKTIS to increase security for each culvert with an assumed 20 m length. This length will be verified by as-builts or alternative methods.

Table 4-6 Culvert security estimate comparison.

Description	Location	Quantity (m)	Unit Rate ($/ea.)		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Culverts for Quarry Access Roads	Tote Road	80	$50	$50	$4,000	$4,000	$0
Culverts for KM107 Stockpile Access Road	Mine Site	225	$50	$50	$11,250	$11,250	$0
Culverts for 800p Camp Discharge Line	Mine Site	60	$50	$50	$3,000	$3,000	$0
25 Culverts		500		$50		$25,000	
TOTAL					**$18,250**	**$43,250**	**($25,000)**

4.6 FILL APPLICATION

Table 4-7 shows a comparison of QIA and Baffinland's fill application security estimate. As QIA used Baffinland's quantity estimate, the difference in costs is based on unit cost.

[24] Baffinland (2018). 2017 Qikiqtani Inuit Association (QIA) and Nunavut Water Board (NWB) Annual Report for Operations. March 31, 2018.

Table 4-7 Fill application security estimate comparison.

Item	Location	Quantity (m^2)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Fill Application for 2018 Estimate Addendum	Mine Site	2,664	$39	$38.43	$98,378	$102,387.15	($4,009)

4.7 CONTAMINATED SOIL REMOVAL

Consistent with the 2014 Security Estimate,[8] ARKTIS has assumed that any contaminated buildings will result in contaminated soil. The volume of contaminated soil removal is calculated by multiplying the area of the contaminated building by 0.5 m in depth. Baffinland's Estimate excluded contaminated soil.

The Geotechnical Inspection[25] identified that liners have degraded, so the 2018 Environmental Audit[1] recommended increasing the reclamation security for contaminated soil removal beneath containment facilities as is done beneath contaminated buildings. QIA has requested Baffinland describe how Baffinland proposes to validate the degrading liners are not leading to contamination below containment facilities and identify how this issue is to be addressed in the reclamation security. As Baffinland has yet to respond to the 2018 Environmental Audit, [1] ARKTIS has not changed security for contaminated soil removal under containment facilities.

Table 4-8 Contaminated soil removal security estimate comparison.

Item	Location	Quantity (m^3)	Unit Cost		Direct Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Washroom facility for Tote Road	Mine Site	18		$29.10		$523.72	($524)
Washcar	Mine Site	18		$29.10		$523.72	($524)
E-House	Milne Port	18.5		$29.10		$538.26	($538)
Heated Maintenance shop for pit equipment at KM110.5 laydown	Mine Site	750		$29.10		$21,821.53	($21,822)
TOTAL		**804.5**				**$23,407.22**	**($23,407)**

[25] Baffinland (2018). Submission of 2018 Geotechnical Inspection Report No. 1 (Jul/Aug. 2018). October 2, 2018.

5 INDIRECT COSTS ANALYSIS

The following subsections describe in detail, by reclamation activity, changes to Indirect Costs resulting from Baffinland's Estimate. A summary of all Indirect Costs by line item is presented in Appendix B.

5.1 CONTAMINATED SOIL TREATMENT

Table 5-1 summarizes QIA's reclamation security estimate based on quantities determined in Section 4.7 Contaminated Soil Removal. This method is consistent with the 2014 Security Estimate Report. Baffinland's Estimate excluded this Indirect Cost.

Table 5-1 QIA's contaminated soil treatment security estimate.

Item	Location	Quantity (m^3)	Unit Cost		Indirect Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Washroom facility for Tote Road	Mine Site	18		$9.40		$169.12	
Washcar	Mine Site	18		$9.40		$169.12	
E-House	Milne Port	18.5		$9.40		$173.81	
Heated Maintenance shop for pit equipment at KM110.5 laydown	Mine Site	750		$9.40		$7,046.46	
TOTAL		**804.5**				**$7,558.50**	**($7,559)**

5.2 EXPLOSIVES

Table 5-2 shows a detailed summary of Baffinland and QIA's security estimate comparison for demobilization of Ammonium Nitrate. There is no difference in total Indirect Costs as QIA has used Baffinland's quantity estimate.

Table 5-2 Demobilization of Ammonium Nitrate security estimate comparison.

Item	Quantity (m^3)	Unit Cost		Indirect Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Ammonium Nitrate	9,800	$358	$358	$3,508,000	$3,508,400	($400)

5.3 HAZARDOUS SUBSTANCES

As an outcome from the 2018 Environmental Audit, QIA will be increasing security to a total volume of 6,500 m^3 to cover the costs for shipping peak volumes Hazardous Substances off-site. [1] This corresponds to an increase in 1000 m^3 for a reclamation security increase of $358,000 shown in Table 5-3. Baffinland has excluded this increase from their reclamation security estimate.

QIA has increased reclamation security to include a volume of 90 TEUs of sea containers associated with demobilization of Calcium Chloride. This increase is to cover the reclamation costs for shipping peak volumes of Calcium Chloride off-site.[1] To date, QIA has not held security for Calcium Chloride. Calcium Chloride fits the description of a Hazardous Substance as defined in the Lease but does not warrant the designation of a dangerous good that incurs a higher demobilization cost. Since large quantities were observed during the 2017 and 2018 Environmental Audit on-site visit, the 2018 Environmental Audit[1] recommended security be held to demobilize this material from site. Using the 2017 Shipping Manifests and Audit Information Requests, ARKTIS calculated the maximum amount of Calcium Chloride to be 3,070

m^3 that should fit within 90 sea containers for demobilization. The 90 sea containers are included in Table 5-4.

Table 5-3 Hazardous Substances security estimate comparison.

Item	Quantity	Unit Cost ($/m³)		Indirect Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Hazardous Substances	1,000		$358		$358,000	($358,000)

5.4 SEA CONTAINERS

As directed by QIA as an outcome from the 2018 Environmental Audit, and further described in Section 0, QIA will be increasing reclamation security for the demobilization of sea containers to reflect the maximum observed on site. Based on the visual count conducted in the 2018 Environmental Audit,[1] there are 1999 TEU of sea containers at Site. ARKTIS has assumed these Sea Containers will be shipped off site and not landfilled, therefore using the unit rate of $694 to demobilize empty sea containers. This represents an increase of reclamation security of **$985,480**.

There is potential that a portion of the sea containers will be contaminated because of the materials stored within them. An assessment of the quantity of contaminated sea containers and unit costs for their reclamation will be completed after the 2019 ASR.[8]

A 20% contingency, as factored in Section 5.10, has been applied to items in Table 5-4 based on the level of uncertainty in the total value as detailed in the Environmental Audit.

Table 5-4 Sea Containers security estimate comparison.

Item	Quantity	Unit Cost ($/m³)		Indirect Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Remove 20" ISO-Container (TEU)	1,420		$694		$985,480	($985,480)
Calcium Chloride	90		$694		$62,460	($62,460)
TOTAL					**$1,047,940**	**($1,047,940)**

5.5 3RD PARTY OWNED EQUIPMENT

Table 5-5 compares QIA and Baffinland's reclamation security estimate for 3rd Party Owned Equipment. As discussed in Section 3.4, Baffinland has included 3rd party owned equipment as a Direct Cost as the equipment is landfilled rather than backhauled. Baffinland's Estimate includes an Indirect Cost associated with the mobilization and demobilization of equipment based calculated as 10% of the Direct Costs[5] with a total allocation of $676,460. Note that corrections made by Baffinland following the submission of QIA's information requests[2] has led to additional reconciliation of 3rd Party Owned Equipment which is included in Table 5-5.

Table 5-5 3rd party owned security estimate comparison.

Item	Quantity (pcs)	Unit Cost		Indirect Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
3rd Party Heavy Mobile Equipment (make up for 'typical' fleet)	34		$15,964.53		$542,793.87	($542,794)
3rd Party Light Mobile Equipment (make up for 'typical' fleet)	49		$2,785.99		$136,513.57	($136,514)
3rd Party Medium Mobile Equipment (make up for 'typical' fleet)	61		$8,202.67		$500,362.77	($500,363)
Western Star Ore Haul Truck	11		$15,964.53		$175,609.78	($175,610)
3rd Party Heavy Mobile Equipment 2019 ASR Reconciliation (make up for typical)	16		$15,964.53		$255,432.41	($255,432)
3rd Party Medium Mobile Equipment 2019 ASR Reconciliation (make up for typical)	-30		$8,202.67		($246,080.05)	$246,080
3rd Party Light Mobile Equipment 2019 ASR Reconciliation (make up for typical)	41		$2,785.99		$114,225.64	($114,226)
Backhaul Kenworth Unit (Medium Mobile Equipment)	-2		$1,456.15		($2,912.30)	$2,912
Backhaul Western Star Unit (Medium Mobile Equipment)	-3		$1,456.15		($4,368.46)	$4,368
Baffinland 10% of Direct Cost Demobilization Cost				$676,460		$676,460
TOTAL				**$676,460**	**$1,471,577**	**($795,117)**

5.6 WORKER MOBILIZATION AND CAMP ACCOMMODATIONS

Table 5-6 shows QIA and Baffinland's reclamation security estimate for worker mobilization and accommodations. Due to the increase in reclamation activities, additional person days are required to reclaim The Project. ARKTIS calculates that an additional 3,567 person-days will be required; Baffinland calculated 5,312. The discrepancy noted between Baffinland and ARKTIS person days can likely be attributed to the large amount of mobile mechanical vehicles being landfilled by Baffinland, resulting in substantial time to crush, load and fill. ARKTIS continues to use the 70/30 split between northern and southern workers on 20-day shifts. The cost for accommodation and camp operation is assumed $225.50/person day and includes camp maintenance, catering, housekeeping, and fuel costs.

Table 5-6 Worker mobilization and camp accommodations security estimate comparison.

Item	Quantity		Unit Cost ($/person-days)		Indirect Cost		
	Baffinland	QIA	Baffinland	QIA	Baffinland	QIA	Diff
Worker Mobilization - Northern Hires	1594	1,070	$75	$63.16	$437,000	$67,578.95	$178,092
Worker Mobilization - Southern Hires	3719	2,497	$85	$76.62		$191,328.57	
Worker Accommodations and Camp Operations	5312	3,567	$226	$225.50	$1,198,000	$804,358.50	$393,642
TOTAL					**$1,635,000**	**$1,063,266.02**	**$571,734**

5.7 FUEL

Table 5-7 shows a comparison of QIA and Baffinland's reclamation security estimate for the Indirect Cost for fuel. The following three assumptions have been included in QIA's reclamation security estimate.

1. QIA takes the conservative assumption that fuel abandoned on-site will not be available for use for reclamation activities, as there is no guarantee QIA will have access to the fuel, as another creditor may be awarded this asset.
2. QIA assumes that 50% of total fuel storage capacity will be left at closure and will need to be demobilized from Site.
3. QIA assumes that all fuel required for reclamation will have to be mobilized to Site. Contrarily, Baffinland typically assumes it will only need to bring half of the required fuel to complete reclamation activities.

The difference in fuel mobilization is due to Baffinland assuming that 50% of the fuel for reclamation will be available at closure.

Table 5-7 Fuel security estimate comparison.

Item	Quantity (m^3)		Unit Cost		Indirect Cost		
	Baffinland	QIA	Baffinland	QIA	Baffinland	QIA	Diff
Fuel Demobilization	15,000	15,000	$100	$100	$1,500,000	$1,500,000	$0
Fuel Mobilization	590	955	$400	$380	$236,000	$362,900	($126,900)
TOTAL	**15,295**				**$1,736,000**	**$1,862,900**	**($126,900)**

5.8 SHORT-TERM CARE AND MAINTENANCE, CLOSURE MONITORING AND REPORTING

Baffinland's Estimate includes an increase to Post Closure Monitoring of $1,233,000 from $3,776,000 based on the updates to the ICRP in 2018.[26] The updates include cost estimates for post closure monitoring programs. ARKTIS had previously[4] identified gaps in Baffinland's Post Closure Monitoring Schedule and Costs that increase QIA's liability. These omissions are further described in this subsection, where an

[26] Baffinland (2018). Interim Closure and Reclamation Plan Revised Draft – Rev 5. October 30, 2018.

update to the short-term care and maintenance table and maintenance calculations are provided in Appendix C.

Sufficient reclamation security for labour and other supplies to operate the Waste Rock Facility water treatment facility for a minimum of five years based on the requirements of Section 12.4 of the Commercial Lease was not included in Baffinland's Estimate. To estimate the operations and maintenance costs, an annual volume of drainage to be treated was approximated using the stockpile sedimentation pond discharge volumes included in the 2018 monthly monitoring reports submitted to NWB[27] [28] [29] [30] to be 70,355 m^3. An approximate unit rate of \$1/m^3 associated with running a water treatment plant in Nunavut. Based on these assumptions, reclamation security requires an increase of \$351,775 to operate the Waste Rock Facility water treatment facility for the required five years. Valid operational data can increase certainty in this assumed value.

Baffinland has not included a cost to maintain site throughout temporary care and maintenance as well as closure. ARKTIS has developed an approximation for the maintenance of the Tote Road provided in Appendix C using Nunavut Contractor Rates and general understanding of required maintenance from discussions with Baffinland. Using this method, a rate of \$531,847.44/year has been added for the first 5 years including short term maintenance and closure for a total increase of \$2,659,237.

Baffinland's Estimate does not include a reclamation cost for regulatory fees. This would include but not be limited to the application and related administration of acquiring and operating a water licence. Using a historical estimation from the Northwest Territories,[31] ARKTIS has approximated an increase of \$2,300,000.

Baffinland's Estimate does not include costing for the Environmental Effects Monitoring Program from year 5-15. Per Part 2 Division 2 article 19 (1), it may not be required that Baffinland conducts the Environmental Effects Monitoring Program if there is no discharge. It is uncertain is suspending the Environmental Effects Monitoring Program is acceptable by Environment Canada while the pit is filling, creating uncertainty if the reclamation cost associated with the Environmental Effects Monitoring Program is sufficient.

ARKTIS' aggregate security estimate for short-term care and maintenance, closure monitoring and reporting is \$9,826,012. This is a marginal increase of **\$6,060,012** of the current security estimate of \$3,766,000.

5.9 MOBILIZATION AND DEMOBILIZATION OF EQUIPMENT AND MATERIALS

ARKTIS has assumed that items included in Baffinland's Estimate Section 3.3.2.5 Mobilization and Demobilization of Equipment and Materials may be stored on-site while seeking NIRB and NWB approval.

ARKTIS has calculated the Indirect Cost to mobilize the expansion project equipment and materials based on the cubic meters for the equipment designated as Phase 2 Expansion Project Materials and Equipment submitted by Baffinland.[5]

[27] Baffinland (2018).2AM-MRY1325 June 2018 Monitoring Report-ILAE. July 31, 2018.

[28] Baffinland (2018).2AM-MRY1325 July 2018 Monitoring Report-ILAE. August 30, 2018.

[29] Baffinland (2018).2AM-MRY1325 August 2018 Monitoring Report-ILAE. September 30, 2018.

[30] Baffinland (2018).2AM-MRY1325 September 2018 Monitoring Report-ILAE. October 31, 2018.

[31] Aboriginal Affairs and Northern Development Canada (2011). Aboriginal Affairs and Northern Development Canada Technical Intervention – DeBeers Canada Mining Inc. Snap Lake Water Licence MV2011L2-004. November 7, 2011.

During the 2018 Annual Security Review process, ARKTIS estimated[32] that it costs approximately **$2,000,000 per ship** that can carry approximately 27,000 cubic meters. Therefore, it would require approximately 8.5 ships to demobilize all Phase II materials and equipment. As there would require equipment mobilized to load the Phase 2 Expansion Project Materials and Equipment, ARKTIS has assumed that 9 total ships are sufficient for the equipment listed in Baffinland's Estimate for a total of **$18,000,000**. QIA's cost was estimated using a per ship calculation in lieu of a unit cost approach.

Table 5-8 shows a comparison of QIA and Baffinland's reclamation security estimate for demobilization of Phase 2 equipment and materials. Table 5-9 shows a comparison of QIA and Baffinland's reclamation security estimate. ARKTIS has maintained Baffinland's rate until Baffinland provides further operational data for the Waste Rock Facility Water Treatment Plant as recommended in Section 5.8.

Table 5-8 Phase 2 Expansion project equipment demobilization security estimate comparison.

Item	Location	Quantity	Unit Cost ($/m³)		Indirect Cost		
			Baffinland	QIA	Baffinland	QIA	Diff
Crushing Module	Milne Port	18,172	$68		$1,483,420	$18,000,000	($2,408,348)
Screening Module	Milne Port	49,868	$68		$2,262,904		
Car Dumper Module	Milne Port	24,756	$68		$1,683,408		
BMH Conveyors	Milne Port	33,278	$68		$3,391,024		
Rail Construction Materials	Milne Port	81,400	$68		$1,235,696		
Shiploader Module		21,815	$68		$5,535,200		
TOTAL		**229,289**			**$15,591,652**	**$18,000,000**	**($2,408,348)**

Table 5-9 Phase 2 Expansion project equipment demobilization security.

Item	Quantity (pcs)	Unit Cost		Indirect Cost		
		Baffinland	QIA	Baffinland	QIA	Diff
Water Treatment Plant Materials				$13,300	$13,300	$0

5.10 CONTINGENCY

ARKTIS has increased contingency as described in Section 2.5 to 20%. This has been applied to marginal and historical total Direct Costs, contaminated soil treatment costs, care and maintenance costs, and closure monitoring/reporting costs as established in QIA's 2014 Comprehensive Reclamation Security Report[8]. QIA's increase in marginal security based on a 20% contingency is **$4,330,125**.

Baffinland's Estimate includes an increase of $3,038,000 of reclamation security based on 12.5% of the total Direct Costs, mobilization and demobilization of equipment and materials costs, worker

[32] Nunavut Eastern Arctic Shipping (2018). Phone correspondence on February 19, 2018.

accommodation and camp operation costs, mobilization of workers costs, care and maintenance costs, and closure monitoring/reporting costs.

5.11 SUPERVISION, PROJECT MANAGEMENT AND CONTRACT ADMINISTRATION

QIA's reclamation security estimate for project supervision, management and contract administration Indirect Cost is **$1,936,652** or 9.4% of the total Direct Costs, contaminated soil treatment costs, care and maintenance costs, and closure monitoring/reporting costs. Baffinland has calculated the 2019 project management fees to be $636,000, or 9.4% of the total Direct Costs. The difference between QIA's and Baffinland's estimate is based on differing total Direct Costs and the inclusion of contaminated soil treatment costs, care and maintenance costs, and closure monitoring/reporting costs.

5.12 ENGINEERING FEES

Baffinland's Estimate includes an engineering, design and execution planning Indirect Cost allowance of $264,000 or 3.9% of the total Direct Costs. ARKTIS has calculated the 2019 engineering fees to be **$331,477.66** or 3.9% of the total Direct Costs. The difference between QIA's and Baffinland's estimate is based on differing total Direct Costs.

6 RECOMMENDATIONS

Table 6-1 summarizes the reclamation security described throughout this Report, including the 2019 Security Increase of $49,242,529. This is an increase of $27,592,300 from the 2019 Security Increase proposed by Baffinland. The difference is mainly attributed to the difference in approach for Indirect Costs including: 3rd party equipment; short-term care and maintenance, closure monitoring and reporting; Phase 2 demobilization; contingency; and project management fees. There are also differences due to the position taken by QIA for items described in the 2018 Environmental Audit such as the increase in reclamation security for the inventory of equipment and sea containers.

Table 6-1 Summary of recommendations.

	Baffinland	QIA	Difference
2018 Security Estimate	$62,130,000	$74,595,000	($12,465,000)
2019 Work Plan increase[33]	$34,399,000	$48,489,600	($14,090,600)
2019 Total Security Estimate	$95,480,000	$123,084,600	($27,604,600)
2018 Security Held by QIA[34]	$73,829,771	$73,829,771	$0
2019 Security Increase	$21,650,229	$49,254,829	($27,604,600)

[33] The security increase from the 2019 Workplan as well as those identified in the audit/high uncertainty.

[34] As understood by ARKTIS.

7 CLOSURE

This report has been prepared exclusively for the use of the QIA for the specific application described within this report. The details provided in this report are for general information purposes only. The information and recommendations contained in this report should not be used for any other purpose, at another location, or by any other parties. Any use of, or reliance on this report by any third party is at that party's sole risk. ARKTIS assumes no responsibly for inappropriate use of the contents of this report, and disclaims all liability arising from negligence or otherwise. General terms and conditions are provided in Appendix D.

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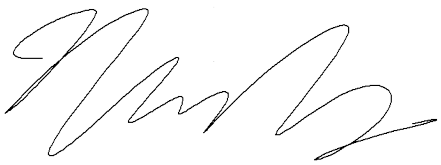

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APPENDIX A – SUMMARY OF DIRECT COST ADJUSTMENTS

Description	Direct Cost		
	Baffinland	QIA	Diff
Concrete Batch Plant		$96,152	($96,152)
Laydown LP1	($19,434)	($21,450)	$2,016
Used conveyors	$131,800	$146,500	($14,700)
Used conveyors	$131,800	$146,500	($14,700)
Grizzly unit 11-0702	$32,950	$36,628	($3,678)
Concrete Batch Plant	$32,950	$36,628	($3,678)
Hydraulic Rock Crusher - Tramac	$32,950	$36,628	($3,678)
Grizzly unit 11-0702	$32,950	$36,628	($3,678)
Jaw Crusher 11-0701	$32,950	$36,628	($3,678)
Screener Unit 10-0701	$32,950	$36,628	($3,678)
1 X D65 ATLAS COPCO DRILL S/N TMG185ED00269	$2,075	$2,090	($15)
30000 L Fuel Tanker Trailer	$1,163	$9,268	($8,105)
1988 MACK Service Truck	$1,456	$1,479	($23)
345 D Excavator	$4,150	$4,181	($31)
PV-271 Drill	$4,150	$4,181	($31)
Cat 793 Mining Truck	$4,150	$4,181	($31)
Kubota RTV-X1100c	$1,458	$1,749	($291)
Used Light Plant	$1,458	$1,749	($291)
Western Star Ore Haul Truck	$22,825	$0	$22,825
Side Dumper Lead or trailer	$22,088	$27,667	($5,579)
2018 Audit Inventory Discrepancies		$62,709	($62,709)
2018 Audit Inventory Discrepancies		$154,409	($154,409)
2018 Audit Inventory Discrepancies		$69,995	($69,995)
2018 Audit Inventory Discrepancies		$62,709	($62,709)
2018 Audit Inventory Discrepancies		$34,948	($34,948)
2018 Audit Inventory Discrepancies		$495,043	($495,043)
Backhaul deloupe float trailer	($1,163)	($1,456)	$293
Backhaul Ford Pickup	($729)	($852)	$123
Backhaul GMC Sierra	($729)	($852)	$123
Backhaul Kenworth Unit	($2,325)	$0	($2,325)
Backhaul Western Star Unit	($3,488)	$0	($3,488)
745C Rock Truck	($10,375)	($10,452)	$77
3rd Party Heavy Mobile Equipment (make up for typical)	$33,200	-	$33,200
3rd Party Medium Mobile Equipment (make up for typical)	($34,875)	-	($34,875)
3rd Party Light Mobile Equipment (make up for typical)	$29,896	-	$29,896
Office trailers (2 x 36 m2)	$3,430	$4,357	($927)
Office trailers (2 x 36 m2)	$3,430	$4,357	($927)
Crusher services trailer (2 x 36 m2)	$3,430	$4,357	($927)
Site Construction Office (2 x 36 m2)	$3,430	$4,357	($927)
Offices and Lunchrooms (5x36m2)	$8,574	$10,893	($2,319)
Quonset hut	$4,764	$6,052	($1,288)
Contractor lunchroom	$1,715	$2,179	($464)
Contractor office	$1,715	$2,179	($464)
Rail Operations offices (2 x 36 m2)	$3,430	$4,357	($927)
Office Trailer (60 x 60)	$15,910	$20,212	($4,302)
Office Trailer (24 x 60)	$6,288	$7,988	($1,700)

Description	Direct Cost		
	Baffinland	QIA	Diff
Office Trailer (12 x 60)	$3,144	$3,994	($850)
Lunchtrailer (44 x 10)	$1,905	$2,421	($516)
Container lunchroom (2 x 36 m2)	$3,430	$4,357	($927)
Container Office (4 x 36 m2)	$6,860	$8,714	($1,854)
Lunchroom	$1,715	$2,179	($464)
Washroom facility for Tote Road	$4,100	$6,536	($2,436)
Washcar	$4,100	$6,536	($2,436)
E-House	$1,771	$6,717	($4,946)
Heated Maintenance shop for pit equipment at KM110.5 laydown	$171,067	$184,908	($13,841)
Bucket Wheel Stacker Reclaimer	$65,900	$73,256	($7,356)
Generator Sets	$131,800	$146,512	($14,712)
Screen Metso FS353	$65,900	$73,256	($7,356)
30,000 L Fuel Tanker Truck	$24,900	$25,084	($184)
374 Excavator	$2,075	$2,090	($15)
740B ARTICULATING WATER TRUCK	$2,075	$2,090	($15)
745C Rock Truck	$4,150	$4,181	($31)
793 Haul Truck	$6,225	$6,271	($46)
922K Wheel Loader	$2,075	$2,090	($15)
950M Loader	$2,075	$2,090	($15)
CONVEYING - Conveyor Feeder	$2,075	$2,090	($15)
CONVEYING - Jump Conveyor	$2,075	$2,090	($15)
D10 Dozer	$2,075	$2,090	($15)
Excavator - cat 349	$2,075	$2,090	($15)
Feeder Dolly	$2,075	$2,090	($15)
Fines Mobile Stacker	$2,075	$2,090	($15)
Fuel Tanker and tractor	$2,075	$2,090	($15)
Fuel/Lube Truck	$1,163	$1,456	($293)
Heavy Duty Shunt Truck Heavy Mobile Equipment	$2,075	$2,090	($15)
Jet A Truck	$2,075	$2,090	($15)
MOBILE EQUIPMENT - MINE SITE WHEEL DOZER - CAT 824H	$2,075	$2,090	($15)
Mobile Primary Crusher Unit	$2,075	$2,090	($15)
Pumper fire truck	$2,075	$2,090	($15)
Generator/Air Compressor	$3,168	$3,333	($165)
Light Plant	$42,761	$44,997	($2,236)
F250 Passenger Van	$729	$852	($123)
Frost Fighter Heater	$5,104	$5,964	($860)
Genie Manlift s135x	$2,188	$2,556	($368)
Light ERT utility vehicle	$729	$852	($123)
Off Road Tracked Rescue Vehicle	$729	$852	($123)
Pickup truck (F350 or similar)	$10,938	$12,781	($1,843)
Portable water pump	$1,458	$1,704	($246)
Skid Steer, Cat 247B or 275D	$729	$852	($123)
Genie Manlift z60	$1,458	$1,704	($246)
Generator (medium)	$3,393	$3,860	($467)
4x4 hotseating bus	$1,163	$1,456	($293)
Boom Truck	$1,163	$1,456	($293)
Freightliner Highway Truck	$1,163	$1,456	($293)
Passenger Bus	$4,650	$5,825	($1,175)

Description	Direct Cost		
	Baffinland	QIA	Diff
Pressure washing truck	$1,163	$1,456	($293)
Telehandler	$1,163	$1,456	($293)
Telehandler	$1,163	$1,456	($293)
Tri-Trombone flat trailer	$1,163	$1,456	($293)
Zoom Boom 12,000 lbs	$1,163	$1,456	($293)
3rd Party Heavy Mobile Equipment (make up for 'typical' fleet)	$70,550		$70,550
3rd Party Light Mobile Equipment (make up for 'typical' fleet)	$44,479		$44,479
3rd Party Medium Mobile Equipment (make up for 'typical' fleet)	$56,963		$56,963
Laydown LP2	$44,847	$49,503	($4,656)
Ore Stockpile Pad Expansion 2019	$209,287	$231,014	($21,727)
Q1 Quarry (additional marginal increase in 2019)	$337,849	$372,923	($35,074)
Laydown 2 - 2019	$83,333	$92,076	($8,743)
Laydown 4 - 2019	$99,014	$109,402	($10,388)
Laydown 7 - 2019	$43,160	$47,688	($4,528)
Laydown 9 - 2019	$138,141	$152,634	($14,493)
Laydown 10 - 2019	$51,523	$56,929	($5,406)
Laydown 13 - 2019	$10,454	$11,551	($1,097)
PQ2a quarry	$516,491	$570,110	($53,619)
PQ4a quarry	$156,965	$173,261	($16,296)
PQ6a quarry	$290,012	$320,120	($30,108)
PQ12a quarry	$347,118	$383,154	($36,036)
Q5 Quarry Expansion 2019	$1,832,140	$2,022,344	($190,204)
Expansion of 800p camp laydown	$17,939	$19,801	($1,862)
WRF Water Treatment plant laydown 2019	$5,232	$5,775	($543)
KM107.5 Laydown for haul road parking	$136,037	$150,159	($14,122)
Km107 Stockpile and access Road	$199,421	$220,124	($20,703)
Mine Site Fuel Tank Farm 2019 Footprint	$32,288	$35,675	($3,387)
Ore Stockpile Sedimentation - New 2019	$62,134	$70,172	($8,038)
Ore Stockpile Sedimentation Pond 2a	$18,226	$20,584	($2,358)
Contaminated Snow dump/oily water containment - new 2019	$11,116	$12,631	($1,515)
New Hazardous Waste Berm 2019	$1,482	$1,684	($202)
KM110.5 Laydown for Mine Ops	$269,084	$297,018	($27,934)
New PWSP 2019	$17,209	$19,554	($2,345)
Crusher Pad Expansion 2019	$17,939	$56,137	($38,198)
KM107 Sedimentation Pond	$30,653	$34,618	($3,965)
Crusher Pad Sedimentation Pond 2019	$8,285	$9,356	($1,071)
Landfarm	$37,280	$42,103	($4,823)
Hazardous Waste Berm - New 2019	$1,482	$1,684	($202)
Fuel Tank Containment Area	$49,707	$56,137	($6,430)
Milne Port Camp Pad Natural Stream Diversion		$4,703	($4,703)
Crusher Maintenance Shop Laydown Area Expansion		$3,300	($3,300)
Water Tanks – Light Tank	$10,263	$15,005	($4,742)
Fuel Tanks – Light Diesel Tank	$14,750	$15,778	($1,028)
Fuel Tanks – Medium Mobile Diesel Tank	$58,669	$63,481	($4,812)
Fuel Tanks – Largest Diesel Tank	$274,555	$312,552	($37,997)
Culverts for Quarry Access Roads	$4,000	$4,000	$0
Culverts for KM107 Stockpile Access Road	$11,250	$11,250	$0
Culverts for 800p Camp Discharge Line	$3,000	$3,000	$0

Description	Direct Cost		
	Baffinland	QIA	Diff
25 Culverts		$25,000	($25,000)
Fill Application for 2018 Estimate Addendum	$98,400	$102,387	($4,009)
Washroom facility for Tote Road		$524	($524)
Washcar		$524	($524)
E-House		$538	($538)
Heated Maintenance shop for pit equipment at KM110.5 laydown		$21,822	($21,822)
Total	**$6,913,762**	**$8,498,887**	**($1,585,146)**

APPENDIX B – SUMMARY OF INDIRECT COST ADJUSTMENTS

Description	Indirect Cost		
	Baffinland	QIA	Diff
Washroom facility for Tote Road	$0	$169	($169)
Washcar	$0	$169	($169)
E-House	$0	$174	($174)
Heated Maintenance shop for pit equipment at KM110.5 laydown	$0	$7,046	($7,046)
Ammonium Nitrate	$3,508,000	$3,508,400	($400)
3rd Party Heavy Mobile Equipment (make up for 'typical' fleet)	$0	$542,794	($542,794)
3rd Party Light Mobile Equipment (make up for 'typical' fleet)	$0	$136,514	($136,514)
3rd Party Medium Mobile Equipment (make up for 'typical' fleet)	$0	$500,363	($500,363)
Western Star Ore Haul Truck	$0	$175,610	($175,610)
3rd Party Heavy Mobile Equipment 2019 ASR Reconciliation (make up for typical)	$0	$255,432	($255,432)
3rd Party Medium Mobile Equipment 2019 ASR Reconciliation (make up for typical)	$0	($246,080)	$246,080
3rd Party Light Mobile Equipment 2019 ASR Reconciliation (make up for typical)	$0	$114,226	($114,226)
Backhaul Kenworth Unit (Medium Mobile Equipment)	$0	($2,912)	$2,912
Backhaul Western Star Unit (Medium Mobile Equipment)	$0	($4,368)	$4,368
Baffinland 10% of Direct Cost Demobilization Cost	$676,460	$0	$676,460
Water Treatment Plant Materials	$13,000	$13,000	$0
Fuel Demobilization	$1,500,000	$1,500,000	$0
Fuel Mobilization	$236,000	$362,900	($126,900)
Crushing Module	$1,483,420	$18,000,000	($2,408,348)
Screening Module	$2,262,904		
Car Dumper Module	$1,683,408		
BMH Conveyors	$3,391,024		
Rail Construction Materials	$1,235,696		
Shiploader Module	$5,535,200		
Remove 20" ISO-Container (TEU)	$0	$985,480	($985,480)
Calcium Chloride	$0	$62,460	($62,460)
Worker Mobilization - Northern Hires	$437,000	$67,579	$178,092
Worker Mobilization - Southern Hires		$191,329	
Worker Accommodations and Camp Operations	$1,198,000	$804,359	$393,642
Hazardous Substances	$0	$358,000	($358,000)
Short Term Care and Maintenance	$1,233,000	$6,060,012	($4,827,012)
Contingency (12.5%/20%)	$3,038,000	$4,330,125	($1,292,125)
PM Fees	$636,000	$1,936,652	($1,300,652)
Engineering Fees	$264,000	$331,478	($67,478)
Total	**$28,331,112**	**$39,990,908**	**($11,659,796)**

APPENDIX C – SHORT-TERM CARE AND MAINTENANCE

Table D.1: Short-term Care and Maintenance and Post Closure Monitoring program costs.

	Temporary Care and Maintenance		Closure			Post Closure							
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 16	Year 17	Year 18
Short Term Temporary Care and Maintenance Program	$100,000	$100,000											
Aquatic Monitoring Program (AEMP, DFO)	$100,000	$100,000	$200,000	$200,000	$200,000	$100,000	$100,000	$100,000	$50,000	$50,000			
Environmental Effects Monitoring Program	$50,000	$50,000	$50,000	$50,000	$50,000						$50,000	$50,000	$50,000
Post Closure Fauna and Flora Monitoring	$100,000	$100,000	$200,000	$200,000	$200,000								
Marine Monitoring			$200,000	$200,000	$200,000								
Geotechnical/Engineering Monitoring	$30,000	$30,000	$30,000	$30,000	$30,000	$15,000	$15,000	$15,000	$15,000	$15,000			$15,000
Environmental Site Assessment		$150,000			$150,000								
Safety Compliance Inspection	$25,000	$25,000	$25,000	$25,000	$25,000	$10,000	$10,000	$10,000	$10,000	$10,000			$10,000
Socio-economic Reporting	$40,000	$40,000	$40,000	$40,000	$40,000	$20,000	$20,000	$20,000	$20,000	$20,000			$20,000
Air Quality Monitoring Program	$30,000	$30,000	$60,000	$60,000	$60,000	$30,000							
Regulatory	$750,000	$750,000	$100,000	$100,000	$100,000	$100,000	$100,000				$100,000	$100,000	$100,000
Maintenance	$531,847	$531,847	$531,847	$531,847	$531,847								
WRF Water Treatment Plant	$70,355	$70,355	$70,355	$70,355	$70,355								
												Total	$9,826,012

Table D.2: Summary of costs used to calculate Maintenance.

Description	Labour	Rate
Steam Culverts		
4 labourers	$330.04	/hr
12 hr/day	$3,960.48	/day
14 days/year	$55,446.72	/year
Road Maintenance		
3 medium equipment operators	$330.51	/hr
12 hr/day	$3,966.12	/day
30 days/year	$118,983.60	/year
3 graders	$750.00	/hr
12 hr/day	$9,000.00	/day
30 days/year	$270,000.00	/year
Road Repair		
2 medium equipment operators	$220.34	/hr
12 hr/day	$2,644.08	/day
14 days/year	$37,017.12	/year
2 Medium Equipment	$300.00	/hr
12 hr/day	$3,600.00	/day
14 days/year	$50,400.00	/year
Total	$531,847.44	/year

APPENDIX D– GENERAL TERMS AND CONDITIONS

USE OF REPORT

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of ARKTIS Solutions Inc.'s (ARKTIS) client. ARKTIS does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than ARKTIS' client unless otherwise authorized in writing by ARKTIS. Any unauthorized use of the report is at the sole risk of the user.

LIMITATIONS OF REPORT

This report is based solely on the conditions which existed on site at the time of ARKTIS' investigation. The client, and any other parties using this report with the express written consent of the clients and ARKTIS, acknowledge that conditions affecting the environmental assessment of the site can vary with time and that the conclusions and recommendations set out in this report are time sensitive.

The client, and any other party using this report with the express written consent of the client and ARKTIS, also acknowledge that the conclusions and recommendations set out in this report are based on limited observations and testing on the subject site and that conditions may vary across the site which, in turn, could affect the conclusions and recommendations made.

The client acknowledges that ARKTIS is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the client.

During the performance of the work and the preparation of this report, ARKTIS may have relied on the information provided by persons other than the client. While ARKTIS endeavors to verify the accuracy of such information when instructed to do so by the client, ARKTIS accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

STANDARD OF CARE

Services performed by ARKTIS for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and financial and physical constraints applicable to the services. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

ALTERNATE REPORT FORMAT

Where ARKTIS submits both electronic file and hard copy versions of reports, drawings and other project related documents and deliverables (collectively termed instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by ARKTIS shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by ARKTIS shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of instruments of professional services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except ARKTIS. The Client warrants that instruments of professional services will be used only and exactly as submitted by ARKTIS.