Discovery
Stories from the Sepon Project
Three stories of discovery

Discovering gold

Discovering copper

Re-Discovering
Refreshing the memory


Pacrim, 1999
Discovering gold
The right ingredients
Stream sediment geochemistry
Gold in soil and auger geochemistry
Gold in Jasperoid
Mineralisation and Alteration

- **MINERALISATION**
  - Rhyodacite Porphyry
  - Skarn Cu
  - Carbonate Replacement Cu
  - Carlin-style Au

- **ALTERATION**
  - Quartz Vein Stockwork Zone
  - Skarn Hornfels Front
  - Jasperoid Front

Scale: 5 km
Discovering copper

Is this just a Fault zone?
Khanong Geology

Geology
- Gold mineralisation
- Rhyodacite porphyry
- Fault rock
- Dolomite
- Mudstone/Claystone
- Sandstone

Copper Zones
- Hypogene Sulphide
- Main Chalcocite Clay
- Exotic

Padan Porphyry Intrusion
Khanong Cu Resource
28.1 Mt at 2.6 % Cu = 730 kt Cu
Main Chalcocite - Clay Zone and Hypogene Sulphide Zone

Geology
- Colluvium
- Ironstone
- Fault rock
- Rhyodacite porphyry
- Dolomite/limestone
- Claystone

Mineralisation Type
- Limonite - clay
- Limonite - clay and oxidised Cu minerals
- Chalcocite - clay
- Pyrite - quartz

- 7.50m @ 5.67% Cu
- 83.00m @ 7.27% Cu
- 36.00m @ 2.04% Cu
- 62.00m @ 1.39% Cu
- 7.50m @ 5.67% Cu
Exotic Zone

**Geology**
- Colluvium
- Fault rock
- Dolomite
- Claystone

**Mineralisation Type**
- Exotic Cu-Mn wad
- Limonite - clay and oxidised Cu minerals
- Partially oxidised chalcocite - clay
- Chalcocite - clay

**Metres**
- 14.00m @ 2.57% Cu
- 30.50m @ 1.15% Cu
- 40.40m @ 0.89% Cu
- 22.90m @ 1.68% Cu
Copper mineralisation

• Hypogene sulphide
  Quartz-pyrite-chalcopyrite 2.0 % Cu

• Supergene in-situ
  Chalcocite clay 4.9 % Cu
  Partially oxidised chalcocite clay 2.0 % Cu
  Limonite-clay & oxidised Cu minerals 8.8 % Cu
  Limonite-clay 0.6 % Cu

• Mobilised exotic
  Cu-Mn-wad and Mn-oxide 1.4 % Cu
Chalcocite Clay
Limonite-clay & Cu oxides
Exotic Cu-Mn wad
Hypogene Mineralisation
ca. 300 Ma
Supergene Weathering
Present Day
Zonation pattern

MINERALISATION
- Rhyodacite Porphyry
- Skarn Cu
- Carbonate Replacement Cu
- Carlin-style Au

ALTERATION
- Quartz Vein Stockwork Zone
- Skarn Hornfels Front
- Jasperoid Front
Mineralisation Model
Fig. 4.1.1. District-scale geology map of the Sepon Mineral District (SMD) showing the location of the main gold and copper deposits (provided courtesy of OZ Minerals Limited).
Sepon in 2016
1998