MINING RIGHT AREA

Legend
- Mogalakwena North
- Mogalakwena Central
- Mogalakwena South
- Zwartfontein South
- Sandsloot Pit
- Tweefontein North
- Tweefontein Hill
- Platreef Outcrop
- Platreef mined out
- Farm boundary
- Mining right boundary

137km²
Size of 1,000 soccer fields
UNDERGROUND OPERATIONS
Drilling, blasting and hauling of ore from below the surface

LEACHING
Base metal-rich solids are leached in high-pressure autoclaves and contacted with MCP leach solution to yield separate nickel and copper streams

PURIFICATION
The separate nickel and copper streams are purified. During this process cobalt sulfate is recovered

ELECTRO-WINNING
Nickel and copper metal cathodes are produced by passing electrical current through the separate purified streams

CRYSTALLISATION
Excess sulfur in solution is neutralised with sodium hydroxide and crystallised to form a sodium sulfate product.

OPEN PIT
The open pit enables shallow ore bodies to be accessed

CRUSHING AND MILLING
Ore is reduced in size with the aid of crushing and milling. Water is added to produce a pumpable slurry

PGM REFINING
Final concentrate is dissolved using hydrochloric acid and chlorine gas. PGMs are sequentially separated and purified to yield platinum, palladium, iridium, rhodium, ruthenium and gold. Osmium is precipitated as a salt

MAGNETIC CONCENTRATION PLANT (MCP)
Crushed converter matte is milled and the PGM fraction is separated magnetically. This is pressure leached to yield a solid final concentrate that is sent to PMR. Base metal-rich non-magnetic solids and leach solution are processed further in the base metal refinery

FLOTATION
The separation of the valuable content from the ore takes place in flotation cells where reagents are added to an aerated slurry to produce high-grade PGM-bearing concentrate

Tailings storage facility (TSF)
Tailings stored on TSF, which is rehabilitated on closure

SMELTING
Use of electric furnaces to smelt concentrate to produce a sulfur-rich matte with gangue impurities removed as slag

SLAG CLEANING
Converter slag is reduced in an electric furnace to recover PGMs and base metals for recycling back to the converter

CONVERTING
Oxygen-enriched air is blown through a top-submerged lance converter to oxidise sulfur and iron contained in furnace matte to SO2 gas and slag respectively. The resulting converter matte is slow-cooled to concentrate PGMs into a metallic fraction

ACID PLANT
The SO2 gas is converted to SO3 by passing it over catalytic beds and the subsequent addition of water produces 98% sulfuric acid which is sold to fertiliser manufacturers

BASE METALS
CONCENTRATION
Concentration of base metals and copper in converter matte is achieved in a series of countercurrent countercrossflow stages

BASE METALS
REFINING
Concentrate is smelted and refined to produce base metal products

WASTE
ROCK DUMPS
People
Legend
ENERGY
WATER
ROCK MINED
ROCK MINED
49,000 Employees
28,311 Megalitres
106,312 Mt
9,337 hectares
24,942 Terajoules
Sulphur Dioxide
Carbon Emissions
106,312 Mt
9,337 hectares
24,942 Terajoules
Sulphur Dioxide
Carbon Emissions
34,000 Mtonnes
7,362 Mtonnes
10,250 Mtonnes
7,825 Mtonnes
9,020 Mtonnes
8,375 Mtonnes
10,000 Mtonnes
7,500 Mtonnes
6,250 Mtonnes
5,000 Mtonnes
3,750 Mtonnes
2,500 Mtonnes
1,250 Mtonnes
0

GEOLOGICAL SETTING LOCATION AND FORM

• Mogalakwena is situated on the 120km strike of the Northern Limb of the Bushveld Complex

• The main mineralised horizon is the 30-100m thick Platreef

• Platreef dips at 40° towards the west

Mogalakwena means ‘place of the crocodile’
MOGALAKWENA MINE AREA- INSIDE RED LINE

Every minute
142 tonnes of rock mined
21 tonnes of rock milled
1.4 ounces of PGMs produced

The Boikgantsho Project falls outside the demarcated area

NORTH PIT
ROPE SHOVEL IN NORTH PIT

The WK-55 weighs in 1800 tonnes
Height of 21.7m at sheave wheel

Theoretical productivity: 6600m³/h – same as excavating half a soccer field down to 1.5m in an hour
Bucket size: 55m³ able to pick up equivalent of 5 male elephants each load

MOGALAKWENA SOUTH CONCENTRATOR

View looking south-west
**MOGALAKWENA NORTH CONCENTRATOR**

- Production to rise to 360,000 oz and with further capital investment to 420,000 oz in 2018

**POLOKWANE SMELTER**

- Smelter can treat 650,000 tonnes of concentrate per year
- Designed to treat high chrome-bearing concentrate from UG2 reef
# IMPORTANT CONTACT NUMBERS

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