

# MANAGING OUR IMPACTS RESPONSIBLY

TAILINGS MANAGEMENT BY PT FREEPORT INDONESIA



## OUR MINING PROCESS AT GRASBERG



### 1 EXTRACTION ▶

The process of removing a mineral resource (ore) from the ground. This can be done by above ground, underground or solution extraction methods. Before we extract the ore, we must first remove the Overburden. This is all the soil, natural material and rock that sit above the mineral deposit.



### 2 MILLING ▶

The ore containing copper and gold is sent to the milling and concentrating site, where it is crushed and ground to the size of fine sand through the Milling process and mixed with water to produce a slurry.



### 3 CONCENTRATING ▶

The copper and gold-bearing minerals are then concentrated through the Flotation Concentration Process, during which air is blown through the mixture and precious minerals float to the top. The copper is removed with a skimmer. The remaining particles that settle at the bottom are called Tailings.



### 4 ORE CONCENTRATE

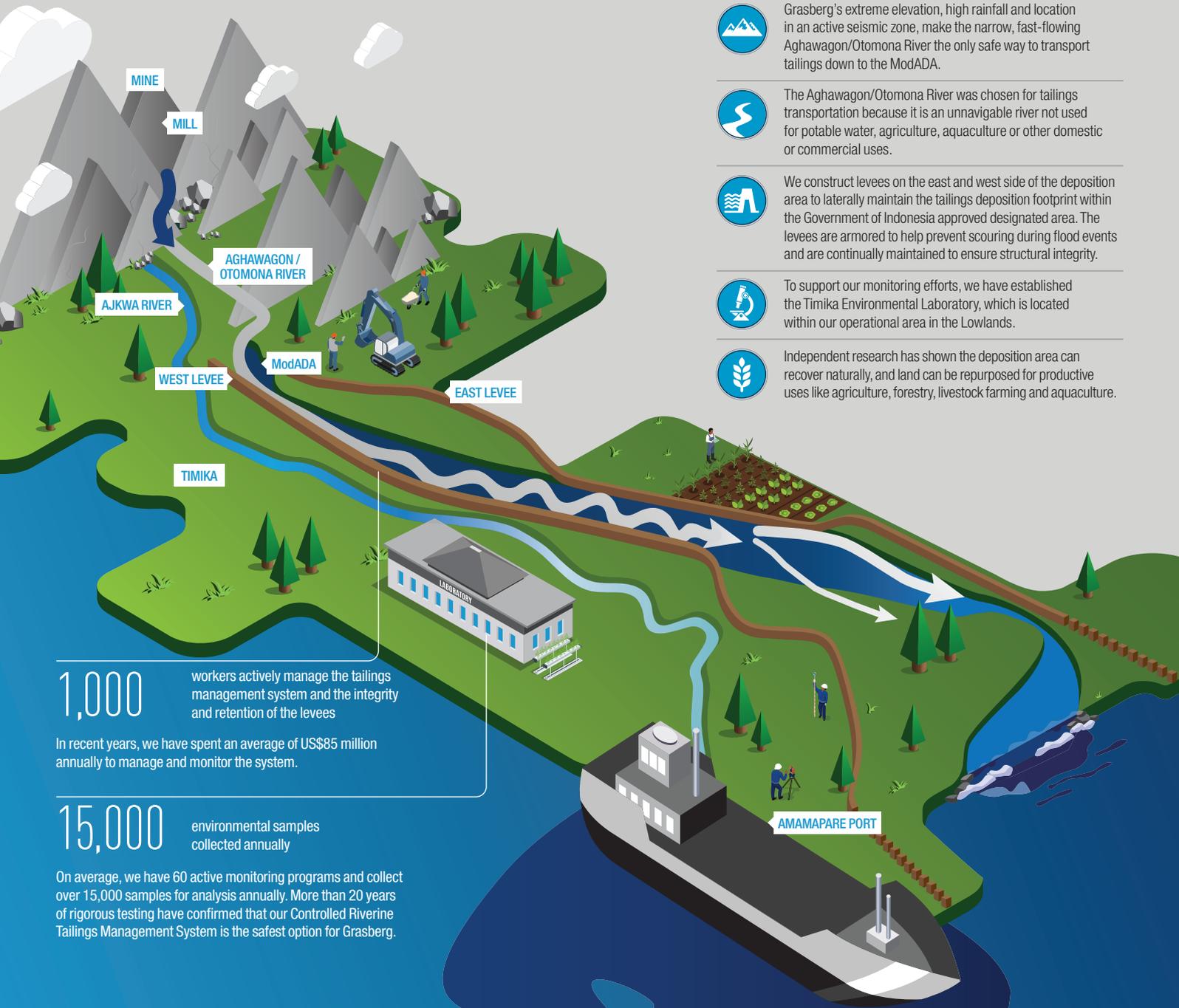
The copper and gold concentrate is transported directly to the Amamapare Port near the Arafura Sea, where it is dried and prepared for shipment to customers.



### 5 TAILINGS

Tailings are the finely ground natural rock particles, or by-products, that remain after economically valuable minerals have been processed and extracted. They are managed to be geochemically benign, helping to ensure safety for the environment. Tailings are safely transported down the Modified Ajkwa Deposition Area (ModADA) via the Aghawagon River using our Controlled Riverine Tailings Management System.

## CONTROLLED RIVERINE TAILINGS MANAGEMENT SYSTEM



Grasberg's extreme elevation, high rainfall and location in an active seismic zone, make the narrow, fast-flowing Aghawagon/Otomona River the only safe way to transport tailings down to the ModADA.



The Aghawagon/Otomona River was chosen for tailings transportation because it is an unnavigable river not used for potable water, agriculture, aquaculture or other domestic or commercial uses.



We construct levees on the east and west side of the deposition area to laterally maintain the tailings deposition footprint within the Government of Indonesia approved designated area. The levees are armored to help prevent scouring during flood events and are continually maintained to ensure structural integrity.



To support our monitoring efforts, we have established the Timika Environmental Laboratory, which is located within our operational area in the Lowlands.



Independent research has shown the deposition area can recover naturally, and land can be repurposed for productive uses like agriculture, forestry, livestock farming and aquaculture.

1,000

workers actively manage the tailings management system and the integrity and retention of the levees

In recent years, we have spent an average of US\$85 million annually to manage and monitor the system.

15,000

environmental samples collected annually

On average, we have 60 active monitoring programs and collect over 15,000 samples for analysis annually. More than 20 years of rigorous testing have confirmed that our Controlled Riverine Tailings Management System is the safest option for Grasberg.