

Tuesday, 11 August 2020

EXCELLENT GOLD RECOVERIES FROM KANMANTOO TESTWORK

Further to the announcement on 2 June 2020, Hillgrove Resources Limited (Hillgrove, the Company) (ASX:HGO) is pleased to provide the following Kanmantoo Underground development update.

The Company is continuing its evaluation of the economics of an underground operation at its Kanmantoo operation. Diamond drilling of the West Kavanagh, Central and East Kavanagh and the Nugent orebodies continues and, as reported on 31 July 2020, is expected to conclude in August and updated mineral resource estimates released thereafter.

Test work to improve the recovery of gold from the copper-gold mineralisation is being undertaken and is on-going. The initial test work has been looking at the cost-benefit of installing a gravity concentration circuit to the processing plant and to produce a gold enriched gravity concentrate with low capex required and no cyanidation circuit. Initial results are very encouraging with;

- A Knelson gold concentrate assaying 60.6 g/t Au, and from which
- A tabled gold concentrate assaying 300.7 g/t Au
- 65% of the gold from a cyclone underflow is recovered by the Knelson concentrator, which is in addition to the gold to be recovered via the copper flotation plant
- There was no additional grinding required to achieve these recoveries
- Using QEMSCAN approximately 70% of the tabled gold concentrate comprises iron oxides and iron silicates, which are rarely recovered by the copper flotation circuit
- Detailed SEM microscopy shows these iron oxides and iron silicates to host gold particles

Previously drilled intersections through the Kavanagh and Nugent Cu-Au mineralisation have been reported in previous ASX releases and include (this is not an exhaustive list, but is a selection of two to three holes from each of the gold ore systems);

KTDD141 12m @ 2.2% Cu, 7.9 g/t Au from 64m downhole in Nugent¹
KTRCD131 7m @ 1.5% Cu, 1.8 g/t Au from 88.5m downhole in Nugent
KTRC788 6m @ 0.06% Cu, 5.4 g/t Au from 156m downhole in Nugent

KTDD154 5m @ 0.3% Cu, 25.9 g/t Au from 175m downhole in Spitfire
KTDD156 9m @ 1.6% Cu, 4.4 g.t Au from 175m downhole in Spitfire

KTDD029 5m @ 3.95% Cu, 0.70 g/t Au from 283m downhole in East Kavanagh
KTDD071 10m @ 3.21% Cu, 0.79 g/t Au from 479m downhole in East Kavanagh

¹ Note that 1 g/t Au is approximately equivalent to 1% Cu at current metal prices

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Recent drilling by Hillgrove has intersected substantial copper mineralisation at the Central and East Kavanagh orebodies including significant gold (reported 10 October 2019). For example;

KTDD187_W7 5m @ 0.31% Cu, 1.14 g/t Au from 356m downhole, and
5m @ 3.73% Cu, 1.18 g/t Au from 425.5m downhole

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. 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.

These drill results (locations shown in Figure 1) demonstrate extensive gold mineralisation is present at Kanmantoo, with gold occurring in conjunction with copper orebodies and gold also occurring in discrete gold systems that have not previously been targets for exploration (for example KTRC788 listed above).

The value of these gold systems, and the initial metallurgical test work results, clearly justify further metallurgical test work to justify the mill capex to improve gold recoveries from the Kanmantoo orebodies, and to capture other gold opportunities in the Kanmantoo region.

The next steps for the potential Kanmantoo underground development, which are being progressed in unison with the drilling program, are as follows:

- Completion of a mineral resource estimate,
- Further metallurgical test work to determine the viability of installing a gravity concentration circuit,
- Completion of final designs and feasibility study, and conversion to an Ore Reserve,
- Completion of the mining approvals process, and
- Securing funding for working capital requirements.

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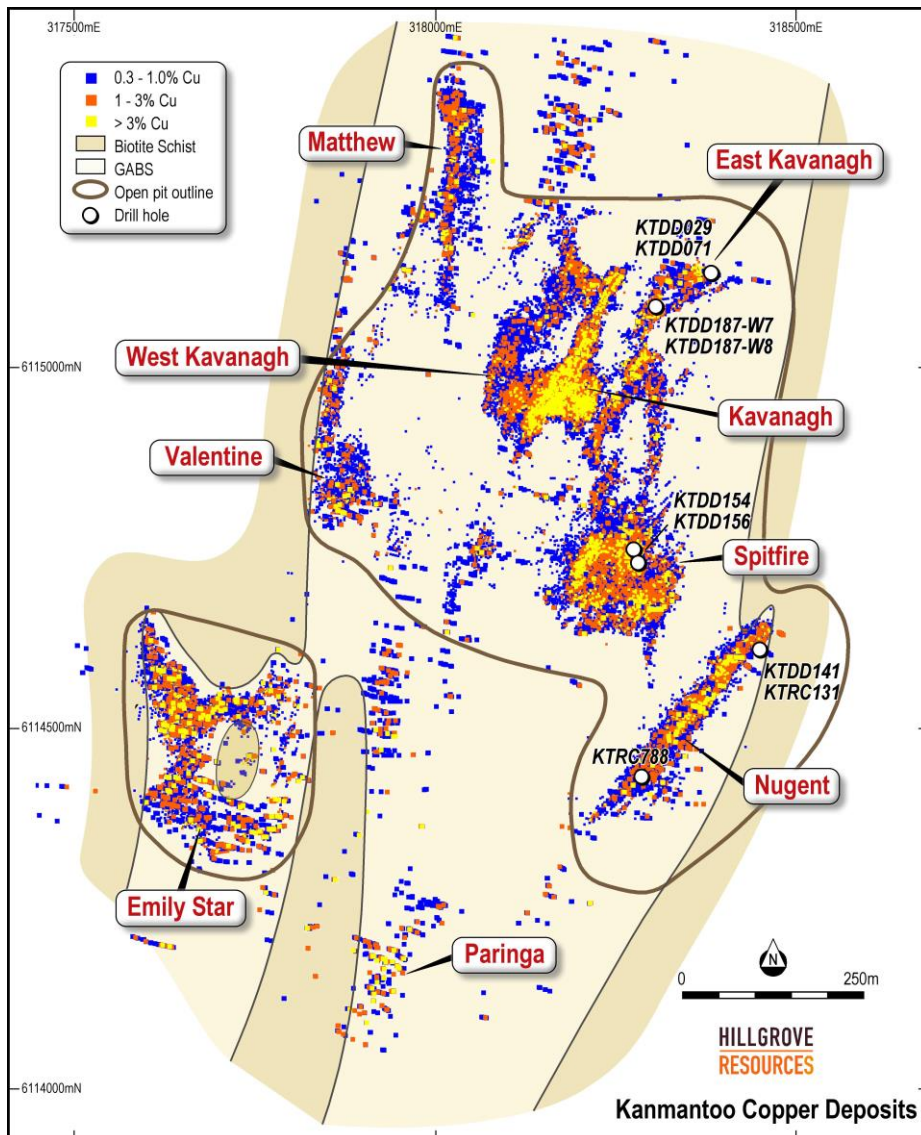
ABOUT HILLGROVE

Hillgrove is an Australian mining company listed on the Australian Securities Exchange (ASX: HGO) and focused on the operation of the Kanmantoo Copper Mine in South Australia and mineral exploration in the south-east of South Australia. The Kanmantoo Copper Mine is located less than 55 kilometres from Adelaide in South Australia.

Competent Person's Statement

The information in this release that relates to the Exploration Results is based upon information compiled by Mr Peter Rolley, who is a Member of The Australian Institute of Geoscientists. Mr Rolley is a full-time employee of Hillgrove Resources Limited and has sufficient experience relevant to the styles of mineralisation and type of deposit under consideration 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 (JORC Code)'. Mr Rolley has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears.

Figure 1 Location of drill holes in text



APPENDIX A

The reason for the renewed interest in the gold mineralisation is that a review of the milling performance over the past 8 years shows that there is a broad correlation between increasing copper grade and increasing gold grade. As underground mining will be focused on higher grade copper ore, the gold grades to the plant will, on average, be commensurately higher than those experienced whilst open pit mining.

As a result, metallurgical test work for the department of gold within the gold endowed copper-gold mineralisation at Kanmantoo has been ongoing. This gold department work will allow further test work to be undertaken to improve gold recoveries of the higher grade Cu-Au ore given the existing mill flowsheet and infrastructure.

The first stage was re-logging of all drill core intersections that assayed significant gold. Figure 2 shows that visible gold can be identified in these high grade intercepts. From the drill core logging a number of samples from various Cu-Au lodes were selected for further investigation. In addition, rock chip samples from the open pit when mining high Cu-Au material from the Spitfire mineralisation, and cyclone underflow samples from the mill circuit when it was processing Spitfire mineralisation were also collected and used in the gold department study.

Figure 2 provides an example of the Cu-Au mineralisation in KTDD154 which assayed 5m @ 25.9 g/t Au, 0.3% Cu from 175m downhole in a quartz vein garnet-chlorite-magnetite schist. Note the red circles at 177.8m are locations of visible gold.

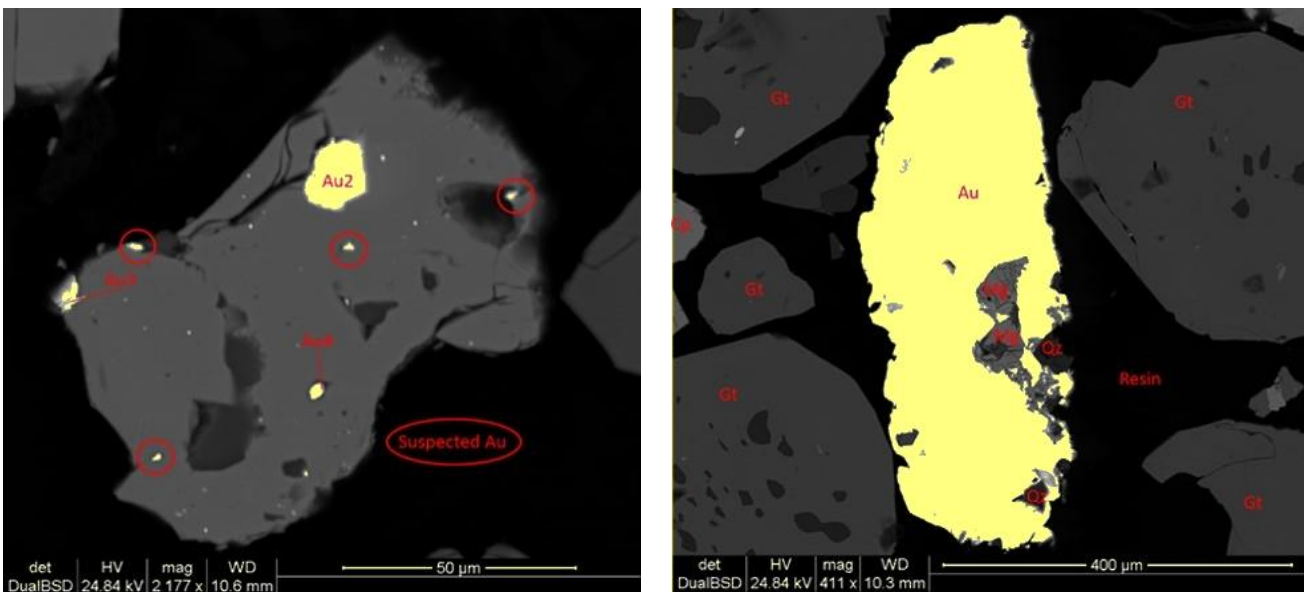
Figure 2 Visible gold in KTDD154



The microscopy by University of Adelaide and QEMSCAN by Bureau Veritas of various samples shows that gold;

- Varies in grain size from 0.5mm to 10um
- Can occur as native gold particles, and also
- Occurs as particles in association with;
 - Chalcopyrite
 - Magnetite
 - Bismuthinite
 - Quartz
 - Pyrrhotite

Figure 3 Microscopy of gold department in Tabled Concentrate



Gold within magnetite grain

Native gold (0.5mm) with magnetite and quartz

The sample from the cyclone underflow (a slurry of large mass particles) was collected over three shifts and combined. The material was not reground or sized. The bulk sample was then concentrated through a Knelson gravity concentrator by KYSKY consulting metallurgists. The Knelson concentrate was then tabled (also by KYSKY consulting metallurgists) and a final concentrate collected. The tabled concentrate represented 62% of the gold in the cyclone underflow. All assaying undertaken by Bureau Veritas.

The mill feed grade was	0.9g/t Au, 0.63% Cu, 2.9% S
Cyclone underflow grade was	4.53 g/t Au, 1.16% Cu, 5.4% S
Knelson gravity concentrate was	60.6 g/t Au, 1.3% Cu, 7.0% S
Tabled Concentrate grade was	300.7 g/t Au, 1.36% Cu, 9.4% S

Summary

The gold department study showed there is significant gold associated with non-sulphides that could be gravity concentrated into a saleable concentrate. This offers the Company a great opportunity to quickly and for low cost make minor modifications to the existing plant to significant increase the recovery of gold form the high grade Cu-Au orebodies expected to be mined from underground operations.

APPENDIX B – JORC Table 1

Section 1 Sampling Techniques and Data

Criteria	Commentary
<i>Sampling techniques</i>	<ul style="list-style-type: none"> All drilling sampling techniques described in ASX release 13 August 2013 and 18 October 2016. The cyclone underflow was bulked and totally processed through the Knelson concentrator and the total concentrate therefrom tabled. There was no subsampling of the concentrates.
<i>Drilling techniques</i>	<ul style="list-style-type: none"> All drilling sampling techniques described in ASX release 13 August 2013 and 18 October 2016
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> All drilling sampling techniques described in ASX release 13 August 2013 and 18 October 2016
<i>Logging</i>	<ul style="list-style-type: none"> All drilling sampling logging techniques described in ASX release 13 August 2013 and 18 October 2016 High quality photographs of all drill core before being sampled were taken under controlled light at the HGO core yard at Kanmantoo. All drill core is stored at Hillgrove's Kanmantoo core yard facility.
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> All drilling sampling techniques described in ASX release 13 August 2013 and 18 October 2016 Samples were split from each of the concentrates for laboratory assay by the assay laboratory under the standard protocols used by Bureau Veritas. All sub-samples then totally pulverised in preparation for assaying.
<i>Quality of assay data and laboratory tests</i>	<ul style="list-style-type: none"> All drilling sampling assay techniques described in ASX release 13 August 2013 and 18 October 2016 All concentrate samples were submitted to Bureau Veritas for analysis. Base metals assayed using a 4-acid digest with determination by Mass Spectrometry. Gold is assayed by 30g Fire Assay The QAQC of analysis processes of the concentrates were in accordance with standard Bureau Veritas protocols. Results from all returned QAQC samples provide reasonable confidence as to the accuracy of the assay results for the concentrates. All CRM results all fall within the expected ranges.
<i>Verification of</i>	<ul style="list-style-type: none"> All drilling verification processes described in ASX release 13 August 2013 and 18 October 2016

Criteria	Commentary
<i>sampling and assaying</i>	<ul style="list-style-type: none"> The concentrate samples were all repeated and re-assayed and all repeated within 1% of the original assays
<i>Location of data points</i>	<ul style="list-style-type: none"> The map projection of Map Grid of Australia 1994 - Zone 54, (MGA94-54) was used for all drilling.
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> See Figure 1 in the body of the text for drill hole locations.
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> All holes are angled drill holes, dipping at -29 to -70deg towards 250 – 280deg (true). This is approximately normal to the observed strike of the mineralisation from in-pit mapping, Dominant mineralisation trends as measured from in-pit mapping are strike 015deg and dip -75deg to east.
<i>Sample security</i>	<ul style="list-style-type: none"> All drilling verification processes described in ASX release 13 August 2013 and 18 October 2016.
<i>Audits or reviews</i>	<ul style="list-style-type: none"> All drilling and assay audits described in ASX release 13 August 2013 and 18 October 2016

Section 2 Reporting of Exploration Results

Criteria	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> The Kanmantoo Cu-Au mine is situated 55kms south-east of Adelaide on Mining Lease ML6345 and is owned 100% by Hillgrove Resources Limited (HGO). HGO owns the land covered by the Mining Lease.
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> Hillgrove Resources commenced exploration drilling in 2004 and since then has completed a number of exploration sampling and mapping campaigns which have resulted in defining the drill targets. The Table 1 of the previous Kanmantoo drilling was reported on 13 August 2013.
<i>Geology</i>	<ul style="list-style-type: none"> Mineralisation occurs as a complex system of structurally controlled veins and disseminations of chalcopyrite, pyrrhotite, pyrite, magnetite, within a quartz + biotite + andalusite ± garnet ± chlorite +/- staurolite schist host rock. Structural studies suggest the

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Criteria	Commentary
	mineralisation is within brittle structures that have been multiply re-activated.
<i>Drill hole Information</i>	<ul style="list-style-type: none"> All drilling verification processes described in ASX release 13 August 2013 and 18 October 2016
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> Intercepts tabulated in the body of the report are amalgamated over a minimum down hole length of 5m > 0.6% Cu with a maximum of 2m internal dilution < 0.6% Cu. No assays were cut before amalgamating for the intercept calculation. No metal equivalent values have been reported.
<i>Mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> Table of downhole mineralised intercepts is reported in the body of this release.
<i>Diagrams</i>	<ul style="list-style-type: none"> Diagrams that are relevant to this release have been included in the body of the release.
<i>Balanced reporting</i>	<ul style="list-style-type: none"> All drill holes have been previously reported.
<i>Other exploration data</i>	<ul style="list-style-type: none"> In situ rock density has been measured by wet immersion method to assess if there is a correlation between Cu grade and rock density. The results indicate that the bulk rock density of 3.09t/m³ as used by the mine site for the past 8 years is still a reasonable representation of bulk density for all mineralisation.
<i>Further work</i>	<ul style="list-style-type: none"> Geological interpretation of the geology and assays to estimate a resource suitable for underground evaluation studies.