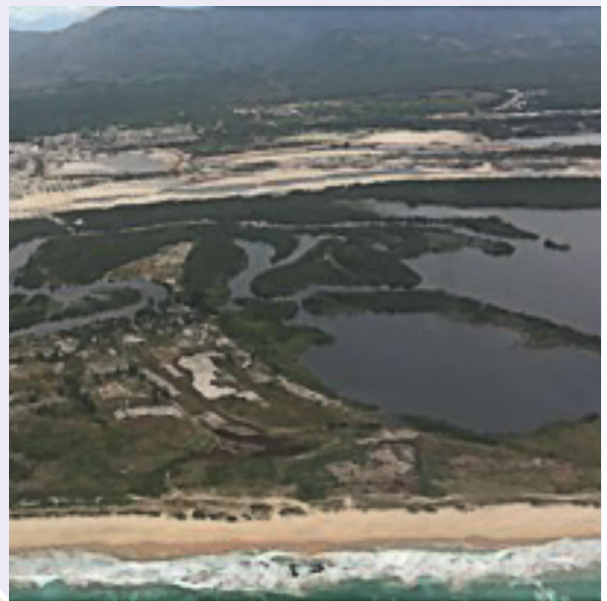


Case Study: Rio Tinto's QMM ilmenite mine in Madagascar

The Rio Tinto QMM mine in southern Madagascar is extracting ilmenite, which yields titanium dioxide used to produce ultra-white pigments for paints, papers, cosmetics, food and other products. Ilmenite sands in southern Madagascar contain other minerals including monazite and zircon, both of which contain the radionuclides uranium and thorium. Extraction began in Mandena in 2009 with a projected project lifespan of 40 years and the removal of 6000 hectares of indigenous littoral forest in one of the poorest and most environmentally sensitive areas of the island.

QMM is a company jointly owned by Rio Tinto (80%) and the Malagasy Government (20%). Rio Tinto is one of the largest mining companies in the world and boasts its involvement in setting the Global Industry Standard on Tailings Management (GISTM) and actively promoting it on a global scale – though QMM has yet to meet the standard.

Aerial view of the QMM mine circa 2018



When is a tailings dam not a tailings dam?

There have been four reported tailings dam failures at Rio Tinto's QMM mine: 2010, 2018, Feb 2022 and March 2022.

- The incidents in 2018 and 2022 received significant attention as a result of local people reporting the appearance of dead fish.¹ One additional incident was reported by the local community on 24th April 2022, but was denied by QMM.
- In response to questions at the company's 2022 AGM about the QMM dam failures in February and March of last year,² Rio Tinto's Chair asserted that there are "no tailings" and "no tailings dam" at the QMM mine.³
- In reality, what is left after QMM extracts ilmenite is *reject sands*. This is another way of saying "mine tailings".⁴ These are put back into the mine basin, thereby making the basin a Tailings Storage Facility (TSF) or Tailings Disposal Facility.
- Permissions granted by the Malagasy regulator require QMM, under its Social and Environmental Management Plan (2014-2018), to build a "berm" 30m wide and 4m high, in order to prevent water flowing from the mine basin into the surrounding environment."
- The "berm" around the TSF is therefore a *mine tailings dam*, even if the company insist to call it by other names (i.e., berm, barrier, levee, embankment, retaining wall). It has the performance objective of a dam: *to retain mine process wastewater in the mine basin*.⁵ **If it does not do that, it has failed.**
- Calling its tailings dam by other names raises questions as to whether QMM seeks to avoid any dam safety standards. **The QMM mine does not currently adhere to the GISTM,⁶ but Rio Tinto states it will meet the August 2023 deadline.**



Mine environs after uncontrolled water release, March 2022

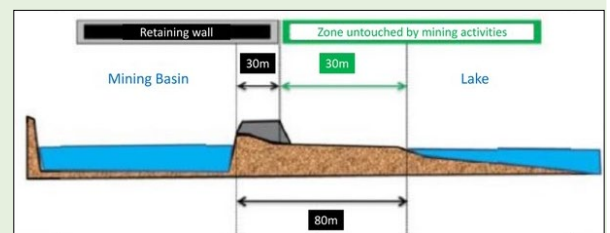


Diagram of the QMM dam as approved by the national regulator in QMM's environmental management plan 2014-18

Q: How will Rio Tinto effectively comply with GISTM if it does not call tailings/dams by their names?

¹ See <http://www.andrewleestrust.org/blog/?p=2671>

² <https://news.mongabay.com/2022/07/on-hazardous-mine-tailings-dams-safety-first-should-be-the-rule-commentary/>

³ See Q&A reporting at: <http://www.andrewleestrust.org/blog/?p=2309>

⁴ Contrary to the Chair's assertion to Rio Tinto shareholders in April 2022, multiple Rio Tinto/QMM documents refer to "tailings" at QMM.

⁵ Rio Tinto confirms that the QMM "berm" has the performance objective of a dam, saying "Designating them as 'dams' as a semantic alternative to 'berms' does not fundamentally alter the expected function and associated risks with the structures." (Rio Tinto response 23 March 2019).

⁶ Rio Tinto claims it currently uses its own internal D3 and D5 standards.

Contamination of local waterways

- Through churning of mineral sands during extraction, QMM's mine generates radionuclide-enriched water containing the heavy metals uranium, lead, and thorium, which it releases through surface discharge and groundwater seepage.
- QMM water data, analysed in 2019 by radioactivity expert Dr Swanson,⁷ indicated high concentrations of uranium in the QMM mine basin, "creating an enhanced source of uranium" to local rivers and waterways when released.
- **Uranium and lead have been detected in waters downstream of the QMM mine, 50 and 40 times respectively above WHO safe drinking water levels** (Swanson 2019, Emerman 2019, 2020 and 2021).⁸ Uranium can affect kidneys and bones ([Health Canada, 2019](#)). Low levels of lead exposure can damage the nervous system, and are linked to learning disabilities, shorter stature, impaired hearing, and impaired formation/function of blood cells ([US EPA, 2019](#)).
- In 2019, hydrology and mining expert Dr Emerman calculated the annual probability of seepage from the QMM mine basin or overtopping of the dam in response to heavy rainfall and determined these to be "unacceptably high."
- Additionally, QMM breached an environmental buffer zone (2013-14) and by doing so constructed its mine basin (TSF) right onto the bed of Lake Besaroy, permanently exposing the local estuary to mine tailings and their contaminants.



QMM's mine basin and tailings dam

Q: What mitigation and prevention steps were taken at QMM between 2010 and 2022 to address tailings and dam safety issues, such as could have prevented the 2022 February and March failures and conflicts?

Q: When will Rio Tinto release the external evaluation report⁹ about the QMM dam failures in Feb/March 2022?

Impacts on people

- Villagers collect drinking water and fish for food and livelihoods from the lakes around the QMM mine at Mandena.
- Following the February and March tailings dam failures at QMM in 2022, hundreds of dead fish appeared. A fishing ban and months of conflict and protests ensued.¹⁰
- **A total of 8778 affected villagers submitted complaints after the fishing ban destroyed their livelihoods**, compounding ten years of losses and health issues that they attribute to water quality degradation caused by QMM operations.¹¹
- Latest reports from the ground suggest that the proposed compensation for 5400 of these complainants does not adequately reflect the real value of the decade-long losses experienced by villagers.¹²
- Villagers have no independent arbitration, legal counsel nor professional accompaniment for these negotiations. The majority of rural villagers are non-literate, with little understanding of Rio Tinto/QMM's international standards and commitments or their national level obligations. Most are excluded from decision making.



Inspection of dead fish after the tailings dam failure in March 2022

Q: What mechanisms and funding will be put in place to provide for legal and other independent representation and support to communities affected by tailings dam failures in order to ensure their rights and entitlements are met during negotiations with mining companies, including negotiations for compensation and remedy?

Q: What GTMI commitments will establish seats at the table for communities, women, and civil society organisations to ensure a fair representation of interests?

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⁷ <http://www.andrewleestrust.org/blog/wp-content/uploads/2019/11/Swanson-Uranium-in-Water-MEMO-Aug-2019-for-ALT-UK-.pdf>.

⁸ All studies available at: http://www.andrewleestrust.org/studies_and_reports.html

⁹ During discussions in February 2022, QMM promised to share this report in line with transparency commitments.

¹⁰ <http://www.andrewleestrust.org/blog/?p=2763>

¹¹ Publish What You Pay 2022, Large-scale mining's impacts: A case study of Rio Tinto's QMM Mine <https://pwyp.org/en/publications/>

¹² <http://www.andrewleestrust.org/blog/?p=3074>