

ERDENES SILVER RESOURCE SALKHIT MINE CLOSURE PLAN PILOT

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THE IMPORTANCE OF CLOSURE COST ESTIMATION

Responsible mining practice includes mine closure cost estimation. Closure cost estimation facilitates legal compliance, and environmental protection, supports financial and operational planning, and strengthens a company's reputation. Early cost estimation and a strategic approach that includes working closely with communities and other stakeholders are critical as they allow mining companies to accurately plan and allocate the appropriate amount of funds for the activities required throughout the closure process.

There are several reasons why closure cost estimation is required for successful mine closure. These are described below.

Legal Compliance: Mining companies are legally required to reclaim their mine site and restore it to a condition that is safe and environmentally sound after the completion of mining activities. Failure to comply with these regulations can result in fines, penalties, and legal action. It is essential for mining companies to estimate closure costs early, and accurately and to adequately fund closure activities to avoid legal repercussions.

Environmental Protection: Mine closure cost estimation helps mining companies to plan early so that they can allocate the funds needed to mitigate the environmental impact of mining activities. These activities include the removal of hazardous materials, reclamation of land, water treatment, and monitoring. Failure to properly close a mine site can have severe environmental consequences, including soil and water contamination, which can have long-term effects on the surrounding ecosystems and communities.

Financial Planning: Early mine closure cost estimation is essential for mining companies to plan for the long-term financial viability of the company. Accurately estimating the cost of mine closure allows mining companies to budget and allocate funds appropriately, ensuring that there are sufficient funds to cover the closing costs when the time comes.

Reputation: Mining companies that fail to properly close a mine site or do not comply with regulatory requirements risk damaging their reputation. Proper mine closure demonstrates a company's commitment to environmental sustainability and responsible mining practices.

The accurate estimation of the costs of mine closure requires a structured and consistent approach, with involvement from all parties. Many factors are involved in developing a closure plan that meets expectations on cost, and strong relationships with regulators and community partners will ultimately determine a project's success.

FINALIZED MINE CLOSURE MONITORING FRAMEWORK FOR SALKHIT SILVER MINE

The mine closure planning team participated in a series of workshops led by CPP Environmental. The team was introduced to and discussed the Closure Monitoring Framework. Appropriate monitoring indicators were selected to assess closure and reclamation progress by objective and thematic area. CPP Environmental analyzed the selected indicators and developed a template with technical information for Erdenes Silver Resources (ESR) to monitor each indicator and to develop adaptive management strategies. The final monitoring framework is indicated in the table below.

The content of the framework was developed in accordance with the regulatory requirements and the Mongolian National Standards (MNS). International best practice is incorporated including: the recognition of the different impacts on and needs of women and men, girls and boys; monitoring the potential influence of climate change; and addressing the socio-economic needs of the local community and workforce.

In addition to the Framework, the Mine Closure Plan's monitoring strategy chapter includes the technical information template for each indicator, the monitoring schedule, and the monitoring plot maps for revegetation and soil indicators.

**The process for developing the Closure Monitoring Framework, including definitions of goals, objectives, criteria, and indicators, was described in the February 2023 newsletter.*



Figure 1: Multi-disciplinary team's fieldwork at Salkhit mine site

Table 1: The final closure monitoring framework

GOAL: Reclaimed sites exhibit characteristics and functions close to the natural ecosystem state, that support traditional land use type for local communities		
Objective 1: The reclaimed landscape is safe		
Criteria	1.1	Landforms are geotechnically stable
	Indicators	1.1.1 Slope stability
		1.1.2 Subsidence
		1.1.3 Erosion
	1.2	Physical features on the landscape do not cause public safety or environmental issues
	Indicator	1.2.1 Safety hazards
	1.3	Chemical properties on the landscape do not cause public safety or environmental issues
	Indicators	1.3.1 Acid mine drainage
		1.3.2 Harmful (deleterious) substances in the subsoil
	1.4	Water quality
Indicators	1.4.1 Groundwater quality	
	1.4.2 Water quality of end pit lake resembles regional groundwater quality	
	1.4.3 Closure of water wells	
Objective 2: Reclaimed sites provide for natural ecosystem processes and functions		
Criteria	2.1	The reclaimed landscape resembles the surrounding natural vegetation communities
	Indicators	2.1.1 Vegetation covers >30% of reclaimed site
		2.1.2 Vegetation species establishment
	2.2	Topsoil placement
	Indicators	2.2.1 Soil quality
		2.2.2 Soil placement depth
	2.3	Reclaimed land supports reestablishment of native biodiversity
	Indicator	2.3.1 Wildlife use
	2.4	Reclaimed land is resilient to climate change
	Indicators	2.4.1 Landforms are resilient to flood
		2.4.2 Greenhouse gas sequestration/absorption
	2.5	Groundwater recovery
	Indicator	2.5.1 Aquifer level
	2.6	Post-closure landforms resembles the natural setting
	Indicator	2.6.1 Surface drainage pattern
	Objective 3: Reclaimed land supports traditional land uses.	
Criteria	3.1	Pastureland vegetation cover will be restored.
	Indicators	3.1.1 Pastureland cover types
		3.1.2 Pastureland forage productivity
	3.2	Plants used for human medicine and animal fodder are available on the reclaimed landscape
	Indicators	3.2.1 Medicine plants diversity
3.2.2 Food plant diversity		
GOAL 2: Develop business opportunities to support local growth and socio-economic development		
Socio-economic conditions of mine employees and local communities are equivalent to, or better, than at the time of mine closure.		
Objective 4:		
Criteria	4.1	Labour and social issues of impacted mine employees
	Indicators	4.1.1 Transferred employees
		4.1.2 Dismissed employees
		4.1.3 Re-trained employees
		4.1.4 Gender specific needs
	4.2	Economic conditions of impacted local communities
	Indicators	4.2.1 Sustainable livelihood of local communities
		4.2.2 Training local people
		4.2.3 Facilities and/or infrastructure remaining for reuse
		4.2.4 Economic benefits of transition

QUARTER FOUR: UPCOMING EVENTS

As the Salkhit Mine Closure Plan Pilot draws to a close in the early summer, the MERIT team is organizing three final events to update stakeholders on project progress, inform the local community, and formally hand over the Mine Closure Plan document to the owner, Erdenes Silver Resources LLC (ESR).

Final Key Stakeholder Meeting – Ulaanbaatar - May 30 2023

Community Engagement Session #3 – Mandalgobi Town – June 13-14, 2023

MCP Handover Ceremony and Workshop – Ulaanbaatar – July 3-4, 2023

CONTACT INFORMATION

Merit aims to provide engaging and relevant content on the Salkhit mine closure plan project. We value our stakeholders feedback and would like to hear from you on how we can improve our newsletter.

For more information about the Pilot, please contact Altangerel (Aagii) Radnaabazar Project Director r.altangerel@merit.mn