

TAILINGS MANAGEMENT

CASE IN POINT: Dry Stack Tailings Storage

Approach

Since the start of operation in 1992, Kestrel has managed tailings as a wet co-disposal earthen landform: where a mix of tailings and water is pumped to decant cells for settlement of solids, then water is recovered and recycled into our water system. Coarse tailings are used to construct continuous raises as upstream lifts to provide ongoing storage capacity as deposition continues. The Kestrel tailings landform (or CDSF) is 140 hectares in size and in 2020 stood at 225mAHD (or 20m above the ground) reaching final height as a designed wet storage and holding ~37.5Mt of tailings.

Outcomes

In 2018, Kestrel took the decision to move to a changed method of tailings storage, called Dry Stack. The decision was built on a feasibility study conducted over ownership change, and was selected based on key factors of remaining within existing footprint, improved environment performance through reduced percolation and ongoing encapsulation for improved water quality, as well as the ability for progressive rehabilitation and capacity through to end of the planned 500 panel series. Final height of the legacy landform will be 255mAHD, or 40-45m above ground for a total storage capacity of 65Mt around 2034.

The system is based on dewatering of tailings prior to deposition: using a process of removing coarse tailings from the tailings stream and then rapid rotation centrifuges to dewater finer grained materials. The drained materials are recombined and stacked on top of the existing landform, pushed down and compacted, tightly packing materials together.

Kestrel has the largest solid bowl centrifuge installation in Australian coal and is the first underground coal mine to adapt the stacking technology. We have proactively installed noise and air quality real-time monitoring around the facility and near sensitive receptors to measure performance and ensure we deliver on our obligations as the facility progresses.

The year ahead

In 2021, Kestrel will look to embed dry stack operation, updating and embedding a new tailings operating manual to Global Industry Tailings Standards. This will improve operations reliability and addressing site water balance changes. We will also look to secure the final closure and rehabilitation design of the facility as a final landform for valid land-use. We will be undertaking trials for progressive rehabilitation and community consultation with our neighbours, local government and Western Kangoulu on final closure landform design.

Plans are also underway for life of mine studies to identify tailings storage solutions (600 & 700 series) with a full life cycle assessment to deliver strong environment and operations performance.

