

**Andromeda Metals Limited**

ABN: 75 061 503 375

**Corporate Details**

ASX Code:

ADN (ordinary shares)

ADNOB (listed options)

Cash at 31 December 2019:

\$4.367 million

Issued Capital:

1,452,777,208 ordinary shares

692,759,532 ADNOB options

99,000,000 unlisted options

**Directors****Rhod Grivas**

Non-executive Chairman

**James Marsh**

Managing Director

**Nick Harding**Executive Director and  
Company Secretary**Andrew Shearer**

Non-executive Director

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# Quarterly Report

Period ending 31 December 2019

**Summary of Company activities for the December quarter:****Poochera Halloysite-Kaolin JV** (right to earn up to 75% interest)

- An increase in the Carey's Well Mineral Resource, which includes an 80% increase in the Measured category, providing improved confidence in the resource quality.
- The overall "bright white" kaolinised granite has increased by over 28% to 26.0 million tonnes. The in-situ "bright white" kaolinised granite contains 10.6 million tonnes of minus 45 micron quality kaolin clay.
- High-purity halloysite confirmed at Poochera with results from 9 holes drilled during the April-May 2019 aircore program returning an average of 59% halloysite in the minus 2 micron fraction. An exceptionally high result of 91% halloysite was returned for one Condooringie drill hole which included a 20 metre intercept of high-bright kaolinised granite.
- Extensive drilling program comprising both aircore and diamond drilling commenced in December to provide data for determination of final pit designs at Carey's Well, proposed plant and waste dump locations and test further extensions to the current Mineral Resource, in addition to follow up on the encouraging results at the Condooringie prospect.
- Efforts fully directed to completion of an optimisation to the Scoping Study to consider wet-processing at site in addition to the Pre-Feasibility Study which is targeted for completion during the second quarter of 2020.

**Drummond Epithermal Gold Joint Venture**

- Evolution Mining undertook extensive field exploration and data review activities during the quarter which has identified a number of potential targets for future follow up.

**Moonta Copper ISR Joint Venture**

- Mineral characterisation and bottle roll testing to trial lixiviant/oxidant combinations on composite Moonta samples has yielded some initial positive results using acid lixiviant solutions and glycine.

**Eyre Peninsula Gold Joint Venture**

- Joint venture partner Cobra Resources commenced field exploration activities on the Project subsequent to the end of the quarter with geochemical samples collected at the Barns, Baggy Green and White Tank deposits sent for analysis.

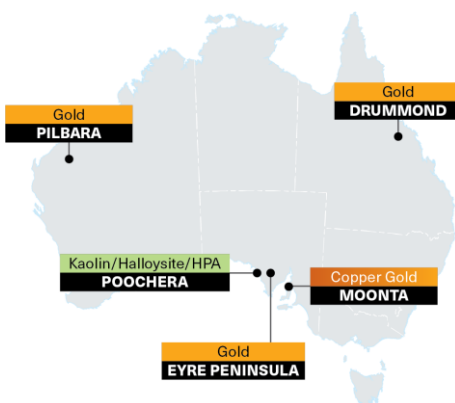
**Fundraising**

- The Company completed a Share Placement of ~85 million shares at an issue price of \$0.047 per share to raise ~\$4.0 million which will principally fund the Feasibility Studies and permitting approvals required for the Poochera Project up to a decision to mine.



James Marsh

31 January 2020



The Board and management of Andromeda Metals Limited (ASX: ADN, Andromeda, the Company) is pleased to provide a summary of the Company’s activities for the quarter ended 31 December 2019.

### Poochera Halloysite-Kaolin Project

The Poochera Halloysite-Kaolin Project covers two main geographic areas of interest, both situated in the western province of South Australia (Figure 1). The current main area of focus for the Project is on the Eyre Peninsula which comprises four tenements and is located approximately 635 kms west by road from Adelaide and 130 kms south-east from Ceduna (Figure 2).

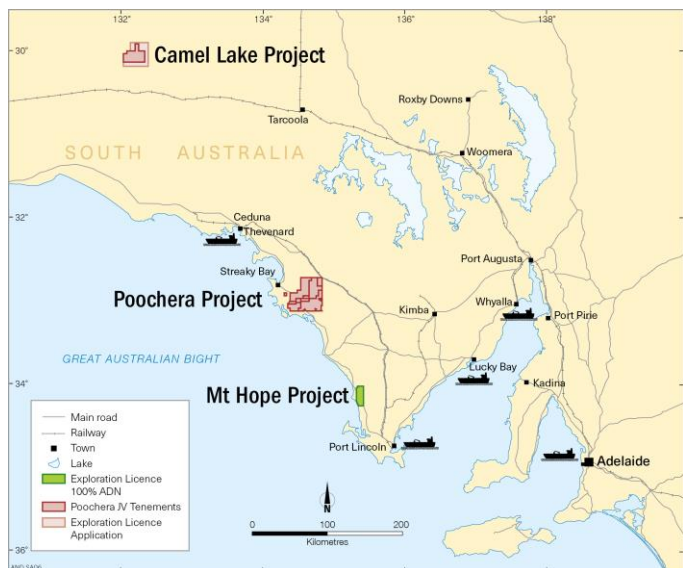


Figure 1 – Project Location Plan

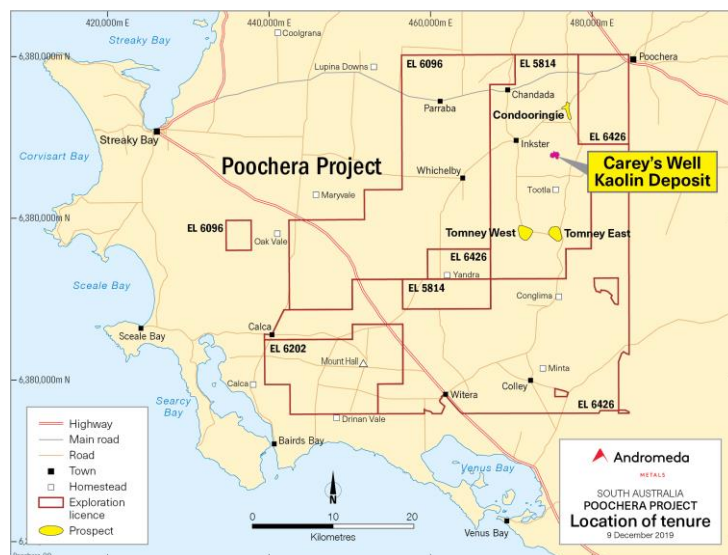


Figure 2 – Poochera Joint Venture tenements

High quality halloysite-kaolin occurrences exist extensively across the Poochera Project area making this a region of global significance for the mineral and capable of supporting a considerable long-life mining operation, should final feasibility studies determine the project to be positively commercial.

The Poochera Halloysite-Kaolin Project is an earn-in joint venture between Andromeda and Minotaur Exploration (ASX: MEP, Minotaur) where Andromeda can earn up to 75% beneficial interest through expenditure of \$6 million over 5 years from April 2018. Andromeda is manager and operator of the joint venture.

### Updated Mineral Resource

Results from the April-May 2019 aircore infill drilling program conducted at Carey’s Well has allowed the determination of an updated kaolinised granite Mineral Resource for the deposit as shown in Table 1 (refer ADN ASX announcement dated 23 December 2019 – “Significant Increase in Mineral Resource for the Poochera Kaolin Project”).

Category	Mt	Brightness Reflectance at 457	-45µm Rec %
Measured	15.6	82.3	50.7
Indicated	4.9	81.7	49.8
Inferred	5.5	82.4	50.4
<b>Total</b>	<b>26.0</b>	<b>82.2</b>	<b>50.5</b>

(minor rounding errors)

Table 1 – New Mineral Resource

Overall “bright white” kaolinised granite has increased by over 28% to 26.0 Mt from the previous resource of 20.2Mt. The amount of Measured Resource has increased by 80%<sup>(1)</sup> due to the 2019 infill drilling, whilst the -45µm recovered material for both Measured and Indicated Resources is reduced by 5%, with the biggest decrease in the recovery grades associated with the Inferred (peripheral) material. Andromeda instigated significant upgrades to the resource with improved processing of the ore to remove the +45 micron fraction. This included engagement with external

laboratories and international kaolin expert consultants on improved processing techniques, along with expanded quality assurance and quality control checks, and independent sign-off on Exploration Results.

As has been previously stated, a halloysite zone has been interpreted within the Carey's Well deposit. The DSO resource estimates for this zone, including back-calculated kaolinite, halloysite and combined halloysite/kaolinite (from the -45micron fraction), are shown in Table 2.

Category	Mt	R457	-45µm Rec %	Kaolinite %	Halloysite %	Kaolin %
Measured	8.7	82.6	52.7	40.3	8.9	49.2
Indicated	1.5	81.9	52.6	42.0	7.0	49.0
Inferred	0.4	81.6	51.7	39.8	7.8	47.5
<b>Total</b>	<b>10.6</b>	<b>82.5</b>	<b>52.6</b>	<b>40.5</b>	<b>8.6</b>	<b>49.1</b>

(minor rounding errors)

**Table 2 – Halloysite Zone Interpretation**

The previous resource estimate for the halloysite content was 9.7Mt within the Carey's Well 'bright white' kaolinised granite Mineral Resource, and so this new estimate represents an increase of approximately 9%. The 12 February 2019 estimate was based on only the halloysite content in the -45 micron fraction for the halloysite zone, but in this case the back calculation method used adds back the +45 micron fraction of primarily quartz sand grains, which is approximately 47.4% of the total ore.

The high grade halloysite material from the recovered -45µm fraction within the halloysite zone comprises:

Category	Mt	R457	Halloysite %	Kaolinite %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	TiO <sub>2</sub> %
Measured	4.6	82.7	17.0	76.5	37.0	0.57	47.6	0.44
Indicated	0.8	82.0	13.4	79.7	36.8	0.52	48.0	0.50
Inferred	0.2	81.6	15.0	76.9	36.8	0.52	48.1	0.55
<b>Total</b>	<b>5.6</b>	<b>82.6</b>	<b>16.4</b>	<b>77.0</b>	<b>36.9</b>	<b>0.56</b>	<b>47.7</b>	<b>0.45</b>

(minor rounding errors)

**Table 3 – High Grade Halloysite Zone**

The updated Mineral Resource provides improved confidence in the resource quality given the significant increase to the Measured Category and these results are being incorporated into the determination of the Pre-Feasibility Study that is currently underway.

- (1) The comparison to the previous Mineral Resource takes into account the updated average dry rock bulk density of 1.44 tonnes/m<sup>3</sup> as reported in the clarification statement made to ASX on 17 May 2019.

### High-Purity Halloysite

Laboratory assays undertaken at a minus 2 micron fraction size performed on a selection of 9 holes drilled during the April-May 2019 aircore drilling program conducted at the Carey's Well deposit, and Condooringie, Tomney East and Tomney West prospects returned an average of 59% halloysite (*refer ADN ASX announcement dated 12 December 2019 – "High-Purity Halloysite confirmed at Poochera"*). A highest value of 91% at a minus 2 micron fraction size was reported at the Condooringie prospect, located only 4 kms north of the Carey's Well deposit, which confirmed historical high halloysite intercepts found by Minotaur. The same drill hole contained an approximate 20 metre intercept of high-bright kaolinised granite making Condooringie a exciting prospect for further evaluation.

### December Drilling Program

An extensive aircore and diamond drilling program at both Carey's Well and Condooringie commenced in December. A total of up to 4,000 metres of aircore drilling is planned to be directed towards obtaining additional data for the determination of final pit designs, to undertake sterilisation for the proposed plant and overburden stockpile locations, and to further test extensions to the Carey's Well Mineral Resource. In addition, up to 88 aircore holes are planned for Condooringie to follow up on the exciting high halloysite intercepts from the April-May drill program.

Diamond drilling comprising up to 8 holes for approximately 300 metres is scheduled to be undertaken at Carey's Well to provide all geotechnical data on the orebody and the underlying rock required for final pit designs for inclusion in the Feasibility Studies. Chemical assaying along with petrologic, structural and mineralogical analysis of core collected will also be performed and used in pit wall stability studies.

### **Scoping Study Optimisation**

The Carey's Well Scoping Study was released on 30 September 2019 and was based on the assumption of an initial direct shipping ore (DSO) operation during the first two years while a dry-processing plant is constructed on site funded by DSO revenues generated from sales. From Year 3, the operation is assumed to revert to site dry-processing of mined kaolinised granite to remove the majority of the contained quartz sand, generating significant transport and shipping savings, with the concentrated product shipped in bulk bags to Asia for toll wet-refining in order to produce a premium bright-white halloysite-kaolin product.

The Scoping Study made mention that studies had commenced on a wet-processing option utilising a low cost, water efficient and commercially available plant to potentially be based on site. These studies are continuing with wet-processing trials and engineering design work undertaken both in the USA and UK. More detailed engineering design testwork on Carey's Well ore by a leading wet-processing plant manufacturer was performed during the quarter and the results are currently being analysed. A water consulting firm has also been engaged to determine preliminary water demand calculations for a wet-processing plant at site and to consider water supply options.

Should these studies conclude that wet-processing at site is a viable option, it is envisaged that a revised Scoping Study including wet-processing will be announced during the March quarter.

### **Pre-Feasibility Study**

Following the release of the positive Scoping Study, the key focus has now turned towards preparation of a more detailed Pre-Feasibility Study (PFS) for the Carey's Well deposit that will take into account the wet-processing results from the optimised Scoping Study should these prove to be viable.

This detailed PFS work conducted during and subsequent to the December quarter end has included:

- Ore geological, geotechnical, geochemical and hydrogeology studies to better understand the orebody and mining method to be used;
- Open pit optimisation work to determine optimal pit designs, overburden dumps and ore inventory;
- Determination of mine scheduling and mining contractor costings;
- Considerable metallurgical testwork to determine optimal product recoveries;
- Plant design options and consideration of infrastructure requirements including power, water, gas and fuel supplies;
- Evaluation of potential road transport, port and shipping options available for product logistics from site to market;
- Determination of product markets, sales volumes and pricing leading to binding offtake agreements with customers;
- Environmental studies including baseline flora and fauna surveys, noise and dust and hydrology studies; and
- Ongoing engagement with key stakeholders including the site landowners, native title groups, the District Council of Streaky Bay, and the Department for Energy and Mining (DEM).

Work is scheduled to continue through the March quarter on the PFS with final study results incorporated into an updated financial model to determine economic outcomes that are currently scheduled for release during the second quarter of 2020.

### **Expansion of Project Tenure**

EL 6426 Mt Cooper was granted on 25 October 2019 and covers 648kms<sup>2</sup> directly south and east of the three tenements at Poochera and captures areas near the Tomney and Condoorie prospects where previous drilling has encountered considerably high-purity halloysite. The tenement has been included under the Poochera Joint Venture Agreement with Minotaur.

## **Camel Lake Halloysite Project**

An introductory meeting with the Maralinga Tjarutja Council, who are the traditional landowners on which the Camel Lake tenement is located, that was scheduled for early December 2019 was postponed until February 2020 due to the availability of council members.

## **Mount Hope Kaolin Project**

During the quarter an E-PEPR was prepared and submitted to DEM to allow for first pass drill testing of the historical non-JORC kaolin resource. Subsequent to the end of the quarter, approval of the E-PEPR was received and the Company is now consulting with key stakeholders to plan for when drilling at the 100% owned Project can be scheduled.

## **Drummond Epithermal Gold Joint Venture**

Focus for the quarter by joint venture partner Evolution Mining (ASX: EVN, Evolution) was directed towards field activities across the broader Drummond tenement holding to identify potential additional targets for follow up exploration.

A 400 metre spaced reconnaissance soil geochemistry program completed during the quarter over the regional Stones Creek Volcanics has returned several areas of interest. In addition, during the December quarter an airborne hyperspectral survey was undertaken across significant areas of the tenement package with the data collected identifying a number of discrete pyrophyllite anomalies which is currently being analysed. Geological mapping and soil sampling over Breccia Hill was also completed with review of this data currently being performed. Evolution geologists conducted an initial reconnaissance visit to the Mt Wyatt tenement during the period with further preliminary exploration to be undertaken once the wet season is complete and access approvals have been obtained.

No significant results were received from the remaining assays over the South West Limey diamond drilling program completed in the previous quarter. However, follow up RC drilling is planned at Roo Tail later in the year to test the southern segment of the Limey Trend.

## **Moonta Copper ISR Joint Venture**

During the quarter, the processing of four composite samples sourced from the Bruce, Larwood and Wombat prospects, which included elevated levels of copper and gold, was performed by Moonta ISR Joint Venture partner Environmental Metals Recovery (EMR). Mineral characterisation by XRD and QEM scan followed by a series of bottle roll leach tests, which tested recoveries using a number of different lixiviant/oxidant combinations, was performed on each sample. Preliminary results show that the copper species leach readily with acid lixiviant solutions and glycine. Gold leach results for glycine also look interesting at this early stage, with final results expected in the following quarter.

In addition, hydrogeological information is being collated to be used in a first pass regional hydrogeological model to be prepared by EMR.

## **Eyre Peninsula Gold Joint Venture**

Joint Venture partner Cobra Resources (LSE: COBR) has completed the first phase of its fundraising and as a result commenced geochemical sampling shortly after the end of the December quarter with calibration calcrete samples collected across the Barns, Baggy Green and White Tank deposits. Multi element analysis of these samples is currently being performed in addition to re-assaying for a full suite of elements on selected samples retained from previous drilling. Further exploration activities will be undertaken at a number of other targets across the Project area once the assay results are received.

## **Pilbara Gold Project**

The application process for the additional tenement (Rooneys) made during the previous quarter to add to the Pilbara tenement portfolio is continuing. Andromeda is currently considering how best to move the project forward given the focus of the Company is directed towards development of the Poochera Halloysite-Kaolin Project.

## **Finance and Corporate**

Andromeda's cash position at the 31 December 2019 stood at \$4.367 million.

On 25 October 2019 the Company completed a Share Placement of 85,046,790 ordinary shares at an issue price of \$0.047 per share to professional and sophisticated investors raising a total of \$3,997,199 before costs.

In addition, a total of 2,975,471 ordinary shares were issued during the quarter resulting from the exercise of ADNOB listed options by optionholders, providing the Company with cash receipts of \$35,705 at the exercise price of \$0.012 per option.

During the quarter, 402,576 ordinary shares were issued to Non-Executive Director Andrew Shearer as approved by shareholders at the 2018 Annual General Meeting in relation payment of half of his director fees in shares rather than cash for the 12 month period to 30 November 2019.

Unlisted options totaling 41 million and having an exercise price of \$0.064 and expiry date of 28 November 2022 were issued to directors during the quarter as approved by shareholders at the 2019 Annual General Meeting. An additional 18,000,000 of the same unlisted options were issued to Andromeda Metals staff and contractors within the Company's issue capacity under Listing Rule 7.1. A further 20 million options having an exercise price of \$0.075 and expiry date of 28 November 2023, and which vest 12 months after issue on meeting the vesting conditions, were issued to directors as approved by shareholders at the 2019 Annual General Meeting.

As of the date of this report, Andromeda Metals currently has on issue 1,452,777,208 ordinary shares, 692,759,532 ADNOB listed options and 99,000,000 unlisted options.

## **Competent Persons Statements**

*Information in this announcement has been assessed and compiled from previous ADN ASX releases by Mr James Marsh and Mr Rhoderick Grivas, both members of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Marsh and Mr Grivas are employees of the Andromeda Metals Limited and have sufficient experience, which is relevant to the style of mineralisation, type of deposits and their ore recovery under consideration and to the activity being undertaken to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code). This includes Mr Marsh attaining over 30 years of experience in kaolin processing and applications. Mr Marsh and Mr Grivas consent to the inclusion in the report of the matters based on the information in the form and context in which it appears.*

*The information in this report that relates to Exploration Results for the Drummond Gold Project is based on information compiled by Rex Brommecker, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Brommecker is employed by Evolution Mining Limited on a full time basis. Mr Brommecker 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 Brommecker consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

## SCHEDULE OF TENEMENTS AS AT 31 DECEMBER 2019

Project	Tenement	Tenement Name	Area km <sup>2</sup>	Registered Holder or Applicant	Nature of Company's Interest %
<b>South Australia</b>					
<i>Wudinna Gold Joint Venture</i>	EL 6317	Pinkawillinie	156	Peninsula Resources Ltd <sup>1</sup>	100%
	EL 6131	Corrobinnie	1303	Peninsula Resources Ltd	100%
	EL 5615 (ELA 2019/148)	Wudinna Hill	42	Peninsula Resources Ltd	100%
	EL 5953	Minnipa	184	Peninsula Resources Ltd	100%
	EL 6001	Waddikee Rocks	147	Peninsula Resources Ltd	100%
	EL 6262	Acraman	96	Peninsula Resources Ltd	100%
<i>Moonta Copper Gold Project</i> <sup>9</sup>	EL 5984	Moonta-Wallaroo	713	Peninsula Resources Ltd	100%
	EL 5984	Moonta Porphyry JV	106	Peninsula Resources Ltd	90% - option to acquire 100% from Minotaur Exploration Ltd
<i>Poochera Kaolin Project</i>	EL 5814	Tootla	372	Great Southern Kaolin Pty Ltd <sup>2</sup>	GSK 100% ADN earning 51% over 24 months
	EL 6096	Whichelby	447	Minotaur Operations Pty Ltd <sup>3</sup>	MOP 100% ADN earning 51% over 24 months
	EL 6202	Mt Hall	147	Minotaur Operations Pty Ltd	MOP 100% ADN earning 51% over 24 months
	EL 6426	Mt Cooper	648	Minotaur Operations Pty Ltd	MOP 100% ADN earning 51% over 24 months
<i>Camel Lake Halloysite Project</i>	EL 6128	Camel Lake	455	Minotaur Operations Pty Ltd	MOP 100% ADN earning 51% over 24 months
	ELA 2019/73	Dromedary	481	Minotaur Operations Pty Ltd	MOP 100% ADN earning 51% over 24 months
<i>Mt Hope Kaolin Project</i>	EL 6286	Mt Hope	227	Andromeda Industrial Minerals Pty Ltd <sup>4</sup>	100%
<b>Queensland</b>					
<i>Drummond Gold Project</i> <sup>6</sup>	EPM 18090	Glenroy	196	Adelaide Exploration Pty Ltd <sup>5</sup>	ADN 100% EVN earning 80% over 48 months
	EPM 25660	Gunthorpe	74	Adelaide Exploration Pty Ltd	ADN 100% EVN earning 80% over 48 months
	EPM 26154	Sandalwood Creek	109	Adelaide Exploration Pty Ltd	ADN 100% EVN earning 80% over 48 months
	EPM 26155	Mount Wyatt	144	Adelaide Exploration Pty Ltd	ADN 100% EVN earning 80% over 48 months
<b>Western Australia</b>					
<i>Pilbara Gold Project</i>	E 46/1196	East Rooneys	54	Frontier Exploration Pty Ltd <sup>7</sup>	100%
	E 46/1336 (Application)	Rooneys	95	Frontier Exploration Pty Ltd	100%
	E 08/2954	Wyloo	124	Mylo Gold Pty Ltd <sup>8</sup>	100%
	E 08/2955	Cheela Plains	123	Mylo Gold Pty Ltd	100%

1 Peninsula Resources Ltd (incorporated 18 May 2007) is a wholly owned subsidiary of Andromeda Metals Ltd.

2 Great Southern Kaolin Pty Ltd ("GSK") is a wholly owned subsidiary of Minotaur Exploration Ltd.

3 Minotaur Operations Pty Ltd ("MOP") is a wholly owned subsidiary of Minotaur Exploration Ltd.

4 Andromeda Industrial Minerals Pty Ltd (incorporated 9 August 2018) is a wholly owned subsidiary of Andromeda Metals Ltd.

5 Adelaide Exploration Pty Ltd (incorporated 13 July 2001) is a wholly owned subsidiary of Andromeda Metals Ltd.

6 Andromeda Metals Ltd has formed a Joint Venture with Evolution Mining Ltd ("EVN") over the Drummond Epithermal Gold Project.

7 Frontier Exploration Pty Ltd (acquired 21 December 2017) is a wholly owned subsidiary of Andromeda Metals Ltd.

8 Mylo Gold Pty Ltd (acquired 21 December 2017) is a wholly owned subsidiary of Andromeda Metals Ltd.

9 Andromeda Metals Ltd has partnered with Environmental Metals Recovery Pty Ltd ("EMR") to form the Moonta ISR Joint Venture.