

JULY 2023

**DRIEFONTEIN TAILINGS
 STORAGE FACILITY (TSF) 1 & 2**

DETAILS OF TAILINGS STORAGE FACILITY

Tailings Storage Facility (TSF) Name	Driefontein TSF1 & TSF2
Operation	Driefontein
Operational Status	Active
Operating Segment	RSA - Gold
Location	Near Carletonville, approximately 70km west of Johannesburg - please refer to Figure 1
Latitude, Longitude (decimals)	TSF1: -26.2434528, 27.749525 TSF2: -26.3705278, 27.5026583
Ore Source	Underground
Type of Storage Facility	Impoundment (upstream development)
Deposition Methodology	Day-Wall Paddock
Year of Commissioning	TSF1 & TSF2: 1972
Consequence Classification (GISTM, 2020)	Extreme
Operating Contractor	Stefanutti Stocks Inland (SSI)
Engineer of Record (EoR)	Knight Piesold (Pty) Ltd (KP)
Current Maximum Height (m)	TSF1: 62 TSF2: 52
Final Maximum Height (m)	TSF1: 72.5 TSF2: 69
Maximum Storage Capacity (tons/month)	TSF1 and TFS2: 240 000 combined capacity
Total Volume Already Deposited (Mm³)	TSF1: 38,3 TSF2: 38,4
Life of TSF (year)	TSF1: 2036 @ 1,5m/year TSF2: 2034 @ 1,5m/year



INNOVATION



COMMITMENT



ACCOUNTABILITY



RESPECT



ENABLING



SAFETY

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 A, 24 June 2022). The assessment indicated unacceptable FoS requiring mitigation measures.

Additional piezometers including nested piezometers will be installed in 2023 to enhance monitoring. This will include the addition of Vibrating Wire Piezometers (VWPs) to ensure the accuracy of the pore pressures/phreatic levels in the stability analysis.

Further piezocone probing will be undertaken in Q3/Q4 2023, after which potential mitigation measures may be required

Dam Breach Assessment

Assessment completed in 2022
 (KP Reference: RI301-00840/06 Rev 0, 18 May 2021)

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). Communities have been identified and are being engaged through various means including Community Engagement Forums (CEF)

DOCUMENTATION:

Site Specific OMS Manual

Version 2022 available
 Mandatory Code of Practice (MCOP) document No: SAND301-00726/06 is in place (dated August 2022)

Design Basis Report (DBR)

Version 2022 available
 (KP Reference: SAND301-00726/26 Rev 0, 6 December 2022)



INNOVATION



COMMITMENT



ACCOUNTABILITY



RESPECT



ENABLING



SAFETY

Environmental Management System

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

The initial Environmental Management Programme (EMPr) is dated 2011

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 (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 21 June 2023 with SSW employees and contractors.

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



INNOVATION



COMMITMENT



ACCOUNTABILITY



RESPECT



ENABLING



SAFETY

CLOSURE & POST CLOSURE

Closure Planning

In place - report prepared by Golder Associates
 (Golder Reference: 20447293-349384-6, December 2021)

Closure Costing

Adequate financial capacity in place
 Financials prepared by Golder Associates
 (Golder Reference: 20138259-341345-2, April 2021)

Asset Insurance Cover

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

Independent Reviews:

Independent Tailings Review Board (ITRB)

23 August 2021 to 27 August 2021 with no material concerns identified

Future ITRB Review (year)

2024

Performance Reviews

Annual and quarterly reports and inspections completed by EoR

Dam Safety Review (DSR)

(KP reference: SAND301-00726-40 Rev 0, 24 April 2023)
 Carried out by an independent third party in 2019/2020 with no material findings
 (KP reference: 301-00840-02-001 Rev 1, February 2020)
 (KP reference: 301-00840-02-002 Rev 1, February 2020)

Next review scheduled for 2024



INNOVATION



COMMITMENT



ACCOUNTABILITY



RESPECT



ENABLING



SAFETY

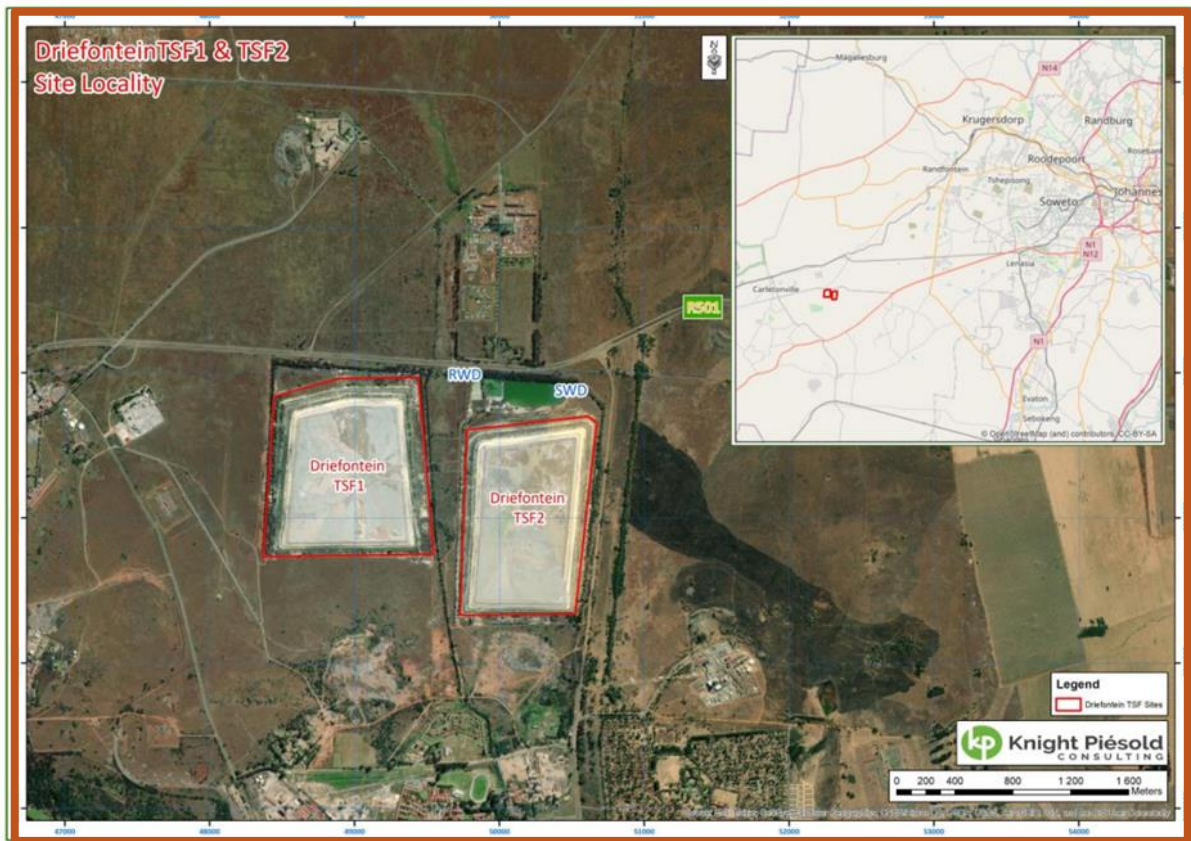


Figure 1: Layout of Driefontein TSF1 and TSF2

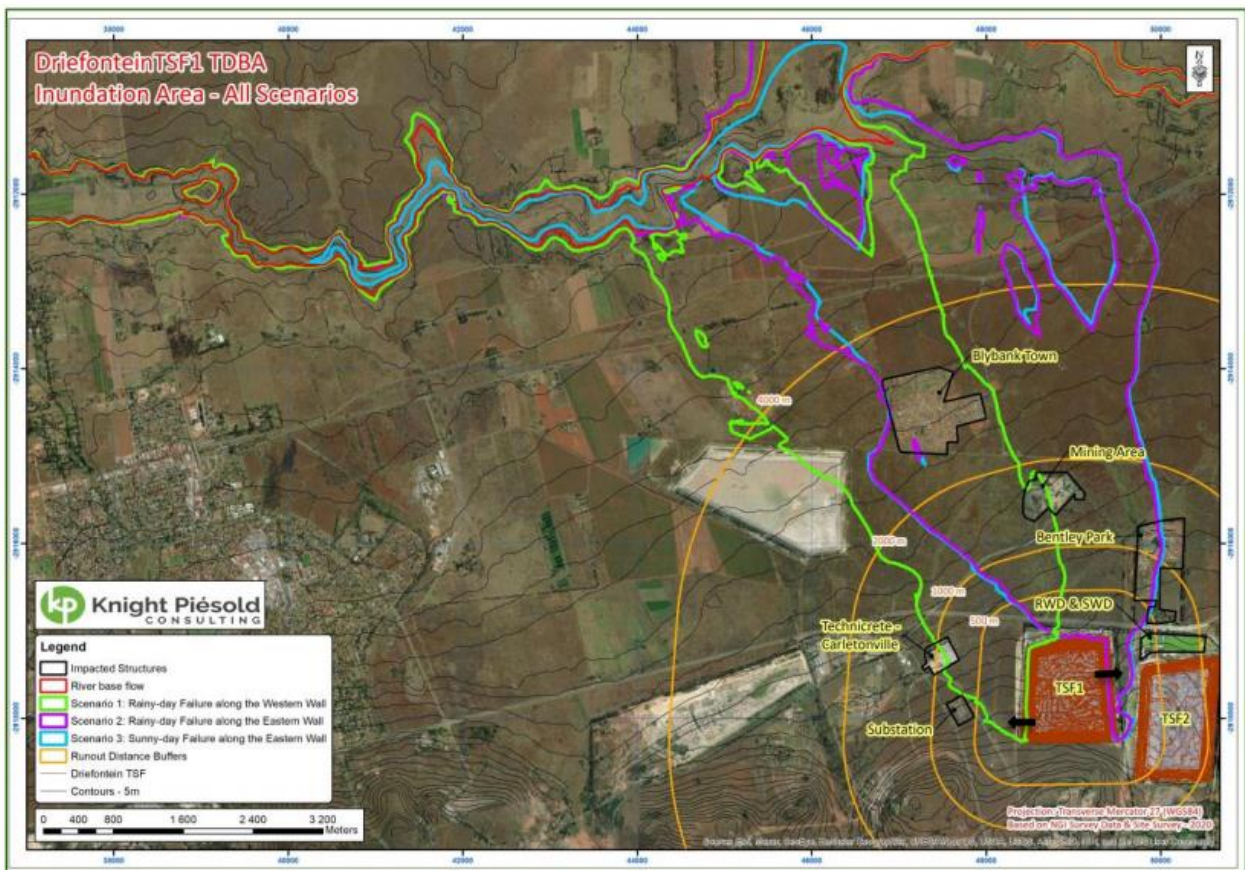


Figure 2: Consolidated view of all failure scenario inundation boundaries (TSF1)



Figure 3: Consolidated view of all failure scenario inundation boundaries (TSF2)



INNOVATION



COMMITMENT



ACCOUNTABILITY



RESPECT



ENABLING



SAFETY