



**ZAMIA METALS LIMITED**  
**TARGETING GOLD & COPPER**  
**IN QUEENSLAND**  
**EXPLORATION STRATEGY,**  
**JULY 2016 – JUNE 2017**

**COVER NOTE**

The first version of this information document, which was placed on the Company's website, was removed at the request of the ASX and replaced by the current version. The original version contained a reference to a "pre-mining resource" which was not reported in accordance with listing rule 5.12

**August 2016**



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## Introducing Zamia Metals Limited

- Listed on ASX since 2007
- Package of Exploration Permits for Minerals (EPMs) in central Queensland
- Exploration success with discovery of Anthony porphyry molybdenum (Mo) deposit
- Focusing on a region with a long history of gold mining
- Targeting epithermal gold and porphyry copper-gold deposits

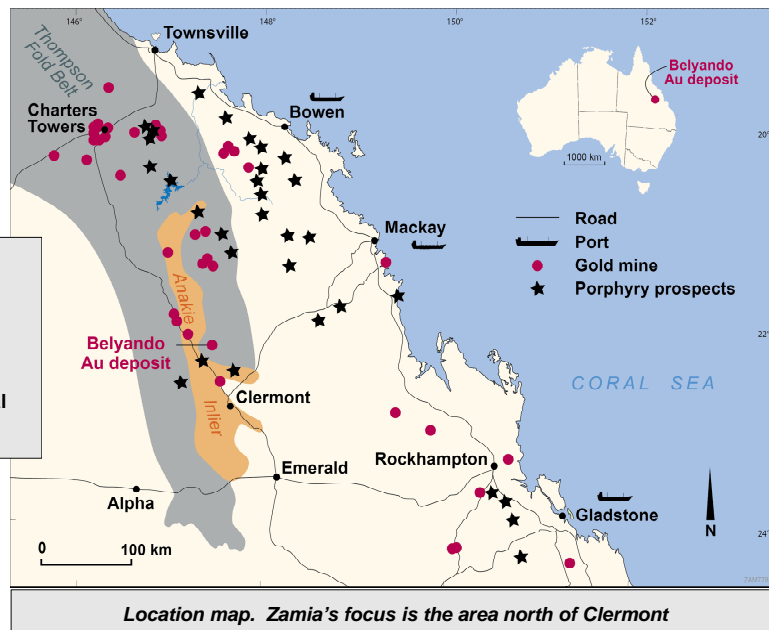
Zamia has identified and prioritised exploration targets within its mineral tenements and is seeking funding to advance those targets towards discovery and resource delineation



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## The Target Region - Central Queensland

- Numerous operating & dormant gold mines
- Good infrastructure - roads, power, water
- No major environmental issues



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## An Established Gold Province

The Charters Towers to Clermont belt in Central Queensland has been a significant gold producing area since the 1860s when gold was discovered at Clermont. Significant epithermal gold deposits (Morrison & Beams, 1995) include:

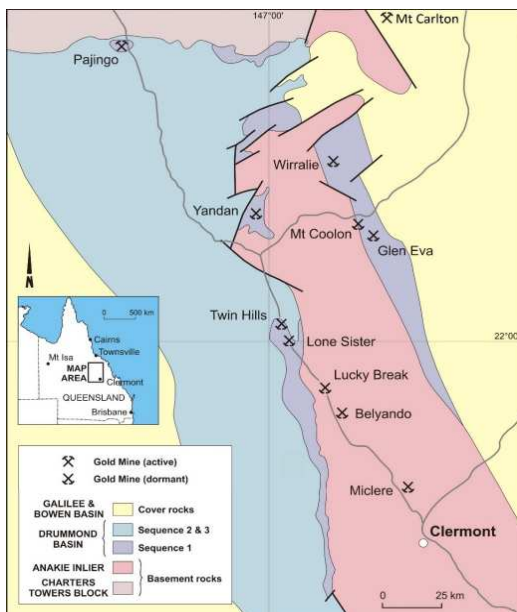
- Charters Towers district: Production 6.6 Moz
- Pajingo: Production + resource 3 Moz
- Mount Carlton: > 1 Moz
- Wirralie: Production 320,000 oz
- Yandan: Production 350,000 oz
- Mount Coolon: Production 290,000 oz
- Twin Hills: Resource 390,000 oz

Zamia's discovery of the Anthony molybdenum deposit demonstrates the potential of the region to host significant porphyry systems

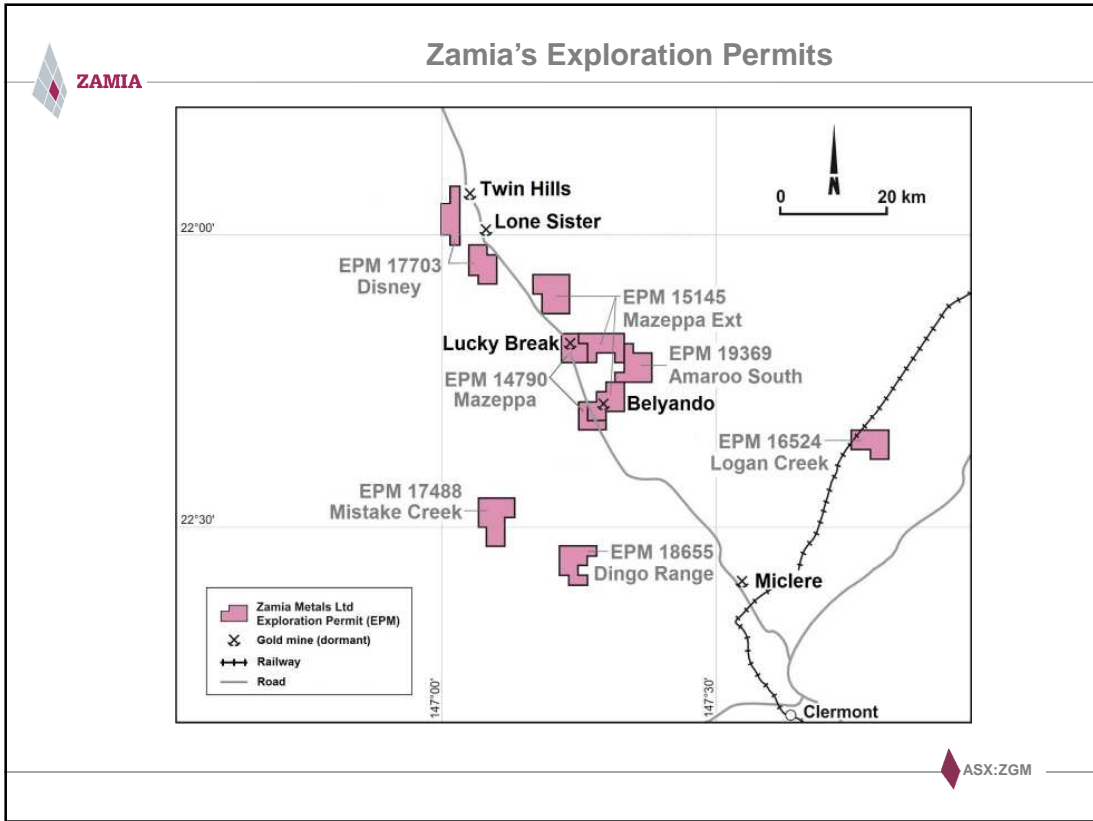


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## Geological Setting



- **Anakie Inlier:** A north-trending basement ridge of Neoproterozoic to Cambrian metamorphic rocks
- **Drummond Basin:** A Devonian to Carboniferous volcano-sedimentary sequence with the Silver Hills Volcanics (dacite – andesite) at the base
- **Devonian to Carboniferous intrusive complexes** of granite to diorite composition with high level porphyry & breccia bodies
- **Drummond Basin flanked by basin sequences** of Permian to Mesozoic age
- **Extensive black soil obscures bedrock**



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## Targeting Porphyry-style Deposits

The Anthony molybdenum deposit, discovered by Zamia, is a typical porphyry system -

- High level porphyry & breccia intrusions
- Stockwork vein mineralisation
- Large tonnage
- Characteristic alteration patterns
- A large geochemical halo

The Anthony discovery demonstrates regional prospectivity for large porphyry-style deposits

Porphyry deposits, even when buried to depths of hundreds of metres, make excellent mining targets -

- Large size
- Can be bulk mined by block caving
- Simple mineralogy & processing

*Anthony drill core showing characteristic sulphide stockwork veining in an altered porphyry intrusion*

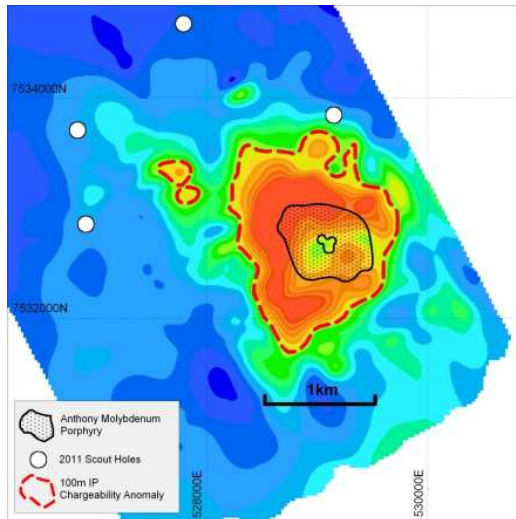
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## Exploration Strategy

Zamia has identified numerous targets for epithermal gold and porphyry copper-gold (Cu-Au)

Zamia is now at a stage where it needs to apply significant funding to test these targets



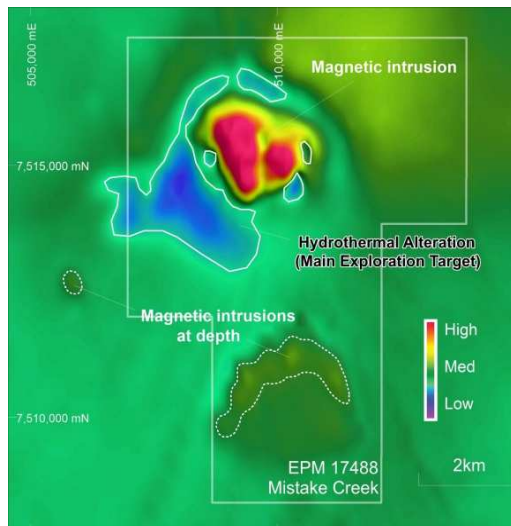
Successful exploration requires:

- Induced polarisation (I.P.) surveys to detect disseminated sulphide concentrations and identify drilling targets
- Deep drilling to test the targets
- Careful geological study to recognise characteristic patterns of rock alteration

*Anthony deposit: I.P. chargeability anomaly (red-orange) at 100m depth surrounding the molybdenum resource (black outline)*



## Mistake Creek (EPM 17488 Mistake Creek)



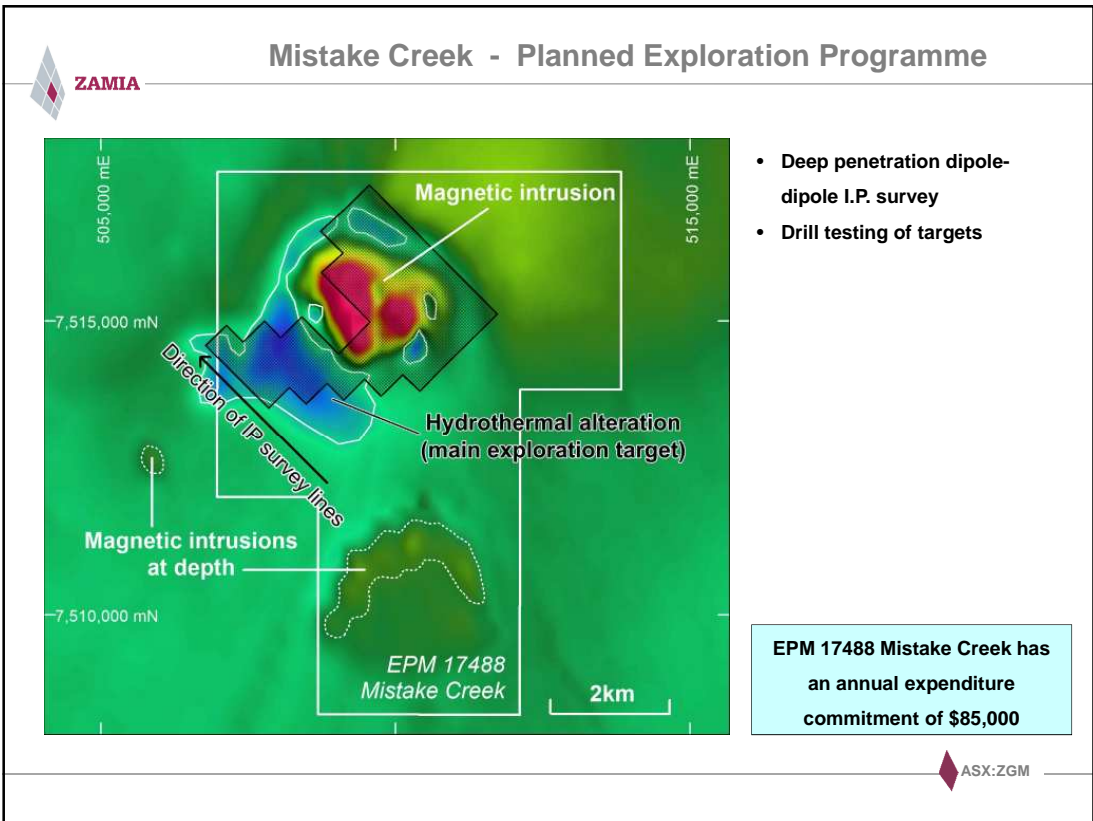
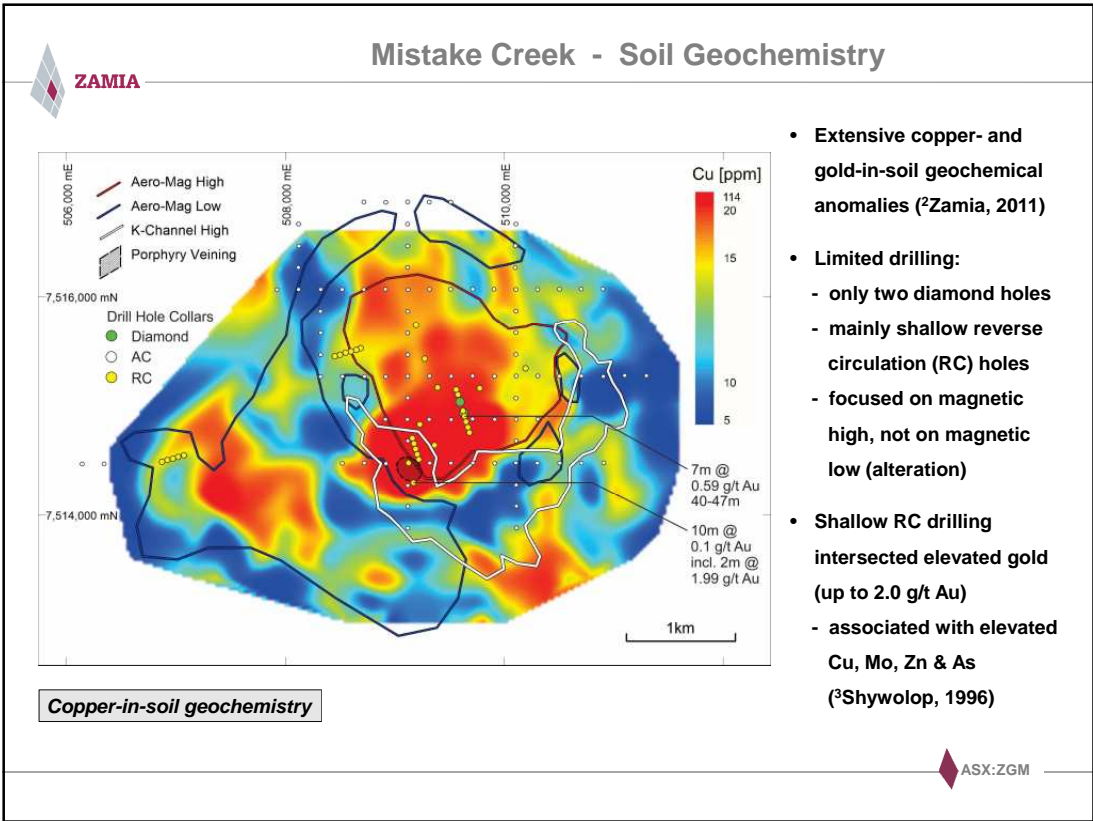
**Mistake Creek magnetic image**

*Porphyry-style veins of quartz-iron oxide (after sulphide)*

- Porphyry copper-gold target
- Magnetic high: an intrusive igneous complex
- Porphyry-style quartz-sulphide veins
- Arcuate magnetic low indicates a broad zone of rock alteration: the main exploration target, untested in previous exploration
- Radiometric imagery shows an arcuate potassium channel anomaly, perhaps reflecting porphyry-related potassic alteration

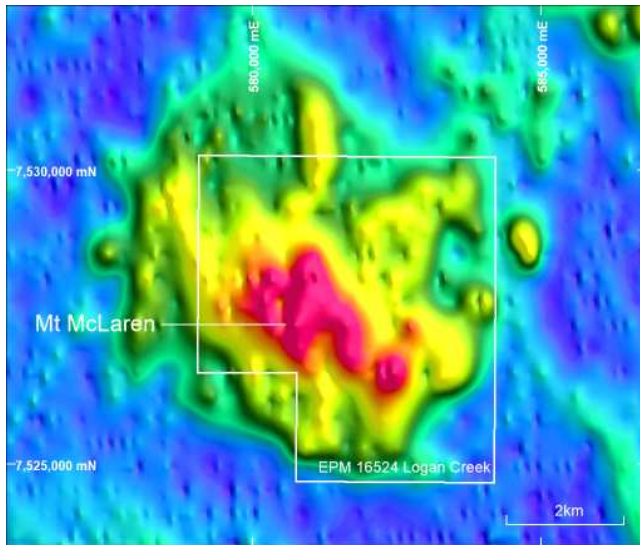








## Mount McLaren Prospect (EPM 16524 Logan Creek)



Radiometric potassium channel image

### Classic porphyry signature:

- Multiple igneous intrusions (intersected in drill holes)
- Veins of quartz-iron oxide (after sulphide)
- Silica-sericite alteration at surface
- A strong potassium signature in radiometric imagery
- A large (1500m x 1500m) Mo-in-soil geochemical anomaly surrounded by Cu and Pb-Zn anomalies (SAMAust, 1973)
- 3000m x 2000m zone of elevated I.P. chargeability (Graham, 1978a)
- Elevated Au Cu Mo As Zn & Pb in drill hole intersections (Graham, 1978b; Forster, 1988)



## Mount McLaren Prospect (EPM 16524 Logan Creek)



Quartz-iron oxide veins in silica-sericite altered rhyolite

### Planned Exploration Programme

- Re-assess soil geochemical results
- Re-model historic I.P. data and, if necessary, carry out a new I.P. survey
- RC and diamond drilling to test targets identified by the I.P. survey

EPM 16524 Logan Creek has an annual expenditure commitment of \$120,000





## Belyando Gold Mine (EPM 15145 Mazeppa Extended)

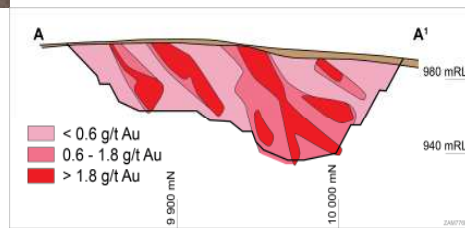


- Deposit discovered in 1985 by drilling a geochemical anomaly
- Open-cut mining & processing by Ross Mining, 1989-1995
- Deposit mined to a depth of 50 – 60m
- Production: 85,846 oz Au, recovery 72% (Mustard, 1998)

Photo: Belyando open-cut mine with leach heaps in the background

- Multiple gold lodes plunge northwest
- Gold mineralisation outlined to 150m depth
- Lodes remain open down plunge

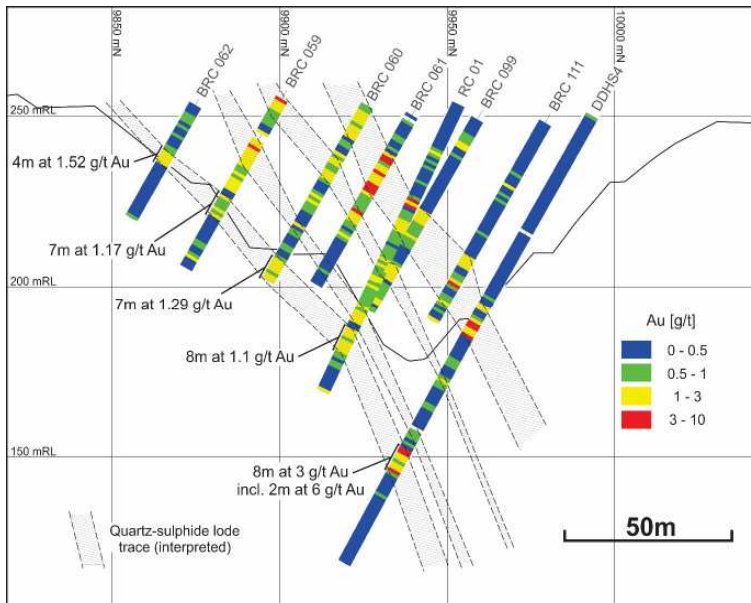
Belyando pit grade section 10,000mE (looking north)  
(after Mustard, 1998)



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## Belyando: Down-plunge Discovery Potential



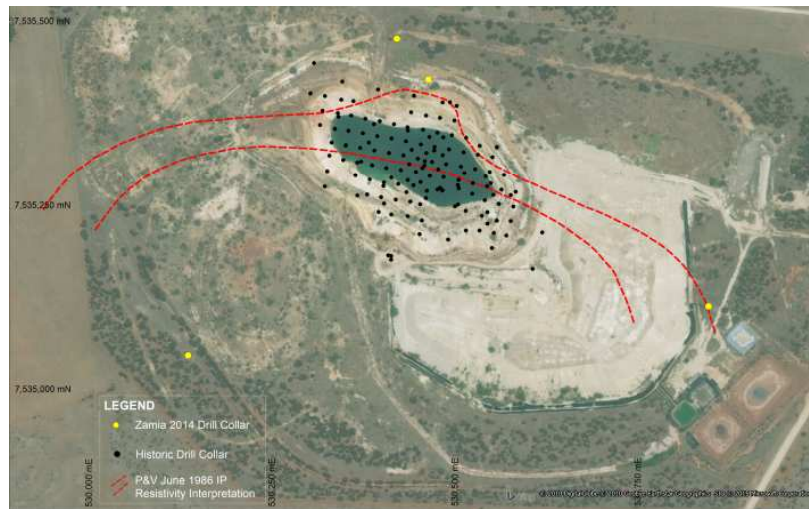
Previous resource drilling, mostly to a depth of only 80m, shows gold intersections below the pit, showing good potential for gold at depth below the pit

(Drilling data from Mustard/Menzies Gold NL (1987) and Ross Mining (1988))

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## Belyando I.P. Survey (1986)



Shallow (~ 100m) I.P. showed (a) a chargeability anomaly extending away from known gold concentration, and (b) a broad arc of high resistivity possibly due to silica alteration. I.P. targets remain largely untested by drilling. The image shows the previously-mined leach heap to the southeast of the open-cut mine

## Belyando Gold Deposit

- Gold in quartz-pyrite-arsenopyrite veins and in siliceous breccia
- Hosted by silicified & brecciated Anakie Metamorphics

*Quartz + fine grained pyrite from  
64.6m in hole DDHS4.  
Assay 2.36 g/t Au + 1800 ppm As*



### Targets

- Extensions of known lodes to northwest below and down plunge from open-cut mine
- Undiscovered lodes lateral to and along strike from known lodes. Magnetic imagery shows magnetite depletion (alteration) along a northwest-oriented structure
- A broad zone of low grade gold (0.8 – 1.0 g/t Au) offering a target for a bulk-mineable gold deposit
- Satellite gold deposits (e.g. Ibis geochemical anomaly, several hundred metres from the open-cut mine)
- Possibly, porphyry-style copper-gold at depth below the Belyando gold deposit



## Belyando: Possible Early Production from Heap Leaching

A heap of previously-mined gold-bearing material is situated adjacent to the old mine. <sup>11</sup>Wirralie Mines extracted around 1000 oz gold from a cyanide heap leach programme during the period 2006-07



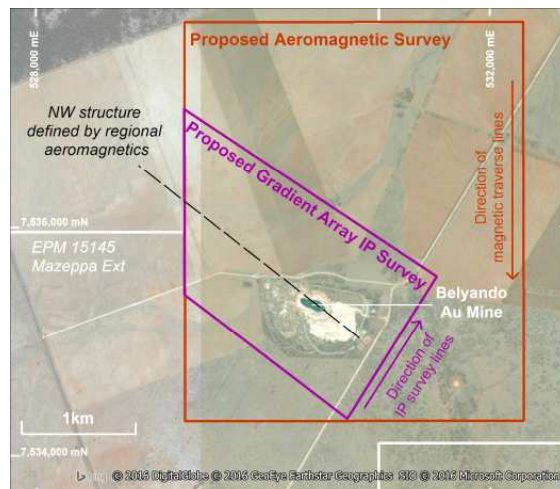
Zamia Metals is considering various options for further recovery of gold from the heap and plans a scoping study to investigate the commercial viability of a small operation based on re-crushing of the previously-mined material followed by cyanide leaching. The scoping study will involve -

- Re-sampling of the heap
- Metallurgical testwork to provide information on crush sizes for optimal gold recovery
- Estimation of costs and preliminary financial analysis



## Belyando - Planned Exploration Programme

- Helicopter magnetic survey over Belyando and extending several kilometres beyond
- A gradient array I.P. survey covering a larger area than the 1986 survey and capable of extending to greater depth
- RC and diamond drill holes to test:
  - extensions to the known gold lodes
  - targets identified by the I.P. survey
  - the Ibis geochemical anomaly
- A scoping study on the commercial viability of gold recovery from the previously-mined gold-bearing heap



EPM 15145 has an annual expenditure commitment of \$300,000





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## Hill 271 Prospect (EPM 19369 Amaroo South)

- Pervasive sericite alteration over an area of 1000m x 1000m
- Surface rubble ("float") of quartz veins with gossanous iron oxide (after sulphide)
- Float samples have elevated concentrations of Au As Sb Bi Cu (<sup>12</sup>Geffress, 1994)
- Best assays 16.7 g/t Au & 12.2% Cu
- Limited previous shallow drilling intersected only low grade gold



Quartz-iron oxide float

- Aeromagnetic imagery shows that the prospect lies along a northwest-trending structure, i.e. parallel to the one which apparently controls the Belyando gold lodes
- In 2013, a single 1.6 km I.P. line detected a chargeability anomaly of +700m width at a depth of + 100m (<sup>13</sup>Zamia, 2014)
- An RC drill hole, to 211m, intersected only weak copper-gold mineralisation

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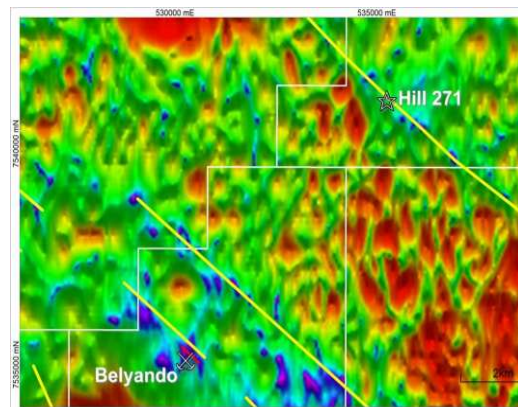
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## Hill 271 Prospect (EPM 19369 Amaroo South)

### Targets

- The northwest structure is a zone of magnetite depletion (alteration) similar to Belyando
- The radiometric signature (high potassium) could indicate proximity to a porphyry-style copper-gold system.

Aeromagnetic image showing northwest-trending structures



### Exploration Programme

- Detailed surface geological mapping to record vein styles and intrusive rocks
- Additional I.P. to provide coverage over the northwest-oriented zone of magnetite depletion evident in the aeromagnetic image
- Plan drill targets based on the I.P. and soil geochemical results

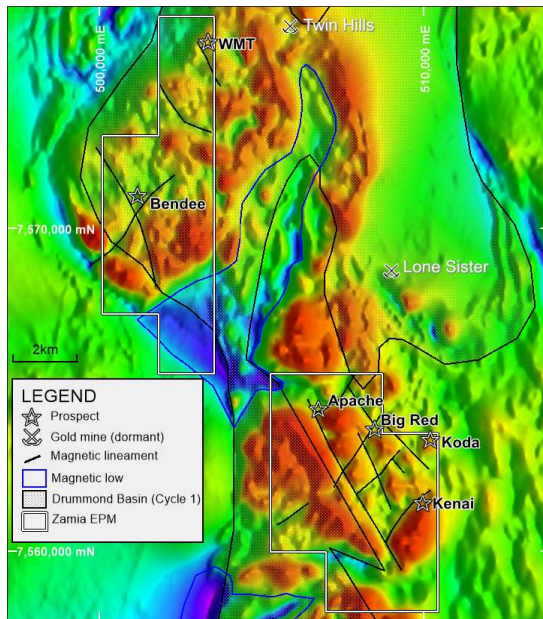
EPM 19369 Amaroo South has an annual expenditure commitment of \$45,000

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## Disney Epithermal Gold Targets (EPM 17703 Disney)

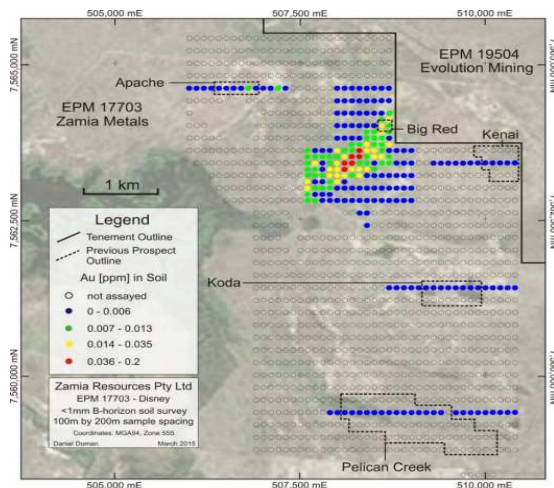


- EPM 17703 lies immediately west and south of known epithermal gold deposits, Twin Hills and Lone Sister (held by Evolution Mining)
- EPM 17703 contains several epithermal gold prospects which have had limited drill testing
- Apache: Previous drilling intersected 2m at 3.25 g/t Au from 137m depth. Untested area with quartz float containing up to 2.72 g/t Au
- Bendee: Previous drilling intersected 4m at 0.63 g/t Au from surface. A 1 km strike of breccia remains untested by drilling
- Aeromagnetic imagery shows demagnetised linear features - evidence of hydrothermal activity along controlling structures
- Soil geochemical anomalies are located along these structures

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## Big Red Prospect (EPM 17703 Disney)



- Gold-in-soil anomaly extends over 1.5 km strike length (<sup>15</sup>Zamia, 2015)
- Surface rubble includes hydrothermal breccia containing up to 1.06 g/t Au
- Most intense gold-in-soil anomaly not tested by drilling

### Planned Exploration Programme

- Re-analyse all soil samples for gold
- RC drilling to test the best geochemical anomalies

**Gold-in-soil geochemistry, highlighting the Big Red prospect. The area of highest gold-in-soil (red dots) has not been tested by drilling**

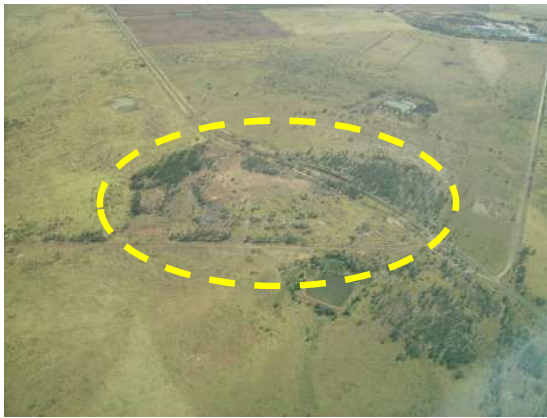
**EPM 17793 Disney has an annual expenditure commitment of \$220,000**

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## Anthony Project (EPM 15145 Mazeppa Extended)



*Oblique aerial photograph of the Anthony project area. The deposit, approx. 800m x 600m in area, is outlined in yellow. The Belyando mine workings can be seen in the right background*

- Anthony is a large porphyry molybdenum (Mo) deposit discovered by Zamia in 2008 by drilling on a Mo-in-soil geochemical anomaly
- The project is sub-economic at the present low molybdenum price
- Drilling on I.P. targets marginal to the Mo resource showed porphyry-style alteration but failed to intersect significant Cu-Au
- It is possible that Anthony will be a feasible project in the future. Zamia intends to apply for a Mineral Development Licence (MDL) covering the deposit plus enough area for future infrastructure requirements
- The MDL area will be excised from Zamia's EPM 14790 Mazeppa and EPM 15145 Mazeppa Extended



## Investment Highlights

- ✓ An established gold province with excellent potential for discovery of further epithermal gold and porphyry copper-gold deposits
- ✓ Large tenement holding with drill-ready epithermal gold and porphyry copper-gold targets
- ✓ Dormant Belyando open-cut gold mine: Resource open down plunge and additional substantial resource potential below known gold lodes
- ✓ Belyando: Potential early cash flow from leaching of previously-mined gold-bearing material
- ✓ Good access and excellent regional infrastructure





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## Exploration Permits for Minerals (EPMs)

Mineral resources are owned by the State of Queensland.

### Exploration Permits:

- Are issued by the Queensland Department of Natural Resources and Mines, initially for a five year period
- Carry expenditure and reporting obligations
- Require lodgement of environmental bonds
- Require access agreements to be negotiated with land-holders
- Require access agreements to be negotiated with native title claimants
- Can be renewed if all obligations are met
- Must be progressively reduced in area
- Provide exclusive rights to apply for Mining Licences within the EPM areas

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## Zamia's Exploration Permits

Tenement Number	Tenement Name	Grant Date	Expiry Date	Status as at 31.03.2016	Area km <sup>2</sup>	Expenditure Commitment
EPM 14790	Mazeppa	12.01.2006	11.01.2021	Year 11	39	\$70,000
EPM 15145	Mazeppa Extended	11.08.2006	10.08.2017	Year 10	112	\$300,000
EPM 17488	Mistake Creek	05.11.2009	04.11.2017	Year 7	47	\$85,000
EPM 16524	Logan Creek	23.12.2010	22.12.2020	Year 6	21	\$120,000
EPM 17703	Disney	30.01.2012	29.01.2017	Year 5	60	\$220,000
EPM 19369	Amaroo South	30.01.2012	29.01.2017	Year 5	34	\$45,000
EPM 18655	Dingo Range	29.05.2013	28.05.2019	Year 3	34	\$70,000

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## 12-Month Exploration Programme, July 2016 – June 2017

### **Mistake Creek:** Porphyry copper-gold target

- Deep penetration dipole-dipole IP survey
- Drill test targets

**EPM 17488 Mistake Creek has an annual expenditure commitment of \$85,000**

### **Mount McLaren:** Porphyry copper-gold-molybdenum target

- Re-assess historic soil geochemistry
- Re-model historic I.P. data and, if necessary, carry out a new I.P. survey
- RC and diamond drilling to test targets identified by the I.P. survey

**EPM 16524 Logan Creek has an annual expenditure commitment of \$120,000**

### **Belyando:** Epithermal gold target; possible porphyry system at depth

- Helicopter magnetic survey over Belyando and extending several kilometres beyond
- A gradient array I.P. survey covering a larger area and extending to greater depth than the 1986 survey
- RC and diamond drilling
- A scoping study on the viability of gold recovery from the previously-mined gold-bearing heap

**EPM 15145 Mazeppa Extended has an annual expenditure commitment of \$300,000**



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## 12-Month Exploration Programme, July 2016 – June 2017

### **Hill 271:** Epithermal gold target; possible porphyry system at depth

- Detailed surface geological mapping
- Additional I.P. to provide coverage over the NW-oriented zone of magnetite depletion
- Compile and interpret historical soil geochemical results
- Identify and prioritise drill targets based on the I.P. and soil geochemical results

**EPM 19369 Amaroo South has an annual expenditure commitment of \$45,000**

### **Disney:** Epithermal gold targets

- Complete detailed soil geochemical surveys over target areas
- RC drilling to test the best geochemical anomalies

**EPM 17703 Disney has an annual expenditure commitment of \$220,000**

Smaller funding amounts are required for other regional targets

**The total expenditure commitment for the 12-month period is \$910,000**





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## References

- <sup>1</sup>Morrison, G.W., and Beams, S.D., 1995. Geological setting and mineralisation style of ore deposits of Northeast Queensland. In Beams, S.D., ed. Mineral Deposits of Northeast Queensland: Geology and Geochemistry. EGRU Contribution 52, pp1-32, James Cook University
- <sup>2</sup>Zamia Metals Limited, 2001. Quarterly activities report for the quarter ended 30 September 2011. ASX:ZGM 27 October 2011
- <sup>3</sup>Shywolup, W., 1996. Exploration Permit for Minerals, EPM 10444 – Piebald Creek, Annual report for period February 15, 1995, to February 14, 1996, for Cyprus Goold Australia Corporation, Report No. 847. QDEX Company Report 27653
- <sup>4</sup>Swiss Aluminium Mining Australia, 1973. Authority to Prospect 884M Clermont, Queensland. Report on prospecting activities 1972. QDEX Company Report 4507
- <sup>5</sup>Graham, J.M., 1978a. Authority to Prospect 1838M Mt McLaren Project (Mo). Progress report on exploration for the period ended March 1978. Pennzoil of Australia Limited. QDEX Company Report 6445
- <sup>6</sup>Graham, J.M., 1978b. Authority to Prospect 1838M Mt McLaren Project (Mo). Progress report on exploration for the period ended March 1978. Pennzoil of Australia Limited. QDEX Company Report 6771
- <sup>7</sup>Forster, R., 1998. AP 4308 (Logan). Report for the year ended 16 June 1988. Peko-Wallsend Operations Limited, Geopeko Division. QDEX Company Report 18838
- <sup>8</sup>Mustard, R., 1998. Belyando Gold Deposit. In Berkman, D.A., and Mackenzie, D.H., eds. Geology of Australian and Papua New Guinean Mineral Deposits, 00707-714, The Australasian Institute of Mining and Metallurgy
- <sup>9</sup>Mustard, H.M., 1987. Authority to Prospect 4165M Hill 266. Annual report covering period 28 December 1886 – 27 December 1987. Menzies Gold NL. QDEX Company Report 18248
- <sup>10</sup>Ross Mining, 1998. Authority to Prospect 4165M Hill 266, Six monthly progress report for the period ending December 27, 1988. Prepared by J.J. Lawton. QDEX Company Report 19642
- <sup>11</sup>Wirralie Mines, 2007. Wirralie and Belyando Gold Mines, Queensland. Information Memorandum, Wirralie Mines PL
- <sup>12</sup>Geffress, G.M., 1994. Frankfield Project Exploration report for the period 10/9/92 to 3/11/93. CRA Exploration Pty Ltd. QDEX Company Report 25635
- <sup>13</sup>Zamia Metals Limited, 2014. Quarterly Activities Report for the quarter ended 31 December 2013. ASX:ZGM 31 January 2014
- <sup>14</sup>Zamia Metals Limited, 2015. Substantial gold anomalies in soil – EPM 17703 Disney tenement. ASX:ZGM 25 March 2015

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## Disclaimer

### Forward-Looking Statements

This document contains certain "forward-looking statements", including, but not limited to, statements concerning current and future drilling programmes, estimation of mineral resources, the continuing development plan, the type of mineralisation present and expected results.

Information inferred from the interpretation of drilling results may be deemed to be a forward looking statement, as it constitutes a prediction of what might be found to be present when and if a project is actually developed.

Statements and estimates concerning mineral resources may also be deemed to be forward looking statements in that they involve estimates, based on certain assumptions, regarding the mineralisation that would be encountered if and when a mineral deposit is actually developed and mined.

Forward looking statements are not historical facts, and are subject to a number of risks and uncertainties beyond management's control. There can be no assurance that such statements will prove to be accurate. Actual results and future events could differ materially from those anticipated in such statements. Risks and uncertainties that could cause results or future events to differ materially from current expectations expressed or implied by the forward-looking statements include, among other things, but without limitation, those set forth in the Annual Report and the website ([www.zamia.com.au](http://www.zamia.com.au)) of Zamia Metals Limited ('Zamia').

For more information about the Company's properties and projects, please refer to the Annual Report.

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### Technical Information

The technical information contained in this document was compiled by Dr Ken Maiden, a Non-Executive Director of Zamia Metals Limited. Dr Maiden is a Member of the Australian Institute of Geoscientists and a Fellow of the Australasian Institute of Mining and Metallurgy. He has sufficient experience to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Dr Maiden consents to the inclusion of the matters in the form and context in which they appear.

All technical information contained in this presentation is based on exploration results and scientific data previously released by Zamia Metals Limited and/or quoted from sources in the public domain. Details of data acquisition, processing and interpretation underlying this information are provided in the relevant company reports or scientific literature, as cited and referenced.

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## Zamia Metals Limited

**Address:** Suite 60, Level 6 Tower Building  
Chatswood Village  
47-53 Neridah Street  
Chatswood NSW 2067 Australia

**Telephone:** +61 (2) 8223 3744

**Email:** [info@zamia.com.au](mailto:info@zamia.com.au)

**Website:** [www.zamia.com.au](http://www.zamia.com.au)

