

FSE’S REPORT ON THE JAGERSFONTEIN TAILINGS STORAGE FACILITY DISASTER

The FSE conducted interviews regarding the Jagersfontein Tailings Storage Facility disaster with *inter alia*:

* SUNDAY TIMES (18 September 2022)
<https://www.timeslive.co.za/sunday-times/news/2022-09-18-jagersfontein-disaster-a-wake-up-call-for-sa/>
* TIMES LIVE

https://www.timeslive.co.za/sunday-times-daily/news/2022-09-13-jagersfontein-an-accident-waiting-to-happen-but-not-inevitable-expert/

* FOKUS (14 September 2022)

<https://www.facebook.com/watch/?v=876335920003168>

* Newzroom Afrika (12 September 2022)

<https://www.youtube.com/watch?v=5qUr2JWzfGY>

* ENCA (13 September 2022)

<https://www.youtube.com/watch?v=dYFHAMKmxh4>

* Mail & Guardian (12 September 2022)

<https://mg.co.za/environment/2022-09-12-free-state-dam-collapse-premier-awaiting-preliminary-report/>

* Radio 702

<https://omny.fm/shows/afternoon-drive-702/jagersfontein-how-mine-dams-collapse>

* Newzroom Afrika (17 September 2022)

<https://www.youtube.com/watch?v=vY2IHKjzZcU>

* SALAAM MEDIA

<https://www.facebook.com/watch/live/?ref=watch_permalink&v=1042531189764296>

* Radio 2000
* New York Times (John Eligon) (12 September 2022).

The FSE reported on the following issues:

Tailings

Mining creates tailings or residues. As early as 1987, the US Environmental Protection Agency recognised that “.....problems related to mining waste may be rated as second only to global warming and stratospheric ozone depletion in terms of ecological risk. The release to the environment of mining waste can result in profound, generally irreversible destruction of ecosystems.” (Sources: CSIR. Briefing Note August 2009. Acid Mine Drainage in South Africa. Dr. Pat Manders. Director, Natural Resources and the Environment; European Environmental Bureau (EEB). 2000. The environmental performance of the mining industry and the action necessary to strengthen European legislation in the wake of the Tisza-Danube pollution. EEB Document no 2000/016. 32 p)

Tailings usually takes the form of a liquid slurry made of fine metal or mineral particles and water – created when mined ore is crushed and finely grounded in a milling process to enable the metals and minerals of interest to be extracted.

If not managed properly, tailings can have chronic adverse impacts on health, wellbeing and environmental integrity, with pollution from effluent and dust emissions being potentially toxic to humans, animals and plants. (https://www.icmm.com/en-gb/our-work/innovation-for-sustainability/tailings)

The long-term management of tailings is the responsibility of the mining companies that produce them and is subject to South Africa’s Environmental Legislation.

Tailings management needs to be effective throughout the life of an operation including closure and post-closure.

Tailings Storage Facilities

Mine tailings are stored in Tailings Storage Facilities. Tailings Storage Facilities are the largest man made structures on earth and are living structures. Construction is a relatively simple but highly specialised technology. The mining industry is under significant pressure to cut costs. This results in a geotechnical structure having an inherent high hazard requiring an in-depth understanding and continual management within an appropriate tailings management system.

Tailings Storage Facilities (TSFs) are engineered structures that comprise the confining embankments (commonly referred to as tailings dams) and associated works and are designed to contain tailings (residue following extraction of valuable material from metal ore processing) and to manage associated water.

The tailings are pumped as a slurry to the TSF. The tailings settle to form the TSF. To manage mining facilities responsibly, the TSF owner must understand the physical and chemical risks associated with the TSF and implement controls to reduce risks relating to potential health, safety, environmental, societal, business, and economic impacts in line with regulations.

If poorly designed, constructed or managed, tailings storage facilities represent a significant risk to local communities and ecosystems, especially in downstream environments.

In South Africa, most of our tailings facilities are “upstream” facilities, which has the lowest cost but high risk. The stability of the TSF is dependent on the tailings and requires a high level of surveillance.

There is no comprehensive global registry of tailings dams. It is estimated that there are around 18 000 dams, 3,500 of which are active. However, the number may be much higher.

Within the Witwatersrand gold fields there are approximately 270 tailings storage facilities which house 6 billion tons of iron pyrite tailings and 600 000 tons of uranium. (Source: Chevrel, S, Croukamp, L, Bourguignon, A & Cottard, F 2008, A Remote Sensing and GIS Based Integrated Approach for Risk Based Prioritization of Gold Tailings Facilities — Witwatersrand, South Africa, in A Fourie, M Tibbett, I Weiersbye & P Dye (eds), Proceedings of the Third International Seminar on Mine Closure, Australian Centre for Geomechanics, Perth, pp. 639–650.)

Causes of Tailings Dams Failures (1915 – 2016)

* 52: Unknown
* 27: Earthquake -seismic instability
* 7: Erosion – external erosion
* 17: Seepage and internal erosion
* 30: Slope instability
* 15: Foundation – structural and foundation conditions, foundations with insufficient investigations
* 16: Structural – structural inadequacies, inadequate or failed decants
* 44: Overtopping
* 1: Mine subsidence

Research of all serious TSFs’ failures since 1915 shows:

* The rate of serious tailings dam failures is increasing. Half (33 of 67) of serious tailings dam failures in the last 70 years occurred in the 20 years between 1990 and 2009.
* The increasing rate of tailings dam failures is propelled by, not in spite of, modern mining practices. The increasing rate of tailings dam failures is directly related to the increasing number of TSFs larger than 5 million cubic meter capacity necessitated to allow the economic extraction of lower grades of ore.
* 19 catastrophic failures are predicted globally from 2018 to 2027.

(Source: Earthworks)

Global Tailings Standard on Tailings Management

The Investor Mining and Tailings Initiative (IMTSI) was founded in 2019 after the failure of the Córrego do Feijão mining facility in Brumadinho, Brazil, killing 270 people, and causing significant environmental damage. Shortly after the disaster in Brumadinho, a call to industry was issued, supported by investors with 1 trillion Assets Under Management. This call outlined the need for an industry-wide response to the problem of tailings storage facilities, and called attention to Environmental, Social and Governance (ESG) risks.

A Global Tailings Standard on Tailings Management was established by the International Council on Mining and Metals (ICMM), which represents the top 30 largest global mining companies in the world. Sibanye-Stillwater Limited (Sibanye-Stillwater) is one of the mining companies which agreed to the implementation of the ICMM’s Global Industry Standard on Tailings Management.

The Standard strives to achieve the ultimate goal of zero harm to people and the environment with zero tolerance for human fatality. It requires Operators to take responsibility and prioritise the safety of tailings facilities, through all phases of a facility’s lifecycle, including closure and post-closure. It also requires the disclosure of relevant information to support public accountability, and an emergency response plan.

Some of the principles of the Standard are:

* Respect the rights of project-affected people and meaningfully engage them at all phases of the tailings facility lifecycle, including closure. (Principle 1)
* Establish a process for reporting and addressing concerns and implement whistleblower protection. (Principle 12)
* Publicly disclose and provide access to information about the tailings facility to support public accountability. (Principle 15)

Current Legal Matrix Pertaining to Management of Tailings

**Section 24 of the Constitution of the Republic of South Africa**

“Everyone has the right-

(a) To an environment that is not harmful to their health or well-being; and

(b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that –

i. Prevent pollution and ecological degradation;

ii. Promote conservation; and

iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

**Section 28 of National Environmental Management Act, 107 of 1998**

Duty of care and remediation of environmental damage

1. “Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring…”

Who is responsible/liable?

Section 34 of NEMA makes provision for both ‘firms’ (including companies and partnerships) and their ‘directors’ (including board members, executive committees or other managing bodies or companies or members of close corporations or of partnerships) to be held liable, in their personal capacities, for environmental crimes.

This personal liability also applies to managers, agents or employees who have done or omitted to do an allocated task, while acting on behalf of their employer.

The duty to take reasonable measures to prevent significant pollution or degradation of the environment from occurring, continuing or recurring (“the duty of care”) also applies to pollution that occurred before NEMA commenced; to pollution that might arise at a different time from the actual activity that caused the contamination and to pollution that may arise following an action that changes pre-existing contamination.

It is therefore no defence to say that the pollution is historic, indirect or underlying – the responsibility to take reasonable steps remains.

Unless it can be shown that all reasonable steps necessary to prevent the crime were taken, even an unintentional (but negligent) unlawful act or omission which causes significant pollution or degradation of the environment, can make a ‘director’ personally liable.

**Mineral and Petroleum Resources Development Regulations, 2020 (as amended)**

REGULATION 56

In accordance with applicable legislative requirements for mine closure the holder of a mining right must ensure that-

a)The closure of. a mining operation incorporates a process which must start at the commencement of the operation and continue throughout the life of the operation;

b)Risks pertaining to environmental impacts must be quantified and managed proactively, which includes the gathering of relevant information throughout the life of a mining operation in accordance with the provisions of the National Environmental Management Act, 1998 and the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014;

c)The safety and health requirements in terms of the Mine Health and Safety Act, 29 of 1996, are complied with;

d)Residual and possible latent environmental impacts are identified and quantified in accordance with the provisions of the National Environmental Management Act, 1998, the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014.

e)The land is rehabilitated, as far as is practicable, to its natural state, or to a predetermined and agreed standard or land use which conforms with the concept of sustainable development in accordance with the provisions of the National Environmental Management Act, 1998, the Financial Provision Regulations, 2015 and the Environmental Impact Assessment Regulations, 2014; and

f)Mining operations are closed efficiently and cost effectively.

**The National Water Act, 36 of 1998**

Who is responsible/liable?

“19 (1) An owner of land, a person in control of land or a person who occupies or uses the land on which-

Any activity or process is or was performed or undertaken; or

Any other situation exists, which causes, has cause or is likely to cause pollution\*of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.”

(\*Pollution means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful to the welfare, health or safety of human beings, aquatic or nonaquatic organisms, resource quality or property.)

**Regulations on Use of Water for Mining and Related Activities Aimed at the protection of Water Resources GN.R 704 of 4 June 1999**, which regulates:

* Restrictions on locality
* Restrictions on use of material
* Capacity requirements of clean and dirty water systems
* Protection of water resources
* Security - any impoundment or dam containing poisonous, toxic or injurious substance to be effectively fenced off to restrict access, erect warning boards to warn persons.
* Temporary or permanent cessation of mine or activity

**Mine Health and Safety Act, 29 of 1996**

The Mine Health and Safety Act defines the obligations of mining owners in regard to ensuring a safe working environment.

However, a general obligation rests upon every employer or owner of a mine, to:

(a) Identify the relevant hazards and assess the related risks to which non- employees are exposed; and

(b) to ensure that non-employees who are directly affected by the activities at the mine, are not exposed to any hazards to their health and safety. To this end, the employer must establish a policy concerning the protection of non- employees who are directly affected by the activities at the mine.

Extraction activities in residue stockpiles

“Mine”, used as a verb in the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA) does not include extraction activities in residue stockpiles. Extraction of minerals from residue stockpiles constitutes processing that does not require a separate mining permit or mining right.

The judgement in the De Beers Consolidated Mines Ltd and Ataqua Mining (Pty) Ltd and others matter in the High Court of South Africa (Orange Free State Provincial Division - Case No. : 3215/06 ), established that reprocessing of tailings are not subject to the control of the MPRDA and does not require a mining right/permit.

Whilst Listing Notices 1, 2 and 3, of the Environmental Impact Assessment (EIA) Regulations, include residue deposits and residue stockpiles, the intention of the MPRDA was to exclude tailings dumps according to the above judgment.

The Court found that there are several reasons why tailings dumps, are not subject to control by the MPRDA namely:

* The tailings dumps are movable, and the minerals/metals s occurring in them do not occur “naturally in or on the earth”.
* Tailings dumps do not occur naturally. They are formed by the placement of processed and partly processed materials, to be reworked in future years when technology improves
* The MPRDA did not want to regulate tailings dumps. “Mining” of a tailings dump is in fact “processing”. “It is the winning of the mineral”.
* The MPRDA targets mining rights in unsevered minerals in the ground, not in tailings which have been mined.
* “Tailings are different: … it is not part of the heritage to which section 3(1) of the MPRDA refers.”

Pass the Parcel

One of the most practices for mining companies avoiding their closure commitments is to pass the parcel, that is, the selling of mines close to closure on to less resourced companies who will relieve them of the responsibility and liability of dealing with the problems of closure. This pass the parcel approach to the custodianship of the closure plan allows for mines to end up in the hands of the weakest companies who neither have the resources, will or intention to manage closure responsibly.

In the case of Jagersfontein, De Beers and Reinet were two of the predecessors of the Jagersfontein Development, the successor in title and current owner of the Jagersfontein TSF.

Section 28 of the NEMA allows for the retrospective application of the polluter pays principle, if there was failure in duty of care to prevent ecological degradation and pollution.

Parliamentary Portfolio Committee (PPC) on Mineral Resources: Findings and Recommendations

* The PPC on Mineral Resources found pursuant to its oversight visit of the Mintails Group of Companies and Shiva Uranium Mine in 2018:
* It is clear that some mining companies are still operating without adequate financial provision for repairing damage caused to the environment by mining activities, if they suddenly close.
* Neither Shiva Uranium (Pty) Ltd and Mintails Mining SA (Pty) Ltd has saved all the money they were supposed to set aside under the law to pay for environmental rehabilitation. The shortfalls are R36.6-million for Shiva and R460-million for Mintails.
* The state will inherit these liabilities if the mines are finally liquidated.
* The Department of Mineral Resources (DMR) has failed to implement effectively and carry out the intentions of Parliament to ensure that all mines rehabilitate the damage they cause.
* Changes to the mining law were made by Parliament after 2002 to ensure that in mining, as elsewhere, the polluter must pay.
* The new laws have not proven effective in avoiding this situation where the state and the taxpayer still ends up paying for the environmental harm caused by mining.
* There is a lack of clarity on the rules for the Department of Mineral Resources when it comes to Business Rescue Practitioners. It seems there is non-application of the law resulting in a free for all.
* The DMR allowed Mintails to operate between 2012 and 2018, despite the fact that the Department had never approved the environmental management plans of the mine and had never issued the company with a mining right under the law.
* There is a huge regulatory gap regarding the financial provision of environmental rehabilitation of a mine during the process of business rescue.
* The DMR must identify clearly and specifically the gaps between mining, insolvency and company law that have led to this ongoing situation, where the polluter does not pay, it is the state that ends up paying.
* DMR should get specific legal opinion on these complex issues.
* The DMR must report to the Committee in Parliament on what it will do [or needs to do] differently in future to ensure that this situation does not continue.
* DMR must report on what efforts they have made to hold directors and shareholders of Shiva and Mintails liable for the environmental debts of these failed ventures.
* The DMR must actively ensure that the licensing of mines goes with responsibility and accountability.
* The DMR should further explore the regulatory gaps resulting from the business rescue process and come up with regulations that will ensure full environmental compliance during the period when a mine s experiencing financial distress.
* The DMR should design and implement standardized approaches when dealing with the relaxation of environmental financial provisions for mines that are undergoing business rescue process.

(Source: 22 November 2018: ANNOUNCEMENTS, TABLINGS AND COMMITTEE REPORTS NO 174─2018. No 174—2018, FIFTH SESSION, PARLIAMENT. Pages 39 – 52.)

In the wake of the Jagersfontein TSF disaster, the above findings and recommendations, which at the time of writing have not been implemented, have become highly relevant.