



# **DELIVERING ON GROWTH OPPORTUNITIES**

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**EGM Exploration – South East Asia**

**PNG MINING AND PETROLEUM INVESTMENT CONFERENCE 2016**



## PRIVATE SECURITIES LITIGATION REFORM ACT SAFE HARBOUR STATEMENT

This presentation contains forward-looking statements within the meaning of the safe harbor provided by Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended, with respect to our financial condition, results of operations, business strategies, operating efficiencies, competitive positions, growth opportunities for existing services, plans and objectives of management, markets for stock and other matters. These include all statements other than statements of historical fact, including, without limitation, any statements preceded by, followed by, or that include the words “targets”, “believes”, “expects”, “aims”, “intends”, “will”, “may”, “anticipates”, “would”, “should”, “could”, “estimates”, “forecast”, “predict”, “continue” or similar expressions or the negative thereof.

These forward-looking statements, including, among others, those relating to our future business prospects, revenues and income, wherever they may occur in this report and the exhibits to this report, are essentially estimates reflecting the best judgment of our senior management and involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. As a consequence, these forward-looking statements should be considered in light of various important factors, including those set forth in this presentation. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, without limitation: overall economic and business conditions in South Africa, Papua New Guinea, Australia and elsewhere, estimates of future earnings, and the sensitivity of earnings to the gold and other metals prices, estimates of future gold and other metals production and sales, estimates of future cash costs, estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices, statements regarding future debt repayments, estimates of future capital expenditures, the success of our business strategy, development activities and other initiatives, estimates of reserves statements regarding future exploration results and the replacement of reserves, the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, fluctuations in the market price of gold, the occurrence of hazards associated with underground and surface gold mining, the occurrence of labor disruptions, power cost increases as well as power stoppages, fluctuations and usage constraints, supply chain shortages and increases in the prices of production imports, availability, terms and deployment of capital, changes in government regulation, particularly mining rights and environmental regulation, fluctuations in exchange rates, the adequacy of the Group’s insurance coverage and socio-economic or political instability in South Africa and Papua New Guinea and other countries in which we operate.

For a more detailed discussion of such risks and other factors (such as availability of credit or other sources of financing), see the Company’s latest Integrated Annual Report and Form 20-F which is on file with the Securities and Exchange Commission, as well as the Company’s other Securities and Exchange Commission filings. The Company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this presentation or to reflect the occurrence of unanticipated events, except as required by law.

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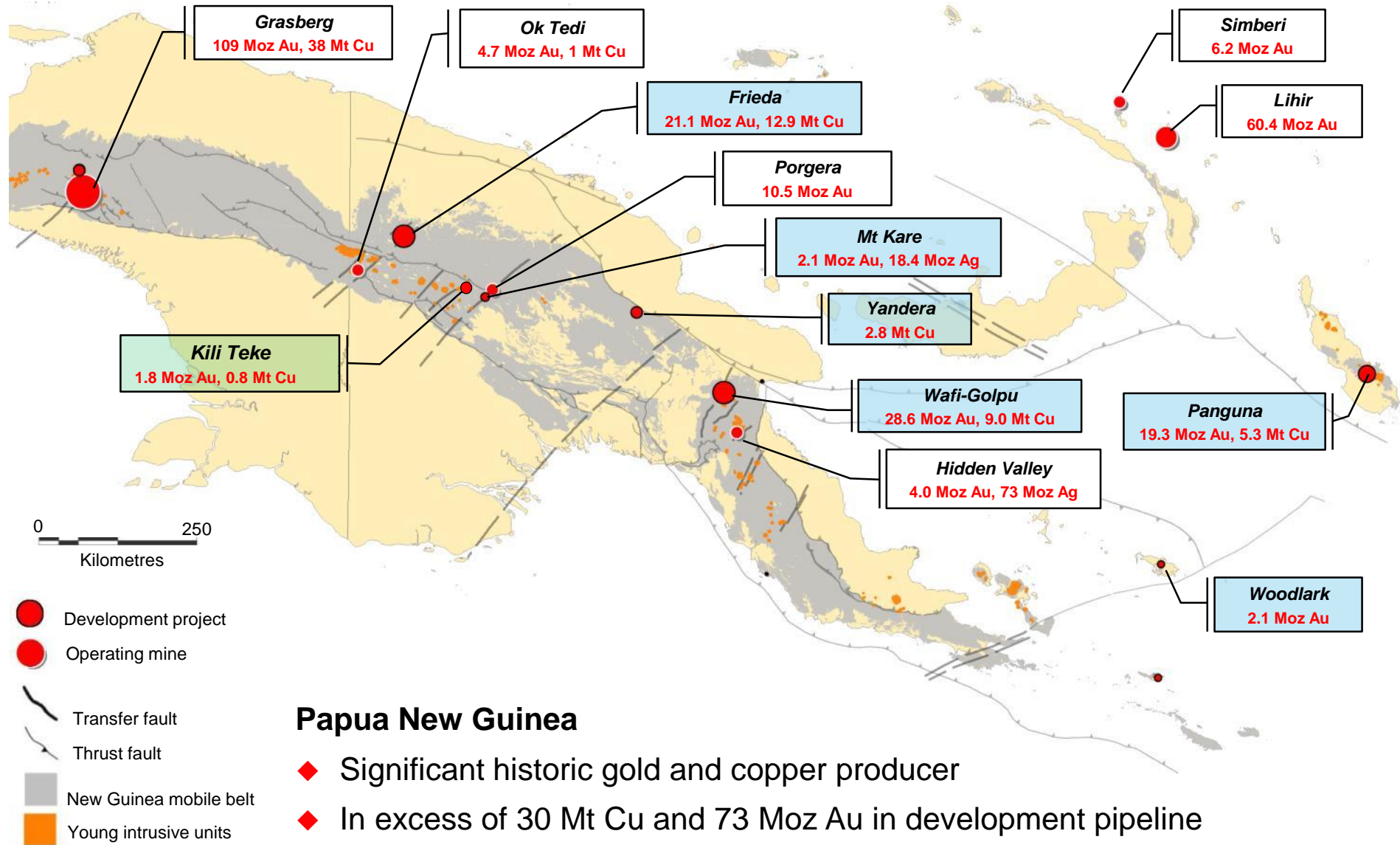


Hidden Valley district exploration



Conclusion

# PNG IS AN EXCEPTIONAL GOLD-COPPER COUNTRY

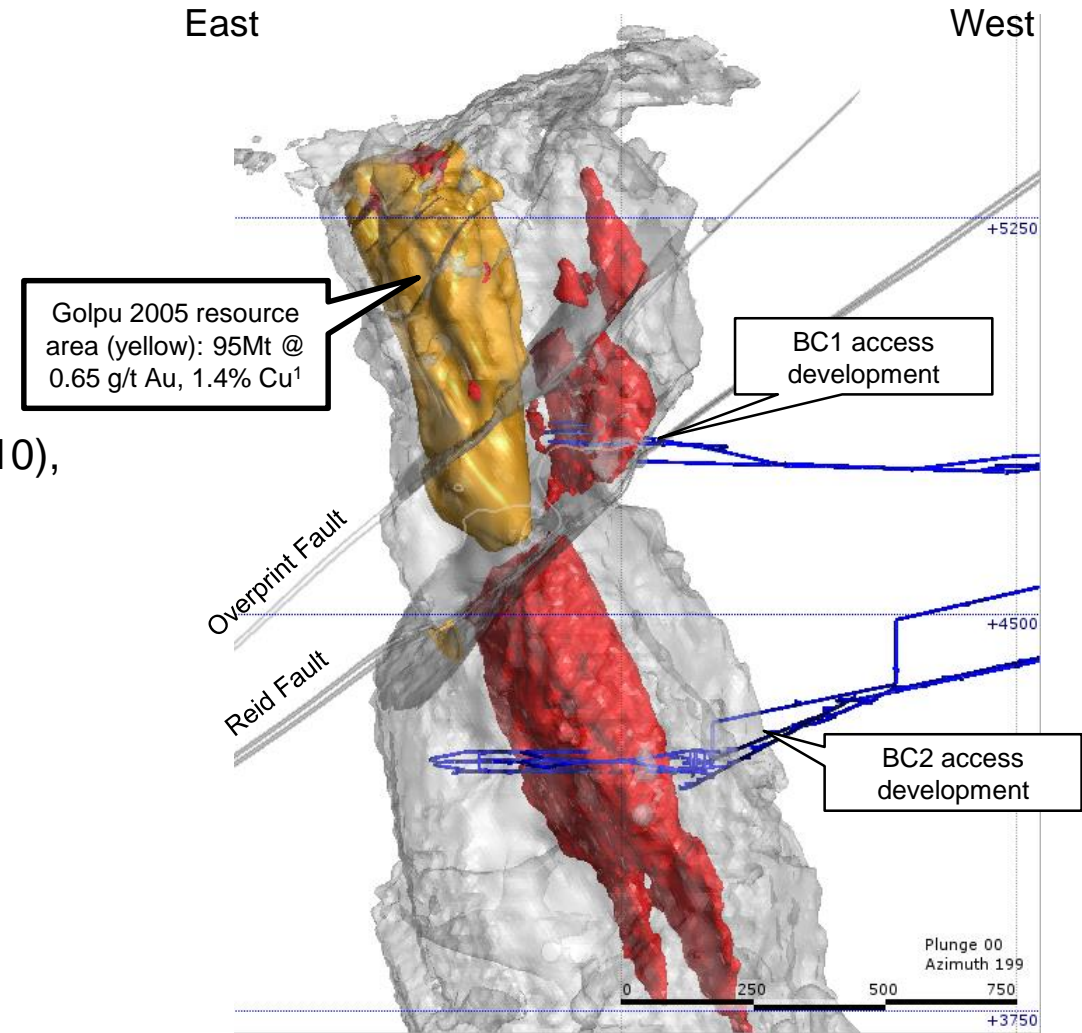


## Papua New Guinea

- ◆ Significant historic gold and copper producer
- ◆ In excess of 30 Mt Cu and 73 Moz Au in development pipeline

## HARMONY – A SUCCESSFUL EXPLORER AND DEVELOPER IN PNG

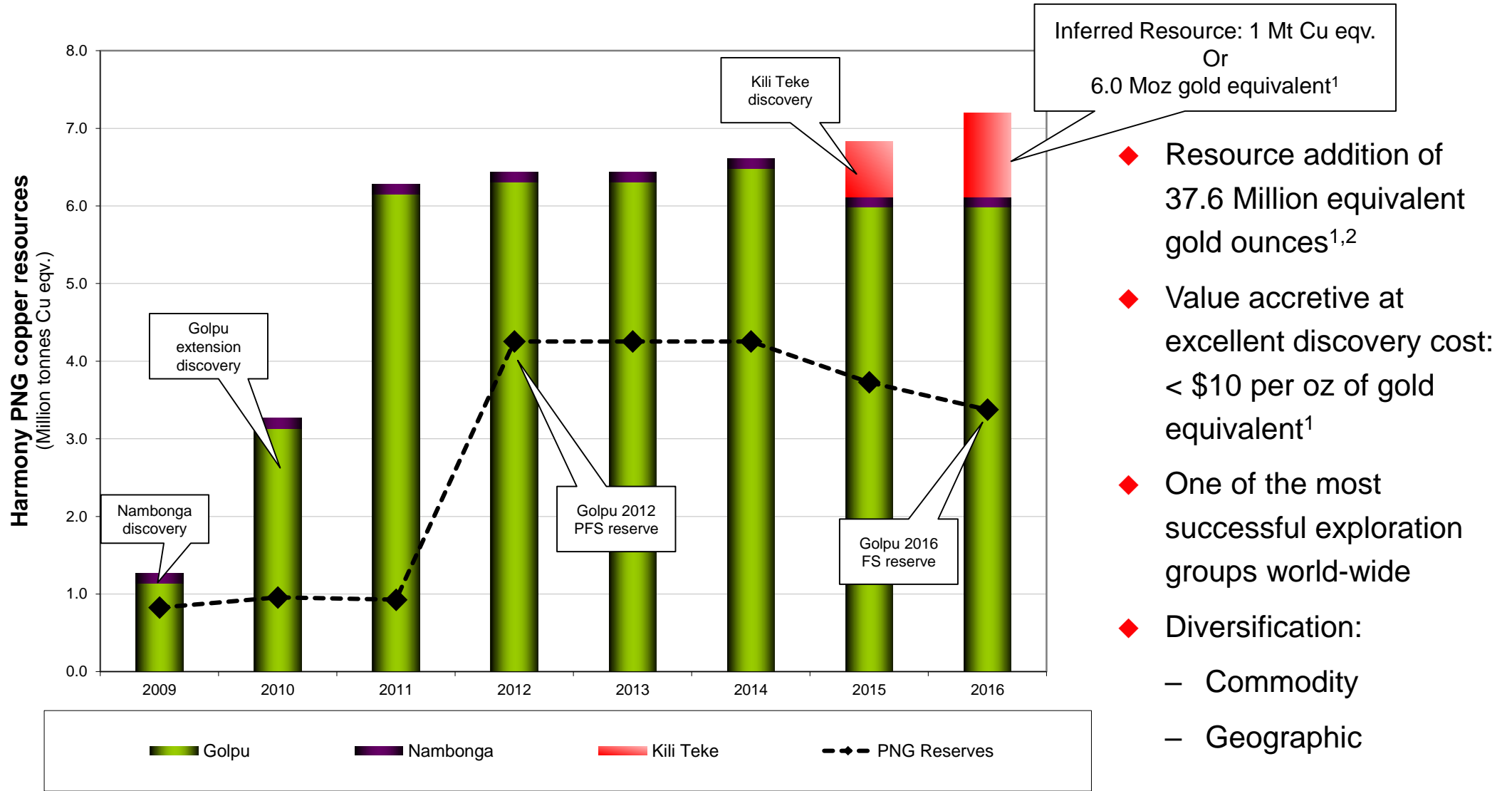
- ◆ Commenced exploration in 2004
  - Developed systems and innovative drilling solutions
  - Country wide prospect review
  - Committed professional exploration team
  - New discoveries: Nambonga (2008), Golpu (2010), Kili Teke (2015)
- ◆ Hidden Valley construction completed 2009
- ◆ Golpu feasibility completed February 2016
  - Emerging Tier 1 copper-gold deposit
  - +30 mine life at lowest quartile costs



Golpu 2016 resource grade shells (0.2% Cu: Grey; 2% Cu: red) showing access development levels (looking ~southwest)

<sup>1</sup> Expressed as 100%; Harmony have 50% equity interest; refer [www.harmony.co.za](http://www.harmony.co.za) for resource statement detail

# GROWING A WORLD CLASS COPPER-GOLD PORTFOLIO IN PNG



<sup>1</sup> Copper equivalent based on US\$1150/oz Au, US\$3.00/lb Cu, with 100% recovery for all metals.

<sup>2</sup> Includes Harmony 50% equity tonnes held in MMJV and 100% owned Kili Teke project 2015.

## ...IN THE CONTEXT OF A WORLD WITH SHRINKING RESERVES AND RESOURCES

High grade reserves are becoming rare:

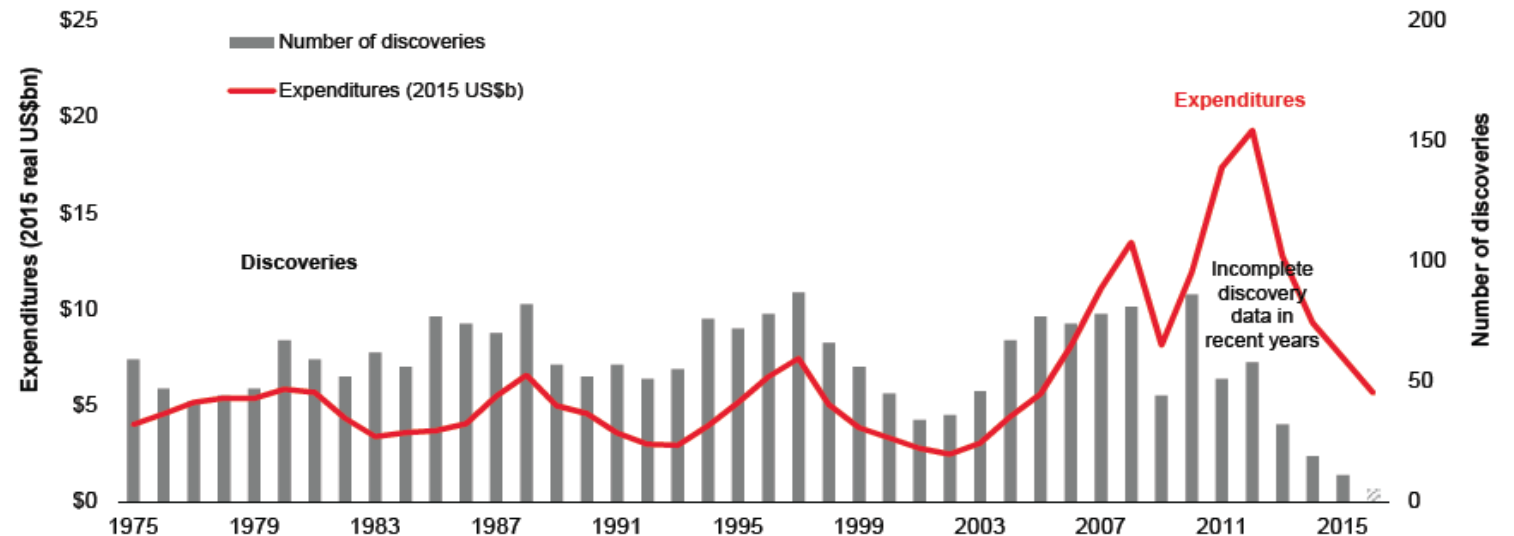
- ◆ Quality reserve replacement fundamental
- ◆ Difficult market conditions / commodity prices
- ◆ Investing through the cycle also creates value uplift opportunity

### Global exploration spend and historic discovery rate<sup>\*\*</sup>

Funding sharply down & new greenfield discoveries announced remain subdued

#### Significant\* mineral discoveries (excluding bulk commodities)

Western World: 1975 - 2015 (excluding FSU + Eastern Europe + China 1995 - 2015)



\*Significant defined as >100Koz Au, >10Kt Ni, >100Kt Cu equiv, 250Kt Zn+Pb, >5Moz Ag, >5kt U<sub>3</sub>O<sub>8</sub>

Source: MinEx Consulting March 2016; Expenditures – SNL Metals & Mining December 2015

Note: SNL expenditure data excludes Uranium prior to 2001.

\*\* As presented by Stephen McIntosh, Riotinto, Citigroup exploration conference, June 2016

## HARMONY GOLD EXPLORATION (PNG) LIMITED

- ◆ 87 employees
  - 91% PNG national
- ◆ 45 permanent staff:
  - Geologists, environment, community affairs, safety, logistics professionals
- ◆ Flow-on work:
  - Helicopter
  - Drilling
  - Assay
  - Construction contractors





## UPLIFTING OUR COMMUNITIES IN PNG

- ◆ Improving living conditions in remote communities
- ◆ Structured community engagement process
  - Local employment
  - Community projects
    - Community facilities
    - Education support
    - Health patrols
    - Law and order awareness
    - Medivacs
- ◆ Sustainable development projects tailored to community needs



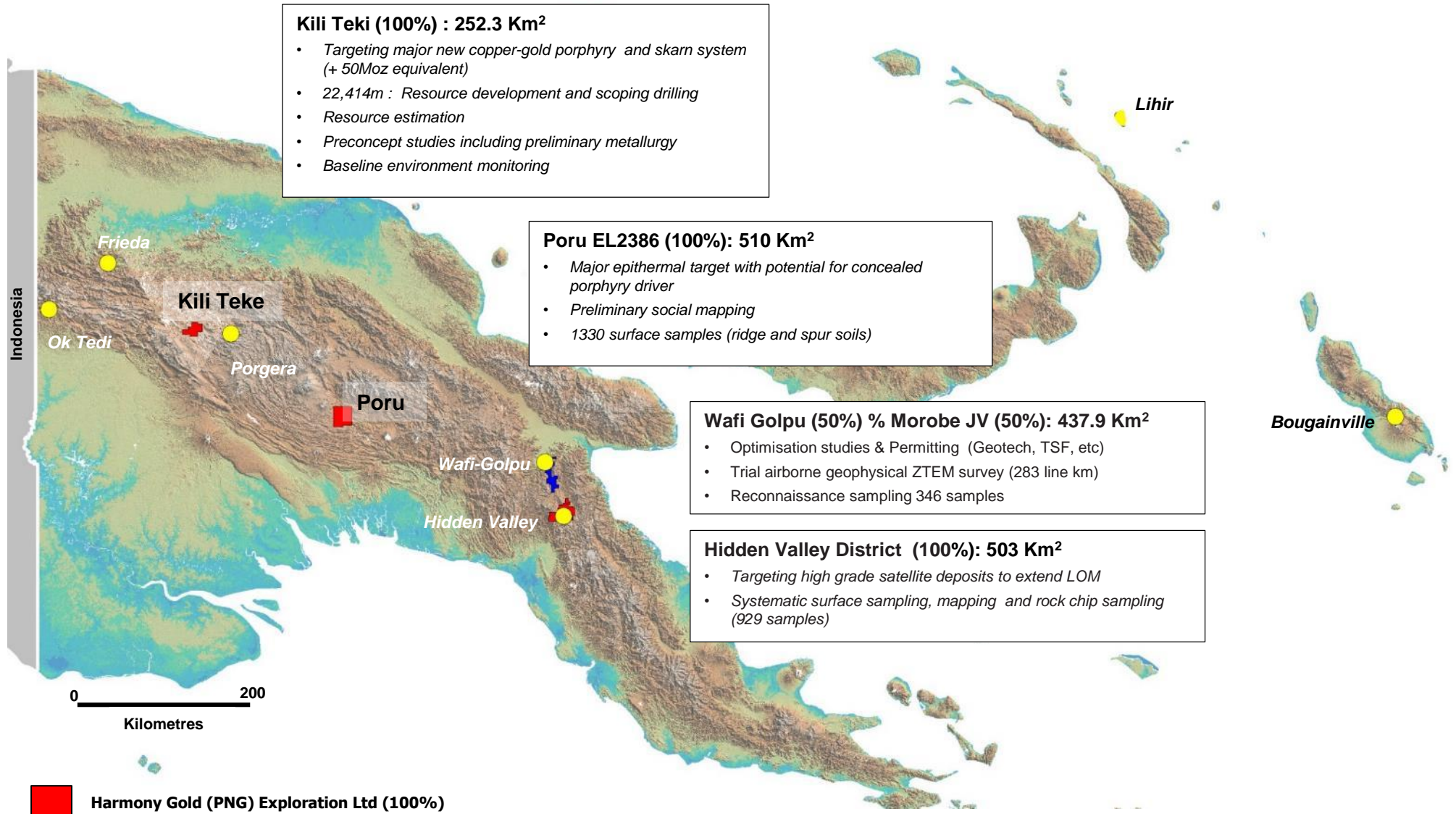
First potable water on tap at Kili Teke ridge

## SAFETY IS OUR TOP PRIORITY

- ◆ 438 LTI free days
- ◆ Management of high risk activities
  - Helicopter slinging, vehicle operation, tree felling, isolated field work, working at heights
  - Ensure critical controls in place for every high risk task
- ◆ Training in system
  - Job safety environment analysis utilisation
  - Emergency management systems and communication protocol
  - Hazard identification / risk assessment and closing out corrective actions fully
- ◆ Initiatives
  - Contractor competency and currency / Skills Verification
    - Safety visits (SBOs)
    - Developing competency cards
  - Vehicle tracking and video monitoring



# HARMONY PNG EXPLORATION



**Kili Teki (100%) : 252.3 Km<sup>2</sup>**

- Targeting major new copper-gold porphyry and skarn system (+ 50Moz equivalent)
- 22,414m : Resource development and scoping drilling
- Resource estimation
- Preconcept studies including preliminary metallurgy
- Baseline environment monitoring

**Poru EL2386 (100%): 510 Km<sup>2</sup>**

- Major epithermal target with potential for concealed porphyry driver
- Preliminary social mapping
- 1330 surface samples (ridge and spur soils)

**Wafi Golpu (50%) % Morobe JV (50%): 437.9 Km<sup>2</sup>**

- Optimisation studies & Permitting (Geotech, TSF, etc)
- Trial airborne geophysical ZTEM survey (283 line km)
- Reconnaissance sampling 346 samples

**Hidden Valley District (100%): 503 Km<sup>2</sup>**

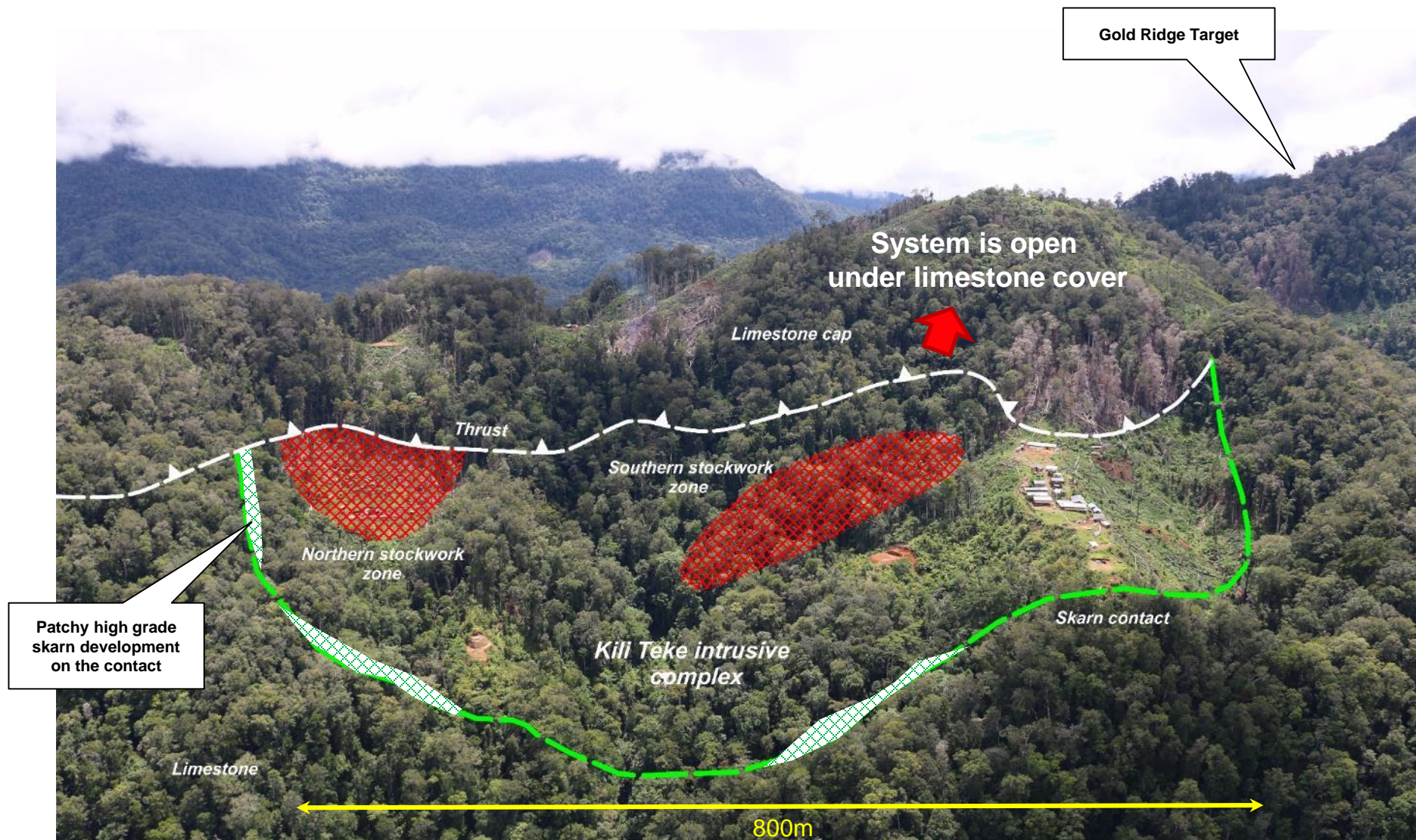
- Targeting high grade satellite deposits to extend LOM
- Systematic surface sampling, mapping and rock chip sampling (929 samples)

- Harmony Gold (PNG) Exploration Ltd (100%)
- Morobe Mining Joint Venture (50%)

Actual Harmony exploration spend over last 12 months:  
Kina 39.5 Million (excludes Golpu project study expenditure)

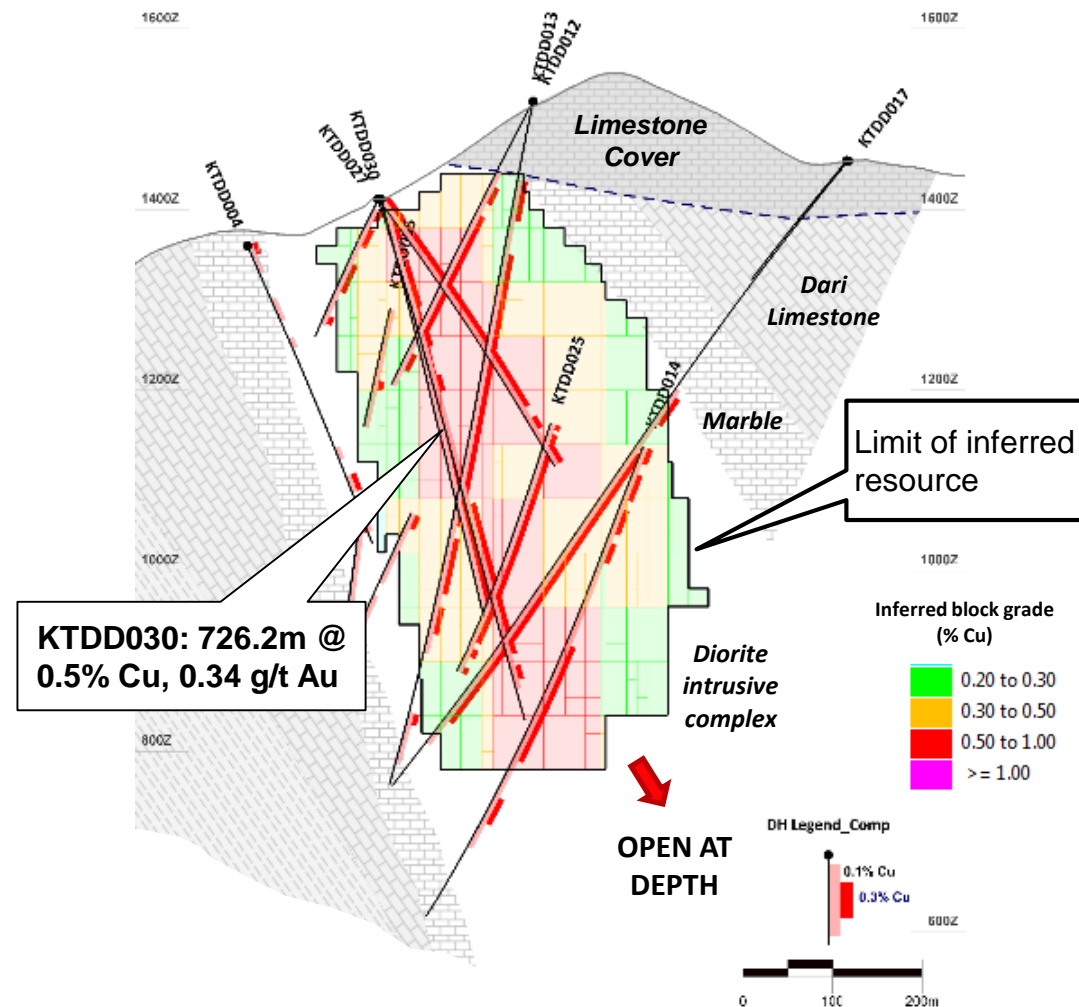


# KILI TEKE – VIEW LOOKING EAST OVER MINERALISED INTRUSIVE COMPLEX



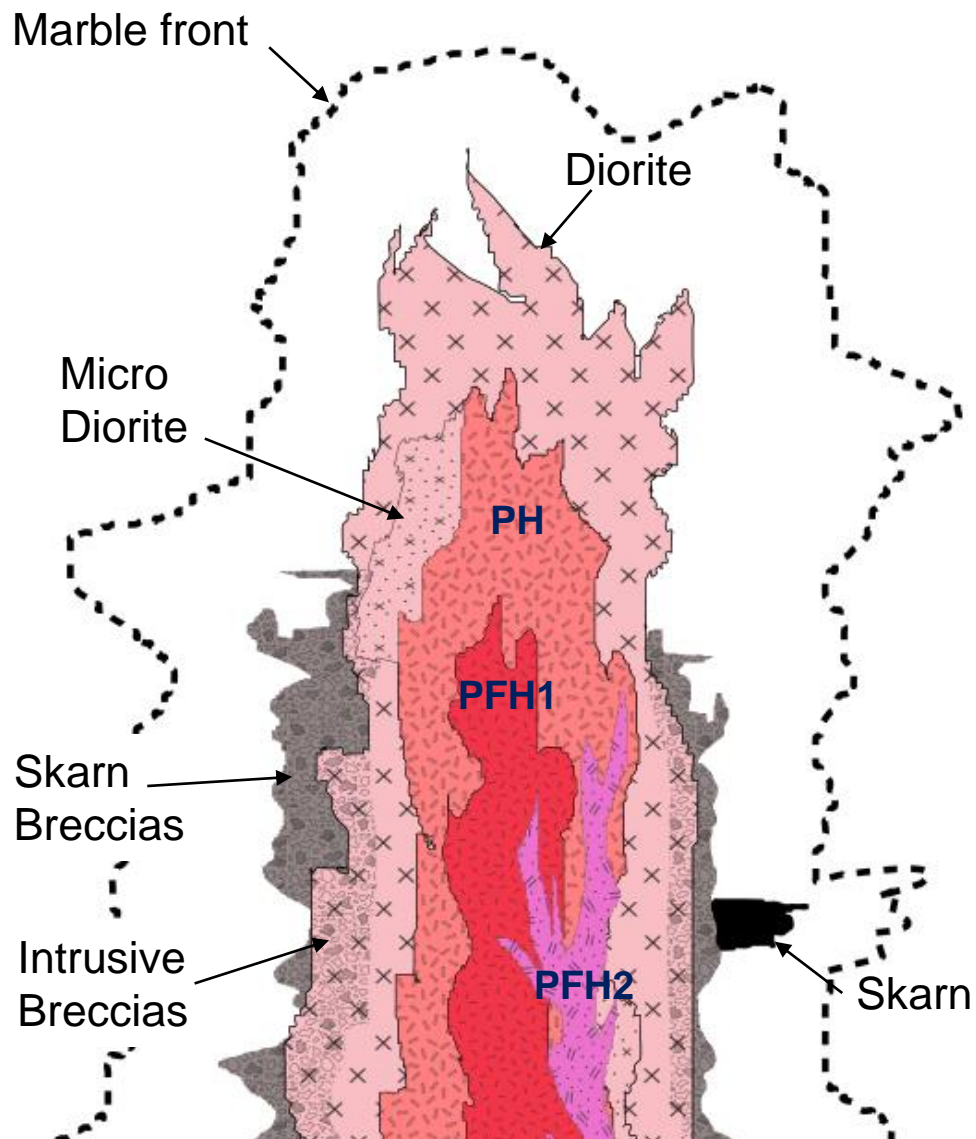
## KILI TEKE RESOURCE MODEL

- ◆ Increased 50% to 6.0 million equivalent gold ounces<sup>1</sup> (785 Kt Cu & 1.8 Moz Au) in July update
  - Remains open at depth
  - Remains open along strike to the southeast
- ◆ Proven fertile porphyry camp in one of the worlds most prospective underexplored terrains
  - Multiple mineralised intrusive events
  - High-grade skarn potential
- ◆ Drilling underway with 2 rigs onsite



<sup>1</sup> Refer [www.harmony.co.za](http://www.harmony.co.za) for detail. Gold equivalent based on US\$1150 oz Au, and US\$ 3.0 lb Cu

## KILI TEKE DEPOSIT – SCHEMATIC CROSS SECTION



### Host rocks:

- ◆ Darai Limestone
- ◆ Ieru Siltstone
- ◆ Initial intrusive complex with breccia, diorite and microdiorite phases

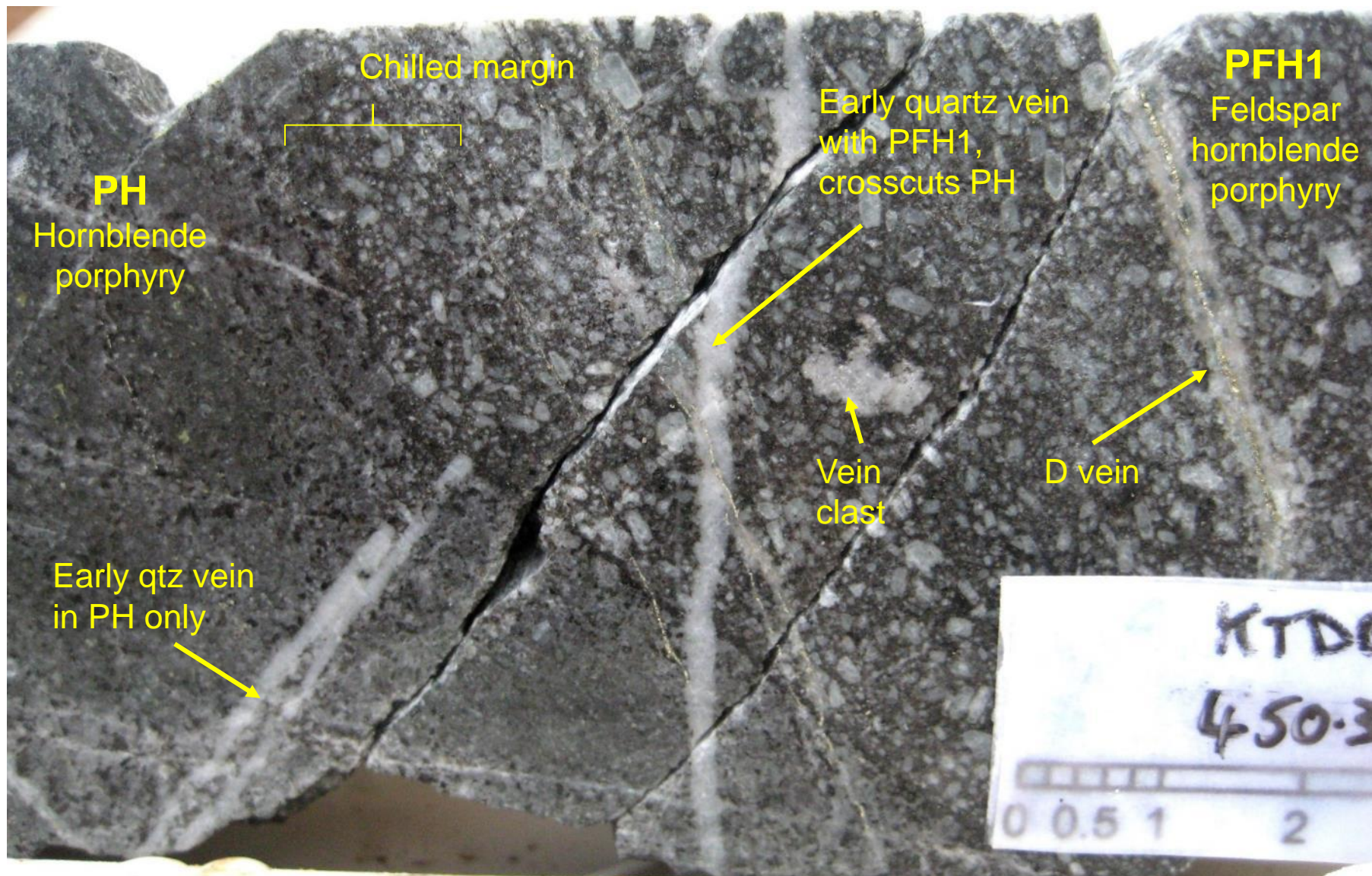
### Followed by intrusion of 2 early mineralised porphyry's:

- ◆ Hornblende porphyry (*PH*)
- ◆ Feldspar-hornblende porphyry (*PFH1*)

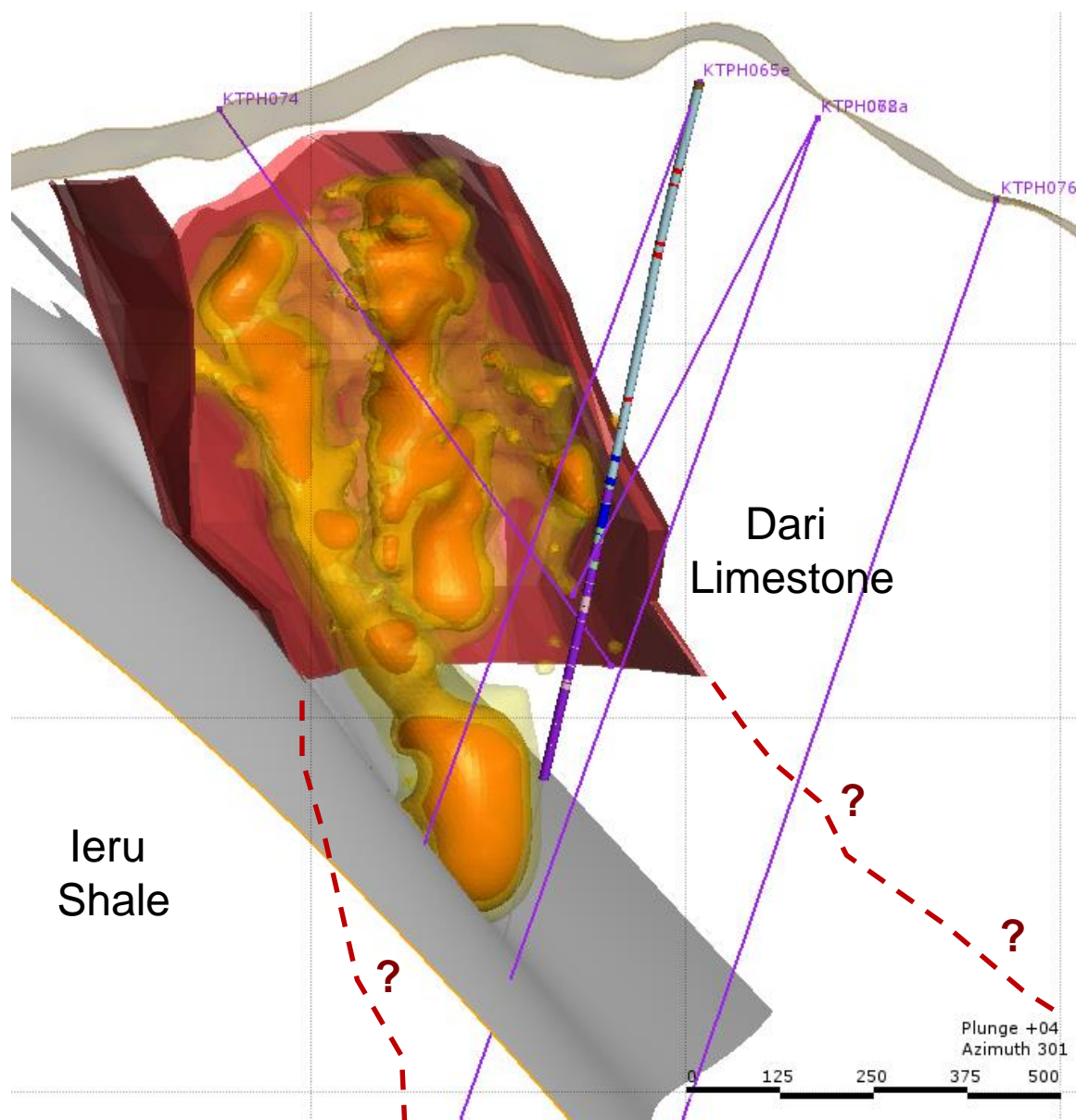
### Followed by late non-mineralized porphyry's:

- ◆ Several phases of Feldspar-Hornblende porphyry (*PFH2*)
- ◆ Lack high temperature mineralised veins

# DETAILED LOGGING FOR CROSS CUTTING RELATIONSHIPS



## KILI TEKE – FORWARD PROGRAM



### Kili Teke a composite porphyry complex

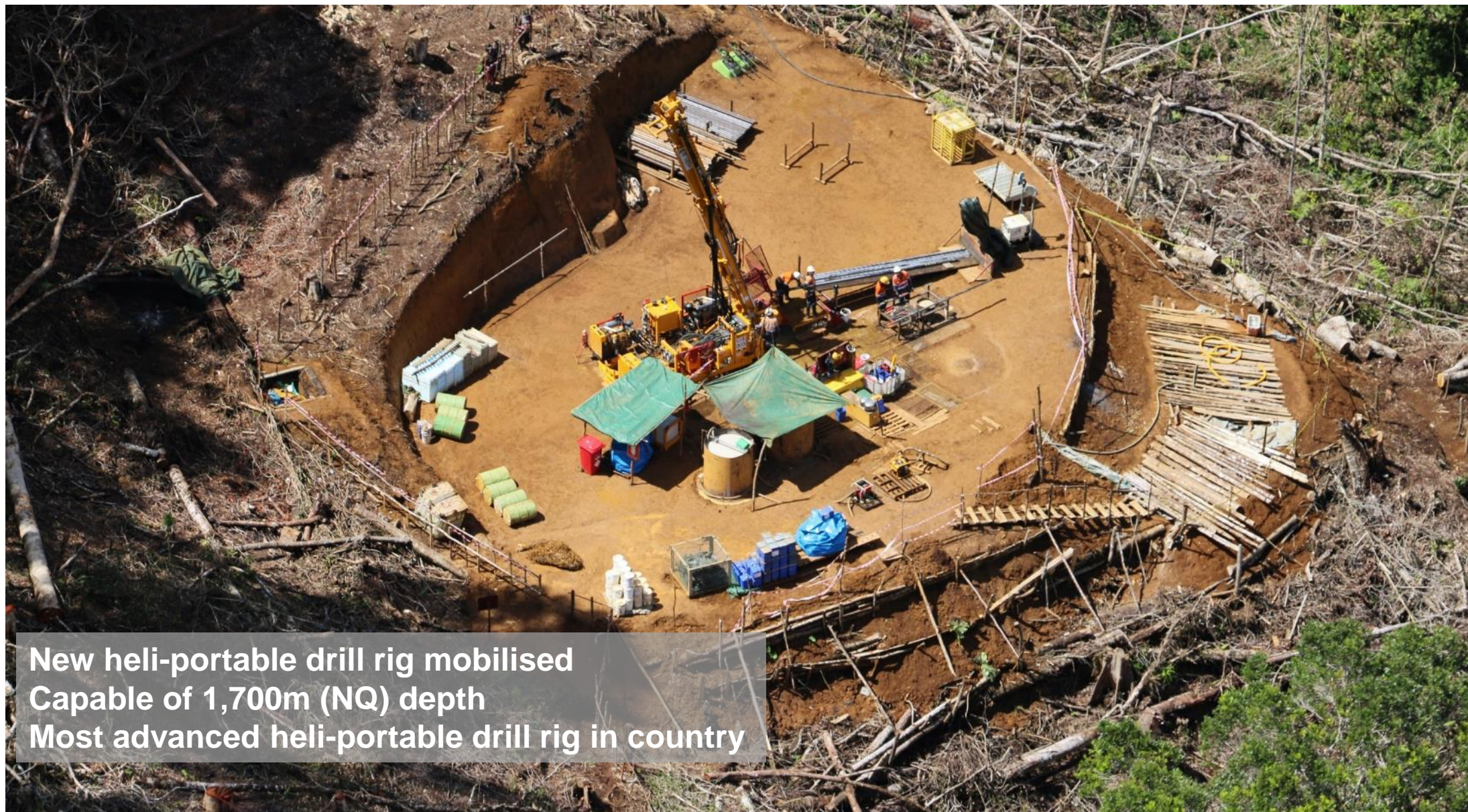
- ◆ ~3.6 Ma
- ◆ Intrudes the Dari – Ieru contact

### Drill strategy:

- ◆ 5 holes / 6400m remaining:
  - 2 deep holes to test geometry and extent of high-grade stockwork mineralisation at depth
  - 2 holes to test southeast limits of the intrusive complex
  - 1 hole to test below marbleised limestone at gold ridge anomaly
- ◆ Geophysics:
  - Airborne geophysics to identify new centres of mineralisation under (thrust) cover – ZTEM or VTEM



## KILI TEKE - TESTING THE DEPTH POTENTIAL



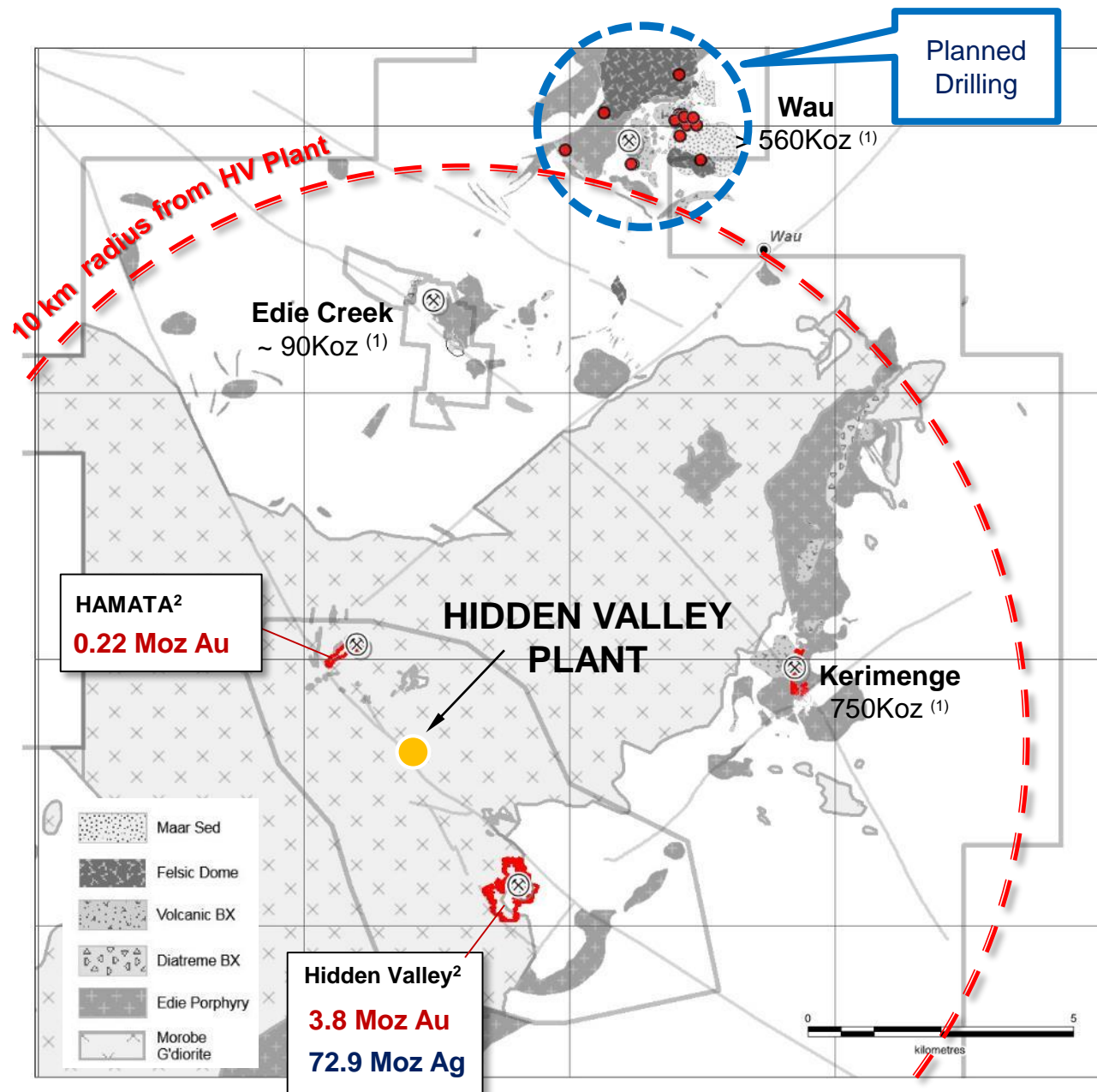
New heli-portable drill rig mobilised  
Capable of 1,700m (NQ) depth  
Most advanced heli-portable drill rig in country



# **HIDDEN VALLEY DISTRICT EXPLORATION**



## BROWNFIELD EXPLORATION POTENTIAL



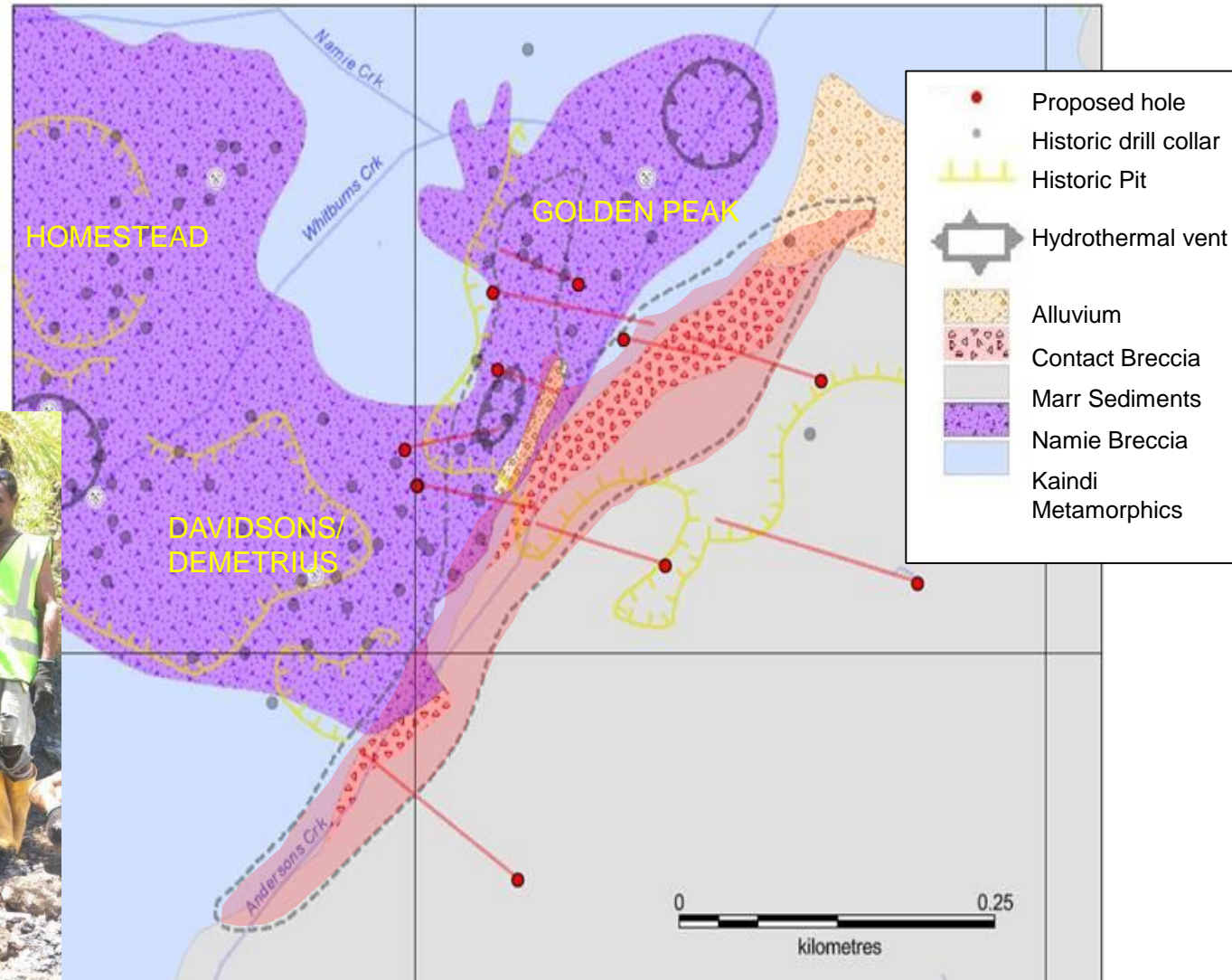
- ◆ Secured 100% ownership of prime tenement holding around the mine:
  - +8 Million ounce mineral district
  - Targeting satellite resources: >100 Koz; with average grades >4 g/t Au
- ◆ Historic mining centre at Wau
  - Intermittently mined since the 1930's
  - Underexplored - previous drilling focussed on outcropping oxide resource areas
  - No application of modern epithermal concepts or exploration under cover

Notes:

- (1) Historical production / non-JORC resources
- (2) 2016 Resource – refer [www.harmony.co.za](http://www.harmony.co.za)

# WAU MINING CENTRE – KORANGA UPFLOW ZONE

- ◆ Previous mining:
  - Outcropping mangano-carbonate veins and associated supergene mineralisation
  - Namie breccia hosted
  - Associated with hydrothermal explosion vents



Colliform silica sulphide band

Koranga upflow zone:

- Contact breccia exposed in Andersons creek
- +600m of strike, open ended
- Potential feeder / fluid conduit
- Untested

Overprinting rhodochrosite

11 g/t Au  
453 g/t Ag

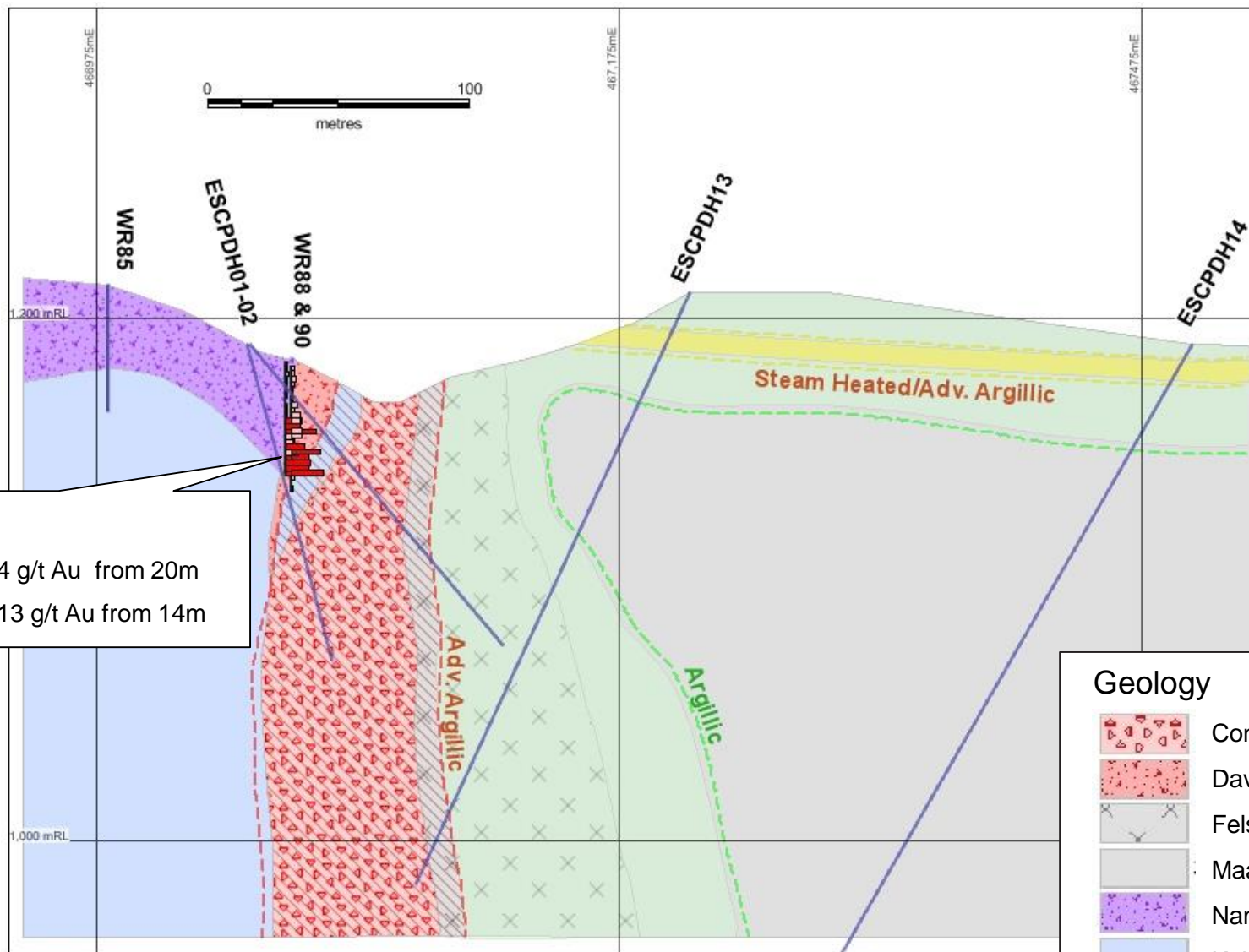
## KORANGA UP-FLOW ZONE



- ◆ Anomalous Hg, S, Mo, suggesting magmatic volatile component
- ◆ Advanced argillic alteration (alunite / dickite)
- ◆ Represents a different phase of mineralisation

**Massive sulphide outcrop, Andersons creek, Wau**

## KORANGA UP-FLOW ZONE



Historic results:

WR88: 24m @ 6.4 g/t Au from 20m

WR90: 28m @ 4.13 g/t Au from 14m

### Drill targets scheduled for testing H1 2017:

- ◆ Davidsons/ Namie hosted mineralisation outlined in historic results
- ◆ Depth potential of mineralised altered contact breccia for Au-Ag mineralisation below the volatile zone

#### Geology

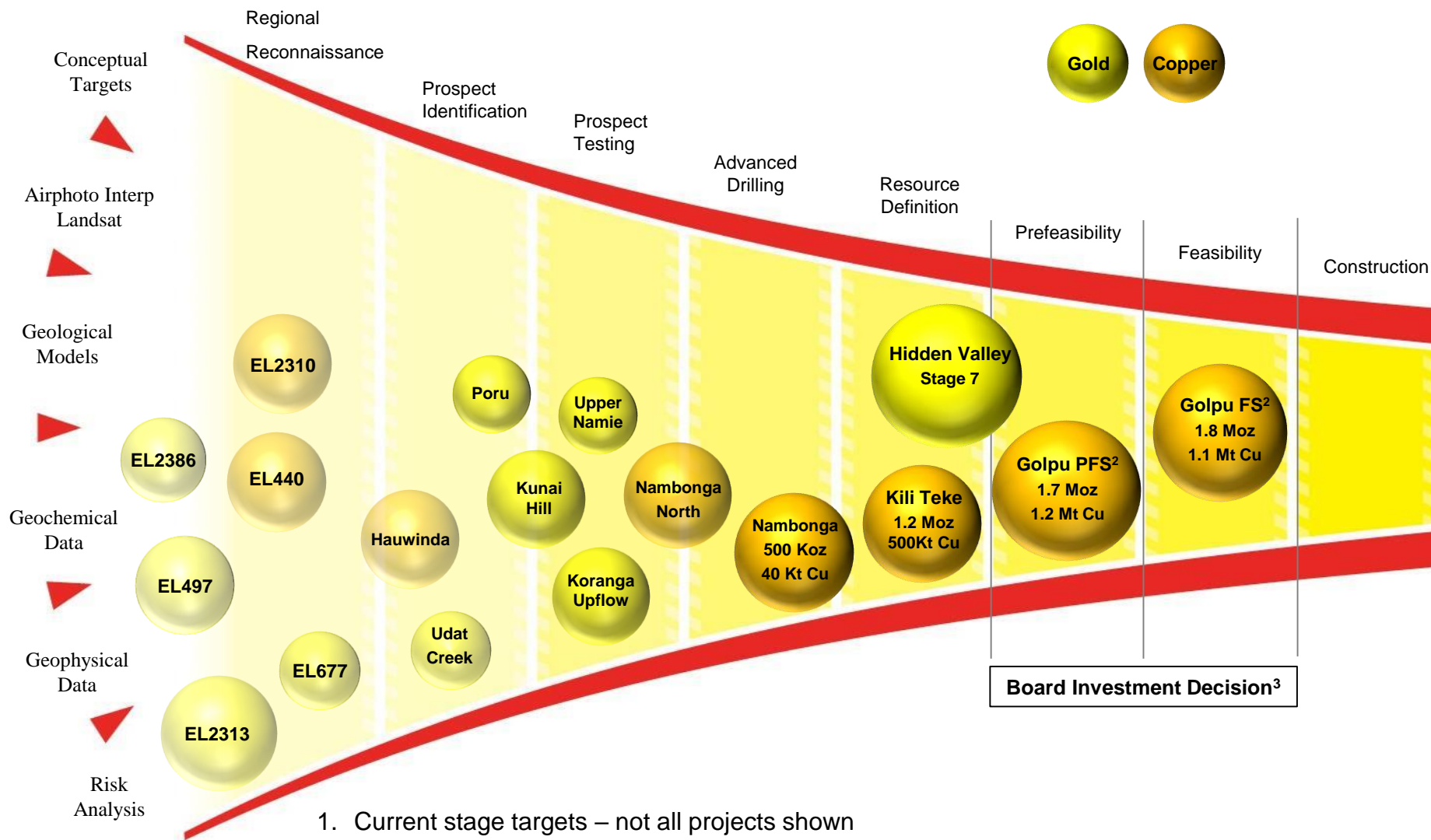
	Contact breccia
	Davidsons breccia
	Felsic porphyry
	Maar seds & volcanics
	Namie breccia
	Kaindi metamorphics



# CONCLUSION



# BUILDING A QUALITY PNG PROJECT PIPELINE



1. Current stage targets – not all projects shown
2. Harmony 50% share; Recovered copper tonnes and ounces as per study findings
3. Tollgate review and board approval required to progress to next level



## DELIVERING ON GROWTH OPPORTUNITIES

- ◆ PNG is hugely prospective for gold and copper-gold deposits
- ◆ Harmony's exploration expenditure in PNG is value adding and building a world class copper and gold portfolio
  - On a gold ounce equivalent basis over 37.6 million ounces equivalent added to the resource base<sup>1,2</sup>
  - Developing pipeline of quality brownfields and greenfields targets
- ◆ Harmony remains committed to exploration in PNG
  - Replace depletion with high margin ounces and create long term value with increased commodity prices
  - Requires appropriate legislative and regulatory support
- ◆ Established teams and systems
  - Cost efficient, effective operator in the PNG environment
- ◆ Kili Teke discovery grown 50% to 6 Million equivalent gold ounces during the year
  - Potentially a major new copper-gold system in PNG

<sup>1</sup> Gold equivalent based on US\$1150/oz Au, US\$3.00/lb Cu, with 100% recovery for all metals.

<sup>2</sup> Resource growth includes Harmony's equity interest in PNG JV resources and PNG 100% owned resources post 2003



# QUESTIONS



## COMPETENT PERSON STATEMENT

The information in the presentation that relates to Exploration Results was compiled by Mike Humphries. Mr Humphries is a full time employee of Harmony Gold Mining Company Limited. Mr Humphries is a member of the Australian Institute of Geologists and has sufficient experience which is relevant to the styles of mineralisation and types of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “JORC Code”. Mr Humphries consents to the inclusion in this presentation of the matters based on this information in the form and context in which they appear.

The information in this report that relates to Mineral Resources is based on information compiled by Mr Greg Job. Mr Job is a full time employee of Harmony and a member of the Australasian Institute of Mining and Metallurgy. Mr Job has sufficient experience that is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in 2012 Edition of the ‘Australasian Code for Reporting of Exploration Reports, Mineral Resources and Ore Reserves’. Mr Job consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to Golpu Mineral Resources is based on information compiled by the Competent Person, Mr Paul Dunham, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Paul Dunham, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest’s executive equity long term incentive plan, details of which are included in Newcrest’s 2016 Remuneration Report. Mineral Resource growth is one of the performance measures under that plan. Mr Paul Dunham has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Dunham consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to Golpu Ore Reserves is based on information compiled by the Competent Person, Mr Pasqualino Manca, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Pasqualino Manca, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest’s executive equity long term incentive plan, details of which are included in Newcrest’s 2016 Remuneration Report. Ore Reserve growth is one of the performance measures under that plan. Mr Pasqualino Manca has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Manca consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.