

Mine Tailings Disclosure Table - MMG Ltd

Overview question:
Please
a) Provide an overview of your tailings management system, and how you manage risk
b) Confirm whether your approach to tailings management has changed or will change in light of the recent tailings disasters at Brumadinho, Mariana, Mt Polley and others. Have you, for example, reviewed all tailings storage facilities with upstream dam construction, and taken steps necessary to protect local communities and the environment e.g. buttressing, evacuation?

The remaining questions should be answered by listing all of the tailings facilities you are responsible for or associated with, per the disclosure letter of the 5th April 2019.

a) MMG manages Tailings Storage Facilities (TSF) and Water Storage Dams as a material risk at the Enterprise level. Our TSF management processes are governed our Tailings Storage Facilities and Water Storage Dam Standard. This Standard identifies Critical Controls for the planning and construction, operation and maintenance, management of change, response management, inspection and assurance and accountabilities of dams, all of which are in line with the Australian National Committee on Large Dams (ANCOLD) requirements and meet or exceed the legal requirements of the relevant jurisdiction. MMG applies critical risk design and execution requirements that are based on risk assessment process reviewed annually by a risk control owner. These aspects focus on operating and non-operating TSFs. The risk management and control execution measures are subject to internal, external and independent audit.

b) There has been increased scrutiny of the integrity of TSFs from both within and external to industry. Recent failures of large upstream constructed dams have been the primary driver for this concern. The majority of MMG's TSFs including Las Bambas are engineered rock and earthfill structures constructed using downstream construction methods. MMG have committed to conforming to the Global Industry Standard on Tailings Management (GISTM) which has the primary intent of preventing catastrophic failure of TSFs. MMG's approach to governance of TSFs fully aligns to the GISTM, including the use of an Independent Tailings Review Boards and the empowerment of Engineers of Record and Responsible Tailings Facility Engineers at each of our TSFs. We have established Accountable Executives for all of our TSF's. We work towards continually improving our operations to further refine and strengthen our TSF controls, benchmarking them with the input from our Independent Reviewers and annual performance audits as defined by ANCOLD. We have established emergency response plans at all of our TSFs.

1. "Tailings Dam" Name/Identifier	2. Location	3. Ownership	4. Status	5. Date of initial operation	6. Is the Dam currently operated or closed as per currently approved design?	7. Raising method	8. Current Maximum Height	9. Current Tailings Storage Impoundment Volume	10. Planned Tailings Storage Impoundment Volume in 5 years time.	11. Most recent Independent Expert Review	12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	13. What is your hazard categorisation* of this facility, based on consequence of failure?	14. What guideline do you follow for the classification system?	15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm).	16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	20. Any other relevant information and supporting documentation.	
Instructions to support completion	Please identify every tailings storage facility and identify if there are multiple dams (saddle or secondary dams) within that facility. Please provide details of these within question 20.	Please provide Long/Lat coordinates	Please specify: Owned and Operated, Subsidiary, JV, NOJV, as of March 2019	Please specify: Active, Inactive/Care and Maintenance, Closed etc. We take closed to mean: a closure plan was developed and approved by the relevant local government agency, and key stakeholders were involved in its development; a closed facility means the noted approved closure plan was fully implemented or the closure plan is in the process of being implemented. A facility that is inactive or under C&M is not considered closed until such time a closure plan has been implemented.	(date)	Yes/No. If 'No', more information can be provided in the answer to Q20	Note: Upstream, Centerline, Modified Centerline, Downstream, Landform, Other.	Note: Please disclose in metres	Note: (m3 as of March 2019)	(m3 as planned for January 2024)	(date) For this question we take 'Independent' to mean a suitably qualified individual or team, external to the Operation, that does not direct the design or construction work for that facility.	(Yes or No) We take the word "relevant" here to mean that you have all necessary documents to make an informed and substantiated decision on the safety of the dam, be it an old facility, or an acquisition, or legacy site. More information can be provided in your answer to Q20			(Yes or No) We note that this will depend on factors including local legislation that are not necessarily tied to best practice. As such, and because remedial action may have been taken, a "Yes" answer may not indicate heightened risk. Stability concerns might include toe seepage, dam movement, overtopping, spillway failure, piping etc. If yes, have appropriately designed and reviewed mitigation actions been implemented? We also note that this question does not bear upon the appropriateness of the criteria, but rather the stewardship levels of the facility or the dam. Additional comments/information may be supplied in your answer to Q20.	Note: Answers may be "Both".	Note: Please answer 'yes' or 'no', and if 'yes', provide a date.	Please answer both parts of this question (e.g. Yes and Yes)	(Yes or No)	Note: this may include links to annual report disclosures, further information in the public domain, guidelines or reports etc.
	Las Bambas TSF1	14 degrees 5'20"S 72 degrees 19'2"W	Owned and Operated	Active	2018	Yes	Downstream	190	207.6Mm ³	363.4Mm ³	Oct-22	Yes	Extreme	ANCOLD (2012) Guidelines on the Consequence Categories for Dams (revised October 2015) ANCOLD (2019) Guidelines on Tailings Dams	No	Both	Yes - December 2022	Yes and Yes	Hydrological assessments are updated for extreme events on an ongoing basis and results are checked back against the design during bi-annual comprehensive inspections as per ANCOLD (2012) Guidelines on Tailings Dams ANCOLD guidelines are used as minimum design basis, particularly ANCOLD (2012) Guidelines on Tailings Dams and Guidelines on the Consequence Categories for Dams The MMG 2022 Sustainability Report contains further information on tailings storage and a summary of our tailings storage facilities. Details can be found at www.mm.com under Sustainability Reports.	
	Kinsevere TSF1	11 degrees 21'45"S 27 degrees 33'18"E	Owned. Operated by previous owner, Anvil Mining	Inactive	2006	No - study underway to reclaim	Upstream	25m	1.1Mm ³	0Mm ³	Sep-22	No	High C		No - has experienced non-structural erosion issues	Both	No - Dry facility with non-saturated tailings mass	Yes and Yes		
	Kinsevere TSF2	11 degrees 22'35"S 27 degrees 34'30"E	Owned and Operated	Active	2011	Yes	Downstream	40m	19.8Mm ³	32.0Mm ³	Sep-22	Yes	Extreme		No	Both	Yes - November 2018	Yes and Yes		
	Rosebery Bobadil Dam	41 degrees 45'3"S 145 degrees 30'47"E	Owned and Operated since acquisition in 2009	Active	1974	Yes	Combined upstream and downstream embankment	39	23.7Mm ³	24.6Mm ³	Jun-22	Yes	High C		No	Both	Yes - October 2019	Yes and Yes		
	Rosebery 2/5 Dam	41 degrees 47'11"S 145 degrees 32'32"E	Owned and Operated	Active. This dam is constructed on historic tailings dams where the date of commissioning is unknown, (is believed to be between 1950 and 1970 based on historical records), and was undertaken prior to MMG ownership.	2018	Yes	Predominately downstream with upstream sections	29	2.5Mm ³ (plus unknown existing)	5.2Mm ³ (plus unknown existing)	Jun-22	Yes	High A		No	Both	Yes - June 2021	Yes and Yes		
	Dugald River TSF1	20 degrees 13'28"S 140 degrees 07'45"E	Owned and Operated	Active	2018	Yes	Downstream for future raises - currently a single stage construction	37	36.6Mm ³	36.6Mm ³	Feb-23	Yes	High C		No	Both	Yes - December 2015	Yes and Yes		

TSF Hazard Categorisation - Consequence categories based on population at risk

POPULATION AT RISK	SEVERITY OF DAMAGE AND LOSS			
	MINOR	MEDIUM	MAJOR	CATASTROPHIC
<1	Very low	Low	Significant	High C
≥1 to <10	Significant (note 2)	Significant (note 2)	High C	High B
≥10 to <100	High C	High C	High B	High A
≥100 to <1,000	High B	High B	High A	Extreme
≥1,000	(Note 1)	(Note 1)	Extreme	Extreme

Note 1: With a PAR in excess of 100, it is unlikely that the severity of damage and loss will be "Minor". Similarly with a PAR in excess of 1,000 it is unlikely Damages will be classified as "Medium".

Note 2: Change to "High C" where there is the potential of one or more lives being lost.

The area of TSF management requires significant technical expertise and interpretation. For more information regarding consequence tables visit www.ancold.org.au