Land and Water Boards of the Mackenzie Valley

LWB/GNWT/CIRNAC Guidelines for Closure and Reclamation Cost Estimates for Mines

January 19, 2022

REASON FOR REVISION	YEAR
Initial publication	2017
• Administrative updates throughout for consistency and clarity. • Updates to sections 1, 2, and 4 to align with current processes and expectations regarding applications, developing closure cost estimates, and engagement. • New guidance added in section 3 pertaining to the Boards' refund process and establishing holdbacks for performance uncertainty.	2022

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Definitions and Acronyms

TERM	DEFINITION
advanced mineral exploration	Advanced exploration is mineral exploration typically marked by the start of bulk sampling. It typically consists of large diameter drilling and trenching, and in larger-scale projects, development of declines or adits, and some on-site ore processing. Roads are often built; field camps can increase in size and heavy equipment may be brought in. The activities associated with advanced exploration often exceed land use permitting and water licensing criteria.
applicant	A person who has filed an application with the Board.
application	Any application for or in relation to a land use permit or water licence submitted in accordance with the *Mackenzie Valley Resource Management Act* (MVRMA), the *Waters Act*, or their regulations, and includes a request for a Board ruling, a plan approval, or any step required to advance a Board proceeding.
Boards (LWBs)	The Land and Water Boards of the Mackenzie Valley, as mandated by the MVRMA. Part 3 of the MVRMA establishes regional land and water boards with the power to regulate the use of land and water, and the deposit of waste, including the issuance of land use permits and water licences, so as to provide for the conservation, development, and utilization of land and water resources in a manner that will ensure the optimum benefit to the residents of the management area and of the Mackenzie Valley and to all Canadians. Part 4 of the MVRMA establishes the Mackenzie Valley Land and Water Board (MVLWB). Regional Land and Water Boards have been established in the Gwich'in, Sahtu, and Wek'èezhìı management areas and now form Regional Panels of the MVLWB.
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada (formerly AANDC/INAC)
closure and reclamation	The process and activities that facilitate the return of areas affected by a project to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and human activities.
closure cost estimate	An estimate of the cost to close and reclaim a project. Also referred to as a security estimate.
closure criteria	A set of standards that measure the success of selected closure activities in meeting closure objectives. Closure criteria may have a temporal component, for example, a standard may need to be met for a pre-defined number of years. Closure criteria can be site-specific or adopted from territorial/federal or other standards and can be narrative statements or numerical values.
closure objectives	Statements that describe what the selected closure activities are aiming to achieve and are guided by the closure principles. Closure objectives are typically specific to project components, are measurable and achievable, and allow for the development of closure criteria.
CRP	Closure and Reclamation Plan.
engagement	The communication and outreach activities an applicant, licensee, or permittee undertakes with affected parties prior to and during the operation of a project.
GLWB	Gwich'in Land and Water Board.

GNWT	Government of the Northwest Territories.
Indigenous government/ organization	An Aboriginal organization representing a First Nation (as defined in section 2 of the *Mackenzie Valley Resource Management Act*), Métis or Inuit organization, the Tłı̨chǫ First Nation, the Tłı̨chǫ Government, or the Délı̨nę Got'ı̨nę Government.
Landowner	As defined in section 1 of the Mackenzie Valley Land Use Regulations: in respect of settlement lands, Tłı̨chǫ lands, Délı̨nę lands, or other private lands, the title holder; and in respect of any other lands, the minister of the Crown or the Commissioner of the Northwest Territories, as the case may be, who has administration and control of the lands. The LWBs acknowledge that the general understanding of this term does not reflect the various land management structures across the Mackenzie Valley; however, the legislated definition of 'Landowner' includes both Landowners and land administrators, so this term is used in this document for consistency with the legislation.
land use permit (permit)	A regulatory authorization required for an activity set out in sections 4 and 5 of the Mackenzie Valley Land Use Regulations; or a land use permit (type C) required by Tłı̨chǫ law for use in Tłı̨chǫ lands or by a Délı̨nę law for a use of Délı̨nę lands, respectively, for which a type A or type B land use permit is not required.
licensee	A person who holds a water licence issued by a Board.
Mackenzie Valley	That part of the Northwest Territories bounded on the south by the 60th parallel of latitude, on the west by the Yukon Territory, on the north by the Inuvialuit Settlement Region as defined in the Agreement given effect by the *Western Arctic (Inuvialuit) Claims Settlement Act*, and on the east by the Nunavut Settlement Area as defined in the Nunavut Land Claims Agreement Act, but not including Wood Buffalo National Park.
Minister	The Minister of Environment and Natural Resources (non-federal areas), the Minister of Lands, or the Minister of Northern Affairs (federal areas), as the case may be.
MVLWB	Mackenzie Valley Land and Water Board.
MVLUR	Mackenzie Valley Land Use Regulations.
MVRMA	*Mackenzie Valley Resource Management Act.*
NWT	Northwest Territories
progressive reclamation	Closure and reclamation activities conducted during the operating phase of a project.
project	Any activity that requires a water licence or land use permit.
permittee	A person who holds a land use permit issued by a Board.
RECLAIM cost model (or RECLAIM)	The GNWT/CIRNAC's model for estimating Closure and Reclamation costs. The preferred tool for calculating closure cost estimates for activities that require a water licence (including those that also require a land use permit). RECLAIM is specific to mining and oil and gas projects, and is administered by the GNWT or CIRNAC.
reclamation research	Literature reviews, laboratory or pilot-scale tests, engineering studies, and other methods of resolving uncertainties and answering questions pertaining to environmental risks for the purpose of providing data and information that will reduce uncertainties for closure options, selected closure activities, and/or closure criteria.
reviewer	Any person or organization who submits comments on documents distributed for public review by the Boards. By submitting comments on an application (via the Online Review System or otherwise), reviewers become parties to the regulatory proceeding

	for the application and are expected to follow the LWBs' *Rules of Procedure*.
security adjustment	A change in the security deposit held under a land use permit or water licence, to reflect changes in the closure plan or unit costs, completion of progressive reclamation, etc.
security deposit	Funds held by the Landowner that can be used to reclaim the site or carry out any remaining ongoing measures if a project is abandoned. Further, the funds can also be used by the GNWT and CIRNAC to take measures to address situations of non-compliance at the site (e.g., spills, releases, mitigations, etc.) when they hold the security.
SLWB	Sahtu Land and Water Board.
type A water licence	A water licence required as per Column IV of Schedules D to H of the Waters Regulations (for non-federal areas); or Column IV of Schedules IV to VIII of the Mackenzie Valley Federal Areas Waters Regulations (for federal areas).
type B water licence	A water licence required as per Column III of Schedules D to H of the Waters Regulations (for non-federal areas); or Column III of Schedules IV to VIII of the Mackenzie Valley Federal Areas Waters Regulations (for federal areas).
WLWB	Wek'èezhìı Land and Water Board.

1.0 Introduction

Mining plays a large role in the economy of the Mackenzie Valley. Each mine will eventually come to the end of its operational life and require closure and reclamation. Unfortunately, in the past, there have been instances where mines have been abandoned without completing closure and reclamation of the operation, leaving the cost of clean-up to the Landowner (the GNWT, CIRNAC, and/or Indigenous government/organization). In response to these past events, the modern regulatory framework has been designed to ensure that mine operators conduct closure and reclamation in an environmentally responsible way, and pay for the cost of doing so. Permittees and licensees that intend to construct and operate a mine are required to provide a security deposit to cover the costs to close and reclaim the site should they not meet these obligations.

In the Mackenzie Valley, the Gwich'in, Sahtu, Wek'èezhìi, and Mackenzie Valley Land and Water Boards (Boards or LWBs) determine the amount of the security deposit required in licences and permits based on the estimated costs of closure and reclamation. The closure cost estimate is based on the closure and reclamation plan (CRP) for the project. The MVLWB/INAC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories* (the MVLWB/INAC Closure Guidelines) outline the requirements for CRPs. Licensees and permittees are required to develop a CRP and maintain a security deposit through the legally binding conditions set out in the water licences and land use permits issued by the Boards.

Typically, a conceptual CRP is required during the project approval stage, followed by iterative development of the CRP during operations, and a final CRP before operations conclude.[1] As the CRP is refined throughout the life of the project and as progressive reclamation is completed, the closure cost estimate can be adjusted accordingly.

The Boards are guided by the INAC *Mine Site Reclamation Policy for the Northwest Territories* (INAC's Reclamation Policy) when approving a mine's CRP and determining the corresponding security deposit. In the context of devolution of lands, rights in respect of water, and non-renewable resources, the Government of the Northwest Territories (GNWT) has adopted this policy on an interim basis. The GNWT has endorsed the MVLWB/INAC *Closure Guidelines* and relies on them when preparing its submissions to the Boards.

1.1 Purpose and Objective

The purpose of these Guidelines is to:

1. describe the Boards' expectations for preparing closure cost estimates (section 2.0);
2. outline the Boards' processes for determining how much security may be required under licences and permits to cover the costs of closure and reclamation (section 4.0); and
3. outline the Boards' expectations and considerations for refunding security held under licences and permits (section 3.0).

[1] See the MVLWB/INAC (2013) *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine sites in the Northwest Territories* for more information.

These Guidelines describe the Boards' process and considerations when it comes to setting and adjusting security for mines in the Mackenzie Valley that have completed progressive reclamation and have met some or all approved closure objectives and closure criteria. These Guidelines do not address site relinquishment, which is separate from the authority of the Boards. Contact the Landowner for questions related to relinquishment.

The Boards' objective in developing these Guidelines is to enhance transparency, process efficiency, and consistency in setting and adjusting security throughout the life of a project.

The Acts and Regulations[2] are the authority in any case where there is a conflict or inconsistency between these Guidelines and the legislation. Additionally, links to various other relevant references are provided in these Guidelines to assist readers; however, these references may be subject to revisions following the publication of these Guidelines.[3] Applicants and other readers should always ensure they are using the most recent versions of any references (e.g., legislation, guidelines, policies, land use plans, etc.).

1.2 Authority

The Boards' authority to require licensees and permittees to provide and maintain security is granted under the *Mackenzie Valley Resource Management Act* (MVRMA, federal legislation) and the *Waters Act* (territorial legislation). This authority encompasses all areas across the Mackenzie Valley, including land owned by Indigenous governments, federal areas, and land administered by the territorial government.[4]

Subsection 11(1) of the Waters Regulations, subsection 12(1) of the Mackenzie Valley Federal Areas Waters Regulations, and subsection 32(1) of the Mackenzie Valley Land Use Regulations authorize the Boards to determine the total amount of security to be provided under licences and permits:

> The Board may fix the amount of security required to be furnished by an applicant in an amount not exceeding the aggregate costs of
>
> a) abandonment of the undertaking;[5]
> b) restoration of the site of the undertaking; and
> c) any ongoing measures that may be necessary after the abandonment of the undertaking.[6]

[2] The *Waters Act* and MVRMA, and the Water Regulations and MVFAWR, respectively.

[3] All Board guidance documents referenced in these Guidelines can be accessed on the Policies and Guidelines webpage on any of the Boards' websites (www.glwb.com/www.mvlwb.com/www.slwb.com/www.wlwb.ca/).

[4] See MVRMA sections 71, 72.11 and subsection 60(1.1), and *Waters Act* subsection 35(1) and paragraph 63(1)(g).

[5] 'undertaking': defined in the Waters Regulations as "an undertaking in respect of which water is to be used or waste is to be deposited" (see Schedule B of the Waters Regulations for types of undertakings). For the purposes of this document, undertaking refers to a project.

[6] The quoted material is identical in all three Regulations except the Waters Regulations and the Mackenzie Valley Federal Areas Waters Regulations include references within the quoted subsection to other parts of the respective regulations.

1.3 Application

These Guidelines will be applied by the MVLWB, GLWB, SLWB, and WLWB. In general, these Guidelines apply to new and existing projects that require a type A or type B water licence. In the Mackenzie Valley, closure cost estimates for these projects are typically developed using the RECLAIM model (discussed further in section 2), which is developed and maintained by the GNWT and CIRNAC. The RECLAIM model is accompanied by the RECLAIM User Manual with instructions on how to use RECLAIM. The RECLAIM User Manual is periodically updated by the GNWT and CIRNAC. These Guidelines compliment the RECLAIM User Manual, and both documents should be used as references when preparing closure cost estimates.

For projects that require only a land use permit and no water licence, closure costs estimates are typically developed using the LWBs' security template, not RECLAIM. If licence and permit applications are being submitted together, however, RECLAIM should be used, and the closure cost estimate should include a break-down of costs for water-related activities and land-related activities. If the project includes activities in both non-federal and federal areas, the closure cost estimate must be broken into two components, reflecting activities specific to the non-federal and federal areas.

These Guidelines can be used to inform closure cost estimates for projects which require a water licence but are not mining, milling, or advanced mineral exploration projects (e.g., oil and gas projects[7]); the Boards' processes and expectations for closure cost estimates will typically be the same as those outlined in these Guidelines.

1.4 How the Guidelines Were Developed

Sections 65 and 102(1) of the MVRMA authorize the Boards to develop the Guidelines:

> 65. Subject to the regulations, a board may establish guidelines and policies respecting permits and other authorizations, including their issuance under this Part.

The Boards implement this provision through the Areas of Operation Initiative. In 2015, under this initiative, the Boards formed several teams to work on issues identified as priorities related to various areas of operation. The Closure Process Team was established at that time and tasked to work on issues related to the Boards' role in setting security. On behalf of the Boards, the Closure Process Team published the *Guidelines for Closure and Reclamation Cost Estimates for Mine Projects* in 2017, which was then updated in 2021 with information pertaining to security refunds and performance holdbacks. Both iterations of the Guidelines underwent a public review process and careful consideration was given to the comments and recommendations received during the public reviews. The content of the Guidelines is based on the public comments and recommendations received during the public reviews; legal and policy research; and input from Indigenous governments/organizations, the GNWT, CIRNAC, Board staff, and consultants with expertise in closure and reclamation and estimating closure costs. The process undertaken to develop these Guidelines was consistent with past and present practices of the Boards.

[7] There is a separate RECLAIM model for oil and gas projects. See the Policies and Guidelines webpage on any of the LWBs' websites to access the RECLAIM models and user manuals.

1.5 Monitoring and Performance Measurement for the Guidelines

Mechanisms will be required to monitor and measure performance and to evaluate the effectiveness of these Guidelines. In accordance with the principles of a management systems approach (e.g., plan-do-check-act), the Boards will develop a performance measurement framework. These Guidelines will be reviewed and amended as necessary within that framework. The framework will also describe how affected parties, industry, and government will be involved in the review process.

2.0 Board Expectations for Closure Cost Estimate Submissions

This section of the Guidelines describes the Boards' expectations for closure cost estimates submitted by an applicant, licensee, or a reviewer; it is intended to act as a "how-to" guide for developing closure cost estimates.

The Boards' expectations are the same whether the submission is made during a licensing or permitting proceeding or during the term of a licence.

2.1 Obtain the Most Recent Version of RECLAIM to Develop Your Estimate

The RECLAIM model is the Boards' preferred means to develop a closure cost estimate; the model reflects the principles of the INAC's Reclamation Policy and is based on reasonable and well-founded assumptions. For example, the unit costs in RECLAIM are based on independent third-party contractor costs, as specified in the INAC Reclamation Policy. RECLAIM is updated periodically to incorporate new information, lessons learned, inflation, and any other relevant changes into the unit costs and default line items. The most recent version of RECLAIM and the RECLAIM User Manual can be obtained from the GNWT[8] or any of the LWBs' websites.[9] Estimates should be adjusted for inflation, based on the number of years since the RECLAIM model was updated or since the RECLAIM estimate was last adjusted for inflation. See the RECLAIM User Manual for more information, including using the inflation function of the model.

Should an applicant, licensee, or reviewer wish to use an alternate method to generate a closure cost estimate, they must propose the alternate method prior to submitting the estimate. Requests to use a different method must be accompanied by:

1. a description of how the proposed method works;
2. a description of how the method reflects the principles in the INAC Reclamation Policy; and
3. a rationale for why a different cost estimating method is being proposed.

The alternate method should be discussed with the Landowner prior to requesting the Board's approval (see section 2.2 on engagement for more information). If the Board approves use of an alternate method, the applicant, licensee, or reviewer may then submit the closure cost estimate using the approved model.

In order to develop a defensible closure cost estimate in RECLAIM, permittee and licensee personnel should have sufficient expertise in mine closure and reclamation and related fields, and in the costing of large engineering projects. RECLAIM users should follow the instructions within the model and its accompanying RECLAIM User Manual.

[8] See the GNWT Department of Environment and Natural Resources website

[9] See the Policies and Guidelines webpage on any of the LWBs' websites to access the RECLAIM models and user manuals.

2.2 Engage with the Landowner Before Submitting an Estimate

When preparing closure cost estimates, applicants, licensees, and permittees should work closely with the Landowner.[10, 11] Engagement can greatly improve the efficiency of the Board's review and approval process and prevent significant delays. It can also improve the estimate's accuracy and it allows the operator and the Landowner to begin discussions about the form of security.

Engagement should occur prior to and during the Boards' regulatory process; in the case of a licensing proceeding (section 4.1), the applicant or licensee would begin prior to the submission (Figure 1). Where possible, consensus on reclamation unit costs or closure activities and line items should be sought. Where consensus cannot be achieved, engagement should be conducted to an extent that allows the applicant or licensee and the Landowner to provide thorough rationale for any differences in their closure cost estimates.

During the term of a licence, security adjustment requests will also benefit significantly from early engagement. For such requests, the Board expects the licensee to:

1. Engage with the Landowner about the closure cost estimate while developing the submission;
2. Provide any information the Landowner requests to help them understand differences in opinion regarding assumptions, quantities, unit costs, etc. or to prepare their own estimate; and
3. Submit an explanation for all differences between the licensee's and the Landowner's closure cost estimates. The Board may request that the Landowner submit cost estimates for all areas of disagreement or a full closure cost estimate. Note that the Board may issue direction to a licensee to work with the appropriate Landowner to understand and address differences.

While early engagement on closure cost estimates is also critical for a licensing proceeding, the Boards recognize that the degree to which an applicant can fulfill the engagement expectations outlined above will vary based on the type of application (for example, new application, renewal application, or amendment application of an existing licence, etc.). Applicants and licensees are expected to strive to complete the steps above to the extent possible and communicate whether they were able to achieve the expectations as part of their application.

In some cases, a reviewer may propose a closure cost estimate - in this case, the reviewer should consider discussing their proposed estimate with the applicant or licensee, and the Landowner, prior to submitting it to the Board. This would help to ensure the reviewer has all the information needed to generate a closure cost estimate.

2.3 Develop the Closure Cost Estimate

As stated in the introduction, the closure cost estimate for a given project is directly linked to the CRP. This must reflect the third-party contractor costs as procured by the Landowner to implement the CRP, because Landowners will be burdened with closure and reclamation of any abandoned sites. This aligns with the INAC Reclamation Policy.

The closure cost estimate must include all direct and indirect costs that would be incurred from the time

[10] The GNWT for projects outside federal areas requiring a water licence, and for any projects on public lands
[11] CIRNAC for projects on federal areas

the site is abandoned, through interim care and maintenance,[12] completion of closure activities, and post-closure monitoring and maintenance, until closure and reclamation of the project has been completed in accordance with the approved final CRP and closure criteria have been met.

Technical guidance on estimating direct and indirect costs is in the RECLAIM Manual. Guidance on updating estimates of direct and indirect costs when requesting a security refund for completed closure activities is in section 3.1 of these Guidelines.

All estimates are to include costs for post-closure monitoring (for example, water quality monitoring, geotechnical inspections, etc.) and maintenance (for example, repairing eroded areas of a tailings cover that would be reasonably expected in the future). Monitoring and maintenance plans in the CPR must have sufficient detail to support the closure cost estimate. This is consistent with the requirement to identify monitoring and maintenance activities in the CRP, as described in the MVLWB/INAC *Closure Guidelines*. It is also consistent with INAC's Reclamation Policy, which states that "adequate security should be provided to ensure the cost of reclamation, including shutdown, closure and post-closure, is born by the operator of the mine rather than the Crown." The total security may include security posted under other authorizations, such as land leases, depending on the circumstance. See section 4.4, Preventing Duplication for more information.

As development of the CRP progresses, and the Board approves closure objectives and closure criteria, the licensee should link closure objectives and closure criteria to the relevant items in RECLAIM. Closure objectives that are performance-based should be flagged, as they may require security to be held back (see section 3.1.2). Early work on closure objectives and closure criteria is critical to the development of the CRP and the return of security for progressive reclamation.

There may also be costs which are not specifically identified in RECLAIM but are required in order to implement the CRP. RECLAIM allows for the addition of line items. If a licensee or reviewer identifies costs for closure activities in the CRP that are not included in the RECLAIM model, these costs should be added as line items in RECLAIM. For example, the following costs are not included in RECLAIM and will likely be incurred during closure and reclamation:

- Engagement costs: the Boards' *Engagement and Consultation Policy* and *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits* require all licensees and permittees to engage with affected parties. Therefore, engagement costs associated with the development of the CRP, closure and reclamation, and post-closure phases should be included in the estimate.
- Regulatory compliance costs: Transfer or renewal of authorizations (e.g., submission of applications, participation in technical sessions and public hearings); preparing required submissions (e.g., annual reports required by the water licence, responses to information requests); reporting (e.g., monitoring reports, Reclamation Completion Reports); and responding to reviewer comments during public reviews.

[12] Refer to "Insolvencies" section in INAC's Reclamation Policy for a description of the processes that may be undertaken when a company becomes insolvent or abandons a project. These legal processes would take place during a period of "care and maintenance" for the project.

- All costs for finalizing the CRP, which may include but not be limited to the completion of any outstanding reclamation research.

While estimates of these costs may not be well refined at the initial licensing phase, during operations a licensee will complete regulatory work, develop and update the CRP, complete reclamation research, and undertake regular engagement; therefore, these costs are anticipated to become better refined through the operational phase of the project.

2.4 Develop Supporting Documentation

A document that describes the assumptions, inputs, and data sources used to develop a closure cost estimate must accompany the estimate submitted to the Board. Assumptions and data sources from this document can be directly entered into RECLAIM. When submitting a RECLAIM estimate, users must submit the EXCEL version that the Boards will post to the public registry. The Boards require additional supporting documentation if an applicant, licensee, or reviewer wishes to use a site-specific cost or implement a phased approach to security. These are discussed in more detail below.

Requests for adjustments to the security deposit over time must be accompanied by an updated closure cost estimate, with a detailed description of each adjusted line item, rationale for the adjustment, and supporting documentation. Proposed adjustments could be the result of reclamation research results, an updated and approved CRP, etc.[13] See section 4.2 for more information about security adjustments, and section 3.1.3 for more information about documentation required for security refund requests.

2.4.1 Documentation for Proposed Site-Specific Costs

The RECLAIM model has unit costs for a suite of possible closure activities. For example, RECLAIM has unit costs for hauling and loading reclamation materials and for removing buildings. In most cases, applicants, licensees, and reviewers use the set of default unit costs provided with the RECLAIM model to develop closure cost estimates for a project. The Boards encourage the use of the default costs. If the default costs do not reflect site costs, the Estimator tab in RECLAIM can be used to develop certain site-specific costs, as discussed further in the RECLAIM User Manual.

Should an applicant, licensee, or reviewer believe a default unit cost in RECLAIM is not reflective of site-specific costs but does not believe the Estimator tab is applicable, it is possible to request approval of a site-specific cost by submitting the following documentation with the RECLAIM estimate:

a) an explanation of why the cost in RECLAIM does not apply; and
b) an estimate of the site-specific cost being proposed, with detailed supporting calculations and documentation, including evidence that the proposed cost represents third-party contractor costs. If a proposed unit cost is based on confidential information (e.g., contractor bids), the Board can consider accepting the information under confidential cover as outlined in the

[13] The Boards' Standard Water Licence Conditions and Schedules template includes a standard condition that limits security adjustment requests to CRP, Closure and Reclamation Completion Report, or Performance Assessment Report submissions, unless otherwise approved by the Board. This condition will likely be included in most new licences and may be considered by the Boards during amendment and renewal proceedings for existing licences.

Board's *Rules of Procedure*.

When both requirements (a) and (b) are met, the Board will consider whether the proposed site-specific cost is appropriate. Site-specific costs developed without using the Estimator tab should be discussed with the Landowner prior to submitting them to the Board. As noted above, site-specific unit costs must reflect third-party contractor costs, not the costs that would be incurred if the licensee or permittee conducted the work.[14]

2.4.2 Documentation for Proposed Timelines for Providing Security

An applicant, licensee, or reviewer may propose a phased payment approach for providing the required security deposit. This allows the amount of security held to increase as mine development progresses (i.e., as liability associated with the closure and reclamation of the site increases) through payment of security in installments.[15] Each phase should be based on a pre-defined milestone. For example, an applicant may propose to submit an initial deposit prior to construction (1st milestone), an increase prior to mining (2nd milestone), and another increase prior to milling (3rd milestone). The applicant should submit a closure cost estimate for each milestone – for example, by submitting one RECLAIM estimate for each. Supporting rationale should be submitted with the RECLAIM estimate(s), explaining how each closure cost estimate has been calculated. This rationale must include a discussion of how the proposed security deposit for each milestone ensures the estimated closure and reclamation costs never exceed the security deposit held during any phase of the project. Applicants, licensees, and permittees are strongly encouraged to discuss proposed phased payment approaches with the Landowner as part of early engagement.

3.0 Board Expectations for Security Refund Requests for Completed Closure Activities

This section outlines the Boards' expectations regarding security refund requests to promote the timely reduction of security after closure activities are successfully completed and liability associated with these specific closure activities has been reduced. Security refunds can be requested during any phase of the project when closure activities have been completed. The Boards' process for considering a security refund request is the same as for any security adjustment, as described in section 4.0. As with any security adjustment, the refund request will undergo a public review.

When considering a refund request, the Board will evaluate the closure cost estimate based on the evidence, including the approved CRP, the supporting evidence that is submitted as outlined in section 3.1.3, and evidence submitted by other parties. The Boards rely heavily on the Landowner's input on closure cost estimates and acknowledge that different landowners will have different risk tolerances, as reflected in the evidence submitted by the Landowner. The Boards will then decide whether to reduce the required security deposit as requested (in whole or in part) based on reviewer comments, Landowner input, the evidence on the record, and pertinent legislation and regulations.

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[14] INAC (2002) *Mine Site Reclamation Policy for the Northwest Territories*, page 6.

[15] The practice of including phased installments in the licence and permit is consistent with the INAC (2002) *Mine Site Reclamation Policy for the Northwest Territories,* which states that "[t]he amount of financial security on deposit will normally increase proportionately as mining proceeds. Generally, this implies that as the mine site grows, water usage increases and the costs to restore a site expand. Accordingly, reclamation costs are usually estimated to rise over the life of the mine" (Page 10).

Security refunds for closure activities such as removing buildings, pipelines, and power lines are relatively straightforward, and can be granted in full so long as associated activities have also been completed as required by the authorizations and confirmed by the Inspector. This is because the success of these closure activities can be easily verified, for example, when the infrastructure is no longer present. In this situation, there may be no need for monitoring to verify long-term performance or for future maintenance.

Refunds for closure activities that have long-term performance requirements, however, such as construction of waste rock or tailings covers, are not as straightforward. Licensees may need to monitor for years or decades to verify that closure criteria for water quality, physical stability, and future use are met. Long-term maintenance may be required for features that remain on-site, such as waste rock piles, tailings facilities, or constructed drainage channels. Some of the maintenance activities may need to account for unplanned events or failures.

Accordingly, until closure objectives and criteria are met, there is often uncertainty about the performance of closure activities. In these cases, a performance holdback may be necessary, as discussed in section 3.1.2.

For clarity, post-closure monitoring and maintenance costs are not refunded when a closure activity is first completed, since monitoring and maintenance associated with the completed closure activity have not yet been carried out.

3.1 Information Requirements for Security Refund Requests

When submitting a security refund request to the Board, licensees and permittees must:

- Conduct a holistic re-evaluation of the closure cost estimate (section 3.1.1);
- Estimate performance holdbacks, where applicable (section 3.1.2); and
- Submit documentation supporting the items above (section 3.1.3).

These three requirements are described below.

3.1.1 Holistic Re-evaluation of the Closure Cost Estimate

When requesting a security refund, operators are expected to consider the completion of the closure activity and the associated reduction in liability holistically within the entirety of the project's remaining liability. The revised closure cost estimate must address the remaining closure and reclamation costs for the entire project and should be generated using the same method as used originally, with consideration for direct and indirect costs.

The holistic re-evaluation of a closure cost estimate prepared using the RECLAIM model is carried out in two cost categories, namely direct costs and indirect costs. Each cost category is comprised of components pertaining to the type of industry, which, for mines, are as listed below and discussed further in the following sections.

- Direct components: open pit, underground mine, tailings facility, rock pile, buildings and equipment, water management, water treatment, chemical and contaminated soil management, surface and groundwater management, interim care and maintenance, and

- Indirect components: mobilization/demobilization, post-closure monitoring and maintenance, engineering, project management, health and safety plans and inspections, quality assurance/quality control, bonding/insurance, and contingency.

Requests for security refunds may be associated with one or more components and result in revisions to one or both of the two cost categories. Licensees are encouraged to view direct and indirect costs together as they are intimately linked. When viewed in isolation, there is the potential for less security to be refunded than requested.

The following sections discuss considerations for security refund requests associated with completed closure activities at any time. Direct and indirect cost categories are discussed independently below. The guidance below may also be applicable to other types of security adjustments, not just refund requests, depending on the circumstance.

Direct Cost Evaluation

Reclamation Completion Reports and Performance Assessment Reports, as outlined in Section 3.1.3, should provide sufficient detail so they can be used to evaluate the work completed, and then by extension, the amount of security to be refunded. It is imperative that these submissions provide clear and tangible evidence of the completion of closure activities and satisfactory performance consistent with the approved closure criteria in the CRP.

If a licensee is requesting the complete refund of security associated with a particular closure activity, then it must be adequately demonstrated that all work incorporated into the unit rate has been completed. For example, the unit cost in RECLAIM for demolition of a structure includes the removal of wastes to either an on-site landfill or an off-site disposal facility. If only the building demolition work is completed, and the waste has not been relocated to a disposal facility then the entirety of the scope of work under the RECLAIM unit rate has not been completed and the full amount cannot be requested.

For partially completed closure activities, the licensee must either estimate the remaining cost or provide a percentage of completion. In either case, the licensee is expected to re-evaluate indirect costs.

Indirect Cost Evaluation

The evaluation of the indirect costs in the RECLAIM model includes a review of the following: mobilization/demobilization, post closure monitoring, engineering, project management, health and safety plans and inspections, quality assurance/quality control, bonding and insurance, and contingency, market price factor adjustments. In general, the security associated with mobilization/demobilization and post-closure monitoring and maintenance activities are developed using unit rates within the RECLAIM model while the remainder are based on percentages of the direct costs. Additional details on how indirect costs are evaluated is provided below. The reader is also encouraged to review the latest version of the RECLAIM User Manual.

Indirect costs can be adjusted as the CRP matures and progressive reclamation is completed because the uncertainty in the nature of the work is reduced as actual information on costs has been obtained. Given the variability in the nature of the indirect costs, the RECLAIM model allows the licensee to evaluate these

costs.

Mobilization/Demobilization

Re-evaluation of the costs for mobilization and demobilization needs to consider the equipment, labour, and materials required to complete the balance of closure and reclamation as outlined in the CRP. When preparing a security refund request, consideration must be given to the work schedule moving forward and the nature of remaining closure activities. The assumptions used in the original closure cost estimate may no longer be valid, and as such, the costs may be greater than originally estimated. For example, if the assumption in the development of the existing closure cost estimate was that all the earthworks for the closure and reclamation of the waste rock stockpiles or tailings containment structures could be done in one field season, but it is now known that a second season will be required, then the costs for mobilizing the resources necessary (i.e., equipment, labour, and materials) for the second season must be accounted for in the closure cost estimate re-evaluation.

Post-Closure Monitoring and Maintenance

Evaluation of the post-closure monitoring and maintenance program (i.e., long term monitoring and maintenance costs) needs to be based on the assumptions used in the development of the land use permit, water licence, and CRP.[16] The costs will need to be evaluated on the basis of post-closure monitoring results and maintenance inspections/records to confirm they are in line with closure objectives and closure criteria specified in the CRP. The costs will need to reflect any changes to the post-closure monitoring and maintenance activities, as outlined in any updated CRP. For example, if the possibility of delayed acid rock drainage arises during operations, the post-closure monitoring costs may need to be increased to include additional years of monitoring.

The overall security required can still be reduced for work completed; however, sufficient security must be held back in order to ensure all post-closure monitoring and maintenance can be achieved. During implementation of the post-closure monitoring, the total security for the project may also be adjusted to include any new issues as they may arise during the post-closure monitoring.

More detail on performance uncertainty is provided in section 3.1.2.

Engineering, Project Management, Health and Safety Plans, Quality Assurance/Quality Control, Bonding, and Insurance

The calculation of engineering, project management, health and safety, quality assurance/quality control, bonding, and insurance costs in the RECLAIM model is based on a percentage of the direct costs, so in general, all of these costs will reflect changes in the direct costs associated with the work remaining. Each of these indirect costs are evaluated separately and they relate to the nature of the work remaining as part of the CRP.

Engineering costs may decrease due to reductions in uncertainty as the project's life cycle matures or as

[16] Other types of monitoring are also required in the monitoring and maintenance tab outside of performance monitoring. Examples include Aquatic Effects Monitoring Programs, wildlife monitoring, air monitoring, geotechnical inspections, Surveillance Network Program, etc.

reclamation is completed, and the costs associated with preparing the engineering designs for the CRP become less. Similarly, for project management, health and safety, and quality assurance/quality control costs, as closure and reclamation is completed, the complexity of the oversight necessary generally diminishes and the percentage assigned may be reduced, thereby reducing the security for this work. Bonding and insurance are also related to the work remaining to be done, which will change as closure and reclamation is completed.

Contingency

The RECLAIM User Manual indicates the following:

> A contingency is added to cover both the uncertainty in the costing estimate (i.e., variability in quantity of work, unit costs and required scope of activities) and the possibility that some aspects of the closure and reclamation activities may be more difficult to perform.

The amount of security held as contingency is normally a function of the status of the project, the maturity of the CRP, and a comparison of operational field data to the predictive model used to form the basis of the closure cost estimate. The less uncertainty, the lower the percentage of direct costs required to cover any potential issues that may arise during the completion of closure and reclamation. The contingency amount can be changed as a project moves through its lifecycle because the nature of the issues relating to closure and reclamation (for example, waste management requirements), engineering controls, and mitigation measures will be better understood and designed. The level of understanding and its effect on the contingency cost will need to be evaluated on a case-by-case basis. Although the contingency cost may be reduced as the CRP is developed and refined through the life of the project, contingency is unlikely to be reduced to zero given the inherent uncertainties in cost estimation.

Note, in the RECLAIM model, contingency amounts are associated with the yet-to-be-completed closure activities. Any contingency associated with completed works are effectively removed from the re-evaluated cost estimate because the contingency cost is calculated on the basis of the remaining direct costs. The contingency cost is not, however, directly associated with the performance of closure activities. For details on security related to the performance of closure activities see section 3.1.2.

3.1.2 Performance Holdbacks

A performance holdback is an amount of security that is not refunded until it can be demonstrated that performance-based closure objectives and criteria have been met. In general, it is a portion of the security that remains once the security associated with completed closure activities is refunded. The concept and general authority to require any holdback is outlined in the INAC Reclamation Policy:

> The Minister may hold back an appropriate amount of financial assurance to cover future requirements for the site. In such cases, the mining company will be responsible for the care and maintenance of the site but will also maintain a claim to any remaining financial assurance.

A performance holdback is evaluated based on a closure activity being completed as confirmed by the documentation requirements set out in section 3.1.3. The Boards will set the performance holdback to account for the performance uncertainty associated with closure activities. Guidance on how to evaluate performance uncertainty is outlined in the section below.

Performance holdbacks will be returned once it has been demonstrated that closure objectives and closure criteria have been achieved. This will likely be an iterative process for those components that have closure objectives with multiple closure criteria. Performance holdbacks can be re-evaluated periodically (for example, every five years), most likely when the licensee submits a Performance Assessment Report. As outlined in the MVLWB/INAC *Closure Guidelines*, Performance Assessment Reports will compare conditions at the site against the appropriate closure objectives and closure criteria. Therefore, with each Performance Assessment Report, there is an opportunity to demonstrate that closure criteria have been met and request a refund of some or all the performance holdback. This provides the operator the opportunity to further reduce security requirements or have security completely refunded. Post-closure monitoring results and, in some cases, updates to predictive models (for example, water quality models or thermal models for tailings covers) will be needed to demonstrate that closure criteria have been and will continue to be met.

Once an operator has successfully implemented the final CRP (including post-closure monitoring requirements) and achieved closure criteria, the Board will reduce the security deposit required under the licence and/or permit to zero. This process is independent of the relinquishment of liability under land leases or other instruments, which is outside the purview of these Guidelines.

Evaluating Performance Uncertainty and Associated Holdback

Performance uncertainty reflects the possibility of closure activities not achieving closure objectives or criteria, which is associated with the inherent risks in design assumptions. For example, if the design of the tailing's containment structure relies on the tailings freezing to mitigate the potential for metal leaching, performance uncertainty reflects an evaluation of the risk to the surrounding area if the tailings are not frozen within the modelled period and the costs to undertake the closure and reclamation measures of mitigating this risk.

Although the RECLAIM model includes a contingency amount, it does not include an amount associated with performance uncertainty. Operators will be required to provide a separate evaluation of the performance uncertainty as part of a security refund request. In evaluating the performance uncertainty, the operator preparing the estimate must consider whether a closure activity may not perform as planned, and the ramifications/consequences of such an occurrence. This should be done within the context of the project's setting and the sensitivity of the local and regional environment. This evaluation will be done on a case-by-case basis as closure activities are completed, using one of the methods below, or an alternate method proposed by the operator so long as sufficient supporting rationale and documentation are provided:

- A percentage of the direct cost items and detailed evaluation of indirect costs for closure activities that have performance uncertainty.
- A detailed evaluation of all applicable direct and indirect costs to address the performance

uncertainty associated with the closure activity for which a refund is sought.

- A detailed evaluation of all applicable direct and indirect costs to address the performance uncertainty associated with the closure activity for which a refund is sought (as per the bullet above), with a factor applied to reflect the likelihood of the closure activity not performing as planned and the consequence of such an occurrence.

As mentioned previously, operators may propose an alternate method for estimating holdbacks associated with performance uncertainty, so long as supporting rationale and documentation are provided. This should be discussed with the Landowner as part of early engagement while preparing the refund request (see section 2.2). Regardless of the method selected to derive the performance holdback, security refunds will be evaluated on a case-by-case basis. It is important to remain conservative in the approach to refunding security when there is performance uncertainty, because the costs associated with the mitigation of performance issues are often expensive – for example, when heavy equipment, materials, personnel, and camps must be mobilized. A performance holdback may need to remain in place for decades post-closure, depending on how long it takes for monitoring results and modeling to show that closure criteria have been and will continue to be met. The length of the post-closure monitoring period will depend on how long it takes the site to become physically and chemically stable. Licensees will estimate this timeline in the CRP, but the actual timeline will not be known until closure criteria are met.

Regardless of the method, indirect costs should be added to the performance holdback. This includes indirect costs that are calculated using percentages (engineering, project management, etc.). The percentages can be different than those used in the main RECLAIM estimate, if the difference is supported by defensible rationale. Mobilization/demobilization costs, which are also an indirect cost in RECLAIM, should be added to the performance holdback calculation. For example, whether a fleet of equipment would need to be mobilized and demobilized to complete either multiple closure activities (waste rock cover rehabilitation and tailings cover rehabilitation) or a single closure activity (tailings cover rehabilitation only) will need to be considered. Whether or not a contingency percentage is added to a holdback will be determined on a case-by-case basis.

It is understood that during the development of the CRP, some of the predictive modelling will include a sensitivity analysis to understand the variance in performance of the model as a function of various input parameters, and that this analysis should be used to support the holdback calculation since it will be very useful when evaluating performance uncertainty. In the case of a tailings cover, the sensitivity analysis for thermal modeling will identify the parameters that create uncertainty and may help to quantify that uncertainty. For example, sensitivity analysis using a model with 50% variability up or down from the mean will help to explain how the mean temperatures compare to the predictive model, and how this may influence the design of the closure structures into the future. Monitoring of trends using post-closure monitoring data compared to the model and its calculated variability will help develop an understanding of whether the performance of the closure activities are trending in accordance with the original model or more in-line with one of the variance trends. This information can be used to determine whether design changes are necessary, and the work required to address any resulting design changes.

In any case where climate plays a role, information pertaining to whether climate change could negatively influence the long-term performance of closure activities should be provided. While the Boards expect

that closure designs will account for climate change, there is inherent uncertainty in climate change predictions. Importantly, climate change predictions are currently only valid until approximately 2100, even though closure designs must perform well beyond then. Many years or even decades will pass between the design phase (during operations) and when closure criteria are met (at the end of the post-closure monitoring period), while internationally accepted climate change predictions may be updated during that period. Therefore, the assumptions made during the design phase should be verified post-closure by updating any modeling that relies on climate assumptions. Where climate change beyond 2100 could reasonably mean that closure criteria may not be met (for example, if PAG rock might thaw after the year 2100), a performance holdback may be appropriate. This performance holdback would apply until post-closure modeling has verified that closure criteria will continue to be met within the timeframe of updated climate change predictions, which by then should be well beyond 2100. If the operator does not believe that there are any risks or uncertainty associated with climate change, they should provide a detailed explanation supporting this assumption.

As described earlier, the refund request will undergo public review. As part of its decision on the request, the Board will establish the performance holdback based on the evidence on the record, including submissions made by reviewers and Landowner. For all of the options described below, it should be noted that the Board may not agree with or support the licensee's estimate or evaluation of performance uncertainty and may elect to use a different approach or direct the licensee to do so.

Performance Uncertainty Based on Percentages

In this option, the operator would update the RECLAIM estimate and then propose a performance uncertainty holdback amount based on a percentage of the direct costs. The percentage assigned for each direct cost would be rationalized by the operator based on their experience and technical expertise, and on site-specific conditions. Table 1 identifies suggested ranges of holdbacks related to the direct costs associated with performance uncertainty, organized by the main components of the RECLAIM model - these ranges can be applied to a single line item or to the sum of multiple line items. These percentages can be used to estimate holdbacks for performance uncertainty, so long as supporting rationale is provided, including confirmation that the conditions and the status of the CRP are consistent with the descriptions in the Table. If conditions are different than those described in the Table, then alternative percentages should be applied and justified. For example, a pit with concerns related to rock stability, not just overburden stability.

As previously noted, all indirect costs must be evaluated as part of deriving the performance holdback. The indirect costs must reflect the work associated with addressing the performance uncertainty associated with the closure activity. Some elements of indirect costs associated with the mine component are identified in Table 1, however, this should not be interpreted as a comprehensive list of indirect costs that need to be evaluated.

Table 1: RECLAIM Direct Cost Items and Holdbacks for Performance Uncertainty for Mine Sites

Direct Cost Item	Holdback[1]	Rationale
Open Pit	0 to 5%	In general, it is anticipated that performance uncertainty related to this direct cost would be minimal (e.g., physical stability and hazard mitigation) unless there are concerns related to the overburden performance at the top of the open pit, or pit flooding has resulted in some potential issues for the downstream watercourses, either of which may require alterations to the design detailed in the CRP. If water quality concerns arise due to acid rock drainage in the post-closure period, the performance uncertainty would be expected to be associated with the water treatment component below and not the open pit component.
Underground Mine	0 to 5%	In general, it is anticipated that the level of uncertainty for this component is low. Water quality concerns related to the underground mine are addressed within the water treatment component below and not the performance uncertainty associated with the underground mine.
Tailings	20 to 50%	Closure and reclamation of tailings containment areas and the use of covers (e.g., capping and freezing of the tailings) hold a high degree of performance uncertainty. The costs associated with mitigating previously closed tailings containment areas due to design assumptions not being realized (i.e., leaching of metals decades post-closure) are significant, and as such, it is imperative that there is a holdback to account for these potential future costs. The lower end of the percentage range is anticipated for sites located in areas where the geology of the site is more favourable (i.e., less potential for acid rock drainage concerns); whereas sites with complex or less favourable geology (i.e., high potential for acid rock drainage concerns) would have a higher level of performance uncertainty, and thus the performance holdback requirements would be expected to be higher. Any uncertainty related to water treatment as a function of performance issues with the tailings management program will be included as part of the water treatment component and not in the tailings calculation of performance holdback. Another example of performance uncertainty relates to the potential for a failure of any perimeter and internal dams within the tailings containment areas. It is anticipated that the level of risk would be low and that it would have a low level of uncertainty, however, a holdback may be required to address future maintenance concerns. Given the nature of the mitigation measures that may be required to address performance issues related to the tailings containment areas, consideration must also be given to the mobilization of labour, supplies, and equipment as well as management of a camp. Depending on the location of the mine site, this may require the construction of a winter road or use of barges to remobilize the appropriate equipment for the rehabilitation work. In this scenario, mobilization/demobilization costs are

Direct Cost Item	Holdback[1]	Rationale
		particularly important because this type of work may require the largest fleet of equipment to be mobilized and demobilized from site to mitigate any performance issues. The holdback percentage ranges provided in this table do not include mobilization/demobilization costs, which must be estimated separately and added to the holdback.
Rock Pile	20 to 50%	Similar to the risks associated with the performance of tailings containment areas, the long-term performance of waste rock piles and the potential of metal leaching in the future presents one of the high-risk issues. Given the long time periods that may pass before any metal leaching is reporting during post-closure monitoring, and the costs associated with rehabilitating the waste rock storage facility covers, it is imperative that a holdback is retained to account for potential future costs. As with the tailings component, the percentage range used to evaluate the anticipated costs associated with the performance holdback relate primarily to the site geology, where less complex and more favourable geologies are expected to have low risk of performance failures, and more complex geologies will have higher risk and thus more potential for performance failures. Any water treatment issues that may arise from the failure of the waste rock containment structures would be captured under the water treatment component below. Similar to tailings, if maintenance or rehabilitation is necessary to address performance issues, it would require the mobilization/demobilization of a fleet of heavy equipment to complete the work, and the holdback percentage ranges provided in this table do not account for this, so this cost would need to be calculated separately and added to the holdback. The portion of the holdback calculation relating to mobilization/demobilization would be assigned under the indirect costs which, when using RECLAIM, are typically calculated after all direct costs are compiled. Mobilization and demobilization costs will need to be evaluated on a case-by-case basis based on the work required to address potential performance issues. Timelines for this work will also need to be considered as performance issues with components may not occur concurrently.
Chemicals	0 to 30%	The removal of hazardous chemicals associated with mine operations can generally be easily evaluated except for work associated with the treatment of petroleum hydrocarbon impacted soils and waste rock at a hydrocarbon-contaminated soil treatment facility. The level of uncertainty associated with these direct costs are a function of the method selected by the mine operator to mitigate issues associated with the management of chemically hazardous materials. If a hydrocarbon-contaminated soil treatment facility is to be used, there is the potential for a portion of the hydrocarbon impacted materials to not be adequately treated, and as such, an alternative plan is required to mitigate this liability. The anticipated uncertainty related to the management of residual fuels, batteries, reagents, etc. will have a performance uncertainty of zero percent (i.e., they are assumed to be removed off-site).
Buildings and Equipment	0%	The removal and disposal of mine site infrastructure is considered routine, and any risks associated with the removal of site

Direct Cost Item	Holdback[1]	Rationale
		infrastructure are well understood by the industry. For this reason, no holdback needs to be assigned to this direct cost item.
Water Management	0 to 20%	In general, the decommissioning of water management structures such as berms and containment ponds is straight forward and requires little to no holdback. However, prior to decommissioning, there may be costs associated with the on-going repair and maintenance of these structures after operations have ceased. Once all equipment has been demobilized from site, these costs can be significant if water treatment requirements extend well into the post-closure monitoring period. The costs associated with the mobilization of equipment, labour, and supplies as well as operation of a camp could be shared with other items with performance uncertainty, so the mine operator should clearly identify where these costs have been assigned within the holdback.
Water Treatment	50 to 100%	Post-closure water treatment can be the greatest post-closure liability at the site. Depending on the circumstances, water treatment infrastructure may be necessary as a contingency into the post-closure period. It is imperative that there is sufficient security in place for this component until the mine operator can demonstrate that post-closure monitoring results meet closure criteria. The percentage range set for performance uncertainty is high based on past experiences with legacy mine sites and metal leaching into water bodies from both tailings and waste rock storage facilities. Note that costs associated with addressing water quality issues (for example, the rehabilitation of any mine structures such as tailings covers and/or waste rock storage area caps) are covered individually under the relevant components.
Revegetation	10 to 100%	Performance uncertainty can also arise with vegetation activities at tailings facilities, rock piles, buildings and infrastructure, and water management structures. There are RECLAIM line items for revegetation, and a performance holdback should be estimated for them. The holdback related to revegetation depends on many factors, such as the location of the project, whether the vegetation will be established actively or passively, the purpose of the vegetation (for example, whether the vegetation is required as part of an embankment design to provide the necessary stability, or for erosion control, or for another means), the success of any vegetation trials, and other site-specific considerations. Closure objectives and criteria will reflect many considerations and will help select the appropriate percentage for calculating the holdback. Where the consequences of unsuccessful revegetation are high and there is significant uncertainty regarding the success of revegetation, a 100% holdback is appropriate.
Interim Care and Maintenance	0%	Given the interim nature of this work, performance uncertainty for this is not addressed.

[1] The percentage ranges provided are based on the technical expertise of the Boards, the GNWT, CIRNAC, and the expert consultants retained to support the development of these Guidelines and are provided to give the mine operator some context regarding the level of expectation associated with holdback amounts. Mine operators are expected to use their own experience and knowledge of site conditions to determine the percentage they think is most applicable to their mine project.

Detailed Evaluation Using RECLAIM

In this option, the operator would update their RECLAIM estimate and then propose a performance uncertainty holdback based on the updated estimate. In the CRP and the existing RECLAIM estimate, the operator will have identified all the closure activities for the project and will have started designing the structures that will permanently remain on-site (tailings facilities, waste rock covers, etc.). As part of this design work, a set of assumptions will be required based on where the project is in its operation lifecycle. The performance uncertainty holdback evaluation will require the operator to look at the various assumptions made and identify where performance issues may exist (analogous to a sensitivity analysis).

In this evaluation, the direct cost items will understandably have varying levels of performance uncertainty, because the potential for non-performance between the different components is inherently different – some components have zero, or near zero, uncertainty. For example, buildings and equipment where it is readily apparent when a building has been demolished, or equipment has been disassembled, and waste components placed into an on-site landfill or removed to an off-site disposal facility. Others have much higher levels of uncertainty. For example, the success of non-PAG rock covers on tailings or waste rock depends on whether the assumptions used to determine the rock as non-PAG are correct. Similarly, thermal covers that are designed to keep PAG or metal-leaching rock frozen may have uncertainty related to modeling, design assumptions, and construction methods.

The performance holdback evaluation must include a description of how the operator derived the costs associated with the performance uncertainty holdback. The operator must identify which closure criteria must be met for the holdback to be returned to the operator. The operator defines the performance uncertainty for the respective closure activity with due consideration given to evaluating what may not perform as planned. The operator then estimates the cost of addressing the lack of performance with detailed rationale and description of all assumptions and calculations used. This should be submitted to form the basis for the holdback proposed by the operator.

Detailed Evaluation Using RECLAIM with Factored Risk

When an operator is developing their security estimate for a project, they will often undertake a risk evaluation for the overall cost of project development including an assessment of the costs associated with closure and reclamation. For example, when designing a thermal cover for a frozen tailings containment structure, a mine operator may complete a sensitivity analysis to help them understand what the costs will be if the design assumptions for the cover do not work as planned.

Using this option, the operator will complete the performance uncertainty evaluation, as noted in the previous method, and then factor in the likelihood the closure activity will not perform as planned and the consequences of such an occurrence. This evaluation would be done on a case-by-case basis, where variables such as, but not limited to, location, geology, receptors, and wildlife, would all be considered in assessing the risk associated with the individual closure activities. It should be noted that this method of evaluation poses some challenges due to the subjective nature of quantifying likelihood, and a variety of risk-based approaches could be suitable for this evaluation (for example, likelihood, statistical, Monte Carlo, etc.), depending on the nature of the site, site setting, and complexity of the closure activities. Engagement with the Landowner (see section 2.2) on these considerations will be crucial.

In all cases, the licensee will need to provide a clear and transparent description of the approach used, including supporting documentation and rationale for assumptions underlying their calculations of performance uncertainty and factored risk. In addition, the impact of uncertainty on indirect costs needs to be explicitly assessed to ensure that the security held back remains reflective of funds needed should additional reclamation work be required.

3.1.3 Required Documentation

Operators must submit the following documentation to support a request for a security refund for completion of final or progressive reclamation:

1. An updated RECLAIM estimate. This must reflect a holistic re-evaluation of the closure cost estimate and any performance holdbacks associated with the refund, as discussed in sections 3.1.1 and 3.1.2.
2. Documentation to describe the basis and assumptions for each revised line item in the new closure cost estimate, in accordance with the expectations outlined in Section 2.4 of this document.
3. A Reclamation Completion Report that conforms with the MVLWB/INAC *Closure Guidelines*, including the following information:
    a. Details, including figures and photos, of the final reclamation work;
    b. An explanation of any work that deviated from the approved design and CRP;
    c. An inventory of the infrastructure removed and that remaining;
    d. All engineered "as-built" reports;
    e. Descriptions of any monitoring that is still required;
    f. A preliminary assessment on the achievement, or lack thereof, of appropriate closure objectives and criteria; and
    g. A conformance table identifying where each requirement (a through f) is met.

    Refund requests will be reviewed in conjunction with the Reclamation Completion Report based on whether the completed closure activity has reduced the closure cost estimate. If the Reclamation Completion Report identifies significant deficiencies in the completed activity (for example, cover material was not placed to CRP specifications), the Board will consider the extent to which these deficiencies may impact performance, and may decide to adjust the security by an alternate amount or not at all.

    When closure activities span many years (for example, building a tailings cover), operators may wish to request several partial refunds, for example, once every two years until the work is complete. In that case, operators will need to submit a Reclamation Completion Report with each refund request. In addition, water licences typically require the submission of a single final Reclamation Completion Report once all closure activity is complete.
4. A Performance Assessment Report, once there is enough monitoring data to demonstrate whether closure objectives have been met. Typically, it is not possible to submit a Performance

Assessment Report for completion of progressive reclamation because the licensee has not yet monitored or established success. Performance Assessment Reports may require years of monitoring to determine success. For more information about Performance Assessment Reports, see the MVLWB/INAC *Closure Guidelines*.

5. Any other documentation to support the request for a security refund.

4.0 Board Processes for Setting Security

This section presents an overview of the Boards' processes for determining the security deposit for a project. These Guidelines describe two distinct processes for setting security.

Section 4.1 discusses the process for setting security during a licensing proceeding. The Board will initially set the security deposit requirements when it first issues a water licence and/or land use permit for a new project. During a licensing proceeding, it is common for the Board to also consider a land use permit application for the project, and in this case, the Board will split the security requirements between the authorizations based on water and land-related liabilities.

The term of these authorizations will typically span several years,[17] and during this time, the Board may adjust the security deposit required under the water licence and land use permit.[18] Section 4.2 presents the process for adjusting the security deposit for a project during the term of the licence.

[17] The maximum term of a land use permit is 5 years, with a one-time opportunity to renew for two additional years; the term of a Water licence is often longer and the duration is different for each project.

[18] During the term of a land use permit, the only way to adjust the security deposit is to amend the permit. An amendment to a permit can only be requested by the permittee. The only other time the Board can adjust security during the term of a land use permit is if it is being assigned to a new permittee.

4.1 Setting Security during Licencing

For all new, amendment, and renewal applications for licences, the Board conducts a licensing proceeding in accordance with the Boards' *Rules of Procedure*,[19] the Waters Act, and the MVRMA.

A proceeding includes opportunities for reviewers to provide input and to ask questions directly of the applicant or licensee, and for the applicant or licensee to respond to questions and recommendations from reviewers.

All new licence and permit applications must include a closure cost estimate, and amendment and renewal applications may need to include an updated estimate. Figure 1 (below) depicts the steps within a licence proceeding involving a public hearing to illustrate when parties can provide input on a closure cost estimate.

At the end of the proceeding, the Board sets the security deposit based on all the information provided during the proceeding and includes the security deposit requirements in the water licence (and land use permit, if one is being issued). Type B water licences for which a public hearing is held, and all type A water licences, are sent to the appropriate Minister for approval.[20] All licences and permits issued by the Boards are supported by written Reasons for Decision, which include an explanation of decisions related to the security deposit requirements.

The Role of Landowners

When a project is on land owned by an Indigenous Government, applicants may need authorizations from the Indigenous Government. These authorizations may have requirements for closure and reclamation and may require security.

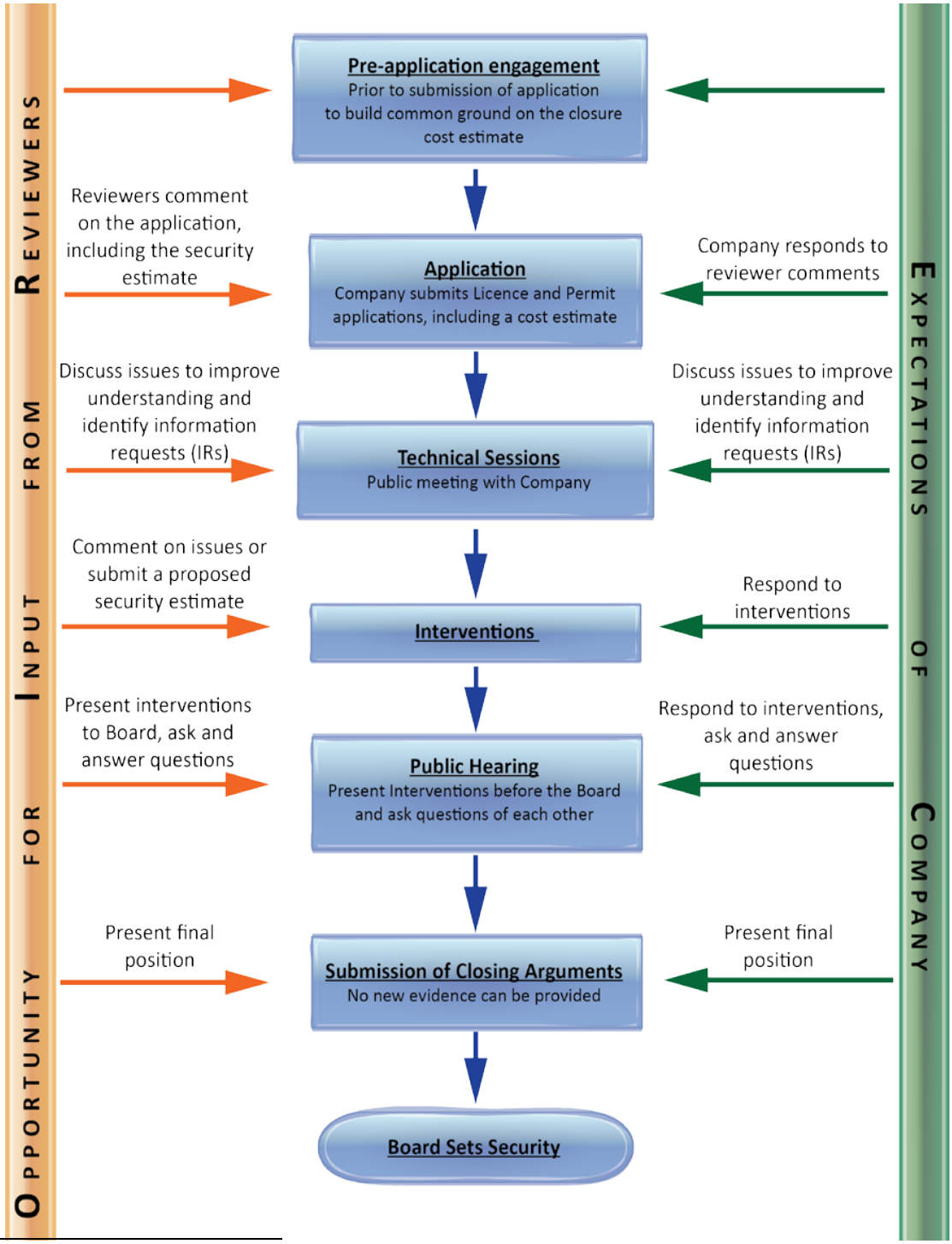
In non-federal and federal areas, respectively, the GNWT and CIRNAC are the legislated authorities responsible for approving type A water licences and type B water licences for which a hearing is held, and, for both permits and licences, setting the form of security, holding security, and ultimately paying for the closure and reclamation of abandoned mine sites. Therefore, the GNWT and CIRNAC often play a central role during an applicant's development of a closure cost estimate. They also provide expert advice and may submit closure cost estimates as reviewers during the Boards' proceedings.

The GNWT and CIRNAC are responsible for keeping the RECLAIM model current by periodically releasing updates that reflect inflation, updated unit costs, and best practices.

[19] The Rules of Procedure can be found under "Resources - Policies and Guidelines" at mvlwb.ca.

[20] As per subsection 47(2) of the *Waters Act* and subsection 72.18(2) of the MVRMA.

Figure 1: Typical Board Process for Setting Security During a Licence Proceeding[21]



[21] Please note: This figure does not include all the steps of a licence proceeding; its purpose is to depict the steps within the licence proceeding when reviewers are able to provide input on a closure cost estimate and when the applicant or licensee is able to respond, prior to the Board setting the security deposit for the project. The orange arrows identify where reviewers have the opportunity to provide input and the green arrows represent where the applicant or licensee has the opportunity to respond to reviewers. Should a reviewer wish to submit a closure cost estimate, they have the opportunity to do so within the timelines of the proceeding.

4.2 Adjusting Security during the Term of a Licence

During the term of a water licence, the Board may adjust the amount of the security deposit required in the licence and/or permit to ensure it continues to reflect the costs associated with closure and reclamation. Typically, the process for adjusting security during the term of the licence is different than during licensing (as described in section 4.1). The timing of security adjustments is often directly linked to the development of the CRP and is determined on a case-by-case basis.

Whether an update to the closure cost estimate and a security adjustment is warranted may be determined by:

a) Licence conditions; some licences have conditions that address the timing of security adjustments or specify when security adjustment requests may be submitted.[22]

b) The amount of time that has passed since the security deposit for a licence was set or last adjusted; adjustments that are too frequent may place an unnecessary burden on the resources of the Boards, the licensee, the Landowner, and reviewers; adjustments that are too infrequent can result in a security deposit that no longer reflects the estimated costs to close and reclaim the project.

c) The information presented in the CRP Progress Report or Annual Report (depending on the licence conditions),[23] which must include "a list of any factors that would influence an increase or decrease in the total reclamation liability next time an updated estimate is required"[24] (e.g., evidence may be presented that the licensee has completed progressive reclamation).

d) Any requests made by the licensee or other parties to adjust licence security (e.g., the licensee has proposed changes to the CRP).

e) Whether there has been an update to the RECLAIM model since the Board last set security for the project or whether the estimate requires an update to account for inflation.

f) Whether there is an upcoming licence renewal or amendment.

g) Other considerations specific to the project or circumstance.

Most often, the Board relies on the information the licensee provides in the CRP Progress Reports or Annual Reports to decide whether an update to the closure cost estimate is required (item (c) in the list above).

The Boards will conduct a public review of the updated closure cost estimate and proposed security adjustments (Figure 2). The public review process allows any party to submit written comments on the estimate and proposed adjustment, and the licensee is then provided an opportunity to respond in

[22] The Boards' Standard Water Licence Conditions and Schedules template includes a standard condition that limits security adjustment requests to CRP, Closure and Reclamation Completion Report, or Performance Assessment Report submissions, unless otherwise approved by the Board. This condition will likely be included in most new licences and may be considered by the Boards during amendment and renewal proceedings for existing licences.

[23] For more information on requirements for CRP Progress Reports, see the MVLWB/INAC (2013) *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*. For more information on Annual Report information requirements, see Boards' Standard Water Licence Conditions and Schedules template.

[24] *Ibid.* p. 25.

writing.[25] Based on the request, the estimate and supporting documentation, and the information provided during the review period, the Board makes a final decision on whether to adjust the security, either as proposed or as appropriate based on the evidence. The Board will provide written reasons for these decisions.

Figure 2: Example of Board Process for Adjusting Security During the Term of a Licence

Should the term of the licence end before the end of project life, the licensee must apply to renew its water licence. The Board may adjust the security deposit through the regulatory proceeding for the licence renewal. Whether or not a licensee is required to submit an updated closure cost estimate during licence renewals depends on several factors. For example, the Board will likely require a new closure cost estimate during a renewal if a new version of RECLAIM was recently released by the GNWT or to reflect the status of progressive reclamation. In addition, should a licensee wish to apply for an amendment to the existing licence (i.e., a change in the requirements of the licence), the security deposit may be adjusted depending on whether the proposed amendment will affect the closure cost estimate.

[25] The Boards also have the option to hold a public hearing, even if it is not required by the legislation (sections 24 and 72.15 of the MVRMA).

Review of the closure cost estimate and determination of security requirements during licence renewals or licence amendments follows the process outlined in Figure 1 (not Figure 2). Licensees are strongly encouraged to contact Board staff prior to submitting a renewal or amendment application to discuss the need to include an updated closure cost estimate.

In all cases, whether security is being set for the first time, adjusted during the term of the licence, or adjusted during a renewal or an amendment, the Board allows for public input and ensures the process is inclusive, fair, and transparent. The applicant or licensee is always provided an opportunity to respond to information submitted by reviewers, prior to consideration by the Board.

4.3 Determining the Security Deposit

The security deposit reflects the amount determined by the Board having considered the closure cost estimates and other evidence submitted as part of the proceeding. The RECLAIM model allows the user to divide each line item into land-related vs water-related liability. Based on this split, the Board may use its discretion to determine how to allocate security between authorizations (licences and permits related to the project). These decisions will always be supported by written reasons for decision.

The Board writes the security requirements into conditions of the water licence and/or into a condition in the land use permit. In the case of an adjustment to a licence security deposit, the Board will update the appropriate water licence schedule.[26] If necessary, the Board will ensure the decision is reflected in an updated RECLAIM spreadsheet and will post the spreadsheet on the public registry.

The security required under the licence or permit must be provided to the Minister. Timelines for providing a security deposit may be outlined within the water licence or land use permit (e.g., security is to be provided prior to commencement of construction, etc.). The Board may include a series of phased payments in the licence based on project milestones (see section 2.4.2).

4.4 Preventing Duplication

The Boards may reduce security in a land use permit or water licence by an amount held under another regulatory authorization for the same project to prevent duplication. For example, if the GNWT holds security under a land lease, the licensee or permittee may request that security in the water licence or land use permit reflect this, should security be held for the same purposes/activities. In order to take this overlap into consideration when setting security in a licence or permit, the Board requires agreement from the Landowner (or other authority, depending on the authorization), proof that the security is provided elsewhere, and documentation to demonstrate that the amount held under the other authorization (the land lease in this example) is for costs required to implement aspects of the CRP.

[26] Refer to footnote 18 for more information regarding adjustments to land use permit security deposits.