

Friday, 27 September 2019

KANMANTOO SOUTH HUB CU-AU GROWTH OPPORTUNITY

Further to the previously announced strategy to optimise the value from the Cu-Au mineralisation immediately south of the Giant open pit¹ the Board of Hillgrove Resources Limited (Hillgrove, the Company) (ASX:HGO) is pleased to announce that the Company has compiled an **Exploration Target**² for those zones that have demonstrated continuity of the higher grade Cu-Au mineralisation that has been mined from the Emily Star and Nugent Cu-Au open pits and their near vicinity. This Exploration Target is termed the South Hub Target and includes the previously announced Nugent Exploration Target (25th May 2017).

The South Hub Exploration Target is in addition to the previously announced Kavanagh Exploration Targets under the Giant Pit which are currently being evaluated via a drilling program and consequent resource study as announced 20 June 2019. These results are expected in the next quarter.

Highlights

- Hillgrove has approximated an Exploration Target in the area immediately south of the Giant Open pit at Kanmantoo of between four and nine million tonnes with a target grade of between 1.2% and 2.2% Cu and 0.1 g/t to 0.3 g/t Au
- The South Hub Exploration Target is outside of any exclusion zone or works area defined by the AGL pumped hydro energy scheme option agreement
- The South Hub Exploration Target suggests the potential for a significant underground opportunity beneath and/or along strike of the recently mined Emily Star and Nugent open pits
- The South Hub Exploration Target is based on utilising the existing processing plant and infrastructure
- The South Hub Exploration Target is a maximum of 900 metres from the Company's fully owned and operating processing plant
- The South Hub Exploration Target is based on previous drilling and open pit grade control data that has intersected higher grade Cu-Au zones, and projecting these to a similar depth as mined at the Giant Pit (viz 300m below natural surface)
- The drilling to evaluate the Kavanagh Exploration Target has been completed and final assays are awaited.

¹ AGM presentation of 30 April 2019, and release of 19 May 2019

² The Exploration Target is conceptual in nature as there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the determination of a Mineral Resource under the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, the JORC Code" (JORC 2012). The Exploration Target is not being reported as part of any Mineral Resource or Ore Reserve

Hillgrove continues to identify several organic growth opportunities as it progresses its strategy to optimise the value of its' existing assets.

The first of these opportunities is the investigation of the Kavanagh Cu-Au lodes beneath the Giant open pit and as previously announced, drilling of this target commenced in late June. The drilling has now been completed and final assays are still awaited before progressing an evaluation of the opportunity window to extract ore from underground during the AGL option period.

The second opportunity for near-term growth, as previously announced, is to assess the down dip and along strike continuation of the higher grade Cu-Au orebodies that have been mined from the Emily Star and Nugent open pits and their near-vicinity, in areas that are not subject to the AGL option agreement. These targets are collectively known as South Hub and present an opportunity for long term production.

Hillgrove has approximated an Exploration Target at the Kanmantoo South Hub area (Table 1 and Figures 1 and 2) of between four and nine million tonnes with a target grade of between 1.2% and 2.2% Cu and 0.1 g/t to 0.3 g/t Au. The main target areas are Nugent, as previously announced on 25 May 2017, Paringa (not previously mined), and Emily Star.

Table 1 Summary of the Exploration Target by zone

South Hub Exploration Target			
	Tonnage Range (Mt)	Grade Range Cu%	Grade Range Au g/t
Nugent	1.5 - 2.5	1.3 - 2.2	0.2 - 0.6
Paringa	0.5 - 1.5	1.1 - 2.2	0.1 - 0.2
Emily Star	2.0 - 4.5	1.2 - 2.2	0.1 - 0.3
Totals	4 - 9	1.2 - 2.2	0.1 - 0.3

Figure 1 Plan view of the South Hub Exploration Target by zone

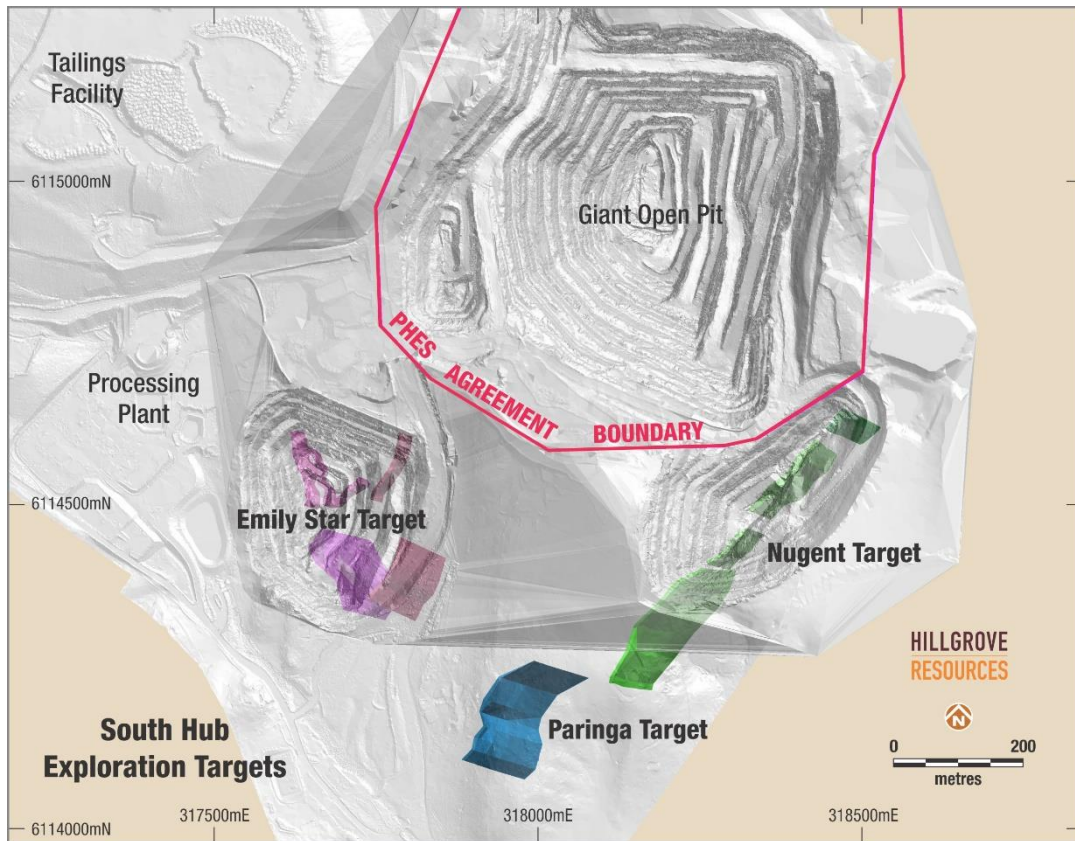
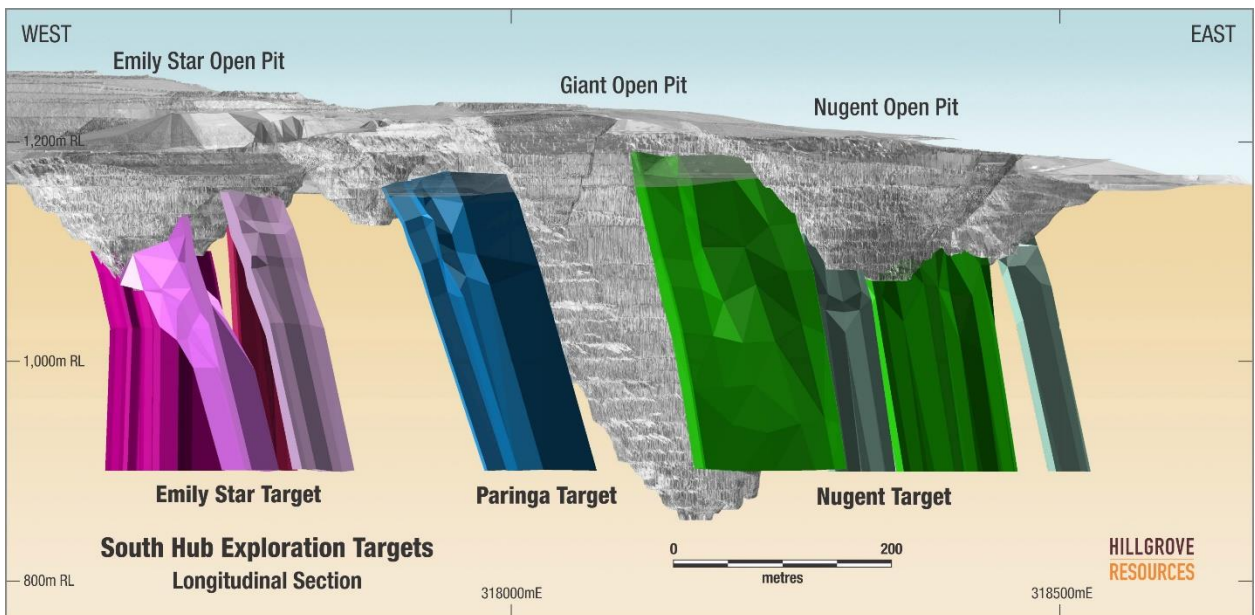


Figure 3 Section looking north of the South Hub Exploration Target



Method of Assessment

Within the region immediately south of the Giant open pit at Kanmantoo, three areas with higher-grade drill intercepts and/or grade control production have been identified which will be the focus for future exploration activities to assess if these targets can be converted to underground mining opportunities. This region is called the “South Hub” and includes the Company owned processing, tailings and administration facilities.

An analysis of the large drillhole database of the Company, in conjunction with the open pit production data and geologic knowledge gained from mining of over 100 vertical metres of the main orebodies at Emily Star and Nugent shows that a number of higher-grade copper-gold zones do extend to depth beneath or along strike from these open pits. The analysis of the drill hole data base also shows there is a lack of drilling below the open pits to fully assess these higher grade zones.

The location and extent of the target zones is based on a 0.6% Cu contour of the grade control copper grades in plan view, and from drill hole data in sectional view. The South Hub Exploration Target has been extrapolated to 900m RL which is approximately 300 metres below the natural surface. This is considered reasonable given that the Cu-Au lodes at the Giant open pit were mined to over 350m depth.

The copper and gold grade profiles for the South Hub Exploration Target have been defined based upon average grades of exploration drilling within the target copper-gold zones, and where available blast hole drilling data.

Table 2 lists a selection of exploration drill holes that are beneath the open pits or immediately along strike from the open pits³ that intersect known higher grade copper zones.

The Paringa zone has not previously been mined, but has similar geology and geochemical characteristics as the Kavanagh lodes at the Giant open pit. The Paringa target is based on broad spaced exploration drilling available to date.

The Nugent Exploration target herein replaces that previously reported on 25 May 2017. In this review the Nugent target has been extended to the southwest and only projected to 900mRL⁴.

Invested Infrastructure

The importance of the existing infrastructure at the Kanmantoo Copper Mine cannot be over-emphasised in assessing the economic materiality of this Exploration Target. In particular:

- The existing copper-gold processing plant at Kanmantoo that operates at a very efficient \$7.30/tonne milled
- The risks associated with understanding copper and gold recovery and processing costs have been largely mitigated through the past 6 years of operation on the same ore types,
- The extensive geotechnical database resulting from open pit mining for the past 7 years,
- The existing fully constructed and permitted Tailings Storage Facility, and
- The existing granted Mining Lease and Environmental Permits

³ This information was prepared and first disclosed under the JORC Code 2004. The information is extracted from the ASX reports dated 6/07/2006, 14/02/2007, 28/03/2007, 23/04/2007, and 25/06/2007. The reporting of the drill hole information has been updated in compliance with JORC Code 2012 in Appendix One of this release. 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.

⁴ Mine elevation is 1000m plus ASL

Table 2 Summary of the Exploration drill holes by Target zone

Zone	Hole ID	DH Length	Downhole Intercept
Nugent	KTDD141	64-76m	12m @ 2.22% Cu, 7.93g/t Au
	KTRCD284	183-195m	12m @ 1.84% Cu, 0.29g/t Au
	KTRC557	102-115m	13m @ 1.0% Cu, 1.6g/t Au
Paringa	KTRC954	144 - 161m	17m @ 3.6% Cu, 0.6g/t Au
	KTRC866	123 - 137m	14m @ 2.8% Cu, 0.3g/t Au
Emily Star	KTRC833	82 - 93m	11m @ 2.0% Cu, 0.2g/t Au
	KTDD127	144 - 150m	6m @ 1.9% Cu, 0.4g/t Au

Exploration Activities

Hillgrove estimate that drill testing of the South Hub Exploration Target will be able to commence in 2020, depending on the required funding being available. The initial objective of the drilling will be to confirm the depth continuity of the Nugent zone.

ABOUT HILLGROVE

Hillgrove is an Australian mining company listed on the Australian Securities Exchange (ASX: HGO) focused on operating its flagship Kanmantoo Copper Mine and associated regional exploration targets, located less than 55km from Adelaide in South Australia.

Presently the Company is milling from low grade stockpiles at the rate of up to 3 million tonnes per annum, and assessing the viability of an underground development below the Giant open pit.

The Company's growth will come from the Kanmantoo Copper Mine operation in South Australia and exploration discoveries from its highly prospective near mine and greenfield exploration projects.

Competent Person's Statement

The information in this report that relates to Exploration Target and Exploration Results is based on and fairly represents information and supporting documentation compiled by Peter Rolley, a Competent Person, a full time employee of Hillgrove Resources Limited, and a member of the Australian Institute of Geoscientists. Mr Rolley 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 'Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves'. Mr Rolley consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

For more information contact:

Mr Lachlan Wallace
CEO & Managing Director
Tel: +61 (0)8 7070 1698

Mr Paul Kiley
CFO & Company Secretary
Tel: +61 (0)8 7070 1698

APPENDIX A – JORC Table 1

Section 1 Sampling Techniques and Data

Criteria	Commentary
<i>Sampling techniques</i>	<ul style="list-style-type: none"> • Reverse circulation (RC) and diamond drill hole (DD) samples collected by Hillgrove Resources personnel have been used for the geological interpretation and estimation. • Drill hole sampling was conducted as per the Hillgrove Resources procedures and QAQC protocols. <p>RC Drilling:</p> <ul style="list-style-type: none"> • 2004 to 2007 drilling: <ul style="list-style-type: none"> • A rig mounted 75/25 splitter was used to collect a bulk sample and smaller split sample (3-4kg) directly off the drill rig at 1m intervals. The split sample was then split down manually if required using a cone or riffle splitter to generate a sample of ~3kg. • 1m intervals were assayed with samples being prepared by Genalysis Laboratories in Adelaide. Each sample was pulverised to ~95% passing - 75µm and the remaining pulp shipped to Genalysis Perth for analysis. • 2011 – 2012 drilling: <ul style="list-style-type: none"> • 1m bulk samples were collected during drilling with smaller split samples (3-4kg) for assay being collected primarily using a cone or riffle splitter directly off the rig. • Specific target intervals and/or samples exhibiting visible mineralisation were assayed at 1m intervals. All other sample intervals were composited (using spear sampling) to 4m intervals for assaying. On return of assay results, the 4m composite results were examined and any 4m composites returning an economic copper grade (>0.2%) were re-assayed using the original 1m samples (collected from original bulk sample using spear sampling to produce a representative 1.5kg to 3kg sample). • Samples were prepared by ALS Adelaide with each sample being riffle split to a maximum size of 3kg then pulverised split to 85% passing 75µm or better and then shipped to ALS Perth for assay. <p>Diamond core:</p> <ul style="list-style-type: none"> • Core samples were sawn in half using a diamond core saw. A small percentage of core samples were sawn in quarters. Sampling was undertaken at 1m intervals or to geological boundaries as determined by the supervising geologist. Half or quarter core samples were sent for assay and the remaining core kept in core trays for future reference. • Samples were prepared by Genalysis Laboratories in Adelaide using a jaw crusher to ~2mm. Each sample was then pulverised to ~95% passing - 75 µm and the remaining pulp shipped to Genalysis Perth for assaying.

Criteria	Commentary																			
<i>Drilling techniques</i>	<table border="1"> <thead> <tr> <th>Drillhole Type</th> <th>Drill Date</th> <th>Bit Size</th> <th>% Orientated</th> <th>Orientation Method</th> </tr> </thead> <tbody> <tr> <td>Diamond</td> <td>All</td> <td>HQ from surface to fresh then NQ2 to end of hole</td> <td>97%</td> <td>Spear</td> </tr> <tr> <td rowspan="2">RC</td> <td>2004 & 2007</td> <td>5³/₄ "</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>2011 & 2012</td> <td>4.5"</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table>	Drillhole Type	Drill Date	Bit Size	% Orientated	Orientation Method	Diamond	All	HQ from surface to fresh then NQ2 to end of hole	97%	Spear	RC	2004 & 2007	5 ³ / ₄ "	NA	NA	2011 & 2012	4.5"	NA	NA
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<i>Drill sample recovery</i>	<p>RC Drilling:</p> <ul style="list-style-type: none"> Sample recovery or the occurrence of wet samples is not recorded in the drill hole database although communications with Exploration Personnel and field observations indicate that sample recovery or wet samples were rarely a problem. <p>Diamond Core:</p> <ul style="list-style-type: none"> Diamond core recovery is recorded by Hillgrove Field Technicians during metre marking and orientation of all holes. Results demonstrate good recoveries with an average recovery rate of 97%. Core loss generally occurs in the upper sections of holes throughout the oxidised and transitional material. Core loss at depth is generally associated with a low Rock Quality Designation (RQD) value, suggesting the interval represents a shear or fault zone. 																			
<i>Logging</i>	<ul style="list-style-type: none"> All RC chips and diamond core were logged for lithology, alteration, weathering and mineralisation by Hillgrove Geologists in accordance with Hillgrove’s Core Logging Procedure. Colour and any additional qualitative comments were also recorded. 99% of all diamond holes have been geotechnically logged and the majority also have magnetic susceptibility readings at 1m intervals. All diamond core trays were photographed before sampling and these photographs are stored on the Hillgrove server. Both drill core and RC chip trays are stored on site in a core yard facility. All geological logging and magnetic susceptibility readings are recorded in the field manually using a paper-based system and then manually entered into Excel spread sheet templates and visually validated before being imported into the Hillgrove drill hole database. Additional validation is conducted automatically on import. 																			
<i>Sub-sampling techniques and sample preparation</i>	<p>RC holes</p> <ul style="list-style-type: none"> Sub-sampling as described in the “<i>Sampling Techniques</i>” section above. <p>Diamond holes</p> <ul style="list-style-type: none"> Sub-sampling as described in the “<i>Sampling Techniques</i>” section above. Field Duplicates were collected via manual splitting of the bulk sample with a riffle or cone splitter if available or by spear sampling. All field duplicates for drilling from 2011 onwards were collected using spear sampling. Analysis of the field duplicate results indicates that this method of duplicate sample collection is satisfactory. Hillgrove have detailed sampling and QAQC procedures in place to ensure sample collection is carried out to maximise representivity of the samples and minimise contamination. 																			

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Criteria	Commentary
<i>Quality of assay data and laboratory tests</i>	<ul style="list-style-type: none"> • Pre 2011, all samples were submitted to Genalysis for analysis. Gold was determined by fire assay by flame AAS (FA50) and copper analysed via a mixed acid digest (method AT) with determination by Optical Emission Spectrometry (OES). If the copper result was greater than 1%, the analysis was repeated using a slightly modified mixed acid digestion technique (method AX). • Post 2011 samples were submitted to ALS Perth for assaying by four acid digest with Atomic Absorption Spectroscopy (AAS) and gold was analysed via fire assay and Atomic Absorption Spectroscopy (AAS). • Approximately 20% of the total samples used for this estimation were assayed using a double acid aqua regia digest with an ICPOES finish (a method which does not guarantee complete dissolution of sample). A re-assay program was undertaken in 2011 which detected no bias between the results of the double acid aqua regia digest and the mixed acid digestion results. • The QAQC of sample preparation and analysis processes were via the following samples: <ul style="list-style-type: none"> • Certified reference materials (CRMS) inserted into the sample sequence at a frequency of one in 20. • Field duplicates inserted at a rate of one in every 20 samples. • Blanks inserted at a rate of one in every 20 samples. • Laboratory QAQC samples were inserted with a minimum of two standards and one blank for every batch of 40 samples. • Hillgrove's Quality policy is that at a minimum of 5% of all samples are CRM's, 5% of samples submitted are blanks and 5% of samples submitted are field duplicates thus ensuring that as a minimum, 15% of all samples submitted for analysis are QAQC samples. • Results from all returned QAQC samples provide reasonable confidence as to the accuracy of the assay results used in the estimation. Field duplicates show a good correlation with original sample results and in general most CRM results fall within the expected ranges.
<i>Verification of sampling and assaying</i>	<ul style="list-style-type: none"> • Umpire laboratory checks were undertaken during 2008 and 2011 with no significant issues identified. • There have been no twinned holes drilled for the Kanmantoo Copper Mineral Resource. • Primary sample data is captured in the field onto paper templates and then entered electronically into Excel templates and stored on the Hillgrove server. The Excel templates were then imported into the SQL database using data entry procedures and database import tools. Data was visually checked by the Geologist prior to import and additional validation was carried out by the database upon import. • Copper results were reported in ppm units from the laboratories and then converted to a % value within the database.
<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 all work undertaken for this Mineral Resource. • Hillgrove drilling was planned and set-out using the local Kanmantoo Mine Grid and then transformed to MGA94-54 for the Resource estimation. The Kanmantoo local grid is oriented at +10° to MGA94_Zone 54 – (i.e. local grid North equates to 010° MGA94_Zone 54). • Within the database the relative level (RL) has been calculated as RL+1000m to ensure no negative RL values within the dataset. • The topographic surfaces used in the estimation have accuracy in the z direction of approximately +/-1m for the majority of the block model area due to the use of lower resolution contours outside the direct mine areas. The source of the contours used outside of the Mining area was sourced from a mix of 2008 flyover data and other Surveys performed prior to Nov 2008. The Kanmantoo Mine area and immediate surrounds have +/-20mm accuracy as this area is updated by the Hillgrove Surveyors regularly using a DGPS (Trimble R8 GNSS Model 3 using kinematic option). • Pre-2011, all drill hole collars were surveyed by Engineering Surveys Pty Ltd (Adelaide) using DGPS. All pick-ups were reported in MGA94-54 coordinate system and converted to local grid. • Post-2011, all drill hole collars surveyed using DGPS (Trimble R8 GNSS Model 3 - kinematic option) by onsite Hillgrove Surveyors. The accuracy of this

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Criteria	Commentary
	<p>instrument is 10mm in the horizontal plane and 20mm in the vertical. All pick-ups were reported in MGA94-54 coordinate system and converted to local grid.</p> <ul style="list-style-type: none"> • Downhole surveys were determined using a variety of methods including Gyro tool, Camteq, Digital downhole cameras, Eastman single shot camera and Compass Clinometers. For all holes initial surveys were completed with either a conventional Eastman single shot camera or digital down hole survey tools and then the majority of drill holes were re-surveyed using a Gyro tool. • All downhole survey methods have a priority assigned to them in the drill hole database and therefore holes with data from multiple methods have had their survey values allocated according to this priority.
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> • Drilling was completed throughout the deposit on a variable section spacing of between 15 m to 40m and an on-section collar spacing of between 10 m and 50m. • The variable drill spacing both along strike and on-section was considered during resource classification; mineralisation estimated on broader spaced drilling was given a lower confidence classification than mineralisation estimated using tighter spaced drilling. • All samples were composited to 2m lengths prior to geostatistical analysis and Mineral Resource estimation.
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> • The majority of holes are angled drill holes (dipping between -55° and -75°) drilled from (Kanmantoo local grid) east to west. The Kanmantoo local grid is oriented at +10° to MGA94_Zone 54 – (i.e. local grid North equates to 010° MGA94_Zone 54). The rotation of the local grid reflects the average 010° strike of the main mineralised lenses and local dominant mineralisation controls. Predominantly the main mineralised lenses dip steeply to local grid east, therefore east-west (local grid) orientated drill holes and section provide as close to practicable “true width”, representative intersections of lithology and mineralisation. • Whilst the Nugent Zone is oblique to the general 010° strike of the mineralised zones, these lenses still generally exhibit a steep easterly dip and their orientation is not considered to have introduced any sampling bias material to the Resource estimation.
<i>Sample security</i>	<ul style="list-style-type: none"> • RC samples – A Hillgrove employee is present for the collection of samples off the rig and is also responsible for collecting and organising the samples ready for assay. Hillgrove has a detailed sample collection/submission procedure in place to ensure sample security. • Assay samples are collected from the rig at the end of each day by Hillgrove Field Technicians, sealed in large plastic bags and placed at the Exploration office ready for pick up by courier. Check sheets detailing all samples for a specific batch are generated prior to the samples leaving site. • DD samples – A Hillgrove employee is responsible for picking up the completed core from the rig at the end of each day and moving it to the core yard ready for processing. Hillgrove Field Technicians and geologists are then responsible for all core movements through to sampling and preparing for transport to the preparation facility. Sample transport is by dedicated road transport to the sample preparation facility. All samples are transported in sealed plastic bags and are accompanied by (either paper form or by email) a detailed sample submission form generated by the Field Technician. • On receiving a batch of samples, the receiving laboratory checks received samples against a sample dispatch sheet supplied by Hillgrove personnel. On completion of this check a sample reconciliation report is provided for each batch received.
<i>Audits or reviews</i>	<ul style="list-style-type: none"> • Core logging and sampling methods were reviewed by Runge in 2008 and were considered to be of a very high standard (report: Mineral Resource Estimate Kanmantoo Copper Deposit South Australia, Feb 2008).

Section 2 Reporting of Exploration Results

Criteria	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> The Kanmantoo Copper Deposit is situated 55kms south-east of Adelaide on Mining Lease (ML) 6345 and ML 6436 and is owned 100% by Hillgrove Resources Limited (HGO). The Mining Leases overly freehold land also held by Hillgrove Resources. There are no Native Title interests, nor are there any historical or environmental issues considered material to this Exploration Target.
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> The Kanmantoo Copper Deposit has a long history of exploration and mining dating back to the mid-19th century. In 1962, Mines Exploration Pty Ltd discovered a number of strong geophysical anomalies which were quickly followed up by a large diamond drilling program of 15,800m. The results of this program led to a decision to begin mining in 1968. In the mid 1990's the Kanmantoo Project area became part of a joint venture between Kelaray Pty Ltd and Pima Mining N.L. and auger drilling identified several new prospects although follow up RC work failed to identify any new significant targets. Hillgrove Resources commenced exploration drilling in 2004 and since then have completed a number of exploration drill campaigns which have resulted in extensions and additions to the known deposit. Pre-strip and near surface mining commenced in early 2011 and the commissioning of the processing plant was completed in November of the same year.
<i>Geology</i>	<ul style="list-style-type: none"> Mineralisation occurs as a complex system of structurally controlled veins, with mineralisation typically forming pipe-like bodies and lenses of chalcopyrite, pyrrhotite, pyrite, magnetite, chalcocite and bornite within a quartz + biotite + andalusite ± garnet ± chlorite schist host rock. Structural studies suggest the main controls on the mineralisation are north-south striking shear zones and north-north-east/north-east striking cross-shears and tension veins.
<i>Drill hole Information</i>	<ul style="list-style-type: none"> All drill holes have been previously reported – see body of report for the ASX releases.
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> Sample length weighting only has been used to report the drill hole intercepts reported in this release. There are no metal equivalents reported
<i>Mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> See Table in body of report.
<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"> A selection of drillholes intersecting the Exploration Target have been reported in the body of the report and these are considered to be representative of the mineralised zones.
<i>Other exploration data</i>	<ul style="list-style-type: none"> There is no other exploration data used in approximating the Exploration Target.
<i>Further work</i>	<ul style="list-style-type: none"> The Company is proposing to undertake a limited drilling program in 2020 to commence testing the Exploration Target.