



Final Submission for the Renewal and Amendment Application of Lupin Mines Inc.'s Water Licence 2AM-LUP1520

**Crown-Indigenous Relations and Northern Affairs
Canada**

Final Submission to the Nunavut Water Board

December 18, 2019



EXECUTIVE SUMMARY

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has participated in the ongoing review of the Lupin Mine Inc.'s (LMI) water licence application for the Lupin Mine Project. The Lupin Mine Site is situated in Nunavut's Kitikmeot region, approximately 250 km west of Arviat and 285 km southeast of Kugluktuk, Nunavut. Lupin operated as a gold mine beginning in the 1980s. It had been in care and maintenance since 2005, and is presently under closure. LMI's application is for renewal and amendment its existing Type A Nunavut Water Board water licence 2AM-LUP1520, which proposes final closure and reclamation for the mine site.

Topics discussed during the review on which CIRNAC has comments are:

- Tailings and waste rock management;
- The monitoring program;
- Closure and reclamation planning; and
- The reclamation security cost estimate.

Most of the issues identified by CIRNAC are still unresolved. As committed to at the technical meeting, LMI has provided memos on outstanding issues. However the information provided does not satisfy most of CIRNAC's requests. Important issues remaining are: the long term stability of dams and covers, and tailings which will be exposed when water levels are lowered in the tailings management area. At this stage, CIRNAC does not support LMI's renewal amendment application.



To be provided.



ATANGUYAIT NAINAGHIMAYOT ONIPKAGIYAIT

To be provided.



RÉSUMÉ

to be provided

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ii
ᐃᑦᓂᕈᓴᓄᑦ ᐱᐅᐱᓄᑦ ᐸᑲᓄᑦ	iii
ATANGUYAIT NAINAGHIMAYOT ONIPKAGIYAIT	iv
RÉSUMÉ	v
TABLE OF CONTENTS	vi
INTRODUCTION	1
TECHNICAL COMMENTS	2
1. Term of Renewed Licence	2
2. Water Use Requirements	2
3. Waste Disposal	2
4. Tailings and Waste Rock	2
5. Amendments to Terms and Conditions	4
6. Management Plans and Reports	4
7. Monitoring Program	4
8. Closure and Reclamation Planning	4
9. Reclamation Security Cost Estimate	5
CONCLUSION	7



INTRODUCTION

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has participated in the ongoing review of the Lupin Mine Inc.'s (LMI) water licence renewal and amendment application for their Type A water licence 2AM-LUP1520. This renewal and amendment proposes is for use of water and deposit of waste associated with the closure and reclamation of the Lupin Mine Project. The Lupin Mine Site is situated in Nunavut's Kitikmeot region, approximately 250 km west of Arviat and 285 km southeast of Kugluktuk, Nunavut. The Lupin gold mine was in operation from 1982 to 2005 with temporary suspensions of activities between January 1998 and April 2000, and between August 2003 and March 2004. The site was in care and maintenance since 2005, but is presently being closed.

On March 4, 2019 CIRNAC submitted Information Requests. CIRNAC also submitted technical review comments and recommendations for the application on April 30, 2019. CIRNAC then participated in a Technical Meeting and Pre-Hearing Conference on June 6-7, 2019 in Kugluktuk. The Nunavut Water Board (NWB) distributed the Pre-Hearing Conference Decision on June 18, 2019. On December 6, 2019, CIRNAC submitted a review of documentation from LMI in response to commitments made at the technical meeting.

The NWB has provided a list of topics for discussion at the public hearing. The topics have been used as headings in this document to organize the comments we made.

Comments in this submission are made in the context of CIRNAC policy and mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*. Comments are structured as issues supported by observations made during the course of the application review and recommendations are made directly to the NWB.



TECHNICAL COMMENTS

CIRNAC's comments made at the information request and technical review stages were principally requesting further details, more information and more justification. Certain elements of the closure plan are not developed to a level expected of a Final Closure and Reclamation Plan. Concerns not resolved at the technical meeting were captured as commitments.

Discussion and further comments on commitments are assigned to the relevant headings from the list of public hearing discussion topics.

1. Term of Renewed Licence

LMI has requested a 7 year licence term. CIRNAC has no comment.

2. Water Use Requirements

LMI is requesting the use of 685 m³/day from Contwoyto Lake. CIRNAC has no comment.

3. Waste Disposal

CIRNAC has no comment on waste disposal measures proposed.

4. Tailings and Waste Rock

Status of commitments pertaining to tailings and waste rock		
Commitment #	Issue	Status
3	Historical data review for ARD potential in dams, roadways, etc.	Unresolved
4	Geochemical modelling and pathway analysis for ARD potential	Unresolved
5	"Dome" design	Unresolved
7	"Dome" seepage source term and load model	Resolved
8	Decision matrix/tree for exposed tailings	Unresolved

CIRNAC technical comments on section 4.3.2.7 identified uncertainty in potential waste rock distribution across the property, including in mill areas, roads, dams and the airstrip. Commitment #3 from the technical meeting was for LMI to provide a summary of historical data. LMI presented a Stantec memo (August 14, 2019) reviewing results of 2005 acid-base accounting studies and estimating the volume of waste rock in dams



based on an air photo. As detailed in section 3 of our December 6, 2019 letter, CIRNAC is of the opinion that historical construction data available with more accurate waste rock volumes have not been reviewed. The memo provided by LMI is therefore insufficient and we have requested:

CIRNAC recommends that LMI thoroughly review the historical data available (i.e. Kinross Closure plan for the TMA (tailings management area), Holubec Jan 2005) to be able to provide a more accurate account of the ARD (acid rock drainage) potential at site given that waste rock was used and that the waste rock is now known to be much more acid generating than previously predicted.

Commitment #4, geochemical modelling and pathway analysis for ARD potential, was dependent on the findings of commitment #3, the review of potential waste rock volume distribution across the site. As the Stantec memo provided does not satisfy CIRNAC's request for commitment #3, we disagree with its conclusion that there is no need for ARD geochemical and pathway modelling. As stated in section 4 of our December 6, 2019 letter:

CIRNAC is requesting that further documentation and/or discussions be presented to support the claim that there is no need for any additional ARD geochemical and pathway modelling.

Additional CIRNAC technical comments on section 4.3.2.7 requested details on the proposed waste rock excavation and placement. At the technical, commitment #5 by LMI was to provide preliminary design level explanations of their proposed "dome" including typical cross sections, and information on seepage, topography, geochemistry and storm water drainage. As a response, LMI provided a Golder memo (October 15, 2019) that repeated what was shared at the technical meeting. Further details were requested at the technical meeting because the information was insufficient, and since it is still missing, this comment is unresolved. Section 6 of our December 6, 2019 covers this topic in detail and requests:

CIRNAC recommends provision of preliminary design cross sections and design details/specification on proposed drainage systems and cover stabilization of proposed dome, in order to provide the confidence that the covered "dome" is protective of the environment.

To allow assessment of the potential impact on water of seepage from the newly proposed "dome" structure, LMI made commitment #7 to provide a geochemical source term and load model for seepage from the waste rock storage "dome". As stated in CIRNAC's December 6, 2019 letter:

CIRNAC considers the documentation provided by LMI to be a seepage model rather than a source term model. However, CIRNAC is satisfied with the



response with the condition that seepage samples are collected and modeling is updated periodically.

We therefore consider this issue resolved.

Tailings at the mine site are known to be acid generating so it is not acceptable to leave exposed tailings outside a containment area, even if they are covered with esker material. This concern was raised in CIRNAC's technical comments on section 4.3.2.8 and resulted in commitment #8, for LMI to provide a decision tree or matrix explaining how tailings will be handled, as they are exposed when water levels in the TMA are lowered. Our December 6, 2019 letter states we are not satisfied with the information provided in the Stantec memo (October 15, 2019) provided by LMI and conclude:

It is CIRNAC's opinion that no material amount of tailings should remain outside of the defined containment cells at closure. Placement of 1m esker cover on any exposed tailings within the dewatered former pond areas, will not be effective in reducing ARD/ML from these tailings and result in impacted seepage from these areas. It is recommended that LMI provide an adaptive management decision matrix clearly outlining how the potentially exposed tailings would be managed.

5. Amendments to Terms and Conditions

CIRNAC has no comment on the amendments to terms and conditions proposed.

6. Management Plans and Reports

CIRNAC has no comment on management plans and reports that are not raised under other sections of this document.

7. Monitoring Program

A follow-up of CIRNAC's comment in section 8 below on commitment #1, is the need to update the monitoring plan to incorporate the findings of the human health ecological risk assessment (HHERA).

8. Closure and Reclamation Planning

Status of commitments pertaining to closure and reclamation planning				
Commitment #	Issue			Status
1	Human Health Ecological Risk Assessment			Unresolved
6	Geotechnical structures	details	of engineered	Unresolved



During the information request and technical stages, CIRNAC requested that LMI provide a HHERA report, which was to be completed following a study in summer 2019. Commitment #1 captured this outstanding information request. As detailed in comment #1 of our December 6, 2019 submission, the HHERA report provided generates two follow-up actions:

- I. *Updated monitoring plan, including duration and frequency, is required to ensure that the planned measures are adequate for the protection of the human health and the environment at closure and post-closure.*
- II. *LMI should include the tailings containment area in the assessment or justify why it is not necessary.*

CIRNAC technical comment on section 2.3.2 requested a conceptual plan for locations where rip rap was to be used to stabilize dams and enhance embankment stability, as well as information on where rip rap was to be sourced. Commitment #6 from the technical meeting was for LMI to provide the geotechnical details of engineered structures. LMI submitted a Stantec report (November 14, 2019) that provides some information, but most of what was requested is still missing. Comment #5 in CIRNAC's December 6, 2019 letter details what is incomplete and concludes:

CIRNAC recommends LMI provide more specific information on the location where embankment stabilization work would be carried out and design details (including final design cross sections showing existing and proposed conditions including construction materials). LMI should also provide reviews to confirm the location and extent of surface stabilization and erosion protection works. CIRNAC recommends that LMI provide the missing details/information to better evaluate the stability of the dams at the tailings containment facility.

9. Reclamation Security Cost Estimate

Status of commitment pertaining to reclamation security cost estimate		
Commitment #	Issue	Status
2	Updated security estimate RECLAIM model	Unresolved
9	Framework for progressive release of security	Unresolved

CIRNAC submitted the same questions in both our information requests and technical comments for more details on the reclamation cost estimate. Full answers have not yet been provided, so effective review of the estimate cannot be completed in a meaningful manner. Due to these uncertainties, CIRNAC has not created a cost estimate. We are still working with costs from the accepted 2016 Knight Piesold until further information is provided by LMI.



As stated in comment #2 of CIRNAC's December 6, 2019 letter, items we are looking for are:

- I. Almost 40% of capital cost is "Contractor indirects". Mobilization is ~80% of Indirect Cost, and is based on a series of Lump Sum (LS) items with no backup. Out of the total security held (approximately \$23.3 million) about 16.5million (~71%) is either LS or indirect costs with limited backup. Clarity is required from LMI to provide additional description of the basis of the estimate.*
- II. LMI proposed Final Closure Plan (CP) estimate does not include for rip -rap armouring of the outer slopes of the dams. This is inconsistent with the approved 2005 Tailings Management Area (TMA) Closure Plan works.*
- III. LMI latest estimate provides for \$999,674 for TMA closure. Review of prior estimates shows LMI values of \$3.9 (2014) and \$2.1 (2017) million. The accepted Knight Piesold 2016 estimate was \$4.9million for the TMA.*

LMI has requested that a renewed licence include a mechanism for progressively reducing security as reclamation activities are conducted. At the technical meeting, CIRNAC and LMI agreed to a joint submission of framework for this release as commitment #9. LMI has shared their proposal with CIRNAC. However, CIRNAC is still working to define how a framework could be defined while still respecting the Minister's discretion, and as a result, we have not yet shared our proposal with LMI or the NWB.



CONCLUSION

At the technical meeting, eight commitments were made by LMI to provide further details and explanations on aspects of the closure planning. Presently, CIRNAC considers a single one resolved and seven remain outstanding. Important issues remaining include:

- 1) Long term stability of covers and dams – insufficient information on design means we do not know such things as if in the long run erosion will cause tailings to wash into the environment.
- 2) Management of tailings that will be exposed when water levels are lowered in the TMA.

An additional commitment was made jointly by CIRNAC and LMI to provide a framework for progressive release of security. This remains outstanding because we are still working on how this can be done.

At this stage, CIRNAC does not support LMI's renewal amendment application.