

## GISTM compliance crucial for sustainable mining water management

Mining operations should focus more on water stewardship when complying with Global Industry Standard on Tailings Management (GISTM). To align closely with water stewardship principles, there should be an emphasis on effective engagement and collaboration between mines and the stakeholders.



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“The GISTM approach to responsible tailings management includes an appreciation that a mine’s water footprint and its tailings storage facilities (TSFs) have impacts well beyond the mine’s licence area,” says Lindsay Shand, partner and principal environmental geologist at SRK Consulting South Africa. “The standard calls for engagement with stakeholders in the broader water catchment area, or basin.”



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### Beyond the border

She highlights that mines will often develop their water management plans (WMPs) with a limited focus on the area within the mine’s boundaries. However, this goes only part of the way towards achieving the real goal of these plans – which is to mitigate operational risk and the potential impact on adjacent landowners and downstream water users, as well as to protect the environment.

“A water stewardship approach broadens a mine’s appreciation of factors outside of its immediate site boundary, extending to its zone of influence, which need to be considered when managing water responsibly,” she explains. “The approach emphasises proactive and ongoing collaboration among water users within a catchment, ensuring that their operations and plans are more holistic and sustainable.”

Franciska Lake, partner and principal environmental scientist at SRK Consulting SA, points out that – from

operational perspective – the management of water and TSFs on mines are closely linked, as water from TSFs is usually captured and re-used in the mining operations.

Lake highlights that the GISTM requires mines to take a holistic approach in managing TSFs, whether in terms of engineering, water management or stakeholder engagement.

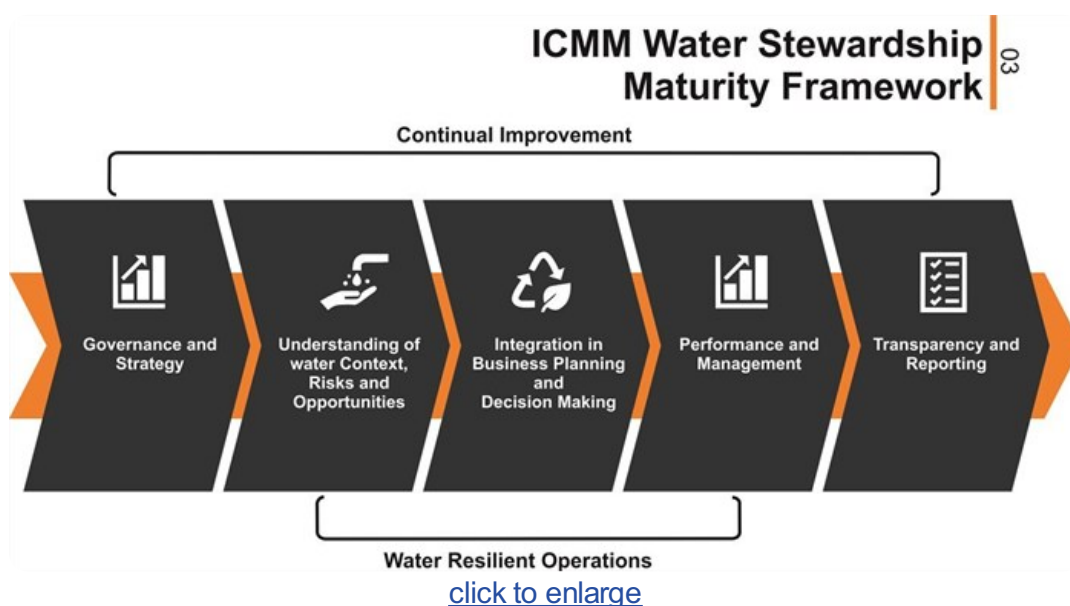
“ A mine’s water balance usually includes inputs and outputs from the TSF, and the way a mine manages this balance can have an impact on water quality and quantity for downstream users,” she explained. ”

## The importance of effective water management

According to Kavandren Moodley, principal environmental scientist at SRK Consulting SA, water management is intricately linked to several key principles of the GISTM.

“The GISTM’s principle 3, which mandates the integration of all elements of the tailings-related knowledge base, has direct implications for water management,” says Moodley. “This knowledge base must encompass not only technical data, but also social, environmental and local economic factors, many of which influence – or are influenced by – water use.”

He notes that technology and monitoring – key aspects of the GISTM’s principle 5 – are particularly pertinent to managing water-related risks.



“Real-time water quality monitoring, for instance, enables earlier detection of anomalies on TSFs, significantly enhancing risk mitigation,” he says. “The principles of water stewardship are deeply ingrained throughout the GISTM and are pivotal in identifying and mitigating risks.”

A water stewardship approach helps mines to proactively address risks such as contamination, seepage and water imbalance, contributing to sustainable outcomes for both the facility and surrounding ecosystems.

## Considering the broader hydrogeological basin

The GISTM has also informed other important industry frameworks, such as the 2023 International Council on Mining and Metals’ (ICMM) Water Stewardship Maturity Framework. This emphasises that mines

understand cumulative impacts related to water management, according to SRK Consulting SA senior environmental scientist Giulia Barr.

“Beyond the mine itself, water management needs to consider the broader hydrogeological basin and the potential impacts of climate change,” says Barr. “This means that mine’s WMP will look at how they affect other users, and how other sites in the catchment might affect the mine.”

The ICMM and Alliance for Water Stewardship (AWS) standard require that the key stakeholders within a catchment are identified, and information on water usage patterns is gathered.



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## Working together

“This opens the door to engagement and possible collaboration in applying best practice principles to meet key water stewardship outcomes,” she says.

“ These include: good water governance; sustainable water balance; good water quality status; important water-related areas such as aquifer recharge zones, springs and wetlands; and safe water, sanitation and hygiene for all. ”

Shand added that water stewardship principles enhance the knowledge base required by the GISTM, through information on downstream users and the potential short-term and long-term consequences of TSF failure.

“Depending on the nature and chemistry of tailings, the consequences of failure can be more accurately assessed with more data from downstream stakeholders,” she says. “This might include the impact of land and water contamination into the future – even beyond the immediate recovery from a TSF incident.”

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