

Stantec's Andrew Watson pointed out that the culture around tailings management has changed dramatically in recent decades



Culture of improvement

Ailbhe Goodbody reports on an SME panel discussion about how corporate cultures can reduce the risks of tailings storage facilities (TSFs) and improve safety

One of the many sessions at the MineXchange 2020 SME Annual Conference & Expo, which took place in Phoenix, Arizona, US, in February, was a panel discussion called 'The importance of culture in safe tailings management'.

The panellists focused on the cultural elements that support the safe design and management of TSFs, including the role of the engineer of record (EoR) and of tailings review boards.

According to the Mining Association of Canada (MAC), the role of an EoR at a tailings facility is to verify whether the TSF and its components have been:

- Designed in accordance with performance objectives and indicators, applicable guidelines, standards and regulatory requirements; and
- Constructed, and is performing, throughout the life cycle, in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and regulatory requirements.

A tailings review board is an independent panel that conducts alternative assessments of a mine's TSFs. Richard Davidson, vice president of AECOM, said: "The role of a review board is an advisory role, and it is important for them to not cross the line too far. As engineers, you typically want to solve the problem whatever it is, and provide your best advice, but it is important to let the team do their job. You can provide advice and guidance to help them make wise choices.

"It is important to realise on a review board, you're not going to have all the details and you're going to be limited in your full understanding, whereas the people on site and the people that are building the structure and the designers have those details. Together you work as a team and advise each other."

Tamara Johndrow, director of tailings and water at Freeport-McMoRan, commented: "As an owner, we do really appreciate having these multiple pieces of advice. We first look to our EoR to provide us with guidance and really to dig into the details and help us in making decisions, but

we're also really interested to see what our review board tells us, because we know that they have such a wealth of experience nursing so many projects. They often have seen them over a long period of time and how they've performed, so I think it's really important to have that wisdom.

"At Freeport, the way we use our review boards is to keep them very actively engaged with updates on what we're doing; they don't make decisions for us, but we see if they think we're on the right path or not. I think it's good to have multiple points of view."

Kanyembo Katapa, chief geotechnical engineer at Freeport-McMoRan, said: "We get a lot of benefit from the tailings review boards; they work on multiple sites and bring experience from other sites. Applying the right lessons from industry failures at other sites is a benefit."

Paula Doughty, manager for tailings and water services at Rio Tinto Kennecott, noted: "Our design review board reports directly to the operations, it doesn't report to the engineer of record, although obviously all the data and the ►

"The role of a review board is an advisory role, and it is important for them to not cross the line too far"

► presentations and the design are going through the review board.

"I look at it [analogous to] a second opinion from a doctor; at the end of the day, if you're getting bad news or good news, you still want to make sure you've got somebody else that's looking at it to say that they looked at it in the right way.

"There have been arguments between review board members where one may think that the analysis should have looked at it from this way, and another from the other way. Those are good, healthy arguments. And at the end of the day, it's making for a better and safer facility.

"So, I can't say enough about how important it is to have those second opinions that are helping you to decide which risks are valid and which aren't, and what needs to be done."

However, she cautioned that a tailings review board is not the be-all and end-all. She said: "A facility is only as good as its design, operated and managed. It doesn't stop at the end of the design. You do need somebody after the review board to come and look at how it's being operated. Is it being operated to the design?"

"We have design review boards, but we also have an operational

review that is required at a minimum every two years, where somebody independent who is not on the design review board and is not part of the engineer of record's firm, comes out and looks at all the data.

"I don't think we'd be continuing to operate and continuing design if we thought that we couldn't do it safely, but you need to make sure that you're designing appropriately, that you're operating appropriately and you're closing appropriately. It can't just stop with the review board; it has to be throughout the entire life of the facility."

EXECUTIVE RESPONSIBILITY

Andrew Watson, vice president, sector leader, mining at Stantec, who was moderating the panel discussion, noted that all the information and data collected about tailings facilities is put into the system and then filtered up to the executive level. He asked the panel what the executives should then do with this information. "What do we want our directors, the CEOs of these corporations to say in order to reinforce this culture of taking care of tailings storage facilities?" he asked.

Johndrow suggested: "I think the number one thing is that they trust us and that they are empowering us, and the next thing I would say is that

they want to hear from us, and they have questions for us."

She said that it is important that executives want to hear the truth and what is really happening, even if it is negative, and that they need to know right away so they can do something about it. She added: "I think that that is so valuable; if executives are asking the questions, it means they are interested."

Davidson has worked with the boards of some junior mining companies, and commented that sometimes when the senior managers are from a financial background, you might assume that they won't understand the technical aspects. However, this is not necessarily the case; he said: "When you sit and talk with them, you realise they do understand because there's a lot on the line and they can provide important feedback about how their mine is operating and how their whole business is operating."

From his point of view, the more interchange there is with the senior levels, the better; whether in terms of leadership, what meaningful things can be done to improve safety or how to ensure that the team is functioning effectively. He stated: "That would be the one thing I would like to see more of –

The panellists focused on the cultural elements that support the safe design and management of tailings storage facilities



continuing that strong engagement from the senior executives.”

Doughty said that there are very few tailings impoundments that are value adding, unless in cases where commodities can be recovered from historic tailings. “[Executives] have got to recognise that you need the resources, from a personnel standpoint and from a capital standpoint,” she explained.

“That money is going to have to be spent on something that’s not necessarily going to bring you a return on investment. When the industry is hitting a low from a metals standpoint and prices are dropping, there are some things you can’t cut back on – and that is making sure that your facility is operating appropriately. Safety is number one.”

Johndrow agreed: “Safety doesn’t go away when prices are low.”

Patrick Corser, discipline leader, tailings and water at Stantec, thinks it is important to communicate to senior executive teams that the EoR role makes long-term commitments to their clients, and that they should be hiring and training as well as setting up succession plans. “We need to possibly be hiring during downturns, which we traditionally have not,” he said. “When there’s a downturn, everybody cuts back, but in this role as an engineer of record you cannot do that.”

He added: “Right now there are a lot of companies trying to get EoRs and engagements for EoRs. We have to communicate to our senior managements, that see this great revenue stream, that if we don’t have the right staff we’re going to have to say no. In the consulting business it is sometimes very difficult to turn down a job, but if we don’t have the



right set of staff, we shouldn’t be doing it.”

CHANGING CULTURE

Watson pointed out that the culture around tailings management has changed dramatically in recent decades, with mining companies more open about their facilities; for example, many will post their tailings designs publicly where people can examine them. He asked the panel what things the industry needs to do to drive the cultural shift towards transparency.

Doughty said: “Every time one of these impoundments fails it’s not just hurting that company, but it’s hurting the industry. So we’ve got to share best practice, we’ve got to be transparent, we’ve got to be willing to share. If we’ve got something good that’s working, we need to raise the bar for the entire industry.”

Johndrow explained: “One of the things that Freeport has been

doing is investing quite a bit on leadership training in all of [its] teams. It’s all about people skills and how we interact with people effectively – how do we understand other peoples’ lens that they’re looking at life through, and how can we best relate to that lens and help them see the lens that we’re looking through?”

“I think that’s one thing that we can do at a base level, to really understand each other and take that time to invest in the relationships.”

Katapa said: “We’ve adopted something that is part of our orientation videos at most of our sites where they tell both contractors and employees that they have the authority to stop the job if they see something unsafe. So whether you’re just there visiting or you work there, if you see something unsafe, you have the authority to stop that job and have that looked at.

“If you think about, it is probably going to cost the operation quite a bit of money [in the short term] if you just stop in the middle for something that you think is unsafe. But we’re saying that you are allowed to do that and when they’ve done it, like they did in Morenci, they were commended for doing that. I think living that mantra is probably important for showing that whatever you say on paper is what you do.”

Doughty agreed: “We’ve got to stop shooting the messenger. If something is going wrong, it’s not [due to] the person who brings it to your attention – in fact they should be patted on the back.” ♥

Kanyembo Katapa said that Freeport-McMoRan gets a lot of benefit from tailings review boards



A tailings facility at a Freeport-McMoRan operation