

## METALLURGY RESULTS FROM DOBROYDE

### Highlights:

- Recent metallurgical testwork completed on high-grade mineralisation at Dobroyde confirms a potential gold recovery of up to 80% by ultrafine grinding of flotation concentrate and cyanidation leaching.
- Independent review has identified various ways to potentially improve recovery using gravity, flotation and more aggressive leaching.

Managing Director, Dr Jeffrey Malaihollo, commented:

*"The preliminary metallurgical results of the high-grade mineralisation at Dobroyde, Junee are encouraging. Although further tests will be required, various ways to potentially improved recovery have been identified.*

*Our immediate objective is to understand the geological control of the high-grade mineralisation. Once we understand the system, we will pursue the various recommendations for metallurgical work to improve the recovery."*

Arc Exploration Limited (ASX Code: ARX) is pleased to announce the results of recent metallurgical testwork completed on core from hole NDD2 drilled by New South Resources Pty Ltd ("NSR") in late 2012.

The hole was drilled on a higher grade gold zone within the Dobroyde gold deposit. ARX currently holds an option to farm-in to Dobroyde as part of the Junee exploration tenement package that is 100% owned by NSR.

The metallurgical testwork was commissioned by NSR in 2013 and compared the effects of industry-typical and ultrafine grind-sizes on gold recovery by froth flotation and subsequent cyanidation leaching of the higher grade gold mineralisation at Dobroyde.

The testwork was undertaken by SGS Lakefield Orestest Pty Ltd in Perth on an approximately 60-kilogram bulk sample of NQ-size half-core material that was composited over continuous 1-metre sample intervals taken from 72 to 96 metres down-hole in NDD2. The gold head grade on the bulk sample was reported at 7 g/t gold.

The results of the testwork were recently received and reviewed on behalf of ARX by a metallurgical consultant from Veritas Metallica Pty Ltd.

The gold metallurgy of Dobroyde is characterised by predominantly fine-grained native gold (<60 microns) and minor auriferous telluride minerals associated with fine grained quartz, baryte and pyrite in hydrothermal breccias and stockworks.

The testwork yielded a recovery of 82% of contained gold in the flotation concentrate and the subsequent cyanidation leach extractions on different grind sizes reported gold recoveries in the range of 70-80%, with a general trend of improved recovery with finer grind sizes.

A review of the historical metallurgical testwork undertaken at Dobroyde on different samples showed that the use of cyanidation leaching of industry-standard and fine-grinds on either whole rock or flotation concentrates approached 80% gold extraction in some cases.

The results of the metallurgical testwork confirm the historical results that a reasonable gold recovery can be achieved by conventional flotation and cyanidation extraction techniques applied to the Dobroyde mineralisation. Optimisation testwork is yet to be carried out to determine whether the flotation recovery might be improved.

Although the application of ultrafine grinding appears to offer no significant increase in the gold recovery, potential exists for further improved gold recovery by optimised gravity and flotation concentration, and intense cyanidation of the derived gold-bearing concentrates.

## **Background on the Junee Project**

The Junee Project comprises four contiguous Exploration Licences (EL's 6516, 6658, 6768 & 8152) covering about 87 km<sup>2</sup> that straddle part of the major regional Gilmore Fault Zone and contains rocks of the Junee-Narromine Volcanic Belt, part of the highly prospective Ordovician-Early Silurian Macquarie Volcanic Arc in the Lachlan Orogen.

Large porphyry-related gold and gold-copper deposits, such as Northparkes, Gidginbung and Cowal, occur along this fertile volcanic belt and their distribution is also spatially related to the Gilmore Fault Zone and its associated fault splays.

EL 6516 contains the 77,000-ounce *Dobroyde* gold deposit (Indicated resource estimate of 2,080,00 tonnes @ 1.15 g/t gold)(see ASX announcements of 3<sup>rd</sup> and 10<sup>th</sup> July 2013) on which historic drilling has produced some spectacular high-grade gold intercepts within a low-grade mineralization envelope (see ASX announcements of 9<sup>th</sup> October and 4<sup>th</sup> November 2013). The deposit is a high-sulphidation type epithermal gold system that occurs in structurally controlled zones of silica-sulphide alteration and cross-cutting baryte-rich breccias surrounded by clay-rich alteration zones in andesitic volcanic host rocks.

The project shows potential to increase in size through the discovery of new gold and gold-copper resources, and occurs near major mine operations and development infrastructure.

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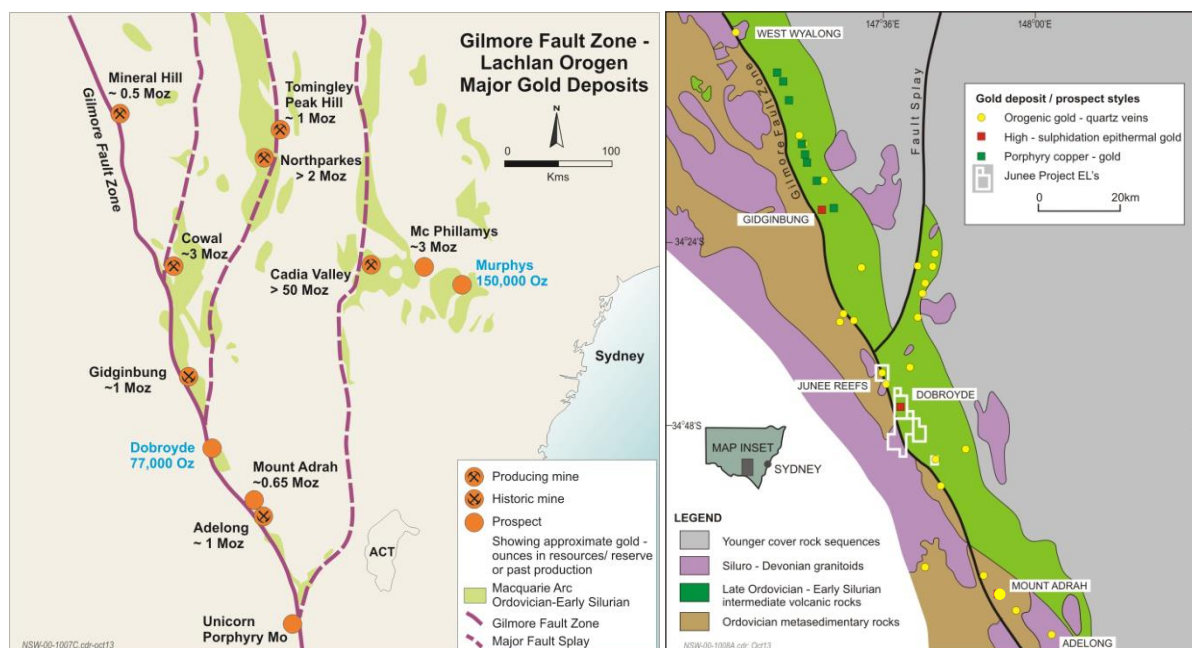
Or visit the website: [www.arcexploration.com.au](http://www.arcexploration.com.au)

## **Competent Person Statement**

The information in this announcement that relates to the metallurgical testwork results from Dobroyde was based on a review prepared by Mr Tom Gibbons, who is a Fellow of the Australian Institute of Mining and Metallurgy and is Principal Consultant with Veritas Metallica Pty Ltd. Mr Gibbons has sufficient experience that is relevant to the review of the metallurgical results, the style of gold deposit under consideration, and to the activity being undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australian Code of Reporting of Exploration Results, Mineral Resources and Ore Reserves.' Mr Gibbons consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.'

The information in this announcement that relates to Exploration Results is based on information compiled by Mr Brad Wake, BSc (Applied Geology), who is a member of the Australian Institute of Geoscientists. Mr Wake has sufficient experience that is relevant to the styles of mineralisation and types of deposit under consideration and to the activity which is being undertaking 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.' Mr Wake is a full time employee of Arc Exploration Limited and consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the Dobroyde gold resource is extracted from the report entitled Junee and Oberon Projects - Statement of Resources created and released to the ASX on 10 July 2013. The report referred to above are available to view on the Company's website: [www.arcexploration.com.au](http://www.arcexploration.com.au) The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.



Figures 1a & 1b Junee Project Location – Lachlan Orogen, New South Wales

## ANNEXURE: Assessment and Reporting Criteria according to 2012 JORC Code

### Section 1 – Sampling Techniques and Data

Criteria	Explanation
Sampling Techniques	<ul style="list-style-type: none"> <li>The bulk sample taken for the metallurgical testwork was from diamond hole NDD2 that was drilled by NSR in late 2012.</li> <li>NDD2 is an inclined hole drilled with an RC-precollar to 33-m depth and then by triple-tube NQ-size coring from 33 to 111.3-m (EOH).</li> <li>The core was logged, marked up for sampling and photographed on-site.</li> <li>The core was securely packed into standard trays and dispatched to SGS Townsville Laboratory for <b>core splitting</b> and initial <b>gold analysis</b>.</li> <li>The core was sawn in half using a diamond core saw and sampled over 1-m intervals along the entire cored section of the hole (from 33 to 111.3-m downhole); Gold was assayed by 30g Fire Assay with AAS Finish by <b>Au-AA25</b> (0.01 ppm gold DL) .</li> <li>The metallurgical sample interval was selected based on the results of the initial 1-m interval half-core gold assaying.</li> <li>High-grade gold mineralisation was intersected from 72 to 96-m downhole; the remaining halfcore from this entire interval was bagged and dispatched to SGS Lakefield Orestest Pty Ltd in Perth for metallurgical sample preparation &amp; testing.</li> <li>At SGS Lakefield Orestest in Perth, the half-core samples were composited for a combined weight of about 60-kg.</li> <li>The 60-kg metallurgical bulk sample was crushed and screened to pass &lt;2-mm, then thoroughly blended and rotary split to produce sub-samples for the metallurgical testwork.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Triple-tube NQ-size diamond drilling through the entire metallurgical sample interval.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Drill core recovery through the metallurgical sample interval was high (&gt;95%).</li> </ul>
Logging	<ul style="list-style-type: none"> <li>The core was logged and marked up for sampling by a project geologist on site.</li> </ul>
Sub-sampling techniques & sample preparation	<ul style="list-style-type: none"> <li>Sub-sampling and sample preparation for the metallurgical testwork was completed under the strict control of qualified technicians at the SGS Lakefield Orestest in Perth.</li> </ul>
Quality of assay data & laboratory tests	<ul style="list-style-type: none"> <li>A consultant metallurgist to ARX from Veritas Metallica Pty Ltd in Perth reviewed the testwork procedures and results and concluded that: "The metallurgical testwork proposal provided by SGS is a logical and sound program of work, consistent with industry standards, for preliminary testing of amenability of gold recovery via a combination of flotation and ultra-fine grinding (UFG), followed by conventional gold extraction by via cyanide leaching".</li> </ul>

<i>Verification of sampling &amp; assaying</i>	<ul style="list-style-type: none"> <li>A selection of pulp samples from the original gold assays performed at SGS Townsville were submitted by ARX for external check assaying at ALS Laboratory in Orange.</li> <li>These were submitted with commercial gold standards for quality control.</li> <li>The ALS gold results showed good reproducibility with the original SGS results.</li> </ul>
<i>Location of data points</i>	<ul style="list-style-type: none"> <li>The drill hole collar position was fixed by GPS reading and the down-hole path of the drill hole (NDD2) was surveyed with an electronic down-hole camera.</li> </ul>
<i>Data spacing &amp; distribution</i>	<ul style="list-style-type: none"> <li>The metallurgical results represent a single bulk sample taken from NDD2.</li> </ul>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <li>The hole was drilled oblique and at moderately high-angle to the known trend of the gold mineralisation and produced a representative sample of the higher grade gold zone within the Dobroyde gold deposit.</li> <li>The true-width of the mineralisation intersected in this hole is estimated to be 12-15m.</li> </ul>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>Samples were bagged, sealed and dispatched under the supervision of the project manager, project geologist &amp; geotechnicians.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>The metallurgical testwork results reported by SGS Lakefield Oretest were independently reviewed by a consultant metallurgist to ARX from Veritas Metallica Pty Ltd in Perth.</li> </ul>

## Section 2 – Reporting of Exploration Results

Criteria	Explanation
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>The Dobroyde gold deposit is wholly contained within EL 6516 and is held 100% by a private company, New South Resources ("NSR") Pty Ltd. ARX has an option to farm-in to the Junee Project, which includes EL 6516. Details were announced in an ARX report released to the ASX 3 July 2013.</li> </ul>
<i>Exploration by other parties</i>	<ul style="list-style-type: none"> <li>EL 6516 has been previously explored by various other companies under different exploration tenements since the 1980's.</li> <li>Dobroyde gold prospect was discovered in a newly excavated road outcrop by Getty Oil in the early 1980's. It was explored and drilled discontinuously by Getty Oil, Little River Resources, Paragon Resources &amp; New South Resources NSR (272 holes for 28,700m).</li> <li>Dobroyde prospect was covered by an airborne magnetics &amp; radiometrics survey flown by CRA in 1995.</li> <li><b>Previous metallurgical testwork</b> was done on drill core by other companies in 1987, 1988 &amp; 1992. This testwork mainly focussed on (1) conventional cyanidation of whole ore treatment at industry-typical grind sizes, and (2) froth flotation pre-concentration of auriferous mineral (primarily native gold and gold-bearing pyrite) followed by industry-typical grinding and cyanidation.</li> <li>Common conclusions are that gold recovery is limited to a maximum cyanidation extraction of about 80% on either whole ore or flotation concentrate.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li>Located in the central-southern part of the Lachlan Orogen</li> <li>EL 6516 straddles the highly prospective and regionally significant Gilmore Fault Zone and contains rocks of the Junee-Narromine Volcanic Belt, part of the highly prospective Ordovician-Early Silurian Macquarie Volcanic Arc. Large porphyry-related gold and gold-copper deposits, such as Northparkes, Gidginbung and Cowal, occur along this fertile volcanic belt and their distribution is also spatially related to the Gilmore Fault Zone and its associated fault splays.</li> <li>EL 6516 is prospective for high sulphidation-style epithermal gold &amp; porphyry gold-copper within the Ordovician volcanic rock unit.</li> <li><b>Deposit Geology:</b> The Dobroyde high-sulphidation epithermal gold deposit lies within an inlier of Junawarra Volcanics, which contain andesitic to dacitic lavas, pyroclastics and rhyolitic dykes. It occurs in northwest-trending linear structures adjacent to the major regional Gilmore Fault Zone. The interpreted mineralised envelope is approximately 350m long and 40 to 80 m wide, plunging 20-25 degrees northward.</li> <li>Gold is generally fine-grained (30-60 microns) and occurs as native gold grains locked in fine-grained quartz, baryte and pyrite in hydrothermal breccias and peripheral vein-stockworks; a small proportion of gold occurs as auriferous telluride minerals.</li> <li>The deposit is hosted by a zoned alteration system characterised by peripheral propylitic alteration, grading inwards through argillic and advanced argillic alteration and a siliceous altered core (Allibone, 1997).</li> <li>Allibone, A (1997) Gold mineralisation and advanced argillic alteration at the Dobroyde prospect, central New South Wales <i>Australian Journal of Earth Sciences</i> (1997) 44, 727-742.</li> </ul>
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>Explained in the preceding table annexure.</li> </ul>
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>Explained in the preceding table annexure.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li>The bulk metallurgical sample reported in this announcement is taken from a higher grade mineralised zone within the Dobroyde gold deposit with an estimated true-width of between 12-15m.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>Diagrams representing the project area are attached to this report.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>Representative reporting of all relevant results have been provided in this announcement.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>EL 6516 was granted to NSR in 2006. Since then NSR has conducted geological mapping, soil sampling, IP-R &amp; SAM geophysical surveys, and some exploration drilling.</li> <li>The 3D exploration analysis of Dobroyde gold prospect using Leapfrog was performed by Dr Jun Cowan, Principal Structural Geologist and a Director of Orefind Pty Ltd. The analysis incorporated historic drill hole data – gold assays – topographic elevation data, interpreted geology &amp; geological consulting reports, and the published regional geology sheet.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>Follow-up work is planned at Dobroyde to include further soil sampling, 3D-inversion modelling and analysis of previous magnetic &amp; IP-R data, and exploration drilling to expand on the known gold resource, identify new gold resources &amp; porphyry copper-gold targets.</li> <li>Reprocessing and modelling of historic airborne geophysical data is in progress and will be used to help explore for possible gold resource extensions in the Dobroyde prospect area.</li> <li><b>Metallurgical testing:</b> Possible further sampling to investigate the potential for improved recoveries using optimised gravity and flotation recovery, or whole ore cyanidation, under more intense (aggressive) leaching conditions.</li> </ul>