

JUNE 2025

MARIKANA TAILINGS STORAGE FACILITY (TSF)

DETAILS OF TAILINGS STORAGE FACILITY

Tailings Storage Facility (TSF) Name	Marikana
Operation	Kroondal - K2 Concentrator
Operational Status	Active
Operating Segment	RSA - PGM
Location	Approximately 15 km outside the town of Rustenburg in the North-West Province - please refer to Figure 1
Latitude, Longitude (decimals)	-25.732519, 27.40939
Ore Source	Underground
Type of Storage Facility	Impoundment (upstream development)
Deposition Methodology	Spigot
Year of Commissioning	2002
Consequence Classification (GISTM, 2020)	Very High
Operating Contractor	EnviroServ Waste Management (Pty) Ltd
Engineer of Record (EoR)	Knight Piesold (Pty) Ltd (KP)
Current Maximum Height (m)	30
Final Maximum Height (m)	45
Maximum Storage Capacity (tons/month)	200 000
Total Volume Already Deposited (Mm³)	12,8
Life of TSF (year)	2037 @1,6m/yr



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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, incorporating piezocone probing and laboratory test work, was conducted in December 2023 and subsequently updated in October 2024 (KP reference: SAND301-00851/21 Rev 0, 24 March 2025)

The assessment confirmed that all Factors of Safety (FoS) for drained conditions exceed the recommended minimum thresholds. While the undrained peak FoS values across all sections are below 1.0. Discussions are ongoing with the Engineers of Record (EoR) to further evaluate and address this matter

Historically, seepage was first identified on the eastern part of the TSF in Q1 2021 which resulted in Phase 1 buttressing. Thereafter, seepage on the north-west & west flanks were observed in Q2 2021 which resulted in an extension of the existing buttress (Phase 2). During the 3rd quarter inspection in 2021, seepage was noted on the north-east and south-east corner of the TSF. Another buttress extension (Phase 3) was carried out and completed in March 2022.

Dam Breach Assessment

Assessment completed in 2022
(KP Reference: PR301-00851/05, Rev 0, 17 February 2023)

Area of Inundation

Has been identified by EoRs – please refer to Figures 2 and 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). An appointed external specialist is currently conducting vulnerability assessments for communities located within the Area of Inundation



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DOCUMENTATION:

Site Specific OMS Manual

Version 2022 available
Mandatory Code of Practice (MCOP) Reference No: SS-ZA-PGM's-MCOP-ENG-CON-0002 is in place (dated June 2024)

Design Basis Report (DBR)

Version 2022 available
(KP Reference: SAND301-00851/07 Rev 0, 27 February 2023)

Environmental Management System

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

The initial Environmental Management Programme (EMPr) is dated 2010. Numerous addendums have been submitted with the latest being in 2016.

Surveillance:

Surveillance Frequency

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

Surveillance Technology/System Deformation Monitoring

Quartex and Groundwork Geolytics
Interferometric Synthetic Aperture Radar (InSAR)

Phreatic Surface Levels & Pore Pressure Measurements

Standpipe piezometers
AquaSense Retrofit piezometers (IoT device)
Vibrating Wire Piezometers (VWPs)

RISK MANAGEMENT / EMERGENCY PREPAREDNESS:

Risk Assessment

Annual Risk Assessment (Failure Mode Effect Analysis) completed with no untoward risk identified

Risk Management

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

Site Specific Emergency Preparedness & Response Plans (EPRP)

Version 2024 available
Annual emergency mock drill for a catastrophic TSF failure – undertaken on 15 November 2024 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: 20353611-341349-2, April 2021)

Closure Costing

Adequate financial capacity in place
Financials prepared by Golder Associates
(Golder Reference: 21467925-349386-1, December 2021)

Asset Insurance Cover

In place – July 2024 to June 2025 (renewal process has commenced)

Independent Reviews:

Independent Tailings Review Board (ITRB)

5 June 2024 with no material concerns identified

Future ITRB Review

June 2027

Performance Reviews

Annual and quarterly reports and inspections completed by EoR
(KP reference: SAND301-00851/21 Rev 0, 24 March 2025)

Dam Safety Review (DSR)

Carried out by an independent third party in 2020. All recommendations at the time have been addressed in the last 3 years.
(KP Reference: RI301-00851/01 Rev B, August 2019)

Next review is currently underway



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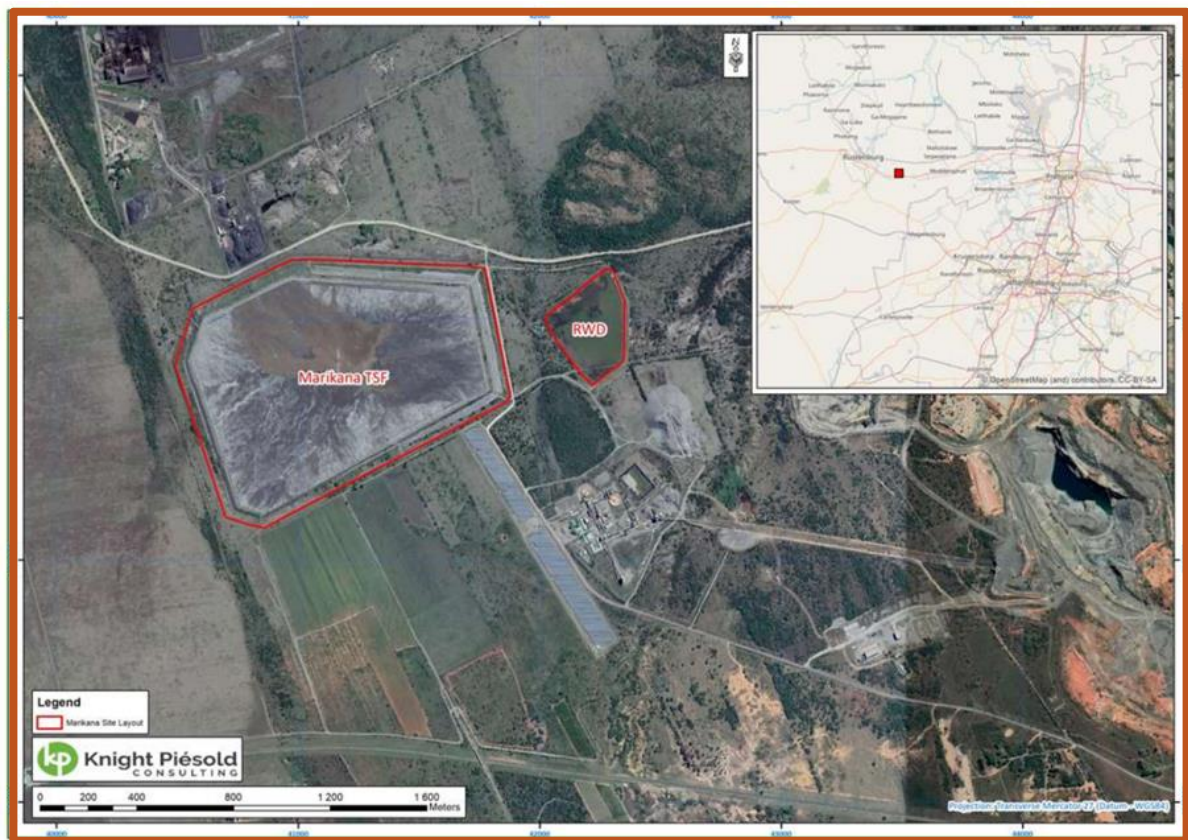


Figure 1: Layout of Marikana TSP



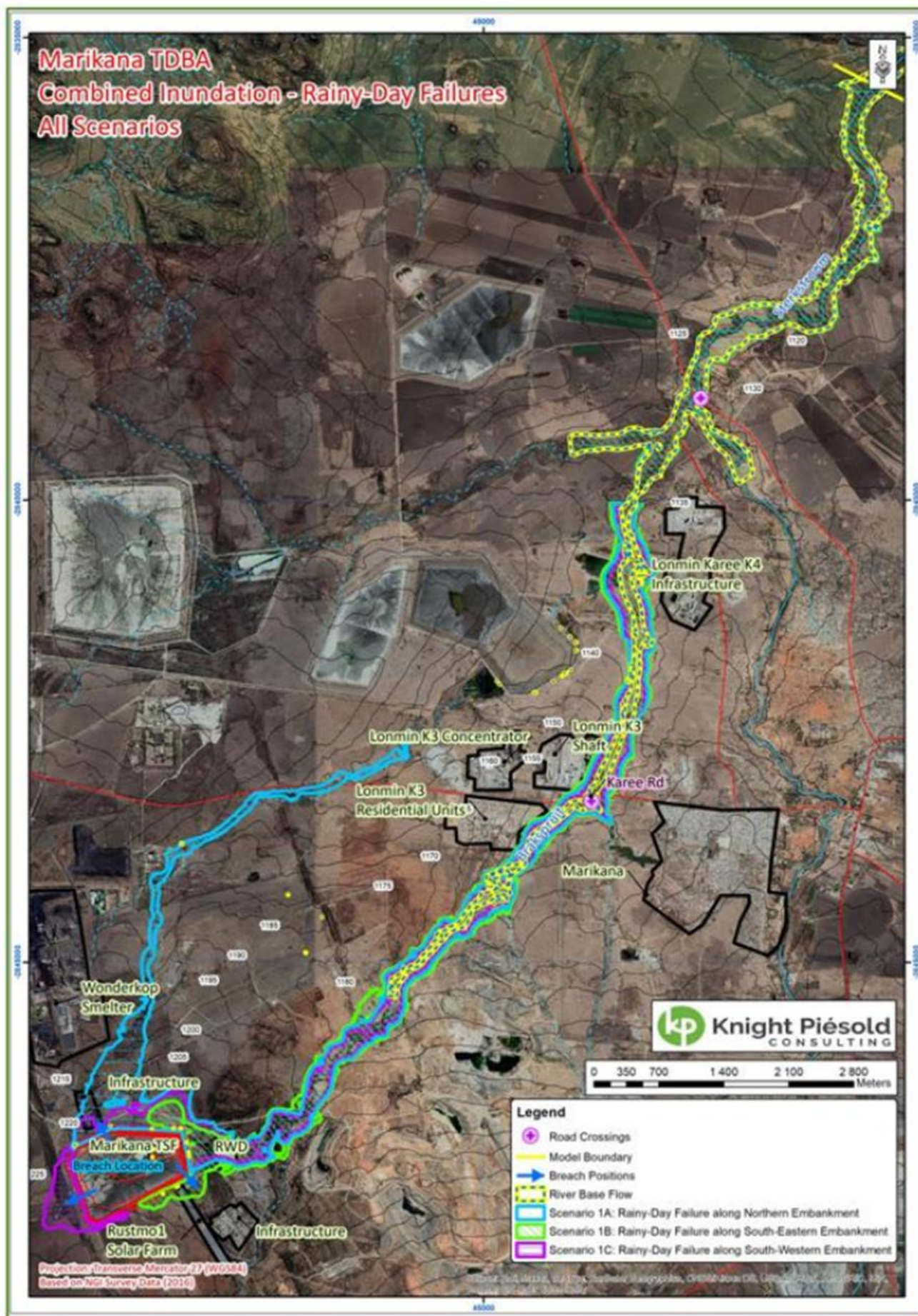


Figure 2: Consolidated view of the rainy-day failure scenario inundation boundaries

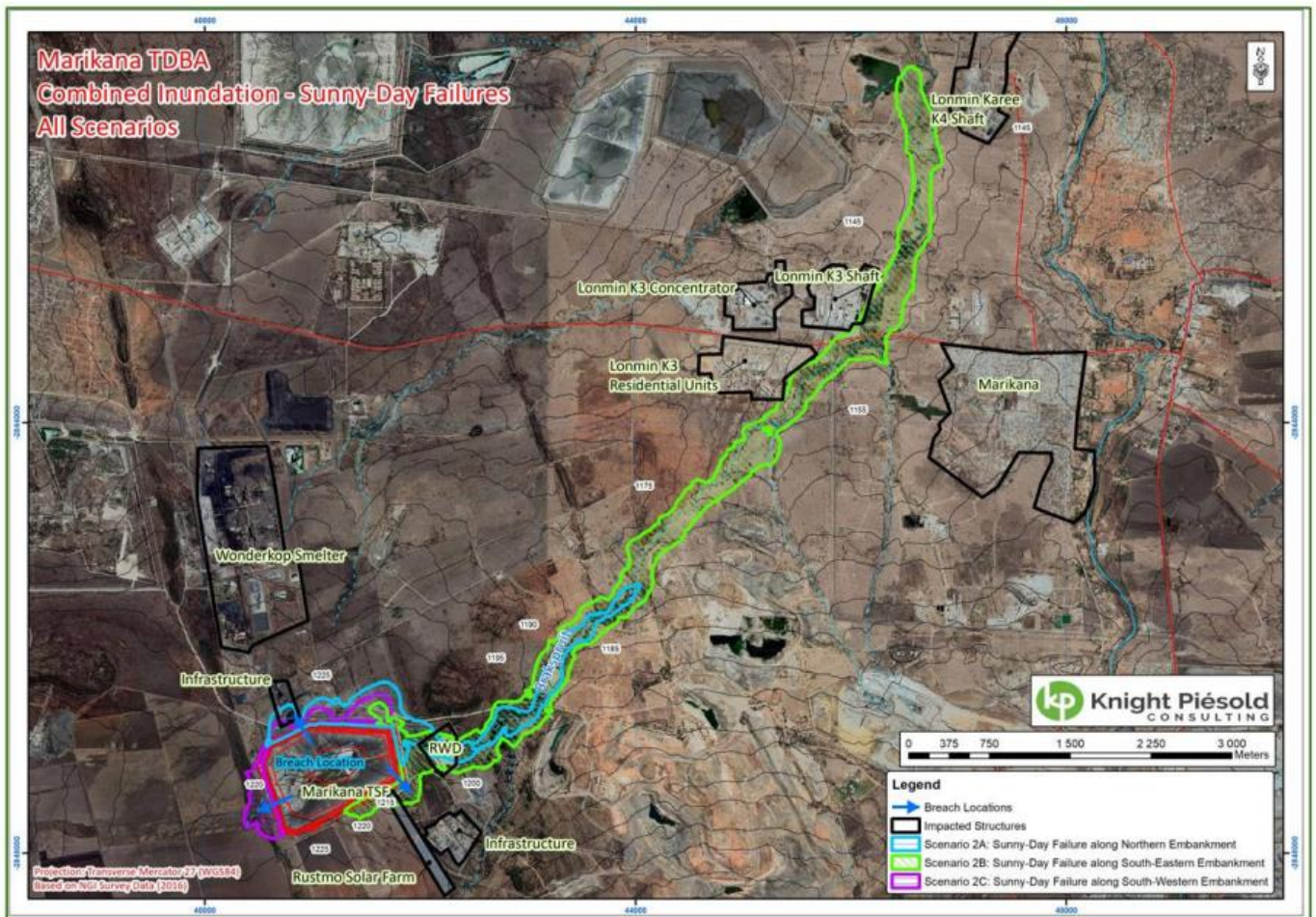


Figure 3: Consolidated view of the sunny-day failure scenario inundation boundaries

