



METALS

## ASX announcement

16 January 2017



### Andromeda Metals Limited

ABN: 75 061 503 375

#### Corporate details:

ASX Code: ADN

Cash: ~\$0.298 million  
(at 31 December 2016)

Issued Capital:  
405,767,063 ordinary shares

#### Directors:

**Colin G Jackson**  
Non-Executive Chairman

**Chris Drown**  
Managing Director

**Nick Harding**  
Executive Director and  
Company Secretary

**Jonathan Buckley**  
Non-Executive Director

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#### Fact:

Gravity separation equipment has come a long way since the days of vanners, bubbles and continuous blanket tables.

### Eyre Peninsula Gold (100% owned), South Australia

#### Barns metallurgy results deliver 97% plus gold recovery with conventional flowsheet

#### Summary

- 97% gold recoveries achieved on three separate composited samples from the Barns deposit.
- The composites comprise one supergene and two primary zone samples. Total gold recovery results were consistent across the three ore types using a conventional gravity and cyanide leach flowsheet.
- Bureau Veritas Minerals Pty Ltd, an independent organisation, also conducted bottle roll (heap leach simulation) and flotation tests at their laboratory in Perth, Western Australia.
- These initial metallurgical results add further confidence to the potential economic value of the Barns deposit.
- The previously released Mineral Resource estimate for the Barns deposit is 2.11 million tonnes at 1.6g/t gold for 107,000 ounces of gold using a cut-off grade of 0.5g/t gold.
- In addition, exploration drilling was recently completed at nearby Baggy Green with results pointing to a potential increase in the local resource base.
- An independent Mineral Resource estimation for Baggy Green, and a rapidly emerging Wudinna Gold Camp, has commenced.

A handwritten signature in black ink, appearing to read "Chris Drown".

Chris Drown  
Managing Director

Direct enquiries to Chris Drown. Ph (08) 8271 0600 or 0427 770 653.

## **Background**

Andromeda Metals' Eyre Peninsula gold project comprises eight tenements securing an area of 2,807 km<sup>2</sup> in the Gawler Craton.

The Company priority on Eyre Peninsula is directed toward advancing the wholly owned Wudinna Gold Camp, a cluster of gold prospects including Barns, White Tank and Baggy Green, into production.

The Company has previously released a Mineral Resource estimate for the Barns deposit of 2.11 million tonnes at 1.6g/t gold for 107,000 ounces using a 0.5g/t gold cut-off grade<sup>(1)</sup>.

An assessment of the Barns deposit by independent mining consultants in 2016 found the robustness of the project would be improved by completing metallurgical testwork to determine gold recoveries, and by increasing the resource base in the Wudinna Gold Camp by adding further shallow resources.

Metallurgical testing of Barns samples is now complete and reported herein. Progress towards increasing the Wudinna Gold Camp resource base has also been made with a recent 23 hole drilling programme completed at the Baggy Green prospect.

As one of the goals of the Baggy Green programme was the definition of shallow ounces, drilling targeted mineralisation commencing within 100 metres of the surface. Additionally, hole spacings were designed to be close enough for use in mineral resource estimation

Results from the programme included the two best intersections recorded to date from Baggy Green with adjacent 50 metre spaced holes recording 16 metres at 5.72g/t gold and 11 metres at 9.32g/t gold respectively.

The drilling confirms the presence of a gently dipping, coherent zone of gold mineralisation which persists for 500 metres along strike, and remains open to the north, south, and at depth.

A Mineral Resource estimate for Baggy Green is underway with results anticipated to be announced in January 2017.

## **Barns metallurgical test work**

### **Composite samples**

Three composite samples were assembled from diamond core drilled at Barns.

The representative samples included:

- supergene mineralisation,
- hangingwall (upper primary lodes) material, and
- footwall (basal primary lode) material.

The samples were shipped to Bureau Veritas Minerals Pty Ltd metallurgical laboratories in Perth, Western Australia.

Representative sub-samples were submitted for gold, silver, copper and sulphur analysis in particular – see Table 1.

Gold head grade reconciliation was noted to show a variation implying the presence of free gold, later borne out by gravity test work.

### **Gravity and cyanide leach**

2kg of each composite was ground in a stainless steel rod mill to a p80 nominally minus 75 microns.

The ground material was passed through a Knelson Concentrator to produce a gravity concentrate and gravity tailings.

The gravity concentrate was then passed over a Mozely Table to reduce the mass to approx. 0.25% of the initial feed.

The Mozely Table concentrate was then subjected to 24 hours of intense cyanidation at 10% pulp density with a solution of 2.5% sodium cyanide. The pregnant solution was analysed for gold, silver and copper.

The leach residue was combined with both the Knelson Concentrator and Mozely Table tailings and subjected to 48 hours leaching at 45% pulp density with initial and minimum sodium cyanide solution strength of 500 and 300 mg/L respectively. Oxygen was sparged

and lime was added to maintain a pH of 10 during the test.

The pulp was filtered and the liquid and solids submitted for gold, silver, and copper analysis to determine gold recoveries.

Gravity plus leach gold recoveries ranged from 96.9% to 98.8% - see Table 2.

#### **Bottle roll cyanide leach tests**

Samples of each composite were reduced to crush sizes of minus 12.5mm, 6.5mm and 3.35mm to investigate (simulate) heap leach flowsheet options.

Each sample was bottle rolled for 96 hours at 45% pulp density with initial and minimum sodium cyanide solution strength of 500 and 300 mg/L respectively. Lime was added to maintain a pH of 10.0 to 10.5.

A sub-sample of leached pulp was extracted from the bottle and analysed for gold and cyanide at 4, 8, 24, 48 and 72 hours.

The tests were terminated at 96 hours and the pulp was filtered and the liquid and solids submitted for gold, silver, and copper analysis to determine gold recoveries.

Gold recoveries were determined for each composite at three crush sizes – Table 3.

#### **Flotation**

The two primary lode composites were ground to minus 75 microns and conditioned with 100g/t copper sulphate activator, 100g/t potassium amyl xanthate collector and 10g/t of MX Gold 900 collector.

Gold recoveries approaching 90% were achieved in approx. 6% of the feed mass from rougher flotation only and represent an approx. concentration ratio of 17.

The supergene composite was not tested as the sulphur level was considered too low.

The results are noted – see Table 4.

#### **Analysis of results**

The gravity and cyanide leach results, achieved with low lime addition (0.2kg/t) and modest cyanide additions (approx. 1 kg/t) for the orebody tonnage dominant primary material, presents a viable conventional flowsheet option to treat all ore types identified at Barns.

Future test work would target coarsening the grind size to establish the optimum economic grind-recovery combination.

The bottle roll cyanide leach tests results achieved are a pointer as to whether a low capital cost heap leach circuit is potentially viable. Gold recoveries generally improved with the finer crush size and reached acceptable levels at 60% plus, again with low lime and modest cyanide consumption rates for the dominant primary ore type.

Future test work would require larger samples to be tested in columns over periods to 90 days.

The flotation results, producing concentrates assaying over one ounce per tonne are excellent in the context where cyanide cannot be used.

However, the gravity and cyanide leach results are superior to the flotation results and given the simpler flowsheet, no further flotation test work would be envisaged at this point.

#### **Next steps**

The next logical metallurgical test work to be conducted would duplicate the above preliminary investigations on Baggy Green material, should the Mineral Resource estimate, currently being completed, indicate a meaningful addition to the gold inventory at the Wudinna Gold Camp.

**Table 1 – composite sample analysis**

Element	Unit	Supergene			Hangingwall			Footwall		
		assay	calc.	wt'd	assay	calc.	wt'd	assay	calc.	wt'd
Gold	ppm	1.91 <0.5 450 0.02 2 46	1.95 0.41 3,050 0.25 1 154	2.46    45	2.02	1.38	2.10	0.77	1.01	1.46
Silver	ppm				<0.5	0.48		<0.5	1.19	
Sulphur	ppm				3,050			4,500		
Sulphide sulphur	%				0.25			0.37		
Arsenic	ppm				1			4		
Copper	ppm				212			88	110	

**Table 2 – gravity and cyanide leach tests**

Composite	Grind 80% passing	Reagent (kg/t)		Gold assay (g/t)		Gold extraction (%)		
		lime	cyanide	Calc. head	residue	gravity	leach	<b>total</b>
<b>Supergene</b>	75	1.15	1.27	2.76	0.03	23.9	74.9	<b>98.8</b>
<b>Hangingwall</b>	microns	0.20	1.08	2.20	0.04	55.0	43.1	<b>98.1</b>
<b>Footwall</b>		0.20	0.92	1.39	0.04	43.0	53.9	<b>96.9</b>

**Table 3 – bottle roll cyanide leach tests**

Composite	Crush size mm	Reagent (kg/t)		Gold		
		lime	cyanide	Calc. head (g/t)	Residue (g/t)	Extraction (%)
<b>Supergene</b>	12.50	3.53	0.61	1.56	0.47	<b>70.1</b>
	6.50	3.55	0.61	1.63	0.19	<b>88.3</b>
	3.35	3.55	0.61	1.86	0.12	<b>93.6</b>
<b>Hangingwall</b>	12.50	0.28	0.87	0.84	0.33	<b>60.6</b>
	6.50	0.28	0.61	1.19	0.65	<b>45.3</b>
	3.35	0.30	0.87	0.92	0.32	<b>65.2</b>
<b>Footwall</b>	12.50	0.27	0.61	0.76	0.51	<b>33.0</b>
	6.50	0.27	0.61	0.96	0.42	<b>56.7</b>
	3.35	0.25	0.61	0.67	0.24	<b>63.8</b>

**Table 4 – flotation tests**

Composite	Reagent (g/t)			Rougher concentrate						
	Copper sulphate	PAX	MX Gold 900	Mass %	Gold		Silver		Copper	
					Grade (g/t)	Rec (%)	Grade (g/t)	Rec (%)	Grade (g/t)	Rec (%)
<b>Hangingwall</b>	100	100	10	5.9	26.6	<b>90.8</b>	8.73	52.3	0.28	58.5
	100	100	10	6.6	17.4	<b>89.8</b>	21.7	60.6	0.15	54.8

(1) See ADN's ASX release dated 19 July 2016 titled "Maiden 107,000 ounce gold resource estimated for Barns deposit" for full JORC information.

**Competent Person Statement and 2012 JORC Compliance Notes – Exploration**

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Chris Drown, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Drown is employed by Drown Geological Services Pty Ltd and consults to the Company on a full time basis. Mr Drown has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Drown consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information contained in the report relating to exploration completed prior to 1 Dec 2013 by the Company and other explorers was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. The information contained in the report relating to exploration completed since 1 Dec 2013 has previously been reported in accordance with the JORC Code 2012, see ADN's ASX releases dated 19 July 2016, 21 September 2016, 3 November 2016, and 28 November 2016.

**Competent Person Statement - Metallurgy**

The information in this report that relates to Metallurgical Processing has been reviewed by Dr Nigel Ricketts, Competent Person, who is a member of the Australasian Institute of Mining and Metallurgy and a Chartered Professional in Metallurgy. Dr Ricketts is employed as Technical Director of Altrius Engineering Services and consults to the Company on a part time basis. Dr Ricketts has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Ricketts consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.