



Supplementary Information

Presentation from the Canadian Environmental Law Association

In the Matter of the

**Cameco Corporation, McArthur River,
Key Lake and Rabbit Lake Operations**

Applications for the renewal of uranium
mine/mill licences for McArthur River,
Key Lake and Rabbit Lake Operations

Commission Public Hearings

June 7-8, 2023

Renseignements supplémentaires

Présentation de l'Association canadienne du droit de l'environnement

À l'égard de

**Cameco Corporation, établissements de
McArthur River, Key Lake et Rabbit Lake**

Demandes visant le renouvellement des permis
d'exploitation de mines et d'usines de
concentration d'uranium pour les établissements
de McArthur River, Key Lake et Rabbit Lake

Audiences publiques de la Commission

7-8 juin 2023

Renewal of Cameco Corporation's Uranium Mill Licence for its Key Lake Operation, Uranium Mine Licence for its McArthur River Operation, and the Uranium Mill and Mine Licenses for its Rabbit Lake Operation



CNSC Hearing References (Ref. 2023-H-06 and Ref. 2023-H-07)

Sara Libman, Legal Counsel

Dr. Tanya Markvart, Expert Report

June 7 - 8, 2023



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Photo: Linda Pim

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Canadian Environmental Law Association (CELA)



Photo: Kelly Mathews

- Specialty legal aid clinic dedicated to environmental equity, justice, and health
- Founded in 1970, funded by Legal Aid Ontario since 1978
- CELA provides free legal services relating to environmental justice in Ontario, including representing qualifying low-income and vulnerable communities in the courts and before tribunals. CELA also provides free summary advice to the public and engages in legal education and law reform initiatives.



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I. Interest and Expertise of the Intervenor

- For this licensing hearing, CELA's legal expertise combined with the local knowledge and experiences of the following joint applicants resulted in the preparation of written submissions regarding Cameco's applications to renew Key Lake, McArthur River and Rabbit Lake's licences:

Coalition for a Clean Green Saskatchewan (CCGS) is a network of individuals across rural, northern and urban Saskatchewan that supports us quickly moving towards a sustainable society.

Committee for Future Generations (CFG) is a group of Dene, Cree, Metis and settler people based in northern Saskatchewan. CFG joined forces to educate people and advocate for greater awareness of the long-term health and environmental consequences of the nuclear industry, inclusive of the uranium mining on Treaty Eight and Ten territory.

Inter-Church Uranium Committee Educational Co-Operative (ICUCEC) is an inter-church coalition that works to educate people about the nuclear industry in Saskatchewan and halt all nuclear development in the province, including mining uranium. ICUCEC's role is that of a nuclear "watchdog" in Saskatchewan and its members make submissions to panels and government regulatory agencies.

Expert Retained for Sustainability Analysis:

Dr. Tanya Markvart is an environmental consultant with expertise in strategic sustainability planning. She holds a P.H.D. in Planning from the University of Waterloo and a B.F.A. from Concordia University.

II. Scope of Review



Photo: Fe de Leon

- Reviewed CNSC and Cameco's documents to assess whether renewing the licenses for Key Lake (KLO), McArthur River (MRO), and Rabbit Lake (RLO) would cause any undue risk to people and the environment; and to assess whether Cameco is qualified to carry out the licensing sought.
- Assessed how the CNSC has applied principles of environmental protection, in accordance with **REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures***.
- Dr. Tanya Markvart's two Expert Reports evaluated the documentation and assessment of effects in compliance with relevant regulatory provisions and the principle of sustainable development.



III. Preliminary Concerns: Public Disclosure

- Transparency and disclosure of documents must be a priority in all licensing hearings
 - Meaningful public participation in decision-making is critical to advancing environmental justice
 - Failure to uphold commitments to release documents diminishes public trust in the CNSC and the actions of the licensee operating in our communities
 - Public dissemination of information is purpose of the CNSC
- Key documents and materials associated with a licensing hearing ought to be publicly available in digestible, and offline-compatible formats, such as PDF versions (KLO/MRO/RLO Recommendations 1-2).
 - Example: The Environmental Protection Review Reports for KLO, MRO, and RLO were only publicly accessible as webpages (inaccessible for reading purposes and for offline reading--PDFs had to be requested)
- Several documents related to the 3 sites were requested, however Cameco filed a request for confidentiality, and the intervenors were unable to view them (KLO/MRO/RLO Recommendations 3-4)
 - e.g., full version of *Key Lake Environmental Risk Assessment* (2020) was requested (only a summary document is publicly available)

All recommendations referenced throughout this presentation are available in Appendices A and B of this presentation (slides 22–32), as well as within our written submissions.



IV. Summary of Findings

Cameco's request for 20-year licence terms for KLO, MRO, and RLO is contrary to the Public Interest

- KLO/MRO Recommendations 5-9, 31-35
- RLO Recommendations 5-9, 16-17, 25-27

Cameco's Licence Applications:

- Fail to consider the increased risk of environmental contamination at each site
 - KLO/MRO Recommendations 10-21
 - RLO Recommendations 18-22
- Fail to consider decommissioning concerns surrounding each site
 - KLO/MRO Recommendations 22-26
 - RLO Recommendations 10-13
- Fail to provide remediation considerations for each site
 - KLO/MRO Recommendations 27-28
 - RLO Recommendations 14-15
- Fail to address the cumulative effects of uranium mining
 - KLO/MRO Recommendations 29-30
 - RLO Recommendations 23-24



V. Detailed Findings



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A. Cameco Corporation's request for 20-year licence terms is contrary to the public interest

Public Engagement Concerns

1. 20-year licence terms (and the CNSC staff's proposed 15-year term for RLO) shields the licensee from the public oversight and participation mechanism provided in section 40(1) of the NSCA for two decades
 - Long gaps in public engagement opportunities, the public's knowledge and awareness of ongoing concerns about a facility becomes fractured, and the ability for the public, the CNSC, and a licensee to meaningfully engage with one another is lost.
2. It would mean relying on more discretionary forms of public engagement like CNSC meetings which are not subject to the licensing framework of the NSCA
 - RORs are not an appropriate alternative to more regular, site-specific licensing hearings
 - Proposed Mid-term reviews (10-years for KLO/MRO and 7.5-years for RLO) do not guarantee robust opportunity for public engagement and scrutiny of licensed site's operations
 - Other regulatory control measures do not justify the use of longer licensing terms
3. It would be contrary to international guidance and precedents

Sustainability Analysis—Dr. Tanya Markvart’s Expert Reports

- Fundamental Flaws in Cameco’s application documentation and CNSC Staff’s Environmental Protection Review Reports:
 1. Justification of the proposed 20-year licences;
 2. Consideration of sustainability, precaution, and adaptation; and
 3. Consideration of rolling stewardship in preliminary decommissioning plans.
- Capacity for long-term “**rolling stewardship**”: the institutional capacity to manage, safely store, and pass along vital information to future generations.
- Because of their hazardous nature, uranium mine tailings and waste rock require perpetual care.
 - Operating and now-closed uranium operation facilities have been associated with severe pollution, e.g., contamination of surface and ground water with radionuclides, heavy metals, and conventional pollutants.
 - Decommissioned mines must be managed forever to prevent the release of contaminants from tailings and waste rock to the surrounding ecosystem and community, and major failures of tailings management facilities have occurred in Canada
- Given the long-term social-ecological impacts, the public **must** be reassured that the CNSC and Cameco have incorporated a rolling stewardship approach in the preliminary decommissioning plan by devoting attention to the above-listed considerations.

Market Volatility of Uranium

- Cameco's request for 20-year licence terms fails to account for the previous, present, and future states of operation at these three sites:
 - KLO and MRO experienced a period of operational shutdown between 2018-2022.
 - RLO has been in a state of care and maintenance since 2016 due to "market conditions"
- With no plans in place to resume mining and milling operations at RLO, granting a long-term licence would be contrary to the objects of the CNSC, namely to:
 - *"...prevent unreasonable risk, to the environment and to the health and safety of persons, associated with that development, production, possession or use."* (NSCA at section 9(a)(i))
- Shorter-term licences (e.g., 5-year terms) would be beneficial for monitoring the instability of the uranium market that may impact how RLO, KLO, and MRO may operate.

RLO Recommendation No.17: In order to restart operations at Rabbit Lake, Cameco should be required to apply for a new licence to do so. This ensures that the Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance are satisfactory to ensure safe operations at Rabbit Lake.

KLO/MRO Recommendation No. 32: Shorter licensing terms (e.g., 5-year licensing terms) ensure that Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance or returns to regular operations are satisfactory to ensure safe operations at both Key Lake and McArthur River.

A 15-year or 20-year term licence would extend beyond Rabbit Lake's Operating Life

- RLO has been non-operation for 7 out of the 10-years of its current licensing term, with no estimated timeline for the resumption of operations.
- The site has had served as a mine and mill site on and off for 50-years, with the Rabbit Lake In-Pit Tailings Management Facility (“RLITMF”) accumulating a substantial amount of radioactive waste and tailings since 1985.
 - RLITMF tailings capacity: 9.0 million m³
 - Between 1985-2015, 7.95 million tonnes of radioactive tailings deposited.
- The aging infrastructure of RLO brings concerns about decommissioning and reclamation plans for this site
- Having a shorter licence term allows for public engagement more frequently as this site continues to age and go through different operational phases.

Climate Change Considerations

- Mining operations and associated facilities are particularly vulnerable to climate change effects.
 - For instance: wildfires are increasingly impacting Northern Saskatchewan uranium mine and mill sites.
 - Example: MRO reportable event in 2021: An increase in outdoor temperatures caused snow meltwater to accumulate within utilidor sump #7 and approximately 2,000 liters of meltwater overflowed the sump onto the ground.
- Climate change considerations are directly relevant to the CNSC's determination about whether the licensee will make adequate provision for the protection of the environment and the health and safety of persons.
 - Detailed climate analysis and site-specific modelling is necessary so that the public can fully understand the potential impacts, review the information, and provide comments to the CNSC.
- Cameco does not mention how KLO, MRO, or RLO will adapt to the impacts of climate change, and how climate resiliency is being implemented presently.
- Transparency about climate change and uranium mining—both in terms of the impact of mining on climate change, and the impact of climate change on mining operations—ought to be considered when assessing these licence applications.

B. Cameco's licence applications fail to consider the increased risk of environmental contamination

- Shorter licencing terms, combined with a careful review of environmental release incidents will ensure that the **precautionary principle** is being applied to these 3 sites.
- Recommendation in both written submissions:
 - The licensee should be required to keep a publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at each site, and how these events are being corrected and monitored.
- Concerns regarding inspections at all three sites.
 - All three sites have had a downward trend in the number of inspections since the COVID-19 pandemic commenced. A return to on-site inspections, and more frequent inspections for all SCAs, (e.g., especially for physical design and waste management SCAs at RLO).



Rabbit Lake

- Despite being in a state of care and maintenance since 2016, there have been 8 reported events between 2017-2021
- In 2021, there were 4 spills that were classified as “low risk”
 - May 11th: A breach in the B-Zone ore pad drainage ditch resulted in the release of an estimated 10.3 m3 of spring melt water from the perimeter ditch of the ore pad onto the perimeter road and into the surrounding area
 - May 26th: It was discovered at the Warehouse Pad 3 Laydown Area that a tote of new engine oil had a cracked drain valve, resulting in a leak of approximately 1.2 m3 of new oil
 - May 28th: A separation in the barge line at a fused butt weld at the AGTMF North Pond surface water causing a release of an estimated 2.75 m3 of melt water.
 - August 25th: A release of approximately 583 kg of propane at the Eagle Point Sand Dryer
- As this aging mining site remains in a state of care and maintenance, environmental releases will continue occur while equipment and infrastructure continue to degrade.
- With a 20- year licence (or even a 15-year licence as recommended by CNSC staff), the ability for the public to regularly comment and engage with information surrounding environmental releases is greatly diminished, and therefore there is less accountability surrounding the monitoring, management, and preventative measures taking place to prevent these releases that will cumulatively impact human health and the environment over time.



Key Lake

- During Key Lake's 10-year licence, there have been numerous environmental releases, with some occurring almost immediately after having the licence renewed (2013), others occurring during the site's state of care and maintenance (2018), and others occurring during the resumption of activities (2022).
- Element of concern for the intervenors since the milling operations commenced at this site: the **Deilmann Tailings Management Facility ("DTMF")**.
 - The Joint Federal-Provincial Panel in expressed concerns about the DTMF in 1997
 - The increase in volume of the DTMF in 2014 has increased the risk of tailings leaching into the environment as the volume of the tailings exerts pressure on pit's barriers
 - The intervenors **request** additional information on what is being done by Cameco to prevent leaching from the DTMF, and seek assurance that the pit is being adequately monitored not just by Cameco, but by the CNSC as well.

McArthur River

- 24 reportable events between 2013-2019
- May 10, 2021: there was a reportable event in which an increase in outdoor temperatures caused snow meltwater to accumulate within utilidor sump #7 and approximately 2,000 liters of meltwater overflowed the sump onto the ground. This event is classified as a reportable release.
- intervenors request that Cameco provide information on whether this event was reasonably foreseeable and preventable, and whether there are other elements of equipment or infrastructure that are susceptible to rapidly changing temperatures causing spills or leaks.

C. Cameco's licence applications fail to consider decommissioning concerns surrounding these three sites

- Robust decommissioning plans play a key role in sustainable development—a principle which falls within the CNSC's guiding principles for protection of the environment.
- Denied access to the preliminary decommissioning plans. “Preliminary Decommissioning Plan and Cost Estimate” summaries available on Cameco's website do not provide any indication of a timeline for the estimated decommissioning phases for these sites.
- **Rabbit Lake:** A 20-year licence would likely exceed RLO's operation life, thus taking the site into decommissioning.
- **Key Lake and McArthur River:** Cameco has indicated that the two sites will likely wind down in 2044.
 - **2020 Environmental Review Assessment for KLO:** “...there is the potential that aquatic biota may be influenced from continued operation and long-term post-decommissioning loads at the KLO. Potential influences on the aquatic community are limited to the near-field exposure zone and the aquatic community further downstream in the Wheeler River drainage is expected to remain protected and not adversely influenced by KLO.”
- Concerns surrounding financial guarantees for decommissioning these sites.
 - Underestimated decommissioning costs
 - Reduction in decommissioning costs for MRO

D. Cameco's licence applications fail to provide remediation considerations for these three sites

- The potential for these sites being licensed for 15-20 years warrants a review of the remediation measures anticipated for RLO, KLO, and MRO.
- In the spirit of **sustainable development**, the **precautionary principle**, and the “**polluter pays**” principle, the CNSC has an obligation to ensure the environment is adequately protected for present and future generations.
- **Rabbit Lake:** RLO's long legacy of processing uranium and producing radioactive waste and other hazardous tailings brings concerns about the remediation approach anticipated for this site. Rabbit Lake has a history of total contaminant loading to the environment being high.
- The **shifting baselines** for these sites leave significant clean-up efforts for future generations, long after Cameco is no longer responsible for care and maintenance.
- **Recommendation:** Cameco should be held accountable for at least a 50-year period following decommissioning of these sites (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.

E. Cameco's licence applications fail to address the cumulative effects of uranium mining

- When considering the renewal of a licence to operate a mine or mill, the CNSC should be taking into consideration what possible cumulative effects may result from renewed licences.
- Cumulative effect assessments occur during environmental assessments and impact assessments prior to projects being approved, but the intervenors suggest that this type of assessment has value beyond the approval process for a mine, and should be revisited throughout the entire life stage of a mine and/or mill.
- **Shorter licensing terms** would enable more frequent reviews of cumulative effects for licenced projects, and would help ensure that a licensee continues to adequately provide for the protection of the environment as recent developments in the region may emerge. This cumulative effects assessment during a licence renewal hearing may help a licensee determine areas to focus adaptation and maintenance efforts on in order to reduce radiological and other environmental releases from happening.

VI. Order Requested



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Order Requested (1)

1. Deny Cameco's request for 20-year licenses on the basis that:
 - a) A 5-year licence term for each site would be better suited for aligning the licensing cycle with the review cycles for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantees for the three sites, while also enhancing public engagement;
 - b) The 20-year licences would remove the right for a public hearing for two decades, compromise meaningful public participation in nuclear matters and erode public confidence in both the Commission and the licensee;
 - c) A 20-year licence would exceed the viability and life span of RLO's operations and does not reflect the current activities presently occurring at Rabbit Lake;
 - d) Climate change, which will result in increasingly dire weather events, has not been expressly considered in the licence applications nor impacts modelled; and
 - e) The risk for environmental contamination increases with every year that the these three sites continue to operate;



Order Requested (2)

2. Denying CNSC staff's recommendation for 20-year licences for KLO and MRO;
3. Denying CNSC staff's recommendation for a 15-year licence for RLO;
4. Requiring Cameco to apply for a licence to resume operations at RLO should Cameco decide to bring the site out of a state of care and maintenance; and
5. Directing Cameco to revise its licence renewal applications, considering all of the deficiencies and recommendations herein.

Thank you.

Appendix A: List of Recommendations for Key Lake and McArthur River Operations



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1. The CNSC should ensure that relevant documents and information are publicly available in accessible formats.
 2. Documents relied upon in Cameco's and CNSC staff's CMDs ought to be publicly available by default and not available upon request only.
 3. References contained in CNSC staff's and Cameco's CMDs ought to be publicly available to that subject matter experts can provide peer review of the documents. This is necessary for the CNSC to uphold its obligations to disseminate "objective" information.
 4. The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.
 5. Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the NSCA, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every 20 years for the public to participate in a hearing and engage in dialogue with the CNSC and the licensee about their concerns.
 6. Regulatory Oversight Reports, mid-term performance updates and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.
 7. The CNSC should disregard CNSC staff's recommendation for 20-year licensing terms. The licensing terms for Key Lake and McArthur River should not exceed 5-years, as this would not only align with the review terms for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantees for these sites, but would also enhance public engagement with both operations.
 8. Regardless the length of the licences provided to Cameco, the intervenors further recommend there be a comprehensive performance update for Key Lake and McArthur River subject to public hearings and review every three years, which would greatly enhance transparency and accountability with the public.
 9. Without a more thorough review of legislation and licensing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.
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10. Shorter licencing terms, with a careful review of environmental release incidents will ensure that the precautionary principle is being applied to Key Lake and McArthur River's activities. The precautionary principle must be applied to any proposed changes in the operational activities at Key Lake and McArthur River—whether that change be transitioning back to a state of care and maintenance, or to increase the annual production/processing limits.
11. The licensee should be required to keep a publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at sites like McArthur River and Key Lake, and how these events are being corrected and monitored.
12. Cameco should provide information on whether the 2021 meltwater overflow event at McArthur River was reasonably foreseeable and preventable, and whether there are other elements of equipment or infrastructure that are susceptible to rapidly changing temperatures causing spills or leaks.
13. Cameco should provide information on how it plans to adapt the McArthur River site (and the Key Lake site) to endure the increasingly frequent weather events and drastic temperature changes that are being caused by climate change. Without adequate climate adaptation measures, spills like the 2021 McArthur River event will only become more frequent during McArthur River's operations.
14. More frequent on-site inspections of McArthur River, with more frequent inspections for all relevant SCAs are required to ensure the protection of human and environmental health. SCAs like physical design and waste management, for example, should be regularly inspected at mining sites like McArthur River.
15. The intervenors request clarification on how the CNSC arranges its inspections of McArthur River, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place.
16. With every additional environmental release increasing the cumulative effects that Key Lake is causing to the local environment, a shorter licence term of 5-years would allow for more frequent reviews of environmental releases, while ensuring the public have the opportunity to meaningfully express concerns and feedback on the environmental protection measures being implemented at Key Lake.

17. Additional information is requested about what is being done by Cameco prevent leaching from the DTMF at Key Lake.
 18. Both Cameco and the CNSC need to provide assurance that the DTMF at Key Lake is being adequately monitored due to the increased risk of radiological and heavy metal contamination at this tailings facility.
 19. More frequent on-site inspections of Key Lake, with more frequent inspections for all relevant SCAs are required to ensure the protection of human and environmental health. SCAs like radiation protection, packaging and transport, and waste management, for example, should be regularly inspected at Key Lake.
 20. The intervenors request clarification on how the CNSC arranges its inspections of Key Lake, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place. Additionally, the CNSC should explain how it determines whether an inspection will be on-site or remote.
 21. The CNSC should enter into an arrangement with the National Research Council of Canada to help create a framework to shape the building standards for uranium mines and mills.
 22. There should be a clear review of Cameco's proposed decommissioning strategies, and the public should have access to the proposed decommissioning plans to ensure that there are adequate measures in place to protect human health and the environment from substantial harm.
 23. Long-term post-decommissioning loads to aquatic biota need to be adequately addressed in decommissioning plans—regardless of whether the aquatic biota are located inside or outside of the near-field exposure zone. More information needs to be provided on how Cameco will address the findings from the Key Lake 2020 ERA which identified that there is the potential that aquatic biota may be influenced from continued operation and long-term post- decommissioning loads.
 24. Reasoning like “cost refinement based on experience at other facilities” should not entitle a licensee to seek a reduction in their financial guarantee for the decommissioning of a specific licenced facility. The “polluter pays” principle must be applied to a specific site's operations carefully, and generally should not result in a reduction in the financial guarantee amount (especially with the rate of inflation increasing the financial guarantee at Key Lake, but not McArthur River).
 25. There must be more transparency surrounding financial guarantees for decommissioning, and that during licencing hearings, a deeper review of these costs ought to occur, regardless of how recently a hearing to review a financial guarantee was conducted.
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26. The cost estimates for decommissioning and remediating Key Lake and McArthur River must be reviewed in a transparent manner during the licence hearing to ensure that the costs to clean up these sites are not grossly underestimated, as has been the case with other uranium mines in Saskatchewan.
27. It is paramount to the licencing renewal process that there is careful consideration of the remediation and reclamation plans for Key Lake, and how a shifting baseline within the environmental studies of this site are influencing the future plans of how this former mining and milling area will integrate into the surrounding environment.
28. There must be an assessment of how long Cameco will maintain control of the decommissioned sites, as Cameco should be held accountable beyond a 20-year mark of remediation activities, and certainly should be held accountable beyond the 10-year transitional monitoring period. Taking into consideration that there have been various mining activities occurring at Key Lake since 1975, the intervenors recommend that Cameco should be held accountable for at least a 50-year period following decommissioning of both this site and McArthur River (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.
29. Cumulative effects analyses should be required for the licence renewal hearing for Key Lake and McArthur River to ensure that there are no environmental effects occurring or that may occur in the future that would interact with the environmental outputs from these sites and result in undue harm to human health and the environment.
30. Shorter licensing terms will enable more frequent reviews of potential cumulative effects that may be caused by these sites, or cumulative effects that may impact the safe operation of these sites.
31. The intervenors recommend that the CNSC issue shorter licensing terms for uranium mine and mill operations like Key Lake and McArthur River in order to review and respond to drastic changes in the operational practices due to issues like market volatility.
32. Shorter licensing terms (e.g., 5-year licensing terms) ensure that Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance or returns to regular operations are satisfactory to ensure safe operations at both Key Lake and McArthur River.
33. The CNSC should review the licence renewal applications with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.
34. The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 20-year licence applications must be clearly set out.
35. Detailed climate analysis must be presented in a public forum as part of the CNSC's licensing process.



Expert Report's Recommendations

- **Justification of Proposed Licence**
 - Cameco must provide evidence for its assumption of future market conditions as part of its justification for a 20-year licence.
 - Critical concerns that require explicit consideration include: (i) an explanation of the public participation processes for public review of Cameco's operations once Cameco decides to resume production, and (ii) an explanation of the public participation processes for public review of periodic reporting as per CNSC regulations. The CNSC and Cameco must ensure the public that its concerns will be heard and addressed throughout a prolonged licence period.
- **Consideration of Sustainability, Precaution, and Adaptation**
 - An explanation of the sustainability criteria adopted to evaluate the impacts of the Rabbit Lake operation, including a comparative analysis of options for all mine and mill components and operational stages, from state of care and maintenance through to decommissioning.
 - An explanation of the process by which sustainability criteria, including precaution and adaptation, were incorporated throughout analysis, including a comparative evaluation of options for all mine and mill components and stages.
 - An explanation of how the associated concepts of reversibility, retrievability, diversity and redundancy were considered in the design and operational aspects of the mine and mill, from state of care and maintenance through to operational, decommissioning, and post-decommissioning phases.
- **Consideration of Rolling Stewardship**
 - The CNSC and Cameco must incorporate a rolling stewardship approach in the preliminary decommissioning plans by explicitly devoting attention to the following:
 - Plans for the accurate transmission of information from one generation to the next;
 - Plans for the transfer of responsibility from one generation to the next, e.g., a 'changing of the guard' every 20 years;
 - Plans for the recharacterization of waste;
 - Plans to rapidly detect and correct any leakages or other problems;
 - Plans for the retrieval of waste; and
 - Plans for continual adaptive management and monitoring



Appendix B: List of Recommendations for Rabbit Lake Operation



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1. The CNSC should ensure that relevant documents and information is publicly available in accessible formats.
2. Documents relied upon in Cameco's and CNSC staff's CMDs ought to be publicly available by default and not available upon request only.
3. References contained in CNSC staff's and Cameco's CMDs ought to be publicly available to that subject matter experts can provide peer review of the documents. This is necessary for the CNSC to uphold its obligations to disseminate "objective" information.
4. The right to cross-examination must be adopted as part of the hearing process so that members of the public have the ability to pose questions regarding, for instance, a study's methods, scope and findings.
5. Licence renewals should be subject to shorter licensing terms as it provides the opportunity for public hearings under section 40(1) of the NSCA, and enhances the openness and transparency of the CNSC, and its oversight of nuclear uses and technologies. These opportunities are critical to building the public's trust in the regulator and would be lost if there is only one chance every 15-20 years for the public to participate in a hearing and engage in dialogue with the CNSC and the licensee about their concerns.
6. Regulatory Oversight Reports, mid-term performance updates and meetings are not sufficient alternatives to licensing hearings given their limited scope and exclusion of oral intervention opportunities. They should not be relied upon to remedy outstanding issues resulting from licensing hearings, nor used as a stand-in for public hearings.
7. The CNSC should disregard CNSC staff's recommendation for a 15- year licensing term. The licensing term for Rabbit Lake should not exceed 5-years, as this would not only align with the review cycles for updating the environmental risk assessments, the preliminary decommissioning plans and financial guarantee for Rabbit Lake, but would also enhance public engagement with Rabbit Lake's operations.
8. Regardless the length of the licence provided to Cameco, the intervenors further recommend there be a comprehensive performance update for Rabbit Lake subject to public hearings and review every three years, which would greatly enhance transparency and accountability with the public.

9. Without a more thorough review of legislation and licensing procedures in other jurisdictions, international precedence and benchmarking do not justify longer term licences in Canada.
10. There should be a clear review of Cameco's proposed decommissioning strategy, and the public should have access to the proposed decommissioning plan to ensure that there are adequate measures in place to protect human health and the environment from substantial harm.
11. The intervenors request a written confirmation from the CNSC and Cameco which guarantees that the Rabbit Lake site will not be turned into a disposal site for low- or medium-level radioactive waste.
12. There must be more transparency surrounding financial guarantees for decommissioning, and that during licensing hearings, a deeper review of these costs ought to occur, regardless of how recently a hearing to review a financial guarantee was conducted.
13. The cost estimate for decommissioning and remediating Rabbit Lake be must reviewed in a transparent manner during the licence hearing to ensure that the costs to clean up this aging mine are not grossly underestimated, as has been the case with other uranium mines in Saskatchewan.
14. It is paramount to the licensing renewal process that there is careful consideration of the site's remediation and reclamation plans, and how a shifting baseline within the environmental studies of the Rabbit Lake site are influencing the future plans of how the former mining and milling area of Rabbit Lake will integrate into the surrounding environment.
15. There must be an assessment of how long Cameco will maintain control of the decommissioned site, as Cameco should be held accountable beyond a 20-mark of remediation activities, and certainly should be held accountable beyond the 10-year transitional monitoring period. Taking into consideration that Rabbit Lake has been operating intermittently since 1975, the intervenors recommend that Cameco should be held accountable for at least a 50- year period following decommissioning (with the potential to extend this duration contingent on the results of remediation activities during that period of time), as this would reduce possible financial burden on the Province of Saskatchewan and also enhance public trust in Cameco investing in robust environmental monitoring and maintenance measures.
16. Should the CNSC issue a licence at the hearing in June 2023, it should be to resume the state of care and maintenance, requiring Cameco to continue repairs and clean- up efforts at Rabbit Lake.
17. In order to restart operations at Rabbit Lake, Cameco should be required to apply for a new licence to do so. This ensures that the Indigenous Nations and communities, and members of the public are properly engaged in the process to determine that all forms of care and maintenance are satisfactory to ensure safe operations at Rabbit Lake.

18. The licensee should be required to keep a publicly accessible record of *all* environmental incidents and events that have occurred at a licenced site. In doing so, there is a clear record of trends on the types of releases and events occurring at sites like Rabbit Lake, and how these events are being corrected and monitored.
19. A shorter licencing term, with a careful review of environmental release incidents will ensure that the precautionary principle is being applied to Rabbit Lake's activities. The precautionary principle must be applied before Cameco restarts any mining or milling activities at Rabbit Lake to ensure that the environmental releases that have occurred will not worsen or become more prevalent during mining and milling activities.
20. More frequent on-site inspections of Rabbit Lake, with more frequent inspections for all relevant SCAs are required to ensure the protection of human and environmental health. SCAs like physical design and waste management, for example, should be regularly inspected at aging mining and milling sites like Rabbit Lake.
21. The intervenors request clarification on how the CNSC arranges its inspections of Rabbit Lake, i.e., how much notice does Cameco receive prior to an inspection, or how does the CNSC decide when certain SCA inspections will take place.
22. The CNSC should enter into an arrangement with the National Research Council of Canada to help create a framework to shape the building standards for uranium mines and mills.
23. A cumulative effects analysis should be required for the licence renewal hearing at Rabbit Lake to ensure that there are no environmental effects occurring or that may occur in the future that would interact with the environmental outputs from Rabbit Lake and result in undue harm to human health and the environment.
24. A shorter licensing term will enable a more frequent review of potential cumulative effects that may be caused by Rabbit Lake or impact Rabbit Lake.
25. The CNSC should review the licence renewal application with express consideration given to climate impacts and climate resiliency, including in the context of site suitability and impacts on safety and the environment.
26. The criteria by which climate change impacts and natural external events have been assessed and evaluated against the 20-year licence application must be clearly set out.
27. Detailed climate analysis must be presented in a public forum as part of the CNSC's licensing process.

Expert Report's Recommendations

- **Justification of Proposed Licence**
 - Cameco must provide evidence for its assumption of future market conditions as part of its justification for a 20-year licence.
 - Critical concerns that require explicit consideration include: (i) an explanation of the public participation processes for public review of Cameco's operations once Cameco decides to resume production, and (ii) an explanation of the public participation processes for public review of periodic reporting as per CNSC regulations. The CNSC and Cameco must ensure the public that its concerns will be heard and addressed throughout a prolonged licence period.
- **Consideration of Sustainability, Precaution, and Adaptation**
 - An explanation of the sustainability criteria adopted to evaluate the impacts of the Rabbit Lake operation, including a comparative analysis of options for all mine and mill components and operational stages, from state of care and maintenance through to decommissioning.
 - An explanation of the process by which sustainability criteria, including precaution and adaptation, were incorporated throughout analysis, including a comparative evaluation of options for all mine and mill components and stages.
 - An explanation of how the associated concepts of reversibility, retrievability, diversity and redundancy were considered in the design and operational aspects of the mine and mill, from state of care and maintenance through to operational, decommissioning, and post-decommissioning phases.
- **Consideration of Rolling Stewardship**
 - The CNSC and Cameco must incorporate a rolling stewardship approach in the preliminary decommissioning plans by explicitly devoting attention to the following:
 - Plans for the accurate transmission of information from one generation to the next;
 - Plans for the transfer of responsibility from one generation to the next, e.g., a 'changing of the guard' every 20 years;
 - Plans for the recharacterization of waste;
 - Plans to rapidly detect and correct any leakages or other problems;
 - Plans for the retrieval of waste; and
 - Plans for continual adaptive management and monitoring

