

Geotechnical Memo

To:	Bongi Mabaso Mnyandu	Date:	05/12/2025
Company:	Coega Development Corporation (Pty) Ltd	From:	Lyzander Parfitt
Copy to:	Gugulethu Moyo, Lwando Zeka, Visa Barnes, Adah Daniel	Project #:	609782
Subject:	Mpozolo Clinic - Fieldwork and Desktop Study Geotechnical Memo		

1. Introduction

SRK Consulting (South Africa) (Pty) Ltd ('SRK') were appointed by the Coega Development Corporation (Pty) Ltd ('the Client') for geotechnical services for the proposed Good Hope, Ntshele and Mpozolo Clinics (Reference CDC-SCU-LET-743-24 dated 29 July 2024).

The Client requested that SRK Consulting (South Africa) (Pty) Ltd ('SRK') submit a revised cost proposal to conduct a geotechnical investigation for the proposed *Mpozolo Clinic*. The geotechnical investigation for the Ntshele Clinic has been completed and Good Hope Clinic will be conducted at a later stage.

This Memo presents the findings of the field investigation undertaken on 18 November 2025, lab results are currently outstanding.

2. Scope of Work

Excavate four test pits (TPs) using a tractor-loaded backhoe (TLB), to a target depth of 3.0 m or shallower refusal, evenly spread across the site to assess the excavatability of the subsurface soil and/or bedrock horizons, and construction material quality.

Complete Dynamic Cone Penetrometer (DCP) tests adjacent to the test pit positions to a planned depth of 3.0 m or shallower refusal.

Record a detailed description of the exposed ground profile in the test pits.

Submit representative disturbed soil samples to SRK-approved soil testing laboratories to determine classification and characterisation properties.

Compile an interpretive geotechnical report.

3. Site Location and Description

The site is located within Mpozolo, approximately 25 km south southeast of Elliotdale, Eastern Cape. The location is shown in Figure 3-1.



Figure 3-1: Site location

The site is located to the west of Mpozolo Primary School, within the fenced school property. The area within the confirmed site boundary is grass covered. The site was previously used as a sports field with football goal posts located on the eastern and western sides, respectively, but it is currently overgrown, Figure 3-2. The topography is generally flat and begins to slope gently to the northeast from the centre of the site at an approximate gradient of 1v 19h or 3°.



Figure 3-2: Site conditions, looking east from TP02

4. Nature of Investigation

The TP refusal depths are summarised in Table 4-1 with the layout of the positions shown in Figure 4-1. The samples submitted for laboratory testing are summarised in Table 4-2.

Table 4-1: TP excavation details

TP ID	Excavated Depth (m)	Refusal		General comments
		Yes/No	Description	
TP01	1.90	Yes	On very soft rock to rock mudstone	No groundwater intersected & excavation sidewalls were stable
TP02	1.00	Yes	On soft to medium hard rock sandstone	No groundwater intersected & excavation sidewalls were stable
TP03	1.00	Yes	On soft to medium hard rock sandstone	No groundwater intersected & excavation sidewalls were stable
TP04	0.80	Yes	On soft to medium hard rock sandstone	No groundwater intersected & excavation sidewalls were stable

Table 4-2: Sample submission

TP ID	Depth (m)	Sample ID	Sample Type	Test Requested
TP01	0.80 - 1.70m	TP01A	Disturbed (large)	FI, RI, MDD, CBR, BI
TP02	0.40 - 1.00m	TP02A	Disturbed (small)	FI, RI, MDD, CBR
TP03	0.40 - 0.7m	TP03A	Disturbed (large)	RI, MDD, CBR, BI

Notes:

FI – Foundation Indicator

RI – Road Indicator

MDD – Maximum Dry Density at Optimum Moisture Content

CBR – California Bearing Ratio (saturated)

BI – Basson Index

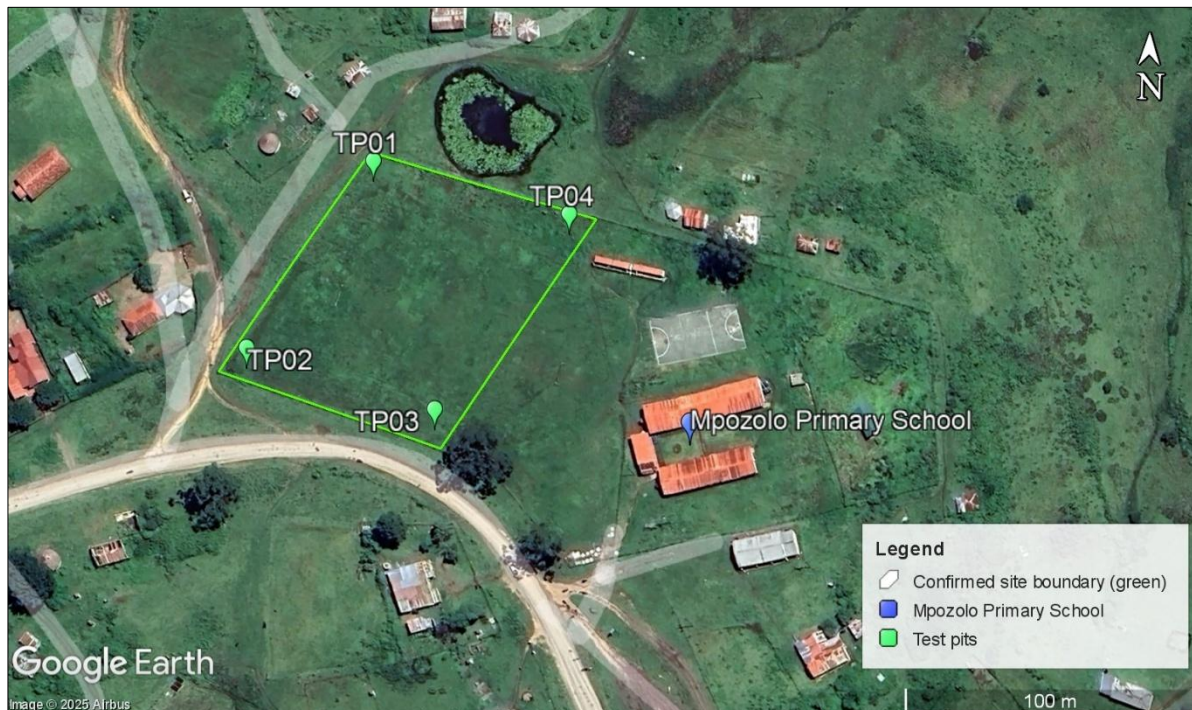


Figure 4-1: TP layout

5. Results and Discussion

5.1. Excavatability

The TPs were excavated using a TLB.

The excavatability of the TPs has been assessed according to the categories outlined in South African National Standard (SANS) 1200 D for restricted excavations, included below as Table 5-1.

The TLB was unable to achieve the planned 3.0 m excavation depth at all the TPs due to the presence of *soft rock to medium hard rock* mudstone and sandstone.

The soil horizons are classified as Soft excavation, the bedrock transitioning from Intermediate to Hard Rock excavation, other than at TP02 where Hard Rock excavation conditions were noted directly below the residual horizon within the sandstone bedrock.

Weighted percentages of SANS 1200 D excavation categories have been estimated for a 1 m (representing a foundation) and 3 m excavation (representing a deep underground utility) across the site (Table 5-2).

Table 5-1: SANS 1200 D excavation classification

Classification	Description
<u>Restricted excavations</u>	
Soft	Material which can be efficiently removed by a back-acting excavator of fly wheel power >0.10 kW for each mm of tined bucket width
Intermediate	Material which can be removed by a back-acting excavator of fly wheel power >0.10 kW for each mm of tined bucket width or with the use of pneumatic tools before removal by a machine capable of removing soft material
Hard rock	Material that cannot be removed without blasting or wedging and splitting
<u>Non-restricted excavations</u>	
Soft	Material which can be efficiently removed or loaded, without prior ripping, by any of the following plant:
	a bulldozer or a track-type front end loader having an approximate mass of 22 tonne and fly wheel power of 145 kW
	a tractor-scraper unit having an approximate mass of 28 tonne and fly wheel power of 245 kW pushed during loading by a bulldozer equivalent to that described above
Intermediate	Material which can be efficiently ripped by a bulldozer having an approximate mass of 35 tonne and a fly wheel power of 220 kW
Hard rock	Material that cannot be efficiently ripped by a bulldozer having an approximate mass of 35 tonne and a fly wheel power of 220 kW
Boulder Class A	Material containing more than 40% by volume of boulders of size between 0.03 m ³ and 20 m ³ in a matrix of soft material or smaller boulders
Boulder Class B	Material containing 40% or less by volume of boulders of size between 0.03 m ³ and 20 m ³ in a matrix of soft material or smaller boulders

Table 5-2: Weighted % of SANS 1200 D excavation categories for 1 m and 3 m depths

Planned excavation depth (m)	SANS 1200 D		
	Soft	Intermediate	Hard
1	83%	13%	4%
3	33%	6%	61%

5.2. Ground profile

5.2.1. Regional geology

The published geological map¹ of the area indicates that the site is underlain at depth by the Permian-aged Adelaide Subgroup, Beaufort Group of the Karoo Supergroup which conformably overlies the upper Ecca Group, Figure 5-1. The intrusive Jurassic-aged Karoo Dolerite Suite is prevalent in the region and occurs as an interconnected network of saucer-shaped sheets, dykes and sills. The Ecca Group rocks and intrusive dolerite were not intersected in the TPs.

The Adelaide Subgroup is grey and brownish red, mudstone-rich with subordinate sandstone.

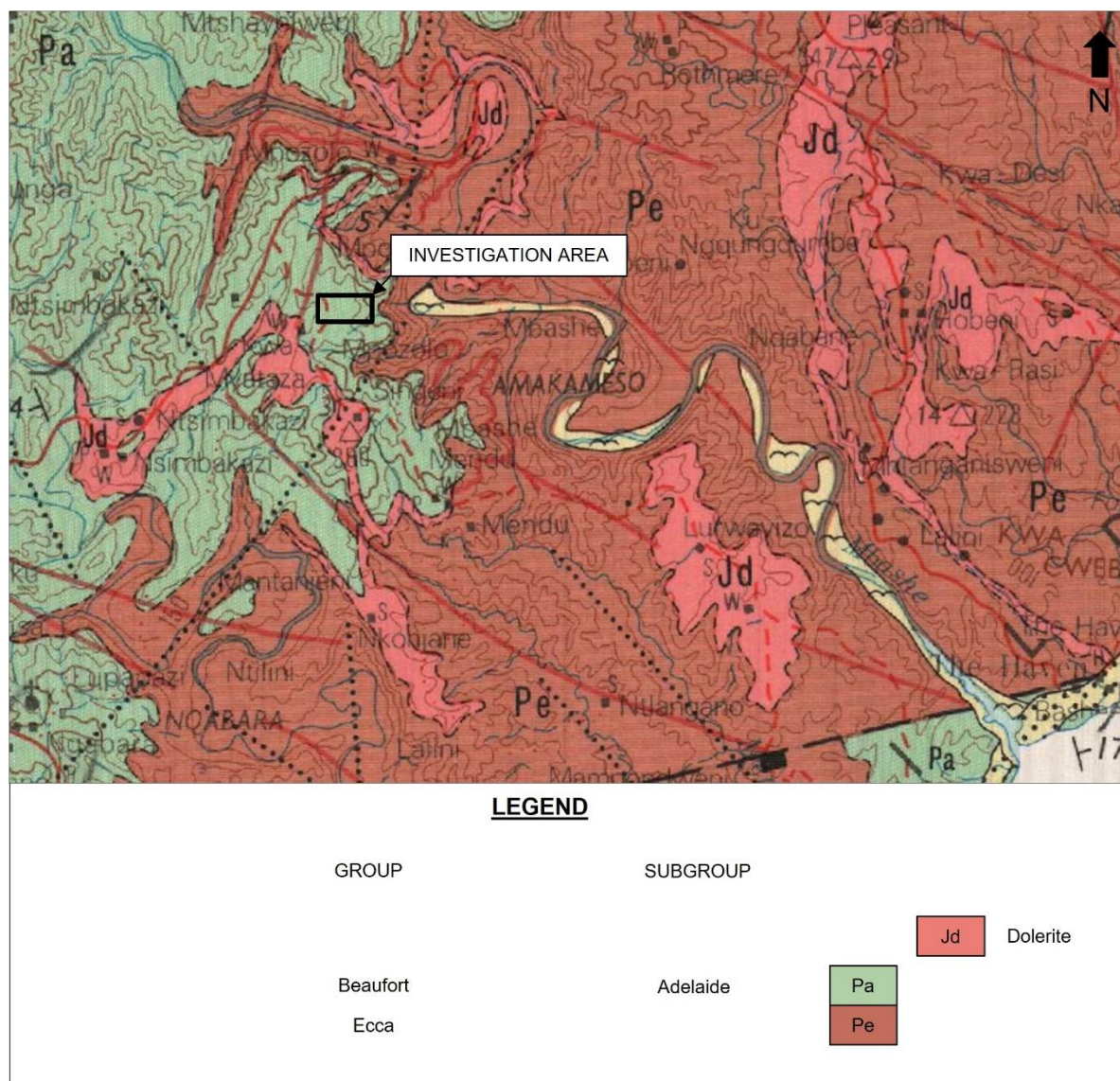


Figure 5-1: Geological Map

¹ Geological Survey, 1979, 1: 250 000 Geological Series, 3128 Umtata

5.2.2. Site

The detailed ground profile exposed in the TPs is summarised in Table 5-3. A typical ground profile is shown in Figure 5-2 with images showing excavated stockpiles of selected soil/rock layers included in Figure 5-3. The penetration rate of the DCP, used to derive the relative density of the soil layers, is shown in Figure 5-4.

In summary, the site is underlain by a sequence of soil horizons with improving, although variable, consistency/relative density overlying an assumed undulating bedrock contact, between 0.60 m and 1.70 m below surface. Soil consistency/relative density descriptions are provided in Table 5-4. The presence of gravel, cobbles and bedrock in the profile prevented DCP penetration to the target depth of 3.00 m. The ground profile intersected in TP01 is 'softer' compared to the others based on a deeper excavation depth and higher DCP penetration rate.

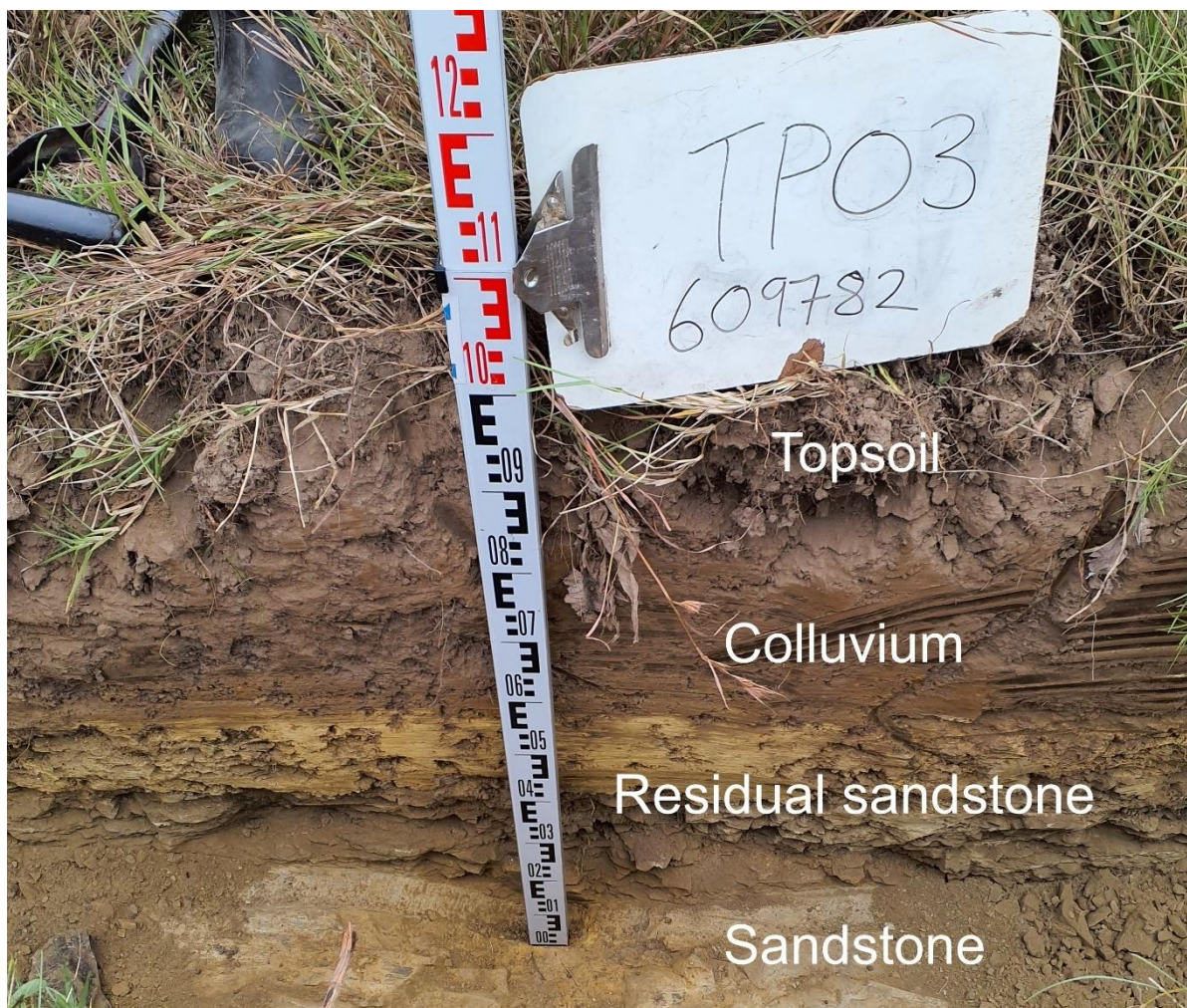


Figure 5-2: Cropped image of the sidewall in TP03 showing the typical ground profile

Table 5-3: Summarised ground profile

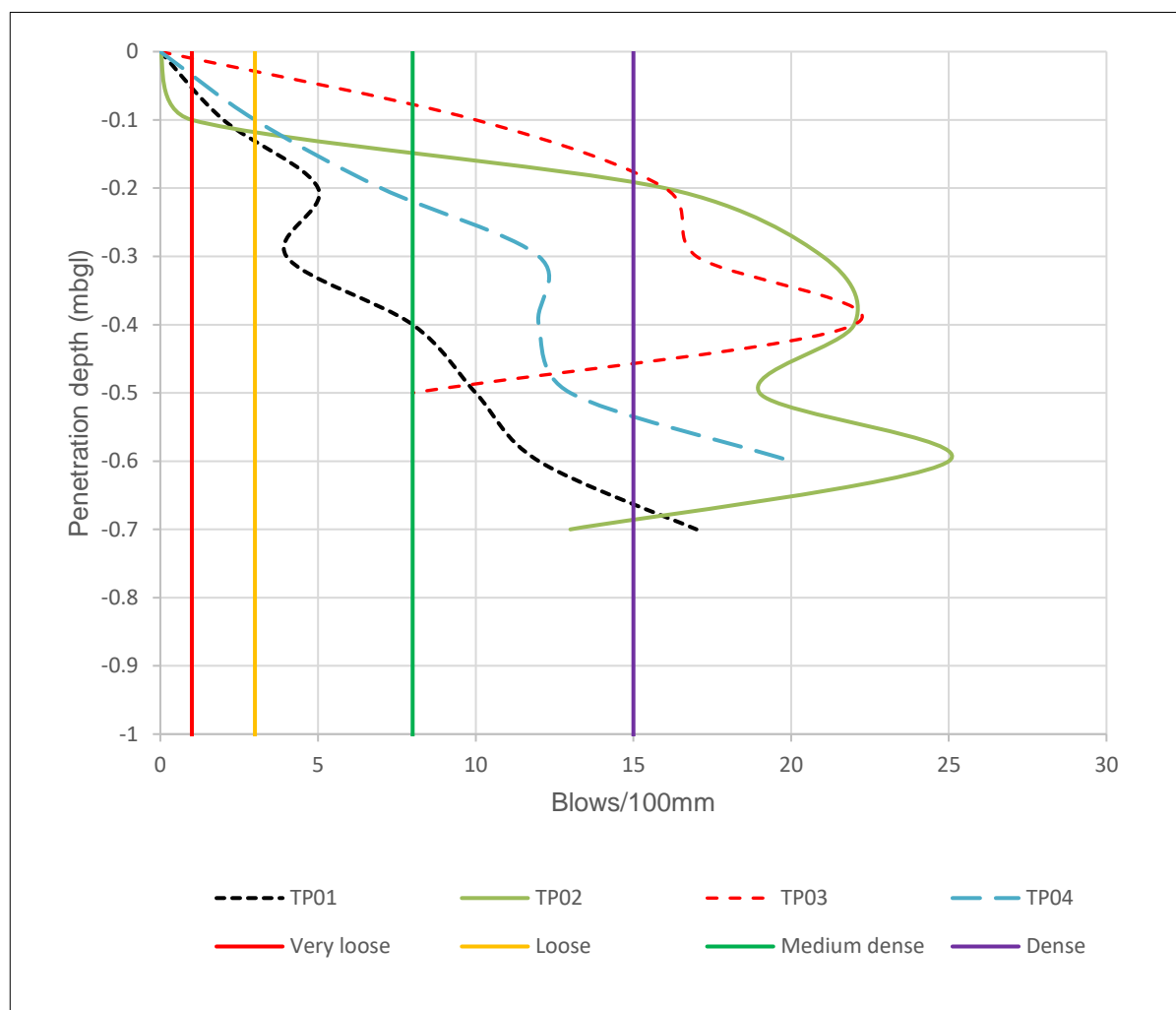
Layer ID	Description	Soil/rock type	Origin	Soil consistency/estimated rock hardness	Notes	Excavated depth to underside of layer or end of TP (m)			
						TP01	TP02	TP03	TP04
1	Dry to slightly moist, greyish brown, voided, with moderate to abundant fine roots, fine-grained	silty SAND	Topsoil	Medium dense to dense		0.40	0.40	0.20	0.30
2	Slightly moist, dark yellowish grey with blotches, voided, with trace fine roots	sandy CLAY	Colluvium	Very stiff to hard	DCP refusal at TP01	0.80			
3	Dry to slightly moist, light greyish brown, voided, with trace to moderate fine roots, fine-grained	silty SAND	Colluvium	Very dense				0.40	
4	Moist, dark greyish yellow with blotches, with moderate angular, gravel and cobble sized fragments of very soft to soft rock sandstone and mudstone, in fine-grained	clayey SAND	Residual Mudstone & Sandstone	Very dense		1.70			
5	Dry to slightly moist, light brownish yellow to yellowish grey with blotches and patches, subangular to angular, gravel, moderate cobble and trace boulder sized fragments of very soft to soft rock sandstone, in a fine-grained clayey or silty sand matrix	sandy GRAVEL	Residual Sandstone	Very dense	DCP refusal at TP02, TP03 & TP04		1.00	0.70	0.60
6	Dark yellowish brown with blotches, highly weathered, very fine grained, near horizontally intensely laminated, fractured, sandy	MUDSTONE	Adelaide Subgroup	Very soft rock to soft rock		1.90+			
7	Yellowish brown and speckled or blotched, highly to moderately weathered, fine grained, near horizontally thinly bedded, interbedded with trace mudstone, fractured	SANDSTONE	Adelaide Subgroup	Soft rock to medium hard rock			1.00+	1.00+	0.80+



Figure 5-3: Excavated stockpiles of Layer 2 (left), Layer 4 (left centre), Layer 5 (centre), Layer 6 (right centre) and Layer 7 (right)

Table 5-4: DCP soil consistency descriptions for granular and cohesive soils

Material	Blows/100mm	Description
Sand	0-1	Very loose
	1-3	Loose
	3-8	Medium dense
	8-15	Dense
	>15	Very dense
Clay	0-1	Very soft
	1-2	Soft
	2-3	Firm
	3-7	Stiff
	7-12	Very Stiff
	>12	Hard

**Figure 5-4: DCP penetration rate**

6. Conclusions


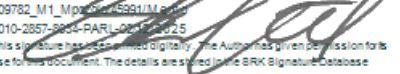
The final interpretive report will be completed when all lab results have been received and checked, estimated to be in January 2026.

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd

Prepared by

SRK Consulting - Certified Electronic Signature

 
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