

DECEMBER 2022

EZULWINI NORTH TAILINGS  
 STORAGE FACILITY (TSF)

DETAILS OF TAILINGS STORAGE FACILITY

Tailings Storage Facility (TSF) Name	Ezulwini North TSF (Cooke 4)
Operation	Cooke 4
Operational Status	Active
Operating Segment	RSA - Gold
Location	Cooke 4, Ezulwini in Westonaria, South-west of Johannesburg - please refer to Figure 1
Latitude, Longitude (decimals)	-26.35345, 27.7256778
Ore Source	Underground
Type of Storage Facility	Impoundment (upstream development)
Deposition Methodology	Day-Wall Paddock
Year of Commissioning	1982
Consequence Classification (GISTM, 2020)	Extreme
Operating Contractor	Stefanutti Stocks Inland (SSI)
Engineer of Record (EoR)	Knight Piesold (Pty) Ltd (KP)
Current Maximum Height (m)	30
Final Maximum Height (m)	60
Maximum Storage Capacity (tons/month)	200 000
Life of TSF (year)	2035 @2m/year

TECHNICAL ASPECTS:

Adopted Factor of Safety (FoS)	Australian National Committee on Large Dams (ANCOLD) (July 2019)
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### Stability Assessment and Mitigation Measures (if applicable)

A detailed stability assessment was conducted in 2021. All sections of the TSF (current and final) analysed, exceed the minimum required FoS for drained and pseudo-static conditions. This assessment will be updated based on piezocone probing and laboratory testing results once they become available in Q1 2023.  
(KP Reference: RI301-00726/21-A, 13 December 2022)

### Dam Breach Assessment

Assessment completed in 2022  
(KP Reference: RI301-00726/21 Rev A, 13 December 2022)

### Area of Inundation

Has been identified by EoRs – please refer to Figures 2 to 5

### Summary of Human Exposure

Consequence classification has been based on Population at Risk (PAR). Communities have been identified and are being engaged through various means including Community Engagement Forums (CEF)

## DOCUMENTATION:

### Site Specific OMS Manual

Version 2022 available

### Dam Safety Review (DSR)

Carried out by an independent third party in 2019/2020,  
During the site visit on 13 November 2019 the immediate concern was the total lack of vertical freeboard around the full perimeter of the TSF. To re-instate the vertical freeboard around the entire top perimeter of the TSF a weekly deposition plan showing the planned deposition vs the actual was prepared to address this concern. In addition, 2 excavators were used to build mechanical walls and re-instate the daywall paddocks around the TSF. Once re-instated a revised freeboard assessment as well as a photogrammetric survey was conducted, and the freeboard was found to be within the statutory freeboard requirements.  
(KP reference: 301-00840/02-005 Rev 1, February 2020)

### Design Basis Report (DBR)

Version 2022 available  
(KP Reference: RI301-00726/09 Rev B, 23 August 2022)

### Environmental Management Programme (EMPr)

In place



Surveillance:

Surveillance Frequency

Daily by the Operator and monthly reports of critical controls submitted to and reviewed by the EoR

Surveillance Technology/System

K2Fly Decipher

Deformation Monitoring

Interferometric Synthetic Aperture Radar (InSAR)

Phreatic Surface Levels & Pore Pressure Measurements

Standpipe piezometers  
 AquaSense Retrofit piezometers (IoT device)

**RISK MANAGEMENT /  
 EMERGENCY PREPAREDNESS:**

Risk Assessment

Annual Risk Assessment (Bowtie) completed with no untoward risk identified

Risk Management

Site specific OMS Manual in place  
 Site specific Trigger Action Response Plans (TARPs) in place  
 Critical controls established and implemented

Site Specific Emergency Preparedness & Response Plans (EPRP)

Version 2022 available

Annual emergency mock drill for a catastrophic TSF failure – undertaken on 8 December 2022 with SSW employees and contractors.

**CLOSURE & POST CLOSURE**

Closure Planning

In place - report prepared by Golder Associates (Golder Reference: 20353622-341342-2, April 2021)

Closure Costing

Adequate financial capacity in place  
 Financials prepared by Golder Associates (Golder Reference: 20447293-349380-3, December 2021)

Asset Insurance Cover

In place – July 2022 to June 2023

## Independent Reviews:

Independent Tailings Review Board (ITRB)	18 July 2022 with no material concerns identified
Future ITRB Review	2025
Performance Reviews	Annual and quarterly reports with inspections completed by EoR (KP Reference: RI301-00726/09 Rev 0, 4 April 2022)



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Figure 1: Layout of Ezulwini (Cooke 4) TSF Complex

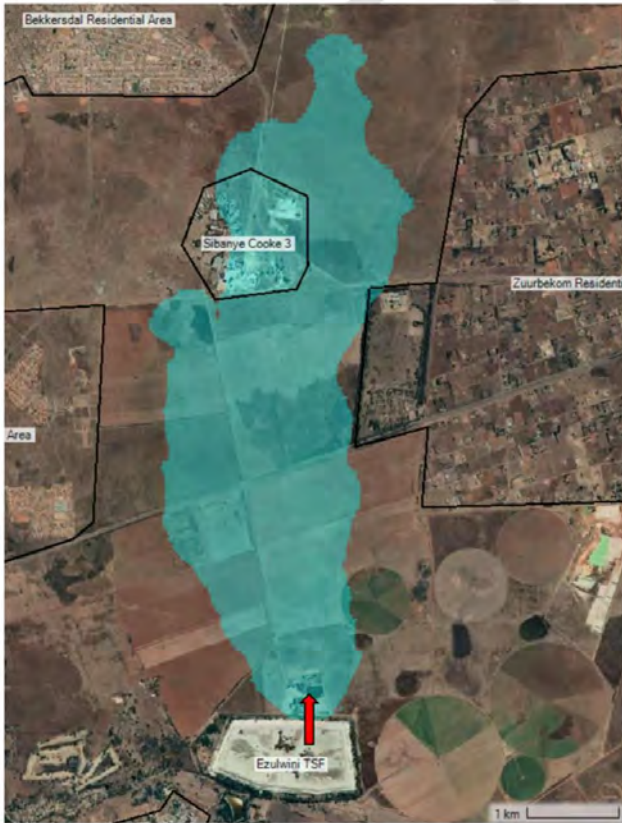


Figure 2: Inundation Map for the Rainy-day Failure at the Northern Wall



Figure 3: Inundation Map for the Rainy-day Failure at the Southern Wall



Figure 4: Inundation Map for the Rainy-day Failure at the North-Western Wall



Figure 5: Inundation Map for the Rainy-day Failure at the South-Eastern Wall