GISTM Public Disclosure Report

Candelaria Mine
Los Diques Tailings Storage Facility

October 2023

1. Introduction

Lundin Mining is committed to the implementation of the Global Industry Standard on Tailings Management (GISTM) at its Candelaria Copper Mining Complex ("Candelaria") in Chile, which includes one active tailings facility known as Los Diques, and five inactive/closed tailings facilities. Principle 15 of the GISTM requires public disclosure and access to information about the tailings facility to support public accountability. This disclosure document is focused on the active Los Diques tailings facility. It has been prepared in accordance with the requirements of Principle 15 of the GISTM and reviewed by Lundin Mining's Accountable Executive.

2. Tailings Storage Facility Description

The Los Diques Tailings Storage Facility (TSF) is an active facility that is part of the Candelaria Copper Mining Complex. The Candelaria Copper Mining Complex comprises two adjacent copper mining operations, Candelaria, and Ojos del Salado, that produce copper concentrates from an open pit and underground mines. Candelaria is indirectly owned by Lundin Mining (80%) and Sumitomo (20%). Candelaria is an open pit and underground mining operation providing copper ore to two on-site processing plants with capacities of approximately 75,000 tonnes per day (tpd) and 3,800 tpd. The Los Diques TSF receives flotation tailings from both processing plants. The Candelaria flotation tailings are thickened and pumped at an average solids content of about 50%. The Minera Ojos del Salado flotation tailings are pumped at an average solids content of about 35%. The Los Diques TSF is designed to provide 600 million tonnes (Mt) of tailings storage capacity based on an average mine process throughput of 75,000 tpd.

Candelaria is located in Chile's Atacama Region, Region III, at an elevation of approximately 650 m above sea level and 20 km south of the city of Copiapó. Copiapó has a desert climate with mild temperatures year-round. Winters are mild with warm temperatures; mid-winter maximums in July reach approximately 20°C. Winter nighttime temperatures average approximately 7°C. Summers are warm with a January average of 22°C. Annual precipitation is approximately 17 mm, of which the majority falls in the winter months.

The Los Diques TSF design includes 10 growth phases (Phases 0 to 9) and is conceptually designed as a "zero discharge" facility while accommodating the Probable Maximum Flood (PMF), leaving a minimum freeboard of 3 m. The tailings facility includes three dams (Main, North and South), a tailings distribution system, water recovery system, and a seepage collection system. The three dams are also designed to withstand the Maximum Credible Earthquake (MCE) and minimum operational freeboard of 5 m.

All three dams are constructed with compacted rockfill following the downstream construction method. For the Main Dam, Phases 0 and 1 include a transition layer, filter layer, and filter protection placed on the upstream slope of the dam. For Phase 2 and all subsequent phases, the upstream slope is lined with a geomembrane placed over a bedding layer. A series of finger drains underlay the Main Dam to collect seepage from the deposited tailings and direct this seepage to the seepage collection system. The upstream slopes of the North and South Dams are also lined with a geomembrane placed over a bedding layer. The plinths of these dams are tied to bedrock. A grout curtain is installed beneath the plinths. These dams are designed to limit seepage migration.

The current Los Diques closure plan concept includes a dry cover and a spillway on the North Dam that will direct surface run-off to a discharge canal located on the west boundary of the dam. Water that is collected in the discharge canal will be routed to the open pit.

Figure 1: Los Diques Tailings Storage Facility Layout

3. Consequence Classification

The consequence of failure classification for the tailings facility is determined by assessing the downstream conditions and selecting the classification corresponding to the highest Consequence Classification from the following incremental loss categories: potential population at risk, potential loss of life, environment, health, safety, cultural, and infrastructure and economics.

The GISTM Consequence Classification for the Los Diques TSF was determined and documented after conducting a series of hypothetical breach analyses considering credible failure modes and scenarios. Since the current configuration of the tailings facility does not include any credible catastrophic failure modes, the GISTM Consequence Classification is "Low". However, for future phases as described in Section 4, the Consequence Classification will increase to 'Extreme'. The Los Diques TSF has been designed with external loading design criteria (e.g., flood, seismic) consistent with both the Consequence Classification selected based on current conditions and the highest Consequence Classification ('Extreme').

4. Summary of Risk Assessment Findings

Lundin Mining applies a risk-informed decision-making approach for all TSF lifecycle phases. Risk assessments are used to identify and evaluate risks to prevent catastrophic failures, and to inform decisions to manage risks to as low as reasonably practicable (ALARP). This approach focuses on credible failure modes and to reduce the risks at our facilities by reducing the likelihood of occurrence and/or downstream impacts, regardless of the consequence classification.

The most recent risk assessment for the Los Diques TSF was conducted in 2023 by an external independent facilitator with participation from a multidisciplinary site team and the Engineer or Record (EOR). The risk assessment included a semi-quantitative Failure Mode and Effects Analysis (FMEA). As part of this assessment, potential failure modes were deemed as credible or non-credible regardless of their likelihood, and then the risk of credible failure modes was evaluated. All failure modes were sorted according to Lundin Mining's risk management framework, with risk mitigation controls identified and tracked.

The current configuration of the Los Diques TSF includes advancements in the construction growth phases. This overbuilt condition has resulted in extra freeboard and is providing significant buttressing support and increased physical dam stability. Due to this condition, the main catastrophic failure modes identified during the risk assessment (overtopping, slope instability, and earthquake) that could result in flow failure scenarios were deemed non-credible. This condition will be maintained for approximately another decade, until the end of the year 2033. Further risk mitigation measures related to ALARP will be considered during the next FMEA risk assessment workshop planned in 2026 or sooner if potential failure modes that could result in flow-type scenarios are deemed credible. The risk assessment methodology and results were reviewed by the Independent Tailings Review Board (ITRB).

5. Summary of Impact Assessments and of Human Exposure and Vulnerability to Tailings Facility Credible Flow Failure Scenarios

The most recent risk assessment for the Los Diques TSF was conducted in 2023 for the current configuration (Phases 3 and 4). The outcome of this assessment was that the current configuration does not have any credible catastrophic failure modes that would result in flow-type scenarios.

6. Description of the Design for all Phases of the Tailings Facility Lifecycle

The Los Diques TSF design includes 10 growth phases (Phases 0 to 9) with a final dam crest elevation of 873 m above sea level (for an approximate overall dam height of 160 m). Phase 0 of the Main Dam reached a crest elevation of 770 m. Construction of the dams is currently in Phase 4.

The Main Dam is raised by the downstream construction method, built with permeable, compacted rockfill (mine waste rock). The minimum dam crest width is 30 m. The foundation materials for the Main Dam mainly consist of Atacama gravels/alluvials (up to 30 m thick). The left and right abutments of the Main Dam are founded on rock.

The North Dam is located in a topographic low. The geometry of this dam is similar to the Main Dam in terms of slopes and crest width. The foundation materials for the North Dam consist of dense alluvials. The left and right abutments of the dam are founded on rock. The South Dam is also located in a topographic low, with geometry similar to the North and Main Dam.

The Seepage Collection System (SCS) is located downstream of the Main Dam. This SCS collects seepage from the Main Dam (and underlying finger drains) and directs it into a pipe from where it is conveyed in a channel to a sump and pump station. Collected seepage is reused in the mine process. The SCS also includes a cutoff wall excavated through alluvial soil to bedrock. The cutoff wall consists of a trench excavated to bedrock with a chisel and clamshell, filled with low permeability plastic concrete. A grout curtain was installed immediately beneath the plastic concrete wall. A drain wall was installed upstream of the plastic concrete wall. The drain wall is equipped with pumps to collect seepage and direct it to the mine process water tanks for reuse. Monitoring wells are installed downstream of the cutoff wall. Additional monitoring and pumpback wells are located between the drain wall and the plastic concrete wall.

Efficient use of water is imperative for Candelaria. Efforts are therefore focused on optimizing the water balance and capturing as much process water as feasible from the Los Diques TSF and its seepage collection systems.

7. Summary of Material[1] Findings of Annual Facility Performance Review and Dam Safety Review (DSR)

The most recent independent DSR for the Los Diques TSF was completed in 2023. The DSR concluded that there were no immediate dam safety concerns for the Los Diques TSF. Various recommendations were made including improvements to the tailings management system, describing clear roles and responsibilities, assigning Key Performance Indicators (KPIs), enhancing the water balance model, and installing additional geotechnical instruments and improving the instrumentation monitoring system. The next DSR will be completed in 2028.

The last Los Diques TSF Performance Review was performed by the EOR in 2023. No significant risks were identified based on the site visit inspections and review. There were no major variations in the instrumentation monitoring data or activation of Trigger Action Response Plans (TARPs) in 2022.

8. Summary of Material Findings of the Environmental and Social Monitoring Program

Our operations are subject to environmental regulations in the various jurisdictions in which we operate. Permitting, approvals and compliance management are important for the effective regulation of mining-related activities to prevent possible adverse impacts on the natural environment, as well as to protect the interests and rights of local communities. There were no material environmental incidents associated with the Los Diques TSF from the 2022 environmental monitoring program.

Lundin Mining's approach to stakeholder engagement is based on clear communication, transparency, and trust. Our goal is to better understand and respond to the interests and concerns of our stakeholders and any emerging issues and risks to our operations. The Responsible Mining Policy (RMP) and Responsible Mining Management System (RMMS) set the framework for a consistent approach to engaging with stakeholders across our organization. We use insights gained from the Social License to Operate (SLO) Index to identify stakeholders and engage on perceived and actual impacts. The SLO is not a one-time achievement; it can vary over time and therefore needs to be constantly maintained. Since 2018, the Candelaria operation engaged an independent third-party to measure the SLO Index. To better integrate social performance in the internal decision-making process on TSF operations and emergency planning, a set of questions covering the community perception on the TSF was included in the quarterly perception surveys. There were no material findings associated with the Los Diques TSF from the 2022 social monitoring program.

9. Summary of the Tailings Facility Emergency Preparedness and Response Plan (EPRP)

The current configuration of the Los Diques TSF does not have any credible failure modes that could result in a flow-type failure scenario. Nevertheless, the Los Diques TSF Emergency Manual is maintained and includes specifications to prepare and manage (eliminate or mitigate) consequences after an event such as an emergency associated with the tailings facility. The latest update of this manual was in 2023. The emergency measures are based on the most recent dam breach and inundation study. The emergency manual presents procedures for the detection, assessment and classification of emergency situations, actions expected for each level of emergency, in addition to a training plan for emergency preparedness. The emergency manual is tested and updated at all phases of the tailings facility lifecycle. It is shared with relevant stakeholders who are involved with emergency response planning.

[1] Material findings are defined as unacceptable tailings facility risks such as a dam safety issue considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.

10. Independent Reviews

The last ITRB site visit was completed in July 2023. The next ITRB site visit and review is scheduled for June 2024 while the next independent DSR is planned in 2028.

11. Financial Capacity

Lundin Mining confirms that it has sufficient financial resources to meet its business requirements for the planned closure, early closure, reclamation, and post-closure of the Los Diques TSF and its appurtenant structures. These costs are disclosed annually in aggregate form in our financial statements contained within our Annual Management's Discussion & Analysis (MD&A) Report. Further, Lundin Mining maintains insurance for the Los Diques TSF to the extent commercially reasonable and available.

12. Management System Reviews and Audits

Candelaria is implementing the Lundin Mining RMP through the RMMS, which includes 16 requirements. The RMMS specifies Company-wide requirements for managing health, safety, environmental and community (HSEC) aspects of our business. The last external RMMS audit at Candelaria was conducted in 2021 with action plans developed to close identified gaps. Candelaria is currently in full conformance with 65% of all RMMS requirements and the remaining 35% is at least partially met with a plan in place.

13. GISTM Conformance

Lundin Mining has retained an external auditor to perform conformance assessments on the GISTM for the Los Diques TSF. These assessments have been performed in accordance with the ICMM Conformance Protocols issued in May 2021.

For the Los Diques TSF, all requirements have been met, or met with a plan in place, and verified by our external auditor.