



# PNG EXPLORATION

PAPUA NEW GUINEA MINING AND PETROLEUM  
INVESTMENT CONFERENCE 2017

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# 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.

## 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.

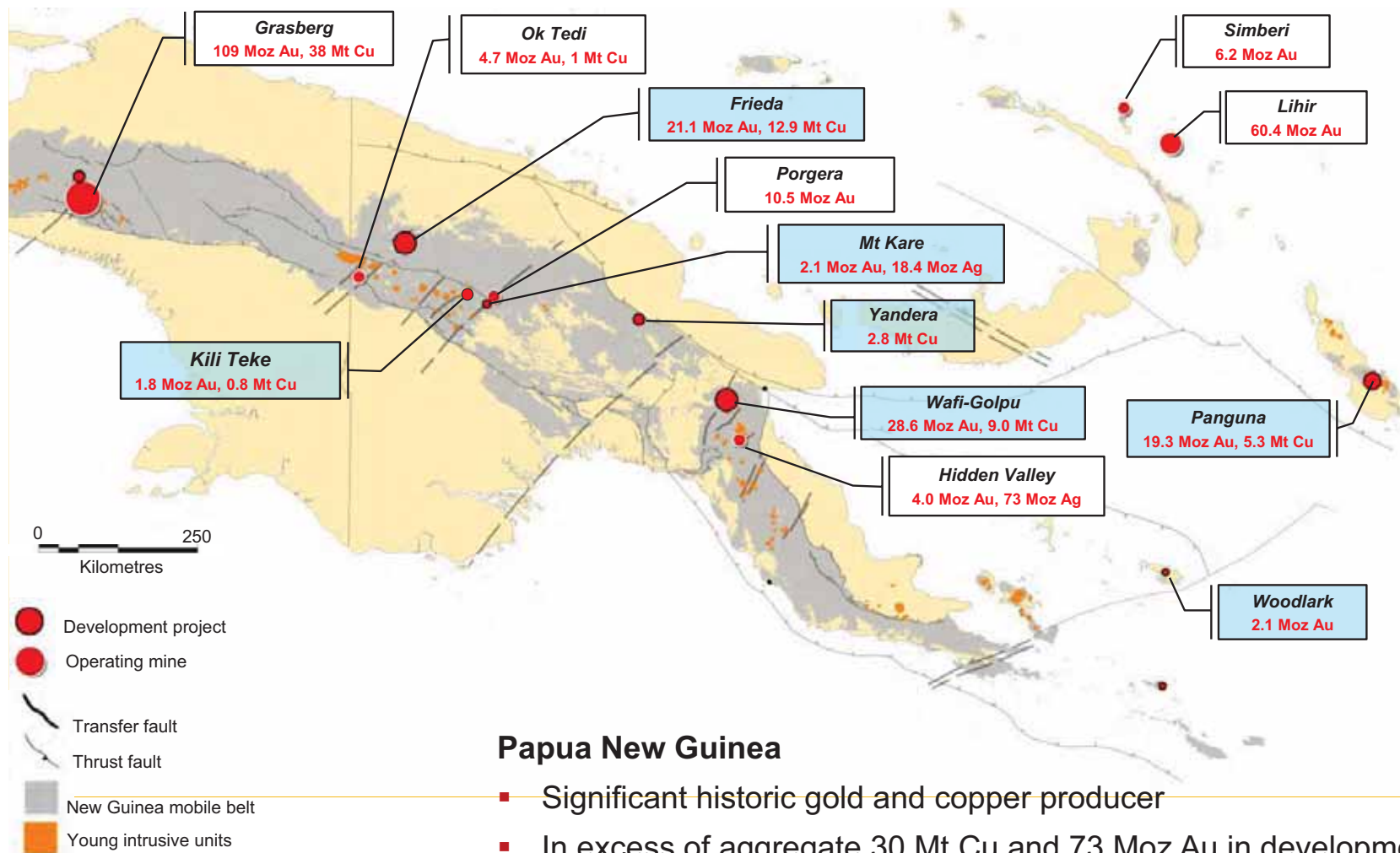
# AGENDA

- 1 Exploration overview
- 2 Kili Teke update
- 3 Hidden Valley district exploration
- 4 Conclusion



## EXPLORATION OVERVIEW

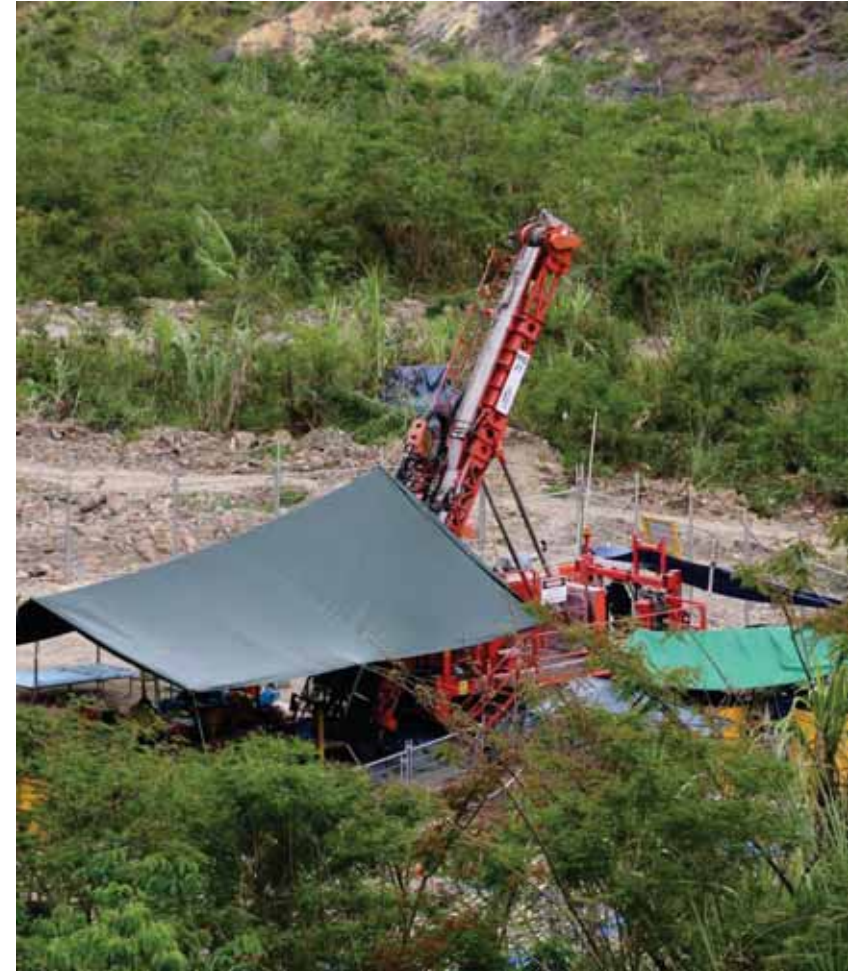
# PNG IS AN EXCEPTIONAL GOLD-COPPER COUNTRY



Source: Internal and published company reports

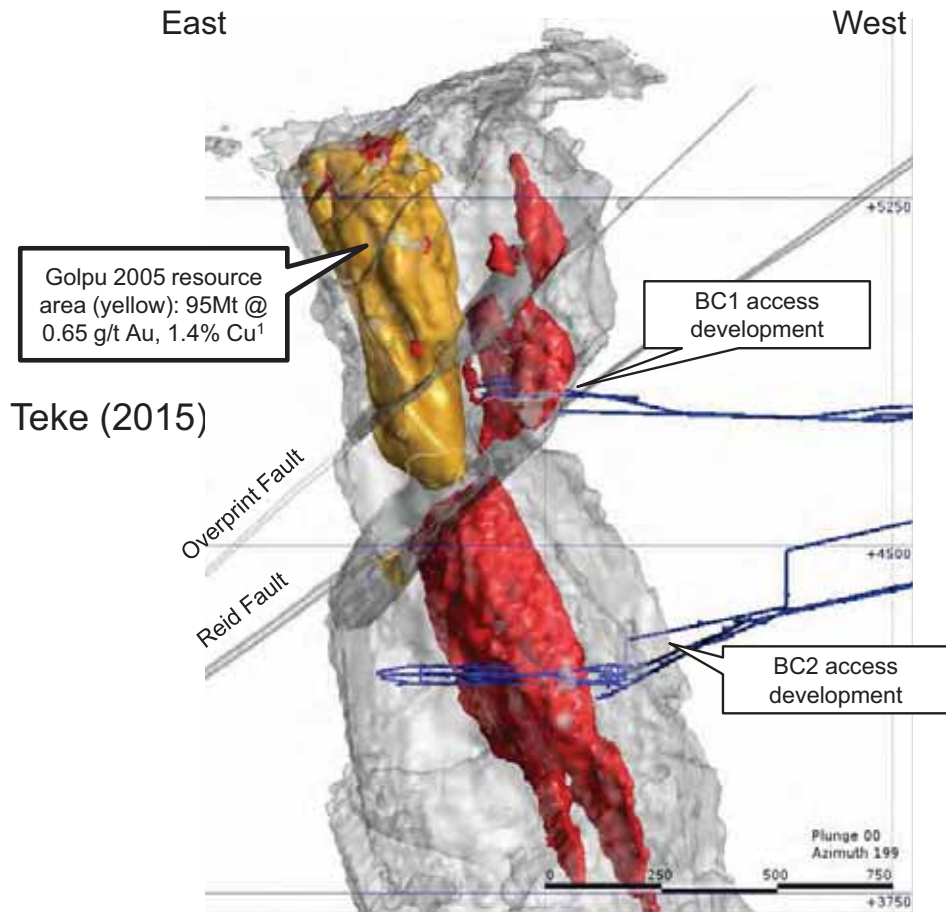
## HARMONY GOLD EXPLORATION (PNG) LIMITED

- 65 employees
  - 89% PNG national
- 32 permanent staff:
  - Geologists, environment, community affairs, safety, logistics professionals
- Wau based
- Flow-on work:
  - Helicopter
  - Drilling
  - Assay
  - Construction



# 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

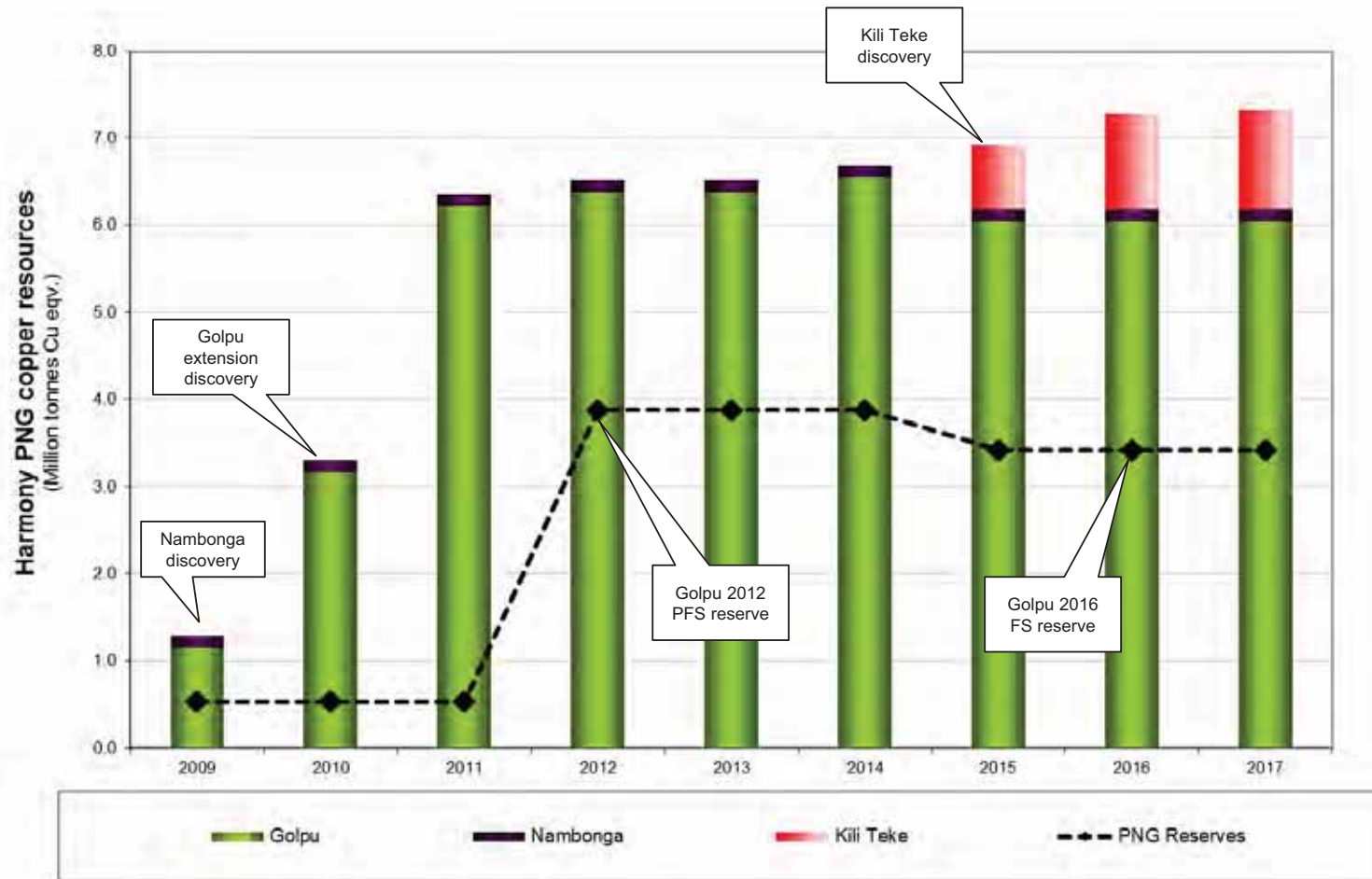


Golpu 2016 resource grade shells (0.2% Cu: Grey; 2% Cu: red) showing access development levels (looking ~southwest)

<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 WORLD CLASS COPPER-GOLD PORTFOLIO IN PNG



- Resource addition of 39.4 Million equivalent gold ounces<sup>1,2</sup>
- Value accretive at excellent discovery cost: < \$10 per oz of gold equivalent<sup>1</sup>
- One of the most successful exploration groups world-wide
- Compelling business case for exploration:
  - Lack of new discoveries
  - Declining reserve positions worldwide

<sup>1</sup> Copper equivalent based on US\$1200/oz Au, US\$3.00/lb Cu, with 100% recovery for all metals.

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

## WORKING TOGETHER WITH OUR COMMUNITIES IN PNG

- Structured community engagement
  - Documented agreements
  - Minuted meetings
  - Communication channels
- Work program benefits
  - Upgrades and maintenance
  - Local employment
  - Community Projects

Tutu Desk Initiative - Wau



Wau airstrip maintenance & upgrade



Wau road access

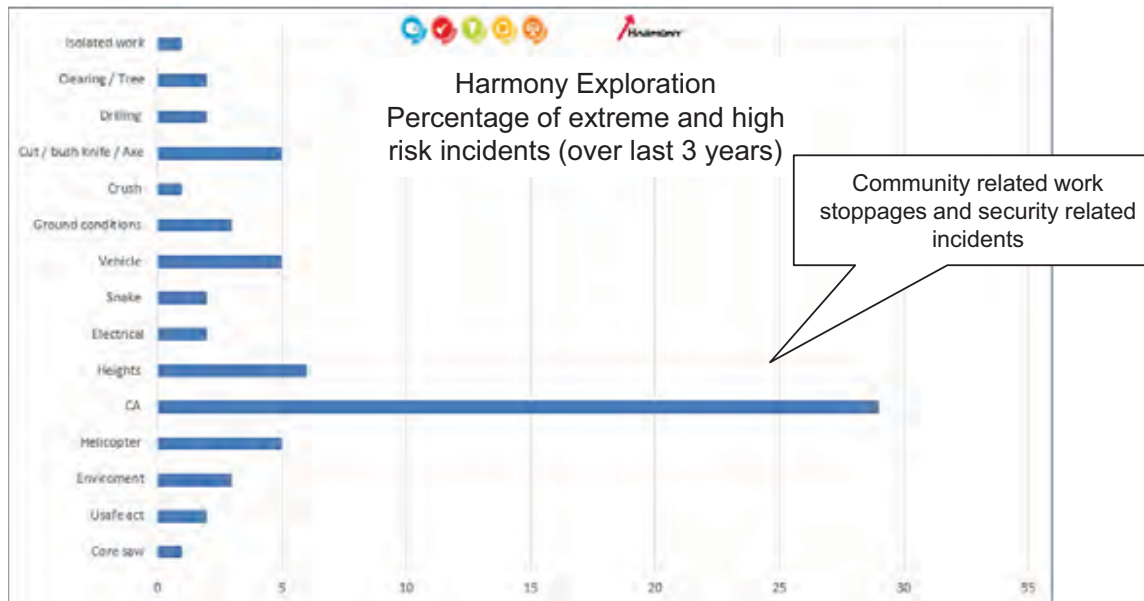
First potable water on tap at Kili Teke ridge



- Improving living conditions in remote communities

## SAFETY IS OUR TOP PRIORITY

- 810 LTI free days
- Training in systems:
  - Job safety environment analysis utilisation
  - Hazard identification / risk assessment and closing out corrective actions fully
- Initiatives:
  - Contractor competency and currency / Skills Verification
  - Development of critical controls for high risk tasks

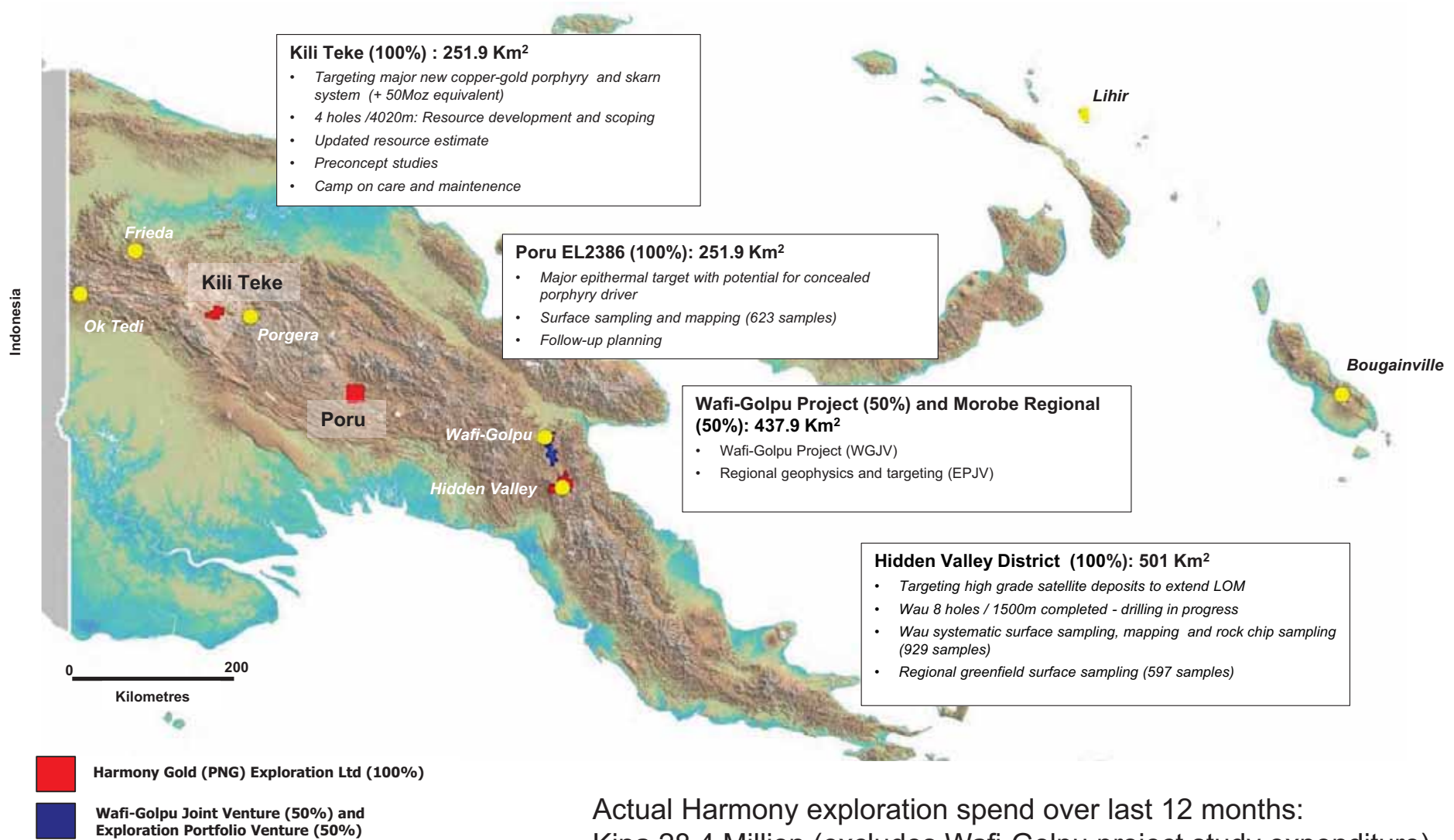


- Community relations and law and order are major focus areas for safety

## HARMONY PNG EXPLORATION STRATEGY

- **Greenfields exploration to expand Harmony's copper and gold footprint in PNG**
  - Advance and leverage Wafi-Golpu Project (50%)
    - Regional geophysics and targeting in Morobe Province (Exploration Portfolio Joint Venture)
  - Project portfolio of large scale alteration/geochemical footprints with potential for major new deposit discoveries (100%)
    1. **Kili Teke:** Studies indicate identification of higher grades or alternative mineralised zones required
      - Further exploration recommended (ZTEM and follow-up drilling)
    2. **Udat Creek:** Major gold target on EL677 (100% owned), located 20km west of HV.
    3. **Poru:** Significant (kilometre scale) high level epithermal Au-Ag alteration and geochemical footprint
- **Brownfields exploration to extend current 6 year life of Hidden Valley mine (100%)**
  - Underexplored opportunity at historic Wau gold mining centre - Potential +500Koz, grades >4 g/t Au
  - Shorter conversion times, less capital intensive projects

# HARMONY PNG TENEMENT PORTFOLIO



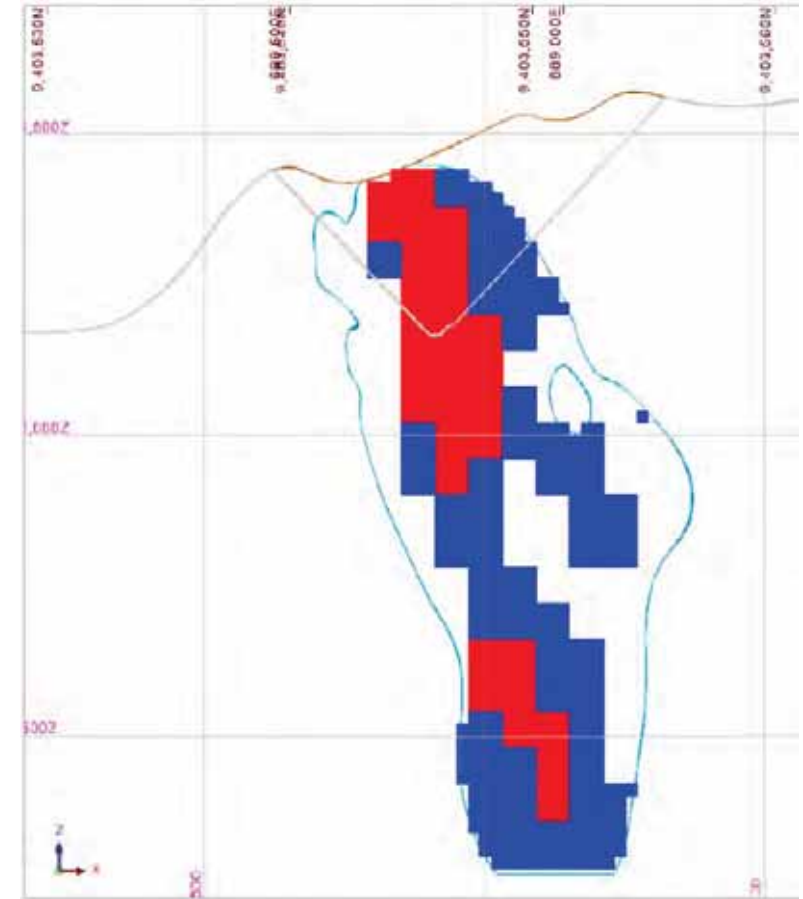
Actual Harmony exploration spend over last 12 months:  
Kina 28.4 Million (excludes Wafi-Golpu project study expenditure)



## KILI TEKE UPDATE

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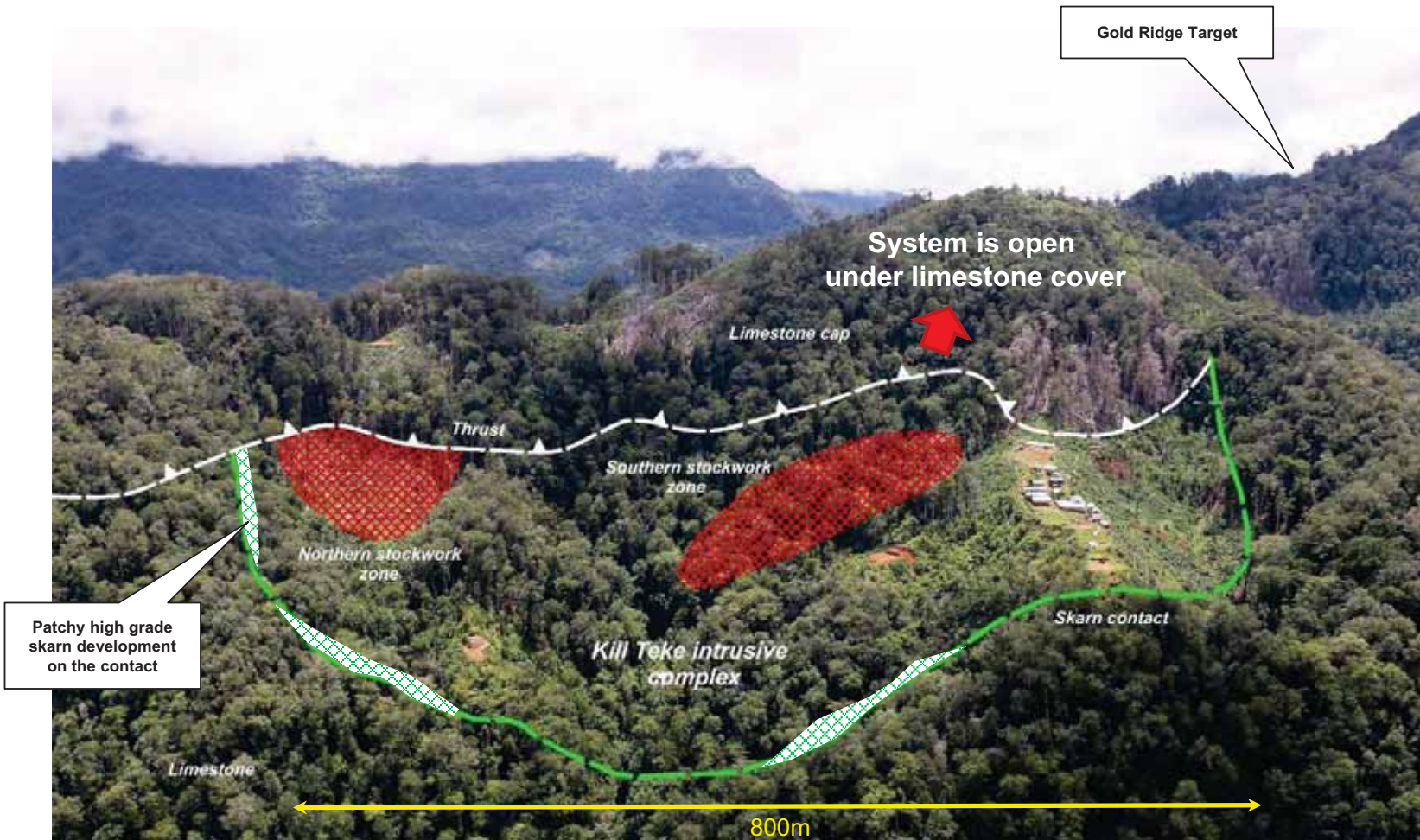
- Updated resource estimate: 237 million tonnes @ 0.34% copper, 0.24 g/t gold and 168ppm molybdenum:
  - 802,000 tonnes copper
  - 1.81 million ounces gold
  - 40,000 tonnes molybdenum
  - 6.2 million ounces on a gold equivalent basis<sup>1</sup>
- Study work highlights value in the open pit due to low strip ratio (1.25), improved grades and early production
- Identification of higher grade zones within the resource or alternative mineralised areas is required to make project economically viable including underground options



Northeast section: topography (brown); most recent whittle open pit extent (grey); estimation domain wireframe (light blue); modelled grade blocks (blue <0.4%, red Cu >0.4%).

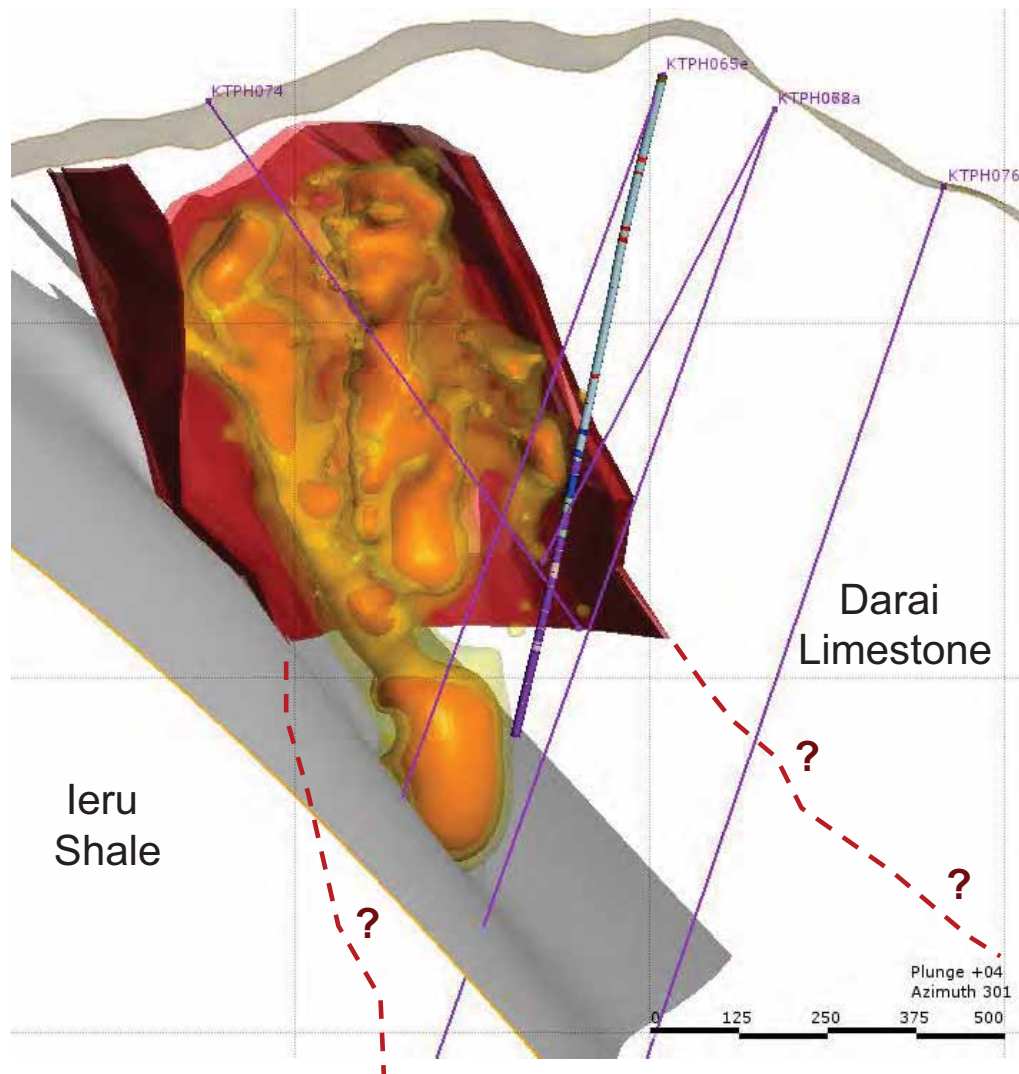
<sup>1</sup> Refer [www.harmony.co.za](http://www.harmony.co.za) for detail. Gold equivalent based on US\$1200 oz Au, and US\$ 3.0 lb Cu

# KILI TEKE – VIEW LOOKING EAST OVER MINERALISED INTRUSIVE COMPLEX





## KILI TEKE – FORWARD PROGRAM



### Kili Teke a composite porphyry complex

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

### Excellent potential to expand:

- ◆ Requires deep holes to test geometry and extent of high-grade stockwork mineralisation at depth and along contact
- ◆ Geophysics:
  - Airborne geophysics to identify new centres of mineralisation (ZTEM / VTEM)

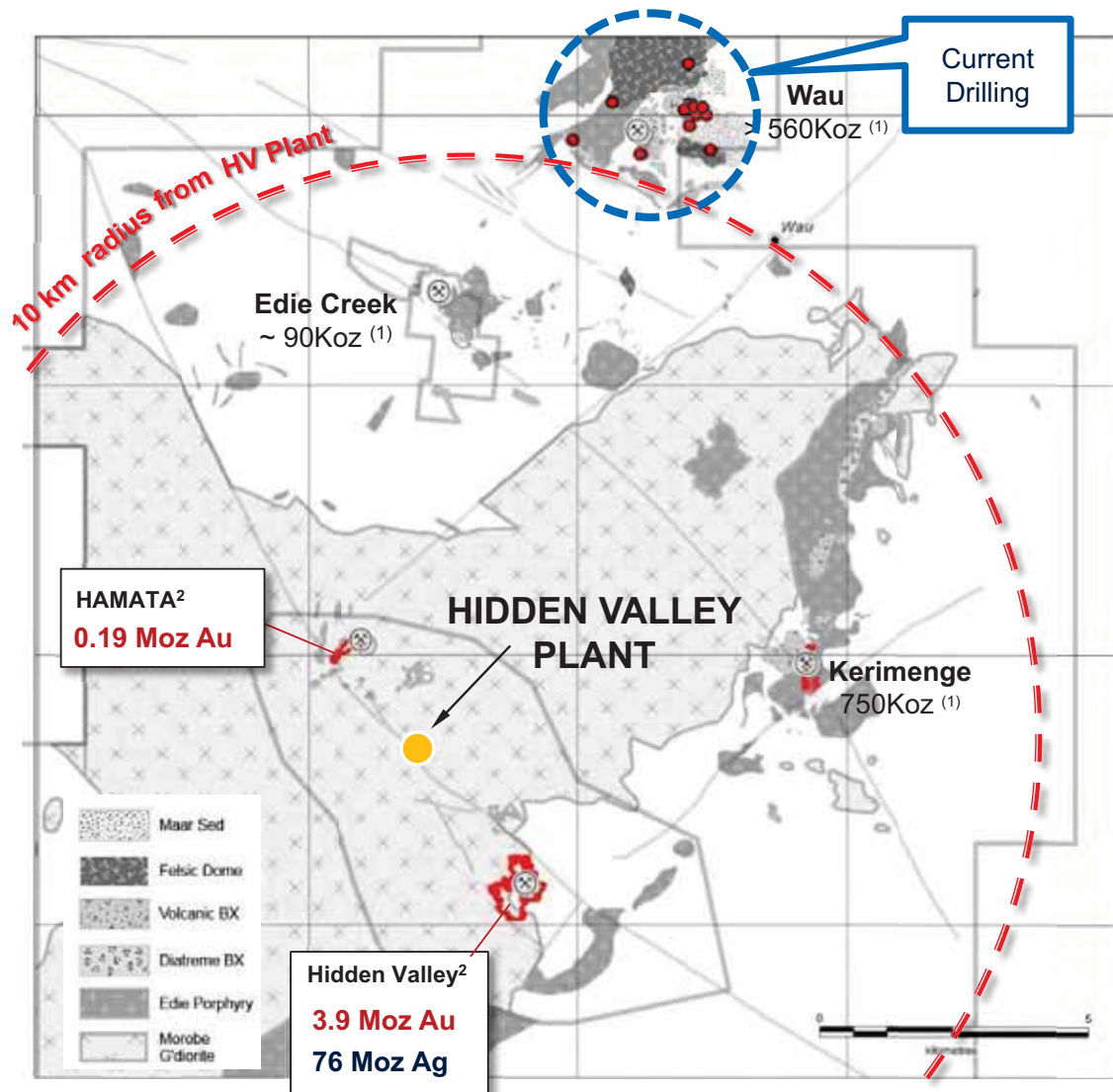
### Reset community agreement:

- ◆ Engaging with Hela Provincial Government to address law and order and resolve conflicting Landowner claims prior to recommencing field work



## HIDDEN VALLEY DISTRICT EXPLORATION

## HIDDEN VALLEY DISTRICT - BROWNFIELD EXPLORATION POTENTIAL



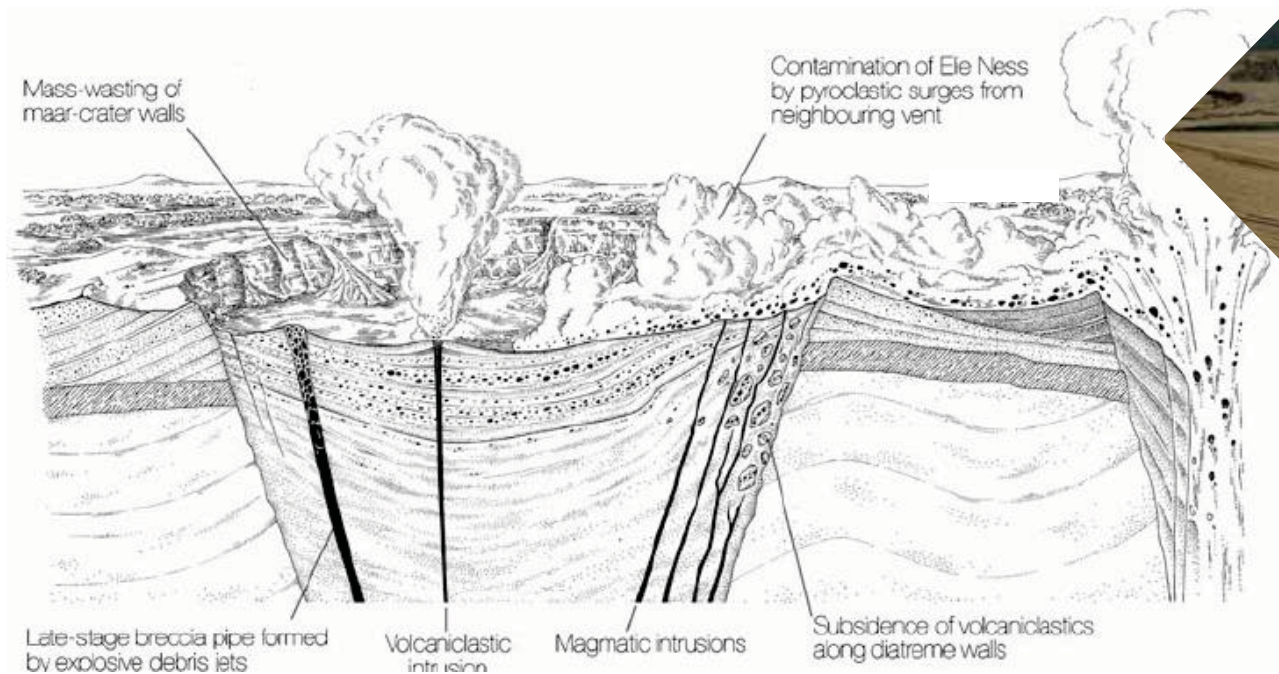
- Secured 100% ownership of prime tenement holding around the mine:
  - +8 Million ounce mineral district
  - Targeting satellite resources: >100 Koz; with average grades >4 g/t Au
  - Leverage Hidden Valley mine and established infrastructure
- Historic mining centre at Wau
  - Intermittently mined 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) 2017 Resource – refer [www.harmony.co.za](http://www.harmony.co.za)

## WAU GOLD MINING CENTRE

- A preserved high level epithermal domefield

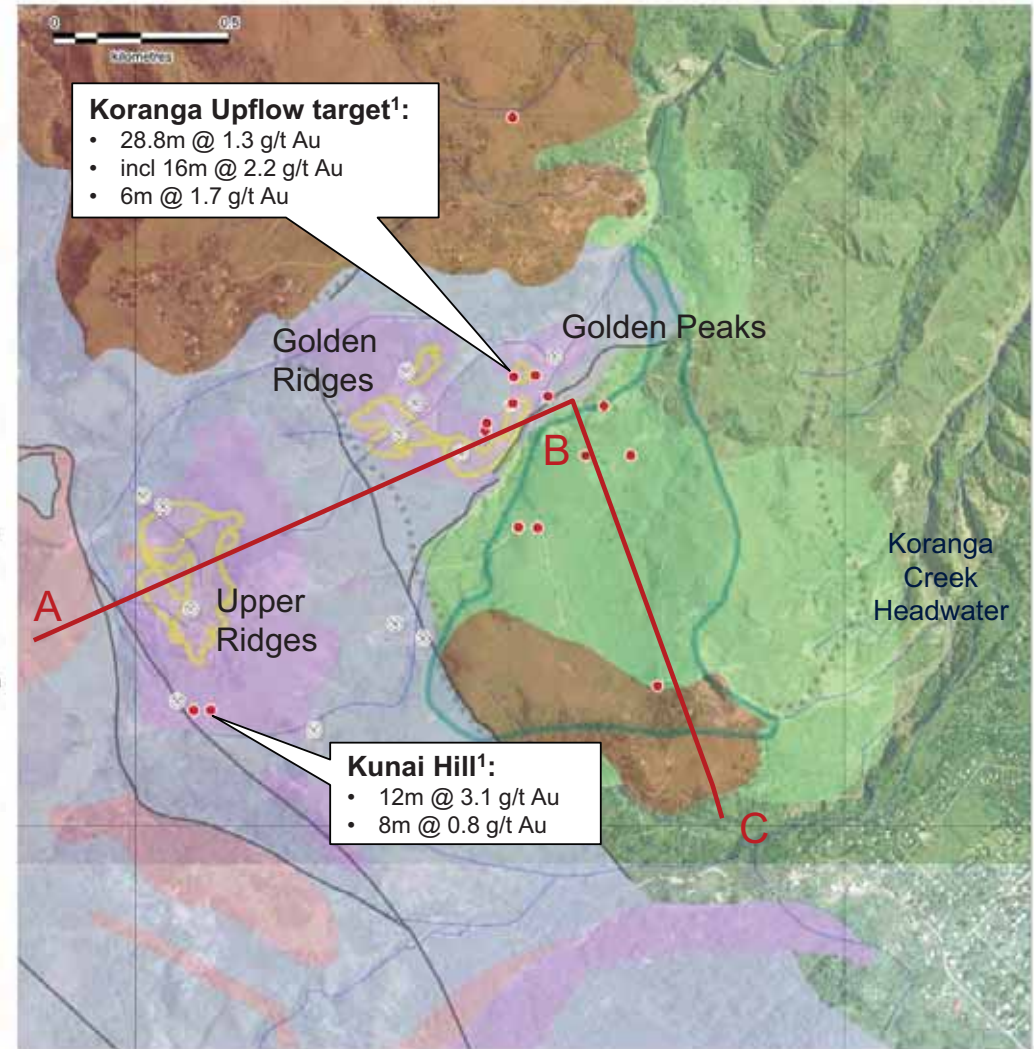


Graphic source: Gernon et al. (2013)



## WAU DRILLING UPDATE

- 8 holes completed (~1500m)
- **Mineralised zone developing at Koranga upflow target:**
  - 150m of strike, 80m down dip extent (open)
  - Extends to surface Au
- **Initial drilling at Kunai Hill in progress:**
  - Mineralisation intersected, brecciated felsic intrusive with base metal sulphides
- **Geological interpretation suggests major deposit potential:**
  - Advanced argillic alteration developed throughout Anderson Volcanic unit
  - Supergene / alluvial gold

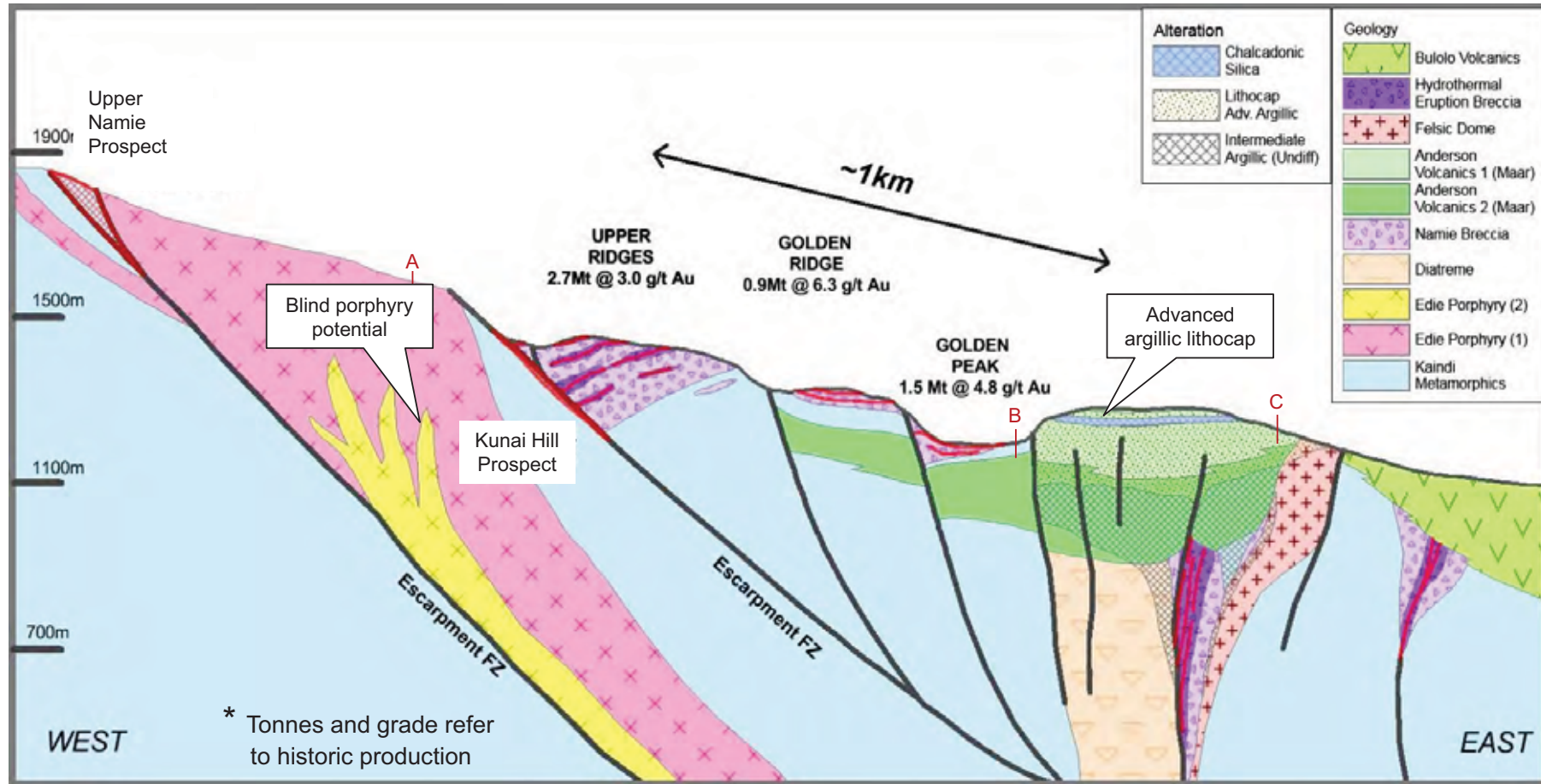


Wau geology interp and orthophoto; planned / completed holes shown in red

<sup>1</sup> Refer [www.harmony.co.za](http://www.harmony.co.za) for supporting technical annexure

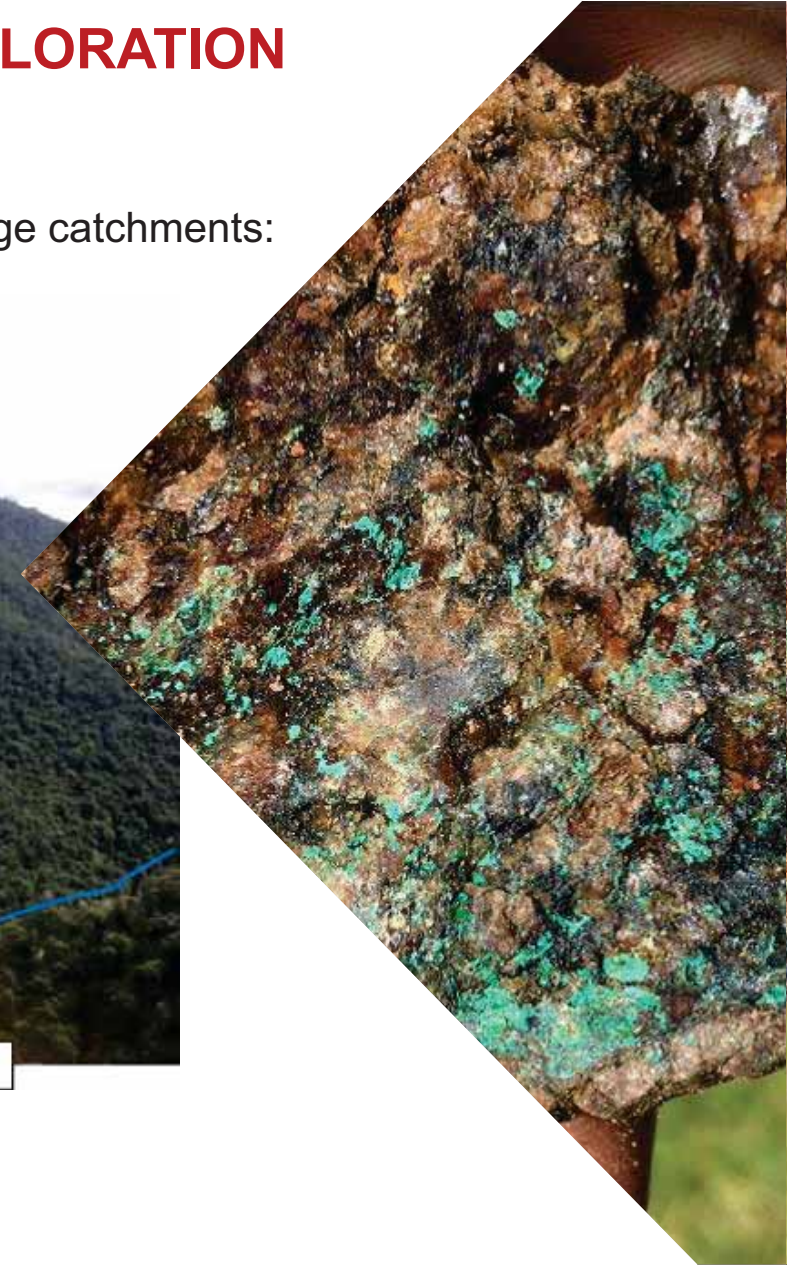
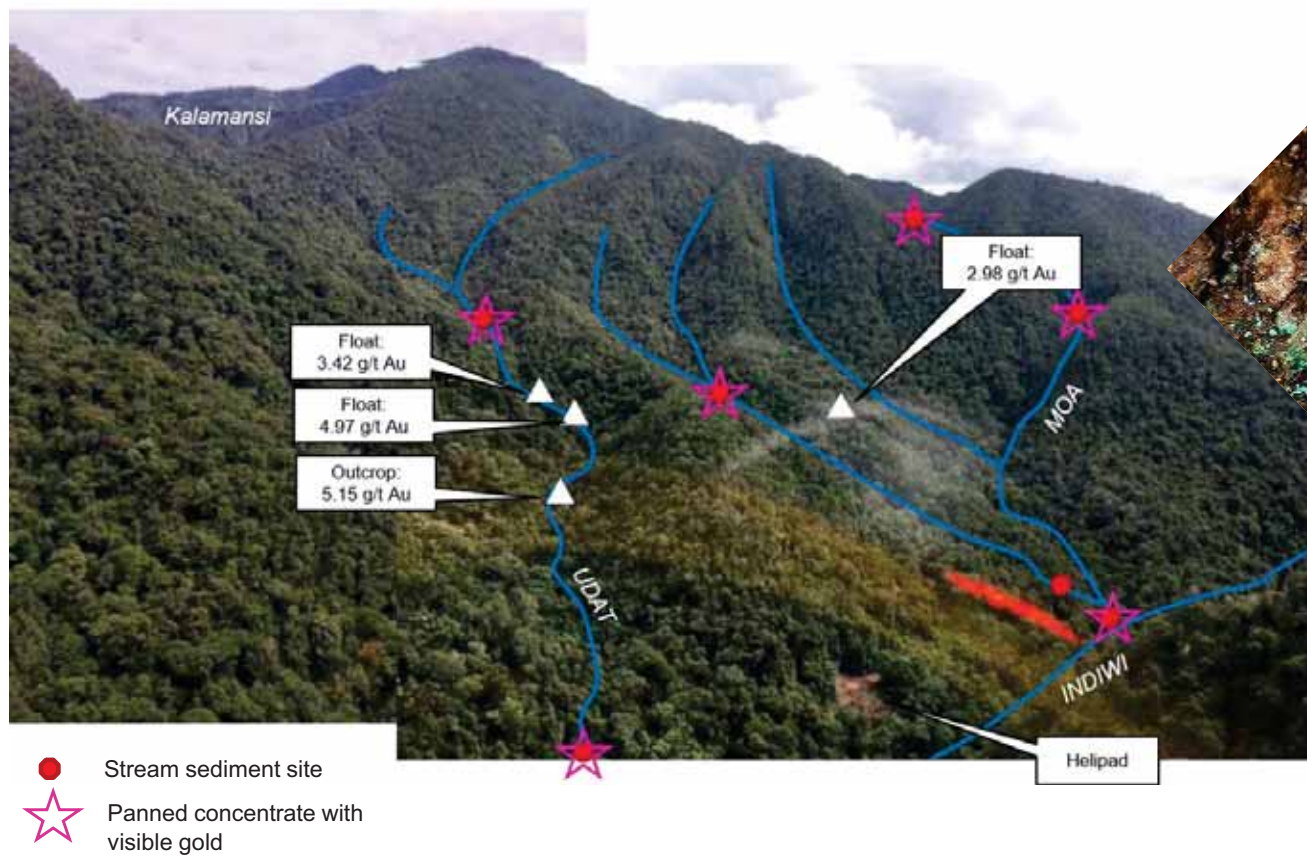
## WAU TARGET POTENTIAL

- Wau epithermal gold deposits interpreted as upflow / outflow zones
- Anderson volcanics confirmed with advanced argillic alteration – targeting fluid conduits and at depth below the lithocap



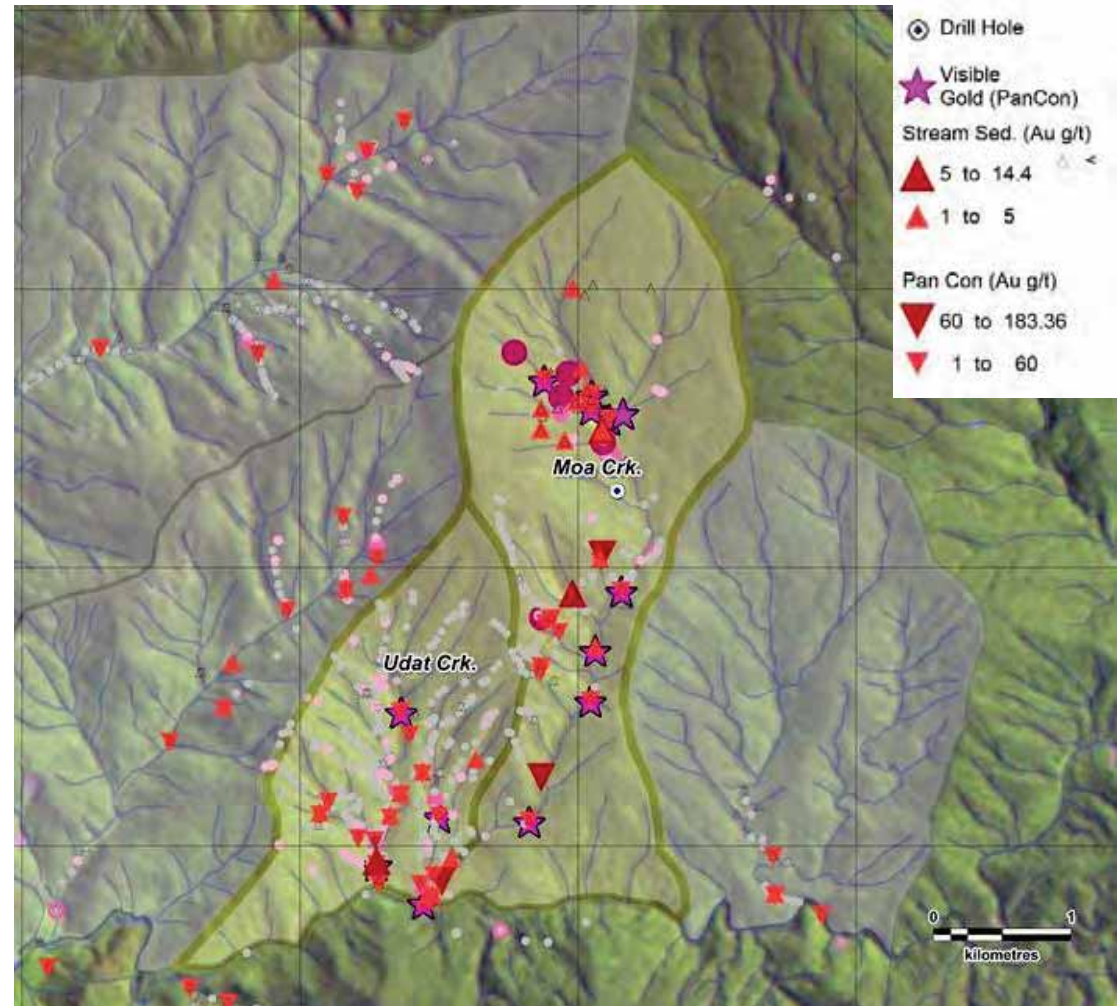
# HIDDEN VALLEY DISTRICT - GREENFIELD EXPLORATION POTENTIAL

View over a portion of the Udat creek and Moa creek drainage catchments:



## UDAT & MOA CREEK CATCHMENT AREA

- Located approximately 20km west of Hidden Valley on EL677
- Large scale geochemical footprint
  - Gold bearing drainages over +10 square kilometers
- Mid – upper level intrusive complex
  - Copper-gold bearing skarns at surface
  - Central porphyry potential with peripheral structurally controlled gold
- Quality grassroots geochemical target generated in the late 1980's with little to no follow-up







## CONCLUSION

## KEY POINTS

- PNG is hugely prospective for gold and copper-gold deposits and under-explored
- Harmony's exploration expenditure in PNG is value adding
  - On a gold ounce equivalent basis over 39.4 million ounces equivalent added to the resource base<sup>1,2</sup>
  - World class project portfolio and pipeline of quality brownfields and greenfields targets
- Harmony remains committed to exploration in PNG
  - Sustain business: replace depletion in the context of a global environment where new discoveries are becoming rare
  - Requires appropriate legislative and regulatory support
  - Established teams and systems: Cost efficient, effective operator in the PNG environment
- Major focus on Hidden Valley brownfield targets for mine life extension
- Greenfield exploration continues:
  - Kili Teke grown to 6.2 Million equivalent gold ounces
  - Quality gold targets developing at Udat creek and Poru
  - Regional geophysics and targeting (as part of the Exploration Portfolio JV)

<sup>1</sup> Gold equivalent based on US\$1200/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

# EM TASOL

QUESTIONS ?





## CONTACT US

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