

Policy framework in Canada for mine closure and management of long-term liabilities

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ABSTRACT

The National Orphaned/Abandoned Mines Initiative (NOAMI) recently published a guidance document that examines a policy framework for mine closure and management of long-term liabilities, including the transfer of care and custody of closed mine sites back to the Crown.

In the six-year performance report, NOAMI identified several priority areas including an examination of the legislative tools and policy approaches across Canada to eliminate future mine abandonment.

A study was undertaken by Cowan Minerals Ltd. to explore the current situation in Canada and provide recommendations for the development of a modern regulatory framework dealing with these matters. This guidance document is based on a survey of all Canadian mining jurisdictions and several key international ones. It is designed for use as a reference document for citizen groups affected by mine closure, and for mining jurisdictions in Canada and elsewhere which may need policy and regulatory development in these areas. The guidance document examines the main components related to mine closure and post-closure site management, and considers long-term care monitoring and maintenance. Options are presented whereby mining jurisdictions may accept mining lands back to the Crown. Topics covered in the guidance document include closure objectives, closure plans, financial assurance, post-closure care, return of mining lands back to the Crown and consultation.

Subsequently, an 'experts workshop' was held to further explore the long-term care, maintenance and return of mining lands to the Crown after closure. With the guidance document as a starting point for discussions, site risk management, legislation and policy, and funding were discussed. Workshop experts provided various recommendations on these issues that will be used to formulate a strategic roadmap on management of long-term liabilities and issues related to the return of mining lands to the Crown.

The guidance document and subsequent workshop suggest the key elements of a modern policy framework and make recommendations related to the return of mining properties to the Crown.

INTRODUCTION

The National Orphaned/Abandoned Mines Initiative (NOAMI) was created by the Federal, Provincial and Territorial Mines Ministers in Canada in 2002. NOAMI assesses key abandoned mine issues and recommends to the Mines Ministers of Canada actions, collaborative approaches and partnerships toward remediation of existing abandoned mines and prevention of future abandonments.

The NOAMI Advisory Committee brings together a multi-stakeholder group representing governments, industry, environmental non-government organisations and Aboriginal Canadians. It is a unique organisation on the world scene related to orphaned/abandoned mine sites.

Over the past six years, NOAMI has made significant contributions to the state of knowledge of orphaned and abandoned mines in Canada and approaches for addressing them. These works are outlined in the NOAMI 2002-2008 Performance Report (NOAMI, 2009). The NOAMI publications, including the 2002-2008 Performance report, are posted on the NOAMI website: www.abandoned-mines.org. In the performance report NOAMI identified new initiatives to pursue over the next several years, including: "Examining the legislative tools and policy approaches across Canada to ensure that currently operating mines can be closed properly so that they do not become abandoned mines in the future."

The goal of all Canadian mining jurisdictions is to promote responsible mining, while avoiding future orphaned and/or abandoned mines. To achieve this goal, clear regulatory processes are required that provide guidance to successfully 'close' an active mine as well as address issues of environmental liability and responsibility for mine closure for both mine operators and regulators. These processes should also provide certainty to the public and to the various levels of governments who manage liabilities and risk related to mine closure and land management.

The NOAMI Advisory Committee wanted a better understanding of the current situation in Canada, and the elements involved to create a robust policy framework. The principal objective was to develop a guidance document that examines the main components related to mine closure and post closure site management, which can include long-term monitoring and maintenance liabilities. The guidance document will also address the transfer of mining lands back to the Crown government through the issuance of a release.

This guidance document is intended to provide a starting point for jurisdictions in Canada and elsewhere to develop their own specific policies related to this issue, and provide additional information to those jurisdictions that currently have a policy in place.

The study was undertaken by Cowan Minerals Ltd., a Sudbury-based environmental consulting company. The report titled *The Policy Framework in Canada for Mine Closure and Management of Long-Term Liabilities: A Guidance Document* was published by NOAMI in November 2010 (Cowan, Mackasey & Robertson, 2010). The guidance document provides a readable text for use as a reference document by a diverse group of stakeholders, including industry, Aboriginal Canadians, governments, non-government organisations and citizen groups affected by mine closure. For simplicity, this report is referred to as the "guidance document" throughout the paper.

It should be noted that the findings and recommendations of the report are to provide information to NOAMI for development of a jurisdictional framework. Future planned work for NOAMI will further test and distil this information and lead to recommendations to Mines Ministers.

METHODOLOGY

A two-pronged approach was used to execute the guidance document. To obtain current information on how the issues under consideration are managed, a questionnaire was developed and sent to selected agencies within Canada. Information was requested on existing legislation, regulations, policies and practices for mine closure including, financial assurance; long-term care and maintenance planning; consultation; and release requirements for closed mine sites which the proponent wishes to return to the Crown. A slightly modified questionnaire was sent to a number of foreign jurisdictions within which mining is a significant economic endeavour. Information collected from the questionnaires was compiled and collated. Key information findings were noted as observations or trends.

The second step was the preparation of a series of briefing notes on the policy elements from which guidance concepts for a policy framework could be developed.

SUMMARY OF GUIDANCE DOCUMENT

Observations and trends

The survey results provide a snapshot of existing legislation, regulations, and policies in jurisdictions for mine closure. Over the last 40 years in Canada, most jurisdictions have implemented regulatory regimes that require mine closure planning and the provision of financial security across Canada. Positive actions are identified, along with some areas that need improvement or additional clarity.

The requirement of closure plans is the norm—and most jurisdictions appear to include every element of an active production site in their closure plans. There are few major gaps identified within or between permits by jurisdictions, and perhaps areas of overlap. A 'one window' approach among agencies regarding permits is the exception rather than the rule.

A number of jurisdictions use spreadsheets, computer models and other tools to calculate financial assurance. This approach is recommended as it provides consistency not only for the regulatory agency but also for the proponent. Use of Net Present Value as a tool to calculate long-term care and monitoring costs following closure is not universal. There is no widely accepted process for calculating long-term monitoring, care and maintenance costs.

Several gaps in emergency response were identified. The focus for emergency response planning is on operating mines, rather than closed out sites (with limited access, infrastructure and technical resources), and there is little planning for catastrophic events. Approaches for storage and safeguarding of maps and documents are not consistent, and may hinder rapid retrieval of information in an emergency.

There is a greater focus on Aboriginal consultation, and several jurisdictions have created dedicated consultation units.

The report noted that regulations and policy around long-term care and monitoring of sites beyond closure are nearly non-existent in Canada, with the exception of the Province of Saskatchewan.

Several jurisdictions have provision for return of mining lands to the Crown, but the process appears to be somewhat subjective. While several jurisdictions report that they will not accept properties with ongoing water treatment or contamination concerns there is little discussion on

how these sites will be maintained once the proponents disappear. This is a real concern for the long-term care and monitoring of closed uranium mines.

A number of jurisdictions outside Canada were surveyed to obtain comparable information on their frameworks. Responses received from several agencies (Colorado, Minnesota, Nevada, New Mexico, US Bureau of Land Management, Utah and Western Australia) are included in the report.

To the authors' knowledge, this guidance document provides current best practices for mine closure and transfer of ownership, and no comparable reviews of this process or policy exist, globally.

Policy guidance and recommendations

Briefing notes were prepared on elements that need to be considered in development of a policy framework: mine closure, risk in closure planning, risk assessment, acid rock drainage/metal leaching, cost estimation, financial assurance, perpetual care/long-term monitoring/maintenance, corporate failure/premature closure, emergency preparedness and legislation, return of mining lands to the Crown, consultation and institutional care. The notes consist of an introduction, issues and policy guidance statements. The key points in several of the briefing notes, adapted from the guidance document (Cowan, Mackasey & Robertson, 2010), are outlined below.

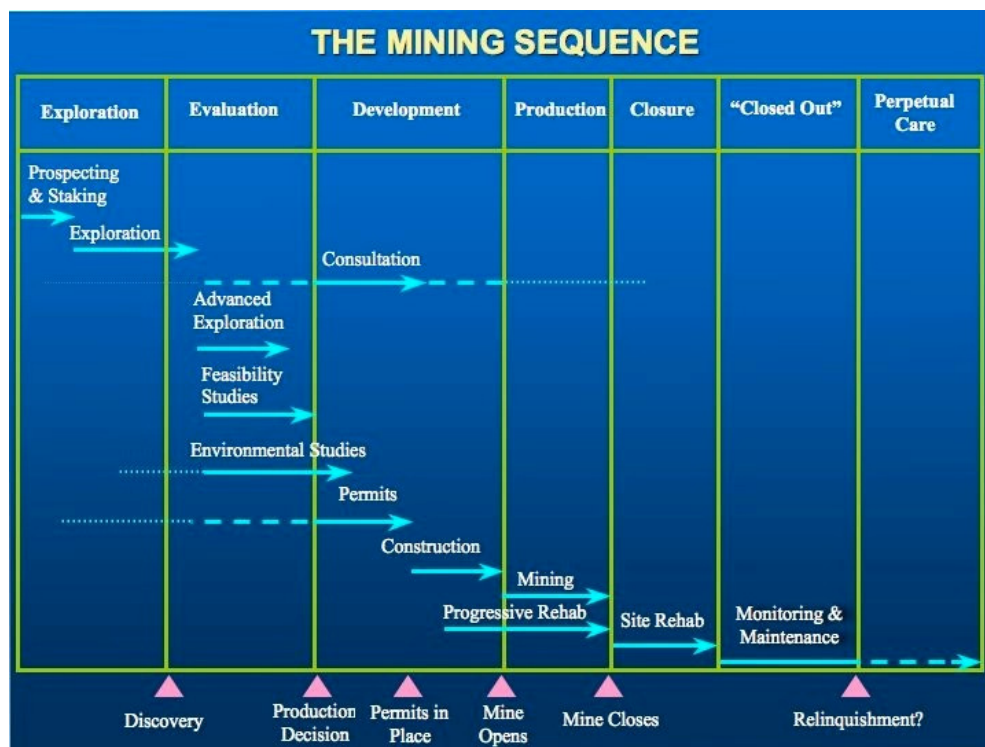


Figure 1 The Mining Sequence
 (modified from the Ontario Ministry of Northern Development, Mines and Forestry)

Mine closure objectives and plans

A mine closure plan is submitted to, and approved by an agency authorised to allow commencement of mine production on the lands involved. The mining sequence is provided in

Figure 1. A clear policy on the closure objectives of a jurisdiction must be in place so that a 'design for closure' or a 'design for return of mining lands' can be applied on a consistent basis. Returning the mine site to a land use compatible with the surrounding terrain will suffice for most cases. In some situations, there may be a need to return the site to its original state. The cost associated with the land end-use can vary widely, and needs to be assessed within the context of the mining strategy of the jurisdiction and affected communities. Closure plans must ensure that mine sites will be restored to a biologically, physically and chemically stable state, acceptable to the regulators and post-mining land users. Plans should be prepared by qualified personnel, and based on sound science, and state of the art engineering. As a mine site evolves with time, the initial closure plan may be subject to amendments and revisions. This would require ongoing re-evaluations of the plan, with an established inspection and enforcement program.

Financial assurance

To prevent further accrual of orphaned and abandoned mines, it is essential that monies are put forward by the proponent to guarantee completion of the work required by the closure plan. This 'insurance policy' is an integral part in formulation of jurisdictional policy and regulations for mine closure. The form and timing for provision of this money is an important component of the policy, and must be balanced with the risk tolerance of a jurisdiction. For example, if the proponent provides 100 percent of the closure costs up front in the form of cash or cash equivalent ('hard assurance') the regulating jurisdiction assumes minimal risk; however, this may impose severe financial constraints on the project. Some jurisdictions may assume more risk and accept 'soft assurance' (guarantees based on some form of corporate guarantee) to secure economic benefits. Regularly scheduled review of financial assurance is necessary to capture changes in the plan or to offset changes in inflation, interest rates etc. To provide greater uniformity in calculating costs and financial assurance, jurisdictions should also consider providing spreadsheets or templates for use by industry and evaluators. Work in this area by British Columbia and Nevada may provide guidance.

Perpetual care, long-term care and maintenance

Mining is viewed as a temporary use of the land; the ultimate goal of mine closure planning is to return the land to its original or other productive use, with no costs to the taxpayer. However, there are site elements that will require long-term monitoring and maintenance, sometimes for decades or even millennia, to ensure physical and chemical integrity. These elements include: tailings and tailings dam stability, waste rock and tailings cover integrity, effluent quality and treatment, pit wall stability and protection against vandalism. Physical structures will require inspection, maintenance and perhaps replacement. Determination of funding to address these long-term needs is in its infancy, but is an important consideration for return of mining lands.

Return of mining lands to the Crown

Once mining is completed, the proponent may wish to return (relinquish, surrender) the mineral rights back to the Crown. There are several factors driving this process. The proponent may not wish to carry the liabilities for these properties forever, and ultimately, the proponent will disappear one way or another. The Crown should be prepared to receive the lands back, either on managed terms, or through unplanned abandonment in the long term. Jurisdictions may wish to have clear policies, rules and procedures in place as to how the process can be managed in the best

interests of the public. There may be some exclusions, whereby a site is considered unacceptable for return despite the necessary financial and management guarantees, i.e. active treatment. Upon return of mining lands, the registration on title documentation and release for proponents must be unimpeachable. The policy and compliance measures must be clear in the event that actions regarding a returned site become necessary, i.e. failure of rehabilitation.

Institutional Custodianship Policy

An Institutional Custodianship Policy (ICP) is needed for management of closed mine sites that require long-term supervision. This may range from passive controls (i.e. registered land use restrictions) to active controls (i.e. fencing hazards or water treatment). Institutional control must be authorised by legislation, but the work could be completed by government, a contractor or other body. Data management, oversight and financing are critical components of an ICP.

Consultation

Consultation with stakeholders must be continuous throughout the mining sequence. Responsibilities of the proponent and jurisdictions must be clearly defined, including mandated consultation with Aboriginal groups. A referring system is suggested for complicated processes.

Recommendations

The Cowan Minerals report (Cowan, Mackasey & Robertson, 2010) made a series of recommendations that would help minimise or prevent the further accrual of abandoned mine features.

1. Greater emphasis should be placed on the development of post-closure policy, regulations and procedures. It would be useful if this were done on a Canada-wide cooperative basis. The existing Saskatchewan model serves as a good underpinning for this.
2. Policy, regulations, and procedures for institutional care need to be developed.
3. Jurisdictions should have a managed return of mining lands process, which is clear and unfettered, i.e. a 'design for return' approach.
4. Release documents should be clear and unimpeachable.
5. Financial assurance regimens should be established which meet the mining strategy of the jurisdiction and its level of risk tolerance.
6. Methods for estimating forward costs, risk assessment and financial options require improvement.
7. Templates, computer programs, etc. should be provided for costing to ensure greater uniformity in the establishment of costs and financial assurance.
8. For national consistency, jurisdictions should consider inclusion of major mineral exploration activities in closure planning.
9. Baseline data collection and sampling protocols and testing for ARD/ML and other contaminants should be required prior to any significant site disturbance.
10. Methodologies for closure, which do not require active treatment, require greater emphasis.
11. Multi-jurisdictional review of risk-assessment processes towards a uniform methodology.

12. Identification and development of land use controls and mapping of rehabilitated features for public access and planning processes is recommended.
13. Risk assessments and emergency/contingency plans should be prepared for sites under long-term/perpetual care.
14. Community and volunteers could be engaged throughout mining sequence to enhance participation and transparency of process.
15. A sound inspection and enforcement program should be in place to support the legislation and regulations and to ensure financial assurance requirements are current.

NOAMI WORKSHOP

Return of mining lands to the Crown resonated strongly with the NOAMI members, and there was interest to pursue discussion further through a focussed workshop. The workshop “Exploring the Management of Long-Term Liabilities and the Return of Mining Lands to the Crown in Canada” was designed to obtain advice to assist NOAMI in the development of recommendations and a strategic roadmap on this issue. To obtain a broader cross-section of opinion, 50 experts from federal and provincial governments, the mining industry, non-government organisations, Aboriginal Canadian groups, consultancies and academia were invited to participate.

To start the discussions, the findings of the Cowan Minerals report were presented, with a look at the ‘big picture’ and a focus on recommendations from the report related to the return of mining lands to the Crown. Workshop participants considered key issues in a series of small breakout sessions and during panel discussions. Key issues considered include:

- When it is acceptable and unacceptable to return mining lands to the Crown and the terms and conditions that must be in place
- Recommended solutions to key issues related to site risk management, funding and legislation, policy and regulation and the barriers to implementing the solutions
- The top three barriers to implementing the above solutions and the actions that should be taken to address them

A general observation at the workshop was that the Province of Saskatchewan is advanced in terms of long-term care, maintenance and return of mining lands. The Institutional Control Program (ICP) developed by Saskatchewan provides for the long-term site management of reclaimed and decommissioned sites and for the transfer of site responsibility back to the Crown. In 2007, the province legislated the Reclaimed Industrial Sites Act and Regulations to establish and enforce the ICP. Under the ICP, each accepted site will have a specific monitoring and maintenance plan and dedicated funds are established to perform those activities. To date six mine sites have been accepted into the program and are managed under provincial responsibility. The Saskatchewan policy development process and framework for ICP, would be a useful model to examine for construction of the NOAMI policy framework (Saskatchewan Ministry of Energy and Resources, 2009).

NEXT STEPS

Recommendations from the workshop outcomes report will be used by the NOAMI Advisory Committee to formulate a strategic roadmap to ensure that processes are in place for instances when the return of mining lands to the Crown is feasible and appropriate.

To further examine this issue in the upcoming year(s), NOAMI will:

- Develop a research plan to further explore and expand on the key points raised by the workshop experts surrounding the transfer of mining lands back to the government
- Obtain stakeholders' perspectives on the issuance of a release, and addressing issues of when and under what conditions such a return of land would be appropriate
- Examine the process where a mine site that was returned to the Crown under the Saskatchewan Institutional Control Program as a learning tool for development of a jurisdictional framework
- Develop a communications strategy that describes NOAMI's work on this subject

The works and recommendations of NOAMI on the return of mining lands should be reported to the Canadian Intergovernmental Working Group and at the Federal, Provincial and Territorial Mines Ministers of Canada at the Mines Ministers' Conference in 2012.

CONCLUSION

Although much progress has been made in the last 40 years with mine closure, a challenge remains in planning for and regulating post-mining management and associated liabilities to prevent the future abandonment of mines.

The challenges of closure planning and ownership transfer that are being addressed in Canada are not unique to Canada but widespread. The guidance document provides a good starting point to develop policy and legislation for jurisdictions in Canada, as well as for other developed nations.

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REFERENCES

- Cowan, W.R., Mackasey, W.O. & Robertson, J.G.A.** (2010) *The Policy Framework in Canada for Mine Closure and Management of Long-Term Liabilities: A Guidance Document*, viewed 8 July 2011, <<http://www.abandoned-mines.org/publications-e.htm>>.
- NOAMI** (2009) *National Orphaned/Abandoned Mines Initiative 2002-2008 Performance Report*, viewed 8 July 2011, <<http://www.abandoned-mines.org/publications-e.htm>>.
- Saskatchewan Ministry of Energy and Resources** (2009) Institutional Control Program. Post Closure Management of Decommissioned Mine/Mill Properties Located on Crown Land in Saskatchewan, viewed 8 July 2011, <<http://www.ir.gov.sk.ca/Default.aspx?DN=50a6404c-0c28-4181-8184-19ff8ec0bec0>>.