

A guidance document for mine closure and management of long-term liabilities – examining a policy framework in Canada

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Abstract

This paper provides a summary of a recent guidance document published by the National Orphaned/Abandoned Mines Initiative (NOAMI), which examines a policy framework in Canada for regulation of mine reclamation and closure, including the management of long term liabilities and transfer of care and custody of closed mine sites back to the Crown. The guidance document provides recommendations for the development of a modern regulatory framework dealing with these matters.

NOAMI was created by the Federal, Provincial and Territorial Ministers of Mines for Canada in 2002. The NOAMI Advisory Committee brings together a multi-stakeholder group representing governments, the mining industry, mining associations, environmental organisations and Aboriginal Canadians. It is a unique organisation globally focused on the issue of orphaned/abandoned mine sites.

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 minimising the incidence of further abandoned mines in Canada. NOAMI has developed several guiding principles, one of which relates directly to the subject matter of this paper; “Work toward eliminating future abandonment must continue, including the tightening of regulatory approaches”.

The guidance document is based on a survey of all Canadian mining jurisdictions and several key international ones. The guidance document provides a plain language, readable text for use as a reference document for citizen groups and for those mining jurisdictions in Canada contemplating new policy and regulatory development in these areas. It examines the main components related to mine closure and post-closure site management and it considers provisions for long-term 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 sites to the Crown, custodial care and consultation. The paper suggests the key elements of a modern policy framework and makes recommendations related to the return of mining properties to the Crown.

1 Introduction

The legacy of orphaned and abandoned mines in Canada has been a challenging problem for governments, industry and civil society. It is also a high priority for Aboriginal Canadians, who are often the ones most directly affected by the environmental and safety issues presented by orphaned and abandoned mines.

An “abandoned mineral site” is one which the National Orphaned and Abandoned Mines Initiative (NOAMI) has defined in terms of tenure as “a neglected mineral site that has not been terminated and has no responsible owner” (an orphaned mineral site is synonymous with abandoned mineral site). This definition applies only to those sites that have no other identified responsible party other than the Crown.

Only in the last two decades has important progress been made in Canada towards addressing the clean up of these sites. In this same period, much policy has been put in place to ensure that new sites and existing operations have in place reclamation and closure plans and adequate financial security should an owner become insolvent or otherwise leave site responsibility to the Crown.

NOAMI has played a role, with the support of Federal, Provincial and Territorial Ministers of Mines in Canada, in documenting this progress since 2002 and in putting forward ideas and guidance suggestions to

improve Canada's ability to prevent future orphaned and abandoned mines and to address those which currently exist.

2 Why are orphaned and abandoned mines an issue in Canada?

Mining has been central to the Canadian economy for over 100 years, and Canada is a supplier of mineral commodities world-wide. However, our long history of mining has left many abandoned sites: more than 10,000 abandoned sites requiring varying degrees of rehabilitation. In the past, mines became "abandoned" because there was no legislation to make mine owners accountable for the entire mine lifecycle. Few understood the physical and environmental hazards that resulted when companies simply locked the gate and walked away from the site. Today, mining legislation in all Canadian jurisdictions requires mine developers to submit mine closure plans that describe how the site will be progressively rehabilitated throughout its lifecycle and how it will be decommissioned when mining activities end.

As noted above, orphaned or abandoned mines are those mines for which the owner cannot be found or for which the owner is financially unable or unwilling to remediate the site. These mines can pose environmental, health, safety and economic problems for communities, the mining industry and governments.

The most serious environmental issues for orphaned and abandoned mines are acidic drainage and metal leaching. Public health and safety hazards amount from mine openings, mine wastes, abandoned infrastructure and subsidence. Addressing the issue of abandoned mines brings into play policy implications such as standards and objectives of closure, fiscal responsibility, funding models and jurisdictional liabilities.

3 Creation of the National Orphaned/Abandoned Mines Initiative

In 2001, a multi-stakeholder workshop was held in Winnipeg, Manitoba to examine the challenges around dealing with orphaned and abandoned mines in Canada. Based on recommendations coming out of this workshop, the National Orphaned/Abandoned Mines Initiative (NOAMI) was created in 2002 by the Federal, Provincial and Territorial Mines Ministers. NOAMI is guided by a multi-stakeholder Advisory Committee that brings together representatives from the Canadian mining industry, federal, provincial and territorial governments, non-government organisations and Aboriginal Canadians. Together they assess issues and make recommendations for collaborative implementation of remediation programmes and policies for orphaned and abandoned mines across Canada.

The NOAMI Advisory Committee takes direction from the Federal, Provincial and Territorial Ministers of Mines in Canada, and reports progress to the annual Mines Ministers Conference. This conference is the oldest National Ministerial Conference in Canada and is an opportunity for Ministers and other stakeholders to discuss and plan for the future of mining in Canada.

NOAMI's activities are jointly funded by the federal, provincial and territorial governments, The Mining Association of Canada, and the Prospectors and Developers Association of Canada and are administered by a secretariat at Natural Resources Canada.

4 Work of NOAMI and products

NOAMI by itself does not directly clean up orphaned and abandoned mine sites. NOAMI has no budget for this, nor does it have any jurisdiction for that kind of work. Instead, NOAMI examines the legislative, policy and programme framework in Canada for addressing the issue of orphaned and abandoned mines, and makes recommendations on how this framework could be improved. NOAMI's multi-stakeholder model is an ideal structure for doing this work. NOAMI provides a structure and open environment for public servants, NGO's, Aboriginal Canadians and the Mining Industry to discuss barriers to clean-up and remediation of orphaned and abandoned mine sites.

4.1 NOAMI task groups

Since NOAMI was created, five task groups have worked to address issues related to orphaned and abandoned mines in Canada.

4.1.1 Information gathering/inventory task group

One of NOAMI's objectives is development of a national inventory of orphaned and abandoned mines based on compatible inventories from each province and territory. NOAMI produced a report entitled "Capacity Building for a National Inventory of Orphaned and Abandoned Sites in Canada" (Cal Data Ltd, 2005), which reviewed Canadian, U.S. and international efforts to inventory orphaned and abandoned mines. Based on this report, NOAMI has been working to finalise an interactive web-based inventory of sites that would tie together all Provincial and Territorial databases, using a consistent framework of definitions with a graphic map interface. This work is continuing and should be launched and made public in the near future.

4.1.2 Community involvement task group

An objective of NOAMI is to develop means to foster community involvement in decision-making about closure and reclamation standards, and to ensure that targeted end-use and reclamation standards are acceptable to local communities. In 2003, the NOAMI Advisory Committee produced a report entitled "Lessons Learned on Community Involvement in the Remediation of Orphaned and Abandoned Mines - Case Studies and Analysis" (NOAMI, 2003a). The lessons learned from these studies were developed into guidelines published in the brochure "Best Practices in Community Involvement: Planning for and Rehabilitating Abandoned and Orphaned Mines in Canada, 2003" (NOAMI, 2003b). Additional work has continued to develop and pilot a modular capacity-building toolkit for areas such as community engagement, environmental concerns, legal and corporate matters, funding and partnerships and aboriginal issues.

4.1.3 Legislative and institutional barriers and collaboration task group

The NOAMI Advisory Committee wanted a better understanding of the legal and institutional barriers that prevent third parties from collaborating on clean-up activities and addressing associated liabilities related to orphaned and abandoned mines. This task group examined the efficacy of various approaches. The NOAMI Advisory Committee commissioned a background study "Barriers to Collaboration: Orphaned and Abandoned Mines in Canada" (Castrilli, 2002). This report examined regulatory barriers, liability disincentives and collaborative opportunities for voluntary abatement, remediation and rehabilitation of orphaned and abandoned mines in Canada and selected international jurisdictions. Additional work has included a multi-stakeholder "Legal and Institutional Barriers to Collaboration Workshop" and a review on jurisdictional legislation (Castrilli, 2007).

4.1.4 Funding approaches task group

Another objective of NOAMI is to identify funding approaches and preferred options for the remediation of orphaned and abandoned mines that could be adapted to meet the varying needs of each jurisdiction. The NOAMI Advisory Committee produced a report entitled "Potential Funding Approaches for Orphaned and Abandoned Mines in Canada" (Castrilli et al., 2003). This report concluded that no single funding approach was a complete solution; a combination of approaches would likely be required. A subsequent workshop was held, which recommended development of a funding "toolkit". This funding "toolkit" was completed and released in 2006, entitled "Rehabilitating Abandoned Mines in Canada: A Toolkit of Funding Options" (Cowan Minerals Ltd., 2006).

4.1.5 Jurisdictional legislative reviews task group

The NOAMI Advisory Committee was asked by Mines Ministers in 2003 to complete a set of guidelines for jurisdictional legislative review that could be used by jurisdictions to evaluate their own policies with respect to collaboration, liability and funding. The NOAMI Advisory Committee conducted this work with a view to ensuring that approaches across jurisdictions are consistent, certain, transparent, coordinated and efficient. The NOAMI Advisory Committee published "Guidelines for Legislative Review" (NOAMI, 2004). Using these guidelines, the NOAMI Advisory Committee then prepared an assessment of all jurisdictions in the "Report on the Legislative, Regulatory, and Policy Framework Respecting Collaboration, Liability and Funding Measures in relation to Orphaned and Abandoned, Contaminated, and Operating Mines in Canada" (Castrilli, 2007).

5 Issue of return of mining lands to the Crown

In 2009, the NOAMI Advisory Committee identified the need to examine the issue of whether and under what circumstances mining lands are returned to the Crown, or to the owner of the land. It did not appear that many (if any at all) jurisdictions had a clear policy set out to address this issue.

Mining companies within Canada are fully responsible for environmental protection and reclamation at their mine sites. They must develop closure plans, estimate costs, carry out planned reclamation work and post security. Government's main role is a regulatory one; that is, to review closure plans, issue permits, inspect reclamation work, and administer financial security on behalf of the Province or Territory.

Many mining sites will be left, after planned closure, with engineered structures (tailings dams, waste dumps with covers, engineered stream channels etc.) that require long-term monitoring and maintenance; possibly in perpetuity. This "post-closure cost" represents a long-term liability and more clarity and certainty of process is needed regarding these future and ongoing responsibilities of the operator and government regulatory agencies.

Post-closure costs are those costs that constitute a stream of expenses extending more than five years beyond planned closure, and represent a long-term liability. These post-closure costs can include:

- Costs of remediation and monitoring of acid rock drainage (ARD) and metal leaching.
- Non-ARD operational and monitoring costs, including site maintenance, monitoring and engineering.

Under legislation of several Canadian mining jurisdictions, there is the ability for government to issue a release, or a similar instrument, that would legally allow a mining operator to terminate its operations and responsibility for a site, with no further obligations. However, few jurisdictions have issued such instruments because of the lack of clarity around the process.

The NOAMI Advisory Committee agreed to examine the issues that would need to be addressed in a policy framework for returning lands to the Crown. The policy framework would address ultimate closure of mine sites and long-term management and related liabilities, in a manner that clearly sets out the responsibilities of the mine operator and government regulatory agencies. NOAMI's interest in this policy development is that without sound policy in place, it is likely that future orphaned and abandoned sites will be created, with unanticipated and unfunded liabilities falling to the taxpayer. A consistent policy will benefit the overall lifecycle planning process and help support new mining projects, as the end target will be clearly identified.

5.1 Formation of task group and preparation of guidance document

To examine the policy framework around the issue of returning mining land to the Crown, a NOAMI Task Group was struck, consisting of various members of the NOAMI Advisory Committee. The Task Group's principal objective is to develop a policy framework that would address ultimate closure of mine sites and long-term management and related liabilities, in a manner that clearly sets out the responsibilities of the mine operator and government regulatory agencies. The policy framework would identify the main policy components and organisational issues related to mine closure and post closure site management, including policy dealing with financial liabilities for long-term monitoring and maintenance. The policy framework would also examine the questions surrounding the transfer of mining lands back to government through the issuance of a release, including questions of when and under what conditions such a return of land would be appropriate.

In early 2010, the Task Group determined that the best way to begin this work was to study the existing status of this issue across Canada and in selected international jurisdictions. This work would also act as a guidance document for use by jurisdictions and mining industry across Canada to outline the main components of a policy framework and provide options to facilitate policy development. From the Task Group's perspective, this "guidance document" would be the initial step in a multi-stage process to bring solid recommendations to the attention of Mines Ministers on the topic of post closure management of mining lands and the return of mining lands to government.

A request for proposals was distributed to selected consultants in early 2010 by the NOAMI Task Group and resulted in the selection of Cowan Minerals Ltd. as the consultant to complete this guidance document. The work on the report was conducted over the course of the summer and fall 2010 and the final report entitled “The Policy Framework in Canada for Mine Closure and Management of Long Term Liabilities: A Guidance Document” (Cowan Minerals Ltd., 2010) was completed and released in November 2010.

It is important to note that this report is an initial review of the topic by an independent consultant. NOAMI has not endorsed the recommendations and findings. Future planned work by NOAMI will further test these concepts and lead to recommendations to Mines Ministers.

6 Overall summary of guidance document

The consultant prepared a questionnaire and submitted it to 17 agencies within Canada and 20 foreign jurisdictions. The questions and the survey findings were broader than the issue of return of mining lands to government. The survey and resulting report examined the overall state of mine closure planning, including the preparation of closure plans prior to mine development, updating of closure plans throughout the mine life, and provision and updating of financial security to cover closure liabilities.

The findings of the survey revealed that the process of closure planning and the provision of financial security are relatively well developed and consistently applied across Canada. This is an area that has seen a lot of attention and development of policy over the past decades and has resulted in the filling of a significant policy void. Canadian mining jurisdictions require proponents to submit mine closure plans prior to receiving approval to commence mining operations. Mine closure plans (also referred to as reclamation or rehabilitation plans) are normally supported with financial assurance provided by the proponent to the jurisdictional authority in various forms acceptable to that authority. This financial assurance comprises a monetary instrument (cash, bonds) or other instruments in an amount estimated to be required to execute the closure plan.

However, the report also found that policy around long term management of sites beyond closure (or “post-closure”) including methods of returning mining lands to the Crown, were nearly non-existent in Canada and elsewhere in the world, other than a few notable exceptions.

The report identified a large number of recommended guidelines for the preparation of closure plans, provisions for financial security, reclamation cost estimates, consultation with affected communities, risk assessment, monitoring, reporting, and inspection and enforcement. These recommended guidelines are based on examining the practices being followed by jurisdictions in Canada and internationally and lessons learned.

In addition, the report examined where there are gaps and a need for further development of policies and approaches in the matter of mine closure planning and financial security. The key recommendations to address these gaps are as follows:

- Legislation, regulations and administrative policies must be in place requiring mine closure plans for the entire mining sequence of the proposed operation.
- Where new rules are being implemented, the regulator must be aware that existing operations may not have the same capacity to meet these requirements and timelines as that of a well planned new mine development. Transitional procedures and administrative policies, such as grandfathering, must be considered to accommodate this situation. In addition, staff training and guidance documents to ensure consistent application within a jurisdiction are necessary.
- Mine waste management plans, including acid rock drainage/metal leaching (ARD/ML) must be in place prior to commencement of mining as part of a comprehensive closure plan.
- Progressive rehabilitation (rehabilitation work completed during the operating phase) should be required where practicable. Generally this is more feasible in certain strip mining or open pit situations than in underground mines.
- Jurisdictions should establish a financial assurance regime which meets the mining strategy of the jurisdiction and its level of risk tolerance; in general self assurance is high risk.

- Methods for estimating forward costs, assessing the attendant risks as well as increasing financing options, require improvement. This work needs to be done by persons with appropriate financial and actuarial expertise.
- To provide for greater uniformity in the establishment of costs and financial assurance, development of a template for use by industry and evaluators should be considered. Both British Columbia's and Nevada's work in this area may be of benefit.
- To further prevent accrual of abandoned mine features, and for national consistency, jurisdictions should consider inclusion of major mineral exploration activities as part of their closure plan process.
- Jurisdictions should require baseline data collection and the implementation of sampling protocols and testing for ARD and other contaminants prior to any significant site disturbance in order to provide for well managed materials handling and the reduction of inadvertent, negative environmental consequences.
- Jurisdictions should have a sound inspection and enforcement programme to support the legislation and regulations and to ensure financial assurance requirements are current. This, in conjunction with continuous improvement by mining companies in developing environmental protection strategies throughout the mining sequence, can reduce risk and provide for good practices.

7 Summary of findings related to post closure and return of lands to government

The report reached some key findings related to management of post closure of mine sites and the return (relinquish, surrender, give up) of mining lands to Government. In particular, the report examined several arrangements for return of mining lands currently available in legislation, and which are not being used for lack of a policy framework for implementation. These schemes include the processes of "Surrender by Agreement" in Ontario, acceptance into the "Institutional Control Program" in Saskatchewan for uranium operations, and the "Surrender of Tenure and Environmental Authority" in Queensland, Australia. There were several lessons drawn from these and other example in the study.

As noted earlier in this paper, the report was intended to be a starting point for NOAMI's deliberations on this topic, and provides the views of an independent consultant based on the limitations of the survey work conducted. Much further work must be done prior to NOAMI being in a position to provide substantive recommendations to Mines Ministers.

First, the report noted that although many jurisdictions do have the authority to provide release documents for specific purposes, the matter of jurisdictions accepting relinquished lands with ongoing liabilities, though fully financed, is evolving. The report noted that jurisdictions should recognise the inevitability of mining lands returning to the Crown and provide for a managed process. The report also noted that the process should make every attempt possible to have the proponent provide the necessary financing to carry out any required long-term monitoring and maintenance, especially water treatment.

7.1 Summary of key findings

The summary by the consultant of the key findings and guidance are as follows:

- Greater emphasis should be placed on the development of a 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.
- Regulations, procedures and facilities regarding institutional care need careful consideration and development by jurisdictions. This includes both passive and active care options.
- Jurisdictions should have a managed relinquishment process, which is clear and unfettered. Hitherto, closure plans have been prepared on a "design for closure" basis. This should specifically include when and why relinquishment is not acceptable to the jurisdiction. It is suggested that a more forward looking approach be embraced and that a "design for relinquishment" approach be adopted.

Closure plans must be supported by financial assurance to guarantee the execution of the closure plan, including any required post-closure costs. Financial assurance in the amount and form acceptable to the regulator must be in place under an administrative scheme devised by the regulator.

Upon relinquishment, the registration on title documentation and release for proponents must be unimpeachable. Procedures must be in place to deal with any required ancillary permits.

Methodologies for closure which do not require active treatment require greater emphasis, e.g. use of natural lakes for reactive tailings storage.

To provide for more certainty and consistency for long-term administration of mine sites a uniform methodology for risk assessment would be beneficial across jurisdictions. This should be explored further through a working subcommittee; the Canadian Nuclear Safety Commission (CNSC) process may provide a starting point for evaluation and consideration.

To assist in the long term/perpetual care administration, identification and development of appropriate land use controls and mapping for public access and planning processes is recommended. Ultimately this should be compatible with other provincial, territorial systems for land use planning. Maps and accessible data or rehabilitated features, e.g. shaft caps, should be available.

For sites under long term/perpetual care the potential for physical or environmental failure remains high. A risk assessment process should be employed to identify potential risks and contingency/emergency response plans should be developed.

Jurisdictions should foster volunteer engagement of community and other stakeholders in project development through close-out planning to enhance participation and transparency of process. Volunteer groups can be beneficial in assisting in long-term monitoring activities. Voluntary Rehabilitation legislation (a.k.a. "Good Samaritan" legislation) is recommended to protect volunteers.

A responsible person or custodian must be in place to manage both the financial assurance and the ongoing commitments it is intended to finance.

8 Next steps for NOAMI

The NOAMI Task Group has laid out a plan to advance the initial work of the guidance document. NOAMI has an interest in focusing future work in this area on the topic of return of lands to the Crown, in order to provide certainty to governments and mining proponents on the terms and conditions where this could be possible with the intent to avoid closed mines from becoming orphaned or abandoned.

The NOAMI Task Group hosted a workshop on the above topic on 31 May and 1 June 2011 in Ottawa, Ontario. The workshop included a broader cross section of opinion than was surveyed by the consultant in preparing the report. The workshop was an excellent opportunity for all participants to enrich their understanding of these issues and to engage in constructive discussions with a broad range of stakeholders from the mining industry, NGOs, Federal and Provincial Governments, academia, consultants, communities and Aboriginal Canadian groups.

The recommendations will be used by the NOAMI Advisory Committee to create a strategic roadmap to identify and provide for those instances where the return of mining lands back to the Crown is feasible and appropriate. These recommendations will be reported to and recommended to the Federal, Provincial and Territorial Mines Ministers of Canada at the Mines Ministers' Conference in July, 2011 in Kananaskis Alberta.

References

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