

JULY 2023

BEATRIX TAILINGS
 STORAGE FACILITY (TSF) 2

DETAILS OF TAILINGS STORAGE FACILITY

Tailings Storage Facility (TSF) Name	Beatrix TSF 2 (BTX2)
Operation	Beatrix
Operational Status	Active
Operating Segment	RSA - Gold
Location	30 km south of Welkom, Free State – please refer to Figure 1
Latitude, Longitude (decimals)	-28.2736972, 26.7716583
Ore Source	Underground
Type of Storage Facility	Impoundment (upstream development)
Deposition Methodology	Day-Wall Paddock
Year of Commissioning	2002
Consequence Classification (GISTM, 2020)	Extreme
Operating Contractor	Stefanutti Stocks Inland (SSI)
Engineer of Record (EoR)	Knight Piesold (Pty) Ltd (KP)
Current Maximum Height (m)	25
Final Maximum Height (m)	30
Maximum Storage Capacity (tons/month)	240 000
Total Volume Already Deposited (Mm³)	28,8
Life of TSF (year)	2029 @ 1,5m/year



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TECHNICAL ASPECTS:

Design Criteria

GISTM and best practice guidelines including Australian National Committee on Large Dams (ANCOLD) (Guidelines on Tailings Dams, July 2019). Site specific design criteria were specified by the EoR. Details are included in the Design Basis Report (DBR).

Stability Assessment and Mitigation Measures

A detailed stability assessment based on piezocone probing and laboratory test work was conducted in 2022 (KP Reference: RI301-00840/06 Rev 0, 13 April 2022). The assessment indicated unacceptable FoS requiring mitigation measures.

Construction of a buttress in the north-west flank to improve stability and intercept seepage was completed in May 2022 and will be assessed for recommended raise in 2023/2024. Additional vibrating wire piezometers (VWP's) have been installed to enhance monitoring.

Additional piezocone testing and shear vanes tests were undertaken between November 2022 and January 2023 to calibrate the stability assessment results. A refined assessment will be available in Q4 2023 following the results from the laboratory testing.

Dam Breach Assessment

Assessment completed in 2022
 (KP Reference: PR301-00726/18 Rev 0, 12 April 2022)

Area of Inundation

Has been identified by EoRs – please refer to Figures 2 & 3

Summary of Human Exposure

Consequence classification has been based on Population at Risk (PAR). Farmers have been identified and are being engaged through various means.

DOCUMENTATION:

Site Specific OMS Manual

Version 2022 available
 Mandatory Code of Practice (MCOP) document No: 2.3.A-COP is in place (dated June 2019)

Design Basis Report (DBR)

Version 2023 available
 (KP Reference: 301-00726/05 Rev C, 27 July 2023)



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Environmental Management System

The Environmental Management System is ISO accredited (ISO 14001:2015)

The initial Environmental Management Programme (EMPr) is dated 2004. Numerous addendums have been submitted with the latest being in 2013.

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)
 Vibrating Wire Piezometers (VWP's)

RISK MANAGEMENT / EMERGENCY PREPAREDNESS:

Risk Assessment

Annual Risk Assessment (Failure Mode Effect Analysis and 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 2023 available

Annual emergency mock drill for a catastrophic TSF failure – undertaken on 30 June 2023 with SSW employees and contractors.

Environmental emergency preparedness is managed on site according to ISO14001: 2015.



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CLOSURE & POST CLOSURE

Closure Planning

In place - report prepared by Golder Associates
 (Golder Reference: 20353619-341344-2, April 2021)

Closure Costing

Adequate financial capacity in place
 Financials prepared by Golder Associates
 (Golder Reference: 20447293-349381-4, December 2021)

Asset Insurance Cover

In place – July 2022 to June 2023 (currently undergoing renewal)

Independent Reviews:

Independent Tailings Review Board (ITRB)

14 July 2022 with no material concerns identified

Future ITRB Review

2024

Performance Reviews

Annual and quarterly reports with inspections completed by EoR
 (KP Reference: RI301-00726/05 Rev A, 23 June 2023)

Dam Safety Review (DSR)

Carried out by an independent third party in 2019/2020 with no material findings.
 (KP Reference: 301-00840/02-009 Rev 1, February 2020)

Next review scheduled for 2024



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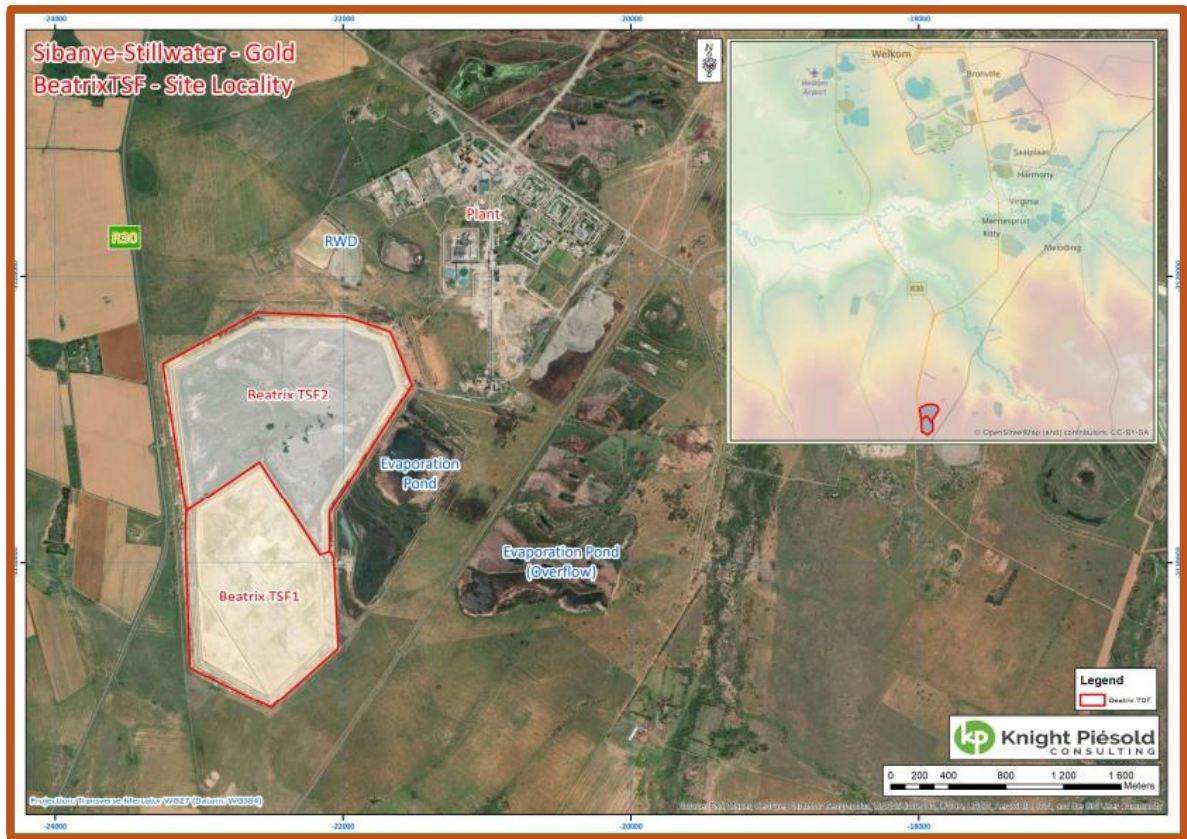


Figure 1: Layout of Beatrix Mine Complex

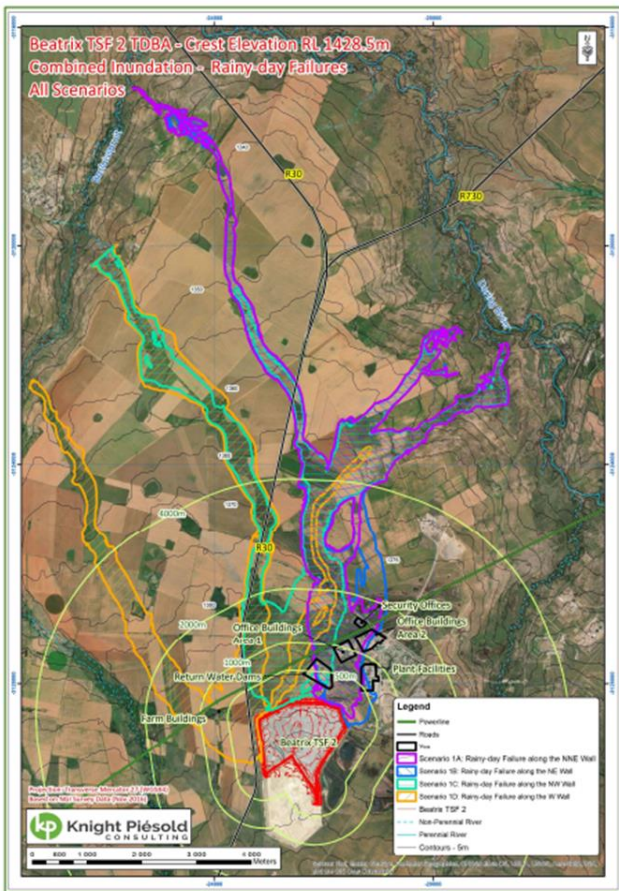


Figure 2: Consolidated view of the rainy-day failure scenario inundation boundaries

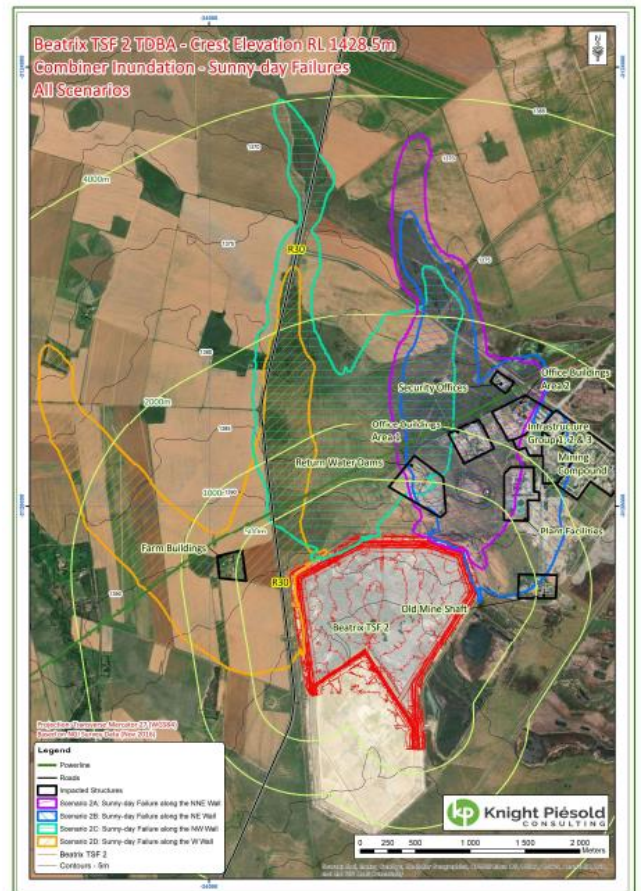


Figure 3: Consolidated view of the sunny-day failure scenario inundation boundaries