Public Disclosure Regarding Boliden Tara Mines Tailings Facility

2025-08-01

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INTRODUCTION

The purpose of this document is to outline in summary form the steps undertaken to comply with the GISTM Standard and provide a status update on works currently on-going.

The Boliden Group ("Boliden") has committed to apply the Global Industry Standard on Tailings Management (GISTM), adopted by the International Council for Mining and Metals (ICMM) in 2020, setting a precedent for the safe management of tailings facilities, towards the goal of zero harm (the "Standard" or "GISTM"). Boliden Tara Mines ("Tara") has put in place additional safety measures in relation to its Tailings Facilities to comply with the GISTM standard.

The Tailings Facilities have been constructed over several years, the first one back in the 1970's. While the Tailings Facilities are deemed safe, the standards and expectations have increased significantly since the commencement of the mining operation back in the 1970's. Therefore, continuous improvement works are required to keep pace with national and international standards. Compliance with GISTM is optional. The Boliden Group along with Boliden Tara Mines want to ensure that its Tailings Facilities meet GISTM standards to deliver the highest level of safety standards.

The Standard contains 77 specific requirements that need to be fulfilled to be in conformance with the Standard. The Standard also requires that adhering members annually issue a status report on their implementation of and conformance with the requirements to support public accountability (Public Disclosure). In accordance herewith, Boliden as the operator of its tailings facilities is to publish and regularly update information on its commitment to safe tailings facility management, implementation of its tailings governance framework, its organization-wide policies, standards and approaches to the design, construction, monitoring and closure of its tailings facilities

A separate document available via Boliden web, named Public Disclosure Regarding Boliden´s Tailings Management Framework, provides a general description regarding Boliden´s tailings and dam safety management for all sites, in which much of the information within requirement 15.1 is met.

This document provides additional information specifically related to the Boliden Tara Mines facility to provide the required information as outlined by the standard.

In addition, Chapter 11 of this document presents the status of implementation of GISTM for the Boliden Tara Mines tailings facility.

1 Description of the Tailings Facilities

Boliden Tara Mines is one of Europe's largest underground zinc and lead mine, and one of the top ten largest in the world. The deposit was discovered in 1970, ore development at Tara commenced in 1973 and production at the beginning of 1977. Boliden purchased Tara Mines in 2004.

The mine is located approx. 2km northwest of the town of Navan in Co. Meath, Ireland, and approx. 60 km north-west of Dublin Airport (See Figure 1).

Boliden Tara mines is an underground mine with the orebody now extending deeper than 1km below surface. During normal operations the mine produces approx. 2.1 Mt of tailings annually. Following the Care and Maintenance period (July 2023 to October 2024) and subsequent re-opening of the mine, the annual ore production target for 2025 and 2026 is 1.8 Mt per annum but is planned to increase over the next 4 years to 2.2MT of ore processed per annum. The coarse fraction of the tailings is separated and used for backfilling underground. To date, ≈ 100 Mt of ore have been processed at Tara Mines.

A portion of the tailings produced is mixed with cement and used to refill ("backfill") mined-out areas to support the surrounding rock within the mine. The aim is to maximise the amount of tailings used as backfill. The portion of tailings produced not used as backfill underground, is discharged to the Tailings Storage Facility (TSF) at Randalstown. The Randalstown TSF is a discrete footprint, located approx. 3km to the north of the mine site facility.

The TSF has been built in six main stages during the period from 1974 to 2022. The approximate footprint area of the Randalstown TSF is 255 ha. (Stages 1 to 5 approximately 193 ha and Stage 6 TSF approximately 62 ha). The base elevation varies leading to dam height ranging from 18 m to 28 m below the final crest elevation at 67.1 metres above Ordnance Datum (mOD).

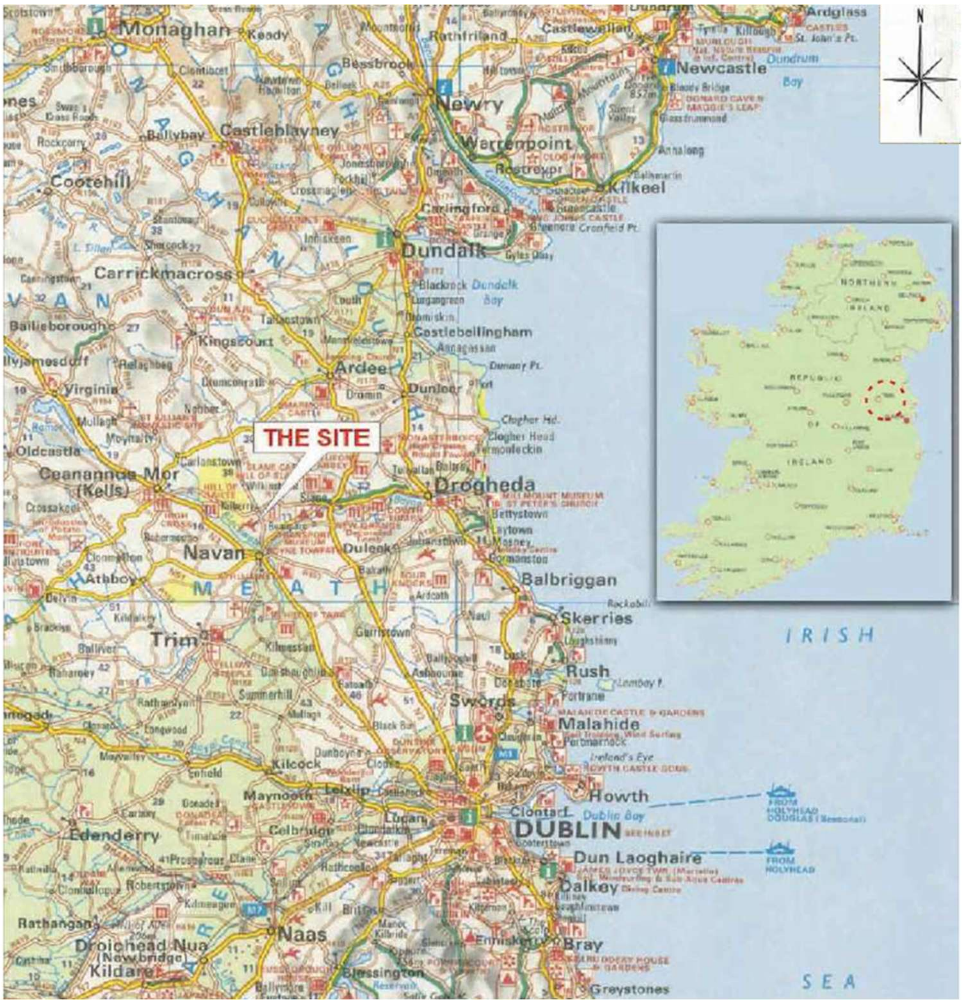

Figure 1 Geographic location of the Tara TSF

The TSF consists of two adjacent facilities:

- Stages 1 to 5, which includes the starter dam, Stages 1, 2, and 3, and the two upstream raises of Stage 4 and 5. Stages 4 and 5 were divided into the eastern "A" side and western "B" side.
- Stage 6 which is a downstream raised, fully geo-composite lined facility. Tailings deposition is currently 100% into Stage 6.

The total tailings design capacity of the TSF is approximately 59 Mt. The total tailings design capacity for Stages 1 to 5 is approx. 46 Mt and Stage 6 will provide an additional storage of approx. 13 Mt.

See Figure 2 for an aerial photo of the Randalstown TSF.

Table 1 provides a summary of the different stage raises. See Section 6 for a more detailed description.

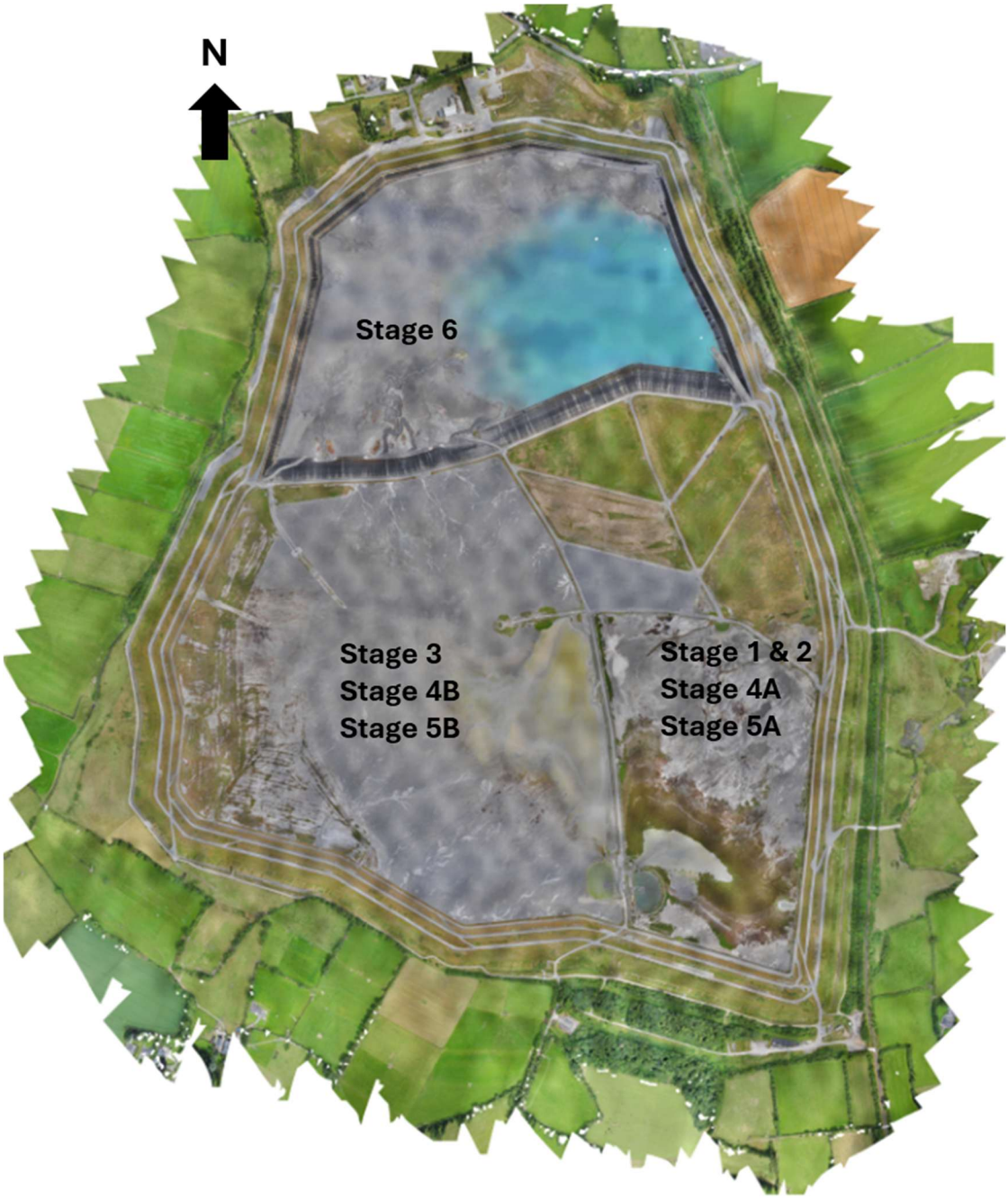

Figure 2 Aerial photo (July 2024) of the Tara Randalstown Facility

Table 1 Description of the Stage Raises of the Tara Randalstown tailings facility

Stage	Description
Stage 1, 2 and 3	Stages 1, 2 and 3 comprise unlined cells contained by the original starter dam. The starter dams are conventional perimeter ring dams constructed from locally borrowed glacial till. Stage 1 was constructed in 1978 followed by Stage 2 in 1983. Stage 1 and 2 were operated until 1988. Stage 3 was constructed in 1987 and filled in 2003.
Stage 4A and B	Stage 4 is the first upstream raise and founded on previously deposited tailings. The embankments dams are raised 7.5 m to an elevation of 63 mOD. Stage 4 is divided into 2 stages: • Stage 4A along the eastern half was constructed in 2000 over the Stage 1 and 2 tailings and filled in 2006. • Stage 4B along the western half constructed in 2006 over the Stage 3 tailings and filled in 2013.
Stage 5A and B	Stage 5 is the second and final upstream raise, with the embankment raised 5.5 m to a final crest elevation of 67.1 mOD. The Stage 5A and 5B sides were constructed over the Stage 4A and 4B areas respectively. Construction of Stage 5A was completed in 2013 and substantially filled in 2016. Stage 5B construction was completed in 2016 and substantially filled in 2020.
Stage 6	Stage 6 is an independent, composite lined facility, located adjacent and adjoining the north slope of the original TSF. Stage 6 has been constructed in two phases comprising an original starter dam and a downstream raise to the final crest elevation. Phase 1 construction was completed in 2019 and Phase 2 in 2022.

2 Consequence Classification

The results of the consequence classifications according to GISTM for the Tara Facility are summarised in Table 2.

The consequence classification was interpreted with input from dam breach analyses (based on modelled scenarios) and deposited material characteristics. See Section 5 for a summary of the impacts identified from the dam breach analyses.

Table 2 Tara tailings facility consequence classification

Classification System	Facility	Criteria	Comment
GISTM	Stage 1 to 5	High	Based on Population at Risk, Potential loss of life, Environmental consequences and impact to local community and infrastructure.
	Stage 6	High	Based on Population at Risk, Potential loss of life, Environmental consequences and impact to local community and infrastructure.

3 Risk Assessment

Boliden Tara Mines has assessed risks in a manner consistent with Boliden's risk management instructions. A detailed assessment of risks related to the operation and closure of tailings facilities has been undertaken by a team of multidisciplinary specialists in 2024. The risks have been evaluated regarding potential consequences related to a range of aspects, including but not limited to health and safety, environment, infrastructure, social aspects and local communities.

Within Boliden's risk framework, risks are categorized into four levels, based on likelihood of occurrence and consequence of a critical hazard. Based on risk level, risks are managed according to Table 3.

Table 3 Required Actions for Different Risks

Risk	Action
Extreme	Intolerable – Requires immediate actions to reduce the risk
High	Generally unacceptable – Detailed action plan required and mitigation plan during transition
Medium	Acceptable if As Low As Reasonably Practicable – Monitor and manage as appropriate
Low	Acceptable – Monitor and manage as appropriate

The majority of the identified risks were interpreted as acceptable with sufficient controls in place to manage these risks. No extreme, intolerable risks were identified. A single high-class risk was identified and requires an action plan to mitigate same. The one high class risk identified relates to static liquefaction of the tailings in Stage 4 and 5. The mitigation measure for this risk is through the construction of a buttress along the perimeter of the Stages 1 to 5 facility. Mitigation has begun through commencement of the buttress works which are currently underway.

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4 Impact Assessment

Boliden has modeled a number of flow-failure scenarios and carried out dam-breach analyses based on same. From this, we have derived the impact assessments for the Tara Randalstown tailings facility. The results are used to evaluate the consequence classification (see Section 3) of the dams and to develop the Emergency Preparedness Response Plan, see Section 9.

The impact assessment according to the Global Industry Standard on Tailings Management (GISTM) is shown in Table 4. The assessment is based on the most recent dam breach analysis completed in 2020. An updated dam breach analysis for the Stage 6 facility evaluating the effect of a higher pond volume within the facility was conducted in 2023, with similar results.

Table 4 Randalstown TSF Impact assessment according to the GISTM

Consequence Criteria	Classification	Impact assessment
Potential Population at risk (PAR)	High (Between 10 and 100)	PAR is estimated to be less than 50 people (incremental loss above baseline flooding).
Potential Loss of Life (LOL)	High (possible 1 to 10)	The estimated potential loss of life is estimated to be less than 10 based on the number of households impacted.
Environment	High	Impact on habitat and endangered species – significant loss Impact on livestock/fauna water supply – potential Process water quality – low toxicity ARD or metal leaching potential – low Potential area of impact – less than 10 km^2 Restoration potential – 1 to 5 years
Health, Social and Cultural	Significant	Disruption of business, services or social dislocation – 500 to 1,000 people effected Impact on regional/national heritage, recreation, community or cultural assets –likely Human health effects – potential for short term effects

Infrastructure and Economics	High	Infrastructure effected - Includes local houses, roads and power lines Economic Loss - Estimated to be high

5 Description of the Design of the Tailings Facility

5.1 Stages 1 to 5

The TSF initially consisted of three cells (Stages 1 to 3) constructed between 1974 to 1987, comprising of an earthfill embankment (starter dam) constructed to a crest elevation of 57 mOD. No geosynthetic lining system was used in the original design, either on the basin floor or on the upstream slope of the embankment (This was the standard practice for the design and construction of these facilities at that time). The embankments have an internal drainage system consisting of a central chimney drain connected to a drainage blanket or finger drains exiting at the downstream toe to control the phreatic level within the downstream sector of the embankment.

Stage 4 was constructed in two Stages (4A and 4B) between 1998 and 2006. Stage 4 is a 7.5 m high upstream raise embankment (63 mOD crest elevation) constructed on the tailings level filled in the starter dam. The Stage 4 embankment is similarly unlined but incorporates a chimney drain in the embankment construction to control the phreatic level. The water from the chimney drains flows into a toe drain capture system and subsequently to a series of manholes which discharge into the Stage 4 manholes.

Stage 5 was similarly constructed as an upstream raise on the Stage 4 tailings and divided into two Stages (5A and 5B). The embankment is 5.5 m high with a crest elevation of 67 mOD. The embankment again has a chimney drain with a similar toe drain capture system connected to a series of manholes to collect and channel the water via open weir structures into the Perimeter Interceptor Channel (PIC).

The maximum height of the Stage 5 raise above the original ground level is 27 m and the minimum height is 18 m.

The overall slope of the perimeter embankment dams (Stages 1/2, 4A and 5A or Stages 3, 4B and 5B) is 3 Horizontal: 1 Vertical (3H:1V).

Tailings deposition was a slurry (15% solids by weight) with two streams, total tailings and slimes depending on underground backfill requirements. In the beginning, theses were pumped into separate locations in the facility. This was, however, switched to a single line for Stage 5.

The pond was initially managed in the center of facility (during Stages 1 to 4) with a reclaim barge pumping water back to the mine site. For Stage 5, however, the pond was migrated to the southern end of the facility to allow the tailings surface to be sloped from north to south for closure.

Water storage on Stage 5 is kept to a minimum, only receiving water from precipitation and seepage return from the PIC. The collected water is currently being pumped from Stage 5B to Stage 6.

5.2 Stage 6 Facility

Stage 6 is a downstream raise earthfill embankment constructed in two Phases:

- Phase 1 to a crest elevation of 58 mOD with a design storage of 5.3 Mm^3
- Phase 2 to crest elevation of 67.1 mOD with a design storage of 4.28 Mm^3. The construction of Phase 2 was completed in August 2022.

Stage 6 is a fully Geo-composite lined facility consisting of Geosynthetic Clay Liner (GCL) and High-Density Polyethylene (HDPE) liners.

The Stage 6 embankment were designed and built to rely on the liner to prevent the embankment becoming saturated. The embankment was constructed from a mixture of glacial till and rock fill sourced from the footprint, imported glacial till from construction activities around the area, glacial till from a local borrow area, and mine rock.

Tailings deposition is a slurry (15% solids by weight) deposited through a series of spigots from the perimeter embankment.

Water is managed as a pond with a low point in the southeast corner of the facility where a barge is located to pump water directly back to the mine site.

6 Annual Performance Review

6.1 Annual Performance Review for 2024

Boliden Tara Mines went into Care and Maintenance on 14 July 2023, after which no further mining or ore processing occurred. No tailings were, therefore, produced to be sent to the TSF. The dewatering of the underground mine workings continued, and this water was circulated through the TSF for temporary storage. The Care and Maintenance period ended in October 2024 with tailings deposition in stage 6 restarting at the end of October.

The following is a summary of the items assessed in the 2024 Annual Performance Review.

- No Construction activities occurred during 2024.
- The operation, maintenance and surveillance of the tailings facility have generally been within design parameters and permit requirements. Deviations in instrument readings have been acted upon according to the set routines.
- Risk assessment updated and risk register in place. Deviation and change management system were implemented.

- An External Emergency Response Plan is in place with the principal Response Agencies.
- All required internal and external reviews for 2024 were scheduled and conducted as planned.
- The facilities are performing according to the design intent based on the monitoring and surveillance undertaken in 2024.
- The design criteria have been updated to include brittle failure of the tailings. Buttress construction started in March 2025 and is scheduled to be completed in 2027.

6.2 Dam Safety Review

A Dam Safety Review was conducted by SLR Consulting in 2022. The next Dam Safety Review is scheduled for 2032.

A number of recommendations were made which have since been addressed. These include:

- Additional investigation and characterization of the foundation soils.
- Investigation and additional instrument installation in the Stage 6 embankment to allow a greater understanding of the potential perched water levels. The inclusion of rockfill in the dam structure resulted in entrapment of water within the structure which has since been draining down.
- Update the Emergency Preparedness and Response plan.

Recommendations which are still being addressed include an updated design of the Stages 5 and 6 spillways as part of closure design, and improved visualization of monitoring data.

7 Environmental and Social Monitoring Program

A TSF monitoring network consisting of groundwater and surface water monitoring points has been established. Sulphate continues to be used as the key indicator parameter for monitoring seepage from the TSF. Monthly reporting to the EPA and contouring of sulphate concentrations in groundwater around the facility are carried out.

An independent annual review of the hydrogeological, hydrological and water quality monitoring data collected at the Randalstown TSF is conducted by an external consultant. The hydro-environmental data is reviewed and compared with data collected in previous years, to identify changes and trends in the hydrogeological and water quality conditions.

Water quality is evaluated in the context of current legislative requirements for Ireland, in particular the European Water Framework Directive (2000/60/EC). As part of this Water Framework Directive implementation process, EU Member States are required to set or review their national water quality standards, considering groundwater-surface water interaction and potential ecological impacts. The Competent Authority responsible for reviewing water quality standards in Ireland is the Environmental Protection Agency (EPA).

BTM holds quarterly meetings with community stakeholder groups.

A Human Rights Impact Assessment (HRIA) relating to all Tara activities has been conducted.

8 Emergency Preparedness and Response Plan (EPRP)

The Emergency Preparedness and Response Plan (EPRP) is triggered by a failure or a near failure. The triggers of the EPRP are defined in the Trigger Action Response Plan (TARP).

When the EPRP is triggered by a dam safety related incident, the Tara emergency control group is activated, and the dam safety emergency group is a technical support to the Tara emergency control group. The dam safety emergency control group is responsible for proposing and initiating dam safety related measures but is subordinated to the Boliden Tara Mines emergency group.

In case of an emergency, the EPRP provides routines for cooperation with local emergency authorities in Navan.

BTM have regular consultation with the Principal Response Agencies (Meath County Council Fire Service Division, Health Service Executive and An Garda Siochana) in relation to emergency planning.

An External Emergency Plan is in place that details the arrangements, and the inter-agency coordinated response for dealing with major accidents

The EPRP is reviewed yearly and updated when necessary. An emergency training simulation was run in April 2025 and was intended to test components of the EPRP and TARP.

9 Independent Review

An Independent Tailings Review team (IR) has been established for Boliden Tara Mines TSF, with online meetings and a site inspection scheduled every two years.

A Dam Safety Review (DSR) was undertaken in 2022 by SLR Consulting. These reviews are scheduled every 10 years as required based on the high consequence classification.

Table 5 Meetings and site inspections related to independent reviews (2024 and 2025)

Type	Conducted/planned	Year	By
ITRB	site inspection (13 and 14 May) Online Meeting (23 October)	2024	IR
	Site Inspection (26 to 29 May) Online meeting (planned in Q4)	2025	ITRB
DSR	Planned	2032	To be determined

10 Reclamation securities and other financial safeguards

Boliden makes provisions in its accounts for future reclamation costs. Boliden´s current provisions for reclamation works can be found in its Annual and Sustainability Report. In addition, insurance is used to cover sudden and unexpected tailings related incidents.

Mining operations, including tailings management, are subject to court/authority approved environmental permits, including the posting of mandatory reclamation securities, usually in the form of bank guarantees. These securities are intended to make sure that there are sufficient financial resources available to cover estimated costs of planned closure, early closure, reclamation, and post-closure of the tailings facility and its appurtenant structures, even in a situation where the operator is unable to cover these costs.

11 Implementation of the Global Industry Standard on Tailings Management

A self-assessment validation of the conformance to GISTM, based on the guidance in the ICMM Conformance Protocols, was conducted in May 2025 by the site personnel with involvement from the management team, as well as subject matter specialists from Boliden Mines Staff Functions.

The results from the self-assessment validation showed that Boliden Tara Mines had made significant advances towards compliance and identified only minor improvements which were needed to reach conformance. These improvements have since been implemented.

On 5th August 2025 Tara is self-assessed as being in full conformance with GISTM.

An assessment by external auditors is being planned to confirm the self-assessment validation.