Ardea Resources Limited

CSIRO/Ardea research at Goongarrie BTZ – insights for nickel sulphide and gold targets

- Completion of the gold in nickel laterite study by CSIRO for Ardea Resources Limited has identified aspects of the geology that will greatly assist future gold exploration and suggests the potential for nickel sulphide mineralisation at depth.
- A second study will commence in July to fully assess the potential for nickel sulphides beneath the nickel laterite deposits.
- Several nickel sulphide and gold targets to be tested using the new knowledge defined by the study.

Ardea Resources Limited (**Ardea** or the **Company**) is pleased to report that the collaborative study with Australia's national science agency, CSIRO, has been successfully completed. The study is supported by the Department of Industry, Science, Energy and Resources' Entrepreneurs' Programme. It is entitled "Gold behaviour in nickel-cobalt laterite at Goongarrie" focused on Bardoc Tectonic Zone (**BTZ**) gold mineralisation associated with nickel-cobalt laterite mineralisation at the Pamela Jean, Patricia Anne, and Elsie North nickel-cobalt-scandium deposits.

Ardea's Managing Director, Andrew Penkethman, noted:

"The in-depth work undertaken by Dr Walid Salama and his team at CSIRO has shed not only new light on our exploration efforts for gold, but in undertaking this study, has increased our understanding of the nickel laterite deposits as well. For Ardea, the work is already providing significant competitive advantages that will take our project studies and exploration efforts in new directions for nickel sulphide exploration, gold exploration, and metallurgical refinement of the process flow sheet."

Without disclosing full technical details and thereby preserving our competitive advantages, some of the findings include:

- Constraints on the degree of migration of gold within the laterite profile.
- Association of gold mineralisation with several geochemical pathfinders that effectively enable us to 'see' through the laterite and follow otherwise undetectable mineralised structures into the fresh rock.
- First identification of volumetrically significant associated minerals throughout the nickel laterite deposits, to be further investigated during current bench-scale metallurgy for the Definitive Feasibility Study (**DFS**).
- First identification of nickel and cobalt sulphide minerals at Goongarrie, trapped within resistate minerals within the nickel laterite deposits.
- Supportive of structural control over the deep V-shaped parts of the laterite deposits, and confirming potential gold and nickel sulphide targets associated with the BTZ structures.

Techniques including scanning electron microscopy (**SEM**) mineral mapping (using TESCAN), hyperspectral analysis, and laser ablation ICP-MS were used to view, identify and analyse never-before identified aspects of the Goongarrie nickel laterite deposits.

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ARL

Ardea Resources Limited
Suite 2 / 45 Ord St
West Perth WA 6005

PO Box 1433
West Perth WA 6872

Telephone
+61 8 6244 5136

Email
ardea@ardearesources.com.au

Website
www.ardearesources.com.au

Directors
Mat Longworth
Non-Executive Chair
Andrew Penkethman
Managing Director & CEO
Ian Buchhorn
Technical Executive Director

Executive Management
Sam Middlemas
Company Secretary & CFO
Matt Painter
General Manager Exploration

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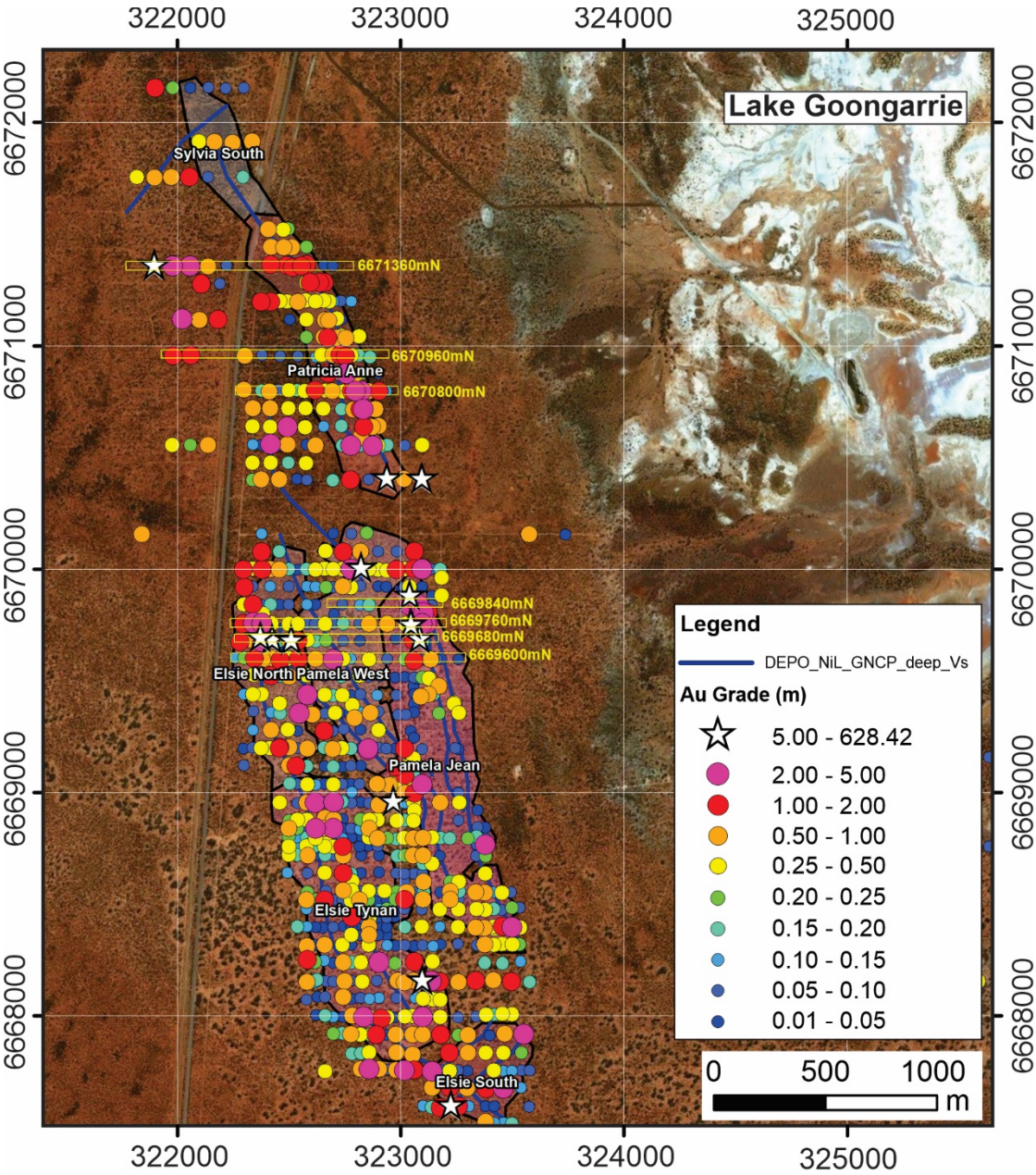

Figure 1 *The location of drill holes in Pamela Jean, Elsie North and Patricia Anne prospect, Goongarrie area. The maximum gold grade (usually over a minimum 2m drill width) is plotted. Projection MGA 94 Zone 51.*

Several gold targets have been identified that will be drilled in the course of DFS drill programs in the coming months (Figure 1 and 2). At Pamela Jean, the deep V-shape of the deposit (Figure 2) appears to be the result of intense penetrative weathering down a pre-existing BTZ structure or stratigraphic unit. The presence of visible gold mineralisation in and around this structure has highlighted this as a target, but the presence of other styles of anomalism also suggests the possibility of nickel sulphide mineralisation down-dip of the V into fresh rock.

The uniformly high gold background identified in Ardea's Goongarrie resource drilling (Figure 1) since it acquired the project in 2017 has implications for future mine grade control and the Kalgoorlie Nickel Project (**KNP**) processing flow-sheet.

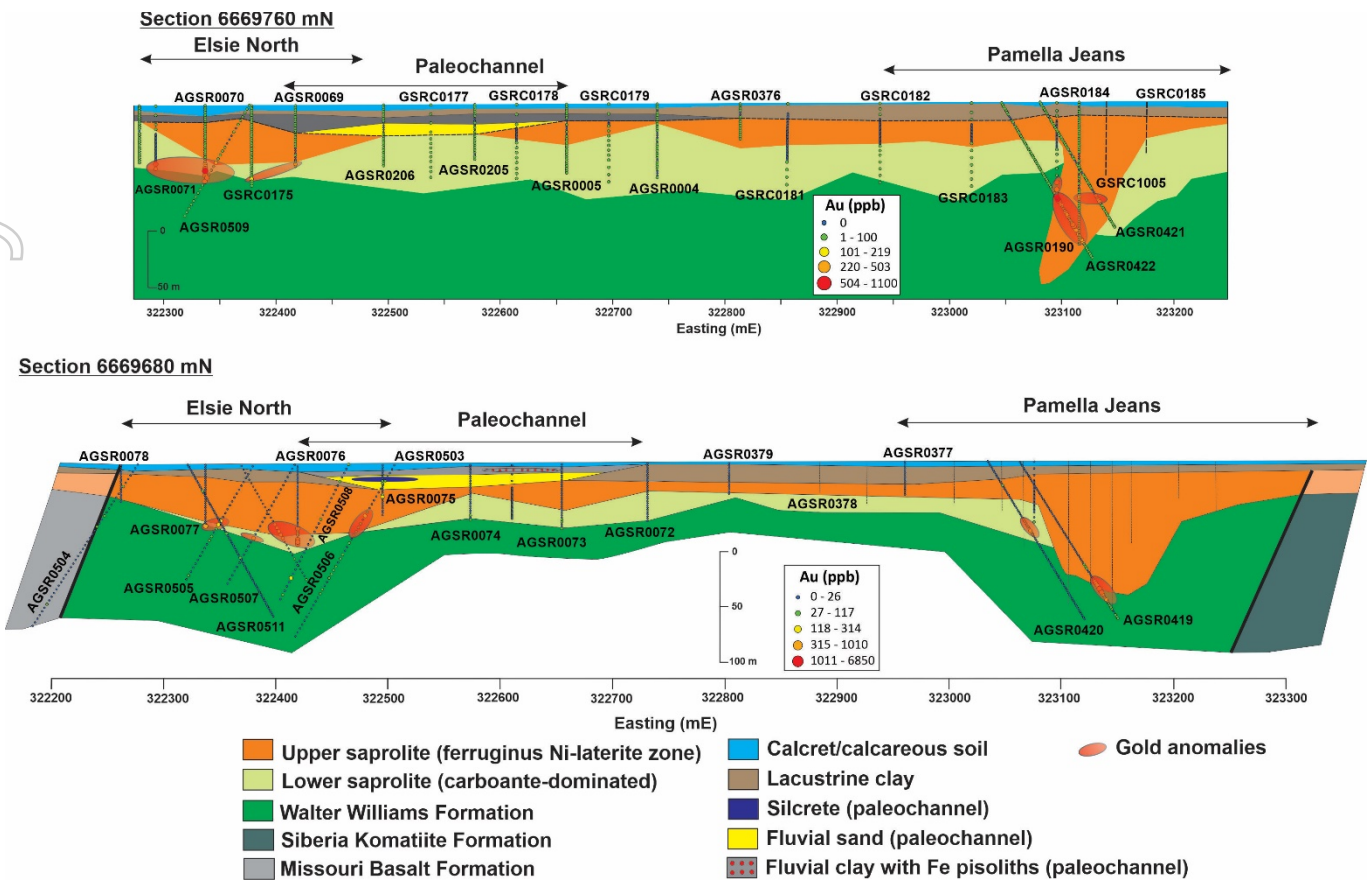

Figure 2 *Two stratigraphic cross-sections are constructed along sections 6669760mN and 6669680mN at Pamela Jean-Elsie North, Goongarrie. Projection MGA 94 Zone 51. These highlight the extensive development of the GNCP laterite profile and thickening associated with preferential weathering on BTZ structures. Gold anomalies tend to occur towards the base of the Upper Saprolite. Insufficient historic drilling to depth within Walter Williams Formation bedrock to test for bedrock gold mineralisation.*

The CSIRO research also begins to unlock the controls of Rare Earth Elements (**REE**s) and other Critical Minerals within the BTZ, as identified by Ardea in drilling within the KNP.

The findings of the CSIRO gold study along with the professionalism and capabilities of CSIRO have encouraged Ardea to follow up with another collaborative study. An assessment of the nickel sulphide prospectivity of the host ultramafic sequences that underlie the Goongarrie nickel cobalt laterite deposits, the Walter Williams Formation and the Siberia Komatiite, will commence in July 2021.

The study will seek to define the fertility of the host sequences for nickel sulphide, and then define vectors to potential mineralisation. The presence of the microscopic sulphide inclusions including nickel sulphide along with a series of other features identified for the first time at Goongarrie during this initial study suggest that there is a possibility of primary nickel sulphide mineralisation at depth beneath the laterite deposits.

Should such mineralisation be encountered, even in trace amounts, it would partly explain the far superior nickel grade and Critical Minerals association of the Goongarrie Line when compared to peer Australian nickel laterites.

This new CSIRO study is expected to be a part of a region-wide multi-client study that aims to define and prescribe a new standard of nickel sulphide exploration technique to assess sequences and drive future discoveries.

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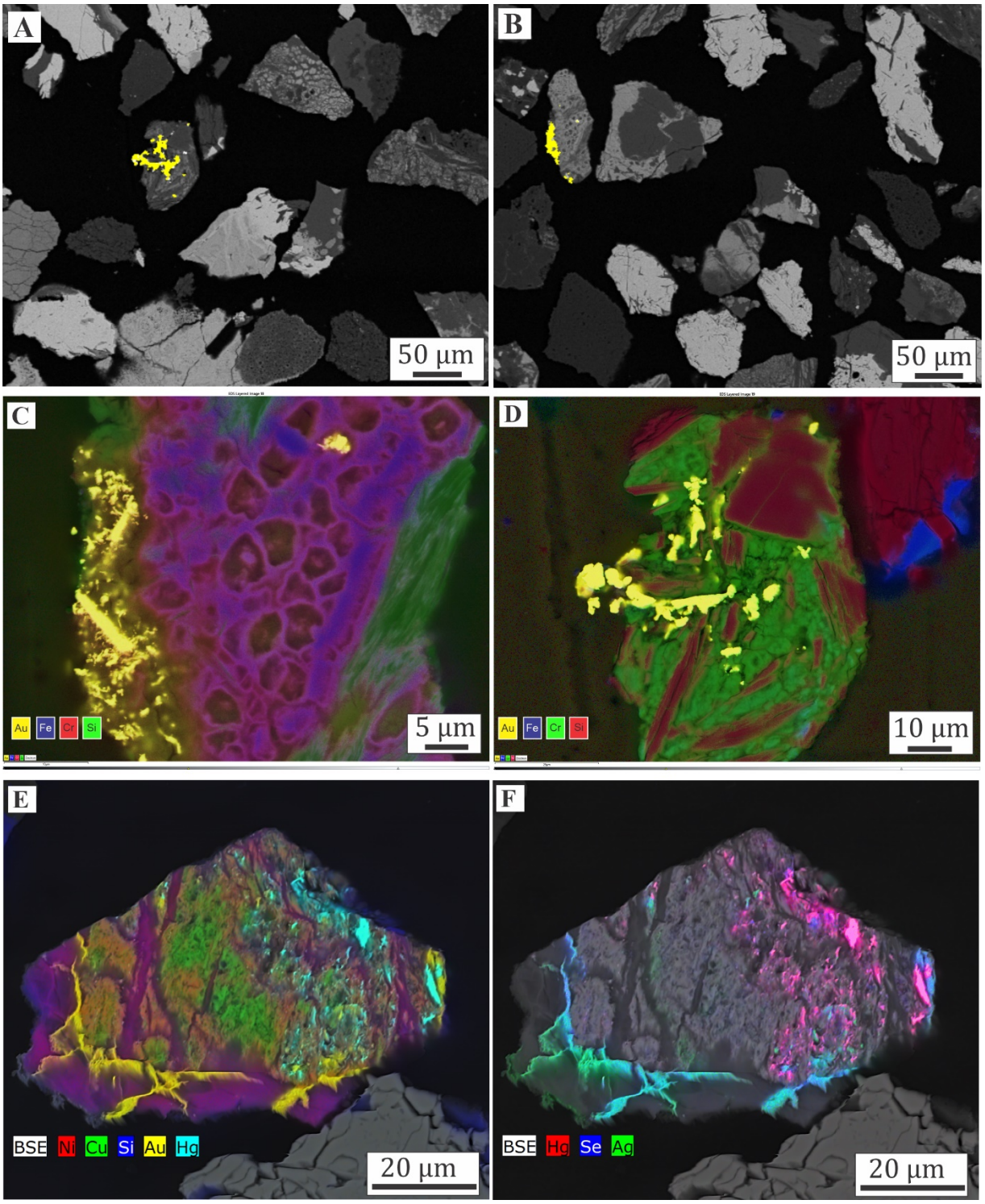


Figure 3 *(A, B) SEM images showing distribution of Au (elemental gold, yellow colour) in Heavy Mineral concentrates of sample 07-39218.*

(C, D) Element maps showing the distribution of gold (yellow) in Cr-bearing Fe oxides (green in C and blue and red in D). Magnesium silicates and quartz (red in C and green in D).

(E, F) Millerite (nickel sulphide) with cross-cutting veins filled by Ni silicates and Au, Ag and Hg selenides. Nickel and copper shows inhomogeneous distribution in millerite.

Authorised for lodgement by the Board of Ardea Resources Limited.

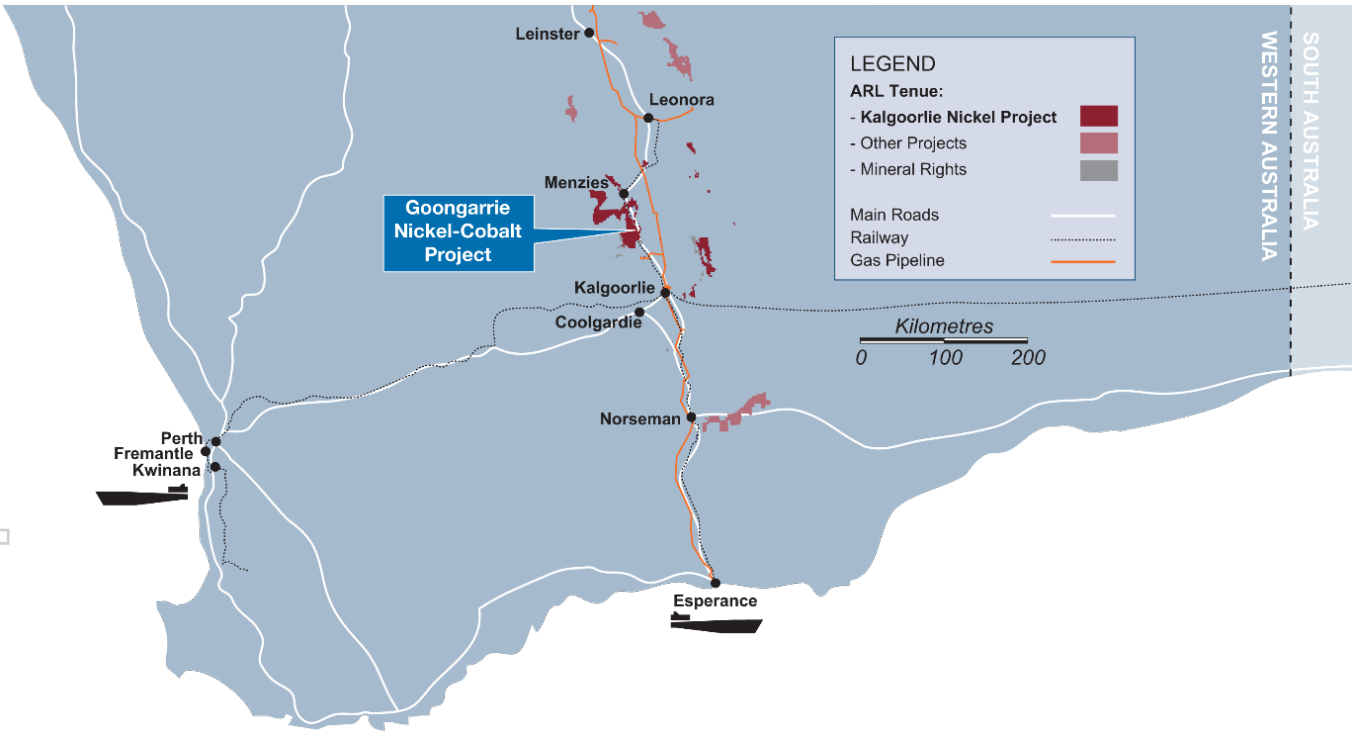
For further information regarding Ardea, please visit www.ardearesources.com.au or contact:

Andrew Penkethman
Managing Director and Chief Executive Officer
Tel +61 8 6244 5136

About Ardea Resources

Ardea Resources (ASX:ARL) is an ASX-listed resources company, with a large portfolio of 100% controlled West Australian-based projects, focussed on:

- Development of the Kalgoorlie Nickel Project (KNP) and its sub-set the Goongarrie Nickel Cobalt Project (GNCP), a globally significant series of nickel-cobalt and Critical Mineral deposits which host the largest nickel-cobalt resource in the developed world; and
- Advanced-stage exploration at compelling nickel sulphide and gold targets within the KNP Eastern Goldfields world-class nickel-gold province.



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This news release contains forward-looking statements and forward-looking information within the meaning of applicable Australian securities laws, which are based on expectations, estimates and projections as of the date of this news release.

This forward-looking information includes, or may be based upon, without limitation, estimates, forecasts and statements as to management's expectations with respect to, among other things, the timing and amount of funding required to execute the Company's exploration, development and business plans, capital and exploration expenditures, the effect on the Company of any changes to existing legislation or policy, government regulation of mining operations, the length of time required to obtain permits, certifications and approvals, the success of exploration, development and mining activities, the geology of the Company's properties, environmental risks, the availability of labour, the focus of the Company in the future, demand and market outlook for precious metals and the prices thereof, progress in development of mineral properties, the Company's ability to raise funding privately or on a public market in the future, the Company's future growth, results of operations, performance, and business prospects and opportunities. Wherever possible, words such as "anticipate", "believe", "expect", "intend", "may" and similar expressions have been used to identify such forward-looking information. Forward-looking information is based on the opinions and estimates of management at the date the information is given, and on information available to management at such time.

Forward-looking information involves significant risks, uncertainties, assumptions and other factors that could cause actual results, performance or achievements to differ materially from the results discussed or implied in the forward-looking information. These factors, including, but not limited to, the ability to create and spin-out a gold focussed Company, fluctuations in currency markets, fluctuations in commodity prices, the ability of the Company to access sufficient capital on favourable terms or at all, changes in national and local government legislation, taxation, controls, regulations, political or economic developments in Australia or other countries in which the Company does business or may carry on business in the future, operational or technical difficulties in connection with exploration or development activities, employee relations, the speculative nature of mineral exploration and development, obtaining necessary licenses and permits, diminishing quantities and grades of mineral reserves, contests over title to properties, especially title to undeveloped properties, the inherent risks involved in the exploration and development of mineral properties, the uncertainties involved in interpreting drill results and other geological data, environmental hazards, industrial accidents, unusual or unexpected formations, pressures, cave-ins and flooding, limitations of insurance coverage and the possibility of project cost overruns or unanticipated costs and expenses, and should be considered carefully. Many of these uncertainties and contingencies can affect the Company's actual results and could cause actual results to differ materially from those expressed or implied in any forward-looking statements made by, or on behalf of, the Company. Prospective investors should not place undue reliance on any forward-looking information.

Although the forward-looking information contained in this news release is based upon what management believes, or believed at the time, to be reasonable assumptions, the Company cannot assure prospective purchasers that actual results will be consistent with such forward-looking information, as there may be other factors that cause results not to be as anticipated, estimated or intended, and neither the Company nor any other person assumes responsibility for the accuracy and completeness of any such forward-looking information. The Company does not undertake, and assumes no obligation, to update or revise any such forward-looking statements or forward-looking information contained herein to reflect new events or circumstances, except as may be required by law.

No stock exchange, regulation services provider, securities commission or other regulatory authority has approved or disapproved the information contained in this news release.

Competent Person Statement

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled or reviewed by Dr Matthew Painter, a Competent Person who is a Member of the Australian Institute of Geoscientists. Dr Painter is a full-time employee of Ardea Resources Limited and 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 Painter consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.