Meliadine Gold Mine Project
(Agnico Eagle Mines Limited)
Amendment of water licence 2AM-MEL1631

Crown-Indigenous Relations and Northern Affairs Canada

Submission to the Nunavut Water Board
March 17, 2021

GCDOCS # 91798581

EXECUTIVE SUMMARY

Crown-Indigenous Relations and Northern Affairs Canada has participated as an Intervenor in the ongoing review of Agnico Eagle Mines Limited's application to amend their Nunavut Water Board type A water licence 2AM-MEL1631 for the Meliadine Gold Mine Project. This project is situated approximately 25 kilometers north of Rankin Inlet in Nunavut's Kivalliq region. The mine plan for the development of the Tiriganiaq gold deposit has two open pits and one underground mine.

Discussion during the technical review covered the following topics:

- **Scope of licence** – what permissions are added with this amendment
- **Water & wastewater management** – how much water can be used and what is done with the wastewater
- **Predictions of water quantity and quality** – how good models are at predicting how much water will be on site and how clean it will be
- **Discharge criteria for wastewater** – how clean water must be before being discharged to Meliadine Lake
- **Waste management** – where the piles of waste rock will go
- **Adaptive management** – how discussions of the Adaptive Management Plan for Water Management at the Nunavut Impact Review Board tie in with the water licence
- **Closure, reclamation & security** – how the site will be cleaned up at the end and how much money needs to be set aside in case Agnico Eagle cannot do that

Crown-Indigenous Relations and Northern Affairs Canada's seven technical comments have been addressed by Agnico Eagle. Several management plans may have to be revised depending on the outcome of the Nunavut Impact Review Board review of the waterline to discharge saline and contact water into Melvin Bay.

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To be provided

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INTRODUCTION

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act,* is an Intervenor of the Nunavut Water Board water licensing process for the amendment of water licence 2AM-MEL1631 for the Meliadine Gold Mine Project, as proposed by Agnico Eagle Mines Limited (AEM).

CIRNAC reviewed AEM's application for the water licence amendment and provided technical comments to the Nunavut Water Board (Board) for their consideration. The review process included Information Requests and a Technical Review submission, both of which received responses from AEM. This was followed by a Technical Meeting on November 30, 2020 and a Pre-Hearing Conference on January 19, 2021 in Rankin Inlet, Nunavut. On February 26, 2021 the Board distributed the Pre-Hearing Conference Decision inviting interested parties to submit final written submissions.

The amendment under consideration involves increasing the scope of water licence 2AM-MEL1631 to include:

- Increasing Total Dissolved Solids (TDS) discharge threshold;
- Increasing freshwater consumption for operations;
- Expanding Waste Rock Storage Rock Facility #3 (WRSF3);
- Reassigning the laydown area formerly designated for Waste Rock Storage Facility #2 (WRSF2) to be used for the expanded WRSF3;
- Constructing site access roads to future deposits (Discovery, Pump, Fzone, and WES-NORMEG); and
- Increasing existing security.

The Board has provided a list of issues to be discussed at the public hearing. The topics have been used as headings in this document to organize the comments we made. Technical comments are provided in the following section. CIRNAC's security estimate is provided as a RECLAIM model in Annex A.

During this amendment process, AEM has provided a draft water licence proposing changes to their current 2AM-MEL1631 water licence. CIRNAC is providing comments on the proposed draft water licence in Annex B.

TECHNICAL COMMENTS

CIRNAC submitted two Information Requests (IRs) and seven Technical Review Comments (TCs). Exchanges and discussion with AEM during the water licence amendment process so far have allowed CIRNAC to clarify the issues we identified. CIRNAC's outstanding concerns are more procedural than technical in nature.

Comments submitted by CIRNAC have been assigned to one of the topics in the Nunavut Water Board's list of issues and have been organized herein by topic rather than by numerical order; however several comments could be assigned to more than one heading. Comments have been developed with the support of Arcadis Canada Inc.

1. Scope of Licence

CIRNAC agrees the scope of licence amendments described in Pre-hearing Conference Decision Report list of issues match those in the application.

These are:

- change Total Dissolved Solid thresholds for discharge to Meliadine Lake;
- increase authorized annual freshwater consumption;
- eliminate planned Waste Rock Storage Facility #2 to create additional laydown areas;
- update waste management strategy;
- construction of additional site and access roads; and
- update Interim Closure and Reclamation Plan.

CIRNAC submitted a single comment regarding the scope of licence, as summarised in Table 1. It has been resolved. As discussed in topic #2 below, the change of scope does not include a modification to site water management, other than an increase to water use authorization. Specifically, the operation of the waterline to move wastewater from site to Melvin Bay is not included in the scope of the amendment, even though it is currently under review by the Nunavut Impact Review Board (NIRB).

Table 1 Status of comment pertaining to scope of licence

Comment #	Issue	Status
TC2	Works Related to Additional Deposits (Discovery, Pump, Fzone, and WES-NORMEG)	Resolved

Works Related to Additional Deposits (Discovery, Pump, Fzone, and WES-NORMEG) (TC2): CIRNAC requested clarifications regarding AEM's intent to develop

deposits referenced in the application and not currently included in the type A water licence. These deposits were referenced in the application with the suggestion that waste rock produced would be placed in the an extended WRSF3. AEM clarified that the current amendment only requests a scope increase to build access roads to additional deposits and does not cover mining.

2. Water Use and Management

Under this application, AEM is requesting authorization for increased for water use by 423,706 m^3/year, from 318,000 m^3/year to 741,706 m^3/year. They are not proposing to change their water management on site. CIRNAC submitted a single comment regarding water use and management, as summarised in Table 2. It is resolved. Should the concurrent NIRB process result in approval of the waterline to Melvin Bay, changes to water management on site would have to be reflected in the water licence prior to waterline operation. This is discussed further in topics #4, #7 and #11 below.

Table 2 Status of comment pertaining to water use and management

Comment #	Issue	Status
TC6	Surface Contact Water Management and Discharge to Melvin Bay	Resolved

Surface Contact Water Management and Discharge to Melvin Bay (TC6): CIRNAC initially identified that no clear descriptions related to changes to water management strategy and potential changes to infrastructure and operations at site had been provided by AEM for the scenario in which the waterline receives NIRB approval and recommended that such information be provided. On November 13, 2020, AEM responded water management would remain similar but acknowledged "*There may be other changes evaluated based on the comments from the NIRB process.*"

3. Water Balance and Water Quality Model and Predictions

AEM provided a water balance and two water quality models for TDS loading. The SNC and Golder models for TDS loading were defined as upper and lower bound predictions for wet and dry years, respectively. CIRNAC submitted two comments regarding water balance and water quality model and predictions, as summarised in Table 3. The first has been resolved and we recommend follow-up for the second.

Table 3 Status of comments pertaining to water balance and water quality model and predictions

Comment #	Issue	Status
TC3	Water Balance Clarifications	Resolved
Tech. meeting follow-up	Difference in TDS models	Follow-up recommended

Water Balance Clarifications (TC3): CIRNAC noted a lack of clarity on the 3,500 mg/L Total Dissolved Solids threshold for reverse osmosis (RO) treatment of saline water from the underground mine and a lack of rationale on water diversion from containment pond #1 (CP1) to saline pond #3 (SP3). AEM responded the threshold was 3500 mg/L was set in 2020 and referred to Saline Effluent Treatment Plant design report for the requested rationale.

Difference in TDS models: Following the technical meeting, CIRNAC submitted further questions on December 4, 2020 on the rationale behind the two different model assumptions and the source of 40% of TDS, defined as “rest of site”. AEM specified both models had many of the same assumptions and differences were because the upper bound model was calibrated with 2019 and 2020 data from site and incorporated cryo-concentration.

Identifying the root cause of elevated TDS on site may have implications on water management systems. Based on the evidence presented to date, it is unclear why the inventory of high TDS water generated by the site has been greater than anticipated. Contrary to statements by AEM, the increase does not appear to be attributable to saline groundwater inflows that were higher than predicted. In addition, we note that approximately 78% (in 2019) and 44% (in 2020) of the TDS inventory (according to Table 3-1 from the SNC 2020 model) is associated with "rest of site”, and that there is very limited information describing the nature of those TDS sources and how they are managed on site. Specifically, AEM has not provided details regarding the specific locations of those surface drainage TDS loads, nor have any mitigation measures been proposed to decrease the TDS loading rates from those sources.

CIRNAC recommends adding a condition in an amended water licence for AEM to undertake additional site monitoring and sampling as necessary to provide further information on sources of TDS and management from the “rest of site”. Specifically, CIRNAC recommends that AEM present a detailed technical assessment describing the TDS loading rates from surface sources to address this uncertainty. The assessment should identify specific sources of loadings (e.g., saline drainage from ore piles/piles, tailings storage facility (TSF), landfarm, landfill, catchment area around CP1, P-Areas)

and quantify the TDS loading rates from each source. In the event that there is insufficient information to characterize these TDS loading sources, AEM should design and implement a monitoring program to collect the missing information. The assessment should also identify potential mitigations that could reduce the TDS loading rates.

4. Wastewater Management and Treatment

Plans for a waterline to move wastewater from site to Melvin Bay are currently under review by the NIRB. The waterline was included in the reclamation cost estimate discussed in this current water licence amendment. CIRNAC submitted a single comment regarding wastewater management and treatment, as summarised in Table 4. It has been resolved.

Table 4 Status of comment pertaining to wastewater management and treatment

Comment #	Issue	Status
IR1	Risk to Fresh Water from Water Pipeline Spill	Resolved

Risk to Fresh Water from Water Pipeline Spill (IR1): CIRNAC requested information on construction, design and spill planning for the planned waterline. AEM specified that operation of the waterline was not part of this application and would be the subject of an alternative Board application should the waterline be approved by the NIRB.

5. Requested Effluent Quality Limits for Total Dissolved Solids (TDS)

AEM requested that criteria for Meliadine Lake discharge in Part F, Item 3 of their water licence be raised from 1,400 mg/L to 3,500 and 5,000 mg/L respectively for maximum average and maximum grab sample concentrations and that the edge of the mixing zone (at 100 m radius) be 1,000 mg/L. CIRNAC submitted three comments regarding requested effluent quality limits for TDS, as summarised in Table 5. They have been resolved.

CIRNAC supports the objective of minimizing the discharge of effluents to Meliadine Lake and is of the opinion this can be achieved once the waterline is in place and by applying the proposed Adaptive Management Plan (topic #7 below). Moreover, CIRNAC defers to Environment and Climate Change Canada and the Kivalliq Inuit Association for determining appropriate discharge limits.

Table 5 Status of comment pertaining to requested effluent quality limits for total dissolved solids

Comment #	Issue	Status
IR2	Amendment to Surface Contact Water Discharge Criterion: Total Dissolved Solids	Resolved
TC1	Total Dissolved Solids (TDS) Thresholds	Resolved
TC5	Validation of Proposed Total Dissolved Solids (TDS) Discharge Criteria	Resolved

Amendment to Surface Contact Water Discharge Criterion: Total Dissolved Solids (IR2): CIRNAC requested supporting information for proposed changes to TDS threshold and Effluent Quality Criteria and Site-Specific Water Quality Objective. AEM's reply presented and referred to information collected during the 2020 discharge which was the subject of an emergency amendment. CIRNAC requested further clarifications via technical comments 1 and 5.

Total Dissolved Solids Thresholds (TC1): CIRNAC requested evidence-based rationale for the proposed TDS threshold revision. AEM responded TDS concentrations in CP1 had been trending upwards and exceeded the current discharge limit of 1,400 mg/L. They also provided model results with predictions of future TDS concentrations.

Validation of Proposed Total Dissolved Solids Discharge Criteria (TC5): CIRNAC recommended that requested limits be validated with all available monitoring and laboratory data. AEM provided a revised Water Quality Management Optimization Plan and a three dimensional hydrodynamic model report using available data.

6. Waste Management

This amendment application requests that waste rock and overburden, originally planned for placement in WRSF2, be placed instead within an increased footprint of WRSF3. CIRNAC submitted a single comment regarding waste management, as summarised in Table 6. It has been resolved.

Table 6 Status of comment pertaining to waste management

Comment #	Issue	Status
TC4	WRSF3 Expansion and Updated Waste Management Strategy	Resolved

WRSF3 Expansion and Updated Waste Management Strategy (TC4): CIRNAC requested information on additional deposits referenced as a basis for expansion of

WRSF3 and their lithology and geochemistry. AEM clarified that the expansion of WRSF3 is necessary because of cancellation of WRSF2 and not because of additional deposits. They also stated this amendment application does not change the mine plan or include the mining of Discovery, Pump, Fzone or WES-NORMEG deposits.

7. Adaptive Management

In the concurrent NIRB review process, AEM has produced an Adaptive Plan for Water Management at the Meliadine Mine. CIRNAC reviewed and suggested changes to the plan's goals and triggers through the NIRB process. Version 1, dated February 2021, covers both saline and contact water discharge through the proposed waterline between the mine site and Melvin Bay.

CIRNAC supports the use of the adaptive management approach to only discharge compliant contact water into Meliadine Lake as the 8th possible activity of the "caution" management level, while also allowing AEM site water management flexibility. Following the plan, there would be no discharge of contact water into Meliadine Lake under "normal" operating conditions.

CIRNAC recognizes that regardless of the NIRB decision, the Board does not intend to integrate the Adaptive Management Plan for Water Management in the water licence.Should the NIRB approve the waterline to Melvin Bay, site wastewater management will change. At minimum this needs to be reflected in the plans approved under the water licence, and it may require further changes.

8. Closure and Reclamation Planning

AEM updated their Interim Closure and Reclamation Plan (ICRP), and CIRNAC noted some elements to reflect the proposed site changes and the proposed water lines were lacking in the updated plan. With inclusion of these details, we would consider the ICRP appropriate for the project at this time.

9. Security

AEM produced a revised reclamation security cost estimate to reflect changes to the ICRP. CIRNAC worked with the Kivalliq Inuit Association and AEM and has reached a final agreement on the security amount: $69,687,246. The supporting RECLAIM model estimate is included as Annex A.

CIRNAC submitted a single comment regarding security, as summarised in Table 7. It has been resolved.

Table 7 Status of comment pertaining to security

Comment #	Issue	Status
TC7	Reclamation Security Estimate Update	Resolved

Reclamation Security Estimate Update (TC7): CIRNAC ensured the reclamation estimate was consistent with the ICRP and created an independent estimate of security requirement, which has since been revised.

10. Water User Compensation

CIRNAC does not have any comments on this topic.

11. Revisions to Management Plans

Existing management plans require revision to reflect proposed changes. With the changes discussed for this water licence amendment, CIRNAC would be looking to review revised versions of:

- Water Management Plan
- Waste Management Plan
- Interim Closure and Reclamation Plan

Should the NIRB approve the waterline to Melvin Bay, we would be looking to review revised versions of the following plans prior to waterline operation:

- Water Management Plan with further revisions
- Spill Contingency Plan
- Groundwater Management Plan

CIRNAC will also review construction designs and drawings for the new infrastructure proposed, including water crossings of a potential waterline.

CONCLUSION

CIRNAC supports the changes proposed in the Adaptive Management Plan which eliminate compliant contact water discharge into Meliadine Lake under normal operating conditions and would like to see this operationalized as soon as possible. We recognize that regardless of the NIRB's decision, the Board will not integrate the plan in an amended water licence. However, should the NIRB approve the waterline to Melvin Bay, the proposed measures would impact how both saline and contact water are managed on site. At a minimum, this would need to be reflected in the water licence's management plans prior to waterline operation. The NIRB decision may also require further changes to the water licence.

CIRNAC's technical comments have been addressed. Our follow-up recommendation is for AEM to provide a detailed technical assessment describing the TDS loading rates from surface sources, with additional site monitoring as necessary, to provide further information on the sources of TDS and management from the "rest of site".

Finally, CIRNAC recommends the Board set reclamation security in an amended licence to $69,687,246, in order for the Crown and the Kivalliq Inuit Association to be secured for activities and infrastructure associated with the Meliadine Project. The security will be held through a security management agreement.

Annex A

RECLAIM Reclamation Cost Estimate

SUMMARY OF COSTS

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY
OPEN PIT	Tiriganiaq Pit 1	$1 651 272	$825 636	$825 636
	Tiriganiaq Pit 2	$389 127	$194 563	$194 563
UNDERGROUND MINE	Tiriganiaq	$1 096 384	$523 192	$573 192
TAILINGS FACILITY	Tailings Storage Facility	$5 081 950	$2 540 975	$2 540 975
ROCK PILE	Waste Rock Storage Facility 1	$247 350	$123 675	$123 675
	Waste Rock Storage Facility 2	$0	$0	$0
	Waste Rock Storage Facility 3	$60 000	$30 000	$30 000
BUILDINGS AND EQUIPMENT	Meliadine Mine	$20 247 209	$10 123 605	$10 123 605
CHEMICALS AND CONTAMINATED SOIL MANAGEMEN		$2 359 406	$1 179 703	$1 179 703
SURFACE AND GROUNDWATER MANAGEMENT		$4 460 458	-	$4 460 458
INTERIM CARE AND MAINTENANCE		$5 294 620	-	$5 294 620
	SUBTOTAL: Capital Costs	**$40 887 775**	**$15 541 349**	**$25 346 426**
	PERCENT OF SUBTOTAL		**38%**	**62%**

INDIRECT COSTS		COST	LAND LIABILITY	WATER LIABILITY
MOBILIZATION/DEMOBILIZATION		$6 961 400	$2 646 012	$4 315 388
POST-CLOSURE MONITORING AND MAINTENANCE		$5 946 270	$2 260 163	$3 686 107
ACTIVE CLOSURE MONITORING AND MAINTENANCE		$3 216 591	$1 222 619	$1 993 972
ENGINEERING	5%	$2 044 389	$777 067	$1 267 321
PROJECT MANAGEMENT	5%	$2 044 389	$777 067	$1 267 321
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	2%	$817 755	$310 827	$506 929
BONDING/INSURANCE	1%	$408 878	$155 413	$253 464
CONTINGENCY	18%	$7 359 799	$2 797 443	$4 562 357
MARKET PRICE FACTOR ADJUSTMENT	0%	$0	$0	$0
	SUBTOTAL: Indirect Costs	**$28 799 471**	**$10 946 613**	**$17 852 859**

TOTAL COSTS	**$69 687 246**	**$26 487 961**	**$43 199 285**

2 **Open Pit Name:** **Tiriganiaq Pit 1** **Pit # 1**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	same count as AEM	each	17	SH	$37.08	$630	50%	$315	$315
Berm at crest	assume there is insufficient material on surface to dozer the berm in place and so overburden and/or waste rock will be recovered from stockpiles to construct the berm	m3	6 308	SB4L	$5.50	$34 694	50%	$17 347	$17 347
Block roads	Assume 1.5H:1V slope for front/back embankments to road berm	m3	320	DRH	$2.40	$768	50%	$384	$384
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow		#N/A	$0.00	$0		$0	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel (soil A)				#N/A		$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Captital									
Remove stationary equipment (sump pumps	AEM used $10,000 in 2020 Whale Tail Security	each	1	WT	$10 000.00	$10 000	50%	$5 000	$5 000
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station & piping system	AEM used $800,000 in the 2019 Whale Tail Security. 80/20 spilt is reasonable as used in AEM 2020 estimate (80% for Pit 1)	each	1	AEM	$640 000.00	$640 000	50%	$320 000	$320 000
Supply/install piping system	5 km of piping per AEM 2020 document	m	5000	PLIL	$50.00	$250 000	50%	$125 000	$125 000
Supply - install pump to flood		each		PF	$350 000.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost	AEM used $0.12/m3 all in cost for Whale Tail Security 2020								
Operate Pumps to flood pit	lower fuel	each		MBK	$558 940.32	$0		$0	$0
Operate pumps (power)		m3		#N/A	$0.00	$0		$0	$0
Maintain pump/pipeline	2 workers x 12 hrs/d, 4 months /yr	ınhours	2304	MBK	$49.60	$114 278	50%	$57 139	$57 139
Annual Pump Servicing	2x Manufacturers Consultant x 12 hr x 7days per yr	$/h	134.4	MBK	$120.00	$16 128	50%	$8 064	$8 064
Pump Servicing Travel Allowance	round trip per person	visits	1.6	MBK	$4 000.00	$6 400	50%	$3 200	$3 200
Accommodations	120 days x 2 labourers + 7 days x 2 Consultants	andays	203.2	MBK	$100.00	$20 320	50%	$10 160	$10 160
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other- Water purchased to flood pit from Meliadine Lake		m3	3 066 667	MBK	$0.0265	$81 267	50%	$40 633	$40 633
					Annual pumping costs	$238 393			
Number of years of pump flooding		years	3.0						
					Total pumping costs	$715 179	50%	$357 590	$357 590
					Total	$1 651 272		$825 636	$825 636
					% of Total			50%	50%

Open Pit Name: **Tiriganiaq Pit 2** **Pit # 2**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs	same count as AEM	each	8	SH	$37.08	$297	50%	$148	$148
Berm at crest	dozer the berm in place and so overburden and/or waste rock will be recovered from stockpiles to construct the berm	m3	2 835	SB4L	$5.50	$15 593	50%	$7 796	$7 796
Block roads	Assume 1.5H:1V slope for front/back embankment	m3	320	DRH	$2.40	$768	50%	$384	$384
Other				#N/A	$0.00	$0		$0	$0
STABILITY STUDY									
Conduct stability and setback study		allow		#N/A	$0.00	$0		$0	$0
STABILIZE SLOPES									
Off-load crest, soil A		m3		#N/A	$0.00	$0		$0	$0
Off-load crest, soil B		m3		#N/A	$0.00	$0		$0	$0
Doze/trim overburden at crest		m3		#N/A	$0.00	$0		$0	$0
Drill & blast pit crest		m3		#N/A	$0.00	$0		$0	$0
Buttress slope		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER/CONTOUR SLOPES									
Place fill, soil A		m3		#N/A	$0.00	$0		$0	$0
Place fill, soil B		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate slopes		ha		#N/A	$0.00	$0		$0	$0
Vegetate pit floor		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SPILLWAY									
Excavate channel (soil A)		m		#N/A		$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
RECLAIM QUARRIES									
Contour slopes		m3		#N/A	$0.00	$0		$0	$0
Place overburden		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m3		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Captital									
Remove stationary equipment (sump pumps	AEM used $10,000 in 2020 Whale Tail Security	each	1	WT	$10 000.00	$10 000	50%	$5 000	$5 000
Remove dewatering pipeline		m		#N/A	$0.00	$0		$0	$0
Remove power lines		each		#N/A	$0.00	$0		$0	$0
Construct diversion ditches		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l A		m3		#N/A	$0.00	$0		$0	$0
-Ditch, mat'l B		m3		#N/A	$0.00	$0		$0	$0
Construct embankment/dam		m3		#N/A	$0.00	$0		$0	$0
Supply/install pump station & piping system	AEM used $800,000 in the 2019 Whale Tail Security. 80/20 spilt is reasonable as used in AEM 2020 estimate (20% for Pit 2)	each	1	AEM	$160 000.00	$160 000	50%	$80 000	$80 000
Supply/install piping system	500 m of piping per AEM 2020 document	m	500	PLIL	$50.00	$25 000	50%	$12 500	$12 500
Supply - install pump to flood		each		PF	$0.00	$0		$0	$0
Remove pump post-closure		each		#N/A	$0.00	$0		$0	$0
Remove pipeline post-closure		m		#N/A	$0.00	$0		$0	$0
FLOOD PIT-Annual Cost	AEM used $0.12/m3 all in cost for Whale Tail Security 2020								
Operate pumps (power)		m3		POCL	$0.12	$0		$0	$0
Maintain pump/pipeline	2 workers x 12 hrs/d, 4 months /yr	unhours	576	MBK	$49.60	$28 570	50%	$14 285	$14 285
Annual Pump Servicing	2x Manufacturers Consultant x 12 hr x 7days per y	$/h	33.6	MBK	$120.00	$4 032	50%	$2 016	$2 016
Pump Servicing Travel Allowance	round trip per person	visits	0.4	MBK	$4 000.00	$1 600	50%	$800	$800
Accommodations	120 days x 2 labourers + 7 days x 2 Consultants	andays	50.8	MBK	$100.00	$5 080	50%	$2 540	$2 540
Passive/biological additives		$/ha		#N/A	$0.00	$0		$0	$0
Passive additives purchase and shipping		tonne		#N/A	$0.00	$0		$0	$0
Other- Water purchased to flood pit from Meliadine Lake		m3	750000	MBK	$0.0265	$19 875	50%	$9 938	$9 938
					Annual pumping costs	$59 157			
Number of years of pump flooding		years	3.0						
					Total pumping costs	$177 469.80	50%	$88 735	$88 735
					Total	$389 127		$194 563	$194 563
					% of Total			50%	50%

Underground Mine Name	Tiriganiaq			UG Mine # 1					
ACTIVITY/MATERIAL	**Notes**	**Unit**	**Qty**	**Code**	**Unit Cost**	**Cost**	**Land**	**Land Cost**	**Water Cost**
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each	2	SH	$37.08	$74	50%	$37	$37
Block roads		m3		#N/A	$0.00	$0		$0	$0
Berm		m3		RB1H	$17.05	$0		$0	$0
Remove Portal #1 (TTOG Steel)	cut, remove and dispose in landfill	m2	1 980	BRS1L	$45.00	$89 100	50%	$44 550	$44 550
Remove Portal #2 (Concrete)	break, remove and dispose in landfill	m2	3300	BRCH	$65.00	$214 500	50%	$107 250	$107 250
Backfill portal #1	105 m long x 8 m deep x 30 m wide	m3	12 600	SB1H	$5.90	$74 340	50%	$37 170	$37 170
Backfill portal #2	116 m long x 15 m deep x 30 m wide	m3	26 100	SB1H	$5.90	$153 990	50%	$76 995	$76 995
Cap raises and/or stopes	4 raises in total	each	4	SNC	$20 000.00	$80 000	50%	$40 000	$40 000
Cap raise # 1		m3		#N/A	$0.00	$0		$0	$0
Cap raise #2		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #1		m3		#N/A	$0.00	$0		$0	$0
Cap shaft #2		m3		#N/A	$0.00	$0		$0	$0
Backfill adits		m3		#N/A	$0.00	$0		$0	$0
Backfill open stope		m3		#N/A	$0.00	$0		$0	$0
Concrete cap over open stope		m3		#N/A	$0.00	$0		$0	$0
Contour portal area		m3		SB1H	$5.90	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE HAZARDOUS MATERIALS									
Remove hazardous materials, U/G labor		hrs	2 160	SCOOPL	$170.00	$367 200	50%	$183 600	$183 600
Remove/decontam. stationary & elect. equip		mandays	72	mechl	$49.00	$3 528	50%	$1 764	$1 764
Remove/decontam. mobile equipment	ship off site by barge	each	1 248	mechl	$49.00	$61 152	50%	$30 576	$30 576
Remove misc. haz. mat & explosives		kg	250	SNC	$10.00	$2 500	50%	$1 250	$1 250
Other				#N/A	$0.00	$0		$0	$0
INSTALL BULKHEADS									
Bulkheads to control water flow		each		#N/A	$0.00	$0		$0	$0
Grout bulkhead		m3		#N/A	$0.00	$0		$0	$0
FLOOD MINE									
Supply/install pump		each		#N/A	$0.00	$0		$0	$0
Supply/install piping system		each		#N/A	$0.00	$0		$0	$0
Operate pumps to flood workings		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m2		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install water quality monitoring pipes		each		#N/A	$0.00	$0		$0	$0
Install permanent pumping system		each		#N/A	$0.00	$0		$0	$0
Install permanent instrumentation	Consistent with Whale Tail 2020 security	each	5	MBK	$10 000.00	$50 000		$0	$50 000
Other				#N/A	$0.00	$0		$0	$0
					Total	$1 096 384		$523 192	$573 192
					% of Total			48%	52%

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
CONTROL ACCESS									
Fence		m		#N/A	$0.00	$0		$0	$0
Signs		each		#N/A	$0.00	$0		$0	$0
Berm		m3		#N/A	$0.00	$0		$0	$0
Block roads		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILIZE EMBANKMENT(S)									
Toe buttress, drainage layer		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, bulk fill		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Raise crest		m3		#N/A	$0.00	$0		$0	$0
Flatten slopes		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER TAILINGS									
Grade/shape tailings surface		m3		#N/A	$0.00	$0		$0	$0
Liner bedding		m3		#N/A	$0.00	$0		$0	$0
Subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geotextile/geosynthetic		m2		#N/A	$0.00	$0		$0	$0
Install geotextile/geosynthetic		m2		#N/A	$0.00	$0		$0	$0
Soil cover	500 mm atop TSF (15.4 ha)	m3	77 000	SB3L	$5.10	$392 700	50%	$196 350	$196 350
Rock (fill) cover	2.5 m thick cover on TSF over 15.4 ha	m3	385 000	RB3L	$12.05	$4 639 250	50%	$2 319 625	$2 319 625
Vegetate		m2		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
BURY PAG ROCK									
Relocate PAG rock		m3		#N/A	$0.00	$0		$0	$0
Place cover over PAG rock		m3		#N/A	$0.00	$0		$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
STABILIZE DECANT SYSTEM									
Excavate and replace		m3		#N/A	$0.00	$0		$0	$0
Plug/backfill with concrete or clay		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE TAILINGS DISCHARGE									
Cyclones		m3		#N/A	$0.00	$0		$0	$0
Pipe		m3		#N/A	$0.00	$0		$0	$0
Remove reclaim barge		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
FLOOD TAILINGS									
Doze tailings to final contour		m3		#N/A	$0.00	$0		$0	$0
Raise crest of dam		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
UPGRADE SPILLWAY									
Excavate channel, rock		m3		#N/A	$0.00	$0		$0	$0
Excavate channel, soil		m3		#N/A	$0.00	$0		$0	$0
Concrete		m3		#N/A	$0.00	$0		$0	$0
Rip rap		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install permanent instrumentation, supply & t	Rate consistent with Whale Tail 2020 security	each	5	MBK	$10 000.00	$50 000	50%	$25 000	$25 000
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0			$0
TREAT SEEPAGE - see "Water Management" and "Water Treatment"									
TREAT SUPERNATANT									
Pump water	2015 estimate had $34,760 allowance	each	0	AEM	$34 760	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
Supply reagents		tonne		#N/A	$0.00	$0		$0	$0
					Annual treatment costs	$0			
Number of years of treatment		years	1						
					Total treatment costs	$0			$0
					Total	$5 081 950		$2 540 975	$2 540 975
					% of Total			50%	50%

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

3 **Rock Pile Name:** **Waste Rock Storage Facility 1** ***1***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
Flatten slopes with dozer		m3		#N/A	$0.00	$0		$0	$0
Flatten "bubble dump" areas		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l A		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l B		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, drain mat'l		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l A		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l B		m3		#N/A	$0.00	$0		$0	$0
Grade WRSF 1	1 m over 50% of WRSF 41.4 ha footprint	m3	207000	DRL	$1.05	$217 350	50%	$108 675	$108 675
COVER ROCK PILE									
Subgrade preparation - doze surface		m3		#N/A	$0.00	$0		$0	$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Rock cover - excavate,haul & spread		m3		#N/A	$0.00	$0		$0	$0
Excavate downslope drainage channel & chute		m3		#N/A	$0.00	$0		$0	$0
Rip rap drainage channel and chute		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
VERY LOW PERMEABILITY COVER (in addition to above)									
Liner subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geomembrame		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		allow		#N/A	$0.00	$0		$0	$0
RELOCATE DUMPS									
Load, haul, dump or doze		m3		#N/A	$0.00	$0		$0	$0
Add lime		tonne		#N/A	$0.00	$0		$0	$0
Contour reclaimed area		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install permanent instrumentation		each		3 MBK	$10 000.00	$30 000	50%	$15 000	$15 000
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
Cyanide destruction water treatment pumping		m3		#N/A	$0.00	$0		$0	$0
Reagents		tonnes		#N/A	$0.00	$0		$0	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
				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	$247 350		$123 675	$123 675
					% of Total			50%	50%

* 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

Rock Pile Name: **Waste Rock Storage Facility 2** ***2***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
Flatten slopes with dozer		m3		#N/A	$0.00	$0		$0	$0
Flatten "bubble dump" areas		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l A		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l B		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, drain mat'l		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l A		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l B		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER ROCK PILE									
Subgrade preparation - doze surface		m3		#N/A	$0.00	$0		$0	$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Rock cover - excavate,haul & spread		m3		#N/A	$0.00	$0		$0	$0
Excavate downslope drainage channel & chute		m3		#N/A	$0.00	$0		$0	$0
Rip rap drainage channel and chute		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
VERY LOW PERMEABILITY COVER (in addition to above)									
Liner subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geomembrame		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		allow		#N/A	$0.00	$0		$0	$0
RELOCATE DUMPS									
Load, haul, dump or doze		m3		#N/A	$0.00	$0		$0	$0
Add lime		tonne		#N/A	$0.00	$0		$0	$0
Contour reclaimed area		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install permanent instrumentation	F2020 - Instrumentation no longer necessary removed 3 units	each		0 MBK	$10 000.00	$0	50%	$0	$0
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
Cyanide destruction water treatment pumping		m3		#N/A	$0.00	$0		$0	$0
Reagents		tonnes		#N/A	$0.00	$0		$0	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
					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

Rock Pile Name: **Waste Rock Storage Facility 3** ***3***

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
STABILIZE SLOPES									
Flatten slopes with dozer		m3		#N/A	$0.00	$0		$0	$0
Flatten "bubble dump" areas		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l A		m3		#N/A	$0.00	$0		$0	$0
Divert runon, ditch mat'l B		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, drain mat'l		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l A		m3		#N/A	$0.00	$0		$0	$0
Toe buttress, fill mat'l B		m3		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
COVER ROCK PILE									
Subgrade preparation - doze surface		m3		#N/A	$0.00	$0		$0	$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Rock cover - excavate,haul & spread		m3		#N/A	$0.00	$0		$0	$0
Excavate downslope drainage channel & chute		m3		#N/A	$0.00	$0		$0	$0
Rip rap drainage channel and chute		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
VERY LOW PERMEABILITY COVER (in addition to above)									
Liner subgrade preparation - compact		m2		#N/A	$0.00	$0		$0	$0
Supply geomembrame		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	$0.00	$0		$0	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0		$0	$0
Rip rap in channel base		m3		#N/A	$0.00	$0		$0	$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	$0.00	$0		$0	$0
Doze & spread excavated material		m3		#N/A	$0.00	$0		$0	$0
Vegetate spread material		ha		#N/A	$0.00	$0		$0	$0
Bedding layer		m3		#N/A	$0.00	$0		$0	$0
Supply geomembrane		m2		#N/A	$0.00	$0		$0	$0
Install geomembrane		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	$0.00	$0		$0	$0
Install pumping wells		m3		#N/A	$0.00	$0		$0	$0
Install pumps/pipelines/power supply		allow		#N/A	$0.00	$0		$0	$0
RELOCATE DUMPS									
Load, haul, dump or doze		m3		#N/A	$0.00	$0		$0	$0
Add lime		tonne		#N/A	$0.00	$0		$0	$0
Contour reclaimed area		ha		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
SPECIALIZED ITEMS									
Install permanent instrumentation	F2020 reassign WRSF2 units to WRSF3 to account for increase in size of WRSF	each		6 MBK	$10 000.00	$60 000	50%	$30 000	$30 000
Install permanent instrumentation, drilling		each		#N/A	$0.00	$0		$0	$0
TREAT ROCK PILE SEEPAGE - see "Water Management"									
HEAP LEACH SEEPAGE TREATMENT - Cyanide Detox									
Cyanide destruction water treatment pumping		m3		#N/A	$0.00	$0		$0	$0
Reagents		tonnes		#N/A	$0.00	$0		$0	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0		$0	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0		$0	$0
					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	$60 000		$30 000	$30 000
					% of Total			50%	50%

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

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

Chemicals/Soil Area Name:

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT									
Hazardous materials audit		mandays		#N/A	$0.00	$0		$0	$0
Phase 1 audit		each	1	MBK	$7 500.00	$7 500	50%	$3 750	$3 750
Phase 2 audit		each	1	MBK	$50 000.00	$50 000	50%	$25 000	$25 000
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS									
Environmental technician/coordinator		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate: oil, fuel		mandays		#N/A	$0.00	$0		$0	$0
Decontaminate maintenance shop		h	140	journeyh	$71.79	$10 051	50%	$5 025	$5 025
Decontaminate power plant		h	140	journeyh	$71.79	$10 051	50%	$5 025	$5 025
Decontaminate bulk fuel storage		h	140	journeyh	$71.79	$10 051	50%	$5 025	$5 025
Decontaminate garage in P-area Laydown	F2020 - new work per SNC ICRP	h	140	journeyh	$71.79	$10 051	50%	$5 025	$5 025
Decontaminate emulsion plant		h	36	journeyh	$71.79	$2 584	50%	$1 292	$1 292
Decontaminate offices/warehouse/accom		mandays		#N/A	$0.00	$0		$0	$0
Removal of asbestos siding on buildings		m2		#N/A	$0.00	$0		$0	$0
Removal of friable asbestos on equipment		m2		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
HAZARDOUS MATERIALS REMOVAL									
Waste oils		litre	40 000	ORL	$0.43	$17 200	50%	$8 600	$8 600
Waste fuel (Type 1, e.g. diesel dregs)		litre	235 910	ORL	$0.43	$101 441	50%	$50 721	$50 721
Waste batteries		each	1	MBK	$3 000.00	$3 000	50%	$1 500	$1 500
mill and water treatment reagents		kg	339 887	PCRH	$2.50	$849 718	50%	$424 859	$424 859
Assay & environmental lab reagents		kg	10000	PCRH	$2.50	$25 000	50%	$12 500	$12 500
Machine shop paints, solvents etc		litre	7 500	EXPLO	$1.50	$11 250	50%	$5 625	$5 625
Glycol		kg	60 000	PCRH	$2.50	$150 000	50%	$75 000	$75 000
Process reagents		kg		#N/A	$0.00	$0		$0	$0
Nuclear sources		allow		#N/A	$0.00	$0		$0	$0
Other hazardous materials		allow		#N/A	$0.00	$0		$0	$0
HAZARDOUS MATERIALS									
Transportation to disposal facility		allow		#N/A	$0.00	$0		$0	$0
Disposal fees		allow		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
CONTAMINATED SOILS									
Contam. soil investigation - Phase 1		each	1	MEL	$25 000.00	$25 000	50%	$12 500	$12 500
Contam. soil investigation - Phase 2		each	1	MEL	$100 000.00	$100 000	50%	$50 000	$50 000
CONTAMINATED SOIL REMOVAL									
Excavate, load, haul to biopile or: Excavate and transport to onsite facility		m3	700.0	SC4L	$9.30	$6 510	50%	$3 255	$3 255
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility		m3	5 000.0	CSRL	$47.00	$235 000	50%	$117 500	$117 500
Remediate on-site at biopile or: Manage hydrocarbon remediation at new facility	F-2020 new work added in ICRP	m3	5 000.0	CSRL	$47.00	$235 000	50%	$117 500	$117 500
Reagents/stabilizing agent		m2		#N/A	$0.00	$0		$0	$0
Excavate and transport to offsite facility		m3	250	SNC	$1 000.00	$250 000	50%	$125 000	$125 000
Excavate and transport to offsite facility (new landfarm area)	F-2020 new work added in ICRP	m3	250	SNC	$1 000.00	$250 000	50%	$125 000	$125 000
Contour decontaminated area		m3		#N/A	$0.00	$0		$0	$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER									
Supply geomembrame, HDPE, ES3, GCL		m2		#N/A	$0.00	$0		$0	$0
Upper and lower bedding layers		m3		#N/A	$0.00	$0		$0	$0
Install geomembrane, HDPE, ES3, GCL		m2		#N/A	$0.00	$0		$0	$0
Erosion protection layer		m3		#N/A	$0.00	$0		$0	$0
Vegetate		m2		#N/A	$0.00	$0		$0	$0
Install infiltration/seepage instrumentation		allow		#N/A	$0.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
OTHER									
				#N/A	$0.00	$0		$0	$0
					Total	$2 359 406		$1 179 703	$1 179 703
					% of Total			50%	50%

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT									
Decontaminate and ship off-site		tonne		AEM	$383.12	$0		$0	$0
Decontaminate and dispose on-site	surface equipment only	manhours	1 739	MECHL	$49.00	$85 211	50%	$42 606	$42 606
Salvage Value		tonne	0	AEM	-$383.12	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE BUILDINGS - see note below									
Accomodation Complex (incl dorms, corridors, kitchen, laundry, dry, rec hall, ERT)		m2	15 915.0	BRS1L	$45.00	$716 175	50%	$358 088	$358 088
Exploration camp - existing does not include fuel storage area		m2	4 257	BRS1L	$45.00	$191 565	50%	$95 783	$95 783
Process Facilities - assumes 5000 TPD plant (including crushing building and crushed ore storage)		m2	148 212	BRS1H	$65.00	$9 633 780	50%	$4 816 890	$4 816 890
Crusher & Conveyor		m2	1 524.0	BRS1L	$45.00	$68 580	50%	$34 290	$34 290
Assay Lab and Core Shack		m2	5 705.0	BRS1L	$45.00	$256 725	50%	$128 363	$128 363
Raise Buildings		m2	2 156.0	BRS1L	$45.00	$97 020	50%	$48 510	$48 510
Tire Shop		m2	134.0	BRS1L	$45.00	$6 030	50%	$3 015	$3 015
Offices, Repair, Lab, Warehouse		m2	21454	BRS1L	$45.00	$965 430	50%	$482 715	$482 715
Maintenance Shop		m2	6285	BRS1L	$45.00	$282 825	50%	$141 413	$141 413
Sewage Water Treatment Facilities		m2	311	BRS1L	$45.00	$13 995	50%	$6 998	$6 998
Effluent Water Treatment Facilities		m2	1182	BRS1L	$45.00	$53 190	50%	$26 595	$26 595
Saline Water Treatment Facilities		m2	9767	BRS1L	$45.00	$439 515	50%	$219 758	$219 758
Potable Water Treatment Facilities		m2	54	BRS1L	$45.00	$2 430	50%	$1 215	$1 215
Water and Wastewater Treatment Facilities	RO Treatment plant, EWTP, SWTP, STP and WTP	each	5.0	SNC	$80 000.00	$400 000	50%	$200 000	$200 000
Power Plant		m2	9 392.0	BRS1I	$45.00	$422 640	50%	$211 320	$211 320
U/G Heating Plant		m2		#N/A	$0.00	$0	50%	$0	$0
Emulsion Plant		m2	851	BRS1I	$45.00	$38 295	50%	$19 148	$19 148
Paste Plant		m2	3630	BRS1I	$45.00	$163 350	50%	$81 675	$81 675
Warehouse, Shops and Other		m2		BRS1L	$45.00	$0	50%	$0	$0
batch plant		m2	3 013.0	BRS1L	$45.00	$135 585	50%	$67 793	$67 793
Comm Tower		m2	247.0	BRS1L	$45.00	$11 115	50%	$5 558	$5 558
Incinerator building		m2	533.0	BRS1L	$45.00	$23 985	50%	$11 993	$11 993
Fuel tanks-on site		m2	3 768	BRS1h	$65.00	$244 920	50%	$122 460	$122 460
Fuel tanks - Itivia Harbour		m2		BRS1H	$65.00	$0	50%	$0	$0
Break foundation slabs	total of all buildings F-2000 Update 25072+1974.74	m2	27046.74	brcs	$6.00	$162 280	50%	$81 140	$81 140
Consolidate & dump boneyard debris		m3		#N/A	$0.00	$0	50%	$0	$0
Guard house		m2	37.0	BRS1L	$45.00	$1 665	50%	$833	$833
Wash Bay	F-2000 new building	m2	976.0	BRS1L	$45.00	$43 920	50%	$21 960	$21 960
KCG Temp.	F-2000 new building	m2	1673.0	BRS1L	$45.00	$75 285	50%	$37 643	$37 643
KCG Perm.	F-2000 new building	m2	2738.0	BRS1L	$45.00	$123 210	50%	$61 605	$61 605
Other	Adjustment to balance SNC estimate (28 jan 2021)	LS	1	ACI	$2 252.00	$2 252	50%	$1 126	$1 126
LANDFILL FOR DEMOLITION WASTE									
Place rock cover over operation landfill	7750 m2 footprint with 3.7 m WR cover	m3	28 675	rr3l	$7.00	$200 725	50%	$100 363	$100 363
Place soil cover		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Base, sides and cover of closure landfill (for demolition rubbish)		m3			$29.41	$0		$0	$0
GRADE AND CONTOUR PADS - see note below									
Accomodation Complex (incl dorms, corridors, kitchen, laundry, offices, dry, rec hall, ERT)		m2	11 671	AEM	$8.47	$98 853	50%	$49 427	$49 427
Exploration camp - existing		m2	4 682.70	AEM	$8.47	$39 662	50%	$19 831	$19 831
Process Facilities - assumes 5000 TPD plant (including crushing building and crushed ore storage)		m2	13 662	AEM	$8.47	$115 717	50%	$57 859	$57 859
Assay Lab/Core Shack		m2	1 925.0	AEM	$8.47	$16 305	50%	$8 152	$8 152
Maintenance Shop		m2	3 606.9	AEM	$8.47	$30 550	50%	$15 275	$15 275
Crusher & Conveyor		m2	1 676.0	AEM	$8.47	$14 196	50%	$7 098	$7 098
Offices, Repair, Lab, Warehouse		m2	4394.698	AEM	$8.47	$37 223	50%	$18 612	$18 612
Storage Facilites	Sea Containers Area	m2	51562	AEM	$8.47	$436 730	50%	$218 365	$218 365
Water and Wastewater Treatment Facilities		m2	2771.32	AEM	$8.47	$23 473	50%	$11 737	$11 737
Power Plant		m2	2173.50	AEM	$8.47	$18 410	50%	$9 205	$9 205
Tire Shop		m2	77.00	AEM	$8.47	$652	50%	$326	$326
Emulsion Plant		m2	482.60	AEM	$8.47	$4 088	50%	$2 044	$2 044
Batch Plant		m2	1215.50	AEM	$8.47	$10 295	50%	$5 148	$5 148
Paste plant		m2	726.00	AEM	$8.47	$6 149	50%	$3 075	$3 075
Raise Buildings		m2	847.11	MBK	$8.47	$7 175	50%	$3 588	$3 588
Incinerator building		m2	209.00	AEM	$8.47	$1 770	50%	$885	$885
Fuel tanks-on site		m2	888.13	AEM	$8.47	$7 522	50%	$3 761	$3 761
Communications Tower		m2	13.38	AEM	$8.47	$113	50%	$57	$57
Guard house		m2	40.39	AEM	$8.47	$342	50%	$171	$171
Ore Pad	F-2000 increase by 5.6 ha per ICRP update	m2	159000.00	AEM	$8.47	$1 346 730	50%	$673 365	$673 365
Wash Bay	F-2020 new building	m2	357.74	AEM	$8.47	$3 030	50%	$1 515	$1 515
KCG Temp.	F-2020 new building	m2	613.25	AEM	$8.47	$5 194	50%	$2 597	$2 597
KCG Perm.	F-2020 new building	m2	1003.75	AEM	$8.47	$8 502	50%	$4 251	$4 251
Pad Container 1	F-2020 new pad areas	m2	11631.00	AEM	$8.47	$98 515	50%	$49 257	$49 257
Pad Container 2	F-2020 new pad areas	m2	10236.00	AEM	$8.47	$86 699	50%	$43 349	$43 349
Warehouse Pad	F-2020 new pad areas	m2	28866.00	AEM	$8.47	$244 495	50%	$122 248	$122 248
Garage Area	F-2020 new pad areas	m2	22955.00	AEM	$8.47	$194 429	50%	$97 214	$97 214
Mobile Crusher Staging Area	F-2020 new pad areas	m2	26514.00	AEM	$8.47	$224 574	50%	$112 287	$112 287
Waste Staging Area	F-2020 new pad areas	m2	12180.00	AEM	$8.47	$103 165	50%	$51 582	$51 582
Ore Staging Area	F-2020 new pad areas	m2	12640.00	AEM	$8.47	$107 061	50%	$53 530	$53 530
RECLAIM ROADS									
Remove culverts		each	16	MBK	$4 000.00	$64 000	50%	$32 000	$32 000
Remove bridges		each	0	AEM	$50 000.00	$0	50%	$0	$0
Scarify and install water breaks		ha		SCFYH	$6 030.00	$0	50%	$0	$0
scarify roads (15m x 40km)	F-2000 Main site roads	ha	18	SCFYL	$4 300.00	$77 400	50%	$38 700	$38 700
Scarify road to Discovery	F-2020 15.8 km width 17 m	ha	26.86	SCFYL	$4 300.00	$115 498	50%	$57 749	$57 749
Scarify Pad at Discovery	F-2020 approx 1 ha	ha	1	SCFYL	$4 300.00	$4 300	50%	$2 150	$2 150
Remove culverts on Discovery Road	F-2020 4 water crossings with 4 culverts each	each	16	MBK	$4 000.00	$64 000	50%	$32 000	$32 000
Scarify road to NORMEG	F-2020 1.503 km width 17 m	ha	2.5551	SCFYL	$4 300.00	$10 987	50%	$5 493	$5 493
Scarify road to WESTMEG 01	F-2020 0.386 km width 17 m	ha	0.6562	SCFYL	$4 300.00	$2 822	50%	$1 411	$1 411
Scarify road to PUMP 01	F-2020 4.042 km width 17 m	ha	6.8714	SCFYL	$4 300.00	$29 547	50%	$14 774	$14 774
Scarify road to FZONE 01	F-2020 1.892 km width 17 m	ha	3.2164	SCFYL	$4 300.00	$13 831	50%	$6 915	$6 915
Scarify road from FZONE 01 to Discovery	F-2020 1.432 km width 17 m	ha	2.4344	SCFYL	$4 300.00	$10 468	50%	$5 234	$5 234
Boat Launch	F-2020 new per ICRP located along Discovery Road	each	1	AEM	$2 000.00	$2 000	50%	$1 000	$1 000
OBJECTIVE: BUILDING DECONTAMINATION & HAZ. MATERIAL REMOVAL									
Decontaminate, oil, fuel and glycol systems		mandays		AEM	$1 000.00	$0		$0	$0
Electrical		mandays		AEM	$1 000.00	$0		$0	$0
SPECIALIZED ITEMS									
Dispose of misc. debris and laydown area refuse				#N/A	$0.00	$0		$0	$0
					Total	$18 548 170		$9 274 085	$9 274 085
					% of Total			50%	50%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)

1 **Building / Equip Name:** **ITIVIA AND ROAD** **Bldg / Equip #:** **AWAR/ITIVIA**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost	% Land	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT									
Decontaminate and ship off-site		tonne		AEM	$383.12	$0		$0	$0
Decontaminate and dispose on-site		tonne		AEM	$5.00	$0		$0	$0
Salvage Value		tonne	0	AEM	-$383.12	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
REMOVE BUILDINGS - see note below									
Accomodation Complex (incl dorms, corridors, kitchen, laundry, dry, rec hall, ERT)		m2		BRS1L	$45.00	$0		$0	$0
Exploration camp - existing does not include fuel storage area		m2		BRS1L	$45.00	$0		$0	$0
Process Facilities - assumes 5000 TPD plant (including crushing building and crushed ore storage)		m2		BRS1H	$65.00	$0		$0	$0
Assay Lab		m2		BRS1L	$45.00	$0		$0	$0
Maintenance Shop		m2		BRS1L	$45.00	$0		$0	$0
Offices, Repair, Lab, Warehouse		m2		#N/A	$0.00	$0		$0	$0
Storage Facilites		m2		#N/A	$0.00	$0		$0	$0
Itivia Harbour Floating Dock Crane		m2	1	SNC	$50 000.00	$50 000	50%	$25 000	$25 000
Itivia Habour Saline Water Tank	Salt Water Tank 15ML. F-2000 still in the plan ??	m2	23.4	BRS1L	$45.00	$1 053	50%	$527	$527
Water and Wastewater Treatment Facilities		m2		BRS1L	$45.00	$0		$0	$0
Power Plant		m2		BRS1H	$65.00	$0		$0	$0
U/G Heating Plant		m2		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m2		BRS1H	$65.00	$0		$0	$0
AN Storage Facility		m2		#N/A	$0.00	$0		$0	$0
Warehouse, Shops and Other		m2		BRS1L	$45.00	$0		$0	$0
Paste plant		m2		BRS1L	$45.00	$0		$0	$0
Storage Facility at Laydown/Airstrip		m2		#N/A	$0.00	$0		$0	$0
Incinerator building		m2		BRS1L	$45.00	$0		$0	$0
Fuel tanks-on site		m2		BRS1H	$65.00	$0		$0	$0
Fuel tanks - Itivia Harbour	3 tanks 20 ML, 13.5 ML and 4ML	m2	4 918	BRS1H	$65.00	$319 670	50%	$159 835	$159 835
Break foundation slabs	total of all buildings	m2	4918	BRCS	$6.00	$29 508	50%	$14 754	$14 754
Consolidate & dump boneyard debris		m3		#N/A	$0.00	$0		$0	$0
Guard house		m2		BRS1L	$45.00	$0		$0	$0
Other				#N/A	$0.00	$0		$0	$0
LANDFILL FOR DEMOLITION WASTE									
Place rock cover over operation landfill		m3		AEM	$8.47	$0		$0	$0
Place soil cover		m3		#N/A	$0.00	$0		$0	$0
Vegetate		ha		#N/A	$0.00	$0		$0	$0
Base, sides and cover of closure landfill (for demolition rubbish)		m3			$29.41	$0		$0	$0
GRADE AND CONTOUR PADS - see note below									
Accomodation Complex (incl dorms, corridors, kitchen, laundry, offices, dry, rec hall, ERT)		m3		AEM	$8.47	$0		$0	$0
Exploration camp - existing		m3		AEM	$8.47	$0		$0	$0
Process Facilities - assumes 5000 TPD plant (including crushing building and crushed ore storage)		m3		AEM	$8.47	$0		$0	$0
Assay Lab		m3		AEM	$8.47	$0		$0	$0
Maintenance Shop		m3		AEM	$8.47	$0		$0	$0
Mine surface general (office and megadome, and explosive plant)		m3		AEM	$8.47	$0		$0	$0
Offices, Repair, Lab, Warehouse		ha		#N/A	$0.00	$0		$0	$0
Storage Facilites		ha		AEM	$8.47	$0		$0	$0
Water and Wastewater Treatment Facilities		m3	0	AEM	$8.47	$0		$0	$0
Power Plant		m3	0	AEM	$8.47	$0		$0	$0
U/G Heating Plant		ha		#N/A	$0.00	$0		$0	$0
Emulsion Plant		m3		AEM	$8.47	$0		$0	$0
Warehouse, Shops and Other		m3		AEM	$8.47	$0		$0	$0
Paste plant		m3		AEM	$8.47	$0		$0	$0
Storage Facilities (Laydown areas)		m3	66 800	AEM	$8.47	$565 796	50%	$282 898	$282 898
Incinerator building		m3		AEM	$8.47	$0		$0	$0
Saline tanks-Itivia Harbour	F-2020 need to confirm this is still part of design given ne	m3	23	AEM	$8.47	$198	50%	$99	$99
Fuel tanks - Itivia Harbour		m3	16 350	AEM	$8.47	$138 485	50%	$69 242	$69 242
Guard house		m3		AEM	$8.47	$0		$0	$0
Place rock cover		ha		#N/A	$0.00	$0		$0	$0
RECLAIM ROADS									
Remove culverts		each	27	MBK	$4 000.00	$108 000	50%	$54 000	$54 000
Remove bridges		each	2	AEM	$25 000.00	$50 000	50%	$25 000	$25 000
Scarify and install water breaks		ha		SCFYH	$6 030.00	$0		$0	$0
scarify roads	Previous estiamte had 15 m wide road no clear why road is now 6.5 m wide. Total length is 23.8+6.2 km	ha	19.5	SCFYL	$4 300.00	$83 850	50%	$41 925	$41 925
Saline Pipeline Cover	F-2020 new per ICRP not in SNC estimate (41 km * 3 m) with 90% of the line covered in overburden	ha	11.07	SCFYL	$4 300.00	$47 601	50%	$23 801	$23 801
Remove saline pipe anchors	F-2020 new per ICRP not in SNC estimate removal of pipe anchors where line is not covered in overburden 10% of length so 4 km with an anchor per 200 m so 20 anchor locations with three anchors per location	each	60	ACI	$500.00	$30 000	50%	$15 000	$15 000
Removal of high point storage containers	F-2020 new per ICRP not in SNC estimate removal of high point containers assume four along the line plus one larger set up at Itivia Installation.	each	5	ACI	$4 000.00	$20 000	50%	$10 000	$10 000
Other				#N/A	$0.00	$0		$0	$0
RECLAIM QUARRIES									
Drill and blast slopes to 1:1	18 quarries and borrow pits includin 3 from site	m3	14319	rb3h	$17.80	$254 878	50%	$127 439	$127 439
Electrical		mandays	0	AEM	$1 000.00	$0		$0	$0
SPECIALIZED ITEMS									
Dispose of misc. debris and laydown area refuse				#N/A	$0.00	$0		$0	$0
					Total	$1 699 039		$849 519	$849 519
					% of Total			50%	50%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. 10m high building multiply area by 3.3 (10/3)

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						
Remove (Excavate) fill	Breach D-CP1, D-CP5 and D-CP6	m3	2 407	SB1H	$5.90	$14 202
Backfill Pond	F-2020 CP7 backfill per updated ICRP	m3	188 400	SB3L	$5.10	$960 840
Contour water intake area		m3		#N/A	$0.00	$0
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
Saline Ponds	Berms SP1 and SP3	m3	6030	Sb1L	$4.30	$25 929
P-area		m3		#N/A	$0.00	$0
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						
Excavate ditches -soil		m3		#N/A	$0.00	$0
Excavate ditches -rock		m3		#N/A	$0.00	$0
Stabilize side slopes		m3		#N/A	$0.00	$0
Rip rap in channel base		m3		#N/A	$0.00	$0
BREACH DITCHES						
Excavate breaches	Remove Berm 1 and 3	m3	13017	SB1L	$4.30	$55 973
Remvoal of Containment Pond Berms	Berm CP3 and CP4 and CP7 (F-2020 ICRP)	m3	147380	SB1L	$4.30	$633 734
Backfill/recontour Channels	8 diversion channels + 2 channels at WRSF (T-Channel 1 and 2 now called 9 and 10)	m3	37781	SB3L	$5.10	$192 683
Install flow dissipation		m3		#N/A	$0.00	$0
Vegetate remainder of ditch		m2		#N/A	$0.00	$0
DECOMISSION FRESH WATER SUPPLY						
Breach embankment		m		#N/A	$0.00	$0
Remove pump	Infras CP1/CP5/CP6/CP7(new in ICRP upda	each	4	SNC	$80 000.00	$320 000
Remove pipeline	Meliadine Lake Diffuser pipeline	m	390	PLRL	$22.00	$8 580
Effluent diffuser Meliadine Lake		each	1	MBK	$3 000.00	$3 000
Freshwater Intake	remove pump	each	1	MBK	$3 000.00	$3 000
Remove pipeline -saline effluent	F-2000 need to be per new design	m	778	PLRL	$22.00	$17 116
Saline water effluent pump (itivia Harbour)		each	1	MBK	$3 000.00	$3 000
WATER CONTROL IN RECLAMATION QUARRY						
Install pumping system		LS		#N/A	$0.00	$0
Remove pumping system		LS		#N/A	$0.00	$0
REMOVE PIPELINES						
Remove pipes	18.5 km of pipeline on site	m	18500	PLRL	$22.00	$407 000
Concrete plug deep pipes		m3		#N/A	$0.00	$0
Remove saline lines	F-2020 (34+7 KM)*2	m	82000	PLRL	$22.00	$1 804 000
DIFFUSER						
New diffuser at Itivia in Bay	F-2020 25 m set up	each	1	MBK	$6 000.00	$6 000
Diffuser pipe	F-2020 outfall removal	m	75	PLRH	$72.00	$5 400
GROUNDWATER COLLECTION SYSTEM						
Excavate/install sumps		m3		#N/A	$0.00	$0
Install pumping wells		m3		#N/A	$0.00	$0
Install pumps/pipelines/power supply		LS		#N/A	$0.00	$0
CONSTRUCT CONTAMINATED WATER STORAGE POND						
Excavate pond		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
Bedding layer		m3		#N/A	$0.00	$0
Supply geomembrane		m2		#N/A	$0.00	$0
Install geomembrane		m2		#N/A	$0.00	$0
Erosion protection layer		m3		#N/A	$0.00	$0
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed Wetland)						
Construct access roads		km		#N/A	$0.00	$0
Install HDPE piping system from collection pond		m		#N/A	$0.00	$0
Inter-cell flow structures		allow		#N/A	$0.00	$0
Install liners		m2		#N/A	$0.00	$0
Install growth media		m3		#N/A	$0.00	$0
Wetland vegetation		ha		#N/A	$0.00	$0
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant		LS		#N/A	$0.00	$0
Build sludge containment facility		LS		#N/A	$0.00	$0
					Total	$4 460 458

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

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

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
ADDITION OF REAGENTS TO WTP						
H2O2		kg		#N/A	$0.00	$0
lime		kg		#N/A	$0.00	$0
ferric sulphate		kg		#N/A	$0.00	$0
ferrous sulphate		kg		#N/A	$0.00	$0
flocculents		kg		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
LABOUR AND SUPPLIES						
Annual fuel		litres		#N/A	$0.00	$0
Annual power		kW-h		#N/A	$0.00	$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	$0.00	$0
Equipment maintenance and parts		allow		#N/A	$0.00	$0
Misc. supplies, hoses, tools		allow		#N/A	$0.00	$0
Communications		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
WATER MANAGEMENT						
Water Treatment (reagents, equip. Op., labour)	CP1 Volume at max water elev.	m3	742 075	AEM	$0.75	$556 556
Skilled Laboruer	1 labour x 12hr/d x 6 months	manhou	2 160	oper-wt	$41.00	$88 560
Annual Treatment Plant servicing	2 consultants x 7 days/year	manhou	168	MBK	$120.00	$20 160
Treatment Plant Servicing Travel Allowance	round trip flight/person	each	2	MBK	$4 000.00	$8 000
Camp Accommodations	30 d x 6 months + 7 days x 2 consultants	days	194	ACCML	$100.00	$19 400
Water pumping from sumps and ponds to treatment plant		allow		AEM	$114 510.73	$0
WTP WATER SAMPLING AND ANALYSES						
Sampling equipment		allow		#N/A	$0.00	$0
Analyses		allow		#N/A	$0.00	$0
Shipping to laboratory		allow		#N/A	$0.00	$0
Reporting		allow		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
SITE ACCESS						
Road maintenance (incl. snow removal)		allow		#N/A	$0.00	$0
Winter road tariff		allow		#N/A	$0.00	$0
Truck rental		allow		#N/A	$0.00	$0
Air support		allow		#N/A	$0.00	$0
					Annual water treatment costs	$692 676
Number of years of water treatment		years	3			
					Total	$2 078 029

1 **Interim Care and Maintenance**

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
INTERIM CARE & MAINTENANCE						
on-site caretaker		manmonths		#N/A	0	$0
extra personnel		manmonths		#N/A	0	$0
-electrician		manmonths		#N/A	0	$0
-mechanic		manmonths		#N/A	0	$0
annual fuel		litre		#N/A	0	$0
misc. supplies		allow		#N/A	0	$0
pick-up truck		each		#N/A	0	$0
small dozer		allow		#N/A	0	$0
small excavator		allow		#N/A	0	$0
snow machine		allow		#N/A	0	$0
communications		allow		#N/A	0	$0
SNP/AEMP water sampling & reporting		each		#N/A	0	$0
geotechnical assessment		each		#N/A	0	$0
interim water treatment		annual		#N/A		$692 676
Active Closure - Maintenance, Monitoring and inspections		each	1	#N/A	0	$1 072 197
other		each		#N/A	0	$0
			Annual	Interim C&M Cost		$1 764 873
Number of years of ICM		years	3		**Total**	$5 294 620

1 Post-Closure Monitoring & Maintenance: Active Closure

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	1 eng, trans, rpt 5 dats@$150, accomm	each	1	AEM	$16 000.00	$16 000
Surface water sampling	AEM estimate	each	1	WSH	$42 997.00	$42 997
Groundwater Sampling		each		WSH	$10 000.00	$0
Receiving/downstream water sampling		each		WSH	$10 000.00	$0
Monitoring program as per plan	Active Closure Period	each	1	AEM	$955 000	$955 000
Monitoring program as per plan	Post-Closure Period	each		AEM	$477 500	$0
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*		each		#N/A	$0.00	$0
Site water monitoring (AEMP and SNP)		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Air Quality Monitoring Program (AQMP)		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		each		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
MAINTENANCE & SURVEILLANCE						
Site care taker	bi-weekly visitis, 2 care takers, 12hr/d 5 mos/yr	anhours	480	operh	$65.00	$31 200
Site vehicle and equipment		allow	1	AEM	$20 000.00	$20 000
acommodation and site maintenance		allow	40	accmh	$175.00	$7 000
Subtotal, Annual post-closure costs						$1 072 197
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of years of post-closure activity				3	years	
Present Value of payment stream						$3 216 591

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

1 Post-Closure Monitoring & Maintenance: Post-Closure

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MONITORING & INSPECTIONS						
Annual geotechnical inspection	1 eng, trans, rpt 5 dats@$150, accomm	each	1	AEM	$16 000.00	$16 000
Surface water sampling	AEM estimate	each	1	WSH	$42 927.00	$42 927
Groundwater Sampling		each		WSH	$10 000.00	$0
Receiving/downstream water sampling		each		WSH	$10 000.00	$0
Monitoring program as per plan	Active Closure Period	each		AEM	$955 000	$0
Monitoring program as per plan	Post-Closure Period	each	1	AEM	$477 500	$477 500
Survey inspection		each		#N/A	$0.00	$0
Regulatory costs*		each		#N/A	$0.00	$0
Site water monitoring (AEMP and SNP)		each		#N/A	$0.00	$0
- Active closure and flooding		each		#N/A	$0.00	$0
- Post pit flooding		each		#N/A	$0.00	$0
Air Quality Monitoring Program (AQMP)		each		#N/A	$0.00	$0
Wildlife Effects Monitoring Program (WEMP)		each		#N/A	$0.00	$0
Vegetation Monitoring		each		#N/A	$0.00	$0
Other				#N/A	$0.00	$0
COVER MAINTENANCE						
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
SPILLWAY MAINTENANCE						
Repair erosion		m3		#N/A	$0.00	$0
Clear spillway		each		#N/A	$0.00	$0
CWTS MAINTENANCE						
Maintain flow, restore vegetation		allow		#N/A	$0.00	$0
MAINTENANCE & SURVEILLANCE						
Site care taker	bi-weekly visitis, 2 care takers, 12hr/d 5 mos/yr	anhours	480	operh	$65.00	$31 200
Site vehicle and equipment		allow	1	AEM	$20 000.00	$20 000
acommodation and site maintenance		allow	40	accmh	$175.00	$7 000
Subtotal, Annual post-closure costs						$594 627
Discount rate for calculation of net present value of post-closure cost, %				0.00%		
Number of events of post-closure activity	10 events to match AEM plan			10	events	
Present Value of payment stream						$5 946 270

NOTE assumes annual testing 1-7 years to match the original AEM submittal and the originally recommended testing to include subsequent monitoring ever 3 years from 8 to 15 years and ever 5 years 16 to 25 years has been reduced to only 3 events..
*Regulatory costs - annual reporting, management plans, progress reports etc.

Mobilization/Demobilization:

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
MOBILIZE HEAVY EQUIPMENT						
Excavators		each		#N/A	0	$0
Barge	to and from Rankin Inlet	each	3	AEM	$1 000 000	$3 000 000
Dump trucks		each		#N/A	0	$0
Dozers		each		#N/A	0	$0
Demolition shears		each	1	AEM	$1 000 000	$1 000 000
Crane		each		#N/A	0	$0
Loader		each		#N/A	0	$0
Compactor		each		#N/A	0	$0
Light duty vehicles		each		#N/A	0	$0
MOBILIZE MISC. EQUIPMENT						
Pump shipping		each		#N/A	0	$0
Pipe shipping		m		#N/A	0	$0
Minor tools and equipment		allow		#N/A	0	$0
Truck tires		allow		#N/A	0	$0
Other				#N/A	0	$0
MOBILIZE CAMP						
Reclamation activities		allow		#N/A	0	$0
Long term reclamation activities (eg pump flooding)		allow		#N/A	0	$0
MOBILIZE WORKERS						
rotations over reclamation period		manhours		AEM	$75.00	$0
crew transportation		each		AEM	$1 386.00	$0
Reclamation activities - transport	26 wrks, 4 trips/yr 3 yrs	each	312	AEM	$1 386.00	$432 432
Reclamation activities - travel time	26 wrks, 4 trips/yr 3 yrs 6 hrs per trip	manhours	1872	operl	$41.00	$76 752
Long term reclamation activities (eg pump flooding) - transport		each		#N/A	0	$0
Long term reclamation activities (eg pump flooding) - travel time		each		#N/A	0	$0
Monitoring Airfare		each		#N/A	0	$0
WORKER ACCOMODATIONS						
Reclamation activities	3 yrs, 180 d/yr 26 wrks	manmonths	14040	accml	$100.00	$1 404 000
Long term reclamation activities (eg pump flooding)		manmonths		#N/A	$0.00	$0
MOBILIZE FUEL						
Fuel freight - reclamation activities		litre		#N/A	0	$0
Fuel freight - long term reclamation activities		litre		#N/A	0	$0
Fuel freight accomodations		litre		#N/A	0	$0
WINTER ROAD						
Construction and operation		km		#N/A	0	$0
Limited winter use		km		#N/A	0	$0
Winter road tarriff		km		#N/A	0	$0
DEMOBILIZE HEAVY EQUIPMENT						
Excavators		km		#N/A	0	$0
mobile equipment		kmtonne	12235	mherh	10.25	$125 409
Dozers		km		#N/A	0	$0
SeaCan Containers	assumes 50% of the 6000 containers will need to be removed from site	kmtonne	90000	mherh	10.25	$922 500
Demolition shears		kmtonne	30	mherh	10.25	$308
Crane		km		#N/A	0	$0
Loader		km		#N/A	0	$0
Compactor		each		#N/A	0	$0
Light duty vehicles		km		#N/A	0	$0
Other		km		#N/A	0	$0
DEMOBILIZE CAMP						
		allow		#N/A	0	$0
DEMOBILIZE WORKERS						
crew travel time		mandays		#N/A	0	$0
crew transportation		each		#N/A	0	$0
WINTER ROAD						
Construction and operation		km		#N/A	0	$0
Limited winter use		km		#N/A	0	$0
Winter road tarriff		km		#N/A	0	$0
					Total	**$6 961 400**

Annex B

Comments on draft water licence

CIRNAC has reviewed the draft water licence provided by AEM on December 18, 2020. Our comments are compiled in the table below. We noted that the page numbers in the document provided were not always linear. The page numbers in the table refer to those indicated on the pages, so there is some repetition.

Part	Item	Page	Comment
A	1 a.	2	*Disposal of Waste Rock in two WRSFs* CIRNAC recommends changing number of WRSFs from three to two because WRSF#2 is no longer used for waste rock under this amendment.
A	1 a.	3	*Controlled and regulated discharge of Effluent from the Water Treatment Plant, Control Pond No. 1 (CP1) to Meliadine Lake* Depending on outcome of discussions on NIRB review, CIRNAC recommends modifying this item to include eliminating discharge to Meliadine Lake under normal operating conditions and discharging to Melvin Bay via the waterline.
B	9	4	Proposed change from *The Licensee shall notify the Board of any changes in in operating plans or conditions …* to *The Licensee shall notify the Board of any changes in Project phases …* Project phases are not synonymous with operating plans or conditions and would likely not include changes in conditions. Informing the Board of upcoming changes can help plan timing of inspections and CIRNAC recommends the condition be kept.

Part	Item	Page	Comment
B	10	4	Proposed change to insert *Plans submitted may be undertaken without subsequent written Board approval and direction after a 45 day period has elapsed following submissions by the Proponent with no action on the part of the Board* CIRNAC does not agree with "deemed approval". If a timeline for plan approval is considered, it should include clauses found for approval of modifications (Part G, Item 1) and not be less than 60 days.
B	12	5	Proposed changes to instruct the Board what to do with changes to plans. The purpose of the proposed changes is not clear since amendments to the licence and modifications have already been defined. CIRNAC recommends keeping the original wording.
B	12	5	CIRNAC has not checked approval status of these plans. Revisions to plans may be necessary depending on outcome of NIRB review of waterline.
B	13	5/6	Item needs to include a list of plans, which will be dependent on how waterline operations are integrated into the water licence. CIRNAC recommends including plans listed under topic #11.
B	16	7	Proposed change *All signs must be in English and Inuktitut ~~and French~~ and shall be …* The rationale for the proposed change is not evident.

Part	Item	Page	Comment
B	19, 20	7	Proposed additions *The Licensee is encouraged to adopt an Adaptive Management approach to the management of uncertainty regarding potential for effects associated with the Undertaking, including identifying mitigation, monitoring or management actions to be taken when specified thresholds and triggers identified in an Adaptive Management Plan are exceeded.* *Prior to the Licensee undertaking the mitigation, monitoring or management actions specified in an Adaptive Management Plan, the Licensee shall ensure that, reflecting the scale and scope of the actions proposed, all applicable regulatory requirements have been met, including, without limitation, applicable land use planning and impact assessment requirements under the* Nunavut Agreement *and the* Nunavut Planning and Project Assessment Act*, and completion of any Modification or Amendment processes required under the Act, the Regulations and/or this Licence.* It is not clear if the adaptive management approach is exclusively for water management or for other issues as well. The second paragraph re-iterates the law, which may not be necessary.
B	21	7	Proposed addition *Unless otherwise stated, references in the Licence to any specific legislation, policy, guideline or other regulatory requirement are deemed to refer to the regulatory requirement as may be amended or as may be expressly replaced by successor legislation, policy, guidelines or other regulatory requirements after the Licence is approved by the Minister.* CIRNAC does not find this adds value.

Part	Item	Page	Comment
C	1	7	*The Licensee shall, within thirty (30) days following the approval of this Licence by the Minister, furnish and maintain security with the Minister in the amount of $~~24,777,500~~* ***34,843,623.*** *As set out in the* Meliadine Security Management Agreement, ~~*February 8, 2016 Version*~~*, the amount secured under this Part constitutes 50% of the total global security amount of $~~49,555,000~~* ***69,687,246*** *that is required to reclaim the Undertaking and reflects that the other 50% of the global security amount will be held outside the Licence by the Kivalliq Inuit Association, in accordance with the terms and conditions of the* Meliadine Security Management Agreement. Parties have agreed to the amount of security, though a new security management agreement has not been signed yet.
C	6	9	Proposed addition *…, a release, in whole or in part, of reclamation security held under this Part by the Minister pursuant to Part C, Item 11 and Section 76(5) of the Act.* Since this is already in the Act, CIRNAC does not believe it needs to be added to the water licence.
C	9	9	Proposed addition *In addition to the process for amending security under Part C, Item 8, the Licensee may, at any time, submit an application to the Board for a change to the amount of security outlined in Part C, Item 1. The submission shall include supporting evidence to justify the amendment. The Licensee's request to amend security will be processed by the Board as an amendment to the terms and conditions of the Licence. For greater clarity, such amendments may not require a Public Hearing.* Since this is already contemplated in the Act, CIRNAC does not believe it needs to be added to the water licence.
D	1, 2g	10, 11	Proposed addition to D1 *with a detailed report in Part D, Item 2 and stamped and signed by an Engineer, for the following:* Proposed removal of D2g *Be signed and sealed by the appropriately qualified Engineer.* AEM proposes moving the requirement for an Engineer to sign and stamp construction design and drawings from D2 to D1. CIRNAC does not see how this improves clarity, and recommends keeping the adjective qualified.

Part	Item	Page	Comment
D	1	11	CIRNAC notes the following elements are not in the list and recommends adding them: • Ditching and pumping piping systems for site underground and contact water management • Drainage plans for roads, laydown areas etc.
D	20	13	Proposed replacement of *The Licensee shall conduct all activities in a manner so as to minimize impacts on Surface Drainage and immediately undertake any corrective measures required in the event of any impacts on Surface Drainage.* With *The Licensee shall undertake appropriate corrective measures to mitigate impacts on surface drainage resulting from the Licensee's Operations.* The proposed replacement reduces the obligation to minimize impact. CIRNAC recommends keeping the original wording, which is based on conducting normal operations to minimize surface impacts and corrective action after that.
E	3	12	Proposed removal of *The total authorized volume of Waters for all purposes referred to in Part E, Items 1 and 2 shall be inclusive of the amounts required for dust suppression.* CIRNAC does not agree the proposed removal. Authorized water use volumes need to include all water used including that for dust suppression.
E	5	13	Proposed addition *..., for use in the mill, drilling, and for dust suppression.* Reclaimed Water would have to meet discharge criteria prior to use for dust suppression.

Part	Item	Page	Comment
E	11	13	Proposed replacement of *The Licensee shall update the Water Management Plan for submission to the Board for review, within sixty (60) days of issuance of this Licence.* With *…, when significant content changes are required.* Depending on the outcome of discussions on the operations of the waterline, an update to the Water Management Plan may be necessary. Significant content changes have not been defined and should be defined if the term is used.
E	13	13	Proposed replacement of *The Licensee shall submit a revised Water Management Plan on an annual basis to the Board for review, following the commencement of Operations.* With *The Licensee shall review the Water Management Plan on an annual basis and provide a summary of changes, if any, in the annual report. A revised Water Management Plan shall be submitted to the Board for review, when significant content changes are required* CIRNAC agrees that if following an annual review, no revisions to the Water Management Plan are deemed necessary, the Licensee need not submit the Plan again. However, should revisions be necessary, a summary of changes in the annual report would not be sufficient for CIRNAC Inspectors. They require an updated version of the plan.

Part	Item	Page	Comment
E	14	13, 14	Given the problems that have occurred on site, the short mine life, the complexity of system and uncertainty of predictions, the need for adaptive management, and stakeholders desire to minimize release to Meliadine Lake, CIRNAC recommends building on the updated requirement for the Water Balance and Water Quality Models to make it an annual requirement, as suggested below this paragraph. Moreover, it should not be limited to only regulated parameters. *An updated Water Balance and Water Quality Forecast will be provided at a minimum of every year.* To improve model results, CIRNAC recommends that Licensee present a detailed technical assessment to identify specific sources of loadings and quantify loadings from each source. The licensee should design and implement a monitoring program to collect any information missing for the assessment.
E	16	15	Proposed addition *The Licensee shall update the Groundwater Management Plan for submission to the Board for review, when significant content changes are required.* Same comment as E11, depending on the outcome of discussions on the operations of the waterline, an update to the Groundwater Management Plan may be necessary. Significant content changes have not been defined and should be defined if the term is used.
E	18	15	Proposed modification *The Licensee shall not breach dikes until the water quality in the pit re-flooded area has been shown to be less than or equal to the CCME Water Quality Guidelines for the Protection of Aquatic Life, appropriate site specific water quality objectives, or the pit lake predictions (Agnico Eagle 2014, FEIS, Table 7.4-22). If water quality parameters are above CCME Guidelines and/or FEIS predictions, a site specific risk assessment must be conducted in order to identify Site Specific Water Quality Objectives (SSWQO's) for the site that that are protective of the aquatic environment. Where they are required, Site Specific Water Quality Objectives shall be incorporated in the approved Final Reclamation and Closure Plan.* CIRNAC does not agree with the proposed modification, specifically the addition of FEIS pit lake predictions as an acceptable gauge of water quality for breaching dykes.

Part	Item	Page	Comment
E	20	15	Proposed change for timeline for giving notice of phase change in mine development from ninety days to thirty days. CIRNAC recommends the original 90 days be kept, since 30 days is not sufficient warning for CIRNAC Inspectors if they need to plan site inspections.
F	3	17	Proposed changes to effluent quality discharge criteria are still under discussion, in particular the maximum TDS concentration of any grab sample.
F	4	17	Proposed removal of reference to acute lethality test. CIRNAC recommends specifying how acute lethality is to be tested.
F	12	18	Proposed replacement of *The Licensee shall update the Water Management Plan for submission to the Board for review, within sixty (60) days of issuance of this Licence.* With *…, when significant content changes are required.* Same comment as E11, significant content changes have not been defined and should be defined if the term is used.

Part	Item	Page	Comment
F	20	19, 20	Proposed replacement of *e. The solids fractions of all mill tailings (except for filtered cyanide leach residue placed in the underground as mine backfill) shall be deposited and permanently contained within the TSF;* *f. The Licensee shall place all filtered cyanide leach residue in the TSF;* With *e. The solids fractions of all mill tailings (except for mill tailings that will be used for paste backfill in the underground) shall be deposited and permanently contained within the TSF;* It is no longer clear where the filtered cyanide leach residue will be disposed. CIRNAC recommends keeping this information in the condition as well as including a new sub-condition to re-evaluate management and operations if tailings are different than expected (e.g. PAG instead of non-PAG). Furthermore, specifying significant issues such as long term stability, dusting and surface runoff might help bring clarity.
H	3	23	Proposed removal *The Licensee shall implement the Aquatic Effects Monitoring Program (AEMP) Design Plan, dated April 2015, as approved by the Board under Part B, Item 12. The Licensee shall update the AEMP Design Plan for submission to the Board for review, within sixty (60) days of issuance of this Licence. The updates are to take into account commitments made with respect to submissions received during the technical review of the Application, as well as final submissions and issues raised during the Public Hearing Process, where applicable.* CIRNAC recommends the implementation of the Aquatic Effects Monitoring Plan remain a condition of the water licence.

Part	Item	Page	Comment
H	5	23	Proposed removal *The Licensee shall implement the Plan entitled "Monitoring Plan for the Phase 1 All- Weather Access Road between Rankin Inlet and the Meliadine site" dated January 2012, that was previously approved by the Board within the issuance of the 2BW-MEL1215 original Licence related to AWAR construction/operation.* CIRNAC recommends the implementation of the Monitoring Plan for the Phase 1 All Weather Access Road between Rankin Inlet and the Meliadine site remain a condition of the water licence during operations.
I	4	20	Proposed change *The signs must be in English and Inuktitut ~~and French~~.* The rationale for the proposed change is not evident.
J	9	24	Proposed removal *The Licensee shall notify the Board in writing, at least sixty (60) days prior to any intent to achieve Recognized Closed Mine status.* CIRNAC recommends keeping the condition to notify the Board of intent to achieve Recognized Closed Mine status.
Sched. A		26	Proposed change to replace *Acutely Lethal Effluent* with *Acutely Lethal* CIRNAC recommends keeping the original wording since acutely lethal does not refer to an effluent but is something with respect to an effluent.

Part	Item	Page	Comment
Sched. A		28	Proposed replacement of "***By-pass Road***" *means an approximately 5 km road and associated water crossings around the Hamlet of Rankin Inlet from Rankin Inlet' Itivia Laydown Area to the AWAR as described in the Application document entitled "Roads Management Plan" dated April 2015;* With *"**By-pass Road**" means access, service, and haul roads and associated water crossings as described in the Roads Management Plan;* CIRNAC recommends keeping the original definition since it is more descriptive and the proposed replacement includes more infrastructure.
Sched. A		28	Proposed removal of reference to drawings in definition of collection pond. CIRNAC recommends keeping references to drawings in the definition, but do not have an issue with including both collection and containment ponds in the term to be defined.
Sched. A		28	Proposed replacement of *"**Collection Pond No.1 or Control Pond No.1 (CP1)**" means a final site-wide contact water collection pond. Water collected in CP1 will be reused by the process plant and the excess water will be treated by the WTP prior to discharge to the outside environment via the diffuser into Meliadine Lake as in the Application document entitled "Water Management Plan" dated April 2015 ;* With ***Collection Pond No.1 or Control Pond No.1 or Containment Pond No. 1 (CP1)**" means a contact water collection pond as described in the Water Management Plan;* CIRNAC acknowledges this definition would need to be updated depending on the outcome of discussions on the operation of the waterline. To our understanding CP1 is still the final site-wide contact water collection pond and it would be helpful to keep this definition in the water licence.

Part	Item	Page	Comment
Sched A		30	Proposed replacement of *"**Engineered Structure(s)**" means any facility, which was designed and approved by a Professional Engineer registered with the Association of Professional Engineers, Geologists and Geophysicists of Nunavut;* With *"**Engineered Structure(s)**" means any facility, which was designed and approved by a Engineer;* Engineered structures in Nunavut need to be designed and approved by an Engineer registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG). CIRNAC recommends altering the original definition to refer to the correct association.
Sched A		30	Proposed removal of reference to drawings in definition of fresh water intake. CIRNAC recommends keeping references to drawings in the definition.
Sched A		30	Proposed replacement of *"**Fuel Storage and Containment Facilities**" means the facilities designed for the bulk storage of fuel at the Meliadine Site and Itivia Site Fuel Storage and Containment Facilities as described in the "Type A Water Licence Main Application Document" dated April 2015;* With *"**Fuel Storage and Containment Facilities**" means the facilities designed for the bulk storage of fuel as described in the Hazardous Materials Management Plan;* CIRNAC agrees with the change to refer to the Hazardous Materials Management Plan, but recommends keeping the description *Meliadine Site and Itivia Site Fuel Storage and Containment Facilities*.
Sched A		30	CIRNAC recommends referring to the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) instead of the Association of Professional Engineers, Geologist and Geophysicists of Nunavut.

Part	Item	Page	Comment
Sched A		30	Proposed replacement of *"**Greywater**" means the component of effluent produced from domestic use (i.e. washing, bathing, food preparation and laundering), excluding sewage;* With *"**Greywater**" means the component produced from domestic use (i.e. washing, bathing, food preparation and laundering);* CIRNAC recommends keeping the original definition since it is more descriptive.
Sched A		31	Proposed removal of reference to drawings in definition of landfill. CIRNAC recommends keeping references to drawings in the definition.
Sched A		31	Proposed removal of reference to drawings in definition of landfarm. CIRNAC recommends keeping references to drawings in the definition.
Sched A		33	Proposed removal of reference to drawings in definition of ore stockpile. CIRNAC recommends keeping references to drawings in the definition.
Sched A		34	Proposed removal *"**Recognized Closed Mine**" means a recognized closed mine as defined by section (1) of the Metal Mining Effluent Regulations (SOR/2002-222 dated June 6, 2002 and amended on March 2, 2012, and as may be further amended from time to time);* CIRNAC recommends keeping this definition since we recommended keeping item J9.
Sched A		34	Proposed removal ***"Reference Method EPS 1/RM/13"*** *means Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout (Reference Method EPS 1/RM/13), July 1990, published by the Department of the Environment, as amended in December 2000, and as may be further amended from time to time;* CIRNAC recommends keeping this definition since we recommended keeping item F4.

Part	Item	Page	Comment
Sched A		35	Proposed replacement of *"**Soil Quality Remediation Objectives (SQROs)**" means the numerical concentration established as target value for soil quality remediation for contaminated sites as determined with guidance provided by* the Canadian Council of Ministers of the Environment (CCME) Canada- Wide Standards for Petroleum Hydrocarbons (PHC) in Soil *(January 2008, and as may be further amended from time to time) and/or* Government of Nunavut, Environmental Guideline for Contaminated Site Remediation (March 2009). With *"**Site Specific Water Quality Objectives (SSWQO)**" means a numerical concentration established as a target value which has been established for specified waters;* Proposed change replaces objective for soil with objective for water, which is confusing. CIRNAC recommends using a definition that prescribes how the objective should be determined.
Sched A		35	Proposed removal of *by means of Engineered Structures* when describing collection of waters for surface drainage. CIRNAC does not see the rationale for removal.
Sched A		35	Proposed removal of reference to drawings in definition of tailings storage facility. CIRNAC recommends keeping references to drawings in the definition.
Sched A		35	Proposed replacement of ***"Tiriganiaq Open Pit 1 and 2"*** with ***"Open Pits"*** could lead to confusion, since access roads to additional deposits are being considered in this amendment. CIRNAC recommends keeping the original wording.
Sched A		35	Proposed removal of reference to drawings in definition of underground mine. CIRNAC recommends keeping the word *mine* in the term to be defined and keeping references to drawings in the definition.
Sched A		37	Proposed removal of reference to drawings in definition of waste rock storage facility. CIRNAC recommends keeping references to drawings in the definition.

Part	Item	Page	Comment
Sched A		37	Proposed removal of reference to drawings in definition of water treatment plant. CIRNAC recommends keeping references to drawings in the definition.
Sched D 1a		41	Proposed replacement of *Professional Engineer* with *Engineer*. CIRNAC recommends the adjective be kept and that design and construction drawings be stamped and signed by an Professional Engineer registered with NAPEG.