PAN AFRICAN RESOURCES PLC

BARBERTON GOLD MINES

OPERATIONS AT SA'S OLDEST GOLD MINE

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OVERVIEW OF PRESENTATION

- Overview and history of Barberton Mines
- Current mining methods
- Further exploration potential

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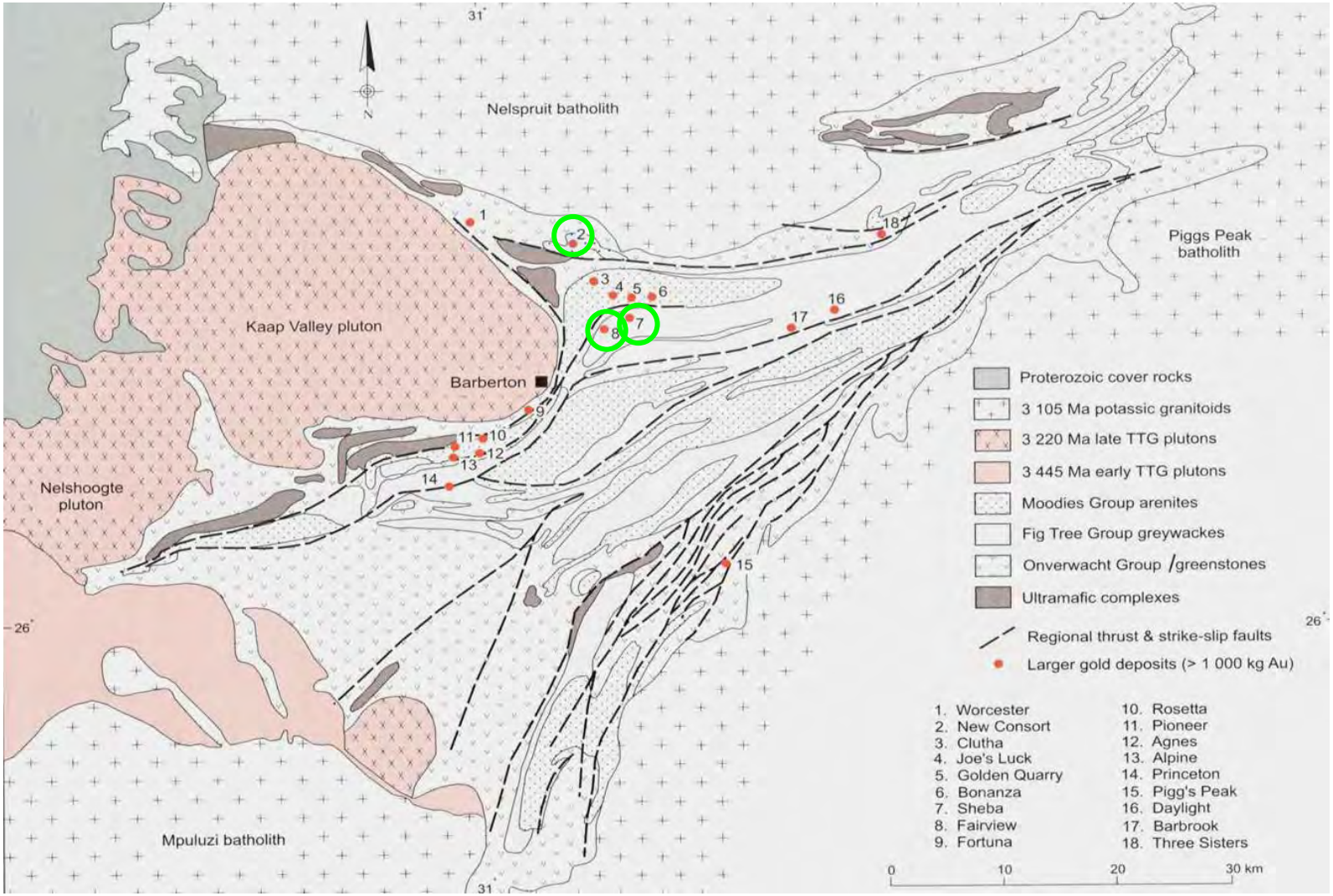
OVERVIEW OF BARBERTON GOLD MINES

OVERVIEW OF BARBERTON MINES ('BML')

- Mining started in 1886 at Sheba Mines – oldest operating mine
- Currently BML have three operations i.e. Sheba, New Consort and Fairview
- BML treat about 24 000 ore tons per month at about 11g/t
- BML also have a Tailings Retreatment Plant (90,000t/m)
- Combined gold production per month is 290kg
- Each operation have a treatment plant with a centralised BIOX® plant
- BML is the biggest employer in the Barberton area

LOCALITY OF BARBERTON MINES



START OF THE GOLDEN QUARRY - SHEBA

This is where it all started. After this discovery a company was floated and the first shares were sold at £1 and it increased to £120

EDWIN BRAY ADIT AT SHEBA MINE

Edwin Bray Adit when it started – Oldest photo of this adit available

EDWIN BRAY ADIT IN PROGRESS

EDWIN BRAY ADIT IN PRODUCTION

EDWIN BRAY ADIT STILL IN USE

EDWIN BRAY ADIT STILL IN USE

Edwin Bray Adit still in use - 127 years later

SHEBA MINE - ZK VERTICAL SHAFT

Sheba Mine – SK vertical shaft – Today (110 years old)

FAIRVIEW MINE STAMP MILL

Very early days of Fairview, on top of the mountain

FAIRVIEW – MAIN ADIT

Fairview Main Adit being used today

NEW CONSORT – 1 LEVEL

Early days at New Consort No1 level entrance

NEW CONSORT - MAIN ADIT

New Consort Main Adit today ± 60 years old

BIOX® PLANT

BIOX® Plant

BARBERTON TAILINGS RETREATMENT PLANT – 'BTRP'

BTRP

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CURRENT MINING METHODS

CURRENT MINING METHODS

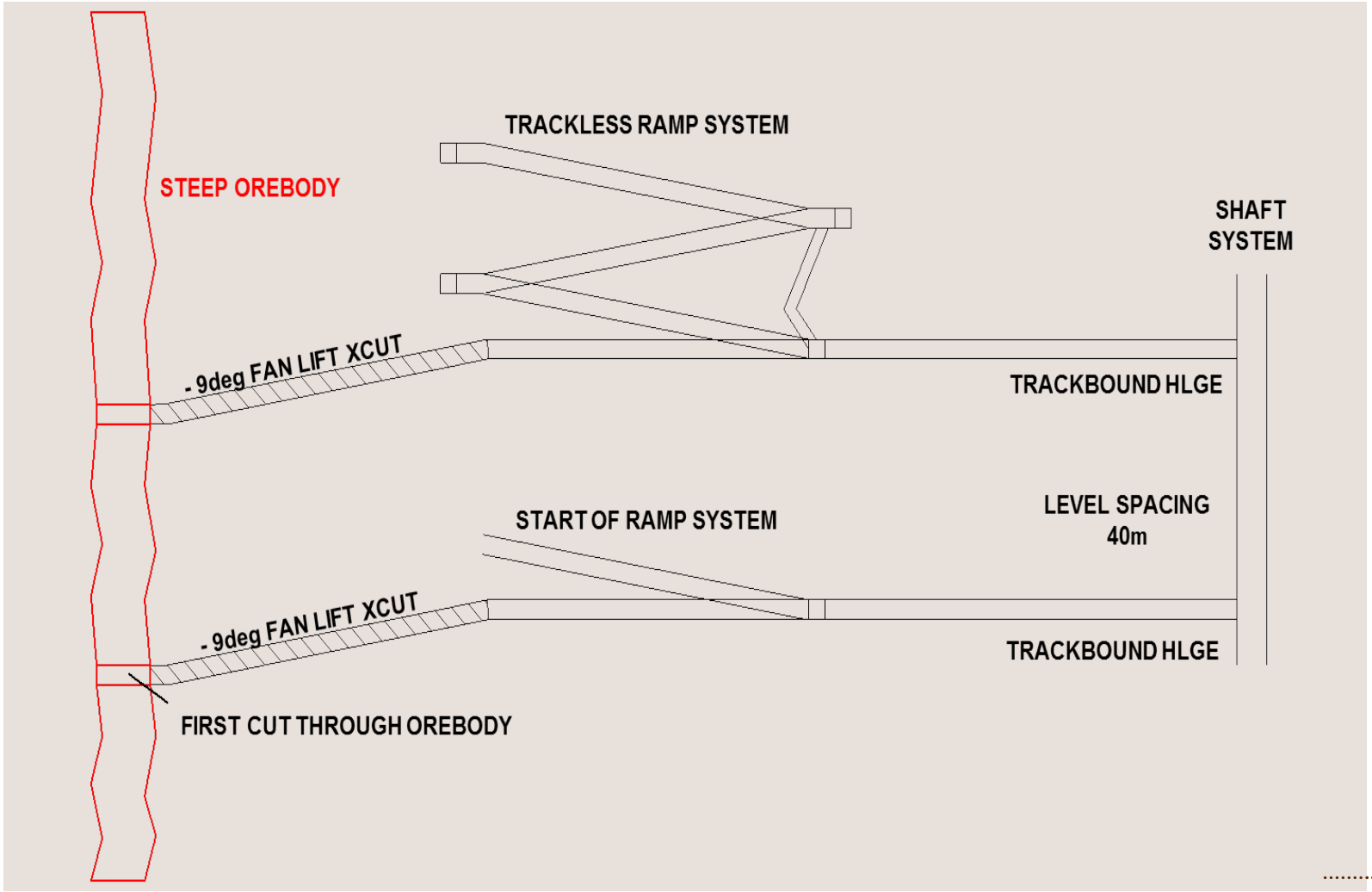
- **Mechanised Mining** – Cut and fill (90%)
  - ❖Breast & Updip
- **Open Stoping** – Conventional Mining (10%)
- **Shrinkage Mining** (0%)

CURRENT MINING METHOD

- **Mechanised Mining** – Cut and fill (90%)
  - ❖ Waste from your infrastructure development is hauled back into stope for fill (Ramp system and Access cross cut which is then fan lifted)
  - ❖ 55% of reef tons removed equates to waste tonnage requirement for waste fill (Development meters required)
  - ❖ Mining sequence
    - o Blasting stope face and support
    - o Loading reef
    - o Waste filling
    - o Compacting
    - o Cement capping

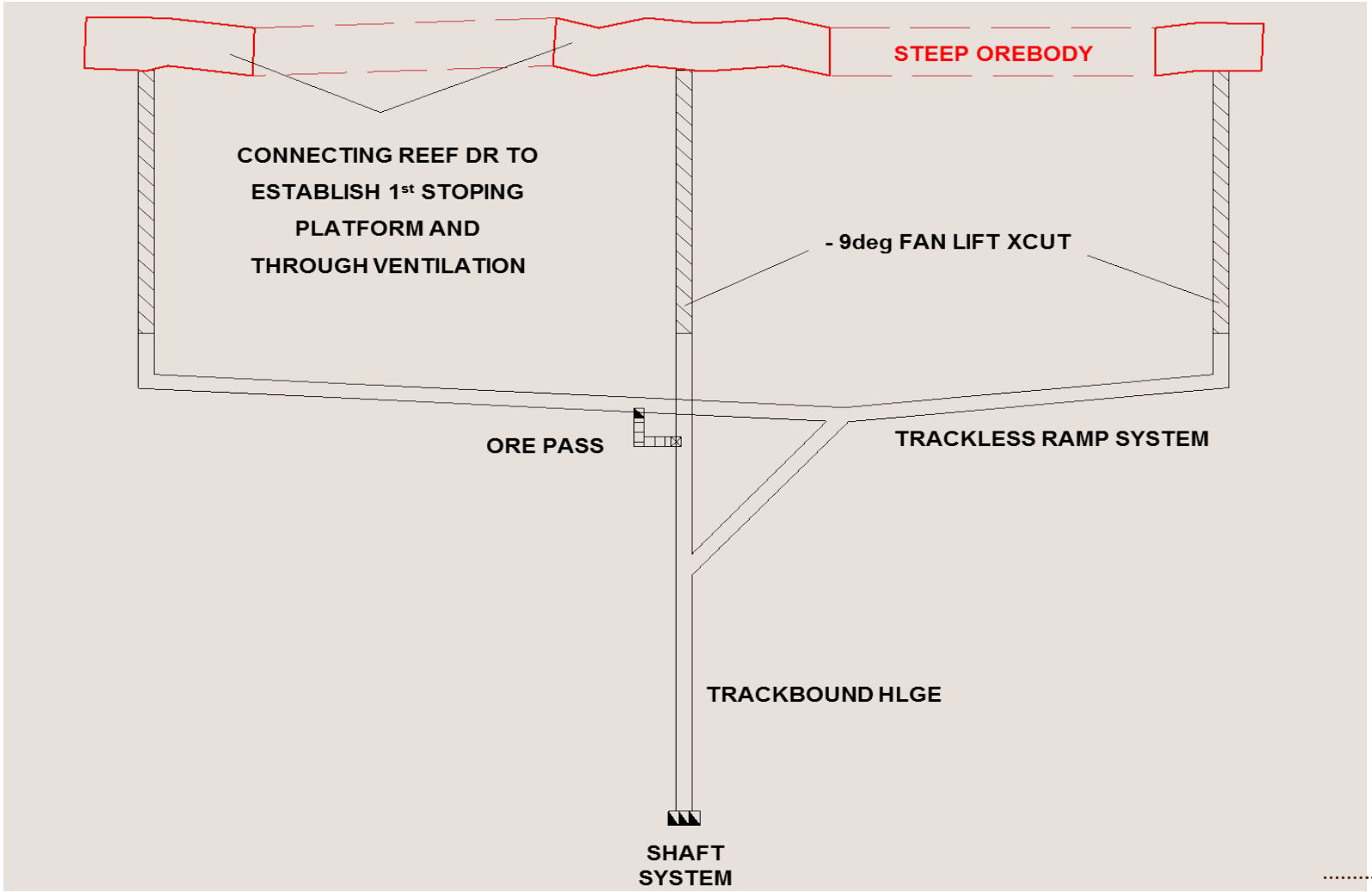
CURRENT MINING METHOD

Simplified section view of stoping/mining layout



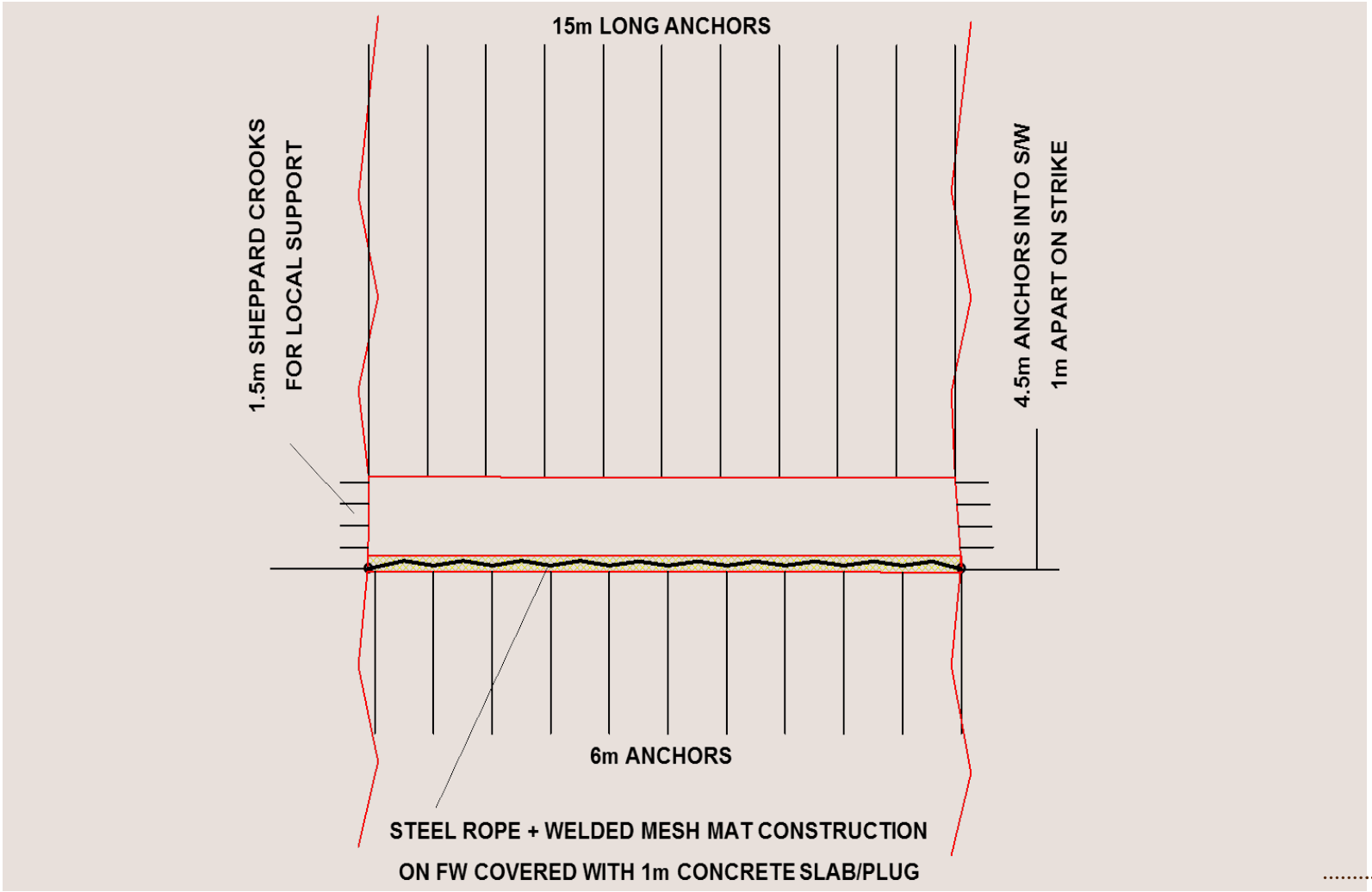
CURRENT MINING METHOD

Simplified plan view of stoping/mining layout



CURRENT MINING METHOD

Close up section of floor support in 1st cut

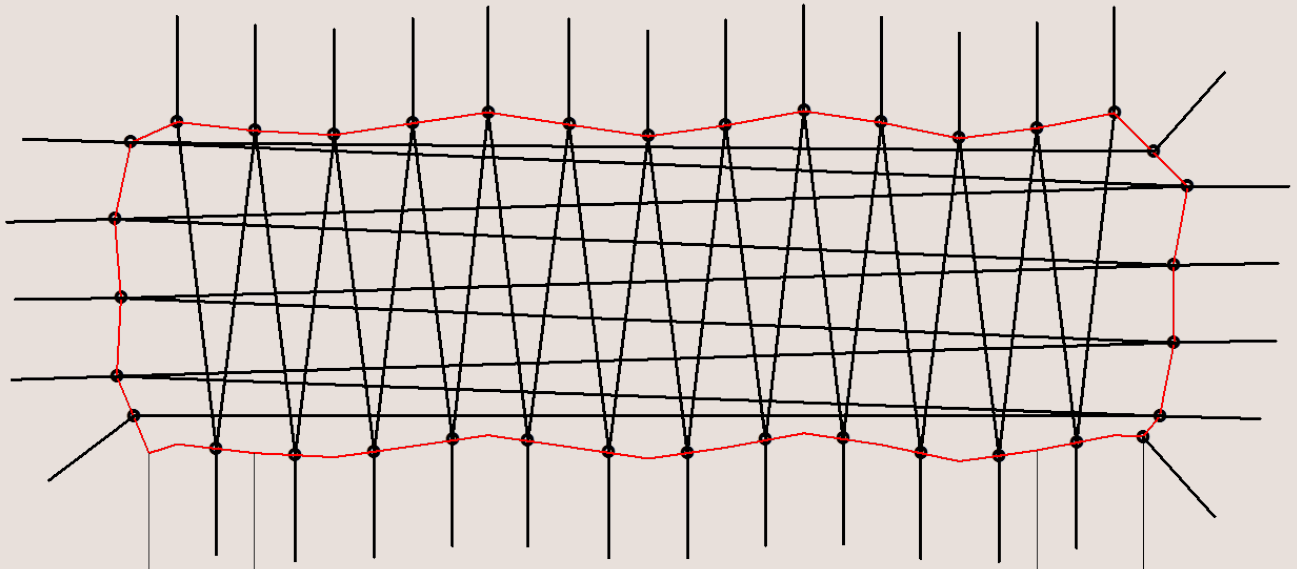


CURRENT MINING METHOD

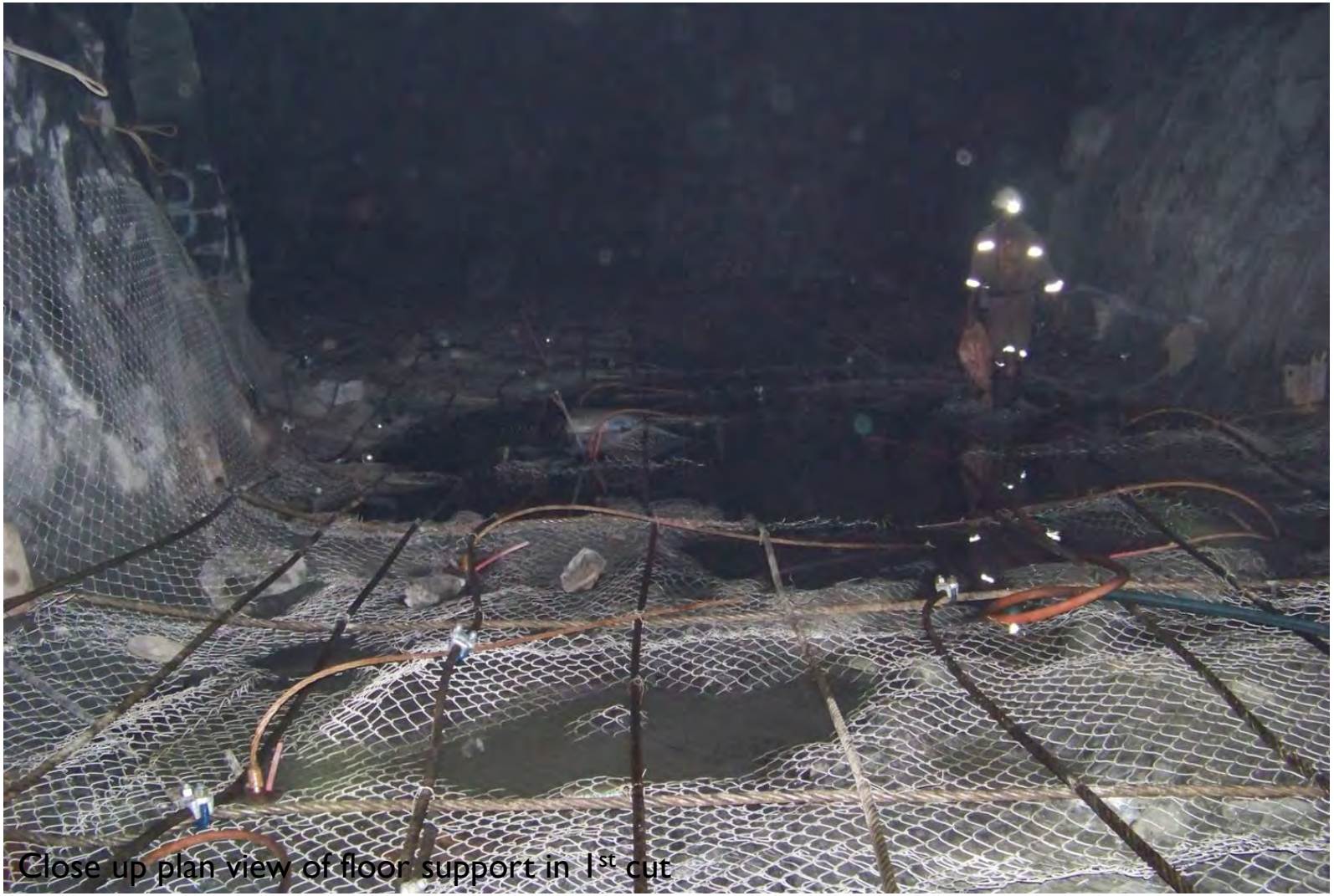
Close up section of floor support in 1st cut

CURRENT MINING METHOD

Close up plan view of floor support in 1st cut



CURRENT MINING METHOD



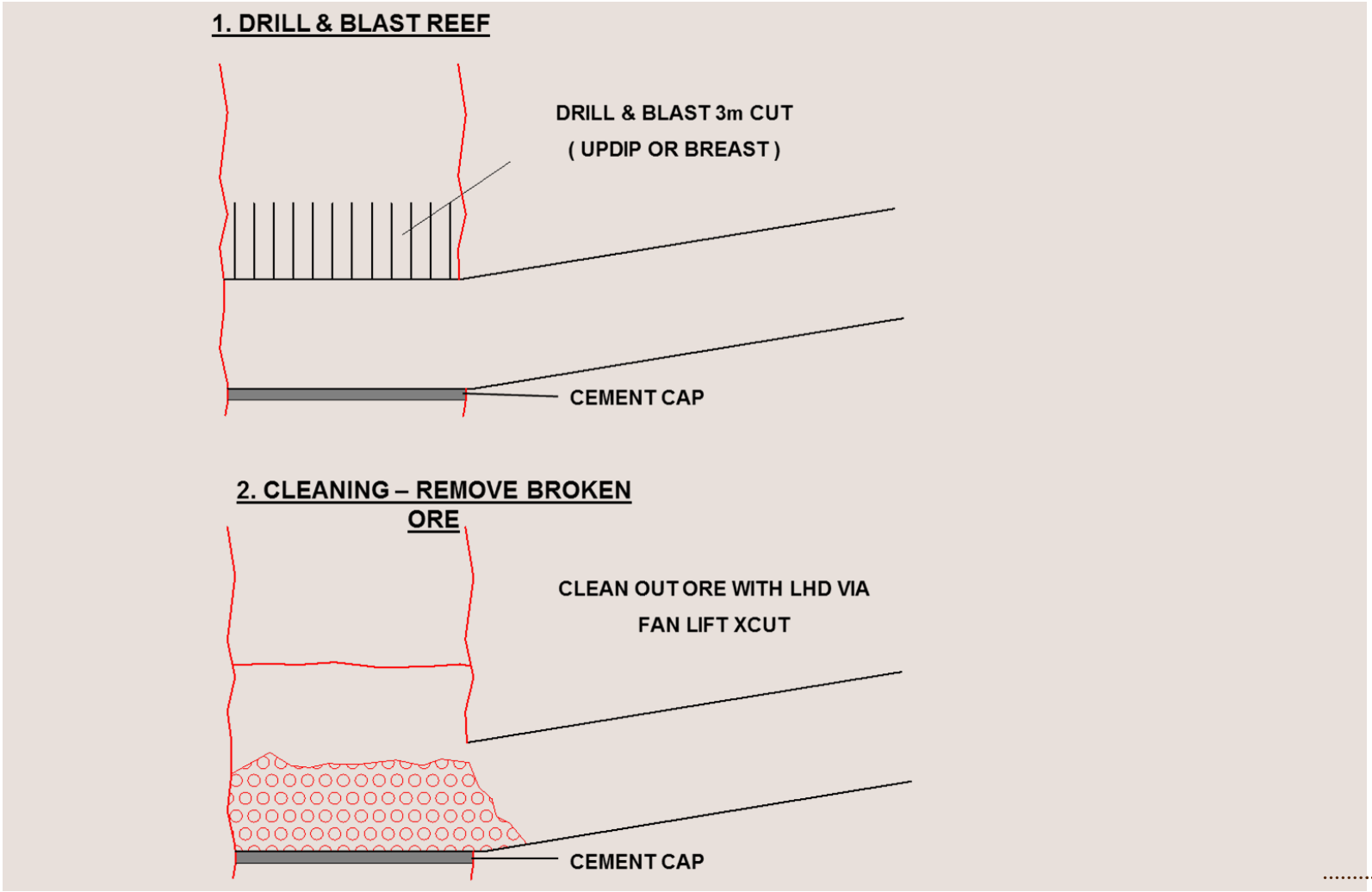
Close up plan view of floor support in 1st cut

CURRENT MINING METHOD

Close up plan view of floor support in 1st cut

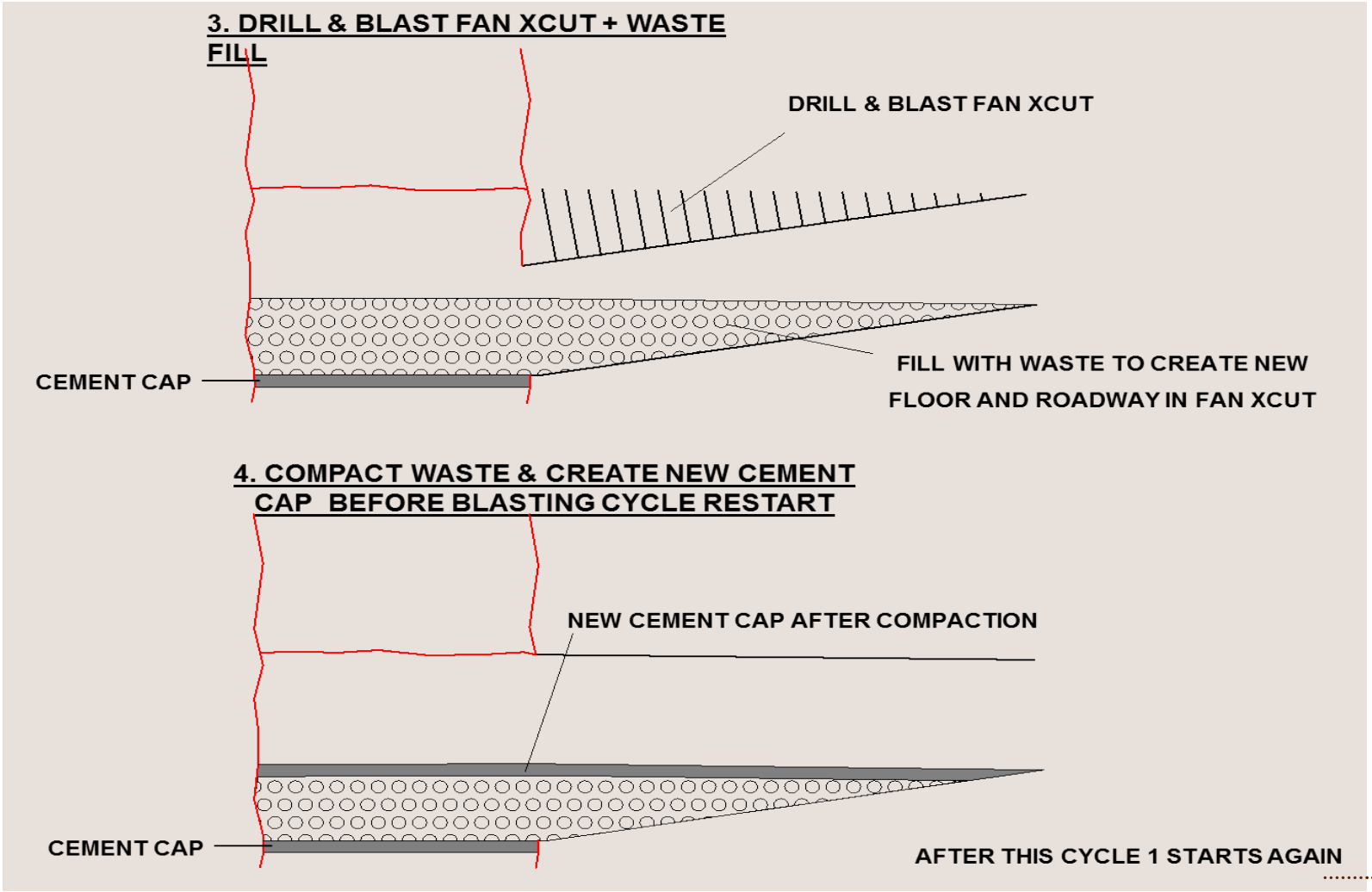
CURRENT MINING METHOD

Stoping cycles



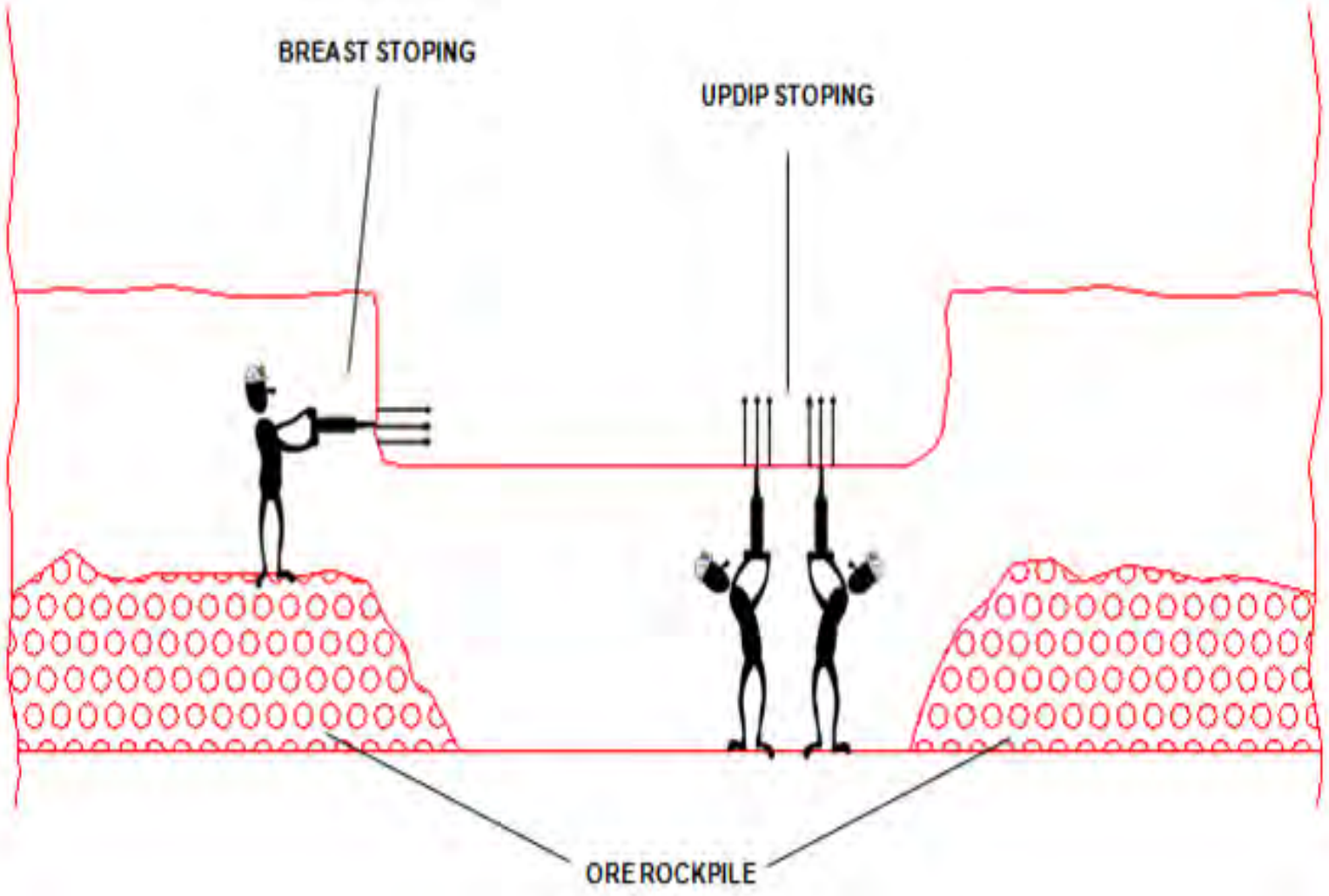
CURRENT MINING METHOD

Stoping cycles



CURRENT MINING METHOD

Section along strike of stope showing Breast mining & Updip mining



FALL OF GROUND MEASURES

- **Mechanised Mining** – Cut and fill (90%)
  - Because the back areas are filled with waste the overall stability of the stopes are good
  - At Fairview we are mining at about 1800m below surface and have not seen any seismic related activities
  - Only the current stope face area is exposed – reducing FOG risk
  - No back areas. This also helps with ventilation conditions and reduces fire risk
  - Both sidewalls are supported with sheppard crook roofbolts
  - In stopes wider than 4m, the stope face (hanging wall) are supported with the 40t, 15m long pre-stressed anchors

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MRC ORE BODY AND EXPLORATION POTENTIAL

BARBERTON MINES - FAIRVIEW

- The MRC is the second richest orebody in the world
- Current life of orebody is 26 years, which greatly exceeds the BML life of mine
- There is a realistic potential for MRC to continue at depth

BARBERTON MINES - FAIRVIEW

The top 10 highest grade underground gold operations

Mine	Country	Major Owner	Au grade, g/t	Ore Reserves,000' tonnes*	Contained Au, 000'ozt
Fire Creek	United States	Klondex Mines	**44.1**	170	172
Macassa (South Mine)	Canada	Kirkland Lake Gold	**22.2**	1330	950
Kedrovka	Russia	Zapadnaya Gold	**22**	380	269
Turquoise Ridge	United States	Barrick Gold	**16.9**	10932	5943
Toguraci	Indonesia	Newcrest Mining	**16**	1000	514
Orcopampa	Peru	Buenaventura	**15.8**	630	321
Dvoinoye	Russia	Kinross Gold	**15**	2137	1028
Pinson	United States	Atna Resources	**13.8**	353	157
Midas	United States	Klondex Mines	**12.9**	220	92
Pimenton	Chile	Cerro Grande	**11.1**	138	49

*Ore reserves are Proven + Probable, except Kedrovka, where A + B categories calculated.

Data retrieved from the IntelligenceMine database - Published in MINING.COM on 16 July 2015

BARBERTON MINES - FAIRVIEW

The top 10 highest grade underground gold operations (What the table should look like in reality)

Mine	Country	Major Owner	Au grade, g/t	Ore Reserves,000' tonnes*	Contained Au, 000'ozt
Fire Creek	United States	Klondex Mines	44.1	170	172
MRC	**South Africa**	**Pan African Resources**	**32.0**	**848**	**871** ←
Macassa (South Mine)	Canada	Kirkland Lake Gold	22.2	1330	950
Kedrovka	Russia	Zapadnaya Gold	22	380	269
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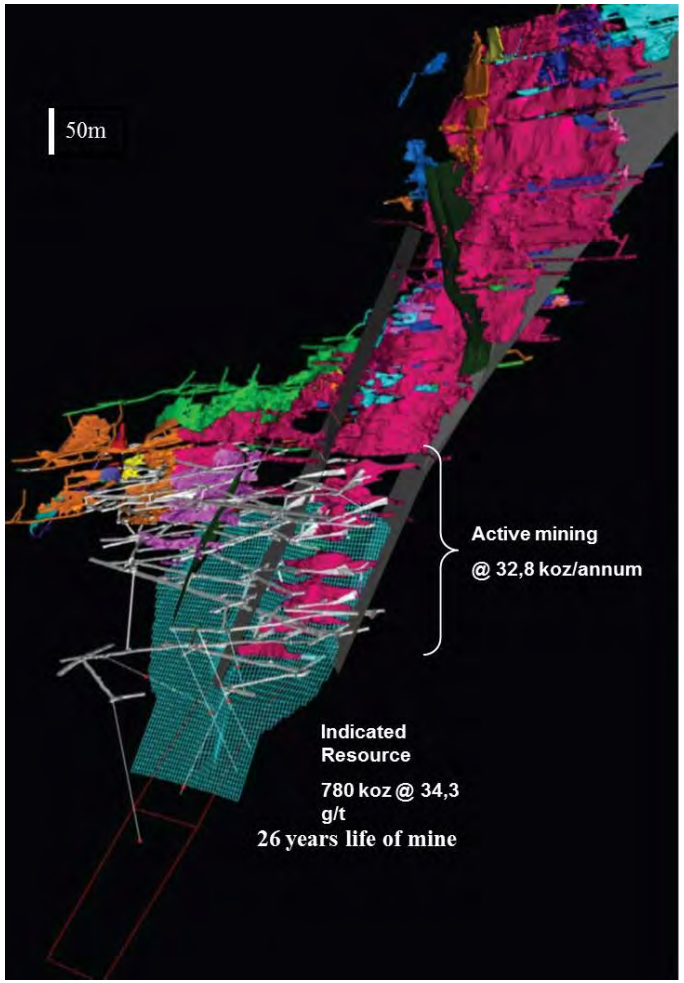
BARBERTON MINES - FAIRVIEW

MRC Orebody



BARBERTON MINES - FAIRVIEW

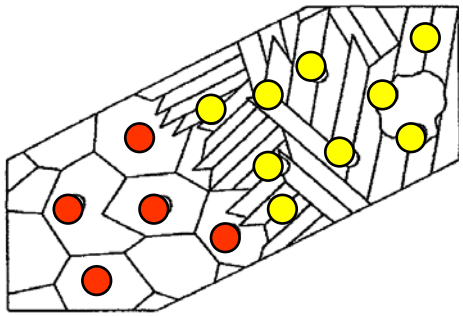
MRC Orebody

Exploration Potential at BML

- Unique geology
- Amira Project Study by University of Western Australia
- Current UJ study

Metamorphic devolatilisation

- Transition from greenschist to amphibolite facies triggers process of devolatilisation
- H_2O-CO_2-H_2S fluids are released from mineral crystal structures and these fluids can transport gold to favourable depositional sites
- Adequate amounts of gold can be dissolve if enough cubic kilometres of appropriate rocks undergo metamorphism



Non-leachable site

Leachable site

Metamorphic devolatilisation

- At higher pressure (and T) gold solubility is higher
- When pressure is released, H_2S (the ligand that makes gold soluble) is driven off, resulting in gold precipitation
- Pressure shadows, which can form during faulting and folding, create spaces effectively sucking the fluid into these spaces and releasing pressure, resulting in gold precipitation

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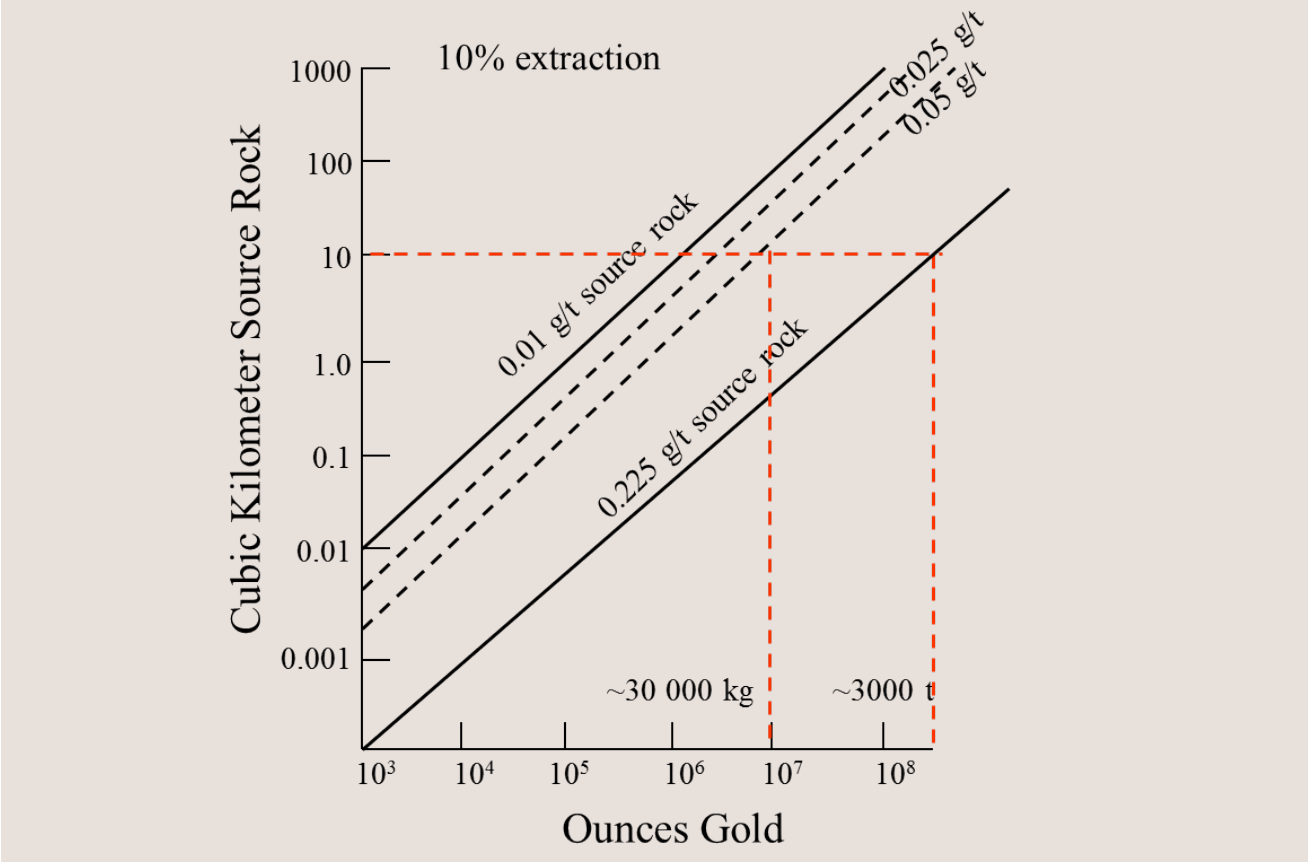
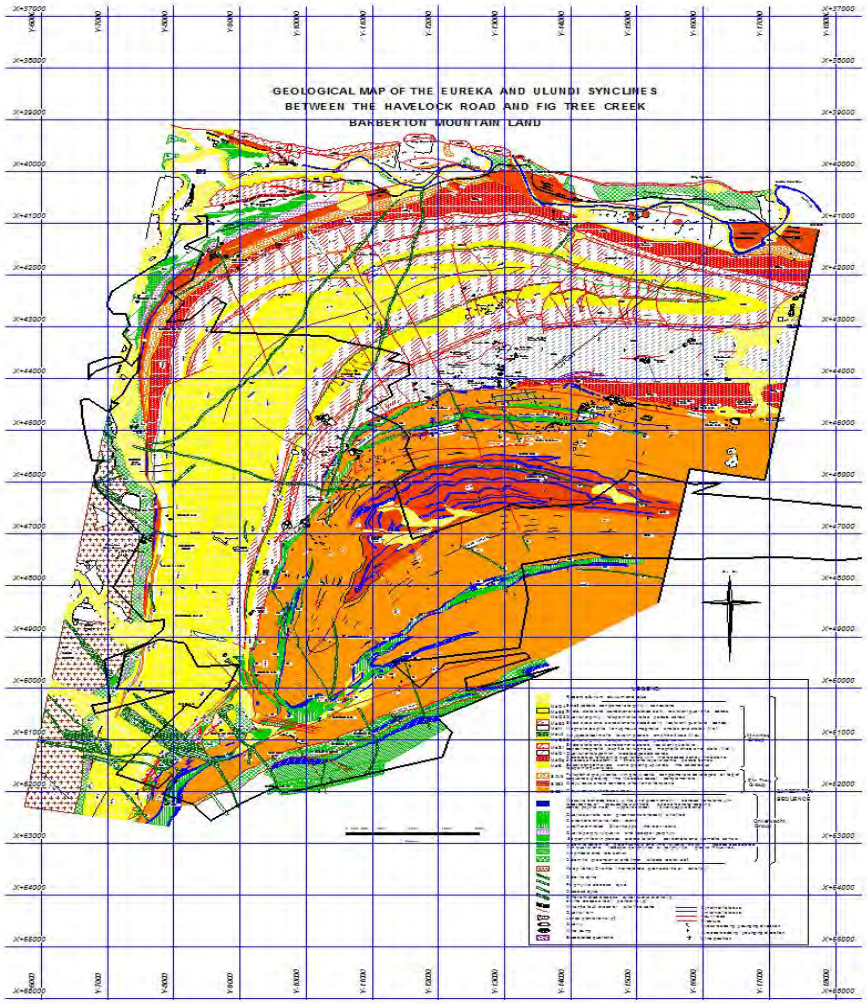
Calculated volume of source rock required to form a deposit containing a given amount of gold

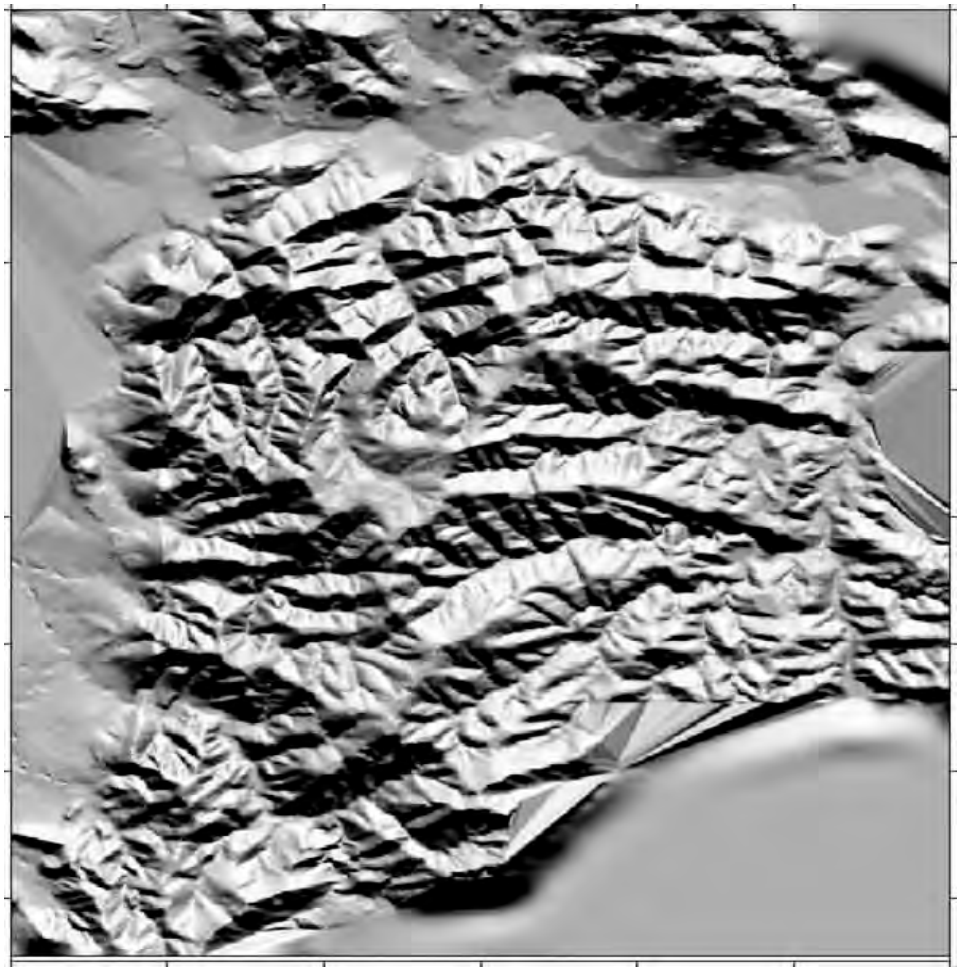
Barberton Greenstone Belt contains 1600 cubic km source rock



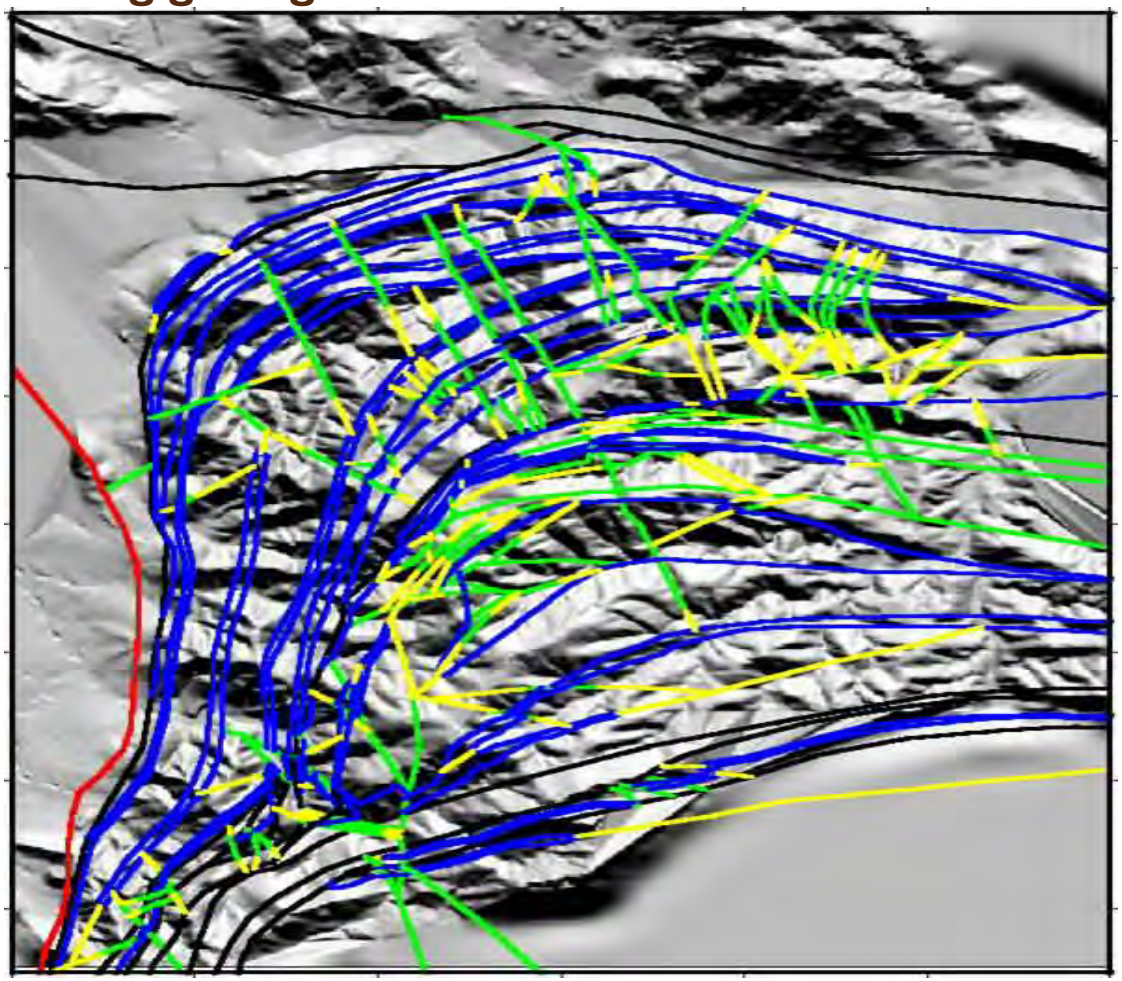
Geological map



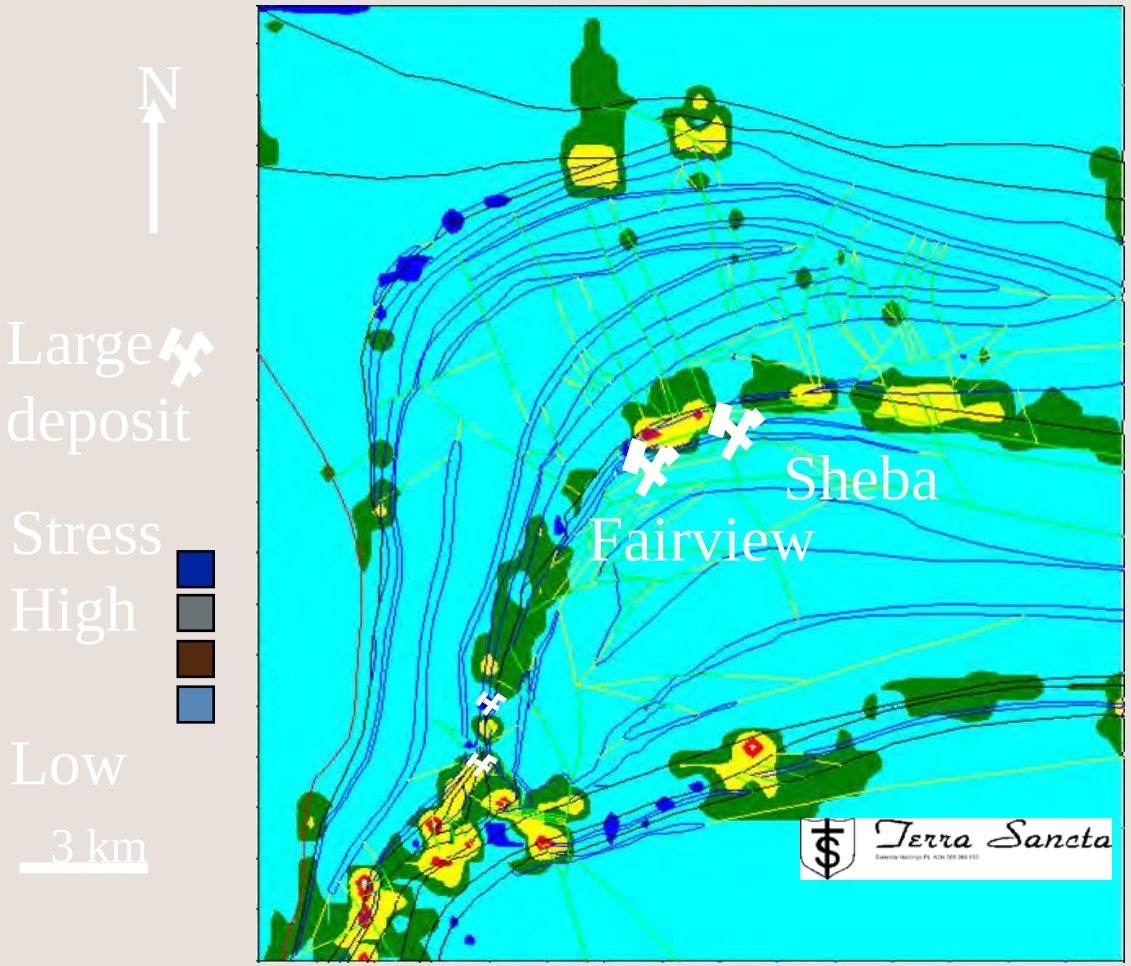
Amira Project – 3D model



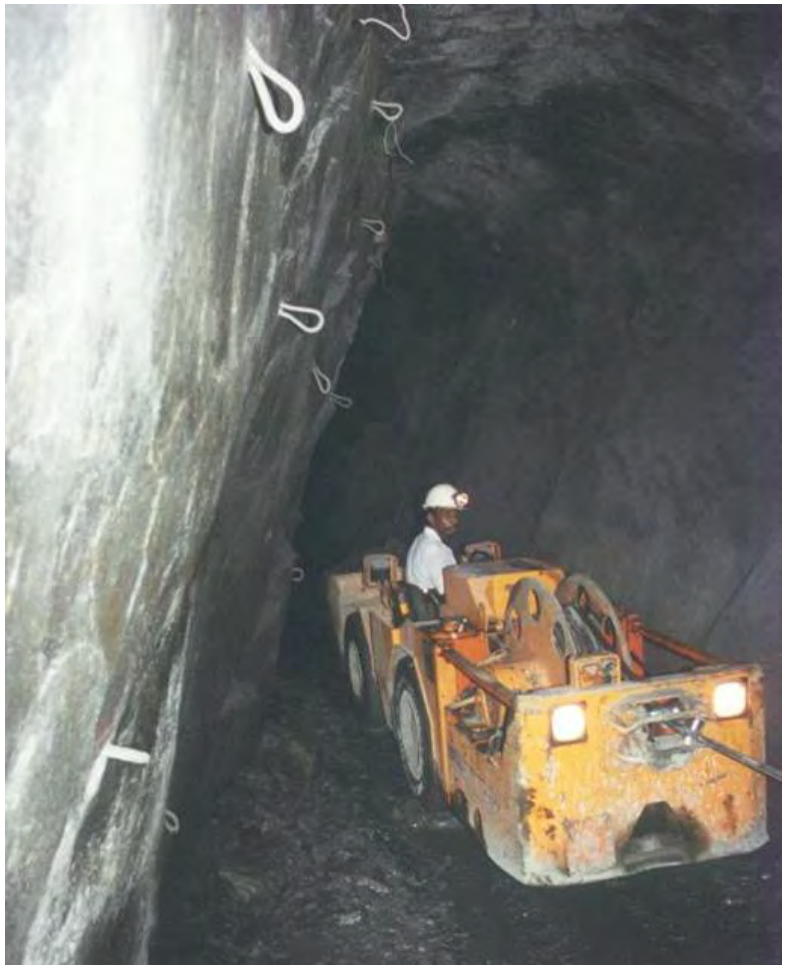
Amira Project – including geological features



Amira Project – high potential areas



Semi-mechanised Stoping



Waste Filling

Up-dip drilling

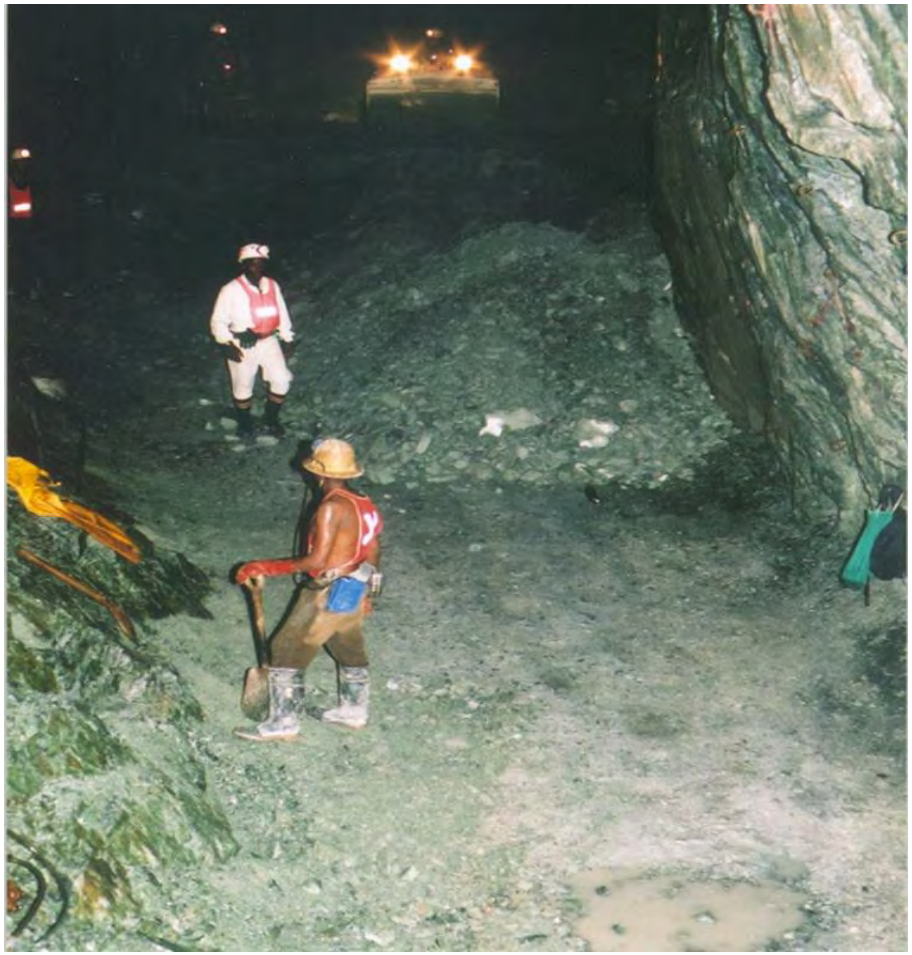
Up-dip drilling

Breast Mining – Waste Fill

Breast – Face Drilling

Compacting – prior to cement cap

Sweeping – Between Reef and Waste Pile



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THANK YOU